NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1382

ARNG-IEE-N 10 June 2024

MEMORANDUM FOR ALASKA ARMY NATIONAL GUARD (AKARNG) ATTN: DONALD B. FLOURNOY, ENVIRONMENTAL PROGRAM MANAGER

SUBJECT: Approval of the Integrated Pest Management Plan (IPMP) for the (AKARNG)

1. References:

a. DoD Instruction 4150.07, DoD Pest Management Program, 26 December 2019

b. AR 200-1, Environmental Protection and Enhancement, 13 December 2007

c. Army National Guard Integrated Pest Management Policy, 4 February 2016

2. In accordance with procedures established in reference 1a and 1b, the AKARNG IPMP has been reviewed/approved effective 28 May 2024.

3. Per reference 1c, your IPMP has been reviewed and approved for technical sufficiency by the ARNG Pest Management Consultant (PMC). Include this memorandum with the signature page as part of your plan.

4. As a reminder, all pesticides and pest control contracts need to be reviewed/approved by the IPMC and PMC prior to that pesticide use/contract award.

5. Submit a copy of finalized IPMP that includes all required signatures.

6. The point of contact for this action is Mr. Bryon Kacprzyk, ARNG Pest Management Consultant, who can be reached at 703-601-8275 or via email bryon.j.kacprzyk.civ@army.mil.

1 Encl
1 (AKARNG) IPMP Signature page

ALISA R. DICKSON
Chief, Conservation Branch
ARNG G9

COORDINATION SHEET

TO:		ACTION:	SIGNATURE/DATE IN & OUT:
1.	Tom Wolforth – DMVA CRM	Review / FWD	Thomas Wolforth Digitally signed by Thomas Wolforth Date: 2024.04.04 13:51:33 -08'00'
2.	Donald Flournoy – DMVA EPM	Review / FWD	FLOURNOY.DONALD.B.1126517657 Digitally signed by FLOURNOY.DONALD.B.1126517657 Date: 2024.04.05 06:38:45 -08'00'
3.	LTC Christopher Dailey – AKARNG G3	Review / FWD	DAILEY.CHRISTOPHER.SHANE.1179088351 Digitally signed by DAILEY.CHRISTOPHER.SHANE.1179088351 Date: 2024.04.10 11:52:44 -08'00'
4.	Steve Ernst – AKARNG Command Safety Director	Review / FWD	ERNST.STEVEN.AMARAK.1268418462 Digitally signed by ERNST.STEVEN.AMARAK.1268418462 Date: 2024.04.04 07:34:07 -08'00'
5.	COL Ray Kelley – AKARNG State Surgeon	Review / FWD	KELLEY.RAY.DON.1019047691 Digitally signed by KELLEY.RAY.DON.1019047691 Date: 2024.05.18 14:44:50 -08'00'
6.	Bryon Kacprzyk – ARNG G-9	Review / FWD	KACPRZYK.BRYON.J.1186257800 Digitally signed by KACPRZYK.BRYON.J.1186257800 Date: 2024.05.28 11:01:34 -04'00'
7.	MAJ GEN Torrence Saxe - TAG	~~Approval~~ / FWD	for MG Hurn 11 July 24
8.			
9.			
10.	Return to Originator		

NAME/TITLE OF ORIGINATOR:	DIVISION:	PHONE:
Mr. Patrick Geary, IPMC, Department of Military & Veteran Affairs (DMVA)-Construction Facilities Management Office (CFMO) Environmental Division	DMVA-CFMO Environmental	428-7157
SUBJECT: Sign updated 2024 Integrated Pest Management Plan (IPMP).	DATE: April 4, 2024	DOCUMENT CODE:

SUMMARY:

- The Integrated Pest Management Plan (IPMP) was previously approved/signed by MAJ GEN Laurel Hummel in 2018. The IPMP is required to be re-certified every 5 years, including updated signatures.
- The Integrated Pest Management Coordinator (IPMC) for AKARNG has reviewed and incorporated comments into the IPMP, which includes updating Point of Contact information, National Guard Bureau (NGB) policy changes, and pest information.
- Once plan is signed and returned, it will be emailed to the Army National Guard (ARNG) G-9 Installations & Environmental Conservation (IEE-N) Branch, Pest Management Program Manager Bryon Kacprzyk.

RECOMENDATION:

- TAG signs page ii (PDF page 3 of 312) of the plan.

POC Email: patrick.geary@alaska.gov

DMVA-FMO/ENV Form A2-001
January 14, 2015

INTEGRATED PEST MANAGEMENT PLAN

FOR THE ALASKA ARMY NATIONAL GUARD

April 2024

1 Signature Page

Technical Review: **Date:**

Patrick S. Geary Digitally signed by Patrick S. Geary Date: 2024.04.08 13:10:26 -08'00' 4/8/24

Patrick Geary
Integrated Pest Management Coordinator & Natural Resource Manager

Thomas Wolforth Digitally signed by Thomas Wolforth Date: 2024.04.04 13:30:46 -08'00' 4/4/24

Tom Wolforth
Cultural Resources Manager

FLOURNOY.DONALD.B.1128517657 Digitally signed by FLOURNOY.DONALD.B.1128517657 Date: 2024.04.05 11:32:01 -08'00' 4/5/24

Donald Flournoy
Environmental Program Manager

DAILEY.CHRISTOPHER.SHANE.1179088351 Digitally signed by DAILEY.CHRISTOPHER.SHANE.1179088351 Date: 2024.04.16 11:51:50 -08'00' 4/16/24

LTC Christopher Dailey
G-3 Director of Plans, Training, Mobilization and Security

ERNST.STEVEN.AMARAK.1268418462 Digitally signed by ERNST.STEVEN.AMARAK.1268418462 Date: 2024.04.24 07:34:59 -08'00' 4/24/24

Steven Ernst
AKARNG Command Safety Director

KELLEY.RAY.DON.1019047691 Digitally signed by KELLEY.RAY.DON.1019047691 Date: 2024.05.18 14:44:01 -08'00'

COL Ray Kelley
AKARNG State Surgeon

KACPRZYK.BRYON.J.1186257800 Digitally signed by KACPRZYK.BRYON.J.1186257800 Date: 2024.06.11 09:37:45 -04'00' 6/11/24

Bryon Kacprzyk
ARNG Pest Management Consultant

Approval:

T. Saxe 11 July 2024

MAJ GEN Torrence Saxe
The Adjutant General

Table of Contents

2 Executive Summary:

Pests can interfere with the military mission, damage real property and the environment, increase maintenance costs and expose personnel to diseases unless properly controlled. As per Army Regulation (AR) 200-1, the Army National Guard's (ARNG) pest management program uses integrated pest management (IPM) to achieve effective pest control with minimal environmental impacts. IPM, as used by the Alaska Army National Guard (AKARNG), is an approach that utilizes all available techniques in an organized program to suppress pest populations in an effective, economical and environmentally safe manner. The techniques of IPM include cultural, physical, mechanical, biological, and chemical controls. IPM strategies depend on surveillance to establish the need for pest control and to monitor the effectiveness of management efforts. Pest control is done by need rather than by schedule with limited use of preventative treatments (common exceptions are pre-emergent herbicides, mosquito larvicide and some fungicide treatments). Pests are controlled to acceptable levels and not always completely eliminated.

The contents of this Integrated Pest Management Plan (IPMP) apply to all activities and individuals working at AKARNG sites and will be implemented to the maximum extent possible. At no time will pest management operations be done in a manner that will cause harm to personnel or violate the law. The application of pesticides is governed by the label. No pesticide will be applied contrary to its label.

This plan describes AKARNG's pest management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety and environmental requirements of the AKARNG IPM program. The first step in pest management begins with the individuals who occupy or maintain buildings, open spaces, or lands through a cost-effective Self-Help Program. For pests that cannot be controlled through Self-Help, the program uses pest management providers, who have the necessary state and/or Department of Defense (DOD) certifications, to control pests using the procedures found in the IPM Outlines (Appendix B). If needed, contracted pest control services are administered and funded by the Facilities Management Office (FMO), with IPM technical guidance provided by the Integrated Pest Management Coordinator (IPMC) and quality assurance by the IPMC and/or Pest Management Quality Assurance Evaluator (PMQAE). Additional responsibilities of pest management personnel are detailed in Section 4 of this plan.

This plan is a working document and will be continually updated to reflect actual pest management and the IPM program practices.

3 Background:

3.1 Purpose:

This IPMP is a framework that defines how pest management is accomplished by the AKARNG for various sites around Alaska that have different needs. The plan identifies elements of the program to include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. This plan is used as a tool to reduce reliance on pesticides, to enhance environmental protection, and to maximize the use of IPM techniques.

3.2 Authority:

3.2.1 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 26 April 1910

3.2.2 Integrated Pest Management Memorandum from the President. 2 August 1979

3.2.3 Department of Defense Instruction (DODI) 4150.07, DOD Pest Management Program, 22 December 2019

3.2.4 Army Regulation (AR) 200-1, Environmental Protection and Enhancement, Chapter 5 Pest Management 13 December 2007

3.2.5 Memorandum, Army National Guard Environmental Programs Division (ARNG-IEE), 04 February 2016, subject: Integrated Pest Management Program Policy

3.2.6 18 Alaska Administrative Code (AAC) Chapter 90, Pesticide Control

3.3 Plan Maintenance:

3.3.1 The IPMC maintains this plan.

3.3.2 Updates to the plan are made when necessary, by the IPMC. Updates to the plan can be in the form of an attached memorandum that is referenced in the affected section of the plan. Minor changes can also be notated directly in the plan and initialed by the IPMC.

3.3.3 Plan review and approval are conducted in accordance with DoD, Department of the Army (DA) and ARNG policies and directives. This IPMP will be reviewed annually by the IPMC during the preparation of the annual Plan Update Form (PUF) (an example PUF is in Appendix H). A completed PUF will be the documentation of the annual plan review. Annual updates of this plan are sent, via the PUF, to the ARNG Pest Management Consultant (PMC) no later than 15 October.

3.3.4 This plan will be revised every five years. Revisions will formally incorporate the annual updates and any other changes to the program that have occurred since the last revision. Complete rewriting of the IPMP during the revision process is not required unless substantial program changes have occurred. Revised IPMPs are reviewed by the ARNG PMC for technical sufficiency and are signed by the Adjutant General (TAG) (or designee). Additional signees of the IPMP are specified in DoDI 4150.07 and DoDM 4150.07 Vol 1.

4 Responsibilities:

4.1 The Adjutant General.

TAG is considered the “Installation Commander” of the virtual installation in regard to the requirements in DODI 4150.07, AR 200-1 and the ARNG Integrated Pest Management Program Policy Memorandum, and has ultimate responsibility for pest management actions at both State and Federally owned (Appendix A) AKARNG sites.

4.1.1 Approve and support the IPMP.

4.1.2 Designate an Integrated Pest Management Coordinator (IPMC) to oversee all pest management activities. Approval of this plan constitutes the written appointment of the listed IPMC, or the IPMC can be appointed with a signed memo (Appendix I).

4.1.3 Ensure that AKARNG personnel performing pest control as a part of their assigned duties receive adequate training (in accordance with Section 9.6 of this plan), and, when required, obtain appropriate pest management certification(s).

4.1.4 Ensure that all pest management operations are conducted safely and have minimal impact on the environment.

4.2 Integrated Pest Management Coordinator (IPMC)

4.2.1 Prepare and maintain the IPMP with 5-year revisions.

4.2.2 Annually review and update the IPMP as needed.

4.2.3 Ensure all pesticides are approved by the ARNG PMC prior to their use at AKARNG Federally owned (Appendix A) sites and all pesticides used at AKARNG sites are listed on the AKARNG State Pesticide Use List (SPUL) (Appendix C).

4.2.4 Coordinate with personnel conducting pest surveillance and/or control to ensure all applicable information is recorded and reported as required by the directives cited in Section 3.2 and this plan.

4.2.5 Function as a point of contact between those individuals who store and apply pesticides (e.g., facility management, pest control contractors) and activities or individuals who document or are impacted by pesticide usage at AKARNG sites (e.g., Environmental Office, Safety Office, Fire Department, and Industrial Hygienist).

4.2.6 Coordinate with the AKARNG NEPA Program Manager about pest control actions in semi-improved or unimproved grounds where there may be endangered, threatened or sensitive animals (including insects) or plants.

4.2.7 Coordinate with the AKARNG Cultural Resources Manager (CRM) to determine whether pest control actions will impact cultural and historical sites and buildings, or places of traditional cultural practice and other things (including plants and animals) of concern for tribal governments and associated Alaska Native entities.

4.2.8 Coordinate with local health officials to determine the prevalence of disease vectors and other public health pests in the area surrounding AKARNG sites. Oversee surveillance at AKARNG sites for known vectors for diseases such as West Nile, Dengue, Chikungunya and Zika viruses.

4.2.9 Coordinate with the State Surgeon any necessary measures for control of disease vectors and other public health pests at AKARNG sites.

4.2.10 Oversee the technical aspects of the Self-Help Program (Appendix E) with respect to pest control products and training of program participants.

4.2.11 Monitor certification and continuing pest management training for pesticide applicators at AKARNG sites. Maintain copies of current certifications in Appendix K of this plan.

4.2.12 Coordinate with the FMO to ensure that contracts including pest management activities at AKARNG sites are forwarded to the ARNG PMC for technical sufficiency review prior to solicitation of the contract.

4.2.13 Ensure that pest management contracts at AKARNG sites with efforts that exceed 0.25 work-years are monitored by a certified PMQAE.

4.2.14 Coordinate with local, state and federal agencies, as necessary, to conduct the AKARNG IPM program in accordance with federal, state, and local laws and regulations that apply to pest management, pesticide use, applicator certification, record-keeping, and reporting.

4.2.15 Provide answers to questions concerning pest management from Commanders, ARNG Directorate, Headquarters Department of Army (HQDA), and interested state agencies.

4.2.16 Perform design review of new construction and landscaping projects to ensure that pest entry points and potential harborage sites have been eliminated.

4.2.17 Prepare, with assistance from a PMC certified in DOD Category 11: Aerial Application Pest Control, an Aerial Spray Statement of Need (ASSON) for any potential aerial application of pesticides to Federally owned (Appendix A) AKARNG sites.

4.2.18 Obtain IPMC accreditation within two years of being appointed to the position and maintain certification with refresher training every three years.

4.3 Pest Management Quality Assurance Evaluator (PMQAE)

4.3.1 Monitor pest management contracts at AKARNG sites when total efforts exceed 0.25 work-years.

4.3.2 Obtain PMQAE certification and maintain certification with refresher training every three years.

4.3.3 If an installation's pest management contract efforts are less than 0.25 work-years, the presence of a trained PMQAE at the installation is not mandatory.

4.4 Pest Management Provider (PMP)

4.4.1 Use IPM techniques to the maximum extent possible.

4.4.2 Maintain current DOD or state certification to apply pesticides in the category of pest control for work being done at AKARNG sites and comply with all state and federal regulations. Send a copy of the certification to the IPMC annually for inclusion in Appendix K of this plan.

4.4.3 Control pests according to the provisions of this plan, in accordance with Alaska state and local laws and regulations, and DOD, Army and ARNG instructions, regulations and policies (DODI 4150.07, AR 200-1, ARNG Integrated Pest Management Program Policy Memorandum).

4.4.4 Conduct surveillance for mosquitoes, ticks, cockroaches, or other pests that could adversely affect the health and welfare of installation personnel.

4.4.5 Operate in a manner that minimizes risk to personnel and the environment.

4.4.6 When using pesticides, always read and follow the label. The label is the law.

4.4.7 Keep records of all pest surveillance and control efforts and provide reports to the IPMC using the format(s) and at the frequency as specified in this plan.

4.4.8 Maintain effective liaison with borough, state, and federal health and environmental officials, as necessary.

4.5 Pest Management Contractors

4.5.1 Use IPM and conduct pest management in accordance with this plan, including ARNG PMC pre-approval of pesticides applied at AKARNG sites. Contractors must have the appropriate pesticide applicator certifications to be authorized to apply pesticides at federally owned ARNG sites.

4.5.2 Comply with all federal, state, and local laws and regulations.

4.5.3 When using pesticides, always read and follow the label. The label is the law. Maintain and ensure all safety and regulatory compliance of on-site pesticide storage and/or mixing areas, if contract permits. Ground Maintenance or Landscaping Contractors shall not bring any invasive species or introduce infested or diseased on any DoD installation.

4.5.4 Submit written records of all pest management activities to the IPMC (or PMQAE) using the format(s) and at the frequency as specified by the directives cited in Section 3.2, this plan, and the contract.

4.6 Facilities Management Office (FMO)

4.6.1 Determine the pest management requirements for the AKARNG sites and request appropriate funding to support contracted pest control operations.

4.6.2 Ensure that AKARNG personnel performing pest control as a part of their assigned duties receive adequate training (in accordance with Section 9.6 of this plan), and achieve pest management certification, as required.

4.6.3 Ensure all pest management activities, including those that are part of the Self-Help Program, are recorded in accordance with this plan and reports are provided to the IPMC at intervals as specified in this plan. Maintain records of pest management operations as required by the directives cited in Section 3.2 and this plan.

4.6.4 Request and monitor contracted pest control operations.

4.6.5 Coordinate with the IPMC to ensure that contracts including pest management activities at AKARNG sites are forwarded to the ARNG PMC for review for technical sufficiency prior to solicitation of the contract.

4.6.6 Provide a copy of each finalized pest control contract to the IPMC within 30 days.

4.6.7 Initiate requests for aerial application of pesticides, when necessary.

4.6.8 Stray animal control is coordinated and performed by the FMO using in-house personnel.

4.7 Director of Plans, Training, Mobilization and Security (DPTMS)

4.7.1 Determine the pest management requirements for the AKARNG training and maneuver lands and request appropriate ITAM funding when pests are impeding training/maneuvers.

4.7.2 For management of pests that are not impeding training/maneuvers (e.g., hornet nests in bivouac areas, noxious/invasive weeds in maneuver areas, etc.), use all non-chemical pest control techniques as recommended in the IPM outlines (Appendix B) before requesting further assistance from the CFMO for in-house or contracted pest control.

4.7.3 Coordinate with the IPMC any pest management activities occurring on AKARNG training and maneuver lands, including wildlife management options, threatened and endangered species mitigation, and reducing the spread of invasive species

4.7.4 Ensure all pest management activities on training and maneuver lands, including those that are part of the Self-Help Program, are performed in accordance with this plan, including the records and reporting of pesticide usage.

4.7.5 Request and assist with the monitoring of contracted pest control operations.

4.7.6 Coordinate with the IPMC to ensure that contracts including pest management activities at AKARNG training and maneuver lands are forwarded to the ARNG PMC for review for technical sufficiency prior to solicitation of the contract.

4.7.7 Initiate requests for aerial application of pesticides, when necessary.

4.8 Facility Managers and Maintenance Personnel

4.8.1 Apply good sanitary practices, landscape maintenance, and materials management to prevent pest infestations.

4.8.2 Use all non-chemical pest control techniques as recommended in the IPM outlines (Appendix B) before requesting further assistance from the FMO for in-house or contracted pest control.

4.8.3 Ensure all pest management activities, including those that are part of the Self-Help Program, are recorded in accordance with this plan and reports are provided to the IPMC at intervals specified in this plan.

4.8.4 Cooperate fully with pest management personnel in scheduling pest management operations, to include preparing the areas to be treated.

4.8.5 Have available on-site Safety Data Sheets (SDSs) for any pesticide stored or used on the premises.

4.9 State Surgeon

4.9.1 Evaluate the human health aspects of the IPM program.

4.9.2 Coordinate with the IPMC any necessary human health-related measures for control of disease vectors and other public health pests at AKARNG sites. The State Surgeon is responsible for preparing an Emergency Disease Vector Response Plan per DoDM 4150.07 Vol 1 and should be followed in the event of an outbreak.

4.10 Unit Commanders

4.10.1 Assure the proper use of the DOD Arthropod Repellent System and other personal protective measures while troops are exposed to potential disease vectors such as mosquitoes and ticks.

4.10.2 Brief troops on potential biological threats (such as cow parsnip) before training exercises.

4.10.3 Appoint a field sanitation team for each company, troop, or battery-size unit. Assure that field sanitation teams are trained and supplied and mission capable prior to deployment.

4.11 Building Occupants

4.11.1 Apply good sanitary practices to prevent pest infestations. Areas need to be free of open food containers. Don't accumulate pest harborage materials such as empty boxes or dunnage.

4.11.2 Cooperate fully with contractors and FMO personnel in scheduling pest management operations, to include preparing the areas to be treated.

4.11.3 Report all pest management issues to the FMO or IPMC.

4.12 Self-Help Program Participants (generally maintenance workers and AKARNG Armory NCO's, but Self-Help is available to all AKARNG members and employees)**:**

4.12.1 Keep all areas clean, dry, and sanitary. Areas need to be free of open food containers. Don't accumulate pest harborage materials such as empty boxes or dunnage.

4.12.2 Using the IPM outlines in Appendix B, determine if Self-Help is allowed for the pest problem.

4.12.3 Contact the IPMC to verify if Self-Help is appropriate, follow the requirements found in Appendix E covering the Self-Help Program. Only pesticides that are pre-approved for Self-Help Program use and listed as such on the AKARNG SPUL (Appendix C) are allowed. All training, recording, reporting, handling and storage of pesticides must be done as specified under the Self-Help Program and in accordance with the pesticide label.

4.12.4 If Self-Help is not appropriate for the pest or level of the pest problem, fill out a FMO Work Order Request for assistance with your pest problem and submit it to the Facilities Maintenance Office. If you are with the Maintenance Office and require assistance, contact the IPMC. Work requests can be found at https://dmva.alaska.gov/FMO/fmoworkorder.

4.12.5 When using pesticides as part of the Self-Help Program, always read and follow the label, and submit the Self-Help Acknowledgement of Understanding form The label is the law.

5 Integrated Pest Management

5.1 Legal Mandate

5.1.1 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 136, Title 7, United States Code (7 USC 136).

5.2 Operations

5.2.1 The four basic principles of IPM work together to provide long-term control of pest populations at acceptable levels with the least detrimental impact on the environment. Although the use of the least-toxic pesticide is an integral part of IPM, non-chemical control is emphasized. Use of pesticides is almost always a temporary measure and often more expensive if used regularly. Non-chemical control may initially be more expensive but will usually be more cost effective long-term with ongoing pest management. Non-chemical controls have the added advantage of being less toxic, which reduces the potential risk to human health and the environment. Surveillance and monitoring of pests are stressed in an IPM program since it is important to determine the cause of the pest infestation and the most effective management of the problem. Insect and vertebrate pests require food, water, and harborage (a place to rest or breed). Long-term control is dependent upon eliminating or restricting pests' access to these requirements.

5.2.2 Mechanical and Physical Control: This type of control alters the environment where pests live, excludes pests, or traps and removes pests where they are not wanted. Examples of mechanical and physical control include harborage elimination in structures through caulking or filling voids; screening; mechanical traps or glue boards; and nets and other barriers to prevent entry into buildings.

5.2.3 Cultural Control: Strategies in this method involve manipulating environmental conditions to suppress or eliminate pests. For example, proper food and waste disposal practices reduces the attractiveness of the area to flocks of birds or wildlife that may increase safety

concerns for aviation operations. Replacing ornamental trees and shrubbery with native plants that are less attractive to defoliating pests is another cultural measure.

5.2.4 Biological Control: In this control strategy, predators, parasites or disease organisms are used to control pest populations. For example, the introduction of ragwort flea beetle and the cinnabar moth have dramatically reduced the prevalence of tansy ragwort. Release of these biological controls in infested areas can eliminate tansy ragwort at that location. Introduction of new biological controls is the responsibility of the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine, Biological Control Program.

5.2.5 Chemical Control: Pesticides kill living organisms, whether they are plants, insects or other animals. At one time, pesticides were considered to be the most effective control available, but pesticide resistance has rendered many ineffective. In recent years, the trend has been to use pesticides that have limited residual action. While reducing human exposure and lessening environmental impact, the cost has risen due to requirements for more frequent application. Since personal protection and special handling and storage requirements are necessary with the use of pesticides, the overall cost of control can be quite high when compared with non-chemical control methods. However, the use of chemicals may be warranted to control some pests and invasive species when other control methods are not sufficiently effective.

6 Priority of Pest Management

Priorities of pest control operations are in the order shown below. Pests that affect the health of AKARNG personnel are of greatest importance. Other important pests included in this section are pests that damage real property, food and other commodities and those that are a threat to natural resources.

6.1 Disease Vectors and Public Health Pests

6.1.1 Mosquito species have the potential to transmit Western equine encephalitis, St. Louis encephalitis, West Nile virus, Zika virus, Dengue, Chikungunya and other diseases. Mosquito-borne virus transmission is usually most prevalent from June through October when mosquitoes are most abundant.

6.1.2 Ticks may transmit disease organisms (such as Lyme disease). Personnel conducting outdoor activities can minimize tick exposure by wearing appropriate clothing (see DOD Arthropod Repellent System), applying tick repellent, and performing personal hygiene inspections (with bathing) daily.

6.1.3 Some spiders (such as Brown Recluse) and stinging insects may produce painful bites as well as toxic reactions. Bees and wasps may produce allergic reactions in some individuals.

6.1.4 Feral/stray cats and dogs, foxes and bats may be infected with rabies. Since these animals may be found in or under buildings, the disease potential should be considered when doing control work with these animals. Bat feces may contain several fungi which, when aerosolized and inhaled, can cause potentially fatal illnesses. Utilize appropriate Personal Protective Equipment (PPE) when cleaning bat-contaminated areas.

6.1.5 Biting flies may transmit tularemia through their bites, but contracting the disease in this manner rarely occurs.

6.1.6 Small rodents such as mice, voles and shrews occasionally invade buildings and cause damage to food and other products. In addition, mice present a potential human health threat of Hantavirus Pulmonary Syndrome (HPS). This disease results from the inhalation of the aerosolized virus found in the feces and urine of rodents, particularly deer mice (*Peromyscus maniculatm*). Although this disease is relatively rare, the high fatality rate (50 percent) makes it significant in the range where it occurs. Utilize appropriate PPE when either handling or removing mice and/or cleaning mouse-contaminated areas.

6.1.7 Fleas found in rodents can transmit plague. Human plague cases have occurred in the past but are extremely rare occurrences.

6.2 Quarantine and Regulated Pests.

The IPMC will coordinate with the local USDA inspectors to determine requirements regarding inspection of cargo for the presence of eggs, larvae, or adult insects that the USDA has prohibited from entering certain geographic areas. Any retrograde cargo that is received is inspected inside the common carrier (e.g., truck, aircraft) used for transport. If any signs of live pests or plant/soil material are present, the shipping container is to be immediately sealed and impounded to prevent discharge of the contents. Notify the local USDA inspector and determine further disposition of the materiel after a joint inspection. If any quarantine pest is suspected, the Facility Manager notifies the IPMC.

6.3 Vertebrate Pests

6.3.1 Mice and rats occasionally invade buildings. The primary management techniques for controlling these rodents are exclusion and sanitation. Snap traps are the main method used for controlling rodent infestations indoors.

6.3.2 Gophers, moles, prairie dogs, and ground squirrels damage lawns and other turf areas through their burrowing. Some of these rodents may be protected under the Endangered Species Act (ESA) and it is vital to coordinate with the AKARNG NRM before performing any exterior rodent pest management.

6.3.3 Stray animal control at AKARNG sites is coordinated and performed by the FMO using in-house personnel.

6.3.4 Wildlife, such as bats, Wood Bison, and Polar Bears may be protected under the ESA. It is vital to coordinate with the AKARNG NEPA Program Manager before doing any wildlife pest management. Larger wildlife such as bears and moose can be dangerous if they become a nuisance or aggressive. Know who to call if such events evolve. On JBER, call the Security Forces Desk at (907) 552-7070 and a Conservation Law Enforcement Officer will be dispatched.

6.3.5 Control efforts for regulated wildlife species, such as bears and moose, are coordinated with the USDA APHIS Wildlife Services and the Alaska Department of Fish and Game.

6.4 Structural Pests

6.4.1 Birds roost in warehouses, aircraft hangars, maintenance and other buildings and damage equipment and supplies with their droppings. Most birds are protected under the Migratory Bird Treaty Act, so coordination with the AKARNG NRM is necessary before taking any management action.

6.4.2 Due to the high cost of repairing termite damage, structures prone to infestation are periodically inspected for termites or termite damage. Carpenter ants may also damage wooden structures.

6.5 Pests Found In and Around Buildings

6.5.1 Food items located in dining facilities, in armory kitchens or in food storage facilities may become infested by stored food product pests.

6.5.2 Stray cats, dogs, or other pets can be a nuisance and must be addressed by appropriate officials who have the correct PPE and gear. Contact the local animal shelter or authorities for assistance. Feral or stray cats and dogs can carry zoonotic diseases like rabies, proceed with caution. See Appendix page B-39 for more information.

6.5.3 Crawling insects (e.g., ants, cockroaches and bed bugs) and spiders may require treatment control in offices, billeting, food service facilities, warehouses and administrative buildings. Proper sanitation and housekeeping is very effective in discouraging these pests. Treatment for bed bugs is accomplished using a combination of heat treatments and chemical applications. Trained bed-bug sniffing dogs can be brought in to assist with surveillance when necessary.

6.6 Noxious and Invasive Plants and Animals

Invasive plants are species that have few, if any, natural controls in their location and spread out of control. The AKARNG supports the three goals of the National Strategy for Invasive Plant Management: prevention, control, and restoration. Invasive weeds are relatively new to Alaska. Many of the invasive species' problems are relatively small and local eradication is still possible. Integrated weed management is the best method to establish control and pesticides will be used, as needed, as part of this program. If left unchecked, the problem will increase exponentially.

6.7 Undesired Vegetation

Weeds along fence lines, road shoulders, paved surfaces (including runways), other developed areas and training areas may require control using IPM techniques, including the appropriate use of herbicides. Noxious vegetation such as poison oak should be controlled when it grows where it can frequently contact personnel. Often, control of unwanted plants can be done mechanically using mowers and trimmers.

7 Health and Safety

7.1 Medical Surveillance of Pest Management Personnel

Pesticide applicators must read and follow all health and safety information on the label. If applying pesticides requires formal medical surveillance or respirators, AKARNG personnel must work with the AKARNG Safety Office to initiate medical surveillance physical exams, as appropriate. Contractors performing pest management services are responsible for their own medical surveillance program.

7.2 Hazard Communication

Safety Data Sheets (SDSs) for pesticides are made available to all individuals who have contact with these chemicals. Hazard Communication (HAZCOM) training is mandatory for individuals working with hazardous materials, including pesticides.

7.3 Personal Protective Equipment

7.3.1 Personal Protective Equipment (PPE) as specified on the pesticide's label is provided to pest management personnel by the unit. Contact the unit supply section when supplies of PPE become low.

7.3.2 Appropriate respiratory protection (High-Efficiency Particulate Air (HEPA) filter cartridges) should be used when working in enclosed areas infested with rodents and rodent waste, as well as additional measures like disposable gloves and the use of disinfectants. Rodent waste is associated with Hantavirus and HPS.

7.4 Fire Protection

The usual hazards presented by a fire are compounded in the case of a pesticide fire by the danger of pesticide poisoning and contamination. Fire protection of pesticides will be governed by the label and the AKARNG Hazardous Material, Waste and/or Spill Management Plans.

7.5 Pest Management Vehicle(s)

Whenever possible, designate a single vehicle to transport and apply pesticides. Pesticides are never transported in the cabs of vehicles, in personally owned vehicles, or in vehicles generally used for non-pesticide related activities unless the pesticides are being used in the Self-Help program. Whenever possible, pesticides are transported in a lockable storage compartment of an assigned vehicle(s). In addition, care is taken to secure pesticides to prevent damage to the containers and spillage of the chemicals. At no time are pesticides to be left unsecured in an unattended vehicle at an unsecure location.

7.6 Protection of the Public

Take precautions during pesticide application to protect the public, on and off AKARNG sites. Follow all precautions listed on the label. Pesticides are not applied outdoors when the wind speed exceeds label-specified levels. Whenever pesticides are applied outdoors, ensure that any drift is kept away from individuals, including the applicator. At no time are personnel permitted in a treatment area during pesticide application unless they are appropriately trained, have met the medical monitoring standards, and are protected in accordance with the pesticide label requirements.

7.7 Pesticide Shop Health, Safety, and Hazards

7.7.1 Personnel will follow all label precautions that deal with the storage of pesticides. Pesticides should be kept secure at all times. Pesticides should be under the applier's direct control or located in a secure locked facility or cabinet that is marked with a warning notice on the outside of the enclosure as specified in 18 AAC 90.615(e). Pesticides are a hazardous material and should be stored according to the SDS.

More information on pesticide storage can be found in the Armed Forces Pest Management Board (AFPMB) Technical Guide No. 17, "Design of Pest Management Facilities". This technical guide can be found on the AFPMB website (go to: http://www.acq.osd.mil/eie/afpmb/ search for "AFPMB") or obtained from the ARNG PMC.

7.7.2 Used pesticide aerosol cans must be turned-in to the Hazardous Waste Program Manager as hazardous waste. Other pesticide containers must be disposed of according to the label directions or turned-in as hazardous waste.

8 Environmental Considerations

8.1 Sensitive Areas

8.1.1 Special consideration is given prior to conducting pest control operations in sensitive areas that are identified on pesticide labels. No pesticides are applied directly to wetlands or water areas (lakes, rivers, etc.) unless their use is specifically approved on the label and in compliance with Alaska Pollutant Discharge Elimination System (APDES) regulations for application over or into waters of the United States. Separate APDES permitting may be required in some instances and will require coordination with the AKARNG Environmental personnel.

8.1.2 In addition to aquatic and marine habitats, sensitive areas also include critical habitat of endangered, threatened, or rare flora or fauna species, and unique geological and other natural features and requires extra caution as to no transport or spread invasive/noxious species.

8.1.3 All aerial application of pesticides to Federally owned (Appendix A) AKARNG sites requires an Aerial Spray Statement of Need (ASSON) that has been approved by the ARNG PMC. The ASSON is prepared by AKARNG personnel with assistance from a PMC certified in DOD Category 11: Aerial Application Pest Control. Aerial application of pesticides to

Federally owned (Appendix A) AKARNG sites also requires additional environmental documentation (see Section 8.4.2 of this plan).

8.2 Endangered or Protected Species and Critical Habitats

8.2.1 Protected migratory birds that occur on AKARNG property cannot be controlled without a permit. Migratory birds and their nests are protected. Neither migratory birds nor their eggs may be harmed. Nuisance nests may be destroyed (not collected) before eggs are laid or after chicks have fledged unless protected under the ESA or the Bald and Golden Eagle Protection Act (BGEPA). Without communication and approval from the AKARNG NEPA Program Manager, trees or other vegetation may not be cut down or cleared between Migratory Bird Nesting Season 1 May to 15 July. If an incident occurs with a migratory bird or a nest, work must cease and the person in charge must consult with the AKARNG NEPA Program Manager.

8.2.2 The IPMC periodically evaluates ongoing pest control operations and also evaluates all new pest management operations to ensure compliance with the ESA, Migratory Bird Treaty Act (MBTA), and the BGEPA. No pest management operations are conducted that are likely to have a negative impact on endangered or protected species or their habitats without prior approval from the ARNG PMC. Special consideration must be given when using pest management tactics in areas where endangered species and/or nesting/roosting eagles are found. Refer to the site-specific Integrated Natural Resources Management Plan (INRMP) for special environmental concerns pertaining to endangered species and coordinate with the AKARNG NRM before performing any pest management operations that might affect endangered or protected species or their habitats.

8.3 Cultural and Historical Sites

All IPM activities are considered to be Section 106 undertakings of the National Historic Preservation Act (NHPA), a law that directs AKARNG to avoid adversely impacting cultural resources (archaeological sites, historical buildings and other structures, and places and plants of importance to Alaska Native people). AKARNG's Integrated Cultural Resources Management Plan (ICRMP) provides details and direction on how to fulfill AKARNG's commitment to these resources. There are many buildings of historical significance on AKARNG lands and many archaeological sites below AKARNG grounds. None of these are marked as such. Be sure to include the AKARNG Cultural Resource Manager (see Appendix F) prior to conducting actions (such as ground altering or building altering work) that include even the possibility of impacts to these kinds of resources. The cultural resource manager will provide guidance on how to avoid adverse impacts to these places.

8.4 Environmental Documentation

8.4.1 An ARNG Programmatic Environmental Assessment (PEA) was completed to identify, document, and evaluate the ARNG IPM Program. In the PEA, the ARNG Directorate addresses potential environmental effects of implementing IPMPs on a broad, programmatic scale. Assessing environmental impacts of the AKARNG IPM Program has been conducted and documented via an ARNG Checklist and Record of Environmental Consideration (REC). The

REC was completed in accordance with 40CFR § 1502.20 and was treated as a tiering action. Environmental documentation can be found in Appendix G.

8.4.2 Aerial application of pesticides to Federally owned (Appendix A) AKARNG sites may require an Environmental Assessment (EA).

8.5 Pesticide Spills and Remediation

An adequate pesticide spill cleanup kit is maintained wherever bulk pesticides are stored or used. All pesticide spills are reported to the AKARNG Water Resources Program Manager (907-428-7151). Spills are governed by the label and the AKARNG Hazardous Material, Waste and/or Spill Management Plans.

8.6 Climate Change

There is a potential for climate change to impact the control of pests on state and local levels. Shifts in precipitation regimes and temperature ranges can result in changes to vegetation that could impact training areas, promote noxious weed infestations, or compromise wildlife habitat. AKARNG supports the development of a vulnerability assessment to better understand the potential impacts related to a changing climate. However, the abundance and distribution of species and habitats at AKARNG sites are too small in scale to address comprehensive climate change vulnerabilities and AKARNG will instead utilize existing state and regional plans, partnerships, or reports that other agencies, universities, or non-profits are conducting to assess, develop and implement climate change adaptation strategies. In general, AKARNG will identify and implement sound IPM strategies, regardless of whether climate changes occur.

9 Program Administration

9.1 Pest Management Operations

9.1.1 Pest management operations are conducted in accordance with Appendix B, “Integrated Pest Management (IPM) Outlines”.

9.1.2 If the pest problem cannot be solved using the Self-Help Program (see Appendix E), then a request for pest control services is sent to the FMO via Work Order Request.

9.1.3 All pesticides used at AKARNG sites will be approved prior to use by the ARNG PMC and listed on the AKARNG SPUL (Appendix C).

9.2 Pest Management Contracts and Contract Quality Assurance

9.2.1 AKARNG site personnel may use contracts when essential pest management services are not provided in-house. Contracts are administered in accordance with DODI 4150.07 for AKARNG Federally owned (Appendix A) sites. The FMO will contact the IPMC for guidance for any contracts that include pest management.

9.2.2 Pest management contracts for AKARNG Federally owned (Appendix A) sites are forwarded to the ARNG PMC for technical sufficiency review prior to advertisement of the contract.

9.2.3 State contracting procedures and regulations are utilized to contract pest control on AKARNG State-owned sites.

9.2.4 Pest management contracts are initiated on an "as needed" basis. Regularly scheduled, monthly or periodic treatments will be eliminated unless deemed necessary after surveying and monitoring pest population levels. Regularly scheduled monthly or periodic treatments at AKARNG Federally owned (Appendix A) sites must be approved by the ARNG PMC. Use of IPM techniques is encouraged in all contracts to decrease DOD's use of toxic chemicals and pollutants. Pest problems threatening the health, safety, or welfare of installation personnel receive priority.

9.2.5 Contractors will conduct pest management in accordance with this plan and may only apply pesticides listed on the AKARNG SPUL at AKARNG sites. Contractors may request addition of pesticides to the AKARNG SPUL via the IPMC.

9.2.6 Once a contract is awarded, it is the responsibility of the FMO to establish a date and time for work to commence. A copy of each finalized contract dealing with pest control must be forwarded to the IPMC within 30 days.

9.2.7 The IPMC is responsible for ensuring the requirements of this plan are implemented for contracted pest management and for assuring the quality of all pest management activities via the Facility Managers. Pest management contracts with efforts that exceed 0.25 work-years must be monitored by a certified PMQAE at AKARNG Federally owned (Appendix A) sites. Work performed by contracted pest management personnel is evaluated based on the adherence to the contract statement of work negotiated through the FMO, the requirements outlined in this plan, and the Facility Manager (or PMQAE) reviews of contracted pest control work to determine the effectiveness of control efforts. Failure of a contractor to adequately control pests is reported to the FMO. Ongoing contracts are evaluated annually or as necessary. An evaluation to confirm the satisfactory completion of all work is performed prior to payment being made.

9.3 Out-leases

If the AKARNG initiates out-leases, the lessee will be governed by this plan as a contractor. IPM techniques will continue to be used to the maximum extent possible and the lessee may only apply pesticides listed on the AKARNG SPUL at sites. Lessees may request addition of pesticides to the AKARNG SPUL via the IPMC.

9.4 Interservice Support Agreements

Tenants of AKARNG sites will be governed by this plan. If the AKARNG has activities or units that are tenants on another installation, they will follow that installation's IPMP unless the interservice support agreement states otherwise. In no instance will a pesticide be applied contradictorily to its label.

9.5 Reports and Records

9.5.1 The AKARNG IPMC is responsible for the maintenance of records for all in-house and contracted pest management operations (e.g., pesticide use, surveillance).

9.5.2 Records of pesticide applicator certification must be retained by the applicator and available for review. Current pesticide applicator records are provided to the IPMC for inclusion in Appendix K of this plan.

9.5.3 All pest surveillance and control operations are recorded by the pesticide applicator or pest management provider. This includes pest management actions done in-house, by contractors, Self-Help Program participants, and as part of out-leases, land management, and forestry programs. These records must contain at a minimum:

a. Date and time of pesticide application

b. Target pest(s)

c. Specific pesticide application location(s)

d. Name of the person (and company, if contractor) applying the pesticide and their certification number (if applicable)

e. Name and manufacturer of pesticide

f. EPA registration number of the pesticide

g. Sufficient information to determine the amount (in pounds) of pesticide active ingredient applied (such as amount of undiluted pesticide used, total amount of concentrate used, or amount of diluted pesticide applied, and the dilution rate)

9.5.4 Pest surveillance and control operations are recorded using the Pest Management Maintenance Record (DD Form 1532-1), the AKARNG Pest Management Treatment Record (Appendix D), or an equivalent hard-copy or electronic form. These records are maintained indefinitely at the AKARNG Facilities Management Office – Environmental Section and are a permanent record of pest management activities.

9.5.5 Records of pesticides used at AKARNG sites are compiled at the end of each quarter by the PMP and provided to the IPMC. For contracted pesticide applications, the Contractor provides records to the Facility Manager, PMQAE or IPMC at the interval required per the

contract. If contracted pesticide usage is reported to the Facility Manager or PMQAE, they will forward the information to the IPMC at the end of each quarter.

9.5.6 The IPMC calculates and provides the data required for the annual PUF (an example PUF is in Appendix H). All pesticide usage will be reported in pounds of active ingredient (PAI) yearly via the PUF, or when requested by the ARNG PMC. The PUF is sent to the ARNG PMC. Only pest-management activities performed at AKARNG Federally owned sites (Appendix A) are reported on the PUF.

9.5.7 For pest management activities at AKARNG State-owned sites (those not listed in Appendix A), the IPMC submits the data for annual pesticide use reporting as required by Alaska Department of Environmental Conservation, Pesticide Control Program.

9.5.8 The IPMC (or designee) provides the data required for the quarterly IPM Installation Status Report (ISR). This data is reported in square footage (indoor pest management) or acreage (outdoor pest management) treated and is reported to the State ISR Program Manager. Only Federally funded pest management activities are reported in the ISR.

9.5.9 The IPMC (or designee) is responsible for answering all IPM-related data calls and submittal of information via the Army Environmental Database Environmental Quality/Headquarters Army Environmental System (AEDB-EQ/HQAES) or another electronic reporting system as specified by ARNG-IEZ.

9.6 Training and Certification

9.6.1 All individuals who apply pesticides at AKARNG sites are to hold current pesticide applicator certification in the appropriate categories for the pests being treated, unless the pesticide application is done under the Self-Help Program. In-house pesticide applicators are to be certified by the DOD or the Alaska Department of Environmental Conservation, Pesticide Control Program. All contractors who apply pesticides must be certified by the Alaska Department of Environmental Conservation, Pesticide Control Program in order to apply pesticides at AKARNG sites. Initial training, apprenticeship periods and refresher training will be completed as required by the certifying agency to maintain current pesticide applicator certification.

9.6.2 The AKARNG IPMC must complete an initial DOD-taught PMQAE/IPMC training course within two years of being appointed IPMC and take refresher training every three years. HAZCOM training is also appropriate since exposure to pesticides may occur in the course of the job. The IPMC is not required to be a certified pesticide applicator if the IPMC will not apply pesticides as part of their duties.

9.6.3 Self-Help Program participants training will consist of reading the Self-Help Handouts for the applicable pest and following the directions of the label for each pesticide used. HAZCOM training is mandatory for personnel exposed to pesticides. When pest management actions are performed in accordance with the requirements of the Self-Help Program (Appendix E), participants are not required to be certified pesticide applicators.

9.6.4 PMQAEs must complete an initial DOD-taught PMQAE/IPMC training course and take refresher training every three years. PMQAEs are not required to be a certified pesticide applicator if the PMQAE will not apply pesticides as part of their duties.

9.7 Pesticide Security

Pesticides and pesticide equipment must be properly stored in facilities and safeguarded. Facilities must be well lighted with a secure perimeter. Video cameras, alarm systems, and self-locking doors are appropriate measures of security. Access to pesticides should be restricted with appropriate warning signs posted. Refer to the AFPMB Technical Guide No. 7, "Installation Pesticide Security" for more information on proper storage and security of pesticides. This technical guide can be found on the AFPMB website (go to: http://www.acq.osd.mil/eie/afpmb/ search for "AFPMB") or obtained from the ARNG PMC. For additional pesticide storage and disposal information specific to the State of Alaska, refer to 18 AAC 90.615(e), available on the State of Alaska Department of Environmental Conservation website at http://dec.alaska.gov/commish/regulations/.

9.8 Emergency Disease Vector Surveillance and Control

The AKARNG's State Surgeon will stay up to date of any new disease vectors entering the area and assess and disseminate information regarding any necessary surveillance and control measures.

9.9 Coordination (DOD, other federal, state, and local)

9.9.1 The ARNG PMC reviews the AKARNG IPMP and gives special attention to any pesticide applications that use restricted use pesticides, use of any pesticide that may significantly contaminate surface or ground water, may adversely affect endangered or other protected species or habitats, or involves aerial application of pesticides.

9.9.2 Liaison is maintained between the IPMC, State Surgeon and local, county and state health agencies to determine the prevalence of disease vectors and other public health pests in the areas surrounding AKARNG sites.

9.9.3 County/borough health and environmental personnel are consulted for proposed actions that may impact adjacent off-post areas or where pests located in off-post areas are impacting AKARNG sites or personnel health.

9.9.4 Wildlife control is coordinated with the USDA, APHIS, Wildlife Service's regional office or local game enforcement officers when wildlife control is necessary.

9.9.5 AKARNG pest management personnel and the IPMC may also coordinate with County/Borough Cooperative Extension offices and USDA Natural Resources Conservation Offices to obtain information about the identification and control of specific pests in their locale or to obtain soil surveys.

9.9.6 The IPMC will coordinate with the AKARNG Cultural Resource Manager to ensure that tribal governments and associated Alaska Native entities are consulted when it is determined that

any activity in this IPMP may impact cultural, historical or traditional cultural properties. Consultation with tribal groups is required by AR 200-1 Chapter 6, the National Historic Preservation Act, Executive Order 13175, and DoDI 4710.02 "DoD Interactions with Federally Recognized Tribes".

9.9.7 Construction projects including landscaping on AKARNG sites are reviewed with pest prevention and control in mind. The IPMC and FMO personnel will review the design of new buildings or other structures and conduct a pest evaluation in the constructed facility prior to completion of the project to ensure that pest entry points and potential harborage sites have been eliminated.

10 Sale and Distribution of Pesticides

No pesticides will be sold at AKARNG sites.

11 IPM References

11.1 Federal Laws

11.1.1 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)

11.1.2 Resource Conservation and Recovery Act (RCRA)

11.1.3 Occupational Safety and Health Act (OSHA)

11.1.4 Federal Noxious Weed Act

11.1.5 Food Quality Protection Act (an amendment to FIFRA)

11.1.6 Endangered Species Act (ESA)

11.1.7 Pollution Prevention Act

11.1.8 Clean Water Act (CWA)

11.1.9 Migratory Bird Treaty Act (MBTA)

11.1.10 Marine Mammal Protection Act (MMPA)

11.1.11 National Historic Preservation Act (NHPA)

11.2 Directives and Instructions

11.2.1 EO 13751: Safeguarding the Nation from the Impacts of Invasive Species, 5 December 2016

11.2.2 EO 13112: Invasive Species (Amended by EO 13286, Amendment of Executive Orders, and Other Actions, in Connection With the Transfer of Certain Functions to the Secretary of Homeland Security), 3 February 1999

11.2.3 Presidential Memorandum, "Integrated Pest Management", 2 August 1979

11.2.4 Presidential Memorandum, "Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds", subject: Using Native Plants in Landscaping, 26 April 1994

11.3 DOD Regulations and Policy

11.3.1 Department of Defense Instruction 4150.07, Department of Defense Pest Management Program, 26 December 2019

11.3.2 AR 11-34, The Army Respiratory Protection Program, 25 August 2013

11.3.3 AR 40-5, Preventive Medicine, 25 June 2007

11.3.4 AR 200-1, Environmental Protection and Enhancement, Pest Management 27 December 2007

11.3.5 NGR No. 385-10, Army National Guard Safety Program, 12 November 2008

11.3.6 ARNG-IEE Memorandum for Environmental Program Managers and Construction and Facilities Management Office for 54 States, Territories, and District of Columbia, Integrated Pest Management Policy, 4 February 2016

11.4 Other References, Manuals, Books and Guides

11.4.1 The most current IPM information is available on the Armed Forces Pest Management Board's website (go to: http://www.acq.osd.mil/eie/afpmb/ search for "AFPMB"). Technical Guides are available on the AFPMB website for more specific information regarding Pest Management, including:

TG 2 - Integrated Pest Management in Child Development Centers and Schools, November 2016

TG 7 (CAC access only) - Installation Pesticide Security, August 2003

TG 14 - Personal Protective Gear and Equipment for Pest Management Personnel, August 2020

TG 15 - Pesticide Spill Prevention and Management, July 2021

TG 16 - Pesticide Fires: Prevention, Management, and Cleanup

TG 17 (CAC access only) - Military Handbook - Design of Pest Management Facilities, August 2009

TG 18 - Installation Integrated Pest Management Program Guide, September 2022

TG 21 - Pesticide Disposal Guide for Pest Control Shops

TG 26 - Tick-Borne Diseases: Vector Surveillance and Control, November 2012

TG 27 - Stored-Product Pest Monitoring Methods, November 2015

TG 29 - Integrated Pest Management in and around Buildings, December 2018

TG 34 - Bee Resource Manual with emphasis on The Africanized Honeybee, December 2016

TG 37 (CAC access only) - Integrated Management of Stray Animals on Military Installations, December 2016

TG 38 - Protecting Meal, Ready-to-Eat Rations (MREs) and Other Subsistence During Storage, November 2015

TG 39 - Preparing DoD Pest Control Contracts and Assessing Contract Performance, December 2021

TG 41 - Rodent-borne Diseases, with Special Emphasis on Protection from Hantavirus, December 2020

TG 42 - Self-Help Integrated Pest Management, April 2015

TG 44 - Bed Bugs - Importance, Biology, and Control Strategies, April 2019 (Supplemental Information)

TG 47 - Aedes Mosquito Vector Control, March 2016

11.4.2 MIL-STD-904C, Guidelines for Detection, Evaluation and Prevention of Pest Infestation of Subsistence, 15 July 2010

11.4.3 TB MED 530, Tri-Service Food Code, 30 April 2014

11.4.4 TB MED 561, Occupational and Environmental Health, Pest Surveillance, June 1992

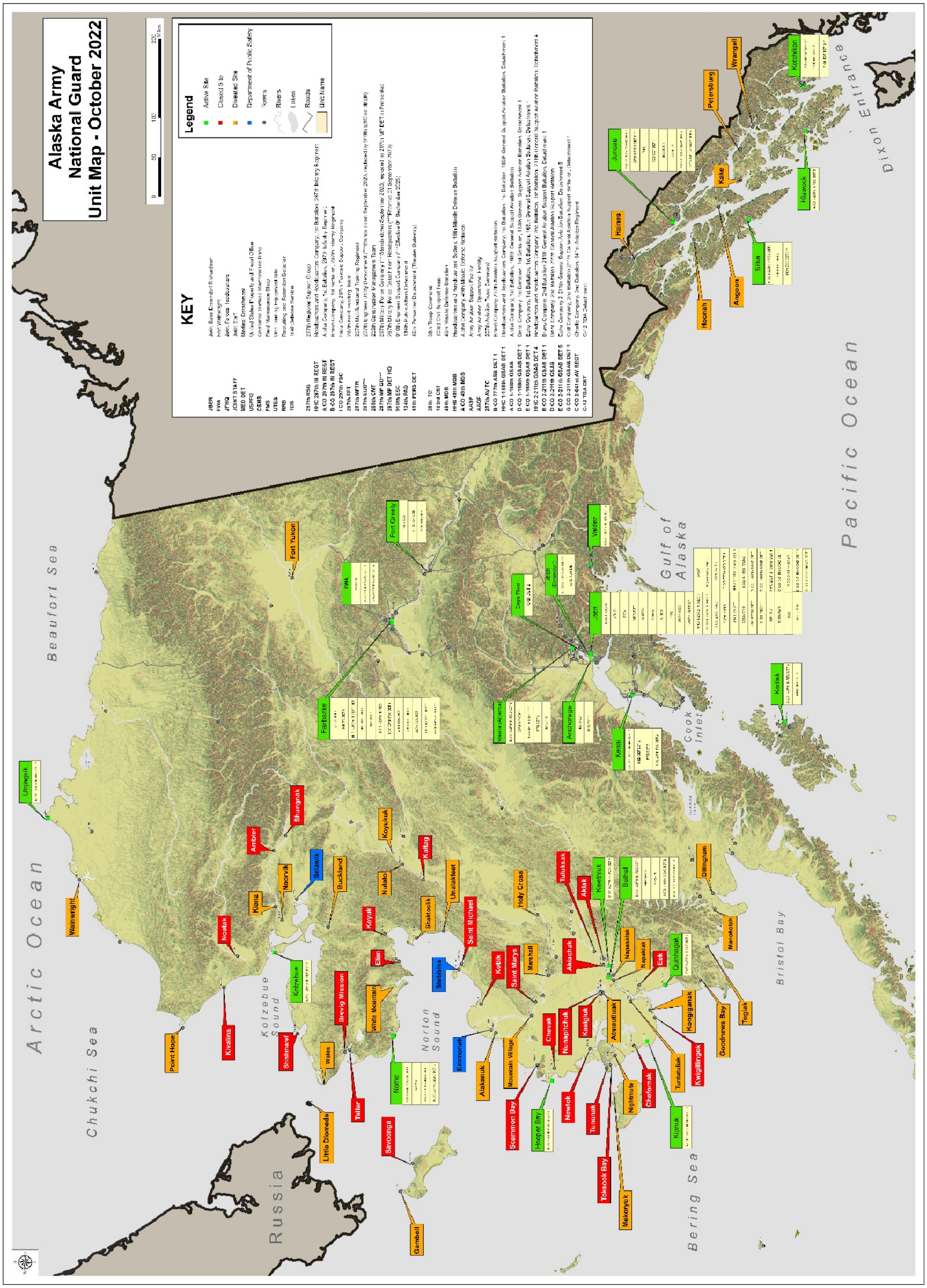
11.4.5 ARNG-IEN Guidance for National Environmental Policy Act (NEPA) Compliance in Support of Natural Resource Planning Actions, 01 April 2016

LIST OF APPENDICES

Appendix A – Federally owned AKARNG Sites

Site Code	Site Name	SUID	Site Type	Site Operational Status
2A65	BETHEL AAOF	4015	DOD Owned	Active
2B41	JUNEAU ARMORY AND FMS	5673	DOD Owned	Active
2B43	NG JUNEAU AAOF	6466	DOD Owned	Active
2B60	NG KENAI ARMORY	6471	DOD Owned	Active
2B65	NG KETCHIKAN ARM FMS	6472	DOD Owned	Active
2B85	NG KODIAK ARMORY	6477	DOD Owned	Active
2C01	NG KOTZEBUE ARM FMS	6482	DOD Owned	Active
2C50	NG NOME AAOF	6502	DOD Owned	Active
2C55	NG NOME ARM FMS	6503	DOD Owned	Active
2D24	NG SITKA ARMORY	6521	DOD Owned	Active
2D80	NG VALDEZ ARMORY	6532	DOD Owned	Active
2D95	ANCHORAGE INTERNATIONAL AIRPORT Building 52 CST	190444	DOD Owned	Active
2292	BETHEL READINESS CENTER	193281	DOD Owned	Active
2521	NG HOOPER BAY ARMORY	6464	DOD Owned	Active
2541	NG KIPNUK ARMORY	6474	DOD Owned	Active
2568	NG EMMONAK ARMORY	6454	DOD Owned	Active
2611	NG POINT BARROW ARMORY	6508	DOD Owned	Active
2621	NG QUINHAGAK ARMORY	6510	DOD Owned	Active
2625	NG SAVOONGA ARMORY	6514	DOD Owned	Active
2678	NG TOKSOOK BAY ARMORY	6527	DOD Owned	Active
2948	NOME READINESS CENTER	170782	DOD Owned	Active
2485	NG CHEVAK ARMORY	6447	DOD Owned	Caretaker
2451	NG AKIACHAK ARMORY	6436	DOD Owned	Caretaker
2530	NG KALTAG ARMORY	5686	DOD Owned	Caretaker
2531	NG KASIGLUK ARMORY	6470	DOD Owned	Caretaker
2545	NG KIVALINA ARMORY	6475	DOD Owned	Caretaker
2549	NG KOTLIK ARMORY	6479	DOD Owned	Caretaker
2565	NG KWIGILLINGOK ARMORY	6486	DOD Owned	Caretaker
2598	NG NOATAK ARMORY	6501	DOD Owned	Caretaker

Site Code	Site name	SUID	Site Type	Site Operational Status
2608	NG NUNAPITCHUK ARMORY	6506	DOD Owned	Caretaker
2651	NG SHUNGNAK ARMORY	6520	DOD Owned	Caretaker
2653	NG ST MARYS ARMORY	6522	DOD Owned	Caretaker
2655	NG ST MICHAEL ARMORY	6523	DOD Owned	Caretaker
2663	NG BREVIG MISSION ARMORY	6444	DOD Owned	Caretaker
2672	NG TULUKSAK ARMORY	6528	DOD Owned	Caretaker
2C00	NG KOTZEBUE AAOF	6481	DOD Owned	Outgranted
2561	NG KWETHLUK ARMORY	6485	DOD Owned	Vacant
02A70	NG BRYANT AIRFIELD	5043	Enclave	Active
02A78	MTA CAMP CARROLL	5043	Enclave	Active
02A80	CAMP DENALI	5043	Enclave	Active
02A90	C12 HANGAR EAFB	4200	Enclave	Active
02B10	FORT WAINWRIGHT Hangar Building 2077	5057	Enclave	Active


Alaska Army
National Guard
Unit Map - October 2022
Legend
Active Site
Closed Site
Divested Site
Department of Public Safety
Towns
Rivers
Lakes
Roads
Unit Name
KEY
Arctic Ocean
Beaufort Sea
Chukchi Sea
Kotzebue Sound
Norton Sound
Bering Sea
Bristol Bay
Cook Inlet
Gulf of Alaska
Pacific Ocean
Dixon Entrance
Russia
Utqiagvik
Wainwright
Point Hope
Kivalina
Noatak
Kiana
Noorvik
Selawik
Ambler
Shungnak
Buckland
Kotzebue
Shishmaref
Wales
Brevig Mission
Teller
Nome
White Mountain
Elim
Koyuk
Shaktoolik
Unalakleet
Saint Michael
Stebbins
Nulato
Koyukuk
Kaltag
Holy Cross
Little Diomede
Savoonga
Gambell
Emmonak
Alakanuk
Kotlik
Saint Marys
Marshall
Mountain Village
Scammon Bay
Hooper Bay
Chevak
Newtok
Nunapitchuk
Kasigluk
Tununak
Toksook Bay
Mekoryuk
Nightmute
Chefornak
Atmautluak
Akiachak
Tuluksak
Akiak
Kwethluk
Bethel
Napaskiak
Napakiak
Eek
Quinhagak
Kongiganak
Kwigillingok
Tuntutuliak
Kipnuk
Goodnews Bay
Togiak
Manokotak
Dillingham
Fairbanks
FWA
Fort Yukon
Fort Greely
Valdez
Glenallen
Eagle River
JBER
Wasilla
Anchorage
Kenai
Kodiak
Haines
Juneau
Hoonah
Angoon
Sitka
Kake
Petersburg
Wrangell
Klawock
Ketchikan

Appendix B – Integrated Pest Management (IPM) Outlines

IPM Outline
Carpenter Ants

Target Pest or Group	Carpenter ants. (For other ants, see IPM Outlines for Nuisance Ants or for Fire Ants).
Target Area(s)	Wood structures and buildings.
Impact on Mission	Damage to wood structures.
Scope	Installation-wide, in and around buildings.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings. ▪ Grounds Maintenance Provider (GMP): Control aphids and similar insects on ornamental plants that attract and feed ants. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record form and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Personnel complaints: including information on when pests were observed, where, and how many. ▪ Visual inspections: ▪ Observation of foraging scout ants or ant trails.

	▪ Follow ant trails to entryways into buildings and to food sources. ▪ Follow ant trails to nests. ▪ Further and intensive surveys may need to be done to find the nest, which is not always easy. It is usually hidden, sometimes in the upper portions or wall voids of wood-constructed buildings and also in logs or trees outdoors. Nest can sometimes be located by putting out food at night, when ants are most active, and following the foragers back to the nest. ▪ Conduct pre and post-treatment surveys to determine whether control operations were effective.
Survey Frequency / Schedule	▪ Ongoing observation by building occupants. ▪ During inspections done by PMP for other wood destroying pests, such as termites, as they occur.
Action Threshold(s)	▪ Presence of ants in and around wooden buildings.

Non-Chemical Control

Type	Method	Responsibility
Cultural	▪ Do not place firewood or other wood against the outside of the building. Doing so can: ▪ Bring wood infested with Carpenter ants into proximity with the building. ▪ Provide an attractant for Carpenter ants. ▪ Hold moisture next to the building. ▪ Do not allow lawn sprinklers to constantly hit wooden portions of the building, or allow water to puddle next to building foundations.	All personnel, FMP, GMP
Physical/ Mechanical	▪ Reduce sources of moisture, such as condensation and leaks, since Carpenter ants usually live in soft, damp wood. ▪ Trim vegetation away from siding and roofs. ▪ Use sealants, such as caulking, to minimize access into buildings. ▪ Clean gutters and ensure they are pitched for proper drainage. ▪ Check to ensure soffits are seated and roofing materials are in good repair. ▪ Replace severely damaged wood.	FMP

Chemical Control

Application Site	When non-chemical methods do not control pests to an acceptable level, apply pesticides to areas where ants nest or travel as based on surveillance information.	
Site Preparation	Pre-treatment procedures: ▪ Visual inspections. ▪ Pesticide applicator shall contact building occupants prior to pesticide applications. ▪ All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or other bait placements.	
Sensitive Areas	▪ Exposed food products, food containers, counter tops, any surface where food may be stored or prepared, or any food storage area. ▪ Outdoors where children or pets may be exposed to pesticides. ▪ Medical treatment facilities. ▪ Waterways. Avoid storm water runoff of insecticides and do not apply directly to water. Many insecticides are highly toxic to aquatic organisms.	
Restrictions	▪ Use baits and spot treatments indoors; do not apply insecticides to baseboards as a preventive residual spray. ▪ Do not apply liquid or dust formulations of insecticides in occupied spaces.	
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.	
Common Active Ingredients	▪ Abamectin ▪ Fipronil ▪ Hydramethylnon ▪ Indoxacarb ▪ Insect Growth Regulators (IGRs) ▪ Pyrethroids (i.e. bifenthrin, cyfulthrin, cyhalothrin, esfenvalerate, permethrin, tetramethrin) ▪ Sulfluramid	
Types of Pesticides		**Authorized Applicators**
Baits	▪ Bait stations can be used indoors or outdoors. ▪ Granular baits can be applied outdoors near nests, ideally along the ant trail. ▪ Baits are specific to the species of ant. ▪ Bait is the most effective control method since it kills the egg-producing queen of the colony. ▪ May require 2 to 7 days for complete control.	In-House PMP; Contracted PMP

Barrier Spraying	▪ Application of a residual outdoors around a building may be necessary if there are many nests and entryways into the building. ▪ May also be necessary if nests are difficult to find. ▪ Usually requires periodic reapplication if ant nests are not destroyed. ▪ Application not allowed in occupied interior spaces.	In-House PMP; Contracted PMP
Dusts	▪ Dusts can be applied to wall voids where ants may be nesting. ▪ The treatment area should remain dry after the application to avoid washing the dust away. ▪ Dust application not allowed in occupied interior spaces.	In-House PMP; Contracted PMP
Granular Insecticides	▪ Acute toxicant in granular form. ▪ Most effective when applied to foraging areas in/around trees.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Carpenter ant infestations are generally not an emergency and do not require immediate response. At sensitive sites, such as medical treatment facilities, immediate response may be necessary.
Time Period to Obtain Control	For indoor infestations, control should be within 2 hours when liquid formulations are used. Baiting indoors or outdoors may take up to a week or more for complete control.
Level of Control	100% control indoors is required.
PMQAE Assessment	Usually customer complaints and follow-up are sufficient to assess efficacy of work.
Safety Considerations	▪ Liquid and dust Insecticides should not be applied to occupied spaces or when food is exposed; baits may be applied when spaces are occupied. ▪ Allow for ventilation of spaces after liquid insecticides have been applied. ▪ Clean food preparation surfaces after treatment. ▪ Applicators must wear personal protective equipment as required by the product label.
Environmental Considerations	▪ Pyrethroid insecticides can be highly toxic to aquatic organisms.
Special Applicator Qualifications	▪ All PMP or GMP applying pesticides must be DOD or State-certified as pesticide applicators. ▪ Carpenter ant control is not part of the Self-Help Program.

Additional Information

For most people, ants become a problem and require action when they enter a building. Carpenter ants can also cause damage to wood structures. Surveys are used to determine if the source of the infestation is indoors or outdoors. Carpenter ants are nocturnal and it is often easier to detect ant trails at night.

The most effective ant baits are slow acting to give worker ants enough time to carry small amounts of bait back to the nest where they will feed other ants and eventually kill the entire colony. The delayed activity means it may take several days to see results. Borate-based baits are not as effective with Carpenter ants as with other ant species. Bait should be placed directly on ant trail, since Carpenter ants will not readily vary their existing path to feed on bait.

Resources

http://ipm.ucanr.edu/PMG/PESTNOTES/pn7416.html

http://www.extension.umn.edu/garden/insects/find/carpenter-ants/

IPM Outline
Nuisance Ants

Target Pest or Group	Black ants, Pavement ants, Odorous house ants, Pharaoh ants, Argentine ants, Crazy ants and other nuisance species. (For other ants, see IPM Outlines for Fire Ants and Carpenter Ants).
Target Area(s)	Offices, food preparation areas, food storage, patios, barracks, medical treatment facilities.
Impact on Mission	Eat and contaminate food; make spaces uninhabitable or unusable.
Scope	Installation-wide, in and around buildings.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings using approved Self-Help control methods. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings. ▪ Grounds Maintenance Provider (GMP): Control aphids and similar insects on ornamental plants. Aphids may attract and feed ants. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual inspections
	  ▪ Observation of foraging scout ants or ant trails.
	  ▪ Follow ant trails to entryways into building and to food sources.
	  ▪ Follow ant trails to nests.
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Conduct pre and post-treatment surveys to determine whether control operations were effective.

Survey Frequency / Schedule	▪ Daily observation by building occupants. ▪ Monthly inspections by PMP, In-House or Contract, outdoors around buildings to identify ant nests.
Action Threshold(s)	▪ Food service areas: 3 per room ▪ Living areas: 5 per room ▪ Medical treatment facilities: 1 per room ▪ Grounds: 2 mounds per yard

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Thorough cleaning of potential food sources in buildings, especially coffee and food preparation areas. ▪ Thoroughly clean food preparation surfaces, countertops, and stoves. ▪ Remove and discard food scraps that may be attractive to ants. ▪ Clean up food and drink spills as soon as possible. ▪ Do not leave dirty dishes on countertops or in sinks.	All personnel, including: Self-Help Program Participants
Mechanical Removal	▪ Use a wet sponge or cloth to wipe up ants. ▪ Spray ant trails with household cleaner or soapy water, then wipe up. ▪ This is **not** an effective control method for Pharaoh ants.	All personnel, including: Self-Help Program Participants
Pest-Proofing	▪ Put food in tightly sealed containers. ▪ Seal holes in walls with caulk or temporarily with petroleum jelly.	All personnel, including: Self-Help Program Participants
Control of Plant Insects	▪ Ants live in cooperation with some plant-infesting insects such as aphids. These insects produce sugars that are food for the ants, while the ants provide protection for the plant juice-sucking insects. ▪ Control aphids and other plant juice-feeding insects on plants.	GMP

Education	▪ Proper food storage and sanitation to prevent infestations. ▪ Use of soapy water to control ants indoors.	In-House PMP, IPMC
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.	

Chemical Control

Application Site	When non-chemical methods do not control pests to an acceptable level, apply pesticides to areas where ants nest or travel as based on surveillance information.
Site Preparation	Pre-treatment procedures: ▪ Visual inspections. ▪ Pesticide applicator shall contact building occupants prior to pesticide applications. ▪ All food should be removed from exposed areas and processing equipment and utensils covered or stored. Post treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or other bait placements.
Sensitive Areas	▪ Exposed food products, food containers, counter tops, or any surface where food may be stored or prepared, or any food storage area. ▪ Outdoors where children or pets may be exposed to pesticides. ▪ Medical treatment facilities. ▪ Waterways. Avoid storm water runoff of insecticides and do not apply directly to water. Many insecticides are highly toxic to aquatic organisms.
Restrictions	▪ Use baits and spot treatments indoors; do not apply to baseboards as a preventive residual spray. ▪ Do not apply liquid or dust formulations of insecticides in occupied spaces.
Common Active Ingredients	▪ Abamectin ▪ Borate-based products ▪ Fipronil ▪ Hydramethylnon ▪ Indoxacarb ▪ Insect Growth Regulators (IGRs) ▪ Pyrethroids (i.e. bifenthrin, cyfulthrin, cyhalothrin, esfenvalerate, permethrin, tetramethrin) ▪ Sulfluramid

Types of Pesticides		Authorized Applicators
Baits	▪ Bait stations can be used indoors or outdoors. ▪ Granular baits can be applied outdoors near nests. ▪ Baits are specific to the species of ant. ▪ Most effective since it kills the egg-producing queen of the colony. ▪ May require 2 to 7 days for complete control.	Self-Help Program Participants; In-House PMP; Contracted PMP
Barrier Spraying	▪ Application of a residual outdoors around a building may be necessary if there are many nests and entryways into the building. ▪ May also be necessary if nests are difficult to find. ▪ Usually requires periodic reapplication if ant nests are not destroyed. ▪ Application is not allowed in occupied interior spaces.	In-House PMP; Contracted PMP
Dusts	▪ Boric acid dust is an effective low toxicity insecticide that can be applied into wall voids where ants may be nesting. ▪ The treatment area should remain dry after the application to avoid washing the dust away. ▪ Application not allowed in occupied interior spaces.	In-House PMP; Contracted PMP
Granular Insecticides	▪ Acute toxicant in granular form. ▪ Only effective if applied directly to the nest.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Ant infestations are generally not an emergency and do not require immediate response. At sensitive sites, such as medical treatment facilities, immediate response may be necessary
Time Period to Obtain Control	For indoor infestations control should be within 2 hours when liquid formulations are used. Baiting indoors or outdoors may take up to a week or more for complete control.
Level of Control	100% control indoors is required.
PMQAE Assessment	Usually customer complaints and follow-up are sufficient to assess efficacy of work.
Safety Considerations	▪ Liquid and dust insecticides should not be applied to occupied spaces or when food is exposed. ▪ Baits may be applied when spaces are occupied. ▪ Allow for ventilation of spaces after liquid insecticides have been applied. ▪ Clean food preparation surfaces after treatment. ▪ Applicators must wear personal protective equipment as required by the product label.
Environmental Considerations	▪ Pyrethroid insecticides can be highly toxic to aquatic organisms.

Special Applicator Qualifications	▪ Ant control using approved bait stations may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP or GMP applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators.

Additional Information

For most people, ants become a problem and require action only when they enter a building. Sometimes ants may nest in walls, especially if there is moisture in those areas. This is a common problem in bathrooms and kitchens. Surveys may be used to determine if the source of the infestation is indoors or outdoors. Control of ant nests outdoors during the spring and early summer may reduce ant problems later in the season. The most effective ant baits are slow acting which gives worker ants enough time to carry small amounts of bait back to the nest. Worker ants will feed the bait to the other ants and eventually kill the entire colony. For this reason, it may take several days to see results from baiting. Different species of ants prefer different forms of bait, and sometimes preferences even vary by season. Ants can be given a "taste test" of several baits to see which ones they prefer and to ensure bait is still effective for that species.

Resources

http://www.ipm.ucdavis.edu/PMG/menu.ants.html
https://extension.umn.edu/insects-infest-homes/ants

IPM Outline
Bats

Target Pest or Group	Bats.
Target Area(s)	Buildings where bats roost.
Impact on Mission	▪ Prevent damage to real property and unsanitary conditions resulting from the buildup of bat guano (feces). ▪ Reduce personnel fear. ▪ Reduce the risk of disease transmission from bats possibly infected with rabies.
Scope	▪ Installation-wide
Responsibility	▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control bats in structures when necessary. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude bats and minimize pest infestations as requested. ▪ Natural Resources Manager (NRM): Provides information regarding any regulatory protections of bats and any current bat management plans for specific sites. ▪ All Installation Personnel: Report bat problems, especially when they pose a health hazard.
Reporting	▪ Report sick or dead bats suspected of carrying rabies to preventive medical personnel. ▪ Record all pest management operations to the IPMC using the AKARNG Pest Management Treatment Record and report usage to AKARNG IPMC every quarter.

Survey

Survey Method(s)	▪ Visual inspections • Observation of bats roosting or entering a building. • Observation of signs of bat roosting such as guano. ▪ Personnel complaints: including information on when pests were observed, where, and how many.
Survey Frequency / Schedule	▪ Daily observation by all personnel and pest management service providers during bat active season.
Action Threshold	▪ When bats pose a health hazard, become a nuisance, or deface property. ▪ Bats in human living quarters or food preparation areas should always be removed.

Non-Chemical Control

Type	Method	Responsibility
Exclusion	▪ Seal openings to attics and other areas where bats may enter and roost. ▪ If bats are currently in structures, **DO NOT** seal openings and trap the bats inside the structure. ▪ If location is a bat maternity roost or bats are hibernating in the structure, delay sealing openings until all bats have left the structure. This may take several months. ▪ **Coordinate with the NRM to identify bat species and roosting/hibernating seasons before proceeding. A number of bats species are protected by the Endangered Species Act.**	FMP; PMP In-House or Contract; NRM Coordination
Provide Alternative Roosts	▪ Bat houses can provide an alternative to buildings as roosting sites. ▪ Bat houses must be correctly built and placed for acceptance by bats.	FMP

Mechanical Removal	▪ Bats that accidentally enter a room can be captured and released outside.
	▪ To reduce stress on the animal, use the following procedure:
	  ▪ Close doors to confine the bat to a single room.
	  ▪ Allow the bat to become exhausted and land.
	  ▪ Do not attempt to catch a bat in flight.
	  ▪ Once the bat has landed, allow it to rest for 20-30 minutes.
	  ▪ Place a bowl, can, or other suitable container over the bat.
	  ▪ Trap the bat in the container by sliding a piece of cardboard or other rigid material between the bat and the surface on which it is resting.
	  ▪ Wear thick leather gloves for this procedure, and avoid touching the bat.
	▪ Release the bat outside. The bat may not fly immediately, so release it in an area where it can remain undisturbed for several hours.
	▪ If the bat is still present the next day, report it the IPMC or PMP.
	▪ **All trapping of bats must be done with coordination and oversight of the NRM.**
		PMP In-House or Contract with NRM coordination

Prohibited Practices	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Killing, trapping, relocating or harassing any bats protected under the Endangered Species Act is prohibited.	
Special PMP Qualifications	▪ Bats should never be handled alive or dead with bare hands. ▪ Proper PPE must be worn when cleaning up bat guano (feces). ▪ All PMP performing bat control should have pre-exposure immunization against rabies.	

Chemical Control

Chemical control is never used for the control of bats. Deliberately poisoning bats is a violation of federal law

Additional Information

Bats are generally considered beneficial organisms that reduce insect populations. Control is only necessary if the bats are causing a nuisance or public health concern.

Resources

How to build and place bat houses and bat information – http://www.batcon.org/

IPM Outline
Bears

Target Pest or Group	▪ Black bears and brown bears. (For control of other vertebrate pests, feral dogs and cats, bats, birds, and snakes, please refer to their specific IPM outlines).
Target Area(s)	Areas near buildings or populated areas.
Impact on Mission	▪ Bears are dangerous when they are cornered and can become aggressive. ▪ Bears can cause damage to buildings, other structures and equipment if they are seeking food.
Scope	▪ Installation-wide.
Responsibility	▪ All Installation Personnel: Practice good sanitation and do not feed any wild and feral animals to prevent attracting them. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude bears from buildings or trash containers. ▪ Base Operation Support: Ensure that dumpsters and trash containers are emptied on schedule and that they are secured to prevent entry by bears. ▪ Joint Base Elmendorf Richardson Conservation Law Enforcement Officers (JBER CLEOs) and/or USDA APHIS Wildlife Services (WS) Personnel: Conduct integrated pest management of bears. ▪ Alaska Department of Fish and Game Personnel: Provide support with nuisance/dangerous bears. ▪ AKARNG IPMC: Provides information regarding any regulatory protections of vertebrate pests.
Reporting	▪ Report all bear encounters to the AKARNG IPMC immediately or Security Forces Squadron 24/7 phone number (907) 552-7070.

Survey

Survey Method(s)	▪ Visual sighting of bears. ▪ Verify personnel reports of bear activity.
Survey Frequency / Schedule	▪ As needed.
Action Threshold	▪ Any sighting of a bear that has entered a building, poses a safety or health hazard, or is accessing food/trash containers/dumpsters.

Non-Chemical Control

Type	Method	Responsibility
Food Removal	▪ Deny access to trash and other sources of food. ▪ Prevent personnel from feeding wildlife and feral animals. ▪ Ensure trash is emptied on a regular schedule since overflowing trash containers can attract bears.	All personnel
Exclusion	▪ Use bear-resistant lids/covers that can be secured on all dumpsters and trash cans. ▪ Store trash containers in secured buildings or bear-resistant cages.	All personnel
Harassment	▪ Herd bears that present no immediate danger to human life or property toward undeveloped areas using: ▪ Voice/hand clapping. ▪ Lights/siren/horn/rattle can. ▪ Inert pepper ball/pepper ball/bear spray. ▪ Cracker shell/rubber slug (shotgun).	Alaska Department of Fish and Game personnel: USDA APHIS WS personnel; JBER CLEOs
Shooting	▪ Shooting may be used to control bears when: ▪ There is imminent danger to humans or property as regulated by Title 5 Alaska Administrative Code 92.410. ▪ The animal has been determined to be a nuisance after consultation with Alaska Department of Fish and Game. ▪ Shooting can be safely conducted. ▪ **All non-emergency shooting of bears must be done with coordination and oversight of the Alaska Department of Fish and Game.**	Alaska Department of Fish and Game personnel: USDA APHIS WS personnel; JBER CLEOs; JBER Security Forces

Prohibited Practices	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Use of Electrical Control Devices (also known as Tasers) on wildlife is prohibited. ▪ Killing, trapping, relocating or harassing any wildlife protected under the Endangered Species Act is prohibited.

Chemical Control

With the exception of bear spray, chemical control is never used for bears.

Bear spray, a type of pepper spray, is used to deter bears during an attack. Bear spray typically contains higher levels of the active ingredients than pepper sprays intended for self-defense against human assailants. Bear spray is an effective alternative to lethal force and should be considered as an option for personal safety. Personnel who carry bear spray must always use it in accordance with the label.

Additional Information

Bears are naturally shy animals and prefer to avoid people. Conflicts usually arise only when bears are attracted to human food/garbage, when they are surprised, or when they are cornered and cannot leave an area.

If a bear hears or sees you coming, the bear will almost always move away. If you do encounter a bear that hasn't detected you, leave the area without disturbing it. Never purposefully approach a bear.

If you encounter a bear and it does not leave the area, make sure that you and those around you are in a safe location (inside a building or vehicle if possible). If you are in the open, group together, stand your ground, and speak in a normal voice, letting the bear know you are human. If a bear cannot tell what you are, it may come closer or stand on its hind legs to get a better look or smell. Never run from a bear. If you have bear spray, ready it for use.

If a bear is not threatening personnel and personnel are in a safe location, observe the bear to determine why it is attracted to the area. Call the AKARNG IPMC to arrange for the attractant to be removed/secured after the bear leaves.

If a bear is a threat to a person's safety, call either the Security Forces or CLEOs (if located on JBER), the police (911), your local Fish and Game office, the Alaska Wildlife Troopers, and/or the AKARNG IPMC.

AKARNG Integrated Pest Management Coordinator (IPMC):

Patrick Geary
907-428-7157
patrick.geary@alaska.gov

JBER Points of Contact:

Jim Wendland, Conservation Law Enforcement Officer
907-552-9453
james.wendland.1@us.af.mil

Colette Brandt, Wildlife Biologist
907-384-3380
colette.brandt@us.af.mil

JBER Security Forces
907-552-7070

JBER USDA APHIS, Brandon Streadbeck
907-862-2473 or 907-745-0871

Alaska Department of Fish and Game Local Field Offices:

http://www.adfg.alaska.gov/index.cfm?adfg=contacts.main

- Anchorage Field Office: (907) 267-2257
- Barrow Field Office: (907) 852-3464
- Bethel Field Office: (907) 543-2979
- Fairbanks Field Office: (907) 459-7206 or (907) 459-7306
- Juneau Field Office: (907) 465-4190
- Kodiak Field Office: (907) 486-1880
- Kotzebue Field Office: (907) 442-3420
- Nome Field Office: (907) 443-2271
- Soldotna Field Office: (907) 262-9368

Alaska Wildlife Troopers Contacts

https://dps.alaska.gov/awt/contact

- Anchorage (907) 352-5401
- Bethel (907) 543-2294
- Fairbanks (907) 451-5352
- Juneau (907) 465-4000
- Kodiak (907) 486-4762
- Kotzebue (907) 442-3241
- Nome (907) 443-2429
- Soldotna (907) 262-4573

Additional information handling encounters with bears can be found here:
http://www.adfg.alaska.gov/index.cfm?adfg=livingwithbears.main

IPM Outline
Bed Bugs

Target Pest or Group	Bed Bugs (Cimex species).
Target Area(s)	Primarily billeting areas, especially transient billeting.
Impact on Mission	Bed bugs bite people, cause allergic reactions, and are generally a nuisance that negatively affect morale and quality of life.
Scope	Installation-wide, but most likely in billeting.

Responsibility	▪ Billeting Managers:
	  ▪ Establish rules and regulations to prevent establishment and propagation of pests.
	  ▪ Prevent movement of furniture between rooms when bed bugs are identified.
	  ▪ Contact the IPMC when bed bugs are discovered.
	▪ Billeting Residents:
	  ▪ Comply with billeting rules and regulations.
	  ▪ Maintain sanitation and cleanliness of personal items such as bedding.
	  ▪ Immediately report suspected infestations of bed bugs to Billeting Managers.
	▪ Pest Management Provider (PMP), In-House or Contract: Refer to 2017 AKARNG Bed Bug SOP for guidance. Conduct surveillance and integrated pest management to control infestations.
	▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.

Reporting	▪ Report all bed bug infestations to IPMC to assist in identifying and preventing further infestations. ▪ Record all pest management operations to the IPMC using the AKARNG Pest Management Treatment Record and report usage to AKARNG IPMC every quarter.

Survey

Survey Method(s)	▪ Personnel complaints: Complaints are commonly received when personnel go to medical with itching or dermatitis due to bites.
	▪ Visual inspections:
	  ▪ Look for pests in mattresses, box springs, bed frames and headboards. Less commonly, bed bugs are found on baseboards and on walls behind furniture.
	  ▪ Apply a flushing agent to cracks and crevices.
	▪ Sticky trap surveys.
	▪ Vacuum surveys of harborages.
	▪ Dry ice / CO2 attractant traps.
	▪ Bed-bug sniffing dogs are available.
	▪ Conduct pre and post treatment surveys to determine whether control operation was effective.

Survey Frequency / Schedule	▪ In billeting, housekeeping should perform inspections during cleaning. ▪ Daily observation by residents in billeting. ▪ Observation during inspections of billeting by unit command leadership personnel. ▪ Monthly observation and/or sticky trap monitoring by PMP or IPMC of spaces post-treatment
Action Threshold(s)	▪ Detection of 1 bedbug, cast skins, or fecal stains should initiate survey and control as needed.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Thorough cleaning shall be performed in each room. ▪ Remove all clutter particularly from under and around beds to reduce harborage. Removal of clutter also enables easier inspection of furniture and mattress. ▪ **When removing materials from an infested room, either treat the material or place in bags. Seal bags before taking out of room to prevent spread of the bugs.**	Billeting Residents
Washing/ Cleaning	▪ Thoroughly wash bedding in hot water and dry on highest heat setting for at least 30 minutes. ▪ Clean mattresses, box springs, frames, headboards with soap and water.	Billeting Residents; Billeting Manager
Mechanical Removal	▪ Vacuum bedbugs from their harborages on mattresses, headboards and other surfaces where they are found. Use a wet/dry vacuum cleaner filled with water or empty and place the vacuum bag in a plastic garbage bag, seal tightly and dispose of outside, immediately.	Billeting Residents; Billeting Manager

Isolation and Exclusion	▪ Prevent removal of furniture from rooms found to be infested until each item is cleaned. ▪ Remove debris from around outside of buildings. ▪ Repair cracks in walls. ▪ Caulk cracks and crevices in bed frames and furniture. ▪ Specially designed mattress encasements will prevent bed bugs from getting on mattresses and leaving mattresses to infest other areas. They do not have seams that can harbor the bugs.	Billeting Manager; FMP
Heat	▪ Heat infested articles and/or areas through to at least 113 degrees F (45 degrees C) for at least 1 hour. ▪ The higher the temperature, the shorter the time needed to kill bed bugs at all life stages. ▪ A pesticide barrier around doorways may be necessary to prevent spread of fleeing bed bugs to adjacent spaces. ▪ Heat may damage sprinkler systems. Implement protective measures before treatment of rooms. ▪ Infested bedding and clothing can be placed in clothing dryer on high heat.	Contract PMP; Billeting Residents
Prohibited Items	Ultrasonic pest repelling devices are useless and prohibited.	

Chemical Control

Application Site	▪ Apply pesticides as required based on survey information to areas where bed bugs are known to harbor. Including:
	  ▪ Bed frames
	  ▪ Mattresses
	  ▪ Baseboards
	  ▪ Furniture
	▪ For heavy infestations, barrier treatments may be required, especially around doors, to prevent bed bugs from fleeing to adjacent areas during treatment.
	▪ Chemical control using insecticides alone will not control/prevent bed bug infestations.

Site Preparation	▪ <u>Pre-treatment procedures</u>:
	  ▪ No pesticide applications shall be done until the space is unoccupied.
	  ▪ Do not remove furniture or beds until PMP has conducted an inspection.
	  ▪ Pesticide applicator shall contact the Billeting Manager prior to pesticide applications.
	  ▪ All bedding and personal items should be removed from exposed areas, placed in bags, and washed or cleaned.

Sensitive Areas	▪ Some people may be sensitive to pesticides. The insecticide on treated mattresses should be allowed to dry and then covered with a mattress cover before being used. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.	
Restrictions	▪ Insecticide resistance may cause treatment failure ▪ Aerosols, dusts and other insecticide formulations that can become airborne shall not be applied in occupied spaces. ▪ Spaces must be vacated before treatment, and then ventilated and the insecticide allowed to dry before personnel reoccupy the space. ▪ Foggers are mostly ineffective in controlling bed bugs because bed bugs hide in crevices and voids where aerosols do not penetrate and they are able to avoid contact with the insecticides. Use of foggers is not recommended.	
Common Active Ingredients	▪ Bifenthrin ▪ Cyhalothrin ▪ Deltamethrin ▪ Other Pyrethroids ▪ Pyrethrin For pyrethroid-resistant bed bugs: ▪ Hydroprene (IGR) ▪ Chlorfenapyr ▪ Silica gel	
Types of Pesticides		**Authorized Applicators**
Flushing Agents	▪ Use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed.	In-House PMP; Contracted PMP
Crack and Crevice Residuals	▪ Apply (by crack and crevice technique) a residual pesticide spray to all known or suspected harborages.	Self-Help Program Participants; In-House PMP; Contracted PMP
Spot Treatment Residuals	▪ Apply as a "spot treatment" to indicated areas.	Self-Help Program Participants; In-House PMP; Contracted PMP
Mattress Treatment	▪ Apply to infested mattresses.	In-House PMP; Contracted PMP
Insect Growth Regulators	▪ IGRs affect the development and reproduction of insects. ▪ When properly applied, IGRs have essentially no effect on vertebrate metabolism because of their mode of action and low application rates, but they can have a significant impact on bed bug molting, fertility and egg hatching success. ▪ Apply according to label directions.	Self-Help Program Participants; In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Discovery of bed bugs in any area requires a response within 24 hours.
Time Period to Obtain Control	▪ One to two weeks. ▪ May be dependent on when the occupant needs to move back into the room.
Level of Control	100% control.
Safety Considerations	▪ Do not treat occupied rooms with liquid or dust formulations.
Special Applicator Qualifications	▪ Limited chemical control of bed bugs, with pre-approved Self-Help pesticides, may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP or GMP applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators.

Additional Information

Treatment failures are due to incomplete surveys for the pest, improper application, and insecticide resistance. Follow up inspections and control is crucial to eliminating the bugs.

Resources

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7454.html
http://www.acq.osd.mil/eie/afpmb/docs/techguides/tg44.pdf
http://www.epa.gov/pesticides/bedbugs/

IPM Outline
Nuisance Birds



Target Pest or Group	Birds.
	
	▪ Most birds are protected under the Migratory Bird Treaty Act (MBTA).
	▪ Without a permit issued by the U.S. Fish and Wildlife Service (USFWS), no actions that affect birds can be taken.
	▪ Actions that affect birds includes:
	  ▪ Harassment, using non-lethal means
	  ▪ Shooting
	  ▪ Live trapping for relocation
	  ▪ Removal of active nest (or inactive nest of eagles and threatened/endangered species of birds)
	  ▪ Or any action that is considered an impact by the USFWS
	▪ Bald and Golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA) that has greater protections and requirements than the MBTA.
	▪ The following birds are some of the common non-native birds to the United States. These birds are not protected by the MBTA or BGEPA:
	  ▪ European Starlings – *Sturnus vulgaris*
	  ▪ House Sparrows – *Passer domesticus*
	  ▪ Pigeons (or Rock Doves) – *Columba livia domestica*
	  ▪ Mute Swans – *Cygnus olor*

Target Area(s)	Areas near buildings or populated areas.

Impact on Mission	▪ Most birds do not pose any serious medical hazard or create a significant threat to government property or mission accomplishment.
	▪ Birds may carry diseases and parasites that can infect humans.
	  ▪ Bird feces may contain several pathogenic disease-causing organisms such as Histoplasma and Cryptococcus.
	  ▪ Nests may also contain ectoparasites, such as mites or swallow bugs (similar to bed bugs), that may feed on humans if there are no longer birds using the nest. While this is usually a minor medical issue, it can cause significant morale issues.
	▪ Birds that build nests or deposit feces on the exterior of structures can adversely impact the aesthetics of the structure and surrounding area.

Scope	▪ Installation-wide. (For control of birds at airfields/heliports, please refer to the site-specific Bird/Wildlife Airstrike Hazard (BASH/WASH) Plan or contact the IPMC).
Responsibility	▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management of nuisance birds. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude nuisance birds from buildings. ▪ Base Operation Support: Ensure that dumpsters and trash cans are emptied on schedule, and that they are securely covered to prevent entry by nuisance birds. ▪ Natural Resources Manager (NRM): Provides information regarding any regulatory protections of nuisance birds. ▪ All Installation Personnel: Practice good sanitation and do not feed unwanted or nuisance birds to prevent attracting them.
Reporting	▪ Record all pest management operations to the IPMC using the AKARNG Pest Management Treatment Record and report usage to AKARNG IPMC every quarter.

Survey

Survey Method(s)	▪ Visual sighting of birds, nests or bird feces.
Survey Frequency / Schedule	▪ As needed.
Action Threshold	▪ Any verified sighting of a bird where it enters a building or poses a safety or health hazard.

Non-Chemical Control

Type	Method	Responsibility
Exclusion	▪ Primary methods for controlling nuisance birds. ▪ Use screening, hardware cloth and metal flashing to cover holes and cracks to prevent entry of birds into buildings. ▪ Use netting to prevent access to the area under building eaves. ▪ Use lids / covers that can be secured on dumpsters and trash cans.	FMP; PMP

Cultural	▪ Keep loading dock doors and unscreened windows closed when not in use. ▪ Deny access to trash and other sources of food. ▪ Prevent personnel from feeding birds other than at authorized bird feeding locations. ▪ Repair leaking plumbing to remove sources of water. ▪ Changing the mowing height of grass can discourage nuisance birds (especially Canada geese). ▪ Erect nesting platforms for birds such as osprey to offer nesting locations other than power poles.	All personnel

Mechanical/ Physical	▪ Nesting in and roosting on buildings can be reduced by architectural modifications of ridges and openings.
	▪ Spike strips have limited effect, but can help to prevent roosting in some instances (such as on windowsills).
	▪ Silicone-based, anti-graffiti paint can be used to discourage nesting of swallows (the surface of the paint is too slick for the mud nests to stick to it).
	▪ After coordination with NRM, removal of inactive nests (unless it is an eagle or threatened/endangered species nest).
	▪ Power washing with water can remove inactive nests, but NRM must be consulted prior to any nest removal.
	▪ Shooting may be used to control small populations (i.e., geese, crows) in areas where:
	  ▪ Shooting is legal.
	  ▪ Shooting can be safely conducted.
	  ▪ Appropriate permits have been obtained.
	▪ Qualified marksmen should perform the shooting.
	▪ Not generally practical for large populations.
	▪ Must have NRM coordination and oversight.
		FMP; Qualified PMP; NRM coordination

Trapping	▪ Live cage-type traps may be used for birds, especially if inside buildings. ▪ Lethal trapping may be appropriate in instances when nuisance birds are non-native species. ▪ Extreme care must be taken to prevent killing non-target animals. ▪ All trapping of nuisance birds must be done with coordination and oversight of the NRM.	PMP In-House or Contract; NRM coordination

Harassment	▪ Use of specially-trained dogs can be very effective to discourage non-migratory Canada geese from foraging/roosting on turf in cantonment areas. ▪ Flashing lights and sounds typically have only temporary effects and are not recommended for most circumstances. ▪ All harassment of nuisance birds must be done with coordination and oversight of the NRM.	PMP In-House or Contract; NRM coordination
Prohibited Practices	▪ Use of electronic or ultrasonic pest repelling devices is prohibited. ▪ Predator (owls, coyotes, etc.) statues/decoys are ineffective and prohibited. ▪ Relocation of trapped animals farther than one mile from point of capture is prohibited. ▪ Killing, trapping, relocating or harassing any birds protected under the MTBA, BGEPA and/or Endangered Species Act (ESA) is prohibited, unless the proper permit/authorization is obtained.	
Sensitive Area/ Environmental Concerns	▪ Coordinate with the Cultural Resources Manager (or Environmental Office) before conducting any modifications to any building, structure or landscape. ▪ Most birds are protected and the identity of nuisance bird species should be certain before any control work takes place.	
Permitting	▪ The appropriate USFWS permit/authorization must be obtained if control actions have any potential to affect MBTA, BGEPA or ESA-protected birds (birds other than European Starlings, Pigeons, House Sparrows, and Mute Swans).	
Special PMP Qualifications	▪ All PMPs performing bird control should hold appropriate licenses and permits to legally capture, transport and release (or euthanize) nuisance birds. ▪ Nuisance birds should never be handled alive or dead with bare hands. PPE should be worn when removing inactive nests and/or bird feces.	

Chemical Control

Chemical control (avicides) is rarely used for the control of birds at ARNG sites. Chemical control is only performed in extreme cases, such as when birds are nesting on aircraft or causing danger to human life. In most cases, control is achieved with non-chemical methods since using avicides may kill endangered or threatened birds, and/or non-target species. All chemical control of birds must be pre-approved by the ARNG PMC.

Additional Information

Woodpeckers often “drum” on buildings during the mating season to attract a mate. Drumming typically does not cause any damage to the building. If a woodpecker is causing damage to a building, there is usually an infestation of wood-boring insects. More information on woodpeckers can be found in the link listed in the Resources section below.

Swallows (especially Cliff and Barn Swallows) may carry Swallow Bugs. Swallow Bugs are very similar in appearance to Bed Bugs. If there is a reported outbreak of Bed Bugs in buildings

where swallows nest, ensure the infestation is actually Bed Bugs. Swallow bugs are considerably less costly to control than Bed Bugs and require different control techniques.

Some populations of Canada Geese have become non-migratory and may live year-round in cantonment areas, often where there is turf surrounding an ornamental pond. Limiting access to the pond with taller vegetation or a low fence around the entire edge of the pond can help to discourage the geese from using the area since geese prefer to walk into the pond rather than fly up and over a boundary to get to the water.

Resources

Swallow management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7482.html
Woodpecker management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74124.html

IPM Outline
American Cockroaches

Target Pest or Group	American cockroaches. (For other cockroaches, see IPM Outline for cockroach control in food preparation areas).
Target Area(s)	Office buildings, warehouses, residences, storm sewers
Impact on Mission	▪ May cause food damage through contamination. ▪ Affect human health through allergic reactions or “entomophobia”. ▪ An aesthetic or morale nuisance. ▪ Large size often frightens people.
Scope	Installation-wide in buildings and in sewers.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings using approved Self-Help control methods. ▪ Food Service personnel (FSP): Ensure compliance with food handling regulations that prevent pest infestations. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual inspections:
	  ▪ Visual surveys of low to moderate infestations may require visiting the facility at night.
	  ▪ Observation of pests in harborages.
	  ▪ Look around areas with heat and moisture.
	  ▪ Inspect floor drains.
	▪ Application of a flushing agent (or canned air) to suspected harborages.
	▪ Sticky trap surveys.
	▪ Vacuum surveys of harborages.
	▪ Personnel complaints: including information on when pests were

	observed, where, and how many. ▪ Conduct pre- and post-treatment surveys to determine whether control operation was effective.
Survey Frequency / Schedule	▪ Daily observation by building occupants. ▪ Monthly observation and/or sticky trap monitoring by pest management personnel.
Action Threshold(s)	▪ Visual sighting of 1 or more cockroaches (all life stages) per room per survey. Flushing agents or sticky traps may be used. ▪ Sighting of 1 egg capsule per survey.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Thorough cleaning of potential food sources in buildings, especially coffee and food preparation areas. ▪ Clean up spills immediately. ▪ Clean out floor drains by rinsing with hot water or using cleaners specifically designed to remove sludge from pipes. ▪ Store food in pest-proof containers ▪ Empty trash cans daily, or avoid putting food items in trash. ▪ Do not eat at desk; eat in a designated coffee break or dining area.	All personnel; Self-Help Program Participants; FSP
Mechanical Removal	▪ Vacuum cockroaches from their harborages. ▪ Used canned air to flush cockroaches from their harborages. ▪ Then use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	Self-Help Program Participants; FSP; PMP
Pest Proofing	▪ Seal holes in walls, ceilings and other areas that may serve as cockroach harborage, as required. ▪ Request support from facilities maintenance provider if necessary.	Self-Help Program Participants; FSP; FMP
Prevention	▪ Inspect food boxes before bringing them into a building.	All personnel; Self-Help Program Participants; FSP
Eliminate Harborage	▪ Seal cracks and crevices with caulk. ▪ Remove corrugated cardboard and other materials that can serve as harborage.	Self-Help Program Participants; FSP; FMP
Eliminate Standing Water	▪ Fix plumbing leaks, especially around sinks, faucets and dishwashers. ▪ Remove standing water from floors after daily cleaning.	FSP; FMP

Education	▪ Proper storage of food and sanitation to prevent infestations and increase effectiveness of pesticide applications. ▪ Understanding the delayed effect of baits.	In-House PMP; IPMC

Chemical Control

Application Site	Apply pesticides as required based on survey information to areas where cockroaches are known to live or travel.
Site Preparation	Pre-treatment procedures: ▪ Visual inspections (canned air may be used, but no flushing agents) or placement of sticky traps may be accomplished while the space is occupied. ▪ All pesticide applications shall be done only when the space is unoccupied. ▪ Pesticide applicators shall notify building occupants prior to pesticide use. ▪ If insecticidal baits are used, thorough cleaning is required to remove competing food sources. ▪ Remove all food from exposed areas, cover or store processing equipment and utensils, and turn off ventilation system. ▪ Remove and dispose all food debris to increase the effectiveness of bait stations. ▪ Clean grease off surfaces. Oil can interact with some insecticides and reduce their effectiveness. Post-treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or bait gel placements.
Sensitive Areas	▪ Exposed food products, food containers, counter tops, any surface where food may be stored or prepared, or any food storage area. ▪ Minimize application of pesticides directly into drains. ▪ Use care in selecting pesticides for use in storm sewers as this can lead to storm water pollution. Applications should be made when storm sewers are dry and rain is not anticipated within a week.
Restrictions	▪ Preventive baseboard spraying in the absence of a pest is prohibited. ▪ Do not apply liquid or dust formulations to occupied spaces or near exposed food. ▪ In food service areas, use only insecticides specifically labeled for those areas.
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.
Common Active Ingredients	▪ Abamectin ▪ Borate-based products ▪ Fipronil ▪ Hydramethylnon ▪ Imidacloprid ▪ Indoxacarb ▪ Insect Growth Regulators (IGRs) ▪ Pyrethroids (i.e. bifenthrin, cyfulthrin, cyhalothrin,

	esfenvalerate, permethrin, tetramethrin)	
Types of Pesticides		**Authorized Applicators**
Baits	▪ Use Cockroach baits (stations containing solid bait or injectable style gel baits) as much as possible. ▪ Gel bait can be applied to a sheet of hardware cloth and hung in manholes. ▪ Proper bait placement is critical to the success of treatment. ▪ Do not apply other insecticides around bait treatment areas.	Self-Help Program Participants; In-House PMP; Contracted PMP
Flushing Agents	▪ Use aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed.	In-House PMP; Contracted PMP
Crack and Crevice Residuals	▪ A residual pesticide may be applied (by crack and crevice technique) to all known or suspected harborages, feeding sites, or passageways.	In-House PMP; Contracted PMP
Spot Treatment Residuals	▪ A residual pesticide may be applied as a "spot treatment" to indicated areas (such as under dishwashers and refrigerators or behind stoves).	In-House PMP; Contracted PMP
Dusts	▪ Boric acid dust is an effective low toxicity insecticide that can be applied to wall voids and into manholes of storm sewers. The treatment area should remain dry after the application to avoid washing the dust away.	In-House PMP; Contracted PMP
Growth Regulators	▪ Insect growth regulators will always be mixed with "knock-down" pesticides.	In-House PMP; Contracted PMP
Fogging	▪ For rapid knockdown of large infestation; follow up with crack and crevice treatments and/or bait placement if needed.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	▪ Dependent on impact on mission. ▪ In food service areas, where impact is on health, and office spaces, where impact is on aesthetics and morale, response time should be within 24 hours. ▪ Warehouses and unoccupied or rarely occupied spaces may warrant a longer response time.
Time Period to Obtain Control	▪ Baits are designed to have a delayed toxic effect which allows cockroaches to take the bait to other cockroaches in their harborage. Generally, baits should result in fatalities within 3 days. ▪ Other insecticide treatments should result in immediate kill of the pest. ▪ Many insecticides are ineffective on egg cases (ootheca) and nymphal cockroaches may emerge within days after treatment, causing another infestation.

Level of Control	Post-treatment survey of the target area should result in a pest population lower than the action threshold number.
PMQAE Assessment	▪ Sticky traps are the best way to quantify and compare pre- and post-treatment surveys. ▪ Visual surveys of low to moderate infestations may require visiting the facility at night. ▪ Follow up surveys should be done one week later to see if eggs have hatched and resulted in another infestation.
Reasons for Treatment Failure	▪ Improper application of the insecticide. ▪ Harborages not identified and treated. ▪ Eggs hatched after treatment. ▪ Insecticide resistance. ▪ Improper placement of bait stations or gel baits.
Safety Considerations	▪ Do apply liquid and dust insecticides to occupied spaces or when food is exposed; baits may be applied when spaces are occupied ▪ Allow for ventilation of spaces after liquid insecticides have been applied. ▪ Clean food preparation surfaces after treatment. ▪ Applicators must wear personal protective equipment as required by the product label. ▪ Most insecticides used for indoor pest control are low in toxicity (signal word “Caution”), but care should be taken to prevent exposure to humans and domestic animals.
Environmental Considerations	▪ Outdoor treatments with pyrethroids are susceptible to runoff and contamination of storm water. ▪ Disposing of pesticides in a drain or storm drain is strictly prohibited.
Special Applicator Qualifications	▪ Cockroach control using canned air and approved bait stations may be accomplished by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Additional Information

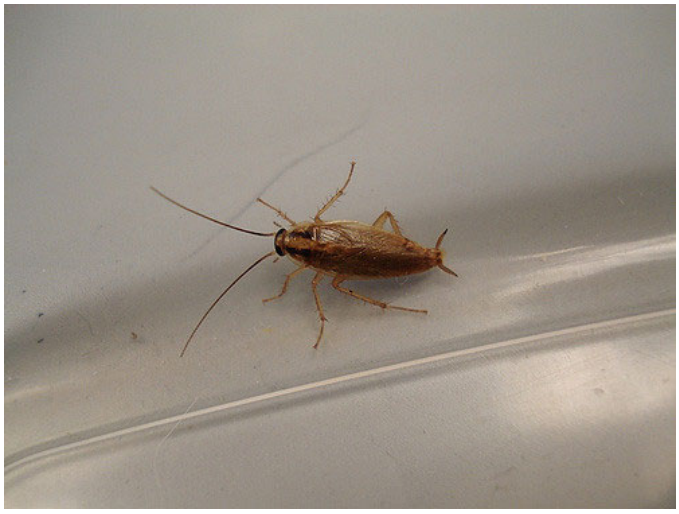
Resources

http://www.extension.umn.edu/garden/insects/find/cockroaches/

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.html (helpful for identifying types of cockroaches)

http://pestsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=2&ProblemId=799

IPM Outline
Cockroaches in Food Preparation Areas



Target Pest or Group	Cockroaches (primarily German cockroach, *Blatella germanica*) in food preparation areas. (For American cockroaches, see specific IPM Outline)
Target Area(s)	Food service facilities: ▪ All government dining facilities including dining halls, kitchens, clubs, restaurants, and storage. ▪ All commercial lessees. ▪ Coffee/kitchen areas and snack bars in administrative areas.
Impact on Mission	May cause food contamination, allergic reactions, or be a nuisance.
Scope	Installation-wide, in food service areas.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings using approved Self-Help control methods. ▪ Food Service Personnel (FSP): Ensure compliance with food handling regulations that prevent pest infestations. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual inspections. ▪ Observation of pests in harborages. ▪ Application of a flushing agent (or canned air). ▪ Sticky trap surveys. ▪ Vacuum surveys of harborages. ▪ Personnel complaints: including information on when pests were observed, where, and how many. ▪ Conduct pre- and post-treatment surveys to determine whether control operations were effective. ▪ Surveys should also identify environmental conditions that lead to cockroach infestations.
Survey Frequency / Schedule	▪ Daily observation by food service personnel. ▪ Monthly observation and/or sticky trap monitoring by preventive medicine personnel during food safety inspections.
Action Threshold(s)	▪ Visual sighting of 4 or more cockroaches (all life stages) per room per survey. Flushing agents (canned air) or sticky traps may be used. ▪ Sighting of 1 egg capsule per survey.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Cleaning of floors and all surfaces to include debris and grease removal. ▪ Clean up spills. ▪ Store food in sealed containers. ▪ Remove cardboard boxes from storage areas. ▪ Keep garbage in containers with tight-fitting lids and use liners.	FSP; Self-Help Program Participants
Eliminate Standing Water	▪ Fix plumbing leaks especially around sinks, faucets and dishwashers. ▪ Remove standing water from floors after daily cleaning.	FSP; FMP
Mechanical Removal	▪ Vacuum cockroaches from their harborages. ▪ Used canned air to flush cockroaches from their harborages. ▪ Then use a wet/dry vacuum cleaner filled with water or empty and dispose of vacuum bag immediately.	Self-Help Program Participants; FSP; In-House PMP; Contracted PMP
Pest Proofing	▪ Seal holes in walls and ceilings and other areas that may serve as cockroach harborage as required. Request support from facilities maintenance provider if necessary.	Self-Help Program Participants; FSP; FMP

Education	▪ Proper storage of food and sanitation to prevent infestations and increase effectiveness of pesticide applications. ▪ Understanding the delayed effect of baits.	In-House PMP; IPMC

Chemical Control

Application Site	Apply pesticides as required based on survey information to areas where cockroaches are known to harbor or travel.
Site Preparation	Pre-treatment procedures: ▪ Visual inspections (canned air may be used, but no flushing agents) or placement of sticky traps may be accomplished while the space is occupied. Only apply pesticide applications when the space is unoccupied. ▪ Pesticide applicator shall contact food service officer or manager prior to pesticide applications. ▪ All food should be removed from exposed areas, processing equipment and utensils covered or stored, and ventilation turned off. ▪ Removal and disposal of food debris will increase the effectiveness of bait stations. ▪ Grease should be cleaned off surfaces since oils can interact with some insecticides and reduce their effectiveness. Post-treatment procedures: ▪ Thoroughly clean all food preparation surfaces. ▪ Do not remove bait stations or bait gel placements.
Sensitive Areas	▪ Exposed food products, food containers, counter tops, any surface where food may be stored or prepared, or any food storage area. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.
Restrictions	▪ Use spot treatments indoors; do not apply to baseboards as a preventive residual spray. ▪ Do not apply liquid or dust formulations of insecticides in occupied spaces. ▪ Use only insecticides specifically labeled for those areas.
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.
Common Active Ingredients	▪ Abamectin ▪ Borate-based products ▪ Fipronil ▪ Hydramethylnon ▪ Imidacloprid ▪ Indoxacarb ▪ Insect Growth Regulators (IGRs) ▪ Pyrethroids (i.e. bifenthrin, cyfulthrin, cyhalothrin, esfenvalerate, permethrin, tetramethrin)

Types of Pesticides		Authorized Applicators
Baits	▪ Cockroach baits (station or injectable style gel baits) are the preferred control method. ▪ Gel baits can be more effective than dry baits due to the moisture in the bait and because gels can be applied to more areas. ▪ Do not apply other insecticides around bait treatment areas.	Self-Help Program Participants; In-House PMP; Contracted PMP
Flushing Agents	▪ Use of aerosol contact pesticides directed into potential harborage areas to flush out and kill pests as needed.	In-House PMP; Contracted PMP
Crack and Crevice Residuals	▪ A residual pesticide may be applied (by crack and crevice technique) to all known or suspected harborages, feeding sites, or passageways.	In-House PMP; Contracted PMP
Spot Treatment Residuals	▪ A residual pesticide may be applied as a "spot treatment" to indicated areas (such as under dishwashers and refrigerators or behind stoves).	In-House PMP; Contracted PMP
Growth Regulators	▪ Insect growth regulators will always be mixed with "knock-down" pesticides.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	▪ Dependent on mission impact. ▪ In food service areas, where impact is on health, and in office spaces, where impact is on aesthetics and morale, response time should be within 24 hours. ▪ Warehouses and unoccupied or rarely occupied spaces may warrant a longer response time.
Time Period to Obtain Control	▪ Application of liquid pesticides will result in immediate control. ▪ Baits generally require 2-3 days before cockroaches are killed.
Level of Control	▪ Cockroaches are difficult to completely eliminate in food service areas. Level of control should be maintained below the established action threshold.
Safety Considerations	▪ Liquid and dust insecticides should not be applied to occupied spaces or when food is exposed; baits may be applied when spaces are occupied. ▪ Allow for ventilation of spaces after liquid insecticides have been applied. ▪ Clean food preparation surfaces after treatment. ▪ Applicators must wear personal protective equipment as required by the product label.
Environmental Considerations	Environmental impact is minimal since applications are performed indoors.

Special Applicator Qualifications	▪ Cockroach control using canned air and approved bait stations may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Resources

http://www.extension.umn.edu/garden/insects/find/cockroaches/

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7467.html (helpful for identifying types of cockroaches)

http://pestsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=2&ProblemId=799

IPM Outline
Feral Dogs and Cats

Target Pest or Group	▪ Feral Dogs and Cats. (For control of bats, birds, snakes and other vertebrate wildlife pests, please refer to their specific IPM outlines).
Target Area(s)	Areas near buildings or populated areas.
Impact on Mission	▪ Feral animals may be dangerous when they are cornered and can become aggressive. ▪ Many feral animals may carry rabies and other diseases and parasites that can infect humans.
Scope	▪ Installation-wide
Responsibility	▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management for vertebrate pests. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude vertebrate pests from buildings. ▪ Base Operation Support: Ensure that dumpsters and trash cans are emptied on schedule and that they are securely covered to prevent entry by vertebrate pests. ▪ Natural Resources Manager (NRM): Provides information regarding any regulatory protections of vertebrate pests. ▪ All Installation Personnel: Practice good sanitation and do not feed feral animals to prevent attracting them.
Reporting	▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual sighting of feral animals or signs of their presence. ▪ Some feral animals may become mainly nocturnal, so visual surveys may need to be conducted at night. ▪ Verify personnel reports of feral dog or cat activity.
Survey Frequency / Schedule	▪ As needed.
Action Threshold	▪ Any verified sighting of a feral dog or cat.

Non-Chemical Control

Type	Method	Responsibility
Exclusion	▪ Use lids / covers that can be secured on dumpsters and trash cans. ▪ Use hardware cloth and metal flashing to cover holes and cracks to prevent entry of feral animals into buildings. ▪ Repair leaking plumbing to remove sources of water for feral animals.	FMP
Food Removal	▪ Deny access to trash and other sources of food. ▪ Prevent personnel from feeding feral animals.	All personnel
Education	▪ Teach site personnel the impact of feral dogs and cats on native wildlife, especially birds, reptiles and small mammals. ▪ Teach site personnel about the threat to human health posed by feral dogs and cats. ▪ Provide resources for pet fostering and adoption organizations.	In-House PMP; IPMC
Trapping	▪ Only live cage-type traps should be used for feral dogs and cats. ▪ Use cat food containing fish or canned tuna for bait. ▪ Ensure that the target pest cannot reach through the back or side of the trap to steal the bait. ▪ Secure trap to the ground to prevent the animal from tipping it over. ▪ Situate and regularly monitor traps to prevent unnecessary stress to trapped animals. ▪ Trap-Neuter-Release (TNR) programs are prohibited.	PMP In-House or Contract; NRM coordination

Shooting	▪ In instances where there is a known threat to human health, shooting may be used to control small populations in areas where: ▪ Shooting is legal. ▪ Shooting can be safely conducted. ▪ Appropriate permits have been obtained. ▪ Qualified marksmen should do the shooting. ▪ Not generally practical for large populations. ▪ Lethal control has considerable risk for generating negative public relations. ▪ Make completely sure that target animals are feral animals and not stray pets.	Qualified PMP
Prohibited Practices	▪ Use of ultrasonic pest repelling devices is ineffective and prohibited. ▪ Relocation of trapped animals is prohibited. ▪ Trap-Neuter-Release (TNR) programs are prohibited. ▪ Killing, trapping, relocating or harassing any wildlife protected under the Endangered Species Act is prohibited.	
Special PMP Qualifications	▪ All PMP performing vertebrate pest control should hold appropriate licenses and permits to legally capture, transport and/or euthanize feral animals. ▪ Feral animals should never be handled, alive or dead, with bare hands. ▪ All PMP performing feral animal control should have pre-exposure immunization against rabies.	

Chemical Control

Chemicals are never used for the control of feral cats and dogs.

Additional Information

Informational brochure about hazards associated with cats:
https://wildlife.org/wp-content/uploads/2014/05/Feral-Cats.pdf

Feral cat management:
http://extensionpublications.unl.edu/assets/pdf/ec1781.pdf

Rabies in domestic animals:
https://www.cdc.gov/rabies/exposure/animals/domestic.html

JBER Veterinary Treatment Facility Contact Information:
Address: 47815 Davis Highway, JBER, AK 99505
Phone Number: 907-384-2865

Alaska SPCA Contact Information:
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IPM Outline
Drain Flies

Target Pest or Group	Drain flies (*Psychoda* species). Also called moth flies, sewage flies, or filter flies.
Target Area(s)	▪ Building interiors, where adult flies may be a nuisance. ▪ These flies may be very common around sewage treatment facilities, where they are considered beneficial decomposers of organic matter.
Impact on Mission	▪ Nuisance that interferes with mission. ▪ Potential human health hazard due to respiratory problems associated with inhalation of fly hairs and body parts. ▪ Mechanical transmission of pathogens leading to illnesses.
Scope	▪ Installation-wide.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations using approved Self-Help control methods. ▪ Facilities Maintenance Provider (FMP): Periodically clean drain pipes to prevent buildup of organic matter where drain flies breed. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	Visual sighting: ▪ Adult drain flies congregate on walls and windows of rooms containing drains where drain flies are breeding. ▪ Adult flies are weak fliers, and usually make a series of short, erratic flights to move from one area to another. ▪ The body and wings are hairy, and the wings are held roof-like over the body when at rest, giving the fly a moth-like appearance. ▪ Adult coloration is yellow, gray or black. Locate source drain: ▪ Locate the drain(s) from which flies are emerging in order to target the fly breeding sites. ▪ Seal suspected drain openings with a glue board, masking tape, or inverted plastic cup overnight to trap adult flies if they are present.
Survey Frequency / Schedule	▪ Scheduled surveys are not typically required. ▪ Presence of drain flies resting on walls in restrooms and other areas with drains will typically prompt a request for pest control.
Action Threshold(s)	▪ Enough flies to constitute a nuisance indicate the need for treatment.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Drain flies breed in accumulated organic matter inside in drain pipes. ▪ Remove this material with over-the-counter drain cleaners. ▪ Scrubbing with a stiff brush may be necessary to remove heavy buildup.	All personnel, including: Self-Help Program Participants; FMP; PMP
Biological Control	▪ Use products containing a specialized complex of bacteria to digest the accumulated organic matter. ▪ Rinse drain with very hot water after use of bacterial drain cleaner. ▪ For full effectiveness, these products should not be used in conjunction with other cleaning products.	PMP
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.	

Chemical Control

Application Site	▪ Drain fly resting areas.
Site Preparation	▪ Drain fly breeding sites must concurrently be eliminated to fully control drain flies.

Sensitive Areas	▪ Food service areas. Ensure that insecticides are labeled for use in food preparation areas, and foods are not contaminated during pesticide application. ▪ Pesticide use inside medical facilities should be minimized to avoid exposing patients. Control should focus on drain cleaning, which provides better control and reduces the health risks associated with pesticides. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water sources.	
Restrictions / Regulations / Permits	▪ Do not apply aerosol pesticides in occupied spaces.	
Common Active Ingredients	▪ Pyrethrins ▪ Pyrethroids ▪ Other contact insecticides	
Methods of Application		**Authorized Applicators**
Non-residual space spray or aerosol	▪ Temporarily controls adult flies. ▪ Does not provide long-term control unless drain fly breeding sites in drains are eliminated.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	▪ Drain fly infestations are generally not an emergency and do not require immediate response. ▪ At sensitive sites, such as medical treatment facilities, immediate response may be necessary.
Time Period to Obtain Control	Most control methods result in rapid kill and control can be obtained in a short period of time.
Level of Control	100% control.
Safety Considerations	▪ Take precautions when using pesticides around food service areas and medical facilities. ▪ Applicator should use personal protective equipment as required by the product label.
Environmental Considerations	▪ Avoid contaminating surface and ground water with pesticides.
Special Applicator Qualifications	▪ Drain fly control using non-chemical/biological methods may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Resources

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74167.html

http://pestsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=2&ProblemId=823

IPM Outline
Filth Flies

Target Pest or Group	House flies (*Musca domestica*), face flies (*Musca autumnalis*), stable flies (*Stomoxys calcitrans*), little house flies (*Fannia* spp.), and other fly species that breed in garbage, compost, manure, or other organic debris. (For control of fruit flies and drain flies, please refer to their specific IPM outlines.)
Target Area(s)	▪ Animal kennels or stables ▪ Dumpsters ▪ Garbage dumps and recycle centers ▪ Any places where organic debris may accumulate
Impact on Mission	▪ Nuisance that interferes with mission ▪ Mechanical transmission of pathogens leading to illnesses
Scope	Management of biting and non-biting flies associated with organic debris. Excludes flies of public health importance such as mosquitoes, biting gnats, black flies, and bot flies.
Responsibility	• All personnel: Ensure proper sanitation in all living and working spaces. • Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings using approved non-Chemical control methods. • Food Service personnel (FSP): Ensure compliance with food handling regulations that prevent pest infestations. • Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations. • Janitorial Service Provider (JSP): Ensure that refuse containers are frequently emptied and sanitized. • Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested.

Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	Visual sighting: ▪ Flies are active during the daytime in warm weather. ▪ Flies may be seen flying around and landing on dumpsters and trash cans. ▪ Fly larvae (maggots) may be seen at the bottom of trash cans. ▪ Flies that enter buildings will congregate around windows. ▪ Flies may be seen crawling on or flying around organic debris. ▪ Visual surveys of adult flies should also identify where flies are entering a building and where they are breeding. Bites: ▪ Adult stable flies will inflict a painful bite on humans, dogs, and livestock. ▪ Most filth flies do not bite. Trapping: ▪ Light traps: Flies are attracted to ultraviolet light and trapped on a sticky pest strip. These traps can also be used to control adult flies as well as monitor populations. ▪ Sticky traps: Place around areas where filth flies are known to be a problem. Many types contain visual lures. ▪ Pheromone traps: Fly pheromones (such as muscamone) attract flies to a container. Speck counts: ▪ 3X5 index cards may be placed around areas to be monitored. Flies that land on the cards will leave vomit or fecal specks that can be counted. Though inexpensive and simple, this technique gives no indication of fly species, and may overestimate fly numbers since a single fly may leave multiple specks. Note: Identification of adult flies is helpful in determining where flies are breeding, in order to target control at the source of the infestation. If the breeding location of the flies cannot be found, collect some flies and identify or send to an entomologist for identification.
Survey Frequency / Schedule	▪ Visual observations should be made around likely breeding sites (i.e. dumpsters). ▪ Traps should be inspected weekly. More frequent inspection may be necessary if sticky traps are placed in areas where they will quickly become covered with dust, insects, or other debris.

Action Threshold(s)	▪ The presence of biting flies in numbers constituting a nuisance for people or animals indicates a need for control within 24 hours if it is interfering with the mission or activities. ▪ In sensitive areas (i.e. kitchens, medical facilities, child development centers) the threshold should be low: 1 fly/room. ▪ For counts on sticky traps, 100 flies per week indicates a need for control.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Eliminating breeding sites is critical for effective filth fly control. ▪ Filth flies often breed in neglected refuse containers. ▪ Cover outdoor trash containers with tight-fitting lids. ▪ Empty trash containers frequently. ▪ Sanitize trash containers that have accumulated organic material. ▪ Steam clean dumpsters regularly. ▪ Do not allow animal manure to build up around stables. ▪ Maintain compost piles to promote rapid decay of organic material. ▪ Do not place compost piles near high-traffic areas where flies are likely to become a nuisance. ▪ Hydrated lime may be applied to stable floors to speed manure decomposition and render stables less suitable for fly breeding.	All personnel, including: Self-Help Program Participants; JSP
Exclusion	▪ Seal cracks and other openings around doors and windows. ▪ Use tight-fitting screens. ▪ Air-curtains may be installed in commercial facilities.	Self-Help Program Participants; FMP
Trapping	▪ Ultraviolet light traps may be used to reduce adult fly populations in buildings invaded by flies. Light traps shall not be used outdoors. ▪ Exercise caution when placing traps; if the trap is visible from outside the structure, it may attract flies into the building. ▪ Traps by themselves are unlikely to control heavy fly infestations. ▪ Do not use bug zappers that electrocute flies in food-preparation areas or eating facilities. Use attractant light traps that collect flies on sticky traps.	All personnel, including: Self-Help Program Participants

Biological	▪ Several species of parasitic wasps can be purchased for use against filth flies. ▪ Biological control agents do not kill adult flies. Wasps lay their eggs in fly pupae, where the wasp larvae consume the developing fly, preventing it from emerging. ▪ Biological control agents will not sting or otherwise harm humans or animals. ▪ Biological control agents are not compatible with chemical insecticides. ▪ Release timing, climatic conditions, release frequency, and number of agents released are all critical for biological control success. ▪ Contact pest management consultants for additional information before instituting a biological control program.	In-House PMP; Contracted PMP
Education	▪ Educate building occupants on sanitation, excluding flies by closing doors and maintaining screens, and proper food storage.	In-House PMP; IPMC

Chemical Control

Application Site	▪ Fly resting areas. ▪ Livestock (repellents and oral larvicides).
Site Preparation	Do not apply residual insecticides during high temperatures, high winds, or if precipitation is expected.
Sensitive Areas	▪ Food service areas. Ensure that the insecticide is labeled for use in food preparation areas, and that foods are not contaminated during application. ▪ Child development centers and other areas frequented by children. Emphasize non-chemical control in these areas. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.
Restrictions / Regulations / Permits	▪ Do not apply liquid or dust formulations in occupied spaces. ▪ Dichlorvos is a carcinogen and cannot be placed in occupied spaces.
Common Active Ingredients	▪ Neonicotinoids ▪ Pyrethroids ▪ Methomyl ▪ Cyromazine ▪ Other insecticides

Methods of Application		Authorized Applicators
Non-residual space spray or aerosol	▪ Will temporarily control adult fly populations in buildings and outdoors. ▪ Will not provide long-term control unless breeding sites are eliminated.	In-House PMP; Contracted PMP
Residual insecticides	▪ May be applied to outside areas where adult flies rest. ▪ Will not provide long-term control unless breeding sites are eliminated.	In-House PMP; Contracted PMP
Baits	▪ May be used around refuse containers and other places to which flies are attracted. ▪ Pheromone baits are commonly used so that competing food sources are not a problem. ▪ Do not use baits indoors or in other areas where flies are not already present. ▪ Baits may attract flies to an otherwise fly-free area.	In-House PMP; Contracted PMP
Impregnated strips	▪ Plastic strips impregnated with dichlorvos will kill adult flies. ▪ Use only inside trash cans or other unoccupied spaces.	In-House PMP; Contracted PMP
Insect repellents	▪ May be used on humans or animals for temporary prevention of stable fly bites. ▪ Will not provide long-term control of fly populations, and must be frequently re-applied.	All personnel
Larvicides	▪ Control fly larvae in manure and other breeding sites. ▪ Can be used simultaneously with adulticides. ▪ Some larvicides are insect growth regulators with lower toxicity for non-target organisms.	In-House PMP; Contracted PMP
Oral larvicides	▪ May be administered to livestock. ▪ Will render manure unsuitable for fly breeding.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Indoor infestations should have shorter response time than outdoor infestations.
Time Period to Obtain Control	Most control methods result in rapid kill and so control should be obtained in a short period of time.
Level of Control	100% control indoors. Outdoors the level can be lower depending on the level of tolerance by people around the buildings. If the source of flies is treated then you should expect 100% control in that area.
Safety Considerations	▪ Take precautions when using pesticides around food service areas and the child development center. ▪ Applicator should use personal protective equipment as required by the product label.

Environmental Considerations	▪ Avoid contaminating water with pesticides. ▪ Space spraying outdoors can result in drift and impact on non-target organisms.
Special Applicator Qualifications	▪ Fly control using non-chemical/biological methods may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP or GMP applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators.

Additional Information

The numbers of products available for filth fly monitoring and control is overwhelmingly large. The efficacy of a given product often depends on local climatic characteristics, the severity of the infestation, the species comprising the infestation, and other localized conditions. Also, many products are available that do not work, or whose efficacy is unproven. Pest management consultants or county or state extension personnel can assist with choosing fly control methods that are most appropriate for a given area.

Resources

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7457.html
http://www.acq.osd.mil/eie/afpmb/docs/techguides/tg30.pdf
http://www.acq.osd.mil/eie/afpmb/docs/techguides/tg29.pdf

IPM Outline
Fruit Flies

Target Pest or Group	Small flies in the family Drosophilidae, commonly called fruit flies or vinegar flies.
Target Area(s)	▪ Refuse containers. ▪ Offices with windows facing loading docks, dining facilities, and other areas where there is ripe or rotten fruit.
Impact on Mission	▪ Nuisance that interferes with mission.
Scope	▪ Installation-wide.
Responsibility	▪ All personnel: Ensure proper sanitation in all living and working spaces. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations using approved Self-Help control methods. ▪ Janitorial Service Provider (JSP): Ensure refuse containers are emptied daily. Also, periodically clean refuse containers to prevent the buildup of organic matter where flies breed. ▪ Facilities Maintenance Provider (FMP): Provide necessary building repairs and modifications needed for pest exclusion. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Fruit flies are attracted to ripening and rotting fruit, and other decaying organic matter. ▪ Fruit flies seen hovering around refuse containers and resting on walls and cabinets near refuse containers. ▪ Fruit flies can be distinguished from other small flies by their tan or yellow colored bodies, and some have red eyes. ▪ Potential breeding sites that are inaccessible (such as garbage disposals and drains) can be inspected by taping a clear plastic food storage bag over the opening overnight. Adult fruit flies will emerge and be trapped in the bag.
Survey Frequency / Schedule	▪ Scheduled fly surveillance is generally not necessary. ▪ Scheduled sanitation usually prevents infestations.
Action Threshold(s)	▪ Enough flies to constitute a nuisance indicate the need for treatment.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	Refuse removal: ▪ Empty waste baskets and other refuse containers daily to prevent the buildup of decaying matter that will attract fruit flies. Refuse container sanitation: ▪ Fruit flies are attracted to moist fermenting foods and require only a moist film of decaying organic matter to breed. ▪ Fruit flies lay their eggs in garbage disposals, empty bottles and cans, trash containers, mops and cleaning rags. ▪ Keep all the above items clean. ▪ The bottom and sides of waste containers, particularly large dumpsters and other trash bins, should be periodically steam-cleaned or washed to remove accumulation of organic matter.	All personnel, including: Self-Help Program Participants; JSP
Eliminate Food Sources	▪ Fruit flies are attracted to volatiles produced by ripening fruit. ▪ Store fruit in the refrigerator in order to avoid attracting fruit flies and other pests.	All personnel, including: Self-Help Program Participants
Exclusion	▪ Fruit flies may migrate indoors from breeding sites located outdoors. ▪ Deter entrance into buildings with tight fitting screens and weather proofing around doors and windows.	FMP

Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.

Chemical Control

Application Site	▪ Surfaces where fruit flies are resting or spaces where fruit flies are flying.	
Site Preparation	▪ Fruit fly breeding sites must be concurrently eliminated to fully control fruit flies.	
Sensitive Areas	▪ Fruit fly infestations often occur in food-preparation areas. Ensure all pesticides used in these areas are labeled for use in food preparation areas, and that foods are not contaminated during application. ▪ Pesticide use inside medical facilities should be minimized to avoid exposing patients. Control should focus on sanitation and exclusion, which provide better control and reduce the health risks associated with pesticides. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water sources.	
Restrictions / Regulations / Permits	▪ Do not apply aerosol pesticides in occupied spaces.	
Common Active Ingredients	▪ Pyrethrins ▪ Pyrethroids ▪ Other contact insecticides	
Methods of Application		**Authorized Applicators**
Non-residual space spray or aerosol; residual aerosol	▪ Temporarily controls adult flies. ▪ Does not provide long-term control unless fruit fly breeding sites are also eliminated.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	▪ Fruit fly infestations are generally not an emergency and do not require immediate response. ▪ At sensitive sites, such as medical treatment facilities, immediate response may be necessary.
Time Period to Obtain Control	Most control methods result in rapid kill and control can be obtained in a short period of time.
Level of Control	100% control.
Safety Considerations	▪ Take precautions when using pesticides around food service areas and medical facilities. ▪ Applicator should use personal protective equipment as required by the product label.

Environmental Considerations	▪ Avoid contaminating surface and ground water with pesticides.
Special Applicator Qualifications	▪ Fruit fly control using non-chemical methods may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Resources

http://ipm.ucanr.edu/PMG/GARDEN/FRUIT/PESTS/fruitflies.html

http://pestsense.cahnrs.wsu.edu/Search/MainMenuWithFactSheet.aspx?CategoryId=2&ProblemId=814

IPM Outline
Adult Mosquitoes

Target Pest or Group	Flying adult mosquito species.
Target Area(s)	All areas, installation-wide.
Impact on Mission	▪ Transmission of mosquito-borne diseases to installation personnel. ▪ Nuisance biting interfering with occupational and recreational activities.

Responsibility	Installation Preventive Medicine Technicians (PMTs): ▪ Conduct adult mosquito trapping to identify problem areas and mosquito species. ▪ Map locations of trapping sites. ▪ Conduct disease risk assessments including pathogen testing if that laboratory capability is available. ▪ Provide information to personnel on how to prevent mosquito bites. Pest Management Provider (PMP), In-House or Contract, or Mosquito Control Provider: ▪ Conduct surveys to verify presence of adult mosquitoes at site to be treated. Treat only when and where adult mosquitoes are present. ▪ Use integrated pest management methods to control adult mosquitoes. ▪ Use pesticides in accordance with the label. Natural Resources Manager (NRM): ▪ Review and approve mosquito control operations conducted in sensitive areas to ensure minimal impact on the environment. Integrated Pest Management Coordinator (IPMC): ▪ Coordinate with PMTs, control provider, PMPAR, and natural resource manager to identify mosquito-breeding sites that can be permanently eliminated by non-chemical methods. ▪ Maintain mosquito control operation records. ▪ Conduct pre- and post-treatment surveys to monitor efficacy of control measures.
Responsibility (continued)	Facilities Maintenance Provider/Grounds Maintenance Provider (FMP/GMP): ▪ Keep building window and door screens in good repair. ▪ Remove tall and/or overgrown vegetation that provides resting areas for adult mosquitoes. Self-Help Program Participants: ▪ Conduct integrated pest management to control infestations in outdoor areas using approved Self-Help non-chemical control methods. Unit Commanders and Building Supervisors: ▪ Ensure maintenance of window and door screens. ▪ If screens are not available, keep doors and windows closed when mosquitoes are present. ▪ Ensure distribution of mosquito prevention and control information to personnel. All Personnel: ▪ Use personal protective measures to prevent mosquito bites.

Reporting	▪ PMTs report surveillance results to IPMC and Mosquito Control Provider (if applicable). ▪ Record all pest management operations to the IPMC using the AKARNG Pest Management Treatment Record and report usage to AKARNG IPMC every quarter.

Survey

Survey Method(s)	▪ Conduct surveys using visual assessments (i.e. landing counts) and/or traps at sites where personnel complain about mosquito bites to verify presence of mosquitoes. ▪ Record sites of verified complaints on a map. Use GPS device if available. ▪ Use traps weekly at same locations to reveal seasonal trends in mosquito abundance. Can be used in subsequent years to plan mosquito control program. ▪ Trap mosquitoes for virus testing.
Survey Frequency / Schedule	▪ Ongoing surveys by residents. ▪ Survey prior to application of adulticide. ▪ For visual surveys, post-treatment surveys may be conducted immediately after the treatment. ▪ For traps, within 24 hours after application.
Action Threshold	▪ Light traps: 25 biting females or 1 vector species in an un-baited light trap. ▪ Landing counts: 4 per 15 minutes. ▪ Disease emergencies declared: light traps: 1 female of a species which has been identified as carrying disease within 5 miles of base caught in a trap. NOTE: Action thresholds can be changed on advice of a DOD entomologist or State Public Health Department personnel.

Non-Chemical Control

Type	Method	Responsibility
Personal Protection	▪ Encourage use of repellents when outdoors in mosquito-infested areas. ▪ Products with the active ingredient diethyl toluamide (DEET) are most effective. ▪ Picaridin (KBR 3023) and IR3535 are also effective. ▪ Avoid outdoor activities at dusk and during the evening hours to lessen chances of being bitten. ▪ Wear long-sleeved shirts and pants when outdoors in mosquito-infested areas.	All personnel, including: Self-Help Program Participants

Exclusion / Pest Proofing	▪ Window and door screens. ▪ Remove tall weeds and overgrowth to remove possible resting areas for mosquitoes.	All personnel, including: Self-Help Program Participants; FMP; GMP
Traps	▪ Propane powered trapping devices that use heat and a chemical attractant have been shown to be effective for small to moderate area control of certain species of mosquitoes.	All personnel, including: Self-Help Program Participants

Chemical Control

Application Site	When the use of non-chemical methods and larvicide do not control adult mosquitoes to an acceptable level, apply adulticides based on surveillance information and risk of mosquito-borne disease.
Site Preparation	▪ Survey treatment site prior to application to ensure presence of flying mosquitoes. ▪ Ensure building occupants are given warning of spray operations if they will be in the area during treatment. They should be advised to stay indoors and keep doors and windows closed during spraying. ▪ Check for thermal inversion (the ground is cooler than the air) to ensure pesticide stays close to ground. ▪ Check for light wind (3-5 mph) perpendicular to path of vehicle travel to maximize swath width. ▪ Check direction of wind and ensure pesticides do not drift into environmentally-sensitive areas. The pesticide label will indicate what animal species are at risk for pesticide poisoning. ▪ Survey area surrounding treatment area to ensure that bee hives will not be in the path of pesticide drift.
Sensitive Areas	▪ All ULV and aerial applied pesticides may affect aquatic organisms especially fish. Care should be taken to ensure proper insecticide droplet size, timing of application, environmental conditions and calibration of equipment.
Restrictions / Regulations / Permits	▪ Pesticide applications to, over, or near waters of the US may require coverage under a NPDES Aquatic Pesticide Permit depending on size of treatment area.
Common Active Ingredients	▪ Naled ▪ Malathion ▪ Permethrin ▪ Resmethrin ▪ d-Phenothrin (Sumithrin) ▪ Prallethrin ▪ Etofenprox ▪ Various Herbicides (for habitat reduction)

Type	Method	Responsibility
Mosquito Adulticides	▪ Apply with ULV or fog generating ground equipment. ▪ Some chemicals may be corrosive and areas where cars are parked should be avoided or owners notified prior to application.	In-House PMP; Contracted PMP; Mosquito Control Provider
Aerial Application of Adulticides:	▪ Emergency control operations as the result of a disease outbreak may require large area application of an adulticide. ▪ Aerial spraying with an appropriately labeled pesticide and application equipment may be used. ▪ An Aerial Application Statement of Need must be prepared by the IPMC and approved by the ARNG PMC prior to aerial application of pesticides. ▪ Additional NEPA documentation and permitting may be required.	Contracted PMP; Mosquito Control Provider
Herbicides	▪ Herbicides may be used to remove vegetation where removal by mechanical means is impractical.	In-House PMP; Contracted PMP
Special Applicator Qualifications	▪ All PMP and Mosquito Control Providers applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators.	

Additional Information

See AFPMB Technical Guide No. 13 for information on ULV application of pesticides: http://www.acq.osd.mil/eie/afpmb/docs/techguides/tg13.pdf

IPM Outline
Larval Mosquitoes

Target Pest or Group	*Culex, Culiseta, and Anopheles* mosquito larvae that live in permanent or semi-permanent water sources and *Culex, Culiseta,* and *Aedes* mosquito larvae that prefer to live in manmade structures and containers.
Target Area(s)	Drainage ditches, ponds, freshwater marshes, catch basins, culverts, backyard ponds, planters, and gutters.
Impact on Mission	Development into adults that cause: ▪ Transmission of mosquito-borne diseases to installation personnel. ▪ Nuisance biting interfering with occupational and recreational activities.

Responsibility	Preventive Medicine Technicians (PMTs): ▪ Survey and identify larval breeding sites in ditches, ponds and marshes. ▪ Map locations of breeding sites. ▪ Conduct disease risk assessments. Pest Management Provider (PMP), In-House or Contract, or Mosquito Control Provider: ▪ Conduct surveys to verify presence of larvae at site to be treated. ▪ Use integrated pest management methods to control mosquito larvae. ▪ Use pesticides in accordance with the label. Natural Resources Manager (NRM): ▪ Review and approve mosquito control operations conducted in sensitive areas to ensure minimal impact on the environment. Grounds Maintenance Provider/Facilities Maintenance Provider (GMP/FMP): ▪ Coordinate with IPMC to eliminate mosquito breeding sites. ▪ Keep building gutters and ponds clean. Integrated Pest Management Coordinator (IPMC): ▪ Coordinate with PMTs, PMP/mosquito control provider, GMP/FMP and NRM to identify mosquito-breeding sites that can be permanently eliminated by non-chemical methods. ▪ Maintain mosquito control operation records.
Responsibility (continued)	Self-Help Program Participants: ▪ Conduct integrated pest management to control infestations in outdoor areas using approved Self-Help control methods. Unit Commanders and Building Supervisors: ▪ Ensure that building occupants keep premises clear of clutter that can hold water and become breeding sites. ▪ Ensure distribution of mosquito prevention and control information to personnel.
Reporting	▪ PMTs report surveillance results to IPMC and Mosquito Control Provider (if applicable). ▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Maps should be used to identify water-holding sites. Conduct ground truthing to verify presence of sites. ▪ Record all water-holding sites on a map or on a GPS receiver regardless of whether larvae are found or not. ▪ Survey water-holding sites for larvae. Use a dipper to take water samples. Dip as follows: • 1 dip/10 ft in linear sources • 1 dip/100 ft^2 in wide sources • 2 dips/ source when small source (i.e. catch basin) ▪ For the first two sources dip until larvae are found, then record number of dips after that; do not count negative dips prior to this. ▪ Record quantity as # larvae / dip. Record negative sources. ▪ Mark locations for treatment or treat immediately. ▪ All positive larval sites will be identified on the map as larval sampling stations. ▪ Continue to look for and identify additional water-holding and breeding sites.
Survey Frequency / Schedule	▪ Ongoing surveys by all personnel for presence of larvae in manmade structures and containers. ▪ Weekly survey of permanent or semi-permanent sites. ▪ Survey prior to application of larvicide and within 24 hours after application. (This method cannot be used after application of methoprene because it is a slow-acting larvicide.)
Action Threshold	▪ One or more larvae per dip.

Non-Chemical Control

Type	Method	Responsibility
Drainage	▪ Containers such as buckets, wrinkled tarps, garbage cans, wheelbarrows, gutter downspouts and tires should be emptied of water and prevented from collecting water. ▪ Artificial ponds may be drained to eliminate breeding sites.	All personnel, including: Self-Help Program Participants
Cavities that Cannot be Eliminated or Drained	▪ Fill holes and low spots with sand or pea gravel. ▪ Fill tree cavities with spray foam sealant.	All personnel, including: Self-Help Program Participants

Vegetation Removal/ Irrigation	▪ Aquatic vegetation encourages mosquito breeding by slowing down water movement in ditches and streams and by providing larvae with protection from predators. Remove emergent and floating vegetation mechanically. ▪ Carefully irrigate lawns and gardens in order to prevent water from standing for several days. ▪ Lawns and landscapes should be irrigated properly to prevent over watering and run-off that can collect and produce mosquitoes.	GMP/FMP
Mosquito Fish	▪ *Gambusia affinis*, or mosquito fish, feed on mosquito larvae and other small aquatic animals and can eliminate and prevent mosquito breeding. ▪ Mosquito fish are often introduced into a water source for long-term control after initial treatment with a larvicide.	NRM coordinates

Chemical Control

Application Site	When non-chemical methods do not control pests to an acceptable level, apply larvicides to sources of water based on surveillance information.
Site Preparation	▪ Survey treatment site prior to application of larvicides to ensure that the majority of mosquitoes are in larval stage. Larvicides are not effective on pupae.
Sensitive Areas	▪ Some permanent and semi-permanent water sources may be habitats for birds, fish and other animals. Alterations, such as vegetation removal or drainage, introduction of fish or herbicide application may have significant impact on these habitats. ▪ Some drainage channels drain into environmentally sensitive habitats and pesticide use may have adverse effects.
Restrictions / Regulations / Permits	▪ Pesticide (including larvicide) applications to, over, or near waters of the US may require coverage under a NPDES Aquatic Pesticide Permit depending on size of treatment area.
Common Active Ingredients	▪ *Bacillus thuringiensis subspecies israelensis* (BTI) ▪ Methoprene and other Insect Growth Regulators (IGRs) ▪ Monomolecular Surface Filming Agents ▪ Herbicides (for habitat reduction)

Type	Method	Responsibility
BTI (Briquettes/ Dunks)	▪ Apply briquettes/dunks by hand as directed on the product label.	Self-Help Program Participants; In-House PMP; Contracted PMP; Mosquito Control Provider
BTI (Granules or Liquid)	▪ Apply by hand (granules), hand compressed sprayer and hydraulic sprayer (liquid), or manual and powered granule spreader. ▪ Liquid is typically more cost-effective when applied to open water. ▪ Granules are more effective when water is covered by heavy vegetation.	In-House PMP; Contracted PMP; Mosquito Control Provider
Methoprene and other IGRs	▪ Apply by hand or manual or powered granule spreader (granules and pellets), as briquets, or hand-compressed and hydraulic sprayer (liquid). ▪ Methoprene slow-release briquets can be applied as a pre-flood application to dry water-holding areas that have been surveyed and are known to produce mosquitoes. ▪ Risk assessments for the effects of methoprene on non-target aquatic invertebrates have shown mixed results and may require trials in test plots before using in environmentally sensitive areas.	In-House PMP; Contracted PMP; Mosquito Control Provider
Surface Films	▪ Surface films lower the water surface tension, preventing suspension of the larvae and pupae at the water surface, subsequently suffocating them. ▪ Not effective for all species of mosquitoes. ▪ Apply by hand compressed sprayer.	In-House PMP; Contracted PMP; Mosquito Control Provider
Herbicides	▪ Herbicides labeled for aquatic sites may be used to remove vegetation where removal by mechanical means is not feasible or practical.	In-House PMP; Contracted PMP; Mosquito Control Provider
Special Applicator Qualifications	▪ Mosquito larvae control using approved BTI briquets/dunks may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP and Mosquito Control Providers applying pesticides (including larvicides) must be DOD or State-certified as pesticide applicators.	

Resources

https://www.epa.gov/mosquitocontrol/controlling-mosquitoes-larval-stage
http://www.cdc.gov/zika/vector/integrated_mosquito_management.html

IPM Outline
Rodents (Mice and Rats)

Target Pest or Group	Norway rats, roof rats, house mice, and deer mice.
Target Area(s)	Buildings, utility vaults, and other structures.
Impact on Mission	▪ May transmit disease ▪ Contaminate food ▪ Damage equipment ▪ Nuisance / morale
Scope	Only commensal rodents and those that are frequent pests of structures. Does not include landscape rodents such as gophers and squirrels.
Responsibility	▪ All personnel: Ensure sanitation and other measures to prevent introduction and propagation of pests. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and around the perimeter of buildings using non-chemical control methods. ▪ Pest Management Provider (PMP): Conduct integrated pest management to control infestations. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested. ▪ Grounds Maintenance Provider (GMP): Remove potential food sources (i.e. fruit on trees) and create barriers (i.e. by vegetation removal) around buildings to deter rodent invasion. ▪ Natural Resources Manager (NRM): Provide guidance when rodent control operations may impact endangered or threatened species or species of concern.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Methods	▪ Visual inspections: observations of rodents or signs of rodents, such as nests, rubmarks, gnawing, earth mounds, burrows, etc. ▪ Use of tracking powder. ▪ Personnel complaints: including information on when pests were observed, where, and how many. ▪ Conduct pre- and post-treatment surveys to determine whether control operations were effective. ▪ Use of ultraviolet inspection lights (rodent urine and hair will fluoresce under UV light).
Survey Frequency / Schedule	▪ Daily observation by building occupants. ▪ Routine facilities inspections by PMP or pest control service provider.
Action Threshold(s)	Sighting of any rodent or sign of rodent in or immediately surrounding the building.

Non-Chemical Control

Type	Method	Responsibility
Sanitation	▪ Remove or prevent access to all potential food and harborage sources inside and outside of buildings.	All personnel, including: Self-Help Program Participants
Eliminate Standing Water	▪ Fix plumbing leaks around buildings.	FMP
Rodent Proofing	▪ Trim ornamental plants and trees to remove harborage. ▪ Seal holes that may serve as entryways through exterior walls. ▪ Trim tree limbs so that they are at least 6 feet from buildings. ▪ Trim vegetation around buildings. ▪ Clean up debris from inside and around buildings. ▪ Request support from facilities maintenance and/or grounds maintenance provider if necessary.	FMP, GMP
Habitat Modification	▪ For field mice: removing vegetation and disking soil in a barrier 50 ft. around buildings will prevent rodent invasion. This is usually done after area wide rodenticide application. ▪ Use of native landscaping will tend to reduce peridomestic and landscape rodent infestations. Avoid heavy ground covers that provide harborage and cover. This type of planting allows rodents to move into buildings from unimproved grounds.	GMP

Trapping	▪ Glue boards, snap traps, or other mechanical trapping devices. (see health precautions below).	Self-Help Program Participants, In-House PMP; Contracted PMP
Education	▪ Awareness of the importance of sanitation on preventing rodents. ▪ Understanding and preventing diseases associated with rodents.	In-House PMP; IPMC
Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Myth: Allowing cats to live around buildings controls rodent population. Reality: Cats are inefficient at rodent control especially when they are already being fed. In many situations, cats pose greater hazards than rodents.	

Chemical Control

Application Site	Apply pesticides as required based on survey information to areas where rodents are known to harbor, feed or travel.
Site Preparation	Pre-treatment procedures: ▪ Pesticide applicators shall contact building occupants prior to pesticide applications. ▪ All bait locations must be mapped. ▪ All Bait stations should be secured to prevent removal. ▪ Bait stations must be properly labeled and marked with the date on which they were placed. Post treatment procedures: ▪ Bait stations should be checked to ensure that stations are refilled, intact and no bait has fallen from them. ▪ Remove bait stations once post-treatment surveys indicate that rodents have been eliminated.
Sensitive Areas	▪ Areas where people and non-target animals may come into contact with the rodenticide. ▪ Areas where endangered or threatened rodent species occur and may consume bait. ▪ Areas where rodents may be the primary food source for an endangered or threatened animal. ▪ Habitat destruction to reduce rodent food sources or harborage may also be destructive to critical habitats of endangered or threatened species. ▪ The IPMC must consult the NRM before any pest management operations are conducted outdoors on unimproved grounds or wildlands.

Common Active Ingredients	Second generation anti-coagulants: ▪ Brodifacoum ▪ Bromadiolone ▪ Difenacoum ▪ Difethialone First generation anti-coagulants: ▪ Diphacinone ▪ Chlorophacinone ▪ Warfarin Others: ▪ Zinc phosphide ▪ Cholecalciferol ▪ Bromethalin Fumigants: ▪ Aluminum phosphide	
Types of Pesticides		**Authorized Applicators**
Bait	▪ Anticoagulant bait: Multi or single dose blocks or pellets; toxicant effect is delayed. ▪ Single dose acute toxicant bait: Acute toxicant effect. ▪ Liquid bait: Used in areas where water sources are scarce. ▪ All rodenticide baits must be applied in tamper-proof bait stations. ▪ Baits may also be applied directly into burrows in some circumstances and when explicitly allowed according to the product label.	In-House PMP; Contracted PMP
Fumigants	▪ Used for control of rodents in burrows. ▪ Fumigants are often restricted use pesticides and may require additional record-keeping and certification.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	▪ Rodents indoors require an immediate response. ▪ High priority areas (i.e. food service establishments) with known rodent problems may require continuous surveillance and subsequent baiting as part of a recurring contract.
Time Period to Obtain Control	▪ Trapping may take several days to complete. ▪ Most rodenticides have a delayed effect and may take 24-48 hours to kill the rodent.
Level of Control	100% indoors.

Safety Considerations	▪ Active ingredients in rodenticides are highly toxic to humans and precautions must be taken to prevent human exposure. ▪ Applicators must wear proper protective equipment as required by the product label.
Environmental Considerations	▪ Rodenticides can adversely impact non-target animals through direct poisoning or secondary poisoning. ▪ Traps, such as sticky traps, may catch non-target animals such as reptiles and birds. Sticky traps should only be used indoors.
Special Applicator Qualifications	▪ Rodent control using mechanical methods (traps) may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Additional Information

Precautions on indoor rodent control:

- Most rodents are infested with ectoparasites (fleas, mites, lice) that may also infest or transmit disease to humans. Ectoparasite control should be conducted prior to eliminating (trapping or rodenticides) rodents.
- Rat control indoors using rodenticides should be avoided. The most commonly used rodenticide baits have a delayed toxic effect that does not kill the rodent until hours (or days for multi-dose) after they have consumed the bait. Rodents may die in walls and other voids where the carcass is difficult to retrieve leading to odor problems caused by the decaying carcass.

Disease Prevention:

Rodents can harbor a number of human disease agents; among them are Hantavirus and plague. Precautions must be taken when working in rodent infested areas. Rodent feces and dried urine may contain Hantavirus that is transmitted when these waste materials are inhaled. Precautions should also be taken when handling dead rodents in traps, and when carcasses are found after rodenticide use. The following precautions should be taken:

- Avoid disturbing feces and other rodent waste when entering enclosed spaces. Use a fitted respirator with high efficiency particulate air (HEPA) filter if necessary.
- Soak rodent waste and dead rodents with a household disinfectant or 10% bleach solution before removing.
- Wear gloves when cleaning or picking up rodent carcasses. Put material in a double plastic bag and dispose of in regular trash.

Resources

House mice: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7483.html

Rats: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74106.html

IPM Outline
Spiders

Target Pest or Group	▪ Various spiders. ▪ Medically important spiders are the black widow (*Latrodectus hesperus*), the desert recluse (*Loxoceles deserta*) and the brown recluse (*Loxoceles reclusa*). The hobo spider (*Tegenaria agrestis*), found in the Pacific Northwest, may also be of medical concern.
Target Area(s)	Areas where spiders are unwanted.
Impact on Mission	▪ Painful and serious bites. ▪ Fear of spiders can impact mission. ▪ Webs are a nuisance.
Scope	Medically-important spiders in occupied areas.
Responsibility	▪ All personnel: Ensure proper sanitation of all living and working spaces as spiders harbor in areas that are rarely disturbed. ▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors and in outdoor living areas and around the perimeter of buildings using approved Self-Help control methods. ▪ Custodial Services Provider (CSP): Provide regular cleaning services. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude and minimize pest infestations as requested. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control infestations.
Reporting	▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter. ▪ Refer serious spider bites to medical personnel.

Survey

Survey Method(s)	▪ Visual inspections: ▪ Look for spiders and webbing in areas where people may be at risk for spider bites. ▪ Personnel complaints: including information on when pests were observed, where, and how many. ▪ Conduct pre and post-treatment surveys to determine whether control operation was effective.
Survey Frequency / Schedule	▪ Daily observation by building occupants. ▪ Monthly inspections outdoors around buildings by PMP to identify spiders.
Action Threshold(s)	1 medically important spider per room.

Non-Chemical Control

Type	Method	Responsibility
Prevent Contact with Spiders	▪ Be cautious when entering areas that are infrequently visited and disturbed, such as storage sheds, wood piles, attics, utility sheds, etc.	All personnel, including: Self-Help Program Participants
Sanitation	▪ Routinely clean out storage areas, rotating boxes of stock and minimizing use of cardboard boxes. ▪ Vacuum carpets and furniture routinely. ▪ Remove webbing from ceilings.	All personnel, including: Self-Help Program Participants; CSP
Mechanical Removal	▪ Smash the spider. ▪ Place a jar over the spider and slip a piece of paper under the opening. Relocate the spider outdoors. ▪ Vacuum spiders and webs while cleaning. Use a wet/dry vacuum filled with water or carefully empty bag when done.	All personnel, including: Self-Help Program Participants
Pest Proofing	▪ Avoid attracting flying insects to buildings with exterior lighting. Reducing flying insects near buildings will deny spiders their food. Save energy and turn off lights, or use motion detectors or colored lamps that do not attract insects readily. ▪ Seal cracks in the foundation and other parts of the structure and gaps around windows and doors.	FMP
Education	▪ Emphasize the importance of sanitation in preventing spiders. ▪ Education and awareness to reduce the fear of spiders and to highlight the benefits of spiders.	In-House PMP, IPMC

Prohibited Items	▪ Use of ultrasonic pest repelling devices is prohibited.

Chemical Control

Application Site	▪ Pesticides are a last resort for recurring problems, since non-chemical control methods, particularly mechanical, are very effective. ▪ Apply pesticides as required based on survey information to areas where spiders are found.	
Site Preparation	Pre-treatment procedures: ▪ Visual inspections. ▪ Pesticide applicators will contact building occupants prior to pesticide applications. Occupants must not be present during indoor spraying. Post treatment procedures: ▪ Remove webbing.	
Sensitive Areas	▪ Outdoors where children or pets may be exposed to pesticides. ▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water.	
Restrictions	▪ Preventive baseboard spraying in the absence of a pest is prohibited.	
Active Ingredients	▪ Pyrethroids ▪ Silica gel ▪ Other insecticides	
Types of Pesticides		**Authorized Applicators**
Liquid aerosols	▪ Most indoor use insecticides do not leave a residual and require direct application to the spider.	In-House PMP; Contracted PMP
Dusts	▪ Dusts, such as silica gel, that are formulated with pyrethrin can provide residual control. ▪ Dusts are more effective in reducing insects that are a food source for spiders, rather than working directly on the spiders themselves.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Within 24 hours in high risk areas where spiders pose an imminent threat to public health.
Time Period to Obtain Control	Immediate. Most insecticides used are contact toxicants and should result in immediate control.
Level of Control	100% indoors in high risk areas. Control to acceptable levels in other areas.

Safety Considerations	▪ Applicators must use personal protective equipment as required by the product label. ▪ Insecticide liquid and dusts shall not be applied to occupied spaces. ▪ Allow for ventilation of spaces after liquid insecticides have been applied. ▪ Clean food preparation surfaces after treatment.
Environmental Considerations	▪ Pyrethroid insecticides can be highly toxic to aquatic organisms.
Special Applicator Qualifications	▪ Spider control using mechanical/physical methods ONLY may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.

Additional Information

The greatest problem posed by spiders is arachnophobia, the fear of spiders. Most spiders are harmless and are very beneficial in controlling insects around buildings. Education of personnel is an important part of control.

Resources

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7442.html (general spider information)
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7488.html (hobo spider information)
http://ipm.ucanr.edu/PMG/PESTNOTES/pn7468.html (recluse information)
http://spiders.ucr.edu/recluseid.html. (brown recluse identification)

IPM Outline
Stinging Insects

Target Pest or Group	Wasps, hornets, yellowjackets and bees.
Target Area(s)	Outdoors.
Impact on Mission	▪ Stinging insects can cause painful stings, massive envenomization, or serious allergic reactions in personnel. ▪ Hives and nests can cause property damage and attract other unwanted pests.
Scope	▪ Outdoors where stinging insects are a threat to personnel. ▪ In occupied buildings and outbuildings where stinging insects nest.
Responsibility	▪ Self-Help Program Participants: Conduct integrated pest management to control infestations indoors, in outdoor living areas and around the perimeter of buildings using approved Self-Help control methods. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct inspections and integrated pest management to control infestations through killing or removal. Remove wasp/hornet/yellowjacket nests and beehives in buildings. Relocate European honey bee swarms and beehives. ▪ Facilities Maintenance Provider (FMP) and Grounds Maintenance Provider (GMP): Report any stinging insect nest sightings.
Reporting	▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the AKARNG IPMC quarterly. ▪ Unusually aggressive bee colonies should be immediately reported to the IPMC.

Survey

Survey Method(s)	▪ Visual inspections:
	  ▪ Observation of insect nesting or swarming.
	  ▪ Routinely examine buildings for openings where wasps, bees or other stinging insects appear to be entering and exiting.
	▪ Personnel complaints: including information on when pests were observed, where, and how many.
	▪ Identify whether bees are swarming or nesting. (see remarks below).

Survey Frequency / Schedule	▪ As observed by personnel.
Action Threshold	▪ Nesting bees, wasps, hornets or yellowjackets near populated areas require immediate response. ▪ Swarming bees, especially near areas where few people are found, should be left alone. ▪ Swarming bees in areas that cannot be avoided by people and appear to be a threat should be controlled or relocated. ▪ Individual bees are foraging and are docile, but may be nesting nearby.

Non-Chemical Control

Type	Method	Responsibility
Discourage and Eliminate Nests	▪ Nests should be removed or relocated by trained personnel.	In-House PMP; Contracted PMP
Avoidance	▪ Stay away from stinging insects if possible.	All personnel
Eliminate Food Sources	▪ Feed pets indoors. ▪ Cover trash cans.	All personnel
Eliminate Standing Water	▪ Some stinging insects are attracted to water. ▪ Repair leaking outdoor faucets and other mechanical water sources. ▪ Eliminate standing water.	FMP; GMP

Traps (Wasps and Yellowjackets)	Wasps, hornets and yellowjackets: ▪ Trapping should start in the spring and be continued through the summer. Early elimination of the queen will reduce the size of populations later in the year. ▪ Lure traps – baited with a chemical attractant or with meat. ▪ Water traps – Meat hung on a string 1-2 inches over a bucket of soapy water. Cover bucket with mesh to exclude other animals. Bees: ▪ Swarming bees can be lured into a trap that mimics a nesting site. ▪ If not within the range of Africanized Honey Bees (see Note below), trapped bees can be relocated to less populated areas.	In-House PMP; Contracted PMP
Mechanical Removal	▪ Wet/dry vacuums may be used to remove bees, but this should only be done by trained personnel.	In-House PMP; Contracted PMP
Pest Proofing	▪ Seal holes in exterior walls of buildings. Request support from facilities maintenance provider if necessary. ▪ Remove debris that can serve as nesting areas. ▪ Cover tree holes or fill with expanding spray foam.	FMP; GMP

Chemical Control

Application Site	▪ Apply pesticides, as required based on survey information, to areas where stinging insects are known to harbor or rest.
Site Preparation	Pre-treatment procedures: ▪ Determine the extent of nesting in buildings to determine whether hive removal will be necessary after removing bees. ▪ Ensure the safety of people in the immediate area of the treatment. Do not allow unprotected bystanders to watch control procedures ▪ Pest management personnel should don protective bee suits. Post-treatment procedures: ▪ Remove dead bees and hive material from buildings. The melting of hive materials can cause extensive damage to building structures as well as attract other pests.
Sensitive Areas	▪ Places where personnel may be harmed by bees or pesticide application. ▪ Buildings that may be damaged by hives.

Restrictions	▪ Do not apply water-based aerosol pesticides in vicinity of electrical equipment. ▪ Do not apply liquid, aerosol or dust formulations of insecticides in occupied spaces.	
Common Active Ingredients	▪ d-trans Allethrin ▪ Cypermethrin ▪ Deltamethrin ▪ Ethofenprox ▪ Esfenvalerate ▪ lambda-Cyhalothrin ▪ n-Octyl bicycloheptene dicarboximide ▪ Permethrin ▪ d-Phenothrin ▪ Piperonyl butoxide ▪ Prallethrin ▪ Pyrethrins ▪ Prallethrin	
Types of Pesticides		
Aerosol Knockdown Agents	▪ High pressure aerosols that can be applied from a long distance can be used. ▪ Application of these insecticides results in a rapid knockdown of the insects.	Self-Help Program Participants, In-House PMP; Contracted PMP
Dusts	▪ Dusts can be applied to nesting areas.	In-House PMP; Contracted PMP
Baits	▪ Baits mixed with a toxicant can be used for wasps, hornets and yellowjackets.	In-House PMP; Contracted PMP
Environmental Considerations	▪ Ensure that insecticides do not enter drains, streams, lakes and other surface water. ▪ Some pollinators (including bees) are protected under the Endangered Species Act. Check with your Environmental Natural Resources office to determine if you have any protected species of bees in your area.	
Special Applicator Qualifications	▪ Stinging insect control using approved aerosol insecticides may be used by non-certified personnel as part of the Self-Help Program. ▪ All PMP applying pesticides must be DOD or State-certified as pesticide applicators.	

Resources

http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7450.html

IPM Outline
Vertebrate Wildlife Pests

Target Pest or Group	Vertebrate pests, such as: ▪ Raccoons ▪ Skunks ▪ Squirrels and chipmunks ▪ Voles and gophers ▪ Moles and shrews ▪ Groundhogs ▪ Beavers ▪ Opossums ▪ Deer ▪ Elk ▪ Moose ▪ Coyotes, bobcats and other carnivores ▪ Other nuisance wildlife (For control of feral dogs and cats, bats, birds and snakes, please refer to their specific IPM outlines).
Target Area(s)	Areas near buildings or populated areas.
Impact on Mission	▪ Wild and feral animals are dangerous when they are cornered and can become aggressive. ▪ Many wild and feral animals may carry rabies and other diseases and parasites that can infect humans. ▪ Nuisance wildlife can cause severe damage to buildings, other structures and equipment.
Scope	▪ Installation-wide.

Responsibility	▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management of vertebrate pests. ▪ Facilities Maintenance Provider (FMP): Perform facilities repairs and improvements that exclude vertebrate pests from buildings. ▪ Base Operation Support: Ensure that dumpsters and trash cans are emptied on schedule and that they are securely covered to prevent entry by vertebrate pests. ▪ Natural Resources Manager (NRM): Provides information regarding any regulatory protections of vertebrate pests. ▪ All Installation Personnel: Practice good sanitation and do not feed wild and feral animals to prevent attracting them.
Reporting	▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual sighting of vertebrate pests or signs of raccoons. ▪ A number of vertebrate pests are nocturnal, so visual surveys may need to be conducted at night. ▪ Verify personnel reports of vertebrate pest activity.
Survey Frequency / Schedule	▪ As needed.
Action Threshold	▪ Any verified sighting of a vertebrate pest when it enters a building or poses a safety or health hazard.

Non-Chemical Control

Type	Method	Responsibility
Exclusion	▪ Use lids / covers that can be secured on dumpsters and trash cans. ▪ Use hardware cloth and metal flashing to cover holes and cracks to prevent entry of vertebrate pests into buildings. ▪ Repair leaking plumbing to remove source of water for vertebrate pests.	FMP

Trapping	▪ Live cage-type traps may be used for most wildlife and for feral cats and dogs. ▪ Use cat food containing fish or canned tuna as a bait for most vertebrate pests. ▪ Ensure that the target pest cannot reach through the back or side of the trap to steal the bait. ▪ Secure trap to the ground to prevent the animal from tipping it over. ▪ Lethal trapping may be appropriate for instances of nuisance wildlife that is not easily relocated or is a non-native species. ▪ Extreme care must be taken to prevent killing non-target animals. ▪ **All trapping of nuisance wildlife must be done with coordination and oversight of the NRM.**	PMP In-House or Contract; NRM coordination
Food Removal	▪ Deny access to trash and other sources of food. ▪ Prevent personnel from feeding wildlife and feral animals.	All personnel

Shooting	▪ Shooting may be used to control small populations in areas where:
	  ▪ Shooting is legal.
	  ▪ Shooting can be safely conducted.
	  ▪ Appropriate permits have been obtained.
	▪ Qualified marksmen should perform the shooting.
	▪ Not generally practical for large populations.
	▪ **All shooting of nuisance wildlife must be done with coordination and oversight of the NRM.**
		Qualified PMP

Prohibited Practices	▪ Use of ultrasonic pest repelling devices is prohibited. ▪ Relocation of trapped animals greater than one mile from point of capture is prohibited. ▪ Killing, trapping, relocating or harassing any wildlife protected under the Endangered Species Act is prohibited.	
Special PMP Qualifications	▪ All PMP performing vertebrate pest control should hold appropriate licenses and permits to legally capture, transport and release (or euthanize) nuisance wildlife and vertebrate pests. ▪ Vertebrate pests should never be handled alive or dead with bare hands. ▪ All PMP performing vertebrate pest control should have pre-exposure immunization against rabies.	

Chemical Control

Chemical control is rarely used for the control of most vertebrate pests.

If sufficient control of vertebrate pests cannot be achieved using the non-chemical controls, contact your IPMC or the ARNG PMC for further guidance. Chemical control of some vertebrate pests may be allowed under certain circumstances. However, all chemical control of vertebrate pests must be in accordance with a site-specific IPM outline/SOP for chemical control of that pest.

Additional Information

Beaver management: http://agrilifecdn.tamu.edu/txwildlifeservices/files/2016/07/fs_beaver.pdf
Coyote management: http://icwdm.org/handbook/carnivor/coyotes.asp
Deer management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74117.html
Groundhog/woodchuck management: http://icwdm.org/handbook/rodents/woodchucks.asp
Ground squirrel management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7438.html
Tree Squirrel management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74122.html
Vole management: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7439.html

IPM Outline
Weeds and Unwanted Vegetation

Target Pest or Group	Grasses, broadleaf weeds and woody weeds.
Target Area(s)	Fence lines, road shoulders, parking lots, around fuel storage tanks, utility easements, sidewalks, landscaped areas, lawns and turf, recreational fields and ranges.
Impact on Mission	▪ Fire hazard. ▪ Dense weeds encourage rodent and other pest infestations. ▪ Weeds along roadways hide wildlife increasing the risk for vehicle and animal collisions. ▪ Weeds impair sight-lines along security fences and on training ranges. ▪ Degrades installation appearance.
Scope	Improved and semi-improved grounds, rights-of-way, fence lines, paved areas and ranges.
Responsibility	▪ Self-Help Program Participants: Conduct integrated pest management to control weeds using approved Self-Help control methods. ▪ Pest Management Provider (PMP), In-House or Contract: Conduct integrated pest management to control weeds. ▪ Grounds Maintenance Provider (GMP) and/or Facilities Maintenance Provider (FMP): Mechanical control methods and/or mowing to reduce height of weeds.
Reporting	Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter.

Survey

Survey Method(s)	▪ Visual observation and identification during routine inspections. ▪ Annual surveys of roadways and fence lines. ▪ Personnel complaints of weeds impeding mission, contributing to pest infestations, fire hazard or degradation of aesthetics. ▪ Conduct pre and post-treatment surveys to determine whether control operations were effective.
Survey Frequency / Schedule	▪ Daily inspection of areas with extreme fire hazard. ▪ Weekly inspection of landscaped areas. Can be done in conjunction with regular landscape maintenance.
Action Threshold(s)	▪ There is a zero tolerance for weeds installation areas where ordinance or other flammable/explosive materials are stored, due to fire hazard. Consequently, visual sighting of any weed warrants control.

Non-Chemical Control

Type	Method	Responsibility
Mechanical Removal	Pulling or hoeing: ▪ Pull weeds either by hand or with tools that work well on large plants, such as a weed. ▪ Pull up as much root as possible since plants can re-sprout new shoots from the root. ▪ Digging or hoeing is sometimes used in conjunction with pulling to remove the entire root. ▪ Follow-up work will be necessary until desired plants become well established. Mowing: ▪ Mow unwanted plants before they have a chance to set seeds. Chaining: ▪ Drag heavy chains across the tops of target weeds, destroying the foliage and reducing weed density. Root plowing: ▪ Plow with horizontal blades beneath the surface of the ground to sever the root system of target weeds.	Self-Help Program Participants, In-House PMP, Contracted PMP, GMP (or FMP)
Steam	▪ Apply steam to foliage to kill plants. ▪ This technique is unlikely to be cost effective for most weed-control situations.	In-House PMP, Contracted PMP, GMP (or FMP)
Plant Competition	▪ Plant areas with desirable low-growing plants, such as native grasses, to shade-out and outcompete weeds.	GMP (or FMP)

Weed Control Mat	▪ Apply weed control matting. ▪ Matting is composed of synthetic polyester fibers spun tightly together to prevent weed growth by blocking sunlight while still allowing water percolation for drainage. ▪ The matting is unrolled to cover weed-infested areas.	GMP (or FMP)
Improve Vigor of Desirable Plants	▪ Healthy landscaping plants are better able to compete with weeds, thereby slowing the rate of weed invasion. ▪ Aerate and remove thatch in lawns. ▪ Maintain proper watering, fertilizing, and pruning schedules for desirable landscape plants. This is particularly important for managing crabgrass in turf.	GMP (or FMP)
Mulch	▪ Apply course-textured mulches up to 4 inches deep. ▪ Apply fine-textured mulches to a depth of about 2 inches. ▪ Organic mulches: wood chips, sawdust, yard waste, and bark chips. ▪ Inorganic mulches: sand, gravel and pebbles. Use a porous landscape fabric underneath to prevent mulch from sinking into soil. ▪ Synthetic mulches: include geotextiles and landscape fabric. Can be used in conjunction with organic and inorganic mulches.	GMP (or FMP)

Chemical Control

Application Site	When non-chemical methods do not control weeds to an acceptable level, apply herbicides as required based on survey information, to areas where target weeds are problematic.
Site Preparation	<u>Pre-treatment procedures:</u> ▪ Check the local weather forecast. Rain can reduce or negate the effectiveness of an herbicide by washing herbicide off the plant. If precipitation is expected in the next 24-hours, delay application. ▪ Modify irrigation schedule, if necessary. Ensure that sprinklers do not come on immediately following an herbicide application. ▪ Check the local wind conditions. Herbicides can drift and affect non-target plants if applied during windy conditions. ▪ Do not apply herbicides during high temperatures (>95°F), as this can result in excess vaporization of the herbicide. <u>Post-treatment procedures:</u> ▪ Survey the area to establish the efficacy of control. The length of time between application and survey is dependent upon the species of weed being controlled. ▪ Multiple applications may be necessary, particularly if conditions during the first application were too warm, too dry, or too wet.

Sensitive Areas	▪ Use mechanical controls instead of chemical controls whenever possible around playgrounds and areas frequented by children. ▪ Natural areas containing endangered or threatened plant or animal species are normally off-limits for chemical weed control. Do not apply herbicides or allow herbicide drift onto these areas. ▪ Desirable landscape plants. Prevent herbicide drift onto these plants. ▪ Waterways. Avoid storm water runoff of herbicides and do not apply directly to water unless allowed by the label. Many herbicides are highly toxic to aquatic organisms.	
Restrictions/ Permitting	▪ When applying herbicide to riparian areas or other sites near water, use only formulations labeled for aquatic sites. ▪ Herbicide applications to, over, or near waters of the US may require coverage under a NPDES Aquatic Pesticide Permit.	
Prohibited Items	▪ Application of salt to control weeds.	
Common Active Ingredients	▪ Glyphosate ▪ Imazapyr ▪ Dichlobenil ▪ Bromacil ▪ Diuron ▪ Pendimethalin ▪ Prometon ▪ Tebuthiuron ▪ Hexazinone ▪ Dicamba ▪ 2,4-D ▪ Diflufenzopyr ▪ Triclopyr ▪ Metsulfuron methyl ▪ Sulfometuron ▪ Plus others	
Types of Pesticides		**Authorized Applicators**
Ready-to-Use Glyphosate Herbicides	▪ Spray herbicide directly onto the foliage of the weed. ▪ Apply after the weed emerges, but before seed set. ▪ Foliar application is most effective when weeds are young and the weather is clear. ▪ Spot treat weeds growing in paved areas.	Self-Help Program Participants; In-House PMP; Contracted PMP
Pre-Emergent Herbicides	▪ Apply herbicide to the soil before the first leaves emerge to prevent the weed from developing. ▪ Apply pre-emergent herbicides to the soil just before seed germination. ▪ Selective pre-emergent herbicides must be used so that desirable landscape plants are not harmed.	In-House PMP; Contracted PMP

Foliar-Sprayed Post-Emergent Herbicides	▪ Spray herbicide directly onto the foliage of the weed. ▪ Apply post-emergent herbicides after the weed emerges, but before flowering and seed set. ▪ Foliar application is most effective when weeds are young. ▪ Spot treat weeds growing in paved areas.	In-House PMP; Contracted PMP
Soil-Applied Post-Emergent Herbicides	▪ Apply herbicide to the soil around the weed. ▪ The herbicide is absorbed by the plant through its root system.	In-House PMP; Contracted PMP

Contract or Work Considerations

Time Period to Respond	Dependent on service levels. Can be scheduled annually for pre-emergent applications if there is an established history of weed problems.
Time Period to Obtain Control	Dependent on service levels. May take several days before signs of herbicide effect appear.
Level of Control	Dependent on service levels. Complete removal of weeds from sidewalks and other paved surfaces. For fence lines, weed should be low enough to maintain sight lines. Control weeds around fuel tanks to reduce fire risk.
Safety Considerations	▪ Applicators must wear personal protective equipment as required by the product label. ▪ Restrict entry of personnel into treated areas as directed by the product label.
Environmental Considerations	▪ Prevent herbicide drift to non-target areas and prevent contact with desirable plants. Avoid contaminating water.
Special Applicator Qualifications	▪ Small-scale weed control using approved low-toxicity, ready-to-use herbicides may be performed by non-certified personnel as part of the Self-Help Program. ▪ All PMP or GMP applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators.

Additional Information

Correct timing of the herbicide application is often essential for effective weed control. Timing will depend on the species of weed, the mode of action and persistence of the herbicide, non-chemical practices in use, soil conditions, and climate.

Resources

Weed Management in Landscapes:
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7441.html
Weed Management in Lawns: http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74113.html
DOT Roadside Vegetation Management:

https://www.environment.fhwa.dot.gov/ecosystems/vegmgmt.asp

Alaska's Invasive Plant Program: http://plants.alaska.gov/invasives/noxious-weeds.htm

Alaska Plant Materials Center Terrestrial Weed Identification Field Guide: http://plants.alaska.gov/pdf/TerrestrialWeedIdentificationGuide.pdf

IPM Outline
Non-Native, Invasive/Noxious Weeds in Natural Areas, Ranges and Training Areas

Target Pest or Group	Non-native plants that are widespread and adversely affect the habitats they invade, economically, environmentally or ecologically.
Target Area(s)	Natural areas, ranges, riparian areas, training areas, encroachment buffers.
Impact on Mission	▪ Control required by law. ▪ Impacts access to and use of training areas and ranges. ▪ Interferes with mission operations. ▪ Degrades natural habitats. ▪ Impacts endangered and threatened species habitats. ▪ May increase wildfire hazard.
Scope	Installation unimproved grounds.
Responsibility	▪ Natural Resources Manager (NRM): Oversees weed program coordinating detection and control. ▪ Pest Management Provider (PMP), In-House or Contract: Conducts integrated pest management to control weeds. ▪ IPM Coordinator (IPMC): Ensures environmental compliance of the program.

Control Strategy	▪ Develop a plan to determine what resources need protection against invasive species and which plants pose an actual threat. ▪ Use a map to determine problem areas, for planning and measuring success. ▪ Place highest priority on the weeds that have the highest mission impact. ▪ Use the Federal / State Noxious Weed List to help prioritize. ▪ The plan should include solid knowledge of the target plant, such as growing habit, how often it sets seed, months of seed production, etc. and a solid knowledge of the native species whose populations need to be maintained. ▪ Use the following resource: http://plants.usda.gov/java/noxiousDriver - Federal and State Noxious Weed Lists. ▪ Strategy options are generally to eradicate or to control and maintain invasive species at an acceptably low threshold. ▪ One strategy is to map the infestation then break the map into sections depending on the density of the invasive weed. Some areas will be dense and completely overrun, while other patches are relatively free of weeds. Removal efforts should begin in outlier areas that are only lightly infested. Efforts should move gradually from the easiest areas to the more densely infested areas. The densest patches should be eliminated last. Refer to the Bradley Method referenced below. At each step of the way the areas targeted for clean-up must be of a size and quality that goals are achievable within one growing season. ▪ Because of the bank of seeds stored in the soil, weeds will re-sprout for years after the plants have been removed. In the case of some weeds, the seeds can survive for decades. It is important to return and maintain cleared areas until the seed bank has been exhausted. ▪ After weeds have been removed, it is important to recover the area in native plants to crowd out and help stop the reinvasion of invasive species.
Reporting	▪ Record all pest management operations using the AKARNG Pest Management Treatment Record and report usage to the IPMC every quarter. ▪ Report invasive weed control operations to Natural Resources Personnel in cases where weeds are being removed to protect or restore natural habitats. ▪ Reporting of herbicide use and application monitoring to local Water Regulatory Agency is required when the operation is covered under a NPDES Aquatic Pesticide Permit.

Survey

Survey Method(s)	Visual inspection and mapping.
Survey Frequency / Schedule	Ongoing inspection, especially in the spring and summer when plants are easy to identify by their blooms.

Action Threshold(s)	▪ Priority of control of weeds is based upon the Federal and State Noxious Weeds list and impact on mission. ▪ Areas of installations where ordinance or other flammable/explosive materials are stored have zero tolerance for weeds due to fire hazard. Consequently, visual sighting of any weed warrants control.

Non-Chemical Control

Type	Method	Responsibility

Prevention	▪ Preventing just one new invasive weed is of greater conservation benefit in the long run and is far less costly than controlling a widespread rampant pest.
	▪ Block the transport of plant materials onto relatively clean sites or sites that are actively being cleaned.
	▪ Common means of spreading plant materials are:
	  ▪ Tire tread from bicycles and vehicles
	  ▪ Vehicle undercarriages
	  ▪ Boot treads
	  ▪ Dung from horses or other ruminants
	  ▪ Top soil; seeds are often brought in with imported soils
	  ▪ Seed mixes; Invasive species are often included in planting mixes
	  ▪ Potted plants; Seeds are sometimes transported in the potting soil
	  ▪ Hay and other animal feed
	  ▪ Fill for construction sites such as rock fill and soil
	▪ Check plants that are intentionally brought in to ensure none of them are invasive.
	▪ Keep vehicles, tire treads and boots free of dirt and seeds before entering a sensitive area.
	▪ If livestock are brought onto the installation for grazing take precautions to ensure that they do not bring weed material and seeds with them. Horses should be provided certified weed free hay.
	▪ Import fill dirt and gravel from areas that do not have invasive weeds or purchase from suppliers that are certified weed free.
		NRM oversees prevention program

Pulling	▪ Tools are available that help pull weeds. ▪ When pulling plants bring as much of the root as possible out of the ground since many plants can re-sprout from even a small amount of root. ▪ Digging can be used along with pulling to lift the entire plant from the soil.	In-House PMP; Contracted PMP

Cutting	▪ Cutting works well for woody plants that do not re-sprout. Especially if those plants are cut as close to the ground as possible. ▪ If the plant is likely to re-sprout, chemical herbicides can be painted on top of the cut stump. ▪ For invasive trees the herbicide needs to come in contact with the cambial ring between the wood and bark of the trunk. The cambial tissues will transport the herbicide to the roots.	In-House PMP; Contracted PMP
Flaming	▪ Flaming does not involve incinerating the plant, rather to heat it just long enough to produce visible wilting. Heat causes cell walls to burst, which interrupts the flow of water and nutrients. ▪ Flaming is most effective when plants are in very early stages of growth. Older plants with significant stored reserves will require repeat applications and/or concentrating enough heat on the root crown to produce mortality. ▪ Flaming is generally used as a way of coping with the huge flush of seedlings which is often triggered by the removal of parent plants. ▪ This technique is most effective and best done when the ground and vegetation are too wet to carry fire. Avoid conditions that may lead to injury or wildfire.	In-House PMP; Contracted PMP
Solarization	▪ Weeds and insect pests can be killed by covering the ground with layers of clear plastic allowing the sun to create enough heat to destroy all living things.	In-House PMP; Contracted PMP
Prescribed Fire	▪ Prescribed fire can be effective in removing fire-sensitive invasive species from communities that evolved with fire. ▪ Blowtorches and flamethrowers can also be used to burn individual plants or small areas.	NRM Coordinates; In-House PMP; Contracted PMP
Competition and Restoration	▪ Use native plants to out-compete invasive weeds. To do so natives must be planted and cared for until they are well established. ▪ When choosing seed mixes choose seeds that are from adjacent sites and well adapted to the climate. ▪ Choosing plants from far away sources is a common cause of failure. ▪ Be careful of seed mixes that include other invasive plants.	NRM coordinates

Grazing	▪ Grazing animals can selectively control or suppress weeds. ▪ Cattle, sheep, goats, geese, and chickens have been used to graze undesirable species. ▪ Grazing must be continued until the weed's seed bank is exhausted. ▪ It is important never to move the animals from an infested to an uninfested site since seeds can be spread in the animals' droppings.	NRM coordinates
Biological Control	▪ Beneficial organisms can reduce a few specific plants. For example, two species of leaf beetle have been very effective in wiping out populations of purple loosestrife. ▪ To be effective, the insect or pathogen must be host-specific and not pose a threat to other plants.	NRM coordinates
Plant Disposal	▪ Avoid leaving plant remains onsite. Many plants can re-root themselves and continue to grow if left in piles. ▪ When invasive plants are removed they should be placed directly into plastic bags which are sealed at the end of the removal process. The sealed bags should be disposed of by being buried in a landfill or burned.	In-House PMP; Contracted PMP
Cleaning of Vehicles and Equipment	▪ In order to prevent the introduction and spread of invasive weeds, all vehicles and equipment used on a base (especially those used for weed control) must be cleaned of dirt, mud, and visible plant material prior to being brought on base (if coming from off-base) or prior to coming on site (if coming from another location on base). ▪ Vehicles and equipment must also be cleaned after being used on a construction site, prior to being used elsewhere on base. ▪ Vehicles/equipment moved from site to site during weed control should also be inspected and cleaned in order to prevent further spread. ▪ Equipment to be cleaned may include things like weed whackers, shoes, shovels, etc. Before leaving a site workers should brush off shoes in order to prevent tracking seeds on the way to other sites.	In-House PMP; Contracted PMP

Chemical Control

Application Site	Apply herbicides as required based on survey information to areas where target weeds are problematic.

Site Preparation	Pre-treatment procedures: ▪ Check the local weather forecast. Rain can reduce or negate the effectiveness of an herbicide by washing the herbicide off the plant. If precipitation is expected in the next 24-hours, delay application. ▪ Check the local wind conditions. Herbicides can drift and affect non-target plants if applied during windy conditions. ▪ Do not apply herbicides during high temperatures (>95°F), as this can result in excess vaporization of the herbicide. Post-treatment procedures: ▪ Survey the area to establish the efficacy of control. The length of time between application and survey is dependent upon the species of weed being controlled. Multiple applications may be necessary, particularly if conditions during the first application were too warm, too dry, or too wet.	
Sensitive Areas	Areas frequented by children: ▪ Use mechanical controls instead of chemical controls whenever possible around playgrounds and childcare centers. Sensitive habitat: ▪ Use non-chemical methods in natural areas containing endangered or threatened plant or animal species, or use herbicides with care. ▪ Use drift reduction methods to prevent damage to non-target plants and other organisms and sensitive sites.	
Restrictions / Regulations / Permits	• When applying herbicide to riparian areas or other sites near water use only formulations labeled for aquatic sites. • Herbicide applications to, over, or near waters of the US may require coverage under a NPDES Aquatic Pesticide Permit.	
Common Active Ingredients	▪ Imazapyr ▪ Dichlobenil ▪ Bromacil ▪ Diuron ▪ Pendimethalin ▪ Prometon ▪ Tebuthiuron ▪ Hexazinone ▪ Dicamba ▪ 2,4-D ▪ Diflufenzopyr ▪ Glyphosate ▪ Triclopyr ▪ Metsulfuron methyl ▪ Sulfometuron ▪ Plus others	
Methods of Application		**Authorized Applicators**
Selective Broadcast	▪ These herbicides selectively kill one class of plants and are safe for other classes of plants.	In-House PMP; Contracted PMP

Herbicides	▪ The herbicide is applied evenly over a large area of land, usually through a boom sprayer. ▪ Boom sprayers can be mounted on a tractor, ATV, truck, airplane or helicopters. ▪ Relatively small areas can be treated with a backpack sprayer or hand-compressed sprayer.	
Non-selective Spot Treatment Herbicides:	▪ This method directly targets individual plants. ▪ Non-selective herbicides are used and are applied directly to the target plant. ▪ Care must be taken to reduce drift that could harm non-target plants. ▪ Direct application sometimes is used in conjunction with non-chemical treatments, especially when removing invasive trees and shrubs which require root kill to prevent re-sprouting. (See "Cutting" in the Mechanical Control section).	In-House PMP; Contracted PMP
Foliar Spray	▪ Herbicide is sprayed directly onto the foliage of the weed. ▪ Post-emergent herbicides should be applied after the weed emerges, but before seed set. ▪ Foliar application is most effective when weeds are young.	In-House PMP; Contracted PMP
Cut Stump Treatment	▪ Herbicide is brushed or sprayed on freshly-cut stumps.	In-House PMP; Contracted PMP
Aerial Application of Pesticides:	▪ An Aerial Application Statement of Need must be prepared by the IPMC and approved by the ARNG PMC prior to aerial application of pesticides (including herbicides). ▪ Additional NEPA documentation and permitting may be required.	Contracted PMP

Contract or Work Considerations

Time Period to Respond	Control is often conducted during surveys. This may involve observing a plant and then hand pulling or applying an herbicide. Responding to a large area of weeds will depend on timing factors.
Time Period to Obtain Control	Most non-chemical methods and many herbicides result in immediate or rapid kill. However, signs of the effectiveness of some herbicides (i.e. browning of leaves) may not be visible for several days.
Level of Control	In high priority areas a high level of control must be maintained.
Safety Considerations	Applicators use personal protective equipment required by the product label.
Environmental Considerations	When operations are conducted in natural areas, care must be taken to prevent adverse impact to the environment by control measures, vehicles, and workers.

Special Applicator Qualifications	▪ All PMP (or GMP/FMP) applying pesticides (including herbicides) must be DOD or State-certified as pesticide applicators. ▪ PMP conducting invasive weed control must be knowledgeable about identifying and controlling the target plants. ▪ PMP conducting invasive weed control must also be knowledgeable about preventing the spread of invasive plants. ▪ PMP conducting invasive weed control should also be able to produce maps (preferably using GPS and GIS) and write detailed reports.

Additional Information

Correct timing of the herbicide application is essential for effective weed control. Timing will depend on the species of weed, the mode of action and persistence of the herbicide, non-chemical practices in use, soil conditions, and climate.

Alaska's Invasive Plant Program: http://plants.alaska.gov/invasives/noxious-weeds.htm

Alaska Plant Materials Center Terrestrial Weed Identification Field Guide: http://plants.alaska.gov/pdf/TerrestrialWeedIdentificationGuide.pdf

References

www.cal-ipc.org/ip/inventory/index.php - California Invasive Plant Council; lists of invasive species and control advice

Appendix C – AKARNG State Pesticide Use List (SPUL)

APPROVAL	EPA REG #	PREVIOUS EPA REG #	PESTICIDE NAME
Approved for Use by Certified Applicator or Self-Help Program	91161-1-239		Ortho GroundClear
Approved for Use by Certified Applicator or Self-Help Program	9688-293-8845		Spectracide Weed and Grass Killer
Approved for Use by Certified Applicator	432-1552		Oust XP Herbicide
Approved for Use by Certified Applicator	499-465		Whitmire Micro-Gen Pro-Control Aerosol Fogger Prescription Treatment
Approved for Use by Certified Applicator or Self-Help Program	64240-34		Combat Max Roach Killing Bait Station
Approved for Use by Certified Applicator or Self-Help Program	538-333		Scotts Turf Builder Weed & Feed (updated product from Scotts Turf Builder Plus)
Approved for Use by Certified Applicator or Self-Help Program	2217-559-72400		Arctic Gro Weed & Feed Fertilizer (granular formula)

APPROVAL	EPA REG #	PREVIOUS EPA REG #	PESTICIDE NAME
Approved for Use by Certified Applicator	100-1066		Demand (Patrol) CS Insecticide
Approved for Use by Certified Applicator	100-1484	352-652	Advion Cockroach Gel Bait
Approved for Use by Certified Applicator	100-1501	352-776	Arilon Insecticide
Approved for Use by Certified Applicator	1021-1767		Bedlam Insecticide (Multicide Lice & Dust Mite Spray)
Approved for Use by Certified Applicator or Self-Help Program	1021-1780-239		Ortho Hornet & Wasp Killer
Approved for Use by Certified Applicator	1021-2796		Vendetta Nitro Cockroach Gel Bait
Approved for Use by Certified Applicator	12455-79		Contrac All Weather Blox (Rat & Mouse Bait)
Approved for Use by Certified Applicator or Self-Help Program	239-2699		Ortho Home Defense MAX Indoor Insect Barrier
Approved for Use by Certified Applicator	241-392		Phantom (SD) Termiticide-Insecticide
Approved for Use by Certified Applicator	2724-351		Gentrol IGR (Zoecon RF-259) Emulsifiable Concentrate
Approved for Use by Certified Applicator	279-3206		Talstar TC Flowable Termaticide/Instecticide (P, One, P Profressional, PL)
Approved for Use by Certified Applicator or Self-Help Program	279-9534-239		Ortho Home Defense MAX Insect Killer for Indoor & Perimeter I
Approved for Use by Certified Applicator or Self-Help Program	432-1257		Maxforce RoachBait
Approved for Use by Certified Applicator	432-1377		Tempo Ultra WSP
Approved for Use by Certified Applicator	432-1460		Maxforce FC (Magnum) Roach Killer Bait Gel
Approved for Use by Certified Applicator	432-1483		Temprid SC Insecticide
Approved for Use by Certified Applicator	432-1527		Temprid Ready-To-Spray Insecticide
Approved for Use by Certified Applicator	432-763		Suspend SC Insecticide (K-Othrine® SC Insecticide)
Approved for Use by Certified Applicator or Self-Help Program	45385-97-56		Kills Bedbugs II (Cenol D 200)
Approved for Use by Certified Applicator or Self-Help Program until supplies are exhausted	47000-78	13898-7	CTL Industrial Spray 47000-78
Approved for Use by Certified Applicator or Self-Help Program	4822-553		Raid Wasp & Hornet Killer

Approved for Use by Certified Applicator or Self-Help Program	4822-569		Raid Flying Insect Killer, Outdoor Fresh Scent (House & Garden)
Approved for Use by Certified Applicator	499-304		Cy-Kick CS Contolled Release Cyfluthrin
Approved for Use by Certified Applicator	499-452		ULD BP-100 Insecticide
Approved for Use by Certified Applicator	499-473		221L Whitmire Micro-Gen TC 205 Injection System (PT Residual)
Approved for Use by Certified Applicator	499-507		Advance Cockroach Gel Bait (TC 248)
Approved for Use by Certified Applicator	499-514		ULD BP-100 Contact Insecticide II
Approved for Use by Certified Applicator	499-531		Alpine Pressurized Insecticide
Approved for Use by Certified Applicator	499-570		Fendona CS Controlled Release Insecticide
Approved for Use by Certified Applicator	524-529		Roundup Pro Concentrate
Approved for Use by Certified Applicator	538-282		Turf Builder Plus 2 Weed Control
Approved for Use by Certified Applicator	66222-22-34704		Pramitol 25E
Approved for Use by Certified Applicator	67702-8-33116		Lily Miller Moss Out
Approved for Use by Certified Applicator or Self-Help Program	71995-33		Roundup Weed & Grass Killer Ready-to-Use Plus
Approved for Use by Certified Applicator or Self-Help Program	802-543		Lilly Miller Moss Out
Approved for Use by Certified Applicator or Self-Help Program (see comments)	802-558		Lilly Miller Moss-Out Granules
Approved for Use by Certified Applicator or Self-Help Program	9688-190-8845		Chemisco (Spectricide/Hot Shot) Wasp & Hornet Killer (LE)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-1		Insect Repellent (DEET)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-2		Insect Repellent (Permethrin)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-3		Insect Repellent (Picaridin)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-4		Insect Repellent (IR3535)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-5		Insect Repellent (Oil of Lemon Eucalyptus)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT-6		Bear Spray

Appendix D – AKARNG Pest Management Treatment Record Form

AKARNG Pest Management Treatment Record
Self-Help/Non-Chemical/Chemical

Facility: _____ **Treatment Date:** _____

Location of Treatment: _____

Type of Pest Problem: _____

Indicators of Pest Problem: _____
(What did you observe and where? Number of pests seen, signs of damage...)

Self-Help & Non-Chemical Pest Management Actions:

Mandatory Self-Help training is required prior to application pesticides. Only pesticides listed as "Approved for Self-Help Program" on the State Pesticide Use List (SPUL) are allowed to be used as Self-Help.

Self-Help Applicator Name: _____

Methods Applied/Product(s) Used: _____

_____

Chemical Pesticide/Herbicide Application:

With the exception of pesticides listed as "Approved for Self-Help Program" on the SPUL , no other pesticides may be applied by AKARNG personnel without current State or DOD Pesticide Applicator Certification.

Applicator Name: _____ **Certification #:** _____
(print clearly)

Size of Treated Area: _____ **Man Hours Used:** _____
(approximate sq ft or acreage)

Pesticide/Herbicide Trade Name: _____

EPA Registration Number: _____

Active Ingredient(s) and % Concentration: _____ %

_____ %

_____ %

Ready-To-Use Formulation? ☐ **Yes** or ☐ **No**

or **If yes, quantity applied:** _____
(indicate oz/gal/lbs)

Concentrate Formulation? ☐ **Yes** or ☐ **No**

If yes, quantity of concentrate used: _____
(indicate oz/gal/lbs)

If yes, quantity and type of diluent: _____ _____
(indicate oz/gal/lbs) (type of dliuent)

If yes, quantity of mixture applied: _____
(indicate oz/gal/lbs)

If Outdoor Pesticide/Herbicide Application:

Wind Speed: _____ **Temperature:** _____

Wind Direction: _____ **Other Notable Conditions:** _____

File the original of this record on site as part of your permanent record.
Submit a copy to AKARNG IPMC:

Patrick Geary
State of Alaska DMVA/ AKARNG CFMO Environmental
P.O. Box 5169 JBER, AK 99505
Office (907) 428-7157
patrick.geary@alaska.gov

Appendix E – AKARNG Self-Help Program

The AKARNG Self-Help Program allows maintenance workers, facility managers, building occupants and unit personnel to use Integrated Pest Management (IPM) measures for control of minor pests. This program features ready-to-use, low toxicity pesticides pre-approved by the ARNG Pest Management Consultant (ARNG PMC).

AKARNG Self-Help Program participants may only perform pest management actions listed in the Self-Help IPM Outlines starting on page E-5.

Only pesticides that are specifically listed on the AKARNG SPUL for use in the Self-Help Program (Appendix C) may be used and participants must review the educational materials for the pest and the control method prior to their use.

All application, safety, storage, disposal and recording requirements as outlined on the pesticide label, the Self-Help training materials, this IPMP and the Self-Help IPM Outlines are to be followed.

When pest management actions are performed in accordance with the requirements of the AKARNG Self-Help Program, participants are not required to be certified pesticide applicators.

Step 1. Determine if Self-Help is appropriate. Use the Self-Help IPM Outlines starting on page E-5 to help identify the pest, assess the level of the pest problem and determine what IPM controls can be used to reduce pest presence to acceptable levels.

Step 2. If, Self-Help control is NOT appropriate for the pest (see page E-5) or if the level of the pest problem is greater than can be controlled with Self-Help, put in a Work Request with FMO (available at https://dmva.alaska.gov/FMO/fmoworkorder) or contact the AKARNG IPMC.

Step 3. If Self-Help control is appropriate for the pest and the level of the pest problem, use the Self-Help control methods in the order they are given in the Self-Help IPM Outline (see page E-5) for the pest. Use all Self-Help cultural, mechanical and physical control methods before using Self-Help chemical control methods. Also, keep in mind that it is rarely possible to completely eradicate a pest and the goal is to control the pest to acceptable levels.

Step 4. If non-chemical Self-Help control methods do not control the pest(s) to acceptable levels, Self-Help-approved pesticides, as listed in the Self-Help IPM Outlines starting on page E-5, may be used. A list of approved Self-Help Program pesticides is on page E-3. These are low-toxicity, ready-to-use pesticides and are the only pesticides allowed for use by Self-Help Program participants.

Pesticides that require dilution are not allowed for use in the Self-Help Program at AKARNG sites.

Step 5. Obtain pesticides/equipment listed on Self-Help SPUL by direct purchase.

All pesticides used for Self-Help MUST have the exact EPA Registration Number as the pesticide listed on the AKARNG SPUL as approved for Self-Help Use. Pesticide approval is

based on the EPA Registration Number of the pesticide and, even if the active ingredient is the same and the pesticide contains the same concentration, a pesticide is not approved for use unless it is listed on the SPUL with that specific EPA Registration Number.

If a Self-Help pesticide for the pest(s) with the listed EPA Registration Number cannot be reasonably procured, contact the IPMC to determine if there is a substitute available. The IPMC can request the addition of pesticides to the Self-Help Program list by submitting the pesticide name, manufacturer, EPA registration number, target pest and target site to the ARNG PMC for review and approval.

Step 6. Review the educational materials as specified in the Self-Help IPM Outlines starting on page E-5 and the pesticide label(s) BEFORE applying any Self-Help pesticides.

After reviewing the training materials and label(s), sign and submit an AKARNG Self-Help Training Acknowledgement of Understanding (page E-4) to the IPMC. A copy may be kept locally if desired. The pest/pesticide-specific educational materials must be reviewed at least annually and an AKARNG Self-Help Training Acknowledgement of Understanding is to be resubmitted to the IPMC at that time.

The pesticide label must be reviewed before EVERY application of the pesticide since label requirements can change.

Step 7. Apply the pesticides in accordance with the label and the pest-specific Self-Help IPM Outlines (see page E-5). Pesticide labels are legal documents and all directions and restrictions on the label MUST be followed.

Step 8. Report pesticide applications using the AKARNG Pest Management Treatment Record Form (Appendix D) or via phone call/email to the IPMC. Report the quantities of pesticides purchased for Self-Help use to the IPMC at time of application.

Step 9. Store and dispose of pesticides as directed by Section 7.7 of the AKARNG IPMP and in accordance with label directions.

Step 10. If the Self-Help control methods in the IPM Outline do not control the pest to acceptable levels, put in a Work Request with the FMO or contact the AKARNG IPMC.

Pesticides Approved for use by Self-Help Program Participants:

APPROVAL	EPA REG #	PREVIOUS EPA REG #	PESTICIDE NAME
Approved for Use by Certified Applicator or Self-Help Program	91151-1-239		Ortho GroundClear
Approved for Use by Certified Applicator or Self-Help Program	2217-559-72400		Arctic Gro Weed & Feed Fertilizer (granular formula)
Approved for Use by Certified Applicator or Self-Help Program	538-333		Scotts Turf Builder Weed & Feed
Approved for Use by Certified Applicator or Self-Help Program	64240-34		Combat Max Roach Killing Bat Station
Approved for Use by Certified Applicator or Self-Help Program	1021-1780-239		Ortho Hornet & Wasp Killer
Approved for Use by Certified Applicator or Self-Help Program	279-9534-239		Ortho Home Defense MAX Insect Killer for Indoor & Perimeter I
Approved for Use by Certified Applicator or Self-Help Program	432-1257		Maxforce RoachBait
Approved for Use by Certified Applicator or Self-Help Program	45385-97-56		Kills Bedbugs II (Cenol D 200)
Approved for Use by Certified Applicator or Self-Help Program	4822-553		Raid Wasp & Hornet Killer
Approved for Use by Certified Applicator or Self-Help Program	4822-569		Raid Flying Insect Killer, Outdoor Fresh Scent (House & Garden)
Approved for Use by Certified Applicator or Self-Help Program	71995-33		Roundup Weed & Grass Killer Ready-to-Use Plus
Approved for Use by Certified Applicator or Self-Help Program	9688-293-8845		Spectracide Weed & Grass Killer
Approved for Use by Certified Applicator or Self-Help Program	802-543		Lilly Miller Moss Out
Approved for Use by Certified Applicator or Self-Help Program	9688-190-8845		Chemisco (Spectricide/Hot Shot) Wasp & Hornet Killer (LE)
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT		Insect Repellent DEET, Permethrin Picaridin, IR3535, Lemon/Eucalyptus oil
Approved for Use by Certified Applicator or Self-Help Program	239-2699		Ortho Home Defense MAX Indoor Insect Barrier
Approved for Use by Certified Applicator or Self-Help Program			
Approved for Use by Certified Applicator or Self-Help Program			
Approved for Use by Certified Applicator or Self-Help Program			
Approved for Use by Certified Applicator or Self-Help Program	REPELLENT		Bear Spray
Approved for Use by Certified Applicator or Self-Help Program until supplies are exhausted	802-558		Lilly Miller Moss-Out Granules
Approved for Use by Certified Applicator or Self-Help Program until supplies are exhausted	47000-78	13898-7	CTL Industrial Spray 47000-78

AKARNG SELF-HELP TRAINING

Acknowledgement of Understanding

Type of Pest: _____

Control Methods: _____

_____

1. I have read and understand the instructions for performing Self-Help pest control for _____ and have read and understand the pesticide label(s). I will follow the label instructions and all other instructions given to me. If I do not understand the instructions, I will have a qualified person explain them to me before continuing. I understand that any pesticide application not in accordance with the label is a violation of the Federal Insecticide, Fungicide, and Rodenticide Act.

2. I will make sure pets, children, and individuals who may be sensitive or allergic to pesticides will not be present during any application nor will they be allowed back into the treated area(s) before thorough post-treatment ventilation.

3. I will perform the control procedures myself, at my facility area only.

4. Once I have received the Self-Help pest control items, I will not use any of the products in a manner inconsistent with the label. Unused items and empty containers will be disposed of as specified by the Integrated Pest Management Coordinator (IPMC) and the product label.

5. I will record and report Self-Help actions as directed by the IPMC.

Name/Title (print): _____

Signature: _____ Date: _____

Facility Name/Building Number: _____

AKARNG Self-Help IPM Outlines

SELF-HELP IPM Outline
Bed Bugs

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (ready-to-use bed bug control pesticides) and techniques by installation maintenance and AKARNG personnel who encounter bed bugs during the normal course of their assigned duties. The AKARNG Bed Bug Standard Operating Procedure dated 7 December 2017 shall be utilized as a guidance tool.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC at 907-428-7157 for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC within 1 week using the AKARNG Self-Help Pest Management Treatment Record form.
- Approved Self-Help techniques and products are tools to assist Self-Help Program participants with the control of bed bugs in their work and billeting areas. These Self-Help control efforts supplement bed bug control done at the site by Pest Management Professionals (PMPs).
- Although bed bugs rarely carry disease or cause any negative health effects, they are a nuisance that affects morale and quality of life. Also, their bites can cause allergic reactions in some people.

C. ACTIONS

STEP 1. Surveillance.

- Identify the insect and, if possible, determine the extent of the infestation.
- It is important to identify the insect(s) so the most effective control methods are performed. A number of insects are similar in appearance to bed bugs and the control techniques in this outline should only be used for control of bed bugs.
- Use the fact sheet attached to this outline to identify the type(s) of insect.
- If a bed bug infestation is discovered, immediately contact the AKARNG IPMC at 907-428-7157 or the CFMO at 907-428-6859 to assist in identifying and preventing further infestations.

STEP 2. Decide if Self-Help is appropriate.

- If after identifying the insects using the information in this outline, it is determined the insects are not bed bugs, refer to the appropriate Self-Help IPM Outline for that insect or contact the IPMC to arrange for control by a Pest Management Professional (PMP).
- The decision to use Self-Help for control of bed bugs is often based on personal judgement and common sense. If you have **any** doubts the bed bug infestation can be controlled with Self-Help actions, contact the IPMC to arrange for control by a Pest Management Professional (PMP).
- Approved Self-Help techniques and products are tools to assist Self-Help Program participants with the control of bed bugs in their work and billeting areas. These Self-Help control efforts supplement bed bug control done at the site by Pest Management Professionals (PMPs). Attempting to control bed bugs with methods that are not effective for them or not appropriate for Self-Help use may result in loss of work time, higher costs and unnecessary exposure of AKARNG personnel to pesticides.

STEP 3. Non-Chemical Controls.

- Using pesticides as the only control method will rarely provide effective control of bed bug infestations. Non-chemical controls are also required to fully control bed bugs.
- See Non-Chemical Control options below for further guidance on control methods for bed bugs

STEP 4. Perform Chemical Control

- Self-Help products for bed bugs can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.
- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do **NOT** eat, drink or smoke while using any pesticide.
- Use product as directed on the label for control of bed bugs.
- See Chemical Control options below for further guidance on using pesticides to control bed bugs.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.
- Use of chemical controls alone will rarely provide sufficient control of bed bugs. Non-chemical controls are also needed to effectively control bed bug infestations.
- If all the actions in STEP 3 and 4 have been done and there are still on-going bed bug infestations at the same facility, contact the AKARNG IPMC. Further assessment and more extensive control methods may need to be implemented by contract or the CFMO or Facilities Maintenance Office.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.
- If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC.

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC using the AKARNG Self-Help Pest Management Treatment Record form (Appendix D) or via phone call/email to the IPMC.
- The AKARNG IPMC should be notified of pest management treatment within 1 week.

STEP 7. Follow-up and Assessment.

- Every few days after initial cleanup and control, carefully look for any evidence of bed bugs. If bed bugs are found, either the initial cleanup missed some

individuals or eggs have hatched and retreatment may be needed.

- Continue to inspect for presence of bed bugs, at least every 7 days. It is best to use interceptors (placed under the legs of furniture to catch bed bugs and keep them from climbing the legs) for monitoring, in addition to visual surveys.
- If the Self-Help control methods in this outline do not control the bed bugs to acceptable levels within 7 days, put in a Help-Ticket with the Facilities Maintenance Office or contact the AKARNG IPMC.

BED BUG CONTROL

WHY IS CONTROL NEEDED?

Although bed bugs rarely carry disease or cause any negative health effects, they are a nuisance that affects morale and quality of life. Also, their bites can cause allergic reactions in some people.

1. GENERAL BIOLOGY

Bed bugs are blood-sucking insects in the family Cimicidae. Both nymphs and adults feed on people while they sleep or rest, mostly during the night, when they are unseen.

Bed bugs are found worldwide in association with human habitations. The common bed bug, *Cimex lectularius*, is a widely distributed species most frequently found in the northern temperate climates of North America, Europe, and Central Asia. It occurs less frequently in southern temperate regions. In tropical regions, the tropical bed bug (*Cimex hemipterus*), is more common.

The growth and development of bed begs is optimal when they feed on people. However, they also feed on other species of animals such as chickens, mice, rats, and rabbits.

Bat bugs and swallow bugs are close relatives of bed bugs and may also be found in and around human dwellings. They may sometimes bite people, although their preferred food sources are bats and birds, respectively.

Until recently, bed bug infestations were thought to be associated primarily with crowded and dilapidated housing. However, bed bugs have undergone a resurgence and can now be found even in the finest hotels and living accommodations.

The reasons for the resurgence of bed bug infestations are not totally understood, but appear to involve increased global travel and commerce, ease of moving infested items, widespread pesticide resistance, and changes in pesticides available to control this pest.

2. INSPECTION AND SURVEY

Identify the insects using the fact sheets attached to this outline. It is important to determine if the insects are bed bugs so the most effective controls are used.

Also determine location and number of infested rooms.

Bedrooms are the principal locations for bed bugs, but any room where people sleep or rest may become infested with bed bugs.

Typically, an infestation starts in one room and spreads slowly to other places where people sleep or rest.

The presence of bites on people should never be used as the only indicator of a bed bug infestation. Many insects bite people and the reaction to bites varies widely between individuals.

Bed bug infestations should be confirmed by detecting the bed bugs themselves or signs of their presence (fecal spots, blood spots, egg cases and shed skins).

An unpleasant, rotting, bloody meat, or acrid “buggy” smell might also be present in heavily-infested areas.

Visual Sighting:

It can take a good deal of time, patience, and perseverance to detect low-level bed bug infestations.

Bed bugs are small – about the size of a sesame seed (although they can be smaller or larger).

Although adults and groups of bed bug nymphs (immature bed bugs) can be seen with the unaided eye, seeing the eggs requires a hand-magnifying lens.

Also look for dark spots of dried bed bug excrement, blood spots where bugs were inadvertently crushed, and the insects’ light-colored shed skins.

Bed bugs can fit into cracks and crevices as small as the width of a credit card.

Use a flashlight and a small mirror to aid in the inspection process

- First look for bed bugs in the mattress, box spring, bed frame and headboard.
- Lift the mattress and inspect all seams and surfaces as well as those of the box spring. If necessary, dismantle the bed frame to fully inspect it.
- Check furniture. Inspect all seams and surfaces. Bed bugs prefer fabric or wood surfaces to metal or plastic.
- Less commonly, bed bugs are found on or behind baseboards, on walls behind furniture, under wallpaper; and in carpets, wall hangings, and similar hiding spots.

Trapping:

Monitors that attract or intercept bed bugs moving between a hiding place and a host can help detect infestations.

- Interceptors (above picture) use the presence of a sleeping person to attract bed bugs and then trap them as they make their way to the person. These small double-cupped monitors are installed under the legs of beds and other furniture items. This type of monitor typically traps six times more bed bugs than can be found during a visual search.

- Sticky (glue) traps can also be used to determine presence of bed bugs, but they are not as effective as monitors that use something to attract the bed bugs.

  Sticky (glue) traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

3. CONTROL METHODS

Managing a bed bug infestation is a difficult task that requires removing or treating **ALL** infested material and follow-up monitoring to make sure the infestation has been eliminated.

Management will require using several non-chemical methods such as cleaning, exclusion and heat treatments.

Extensive infestations may require large-scale heat treatment, use of insecticides or other methods that are not appropriate for Self-Help use. In such case, contact the AKARNG IPMC for Pest Management Professional (PMP) assistance.

Bed Bugs

Even one bed bug is a basis for control. Non-chemical methods are preferred for Self-Help control of most bed bug infestations.

Non-Chemical Control Methods:

Do not throw beds away. It's generally unnecessary to dispose of beds or bedding. These items are expensive to replace, and new beds and bedding can quickly become re-infested by bed bugs that remain in the room.

Sanitation: Thoroughly clean the room(s) where bed bugs have been found.

- Remove all clutter, especially from under and around beds to reduce places where bed bugs hide, rest and breed.
- Removing clutter also allows for easier inspection of furniture and mattress.
- Take all clothes from drawers, shelves and closets and double bag them in plastic bags. Also double bag all personal items (papers, books, electronics, CDs, or anything that could serve as a hiding place for bed bugs) and set them aside until they can be carefully inspected, cleaned or treated.
- When removing items from an infested room, either clean/treat the item or double bag it. Seal bags before taking them out of the room to prevent spread of the bed bugs.
- Strip the bed, double-bag the bedding and wash it in hot water, then dry for at least 30 minutes. Discard the inner bag after putting bedding into the washer, since it could contain bed bugs.
- Remove bed bugs and eggs with the suction wand of a strong vacuum. Target the seams of mattresses and box springs, along perimeters of carpets, under baseboards, and other areas where bed bugs live.
- A single vacuuming rarely gets all bed bugs and eggs and will need to be repeated.
- Use a wet/dry vacuum cleaner filled with water, or empty and dispose of vacuum bag outside, immediately after cleaning the room.
- Portable steam cleaners and other steam delivery devices can also be used to clean mattresses and furniture. Work slowly to make sure steam penetrates well into the furniture to the areas harboring bed bugs and their eggs.
- Disassemble (if possible) and clean bed frames and headboards with soap and water.
- Systematically clean the room – all cracks and crevices around windows, blinds, pictures and clocks on walls, baseboards, under edges of carpets and any other crevices or void areas in the room.
- Systematically examine and clean all furniture – beds, bed frames, dressers, chairs, couches, night stands, etc. If possible, take apart furniture, remove drawers and cushions in order to inspect and clean thoroughly.

- If it will not harm the item, clean personal items with hot soapy water and/or rubbing alcohol.
- Do not reintroduce any items to the room until they have been thoroughly cleaned and inspected.

Isolation and Exclusion:

- If bed bug-proof mattress encasements are available, place them over the mattress and box springs. Bed bug-proof encasements are fabric sacks that slide over the mattress or box spring and have zippers that are tight enough to prevent bed bugs from escaping. These encasements trap all bed bugs in the mattress and box spring, and are smooth on the outside which provides fewer places for bed bugs to hide.
- If available, install bed bug interceptors under all feet of the bed frame to keep bed bugs off the bed and to help monitor for bed bugs. Interceptors are special platforms or cups that are purchased to prevent bed bugs from climbing onto beds. An interceptor can be as simple as a sticky trap placed under a bed post, but these quickly become covered with dirt and dust. Interceptor cups (such as The Climbup™ Bed bug Interceptor and BlackOut BedBug Detector) are preferred. For these to work, bedding must not touch the floor, furniture or walls because it will allow the bed bugs to bypass the interceptors and access the bed.
- Non-washable personal items that are not currently needed can be stored in sealed plastic bags. However, it will take 2-5 months to kill bed bugs by isolating them in bags (the warmer the temperature, the shorter the time).
- Do not remove furniture from rooms that are infested until each item is cleaned.
- Repair or caulk cracks in walls.
- Caulk cracks and crevices in bed frames and furniture.

Heat Treatment:

- Heat infested articles to at least 113 degrees F (45 degrees C) for at least 1 hour.
- The higher the temperature, the shorter the time needed to kill bed bugs of all life stages.
- For washable personal items, dry cleaning, washing in hot water for 30 minutes, or tumble drying for 30 minutes on high will kill all stages of bed bugs.
- Place personal belongings in plastic bags and place in direct sunlight during the warm summer months. Seven pounds of items placed in a clear bag in direct sunlight on a 95 degree F day, will usually get hot enough to kill all bed bugs, nymphs and eggs in one afternoon.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used for control of bed bugs.

Chemical:

There are currently no pesticides that effectively kill bed bugs when used as the only control method. The control of bed bug infestations requires the use of non-chemical methods such as sanitation, exclusion and heat treatment.

Aerosol foggers (aka “bug bombs”) are ineffective in controlling bed bugs and may **NOT** be used. Because bed bugs hide in crevices and voids where aerosols do not penetrate, bed bugs are able to avoid contact with these pesticides.

Desiccant dusts are low-toxicity pesticides and can be effective in controlling bed bugs when combined with non-chemical methods. Desiccants are effective because they work by drying out the bed bugs and the bed bugs cannot develop resistance to them.

Silica aerogel is the preferred desiccant, although diatomaceous earth can also be effective. However, use only diatomaceous earth that is labeled for insect control. Diatomaceous earth used in swimming pool filters or food-grade diatomaceous earth are inhalation hazards.

Only use desiccant dusts that are labeled for indoor use. Lightly dust all accessible cracks, crevices and voids of items or areas being treated. A paint brush is useful for applying these dusts to seams and crevices in sofas and mattresses, along baseboards and inside drawers and dressers. Desiccants can take up to several months to work.

There are a number of very low-toxicity contact pesticides that kill bed bugs on contact. Most alcohol and soap-based sprays are only partly effective. All of these products, once dry, do not provide further control. Bed bug eggs are not killed by alcohol-based sprays, so repeat treatments are usually needed.

Pyrethroid sprays are stronger and longer-lasting pesticides, but most bed bugs are resistant to pyrethroids to some degree. Only use pyrethroid sprays in areas listed on the label – some are not allowed for indoor use.

Some bed bug populations have developed resistance to pyrethroid insecticides and are no longer effectively controlled by them.

Self-Help Chemical Control of Bed Bugs using Aerosol Insecticides:

- Pesticides that kill bed bugs can be used for control of small (limited to no more than one room) bed bug infestations.
- Self-Help pesticides for bed bug control can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**
- Never use a pesticide for bed bugs that does not state on the label that it can be used indoors.
- Never spray yourself with a pesticide
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide product.
- Use the pesticide as directed on the label.
- Apply pesticide to cracks, crevices, bed frames, baseboards, and other similar sites.
- Do NOT apply the pesticide to mattresses.
- NEVER apply pesticides to bedding materials or clothing.
- Always thoroughly wash hands with soap and water after using Self-Help products and before eating, drinking or smoking.

Always follow the label directions for the use, placement

and disposal of pesticide-containing products.

4. AFTER TREATMENT SURVEILLANCE

Every few days, after initial cleanup and control, carefully look for evidence of bed bugs. If bed bugs are found, either the initial cleanup (or treatment) missed some individuals, or eggs have hatched, and retreatment may be needed.

Continue to inspect for presence of bed bugs, at least every 7 days. It is best to use interceptors (cups placed under the legs of beds/furniture to catch bed bugs and keep them from climbing the legs) and other methods of monitoring in addition to visual inspections.

If there is a reduction in the number of bed bugs, Self-Help control efforts are working.

If there is not a reduction in the number of bed bugs after 7 days of starting control efforts, put in a Help-Ticket with the Facilities Maintenance Office or contact the AKARNG IPMC for Pest Management Professional (PMP) assessment and possible additional control measures.

Bed Bugs

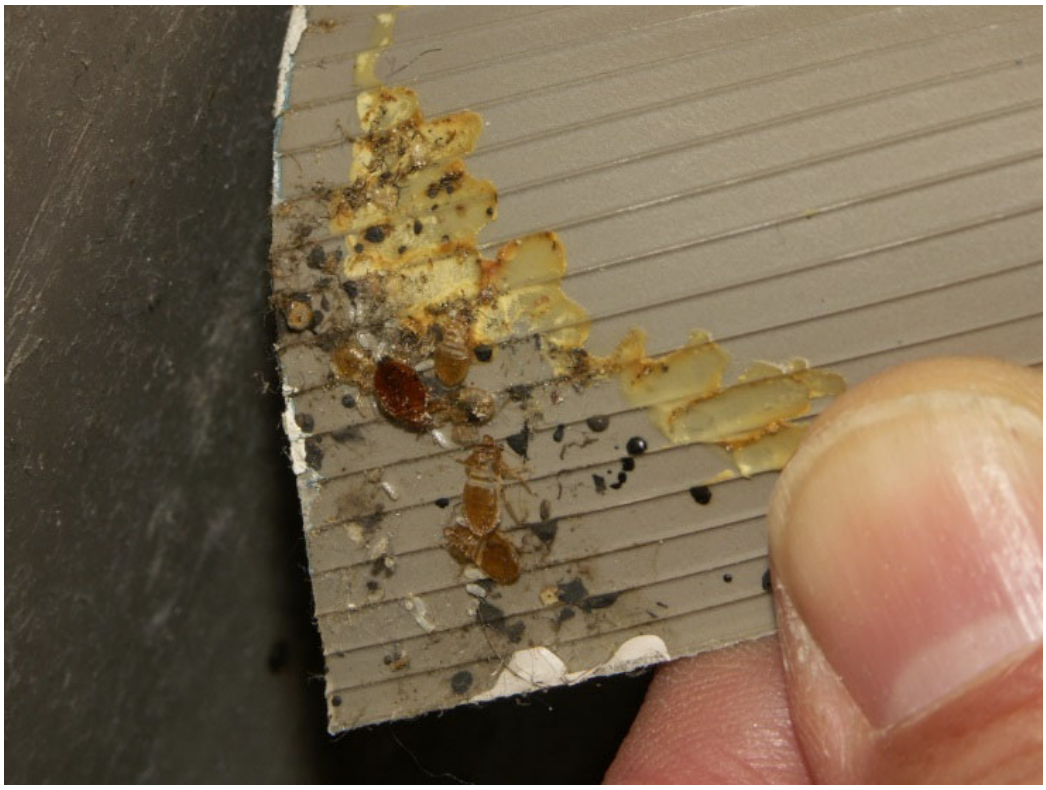
- Adult bed bugs are oval, wingless, about 1/5-inch long, and rusty red or mahogany colored. Their bodies are flattened, they have well-developed antennae, small compound eyes, and the area behind the head (the pronotum) expands forward on either side of the head and is covered with many small hairs.

- Immature bed bugs, called nymphs, are identical to the adults except they are smaller (1/20-1/5 inch), have a thinner outer skeleton (that make them more transparent), and are a lighter yellowish-white color. (Bed bug nymph in lower-left of above picture.)

- Bed bugs are distinguished from another common blood-sucking species, conenose bugs (also known as kissing bugs), by their smaller size, more rounded shape, and lack of wings as adults. Conenose bugs may be up to ¾-inch long.

- Bed bugs can be distinguished from closely-related bat bugs and swallow bugs by comparing the length of the hairs on the pronotum to the diameter of the eye. To do so requires a hand lens or microscope. These hairs are shorter than the diameter of the eye on a bed bug and longer than the diameter of the eye on bat bugs and swallow bugs. This distinction is sometimes important to make, since managing these bed bug relatives involves managing their vertebrate hosts (i.e., bats and swallows) nesting in, on, or near homes.

Bed Bugs (continued)



(Bed bug, shed skins, eggs and fecal spots)

- Female bed bugs lay 200 to 500 tiny (1/20 inch) white eggs during their lifetimes. They usually lay two to five eggs per day, on rough surfaces such as wood or paper. Eggs are laid near their hosts' sleeping places and resting places.

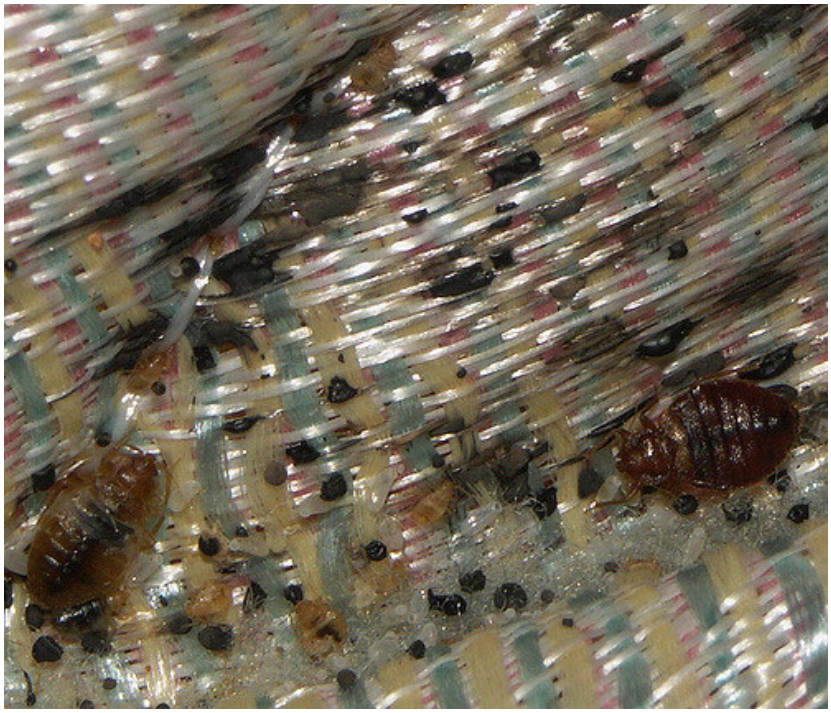
- A glue-like material covers the eggs and they hatch in about 10 to 15 days, at room temperature. After hatching occurs, the eggshells frequently remain stuck in place.

- There are five progressively larger nymph stages, each requiring at least one blood meal before molting to the next stage. The entire life cycle from egg to adult requires anywhere from five weeks to four months, depending on temperature and availability of food (blood).

- Bed bug development occurs most rapidly when temperatures are between 70° and 82°F.

- Both nymphs and adults usually feed at night and hide in dark cracks and crevices during the day. However, hungry bed bugs may feed any time hosts are nearby and sedentary.

Bed Bugs (continued)



Common hiding places are typically located within six feet or fewer from areas where people sleep or rest. These include: along mattress seams and tufts; beneath covers; in wood joints of box springs; in cracks and joints of bed frames; behind baseboards and headboards; under loose wallpaper; behind picture frames; and inside furniture, appliances, electronics and upholstery.

- Bed bugs prefer to live in or on materials made of wood, paper, or fabric rather than those made of metal or plastic.
- Occasionally, people may pick up bed bugs in theaters or on buses and trains. People can also bring bed bugs into their home on infested clothing, bedding, furniture, and luggage.
- Bed bugs can go without feeding for 20 to 400 days, depending on temperature and humidity. Older stages of nymphs can survive longer without feeding than younger ones, and adults have survived without food for more than 400 days in the laboratory at low temperatures.
- Adults may live up to one year or more, and there can be up to four generations per year.
- Bed bugs feed on humans, usually at night when they are resting. They feed by piercing the skin with their mouthparts.

Bed Bugs (continued)

- A bed bug can ingest up to six times its weight in blood during one feeding event, which takes between 3 and 10 minutes.
- People usually are not aware they have been bitten until afterward because bites occur while people are asleep, and bed bugs are known to inject a natural anesthetic while feeding.
- Bed bug saliva injected during the feeding can later produce itchy skin and swelling near the bite, if the victim is allergic. Swelling may not develop until a day or more after feeding, and some people show no symptoms at all.
- Distinguishing bed bug bites from the bites of other insects such as mosquitoes, fleas, and spiders is difficult to impossible. People often confuse itching bed bug welts with mosquito bites. The only way bed bug infestations can be confirmed is to find the bed bugs or their signs (eggs, shed skins and fecal spotting).
- In addition to direct injury to humans, bed bugs leave odors and unsightly fecal spots on bed sheets and around the insects' hiding places. These spots are usually reddish brown or dark brown to black, sometimes yellowish, roughly round (although sometimes they appear as streaks), and can be very small.

Bed Bugs (continued)

- People may bring bed bugs into their homes in luggage or on clothes after visiting an infested location.
- If you travel frequently, look for signs of bed bugs in your hotel/billeting room before unpacking.
- Checking behind headboards and under sheets, and by inspecting mattress seams and tufts. Look for bed bugs, nymphs and fecal spots.
- If you suspect bed bugs are present, notify management and request to change rooms or hotels.
- Inspect your luggage before leaving hotel/billeting.
- As soon as you get home, wash and dry all your clothes at the hottest settings the fabric will permit.
- Frequent travelers may want to store luggage away from the bedroom, such as in the garage or a hall closet.

For more information see: http://www.acq.osd.mil/eie/afpmb/docs/techguides/tg44.pdf

Bed Bugs (continued)

(Bed bugs surrounding recessed screw in furniture)

(Bed bug, eggs and fecal spots on wood furniture frame)

Bed Bug or Not?

NO! Cockroach Nymph

YES! Bed Bug Nymph

NO! Tick

NO! Sowbug

YES! Bed Bug

NO! Cigarette Beetle

NO! Cigarette Beetle

NO! Flea

YES! Bed Bug

NO! Earwig

NO! Tick

NO! Cockroach Nymph

Approved Self-Help Products for Control of Bed Bugs:

1. JT Eaton Kills Bedbugs II (EPA Registration No. 45385-97-56)

SELF-HELP IPM Outline
Cockroaches

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (ready-to-use cockroach baits) by installation maintenance and AKARNG personnel who encounter cockroaches during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Control Record form.
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of small-scale cockroach infestations that have yet to become extensive enough to warrant Pest Management Professional (PMP) control. Trying to control an excessively large infestation can result in loss of work time and higher costs resulting from cockroach contamination of facilities.
- Cockroach feces and saliva contain proteins and allergens that may trigger asthma attacks in some people. In densely populated areas, scientists have identified a correlation between roach presence and the incidence of asthma.
- Cockroaches can also spread various pathogens, including bacteria, viruses and parasitic worms.

C. ACTIONS

STEP 1. Surveillance.

- Identify the type of cockroach; the extent of the infestation; possible entry points into the building; and food and water sources.
- It is important to identify the type of cockroach so the most effective baits are used. The size and type of bait depends on the type of the cockroach. Use the fact sheets attached to this outline to identify the type of cockroach.
- Determine the extent of the cockroach infestation to help decide if the control needed is beyond that available to Self-Help Program participants.
- Locating where cockroaches are entering the building(s) and their sources of food and water is vital to long-term control of cockroaches. There is an endless source of cockroaches in the world and control will be a never-ending battle if cockroaches can easily get into the building and/or there is readily-available food and water.

STEP 2. Decide if Self-Help is appropriate.

- After identifying cockroaches using the information in this outline and determining control of that type of cockroach and/or the extent of the cockroach infestation is **NOT** appropriate for Self-Help Program control, contact the IPMC to arrange for control by a Pest Management Professional (PMP).
- The decision to use Self-Help for control of cockroaches is often based on personal judgement and common sense. If you have **any** doubts that the cockroach infestation can be controlled with Self-Help actions, contact the IPMC to arrange for control by a Pest Management Professional (PMP).
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of small-scale cockroach infestations that have not become wide-spread enough to warrant Pest Management Professional (PMP) control. Trying to control an excessively large infestation will result in loss of work time, higher costs and unacceptable exposure of AKARNG personnel to pesticides.

STEP 3. Perform Physical and Cultural Controls.

- Using cockroach baits as the only control method will rarely provide sufficient control of cockroach infestations.
- Habitat modification (cleaning up food sources and nesting locations) and building maintenance practices (repairing holes, cracks and other paths that cockroaches use to enter buildings) are vital in controlling cockroach infestations.

- If all the actions in STEP 3 and 4 have been done and there are still on-going or repeated cockroach infestations at the same facility, contact the AKARNG IPMC (907-428-7157). More extensive control methods may need to be done by contracted pest control companies.

STEP 4. Perform Chemical Control (baiting).

- Self-Help products for cockroaches can be obtained by request from the Facilities Maintenance Office via Work Order Request. Only use products that are pre-approved for use in the AKARNG Self-Help Program.
- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do **NOT** eat, drink or smoke while using any pesticide.
- Use product as directed on the label for control of cockroaches.
- See Section 3 Control, Chemical below for further guidance on using cockroach baits.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.
- Bait will not kill all the cockroaches immediately – the pesticide has a delayed effect so the cockroaches that have eaten the bait can expose other cockroaches. They do this by spreading small amounts of the bait around on their body/feet, when other cockroaches eat their pesticide-containing feces, or when other cockroaches eat the bodies of pesticide-killed cockroaches.
- Use of chemical controls (pesticides) only will rarely provide sufficient control of cockroaches. Habitat modification through cleaning and sanitation, and building practices (exclusion) are more permanent controls.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.
- If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC (907-428-7157).

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC (907-428-7157) using the Self-Help Pest Control Record form (Appendix D) or via phone call/email to the IPMC.
- The AKARNG IPMC should be notified of pest management treatment

immediately.

STEP 7. Follow-up and Assessment.

- If the Self-Help control methods in this outline do not control the cockroaches to acceptable levels with 30 days, put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC.

COCKROACH CONTROL

WHY IS CONTROL NEEDED?

Cockroaches are often the most abundant and troublesome pests in offices, dining halls and other buildings.

The cockroach's appearance, odor and habits make them objectionable to many people. A few cockroaches can become a large infestation very quickly because of their extraordinary ability to reproduce and how well they are able to co-exist with people.

Cockroaches' feces and saliva contain proteins and allergens that may trigger asthma attacks in some people. In densely populated areas, scientists have identified a correlation between roach presence and the incidence of asthma.

Cockroaches can also spread various pathogens, including bacteria, viruses and parasitic worms.

1. GENERAL BIOLOGY

There are several thousand species of cockroaches throughout the world. Four species are of primary economic importance: German, Brown-Banded, Oriental and American. However, seven species/groups are commonly found in buildings (depending on geographic area). The Asian cockroach (a recently introduced species) is being seen with increasing frequency.

See attached information sheets for more information on each of the common cockroach species.

2. INSPECTION AND SURVEY

Cockroaches are seldom seen during daylight hours and, in colder climates, they will live year round in structures. In warmer climates, once cockroaches gain entry into buildings, they seek out safe areas (harborages) and make the regular trips, usually during dark periods, to food sources from their harborages. Inspection for cockroach infestations normally involves flushing of pests from harborages (using canned air), sticky traps and/or inspection for droppings.

Visual Sighting: A good flashlight is an essential tool for cockroach inspections. Cracks and crevices should be examined with specific attention near sources of food and water, or in damp areas. Canned air can be sprayed into cracks as a flushing agent to force the cockroaches out where they can be seen and identified.

An indicator of a heavy cockroach infestation is fecal spots near likely harborages (places where they hide).

Cockroach fecal droppings are sometimes confused with rodent droppings. The feces of small cockroaches are black and resemble ground coffee or black

pepper. Larger cockroaches leave black or brown droppings which are cylindrical in shape and have ridges down the side.

Rodent fecal droppings are usually dark, moist, soft and shiny, if recent, or dry and hard, if a few days old. When examined under a magnifier or microscope, hairs can usually be seen in rodent droppings. Mouse droppings have pointed ends.

Trapping:

Sticky traps (aka glue boards or glue traps) are excellent tools for cockroach surveys. They are inexpensive, non-toxic and easy to use. Placement of sticky traps near suspected cockroach harborages (places where they hide) for 24 hours will provide quantitative results of current infestations. However, catching no roaches does not necessarily mean there are no roaches. Sticky trap catches are proportionate to roach population size and activity in the area where the trap is placed.

Sticky traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

3. CONTROL METHODS

Cultural:

Sanitation: Most cockroach infestations can usually be traced to poor sanitary conditions that provide a source of food for the cockroaches. A control program should include removal of the food supply by improving food and refuse storage and removal.

- Keep kitchen scraps in sealed containers.
- Clean up food and beverage spills immediately.
- Do not leave food out overnight.
- Vacuum or sweep frequently.
- Fix leaking faucets and plumbing.

Because of cockroach habits, good sanitation is important to achieving and maintaining successful control of cockroaches. In the absence of good sanitation, chemical control measures cannot be expected to be fully effective.

Physical:

Exclusion: Cockroaches can get inside of buildings by hiding themselves or their egg cases in packages (such as cartons of supplies, cases of soda, boxes of vending machine foods, etc.) that are brought into the building. It is impossible to inspect all incoming boxes, but efforts should be made to inspect as much as possible.

Movement of cockroaches between buildings may be along steam and water lines, or in sanitary and storm drain sewers. In warmer climates where they can live outdoors most of the year, cockroaches may simply walk into a building looking for food or water. The use of exclusion practices such as caulking and sealing cracks and other possible entrances is very helpful in preventing and controlling cockroach infestations.

Since cockroaches often enter through small openings, seal the following areas:

- Cracks and crevices where cockroaches can hide, such as crevices where countertops and kickboards meet the walls.
- Holes in the walls that lead into the wall void, such as around pipes.
- Around doors and windows.
- Cracks, crevices and holes in walls and foundation; this will reduce entry of the larger cockroaches (such as American cockroaches) from the outdoors.
- Seal exterior cracks and crevices with silicone caulk, making sure all windows have tight fitting screens in good repair.
- Use door sweeps and screen doors.

Mechanical:

Sticky Traps: Sticky traps (aka glue traps or glue boards) alone will not control most cockroach infestations. Although sticky traps are simple to use and may be effective in stopping an infestation from occurring, chemical control is usually necessary once an infestation is established.

Sticky traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

As a general rule, 4-6 bait stations are needed for every 100 square feet (10' x 10' room) of infested area.

Use a higher number of bait stations where the infestations are heaviest.

Placement should be concentrated where there is a food source, in areas that have not been treated with other pesticides, or where there are access routes from untreated adjoining areas.

Do not spray insecticides in areas where bait stations are placed. Insecticide sprays kill cockroaches on contact and then they are not able to expose other cockroaches to the bait.

The bait must be placed where cockroaches live or travel so the insects have maximum access to it. Bait stations should usually be placed next to walls and/or in dark, enclosed areas.

For active infestations, the bait stations should be replaced every 90 days.

German or Brown Banded Cockroaches (**smaller infestations** – less than 10 cockroaches found in one room only):

- Use 6 small bait stations and 3 sticky traps.
- Place the sticky traps along baseboards, usually behind appliances and other objects that are not moved on a daily basis.
- Read the entire bait station label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide.
- Place the bait stations along floor/wall junctions in protected places, especially in those areas where cockroaches have been seen.
- Bait stations can also be placed under appliances, preferably next to the sides of the devices.

Always follow the label directions for the use, placement

and disposal of bait stations.

German or Brown Banded Cockroaches (**larger infestations** – cockroaches found in more than one room):

- Get 6-12 small bait stations and 6-8 sticky traps.

- Read the entire bait station label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide.
- Place the bait stations along floor/wall junctions in protected places, especially in those areas where cockroaches have been seen.
- Bait stations can also be placed under appliances, preferably next to the sides of the devices.

Always follow the label directions for the use, placement

and disposal of bait stations.

American, Smokybrown, Oriental or Australian Cockroaches:

- Use 3-5 large bait stations and 3 sticky traps per each room where cockroaches are found (i.e., bathrooms, kitchens and utility rooms).
- Read the entire bait station label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide.
- Place the sticky traps along baseboards, usually behind appliances and other objects that are usually not moved on a daily basis.
- Place the bait stations along floor/wall junctions in protected places, especially in those areas where cockroaches have been seen.
- Bait stations can also be placed under appliances, preferably next to the sides of the devices.
- Adult American, Smokybrown and Oriental cockroaches are too large to enter the small bait stations.

Always follow the label directions for the use, placement

and disposal of bait stations.

Asian Cockroaches:

- Control with cultural and physical controls:
  - Change white light bulbs to yellow bulbs around entrance doors.

- Seal exterior cracks and crevices with silicone caulk, making sure all windows have tight fitting screens in good repair.
- Use door sweeps and screen doors.
- If cultural and physical controls are not enough, [put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC for PMP control of outdoor populations.

Wood Cockroaches:

- Bait stations are not effective for wood cockroaches.
- Vacuum or sweep up individual wood roaches and dispose of them outside.

Wear appropriate Personal Protective Equipment (PPE) as directed on the label whenever handling cockroach bait stations.

Bait will not kill all the cockroaches immediately – the pesticide has a delayed effect so the cockroaches that have eaten the bait can expose other cockroaches to the bait. They do this by spreading small amounts of the bait around on their body/feet, when other cockroaches eat their pesticide-containing feces, or when other cockroaches eat the bodies of pesticide-killed cockroaches.

Dispose of used bait stations as directed on the label. If the label is missing, dispose of by wrapping the bait station and placing in a garbage can.

4. AFTER TREATMENT SURVEILLANCE

Clean up or remove egg cases, cast skins and droppings/stains in order to tell if there is new cockroach activity.

Continue to use sticky traps and check them regularly, noting what is captured. Look for cockroaches at night just after the lights in a room are switched on. Look for egg cases, cast skins, fecal droppings or staining.

If there is a reduction in the number of cockroaches, then Self-Help control efforts are working. Remove sticky traps after 30 days if additional roaches are not caught.

If sticky traps are full of cockroaches and/or there are still egg cases, cast skins and droppings/stains being seen after cleaning up those from the initial infestation, put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC for Pest Management Professional (PMP) control.

German Cockroach

- The German cockroach is the most common pest in homes, barracks, dining facilities, and warehouses.
- It is a small brownish insect about 5/8-inches long and easily identified by two longitudinal black bars on the pronotum (the disc-like plate behind head).
- German cockroaches live in warm, dark places and are most commonly found in places close to food and water such as dining facilities, bathrooms and pantries. They live in walls, cabinets and other hiding places in these rooms.
- They will also live anywhere that has adequate food, water and shelter present. They may be found near plants, pet food, in clutter such as clothing on the floor, books, magazines, newspapers, boxes and paper bags.
- They secrete a fluid that leaves a characteristic odor. This odor may even linger after the cockroaches are gone if there was a large infestation.
- German cockroaches can be found in almost all geographical areas of the United States.
- In addition to common human foods, German cockroaches will feed on almost anything with nutritional value such as saps, glue and toothpaste.
- German cockroaches breed year-round.

German Cockroach (continued)

- The females produce from 4-5 egg capsules during their life span. Each egg capsule (called an “ootheca”) produces about 30 nymphs.
- The adult female carries her egg case until 1-2 days before hatching. The egg case is then deposited in a sheltered place.
- Nymphs hatch from the egg case and are somewhat similar in appearance to adults except that they lack wings.
- Development from egg to adult ranges from about 50 to 200 days depending on temperature and relative humidity.

Female Asian and German cockroaches.

Asian cockroach on the left and German cockroach on the right.

- Asian and German cockroaches are best told apart by looking if the wings of the female cover the egg case (oothecal) when it is being carried.

Asian Cockroach

- Asian cockroaches were introduced to Florida in 1980's and have quickly become established in the southeastern United States. Their range is expanding and Asian cockroaches have been found as far north as Michigan.
- Asian cockroaches are almost identical in appearance to the more common German cockroach. Adults of both species are approximately 5/8-inches long and 3/16-inches wide. Both are similar in color, with prominent dark stripes just behind the head. However, their behavioral patterns are quite different.
- Unlike German cockroaches that are repulsed by light and the presence of people, Asian cockroaches live outdoors in warm climates, are attracted to light and take little notice of human presence.
- Asian cockroaches usually live outside buildings in moist shady leaf litter and grassy areas and are generally not active during the day. If the leaf litter is disturbed, adult Asian cockroaches will fly to escape.
- If the temperature is 70 degrees F. or higher at dusk, Asian cockroaches fly towards any light source. They are very strong flyers and can fly as far as 120 feet. They are attracted to light and usually invade buildings by entering around doors and windows. Once inside, they fly to sources of light.
- Asian cockroaches are omnivorous and will eat pet food, seeds, flowers, and even pet feces.

Asian Cockroach (continued)

- In the winter, Asian cockroaches survive by burrowing into leaf litter and soil. In the spring, they begin to emerge, and their numbers grow into large populations that can reach 30,000 to 240,000 cockroaches per acre.

- Asian cockroaches are often mistaken for German cockroaches, and control measures are applied the interiors of buildings but not outside where Asian cockroaches live.

- Because Asian cockroaches live outdoors, management practices need to target leaf litter and mulch. It is imperative that cockroaches be identified correctly so that control and management practices can be applied in the correct locations.

Female Asian and German cockroaches.

Asian cockroach on the left and German cockroach on the right.

- Asian and German cockroaches are best told apart by looking to see if the wings of the female cover the egg case (ootheca) when it is being carried. Males can only be told apart using magnification.

- In contrast, German cockroaches live strictly inside homes, flee from sources of light, and, although adult German cockroaches have fully developed wings, German cockroaches do not fly.

- Asian cockroaches are easily controlled with most pesticides; in contrast, German cockroaches often have resistance to many classes of insecticides.

Oriental Cockroach

- Oriental cockroaches are medium sized, black cockroaches that are often called “waterbugs”.
- They are shiny, blackish-brown and are approximately ¾ to 1-inches long.
- The wings of adult male Oriental cockroaches cover two-thirds of the abdomen. Adult female specimens are wingless, and their small wing pads extend only to the middle of the abdomen.
- Oriental cockroaches do not fly and prefer warm, damp places such as cellars and sewers.
- Oriental cockroaches are primarily an outdoor species. Most outdoor populations live beneath mulch in landscape beds, in leaf litter, beneath stones or debris outside.
- They frequently get into buildings beneath doors, through open doors or gaps beneath siding. If access is available, Oriental cockroaches can thrive in the voids or openings beneath porches, in wall voids and crawlspaces.
- In urban areas, Oriental cockroaches can be found in large numbers living in storm drains and sewers.
- Oriental cockroaches are known for their preference for feeding on garbage, filth or material that has begun to decay.
- Oriental cockroaches are very dependent on water. Studies have shown they can survive up to a month without food, but they cannot survive for more than two weeks without water.

Oriental Cockroach (continued)

- Although their natural habitat is outdoors, Oriental cockroaches may infest homes in summer. Inside, they tend to remain on lower floors.
- Oriental cockroaches tend to gather in large numbers near water sources.
- In areas where large populations of Oriental cockroaches are present, a musty odor can often be detected
- On average, an adult male oriental cockroach will live 110 to 160 days and the adult female can live anywhere from 35 to 180 days.
- A single female oriental roach can produce approximately eight egg cases with approximately 16 eggs per case.
- Approximately 30 hours after a female Oriental cockroach has produced an egg case, she will drop it in a protected area where it will stay until the young hatch.
- In the warmer months, the time it takes for an egg to develop into an adult may be as few as 200 days. However, when the weather becomes colder, or during the late fall and winter months, it can take as many as 800 days for Oriental cockroaches to go from egg to adult.
- Oriental cockroaches are found worldwide, although they are more common in the northern states than in the southern United States.

American Cockroach

- American cockroaches are one of the largest commonly-found roaches in the United States.
- They are about 1¼ to 1½-inches long and dark brown to mahogany color with somewhat obscure yellow margins on the pronotum (the disc-like plate behind the head). The adults have fully developed wings that completely cover the back end of their body.
- In north states, American cockroaches almost always live indoors and are found in warm, damp places such as sewers, steam tunnels, around floor drains, near sump pumps, crawl spaces and damp basements. In basements, they may be found in corners areas high on the walls or in floor drains. They more commonly congregate in open spaces instead of small cracks and crevices.
- In southern states, American cockroaches live and reproduces outdoors and are capable of flight. They can be found in moist, shady areas like yards, hollow trees, woodpiles and mulch. At times they can be found under roof shingles or attics. Usually, they will live outside but will wander inside in search of food and water or during extremes in weather conditions.
- American cockroaches enter buildings to find water or food. They forage under appliances, in drains, in food storage cabinets and on the floor for crumbs, and scraps of food. They will also eat any food that is left out overnight and will even chew through thin plastic food packaging.

American Cockroach (continued)

- Adult American cockroaches live from 200 to 400 days.
- The American cockroach will reproduce indoors (and outdoors in warmer climates).
- The female can produce as many as 90 egg capsules in its life time. Each egg capsule has approximately 15 eggs.
- They young or nymphs (1/4-inch long) emerge from the eggs in about 60 days. It takes about 30 days for the young to mature to adulthood, but this is temperature dependent and means the nymphs will mature faster in warmer temperatures and slower in colder temperatures.
- American cockroaches are the most common cockroach found in the sewers of the United States. Because of their longevity and reproductive capacity, American cockroaches can produce very large populations. As many as 5,000 American cockroaches have been collected from a single sewer manhole.

Smokybrown Cockroach

- Smokybrown cockroaches are approximately 1¼-inches long. They are typically brownish black but their color can vary from dark mahogany to black. They do not have markings and are shiny. Both sexes have wings that extend beyond their abdomen.

- They live primarily outdoors and are good fliers. Smokybrown cockroaches are attracted to lights and may enter buildings because they are drawn to interior lighting.

- Smokybrown cockroaches enter buildings through openings or gaps beneath siding, through attic or soffit vents, openings around utility and plumbing penetrations, and through open windows or doors.

- Smokybrown cockroaches are found outside in areas that are warm, very moist and protected from the elements. They can easily become dehydrated, so the availability of a moist environment is critical for survival. Around buildings and structures, smokybrown cockroaches can be found in tree holes and cavities, beneath mulch beds and ground cover, and around soffits and eaves, or areas where moisture problems may exist.

- Smokybrown cockroaches primarily feed during the late dusk or early dawn hours when they leave their hiding places in search of food. They will feed on any food that may be available, including human food scraps, dead insects, fecal matter and even plant materials. They may also be seen drinking available water.

Smokybrown Cockroach (continued)

- Female smokybrown cockroaches deposit their egg cases approximately one day after it is formed and firmly glue it to an object. Females produce from 4-32 egg cases in a lifetime with each case containing from 4-29 eggs.
- The time spent from egg to adult is about 400 days depending on humidity and temperature.
- An adult female smokybrown cockroach can live about 250 days.
- Smokybrown cockroaches are common pests of the southeastern United States. Although they are mainly found from central Texas eastward, and as far north as North Carolina, smokybrown cockroaches have also been found as far north as Indiana and Illinois.

Australian Cockroach

- The Australian cockroach is slightly smaller in size (about 1-inch long) and similar in appearance to the American roach.
- It can be recognized by the vivid pale area surrounding the edge of the pronotum (the disc-like plate behind head).
- Australian cockroaches can be found in wall voids, tree holes, leaf piles, mulch, wood piles, tree bark, in and around shrubs and greenhouses. Inside they are found in attics, kitchens, garbage cans and garages.
- Australian cockroaches feed on plant material and decaying material. They will also eat starchy materials like book bindings and glue in boxes.
- Australian cockroaches are good fliers and they will enter buildings where enough food, moisture, and heat are available.
- Females drop egg cases in hidden areas and cracks and crevices. Each case has about 24 eggs with a smaller percentage that hatch. The nymphs are marked with yellow patches and take about a year to develop.
- They are mostly found in the south and tropical areas like Hawaii. They have been found in houses in the northern states due to transportation and shipping. They can populate well when temperatures stay above 80 degrees.
- Australian cockroaches are more common in Florida and California than in more northern, colder states.

Brown Banded Cockroach

- Adult brown banded cockroaches are 1/2 to 5/8-inches long and are reddish brown to dark brown in color. They have two cross bands of lighter color, one is at the base of the wings and the other is about 1/3 of the way down the back. The female is broader than the male; her wings do not extend to the tip of her abdomen like the male's wings.
- Brown banded cockroaches are not as common as German cockroaches, but they are found nationwide.
- Brown-banded cockroaches like warm temperatures and are found in places where cockroaches are usually not expected, such as on closet shelves and inside/under large and small electrical appliances (electric clocks, computers, radios and television sets). They tend to hide in places up off the floor, including behind pictures and wall hangings.
- Brown-banded cockroaches are not normally as troublesome as German cockroaches, but they can reach large numbers if food and water are abundant.
- They produce an unpleasant odor and will feed on food product, glues and fabrics.
- The female produces about 13 egg capsules in her lifetime. Each egg capsule contains 10 to 18 eggs.
- Female brown banded cockroaches frequently glue their egg capsules beneath furniture and behind pictures.
- Adult brown-banded cockroaches live about 6 months. The developmental time from egg to adult is over 200 days.

Wood Cockroaches

- Wood cockroaches are light to dark brown, about ¾ to 1-inch long, and the sides of the thorax and front half of the wings have a yellow border. The females are wingless and are rarely seen.
- Wood cockroaches are found mostly in the eastern United States.
- Wood cockroaches live outside, but will occasionally enter homes by coming in with firewood or other items stored outside. They are often confused with German, American or Smoky Brown cockroaches.
- Behavior is the best way to tell the difference between wood cockroaches and other cockroaches. Wood cockroaches can be seen day or night, they aren't skittish and are less likely to scurry away when approached, and they wander around when inside a building without gathering in any particular area.
- Wood cockroaches normally live outdoors in moist woodland areas, including woodpiles, mulch, under the loose bark of trees, branches or decaying logs. Wood cockroaches eat decaying organic matter such as rotting trees and leaf litter.
- They are generally considered a minor pest since they prefer to be outside, need an environment that is consistently moist, and do not survive long nor breed indoors
- Wood cockroaches don't breed inside and pesticides that control other roaches are not as effective against them, so it is best to simply pick them up with a vacuum cleaner or broom and dustpan and discard them outside.

Approved Self-Help Products for Control of Cockroaches:

Maxforce Roach Bait (EPA Registration No. 432-1257)

Combat Max Roach Killing Bait Stations (EPA Reg. No. 64240-34)

SELF-HELP IPM Outline
Flies

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (including traps and baits) by installation maintenance and AKARNG personnel who encounter flies during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Management Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Control Record form.

- Approved Self-Help products are tools to assist Self-Help Program participants with the control of flies in their work and billeting areas. These Self-Help control efforts supplement fly control done at the site by Pest Management Professionals (PMPs).
- Flies can carry and transmit several diseases and parasites that can cause sickness in humans. All flies, including non-biting flies, can transmit disease organisms by tracking them from their source onto food or people.

C. ACTIONS

STEP 1. Surveillance.

- Identify the type of flies and, if possible, where they are breeding.
- It is important to identify the type of flies so the most effective controls are used. Sanitation is the best control method for some types of flies, and others

are more effectively controlled by traps and habitat modification.

- Use the fact sheets attached to this outline to identify the type(s) of flies.

STEP 2. Decide if Self-Help is appropriate.

- After identifying the flies using the information in this outline and it is determined control of that type of fly is **NOT** appropriate for Self-Help Program, or additional control measures are needed, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

- The decision to use Self-Help for control of flies is often based on personal judgement and common sense. If you have **any** doubts the fly infestation can be controlled with Self-Help actions, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

- Approved Self-Help products are tools to assist Self-Help Program participants with the control of flies in their work and billeting areas. These Self-Help control efforts supplement fly control done at the site by Pest Management Professionals (PMPs). Attempting to control flies with methods that are not effective for the type of fly will result in loss of work time, higher costs and unnecessary exposure of AKARNG personnel to pesticides.

STEP 3. Perform Physical and Cultural Controls.

- Using pesticides as the only control method will rarely provide effective control of fly infestations.

- Habitat modification (removing sources of food and fly breeding locations) is vital in controlling flies.

- If all the actions in STEP 3 and 4 have been done and there are still on-going significant fly infestations at the same facility, contact the AKARNG IPMC (907-428-7157). Further assessment and more extensive control methods may need to be implemented by contract or a pest control company.

STEP 4. Perform Chemical Control (trapping with chemical baits).

- Self-Help products for flies can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.

- Do **NOT** eat, drink or smoke while using any pesticide.

- Use product as directed on the label for baiting of flies.
- See Chemical Control options below for further guidance on using fly baits and traps.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.
- Use of chemical controls will rarely provide sufficient control of flies. Habitat modification by removing food sources and fly breeding areas provides additional control.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.
- If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC (907-428-7157).

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC using the Self-Help Pest Control Record form (Appendix D) or via phone call/email to the IPMC.
- The AKARNG IPMC should be notified of pest management treatment immediately.

STEP 7. Follow-up and Assessment.

- If the Self-Help control methods in this outline do not control the flies to acceptable levels within 30 days, put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC.

FLY CONTROL

WHY IS CONTROL NEEDED?

Flies can carry and transmit several diseases and parasites that can cause sickness in humans. All flies, including non-biting flies, can transmit disease organisms by tracking them from their source onto food or people.

Some flies, such as drain flies, can be a human health hazard due to respiratory problems associated with inhalation of fly hairs and body parts.

Other flies, such as deer flies, horse flies and stable flies, can inflict painful bites.

Besides their ability to transmit numerous diseases, the presence of flies can also be very annoying and distracting to personnel.

1. GENERAL BIOLOGY

Domestic flies are those that are commonly found in close association with people and the animals associated with humans.

House flies and other domestic flies may fly into buildings through open doors and windows. In some cases, they may also crawl in through holes, cracks, and crevices.

Flies can reproduce very quickly and in large numbers. For example, house flies will lay about 500 eggs in their lifetime. If all the offspring of a single female house fly survived and reproduced, in five months there would be approximately 191,010,000,000,000,000,000 flies.

Flies will not usually breed in structures unless garbage is present for longer than one week, or there is a dead animal in an attic, crawl space, or other interior area.

Flies generally reproduce outdoors, but they will enter homes or buildings in search of food, moisture and shelter. If there is suitable decaying organic material available, they will reproduce indoors.

The life cycle of most flies is completed in 1-4 weeks, but it depends on the type of fly and weather conditions. The females generally lay around 150 eggs at a time. The legless white larvae (maggots) hatch, feed on the decaying animal or plant material and develop into pupae in about 7-14 days. The adult emerges from the pupae in three or more days.

See the attached information sheets for more information on types of flies that can be commonly found in work areas.

2. INSPECTION AND SURVEY

Identify the type of flies using the fact sheets attached to this outline. It is important to identify the type of flies so the most effective controls are used.

Sanitation is the best control method for some types of flies and others are more effectively controlled by traps and habitat modification.

Visual Sighting:

- Observation of adult flies hovering around trash containers and resting on walls and cabinets near trash containers.
- Observation of fly larvae (maggots) in trash or trash containers.
- Adult drain flies often congregate on walls and windows of rooms containing drains where drain flies are breeding
- Locate the drain(s) from which drain flies are emerging in order to target their breeding sites.
- Adult fruit flies are usually seen near fruit or other rotting foods.

Trapping:

- Sticky (adhesive) fly strips (that do not contain a pesticide) can be used for fly surveillance.
- For drain flies, seal suspected drain openings with a glue board, masking tape, or inverted plastic cup overnight to trap adult drain flies if they are present.

3. CONTROL METHODS

House Flies

An occasional fly in a building is not out of the ordinary, but continual fly problems are not normal. Sanitation and exclusion are the best methods for controlling house flies.

Cultural:

Sanitation: Removing feeding and breeding sites is critical for effective house fly control.

- House flies often breed in dirty trash containers.
- Cover outdoor trash containers with tight-fitting lids.

- Empty trash containers frequently.
- Clean and sanitize trash containers that have accumulated organic material.
- Clean dumpsters regularly.
- Do not allow animal feces or manure to accumulate in areas near buildings.
- Maintain compost piles to promote rapid decay of organic material.
- Do not place compost piles near areas where flies are likely to become a nuisance.

Physical:

Exclusion:

- Seal cracks and other openings around doors and windows.
- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Trapping:

- Ultraviolet light traps may be used to reduce adult fly populations inside buildings. Light traps may not be used outdoors.
- Do not place light traps so they are visible from outside the structure since it can attract flies into the building.
- Light traps by themselves are unlikely to control heavy fly infestations.
- Do not use electric bug zappers that electrocute flies inside food-preparation areas or eating facilities. At these sites, only use light traps that collect flies on sticky traps.

Fly Swatters: Fly swatters are an effective control method for small numbers of flies that are inside buildings.

Sticky Fly Strips:

- Sticky fly strips that **do not** contain pesticides can also be used to help control flies inside buildings.
- Use one or two strips per room.

- Do not place strips in the kitchen or food preparation areas.
- **NEVER** use fly strips that contain pesticides in occupied areas.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

Trapping: Traps containing chemical bait (lures) may be used outside of buildings to reduce fly populations. However, there is a never-ending source of flies outside and sanitation/exclusion are more effective methods of house fly control in most circumstances.

Self-Help Chemical Control of House Flies using Chemical-Baited Traps:

- Jar traps, such as the Farnam Terminator or Captivator, with Starbar Fly Trap Attractant, are an effective system for trapping house flies in most instances.
- Self-Help products for flies can be obtained by requesting traps and bait from the Facilities Maintenance Office or. Only use products that are pre-approved for use in the AKARNG Self-Help Program.
- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide product.
- Use correct number, spacing and placement of fly traps as directed on the label.
- Use correct number of baits (lures) per trap as directed on the label.
- Place traps around refuse containers and other places that attract flies.
- Do not use traps/baits indoors or use in outdoor areas where flies are not already present because the bait may attract flies to an otherwise fly-free area.
- The bait (lure) usually has a strong, unpleasant odor and traps are best placed away from windows that are regularly kept open and areas where personnel congregate.
- Empty trap(s) regularly and add additional bait (lure), as directed on the label, throughout the fly breeding season.
- Always thoroughly wash hands with soap and water after using Self-Help products and before eating, drinking or smoking.

Always follow the label directions for the use, placement and disposal of pesticide-containing products.

Fruit Flies

An occasional fruit fly in a building is not out of the ordinary, but continual fly problems are not normal. Sanitation and eliminating food sources are the best methods for controlling fruit flies.

Cultural:

Sanitation: Eliminating feeding and breeding sites is critical for effective house fly control.

- Empty trash containers daily to prevent the buildup of decaying foods that can attract fruit flies.
- Fruit flies are attracted to moist fermenting foods. They require only a moist film of decaying organic matter to breed.
- Keep garbage disposals, empty bottles and cans, trash containers, mops and cleaning rags clean to prevent fruit flies from using them as breeding sites.
- The bottom and sides of trash containers, especially large dumpsters, should be periodically steam-cleaned or washed to remove accumulation of organic matter.

Eliminate Food Sources:

- Fruit flies are attracted to gases produced by ripening fruit.
- Store fruit in the refrigerator in order to avoid attracting fruit flies and other pests.
- Cover outdoor trash containers with tight-fitting lids.
- Empty trash containers frequently.
- Clean and sanitize trash containers that have accumulated organic material.

Physical:

Exclusion:

- Seal cracks and other openings around doors and windows.
- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Fly Swatters: Fly swatters are an effective control method for small numbers of flies inside buildings.

Sticky Fly Strips:

- Sticky fly strips that **do not** contain pesticides can also be used to help control flies inside buildings.
- Use one or two strips per room.
- Do not place strips in the kitchen or food preparation areas.
- **NEVER** use fly strips that contain pesticides in occupied areas.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

- If the cultural, physical and mechanical methods do not control fruit flies to acceptable levels, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

Drain Flies

Sanitation and eliminating breeding sites are the best methods for controlling drain flies.

Cultural:

Sanitation: Eliminating breeding sites is critical for effective drain fly control.

- Drain flies breed in accumulated organic matter inside interior drain pipes.
- Remove this material with over-the-counter drain cleaners.
- Scrubbing drains with a stiff brush may be necessary to remove heavy buildup.

Physical:

Exclusion:

- Seal cracks and other openings around doors and windows.
- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Fly Swatters: Fly swatters are an effective control method for small numbers of flies inside buildings.

Sticky Fly Strips:

- Sticky fly strips that **do not** contain pesticides can also be used to help control flies inside buildings.
- Use one or two strips per room.
- Do not place strips in the kitchen or food preparation areas.
- **NEVER** use fly strips that contain pesticides in occupied areas.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

- If the cultural, physical and mechanical methods do not control fruit flies to acceptable levels, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

Fungus Gnats

An occasional gnat in a building is not out of the ordinary, but continual fly problems are not normal. Eliminating breeding habitat in indoor potted plants is the best method for controlling fungus gnats.

Cultural:

Eliminate Breeding Sites: Eliminating feeding and breeding sites is critical for effective fungus gnat control.

- Avoid overwatering potted plants. Allow the surface of the soil to dry between waterings.
- Dump excess water out of the saucer/tray under plants after watering indoor plants.
- Use only sterilized potting soil in indoor plants. Unless potting soil is pasteurized first, it is often infested with fungus gnats.
- Do not move potted plants that are infested with fungus gnats to new areas where flies can infest other pots.

- In some cases, the best control is to dispose of severely infested plants.

Physical:

Exclusion:

- Seal cracks and other openings around doors and windows.
- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Sticky Fly Strips or Sticky (Glue) Traps:

- Sticky fly strips that **do not** contain pesticide or glue traps can also be used to help control adult fungus gnats after their removing breeding sites.
- Attach strips or sticky (glue) traps (they can be cut into smaller pieces) to wooden skewers or sticks and place in potted plants that are infested with fungus gnats.
- Do not place sticky traps in the kitchen or food preparation areas.
- **NEVER** use fly strips that contain pesticides in occupied areas.
- Sticky (glue) traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

- If the cultural, physical and mechanical methods do not control fungus gnats to acceptable levels, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

Biting Flies

Biting flies are most commonly encountered outdoors and are difficult to control since they breed outside where there is a nearly unlimited source of flies and

breeding sites. Trapping and use of repellents are also not as effective with these flies as with other flies and insects.

Cultural:

Eliminate Breeding Sites: The most effective and economical method for reducing stable fly numbers is to eliminate their breeding sites.

- Remove or compost grass clippings.
- Properly maintain compost piles, by periodically turning the pile, to prevent them from becoming breeding areas for flies.

Physical:

Exclusion:

- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Fly Swatters: Fly swatters are an effective control method for small numbers of flies inside buildings.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical: Chemical control methods that can be used for Self-Help are not effective for biting flies.

Trapping: Using traps for biting flies is not an effective control method since, unlike house flies, they are not attracted to traps using odor-based lures. Light traps may not be used outdoors.

Insect Repellents: Insect repellents are not typically effective for biting flies. Covering exposed areas of the body is preferred.

4. AFTER TREATMENT SURVEILLANCE

Fly strips that **do not** contain pesticide and sticky (glue) traps can be used to determine the effectiveness of fly control.

If there is a reduction in the number of flies, Self-Help control efforts are working. If using traps, continue to empty and bait traps until the end of the fly breeding season.

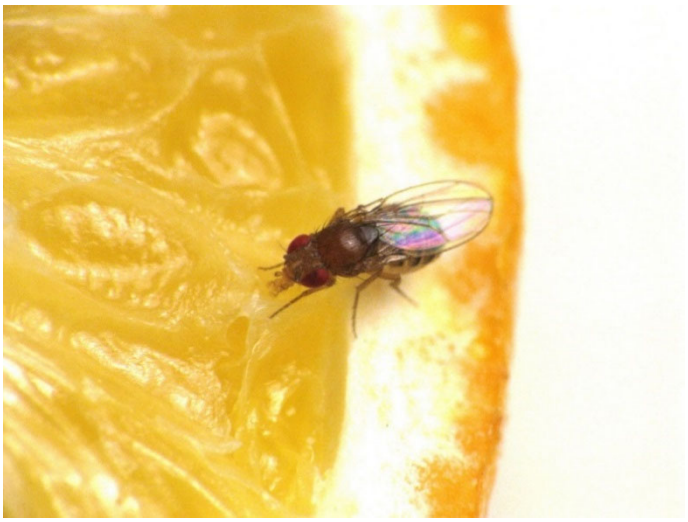
If there is not a reduction in the number of flies after 14 days of starting control efforts, put in an FMO Work Request with the Facilities Maintenance Office or

contact the AKARNG IPMC for Pest Management Professional (PMP) assessment and possible additional control measures.

House Flies

- House flies (*Musca domestica*) are 3/16 to 1/2-inches long and have two wings. They have large compound eyes and their bodies are usually striped. Their color varies from light gray to metallic shades of green, blue, and blue-green.
- House flies have sponging mouthparts and eat solid food by first liquefying it with their saliva. House flies can also regurgitate onto a solid food to assist with the liquefying process.
- Like all flies, house flies have a four-stage life cycle: egg, larva, pupa, and adults.
- Female flies deposit eggs in animal feces, carrion or moist organic material where the larvae (maggots) complete their development.
- The rate of house fly development is dependent upon temperature; and under summertime conditions, flies may develop from egg to adult in as little as 7 days. Once the female fly has mated, she can lay several batches of eggs, typically containing over 100 eggs each.
- House flies cannot bite because they have sponging mouthparts.
- House flies can carry a number of disease organisms that they pick up while feeding on animal feces, animal body secretions, or kitchen waste and they can then deposit onto human foods during feeding.
- House flies leave dark fecal and regurgitation spots on wall surfaces where they rest.

Fruit Flies



- Fruit fly adults are small (about 1/8-inch long), yellow or brownish flies that usually have red eyes.
- Fruit flies are attracted to ripened fruits and vegetables. They can also breed in drains, garbage disposals, empty bottles and cans, trash containers, mops and cleaning rags.
- Fruit flies lay large numbers of eggs on fruit and the larvae feed on the fruit.
- Fruit flies are active during periods of warm weather, and a single generation may develop in less than a week when temperatures are between 80° and 89°F.
- Temperatures above 105°F kill adult fruit flies in a few minutes.
- Infestations can originate from over-ripened fruits or vegetables that were previously infested and brought inside.
- The adults can also fly in from outside through inadequately screened windows and doors.
- Fruit flies are primarily nuisance pests. However, they also have the potential to contaminate food with bacteria and other disease-producing organisms.

Drain Flies

- Drain flies, also called moth flies, are about 1/8-inch in length and often dark-colored. Their wings are covered with fine hairs that gives them a moth-like appearance.
- Drain flies rest on surfaces with their wings held over their back in a roof-like manner
- They are not good flyers, and usually fly with short hopping flights.
- Female drain flies lay eggs in wet organic matter, usually in sink or shower drains.
- Drain flies may also be found developing in wet animal manure, sewage or compost.
- Very large numbers of these flies in one area probably indicates a breeding site bigger than a few indoor drains.
- The life cycle of drain flies can be as short as 8 days, but can take as long as 24 days, depending on the temperature.
- Drain flies do not bite people or animals, and they cause no damage to structures or plants.
- However, because drain flies develop in decaying organic matter, they can carry disease organisms from their development sites to areas where sterility is important, such as health care facilities and food preparation areas.
- Drain flies may also affect human health when present in high numbers, because the bodies of dead flies may disintegrate to form potential allergens.

Fungus Gnats

- Fungus gnats (Orfelia and Bradysia species) are very small (1/8 to 1/16-inch long), dark flies that are similar in appearance to tiny mosquitoes. Adult fungus gnats have slender legs with segmented antennae that are longer than their head.
- Fungus gnats live in dirt, potting mix, and other sources of organic-rich soil.
- The source of fungus gnat infestations are usually potted plants.
- Fungus gnat larvae primarily feed on fungi and organic matter in soil, but can also chew on plant roots.
- Adult fungus gnats may emerge from indoor houseplants and become a nuisance.
- Adult fungus gnats are attracted to light and they are often seen flying near windows. They may also remain near potted plants and can be seen resting or moving on the soil or plant leaves.
- Females lay tiny eggs in moist organic debris or potting soil. The larvae have a shiny black head and an elongated, whitish-to-clear, legless body. If conditions are especially moist, the larvae may leave slime trails on the surface of soil that look like trails from small snails or slugs.
- Adult fungus gnats don’t usually damage plants or bite people. Their presence is primarily considered a nuisance.
- Adult fungus gnats are short-lived and a generation of fungus gnats (from female to female) can be produced in about 17 days depending upon temperature.

Biting Flies

- There are numerous flies that bite people and animals, including deer flies (pictured above), horse flies and stable flies.
- Deer flies and horse flies are in the family Tabanidae. Horse flies are in the genus Tabanus and deer flies are in the genus Chrysops.
- Deer flies range in size from about 1/4 to 1/3-inches long. Their wings are clear with dark bands or patches, and their bodies are gray or light brown and some species have yellow and black striping. They have large, often brightly colored, eyes and their antennae are usually longer than their head.
- Horse flies range in size from 3/4 to 1-1/4-inches long and usually have clear or solidly-colored wings and brightly colored eyes.
- Like mosquitoes, it is the female deer fly and horse fly that bites. Females require a meal of blood in order to produce eggs.
- The female deer fly bites with two pairs of mouthpart “blades” that cut the skin. Once the skin is cut, the female fly then laps up the blood from the wound.
- Deer flies feed on a variety of mammals, including humans, pets, livestock and deer. They usually bite moving targets and attack the top half of the body, such as the head or neck.
- Horse flies feed the same way as deer flies, but prefer biting lower half of the body, such as the legs, and tend to attack stationary targets.

Biting Flies (continued)

- Deer fly females will continue to return and bite repeatedly if their feeding behavior is interrupted.
- Male deer flies and horse flies are mainly pollen and nectar feeders.
- Deer and horse flies are most likely encountered in hot summer and early fall weather, and are active during daylight hours.
- Stable flies (*Stomoxys calcitrans*), sometimes called "biting flies," are another common fly that bites people who are in areas near livestock (such as horses or cattle).
- Stable flies usually appear in mid-late spring, become severe in early summer, and decrease in numbers throughout the remaining summer months when daytime temperatures are high.
- Stable flies are distinguished from house flies by the long, pointed proboscis which extends in front of the head.
- Both male and female stable flies use their proboscis to pierce the skin of a host and suck blood.
- Under optimal temperatures, the stable fly can develop from egg to adult in 12 days.
- In addition to developing in the manure of livestock, piles of moist, decaying plant material (such as grass clippings or hay) are possible breeding sites.
- Both sexes of stable flies feed about once per day on the blood of animals (and sometimes people) and their bite is painful.
- They often bite through clothing, especially on the ankles. Adults do not feed at night. After a blood meal, the adults fly to a vertical surface to digest their food.
- Stable flies can move large distances. This often occurs when they are picked up by weather fronts and carried aloft for several hundred miles. Un-infested areas can become heavily infested almost overnight.
- Although stable flies are blood feeders and capable of transmitting some disease organisms, stable flies are not known to be significant carriers of disease in the United States.

Approved Self-Help Products for Control of Flies:

Ortho Home Defense MAX Insect Killer for Indoor & Perimeter I (EPA Registration no. 279-9534-239)

Raid Flying Insect Killer, Outdoor Fresh Scent (House & Garden) (EPA Registration no. 4822-569)CTL Industrial Spray (EPA Registration no. 47000-78)

SELF-HELP IPM Outline
Mosquitoes

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (traps and ready-to-use larvicides) by installation maintenance and AKARNG personnel who encounter mosquitoes during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
    - Self-Help products can be obtained by request from the Facilities Maintenance Office via Work Order Request.
- Record and report usage of Self-Help products to the AKARNG IPMC within 1 week using the AKARNG Pest Management Treatment Record Form.
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of mosquitoes in their work and billeting areas. These Self-Help control efforts supplement mosquito control done at the site by Pest Management Professionals (PMPs).
- Mosquitoes carry and transmit many diseases that can cause sickness in humans, such as Zika virus, West Nile, Chikungunya and Dengue.

C. ACTIONS

STEP 1. Surveillance.

- Identify the type of mosquitoes and where they are breeding.
- It is important to identify the type of mosquitoes so the most effective controls are used. Larvicide is the best control method for some types of mosquitoes

and others are more effectively controlled by traps and habitat modification.

- Use the fact sheets attached to this outline to identify the type of mosquitoes.

STEP 2. Decide if Self-Help is appropriate.

- After identifying the mosquitoes using the information in this outline and it is determined control of that type of mosquito is **NOT** appropriate for Self-Help Program, or additional control measures are needed, contact the IPMC or submit a Work Order Request to the Facilities Maintenance Office to arrange for control by a Pest Management Professional (PMP).

- The decision to use Self-Help for control of mosquitoes is often based on personal judgement and common sense. If you have **any** doubts the mosquito infestation cannot be controlled with Self-Help actions, contact the IPMC or submit a Work Order Request to the Facilities Maintenance Office to arrange for control by a Pest Management Professional (PMP).

- Approved Self-Help products are tools to assist Self-Help Program participants with the control of mosquitoes in their work and billeting areas. These Self-Help control efforts supplement mosquito control done at the site by Pest Management Professionals (PMPs). Trying to control mosquitoes with methods that are not effective for the type of mosquito will result in loss of work time, higher costs and unnecessary exposure of AKARNG personnel to pesticides.

STEP 3. Perform Physical and Cultural Controls.

- Using pesticides as the only control method will rarely provide sufficient control of mosquito infestations.

- Habitat modification (removing mosquito resting and breeding locations) is vital in controlling mosquitoes.

- If all the actions in STEP 3 and 4 have been done and there are still on-going significant mosquito infestations at the same facility, contact the AKARNG IPMC (907-428-7157). Further assessment and more extensive control methods may need to be done by contract or the CFMO.

STEP 4. Perform Chemical Control (larviciding or trapping).

- Self-Help products for mosquitoes can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.

- Do **NOT** eat, drink or smoke while using any pesticide.
- Use product as directed on the label for control of mosquitoes.
- See Section 3 (Control, Chemical) below for further guidance on using mosquito larvicides and traps.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.
- Use of chemical controls (pesticides) will only rarely provide sufficient control of mosquitoes. Habitat modification by removing mosquito resting and breeding areas provides additional control.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.
- If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC (907-428-7157).

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC using the AKARNG Pest Management Treatment Record Form (Appendix D) or via phone call/email to the IPMC.
- The AKARNG IPMC should be notified of pest management treatment within 1 week.

STEP 7. Follow-up and Assessment.

- If the Self-Help control methods in this outline do not control the mosquitoes to acceptable levels within 30 days, put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC.

MOSQUITO CONTROL

WHY IS CONTROL NEEDED?

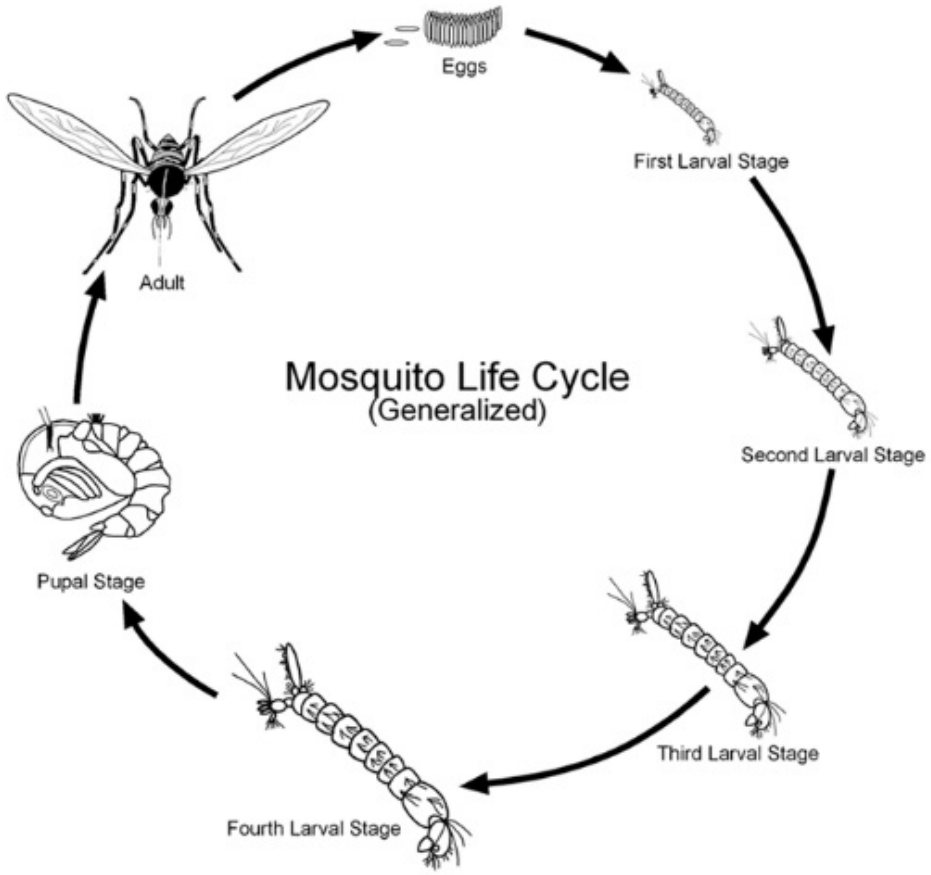
Mosquitoes carry and transmit many diseases that can cause sickness in humans, such as Zika, West Nile, Chikungunya, Dengue and Malaria.

Besides their ability to transmit numerous diseases, the presence of mosquitoes and their attempts to take blood meals can cause great annoyance to personnel.

2. GENERAL BIOLOGY

There are about 3500 species of mosquitoes throughout the world and at least 175 species in the United States.

The most common are the various species in the Aedes, Anopheles and Culex genera (groups).



Note:
Each larval stage is larger than the previous one. Molting occurs between each larval and pupal stage. Larval and pupal stages are aquatic.

Adult mosquitoes are winged insects about 3/16 to 1/4-inches long. The larvae are legless with a bulbous thorax, a long slender abdomen and a breathing tube attached to the tail end of the abdomen. Mosquito pupae look very different from the larvae. Like the larvae, the pupae need to live in water to survive, but they float on the surface of the water, breathing through two trumpet-like appendages attached to the head and chest body region. The pupae move through the water by tumbling and are sometimes called “tumblers”. The adults emerge from the pupae.

The flying range of mosquitoes depends on the species, Many mosquitoes are very good fliers and can range several miles from their breeding sites. Other mosquitoes, such as the Asian tiger mosquito, rarely fly more than 200 yards from where they breed.

Female mosquitoes produce from 50 to 500 eggs per brood and may have 8 to 10 broods in their lifetime. It is estimated that a single female mosquito and its offspring could produce 20 million mosquitoes in 10 weeks.

Mosquitoes generally breed in aquatic environments outdoors. They will not breed in seawater, but they will breed in brackish, stagnant and sewage-contaminated water. Other types of mosquitoes will breed in containers that hold small amounts of water such as tires, buckets, tree holes and gutters. The water in the breeding sites must be still or very slow moving. Mosquitoes will not breed in fast moving rivers or streams.

Mosquitoes cause annoyance and skin irritation due to their feeding habits. It is only the female that feeds on blood and can transmit diseases to humans and animals when doing so.

They are many types of mosquitoes that prefer to share their living areas with people. Because these mosquitoes usually have very small flight ranges, building residents can do much to help with their control.

See the attached information sheets for more information on each of the common types of mosquitoes.

2. INSPECTION AND SURVEY

Identify the type of mosquitoes using the fact sheets attached to this outline. It is important to identify the type of mosquitoes so the most effective controls are used. Larvicide is the best control method for some types of mosquitoes and others are more effectively controlled by traps and habitat modification.

Locate areas of still/stagnant water where mosquitoes may breed.

Visual Sighting: Observation of adult mosquitoes.

Observation of mosquito larvae in manmade structures and containers.

Personnel should always look for potential mosquito breeding sites and either report them to the AKARNG IPMC (907-428-7157) or perform controls to make the sites less attractive to mosquitoes.

Trapping:

Traps are commonly used for mosquito surveillance, however, their use is usually beyond the scope of the Self-Help program. Contact the AKARNG IPMC (907-428-7157) for further information about mosquito trapping efforts.

3. CONTROL METHODS

Cultural:

Sanitation: Perform habitat modification to reduce breeding and resting sites.

- Containers such as buckets, wrinkled tarps, garbage cans, wheelbarrows, gutters, downspouts and tires should be emptied of water and prevented from collecting water.
- If a container cannot be emptied, either drill holes in it so water will drain out or fill container with sand.
- Tree holes that hold water can be filled with sand or spray foam.
- Change the water in birdbaths at least every two days.
- Discard unwanted containers and tires that could become mosquito breeding sites.
- Artificial ponds may be drained to eliminate breeding sites.
- Fill holes and low spots with sand or pea gravel.
- Lawns and landscapes should be irrigated properly to prevent over watering and run-off that can collect and provide breeding sites.

Physical:

Exclusion: Make sure windows and doors are screened and not left open.

Mechanical:

Habitat Alteration: Trim dense vegetation from around buildings to decrease resting sites for mosquitoes.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective and may **NOT** be used.

Chemical:

Trapping: Lethal ovitraps are dark, water-filled containers that mimic the breeding sites favored by certain types of mosquitoes. Lethal ovitraps can be very helpful in controlling day-biting container-breeding mosquitoes (such as Asian tiger mosquitoes).

Female mosquitoes enter the traps to lay their eggs and are killed by a pesticide strip located inside the trap. These traps are relatively inexpensive and easy to use. This type of trap is only effective for certain types of mosquitoes, such as those in the Aedes genera (group).

Larviciding: *Bacillus thuringiensis* subspecies *israelensis* (Bti) is a bacteria that kills mosquito larvae, but is harmless to plants fish, mammals, birds and most other insects. Bti is formulated into "dunks" (or briquettes) that are placed in standing/still water mosquito breeding sites. The Bti dunks/briquettes slowly dissolve and release the bacteria that kills mosquito larvae. Additional Bti dunks/briquettes need to be added to the breeding sites every 30 days throughout the mosquito breeding season.

Bti dunks/briquettes are effective for all types of mosquitoes and are appropriate for Self-Help program use.

Mosquito Repellants: There are many mosquito repellants available to help protect individuals from being bitten. See attached fact sheets for the most effective repellant active ingredients and application techniques.

Self-Help Chemical Control of Aedes Mosquitoes:

- Self-Help products for mosquitoes can be obtained by requesting lethal ovitraps and/or *Bacillus thuringiensis* subspecies *israelensis* (Bti) dunks/briquettes from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.

- Do NOT eat, drink or smoke while using any pesticide.

- Use correct number, spacing and placement of lethal ovitrap traps as directed on the label.

- If there are ponds or other small areas of standing/still water that cannot be drained or filled, add the correct number of Bti dunks/briquettes as directed on the label (typically 1 dunk/briquette per 100 square feet of water surface).

- Always thoroughly wash hands with soap and water after using product and

before eating, drinking or smoking.

- Additional Bti dunks/briquettes will need to be added every 30 days throughout the mosquito breeding season.

- Bti dunks/briquettes will not kill adult mosquitoes immediately – the purpose of both products is to keep the mosquitoes from reproducing, and that lowers the number of adults within 2-4 weeks.

Always follow the label directions for the use, placement and disposal of pesticide-containing products.

Self-Help Chemical Control of Anopheles Mosquitoes:

- Self-Help products for mosquitoes can be obtained by requesting *Bacillus thuringiensis* subspecies *israelensis* (Bti) dunks/briquettes from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.

- Do NOT eat, drink or smoke while using any pesticide.

- Add correct number of Bti dunks/briquettes directed on the label (typically 1 dunk/briquette per 100 square feet of water surface) to ponds and other small areas of standing/still water that cannot be drained or filled.

- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.

- Additional Bti dunks/briquettes will need to be added every 30 days throughout the mosquito breeding season.

- Bti dunks/briquettes will not kill adult mosquitoes immediately – their purpose is to keep the mosquitoes from reproducing and that lowers the number of adults within 2-4 weeks.

Always follow the label directions for the use, placement and disposal of pesticide-containing products.

Self-Help Chemical Control of Culex Mosquitoes:

- Self-Help products for mosquitoes can be obtained by requesting *Bacillus thuringiensis* subspecies *israelensis* (Bti) dunks/briquettes from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide.
- Add correct number of Bti dunks/briquettes directed on the label (typically 1 dunk/briquette per 100 square feet of water surface) to ponds and other small areas of standing/still water that cannot be drained or filled.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.
- Additional Bti dunks/briquettes will need to be added every 30 days throughout the mosquito breeding season.
- Bti dunks/briquettes will not kill adult mosquitoes immediately – their purpose is to keep the mosquitoes from reproducing, and that lowers the number of adults within 2-4 weeks.

Always follow the label directions for the use, placement and disposal of pesticide-containing products.

Wear appropriate Personal Protective Equipment (PPE) as directed on the label whenever handling Bti dunks/briquettes or lethal ovitraps.

Bti dunks/briquettes and lethal ovitraps will not kill large numbers of adult mosquitoes immediately – the purpose of both products is to keep the mosquitoes from reproducing and that lowers the number of adults within 2-4 weeks.

Dispose of used traps as directed on the label. If the label is missing, dispose of by wrapping the trap and placing in a garbage can.

4. AFTER TREATMENT SURVEILLANCE

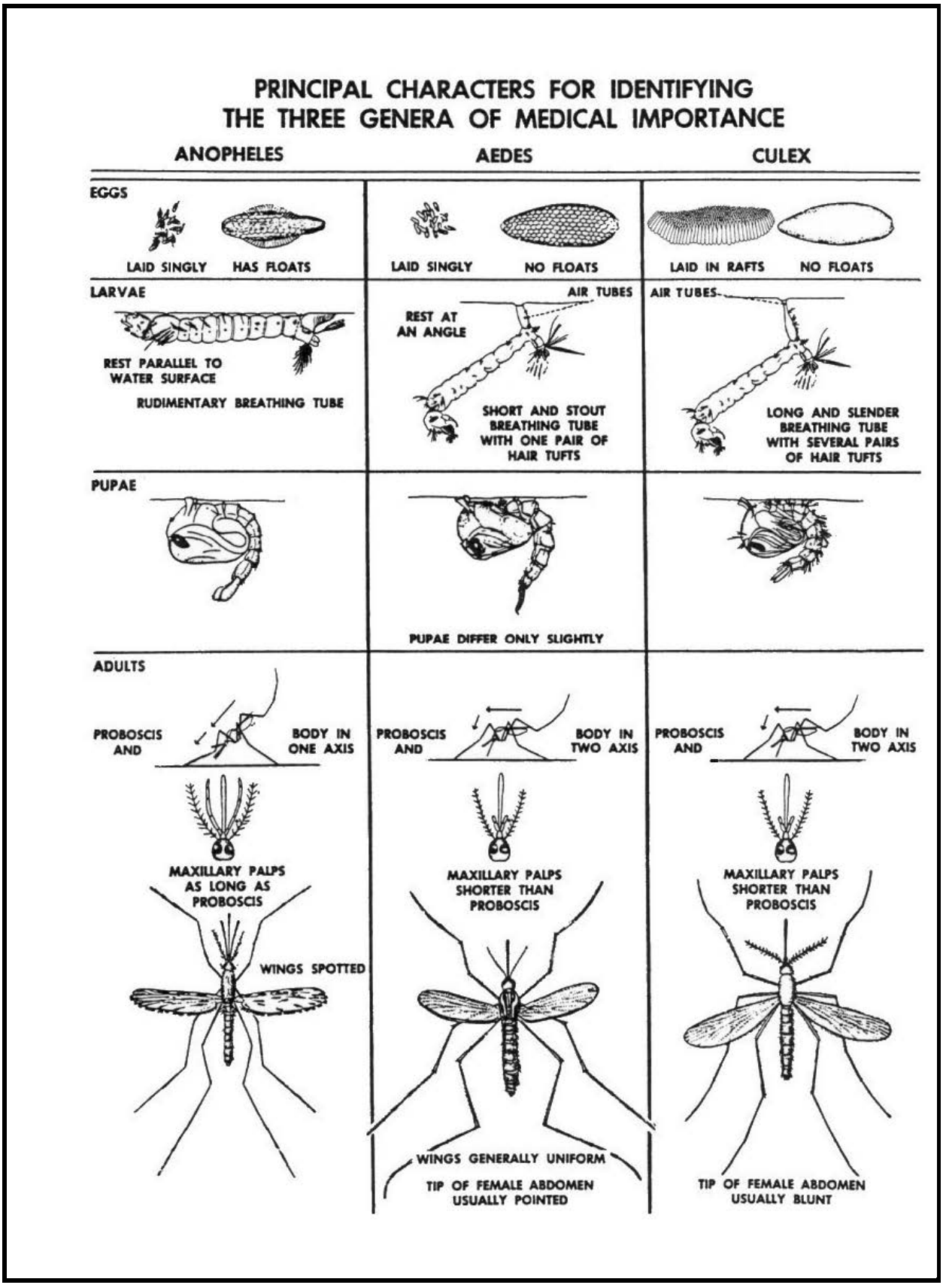
Ongoing surveillance for the presence of mosquito larvae in manmade structures and containers should be continued throughout the mosquito breeding season.

Personnel should also always look for potential mosquito breeding sites and either report them to the AKARNG IPMC (907-428-7157) or perform controls to make the sites less attractive to mosquitoes.

If there is a reduction in the number of mosquitoes, Self-Help control efforts are working. Continue to use Bti dunks/briquettes and/or lethal ovitraps until the end of the mosquito breeding season.

If there is not a reduction in the number of mosquitoes after 30 days of using Bti dunks/briquettes and/or lethal ovitraps, submit a Work Order Request to the

Facilities Maintenance Office or contact the AKARNG IPMC for Pest Management Professional (PMP) assessment and possible additional control measures.


PRINCIPAL CHARACTERS FOR IDENTIFYING
THE THREE GENERA OF MEDICAL IMPORTANCE
ANOPHELES
AEDES
CULEX
EGGS
LAID SINGLY
HAS FLOATS
LAID SINGLY
NO FLOATS
LAID IN RAFTS
NO FLOATS
LARVAE
REST PARALLEL TO WATER SURFACE
RUDIMENTARY BREATHING TUBE
AIR TUBES
REST AT AN ANGLE
SHORT AND STOUT BREATHING TUBE WITH ONE PAIR OF HAIR TUFTS
AIR TUBES
LONG AND SLENDER BREATHING TUBE WITH SEVERAL PAIRS OF HAIR TUFTS
PUPAE
PUPAE DIFFER ONLY SLIGHTLY
ADULTS
PROBOSCIS AND BODY IN ONE AXIS
PROBOSCIS AND BODY IN TWO AXIS
PROBOSCIS AND BODY IN TWO AXIS
MAXILLARY PALPS AS LONG AS PROBOSCIS
WINGS SPOTTED
MAXILLARY PALPS SHORTER THAN PROBOSCIS
WINGS GENERALLY UNIFORM
TIP OF FEMALE ABDOMEN USUALLY POINTED
MAXILLARY PALPS SHORTER THAN PROBOSCIS
TIP OF FEMALE ABDOMEN USUALLY BLUNT

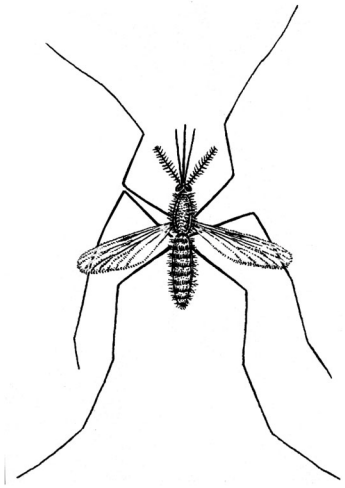
Aedes Mosquitoes

- Mosquitoes in the Aedes genus (group) are often called floodwater mosquitoes because they lay their eggs on moist soil or in containers that periodically catch rainfall.
- Aedes mosquitoes prefer to breed in clean water that is found in tree holes, man-made containers, overflow ditches, and old tires. They lay eggs individually at or above the waterline or on dry surfaces.
- Aedes mosquito eggs can withstand long periods of being dry or cold, so in cold climates, the adult mosquitoes die off while the eggs survive until spring.
- The eggs hatch when wet weather or flooding dampens them and Aedes mosquitoes develop in a four-stage process like other mosquitoes.
- Aedes mosquitoes tend to breed in warm weather, although some species can survive in colder environments.
- Species of mosquitoes belonging to Aedes genus (group) are typically weak flyers and often won't travel more than one-half of a mile away from their original breeding sites.
- Aedes mosquitoes can be identified by the bright white or silver stripes on the abdomen, thorax and legs.

Aedes Mosquitoes (continued)

- The two Aedes mosquitoes that are most commonly found in the United States are also carriers of dangerous diseases.
- The Asian tiger mosquito, *Aedes albopictus* (above right), transmits, Chikungunya, dengue fever, eastern equine encephalitis and Zika (potentially).
- Female Asian tiger mosquitoes are daytime feeders and can be aggressive biters. Like all mosquitoes, the males do not bite.
- Asian tiger mosquitoes, rarely fly more than 200 yards from where they breed.
- The yellow fever mosquito, *Aedes aegypti* (above left), transmits Zika, Chikungunya, dengue and yellow fever.
- The yellow fever mosquito was the most common species of Aedes in the United States until the Asian tiger mosquito was introduced in 1985. Since then, the occurrence of yellow fever mosquitoes has declined in many areas.

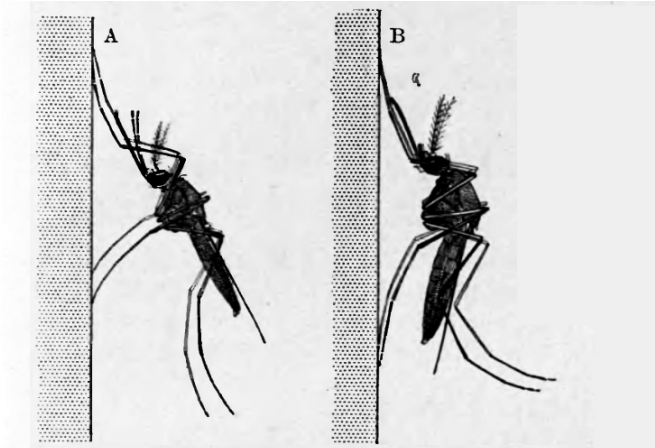
Anopheles Mosquitoes



- Anopheles mosquitoes breed during the warmer months and females deposit their eggs on the surface of water in groups of 50 to 200.
- The eggs hatch and go through the same four-stage developmental process as other mosquitoes.
- Unlike other mosquito larvae, Anopheles larvae do not have breathing tubes, so the larvae lie parallel to the water surface and breathe through holes in their sides called spiracles. Anopheles mosquitoes prefer clean water habitats in marshes, swamps, and rice fields, among others.
- Female Anopheles mosquitoes usually live about two weeks and feed at dusk and dawn. They tend to feed on people and cattle, rather than other warm-blooded creatures.
- Anopheles mosquitoes are the carriers of the parasite that causes malaria. More than one million deaths worldwide each year are attributed to malaria. Anopheles mosquitoes used to carry malaria in the United States, but rarely do so now because the malaria parasite is not present here.

Anopheles Mosquitoes (continued)

- There is at least one species of the Anopheles genus (group) in every state except for Hawaii.



ANOPHELINE AND CULICINE MOSQUITOES IN RESTING ATTITUDE.

- Anopheles mosquitoes are best identified by the position they use while resting. They rest with their body slanted at an angle (above left), unlike other groups of mosquitoes who keep their body level (above right) when at rest.

- Anopheles mosquitoes usually bite at night, just after dusk and just before dawn.

- The malaria mosquito, *Anopheles quadrimaculatus*, lives throughout the eastern and central U.S. and lays its eggs in the shallow, clear water of swamps and ponds which are not too stagnant or acidic. In winter, the fertilized females hibernate in protected areas and come out on warm days.

- *Anopheles freeborni* lives in the western half of the United States, and bites aggressively at twilight and dawn. Its larvae develop in the standing water of irrigation canals, stream edges and rice fields. The adults hibernate, come out on warm days, and breed in early spring.

Culex Mosquitoes

- Culex mosquitoes prefer the tropics, but there are about a dozen species that are somewhat common in the United States.
- They lay their eggs connected together in floating groups called "rafts" on the surface of standing water of any size, including water that is dirty, polluted or brackish. One raft may contain a hundred or more eggs that hatch in two or three days and then develop using the same four-stage process as other mosquitoes.
- Culex mosquitoes tend to hibernate over the winter and breed during the warmer months.
- Adult Culex females usually bite in the evening or at night. Many types of Culex mosquitoes prefer to bite birds or animals rather than humans.
- Northern house mosquitoes, *Culex pipiens*, is common in the northern part of the United States. It is pale brown in color with white stripes on it abdomen and is often found in polluted, standing water. It is the main carrier of West Nile virus.
- *Culex fatigans* is most common in tropic and sub-tropic regions and is found in southern areas of the United States and is present throughout Florida. It is the primary vector of the St. Louis encephalitis virus and can also transmit West Nile virus.

MOSQUITO TRAP-N-KILL
LETHAL OVITRAP

FACT SHEET 18-083-0915

What is the Mosquito Trap-N-Kill and how does it work?

The Mosquito Trap-N-Kill is a reusable mosquito trap that both attracts and kills day-biting container-breeding mosquitoes that live around homes. Unlike traditional mosquito control methods, which apply pesticides over a large area, this trap uses a small strip of pesticide-treated plastic to kill mosquitoes the trap lures in. Female mosquitoes enter the trap looking for a good place to lay their eggs, then the pesticide strip inside kills the adult female and any larva that hatch from her eggs. The Trap-N-Kill attracts female Asian tiger mosquitoes (*Aedes albopictus*) and the yellow fever mosquitoes (*Aedes aegypti*), which spread debilitating diseases such as dengue, chikungunya, and yellow fever with a single bite. **The trap remains effective for up to 45 days, at which time owners should replace the pesticide strip or remove the trap to prevent it from becoming a breeding site for mosquitoes.**

The Mosquito Trap-N-Kill mimics a tree hole breeding site. It lures female mosquitoes inside and kills them. Photo: VID, APHC

Will just using the Trap-N-Kill reduce the number of mosquitoes in my area?

The Trap-N-Kill is most effective when used in combination with other mosquito control strategies. Mosquito larvae can develop in small amounts of standing water. Start by emptying or draining water from places where mosquitoes breed around your home and property. If water cannot be removed, consider applying larvicide to non-drinking-water containers. Common items and areas that collect water creating breeding sites are discarded bottles, cans, tires, flower pot saucers, cemetery urns, trashcans and lids, depressions in plastic tarps, clogged rain gutters, bird baths, plant leaf axils (bromeliads are a popular horticultural plant that produces many potential breeding sites), and natural tree holes. In areas without running water, residents store water in containers around their homes. These containers should be covered with mosquito-proof screens to prevent mosquitoes from breeding in the stored water. Continually assess your control efforts by checking for mosquitoes.

The yellow fever mosquito (*Aedes aegypti*). Photo: CDC / James Gathany

Where do I place the Trap-N-Kill for best results?

The Trap-N-Kill is designed for outdoors use. The best outdoor sites are in part or full shade areas exposed to weather, such as underneath trees or bushes. Protected areas like verandas and porches are less desirable. Place the trap near potential mosquito resting sites, such as walls, fences, hedges, shrubs, used tires, junk piles, or other areas protected from sun and wind. Do not place the trap in direct sunlight, or in windy or fully-exposed areas. Traps should be placed near or at ground level, with at least 12 inches of open space above the trap and place traps 25 feet apart. Keep traps out of reach of children and pets. Do not use the trap on tables intended for serving food.

How can I order the Trap-N-Kill?

For Department of Defense personnel, the Trap-N-Kill is available through the military supply system under NSN 6840-01-628-4751.

Army Public Health Center, Entomological Sciences Program
5158 Blackhawk Road, APG, MD 21010-5403
COM 410-436-3613 / DSN 312-584-3613 / Website: http://phc.amedd.army.mil

How do I set-up the Trap-N-Kill?

1. Remove the small insecticidal strip from package and staple the strip to the inside of the trap, just below the lid. Make sure the strip is between the entrance holes, **not** directly above them. Photo: VID, APHC

2. Place the red velour landing strip inside the canister, opposite the insecticidal strip, so the strip reaches from the bottom of the canister up and over the rim. Bend the red velour strip over the top edge. Photo: VID, APHC

3. Thread zip tie through one side hole and up through the hole in the top of the lid. Screw lid onto the canister making sure to hold the red velour strip in place. Tighten zip tie to secure lid. Photo: VID, APHC

4. Fill canister with water up to the side hole. Do not use chlorinated water to fill the canister. Label the trap with the date it was set up. **Replace the insecticidal strip after 45 days or remove the trap.** Photo: VID, APHC

What else should I consider when using the Trap-N-Kill lethal ovitrap to prevent dengue and chikungunya in my area?

The Asian tiger mosquito (*Aedes albopictus*). Photo: CDC / James Gathany

The Trap-N-Kill can be highly effective when integrated into a community-based dengue or chikungunya control program. For an average-sized home, distribute two to six traps into the surrounding yard. In non-residential areas, traps can be set every 25 feet in a line around the buildings or camp. Remember to eliminate other potential breeding sites that will compete with the Trap-N-Kill.

When controlling dengue and chikungunya, control measures should primarily focus on the yellow fever mosquito (*Aedes aegypti*) unless there is evidence that the Asian tiger mosquito (*Aedes albopictus*) is responsible for the local disease transmission. The yellow fever mosquito mainly breeds around homes, and most mosquitoes will stay within 100 yards of where these places. Its preferred habitats include water storage tanks/jars both inside and outside houses, roof gutters, leaf axils, bamboo stumps, and temporary containers such as metal drums, tires, tin cans, bottles and plant pots. These habitats typically contain relatively clean water. The Asian tiger mosquito also breeds in temporary containers, but prefers natural ones in forests, such as tree holes, leaf axils, ground pools, and coconut shells, and breeds more often outdoors in gardens and less frequently indoors in artificial containers.

The Trap-N-Kill lethal ovitrap simply and specifically controls container-breeding mosquitoes. It reduces the amount of pesticide used, easily integrates into mosquito management programs, and can be removed when mosquitoes are no longer a problem.

Where can I get more information about lethal ovitraps and mosquito control measures?

- Dept. of the Army, TB Med 561; Occupational and Environmental Health Pest Surveillance 1992
- Armed Forces Pest Management Board Technical Guide 47; Dengue and Chikungunya Vector Control Pocket Guide 2014
- Armed Forces Pest Management Technical Guide 48; Contingency Pest and Vector Surveillance 2013
- World Health Organization (WHO) 2009; Dengue, Guidelines for Diagnosis, Treatment and Control.
- Visit the Walter Reed Biosystematics Unit website (wrbu.si.edu), "Medically Important Mosquitoes" section, to search for more information about other container-breeding mosquitoes found throughout the world.

Use of trademarked name does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.
For more information please consult the APHC website - http://phc.amedd.army.mil

Mosquito Bite Prevention (United States)

Not all mosquitoes are the same. Different mosquitoes spread different viruses and bite at different times of the day.

Type of Mosquito	Viruses spread	Biting habits
Aedes aegypti, *Aedes albopictus*	Chikungunya, Dengue, Zika	Primarily daytime, but can also bite at night
Culex species	West Nile	Evening to morning

Protect yourself and your family from mosquito bites

Use insect repellent

Use an Environmental Protection Agency (EPA)-registered insect repellent with one of the following active ingredients. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.

Active ingredient Higher percentages of active ingredient provide longer protection
DEET
Picaridin (known as KBR 3023 and icaridin outside the US)
IR3535
Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)
2-undecanone

Find the insect repellent that's right for you by using EPA's search tool*.

* The EPA's search tool is available at: www.epa.gov/insect-repellents/find-insect-repellent-right-you

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

CS258143 October 13, 2016

Protect yourself and your family from mosquito bites *(continued)*

- Always follow the product label instructions.
- Reapply insect repellent every few hours, depending on which product and strength you choose.
  - » Do not spray repellent on the skin under clothing.
  - » If you are also using sunscreen, apply sunscreen first and insect repellent second.

Natural insect repellents (repellents not registered with EPA)

- The effectiveness of non-EPA registered insect repellents, including some natural repellents, is not known.
- To protect yourself against diseases like chikungunya, dengue, and Zika, CDC and EPA recommend using an EPA-registered insect repellent.
- When used as directed, EPA-registered insect repellents are proven safe and effective. For more information: www2.epa.gov/insect-repellents

If you have a baby or child

- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months of age.
- Dress your child in clothing that covers arms and legs, or
- Cover crib, stroller, and baby carrier with mosquito netting.
- Do not apply insect repellent onto a child's hands, eyes, mouth, and cut or irritated skin.
  - » Adults: Spray insect repellent onto your hands and then apply to a child's face.
- Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years of age.

Treat clothing and gear

- Treat items such as boots, pants, socks, and tents with permethrin or purchase permethrin-treated clothing and gear.
  - » Permethrin-treated clothing will protect you after multiple washings. See product information to find out how long the protection will last.
  - » If treating items yourself, follow the product instructions.
  - » Do not use permethrin products directly on skin.

Mosquito-proof your home

- Use screens on windows and doors. Repair holes in screens to keep mosquitoes outside.
- Use air conditioning when available.
- Keep mosquitoes from laying eggs in and near standing water.
  - » Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as tires, buckets, planters, toys, pools, birdbaths, flowerpots, or trash containers. Check inside and outside your home.

www.cdc.gov/features/StopMosquitoes

Approved Self-Help Products for Control of Mosquitoes:

Contact the AKARNG IPMC if chemical control is necessary.

SELF-HELP IPM Outline
Rodents (Mice & Rats)

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (mechanical and physical controls only) by installation maintenance and AKARNG personnel who encounter rodents (mice and rats) during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
    - Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- **NO chemical control products (rodent baits and/or poisons) are allowed for Self-Help use at AKARNG sites.**
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Control Record form.
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of small-scale rodent infestations that have yet become extensive enough to warrant Pest Management Professional (PMP) control. Trying to control a large, established infestation can result in loss of work time and higher costs resulting from rodent damage to facilities.
- Rodents can harbor a number of human disease agents; among them are Hantavirus and plague. Precautions must be taken when working in rodent infested areas. Rodent feces and dried urine may contain Hantavirus that is transmitted when dust from these waste materials is inhaled. Precautions should also be taken when handling dead rodents in traps.

C. ACTIONS

STEP 1. Surveillance

- Identify the type of rodent, the extent of the infestation and possible entry points into the building, food sources and water sources.

- It is important to identify the type of rodent so the most effective physical and mechanical controls are used. The size of any traps used depends on the size of the rodent. Use the fact sheets attached to this outline to identify the type of rodent.

- As much as possible, determine the extent of the rodent infestation as much as possible to decide if the control needed is beyond that available to Self-Help Program participants.

- Locating where rodents are entering the building(s) and their sources of food and water is vital to long-term control of rodents. There is an end-less source of rodents outdoors. Rodent control will be a never-ending battle if rodents can easily get into the building, especially if there is readily-available food and water.

STEP 2. Decide if Self-Help is appropriate.

- The decision to use Self-Help for control of rodents is often based on personal judgement and common sense. If you have **any** doubts that the rodents can be controlled with Self-Help actions, contact the IPMC for help with assessing the situation and/or to arrange for control by a Pest Management Professional (PMP).

STEP 3. Perform Physical and Cultural Controls.

- Seal all cracks and crevices, especially those over 1/4-inch wide where the rodents may be entering the building. Screening 1/8-inch square or smaller, steel wool and/or metal flashing can be used. Rodents will often chew through calking, although some elastomeric sealants can be used successfully to exclude mice.

- Do not leave unscreened doors and windows open.

- Regularly check objects that are brought into the building, such as boxes, furniture and equipment, to make sure they do not contain rodents.

- Seal food items in metal or rodent-proof containers.

- Store food items in the refrigerator.

- Regularly empty interior garbage cans and place garbage in secure, rodent-proof containers outside until it is removed from the site.

STEP 4. Perform Mechanical Control (trapping).

- Self-Help products for control of rodents can be obtained by request from the Facilities Maintenance Office.

- Only use products that are pre-approved for use in the AKARNG Self-Help Program.

NO chemical control products (rodent baits and poisons) are approved or allowed for Self-Help use at AKARNG sites.

- Wear gloves when performing rodent control actions such as setting traps and handling rodents.

- Wear additional Personal Protective Equipment (PPE) (such as eye and/or respiratory protection) if directed on the label or in areas where Hantavirus is known to occur.

- Do **NOT** eat, drink or smoke while performing rodent control actions.

- Read all instructions for the trap. If no instructions are provided, refer to the fact sheets attached to this outline for guidance on placing and using traps for the target pest.

- Always thoroughly wash hands with soap and water after setting or handling traps/dead rodents, and before eating, drinking or smoking.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.

    - If you have any questions on storage or disposal of the Self-Help products or disposal of dead rodents, contact the AKARNG IPMC (907-428-7157).

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC using the Self-Help Pest Control record form (Appendix D) or via phone call/email to the IPMC.

- The AKARNG IPMC should be notified of pest management treatment immediately.

STEP 7. Follow-up and Assessment.

- Using trapping as the sole control method will only provide temporary control.

- Habitat modification (cleaning up food sources, removing nesting locations) and building practices (repairing holes, cracks and other paths that rodents use to enter buildings) are more permanent controls.

    - If all the actions in STEP 4 have been done and there are still on-going or repeated rodent infestations at the same facility, contact the AKARNG IPMC (907-428-7157). More extensive permanent controls may need to be done by contract or the [CFMO].

RODENT CONTROL

WHY IS CONTROL NEEDED? Rodents like to live the same places and eat the same food as people do. They will contaminate food, destroy fabrics and furniture in search of nesting material and gnaw woodwork, cabinets, furniture and other materials and objects in order to gain access into buildings. They are capable of transmitting diseases to humans such as Rocky Mountain spotted fever, Hantavirus, and Bubonic plague (via the fleas they carry).

1. GENERAL BIOLOGY

See attached information sheets for each of the common rodent pests.

2. INSPECTION AND SURVEY

The normal harborages (places where they rest and nest) indoors are in spaces between walls, attics, eaves, in cabinets and other furniture, and in stored food products. Outdoors, rodents will nest in weeds, rubbish, dense vegetation or in grasslands.

Rodents are usually nocturnal and secretive. They are rarely seen during the day except when infestations are very heavy. Therefore, it is necessary to interpret signs indicating the presence of rodents. Inspection techniques will involve searching for "signs" in the areas of suspected harborage. Signs are found along walls, under piles of rubbish, behind or under storage areas, and in thick vegetation. The following signs are indicative of a rodent infestation.

Fecal droppings: Fecal droppings are usually dark, moist, soft and shiny. In a few days the droppings become dry and hard. When examined under a magnifier or microscope, hairs are usually evident in rodent droppings.

- House mouse: Droppings are typically ¼-inch or less long and are pointed at the ends.
- Norway rat: Droppings are typically ¾-inch long and have blunt ends.
- Roof rat: Droppings are typically ½-inch long and are curved with pointed ends.

Runways: Rodents are creatures of habit and will utilize the same runways between their food source, and nesting areas. Because of their well-developed sense of touch, they prefer body contact with a vertical surface such as a wall or fence and will develop a pathway that can be recognized both outdoors and indoors.

Rub Marks: Mice do not leave obvious rub marks like rats unless there is an extremely heavy infestation. The rub marks of mice will be very low to the floor, and appear more as worn paint or paper rather than oily paint or paper. If rub marks are grossly evident, then the infestation of rodents is probably rats.

Tracks: Wherever there is dust, or when powder or flour is placed out in suspected runways, the tracks left by the animals' feet can give a clue as to the direction of their nests.

3. CONTROL METHODS

Cultural:

Sanitation: Most rodent infestations can usually be traced to poor sanitary conditions that provide a source of food for rodents. A good control program should include removal of the food supply by improving refuse storage and removal.

Elimination of Shelter: Trash and waste materials should be removed to prevent their use as shelters and nesting areas. Lumber and all other materials that can be used as shelters should be stacked on platforms, at least 18 inches above the ground, and at least 18 inches away from walls. Vegetation near buildings should be removed or kept trimmed.

Physical:

Rodent Proofing: House mice can enter through openings as small as 1/4 inch. If a pencil can fit through a crack, so can a house mouse. Structural openings around pipes and electrical conduits should be sealed with metal mesh, metal flashing or steel wool. Most rodents can chew through caulking; however elastomeric sealant may be effective against mice. All openings less than 4 feet above ground should be sealed with metal plates or concrete. Doors should be self-closing and tight fitting at the bottom. Spaces at the door bottoms may be sealed by attaching metal strips.

Mechanical:

Trapping: Trapping is recommended for rodent control when physical and cultural control methods are not enough to control the population.

However, trapping alone is rarely effective. There is an unlimited supply of rodents outdoors and they will continue to enter facilities unless food sources are removed, shelter/nesting areas are eliminated and the means of accessing the facility are sealed.

Using cultural methods (sanitation, elimination of shelter), physical methods (rodent proofing) along with mechanical methods (trapping) can control most rodent infestations.

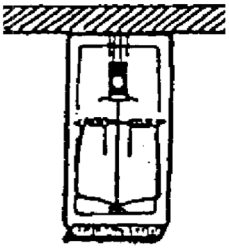
"Old-fashioned" snap traps are highly effective and inexpensive to purchase.

A large number of snap traps should be set in the areas of rodent activity. Placing 12 traps in a room is not too many.

Where the snap traps are placed is very important. Snap traps should be placed in runways along walls, and not in the open. The traps should be placed against the wall,

back-to-back with the triggers facing out and/or perpendicular to the wall, with the trigger portion near the wall.

TWO SNAP TRAPS WITH TRIGGERS FACING OUT



SNAP TRAP WITH TRIGGER NEAR WALL

Another effective method of setting snap traps is to place a board so it leans against the wall to make a shadowy “tunnel” and place the traps under the board with the trigger against the wall. Several traps can be set in a row with a ½-inch space between each trap to capture rodents that attempt to jump over the traps.

Peanut butter is a popular and easy to use bait for snap traps. Bacon, chocolate and nuts are also good baits (tie solid baits to the trap trigger with dental floss).

Commercial rodent trap lure baits (that do not contain a pesticide) are available in convenient syringes or squeeze bottles, but are not necessarily better than the above food baits. However, they do not contain any peanut products, which protects individuals with peanut allergies in the vicinity of the baited traps.

Rodents (especially rats) may be scared of new objects in their environment and may not go near the trap at first. To help overcome this, traps can be pre-baited (bait the trap, but do not set the trigger) for a couple of days to get rodents accustomed to the trap. Then rebait and set the trigger.

Rodents can become trap shy if the trap is triggered but they are not caught. Changing the bait often helps. For example, changing to bait from peanut butter to bacon (tied to the trap trigger with dental floss) can be effective for trap-shy rodents. Changing the location of the traps may also help.

Traps should be inspected daily. Remove and dispose of dead rodents. Always wear proper PPE when handling rodents.

In addition to snap traps, several other rodent traps can be used successfully. Other

traps are usually metal boxes with one or more openings, with trade names like "Ketch-all" or "Tin Cat". These traps rely on rodent curiosity and the rodents enter the trap to explore what is inside. Some of these traps have snap devices to kill and collect the rodents as they enter, and others are constructed so that rodents cannot escape once they are inside the trap. The traps must be inspected frequently to dispose of dead or trapped rodents.

Sticky Traps: Sticky traps (aka glue traps or glue boards) are not as effective as mechanical traps for rodents. Although sticky traps are simple to use, mice often can free themselves, and this type of trap is ineffective with adult rats.

Sticky traps are not recommended for trapping rodents in most instances.

Sticky traps should **never** be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

Ultrasonic and/or Electromagnetic Rodent Repellent Devices: These devices have been proven to be ineffective and may NOT be used.

Chemical:

Rodent Baits: Rodent baits are **NOT** allowed as part of the Self-Help Program. In nearly all instances, trapping of rodents is the preferred control over using toxic baits. Rodents do not immediately die from ingesting bait, and often die in walls and other enclosed spaces where the carcasses cannot easily be removed. The resulting unpleasant odors may persist for three or more months. Also, many baits are still active in the bodies of rodents even after they have died. Any other animal that scavenges and eats the rodent can also be killed by the toxic ingredient in the bait.

House Mice

House mice are about 6 inches long, including the tail. The length of the head and body together is about 3 inches. The tail is almost naked and about as long as the head and body combined. The color of mice ranges from dark gray to light brown and most are dusky gray with lighter bellies. A mouse's head and feet are proportional to its body size. A young rat will have a head and feet that look way too big for its body.

- In areas where facilities are next to open fields or wooded areas, deer mice may enter buildings. Deer mice are slightly larger than house mice, have big ears and eyes, and are usually reddish brown in color. Because of the association of deer mice with Hantavirus (which can be easily spread to humans and causes death), immediately call the Environmental Office for assistance in identification and take appropriate steps to protect human health if you think you have this species present.

- Adult mice usually live 1/2 to 3 years. Mice become sexually mature at about 35 days. The average female has about 8 litters in her lifetime and litter average about 6 young.

- The house mouse is found throughout the world and is the most domesticated of all rodents. They prefer to live in association with humans and man-made structures, but the house mouse can live outside as a field rodent.

- Mice are nibblers compared to the voracious appetite of rats.

- The house mouse can survive in dry habitats and metabolize water from its food source. They do not always need a source of water.

- Mice can enter a structure through holes in walls, floors and the foundation. They can also enter through cracks and crevices around doors and windows. All it takes for a mouse to enter a structure is a 1/4 inch square hole.

House Mice (continued)

- House mice eat and contaminate human food. They urinate and defecate continually. They gnaw and destroy furniture, woodwork, books, paper products, clothing and fabrics. Their urine and feces stain these objects. House mice are also capable of transmitting *Salmonella*, other bacterial diseases, roundworms, and tapeworms.

Norway Rats

- Norway rats (*Rattus norvegicus*) are stocky burrowing rodents, about 16 inches long, including the tail. They were unintentionally introduced to North America around 1775 and have spread throughout the contiguous 48 states. Also called the brown rat, house rat, barn rat, sewer rat, gray rat, or wharf rat, it is a slightly larger animal than the roof rat.

- The nose of a Norway rat is blunt, the ears are small, close set and do not reach the eyes when pulled down. The tail is scaly, semi-naked and shorter than the head and body combined.

- Adult Norway rats weigh about one pound, with coarse fur that is usually is brownish or reddish-gray above, and whitish-gray on the belly. Blackish individuals occur in some locations.

- Norway rats live in close association with people. They burrow to make nests under buildings and other structures, beneath concrete slabs, along stream banks, around ponds, in garbage dumps, and at other locations where suitable food, water and shelter are present. In urban areas they live in and around residences, in basements, warehouses, docks, and in sewers. Although they can climb, Norway rats tend to inhabit the lower floors of multi-story buildings.

- Norway rats will eat nearly any type of food. When given a choice, they select a varied diet and choose fresh foods over stale or contaminated foods. They prefer cereal grains, meats and fish, nuts, and some types of fruit.

- Rats require 1/2 to 1 ounce of water daily when feeding on dry foods but need less when moist foods are available. Food items in household garbage offer a fairly balanced diet and also satisfy their moisture needs.

Norway Rats (continued)

- Norway rats are primarily nocturnal and usually become active around dusk. Some individuals may be active during daylight hours when the rat population is high, when disturbed (weather change, construction, etc.) or when their food source is threatened.

- Norway rat territories are usually 50-150 feet surrounding nests. In populations where there is plenty of food and shelter, the territories are smaller. However, rats will travel 300 feet or more to obtain their food and water if necessary. In urban areas most rats remain around the buildings and areas that provide their necessities, and do not move great distances unless disturbed.

- Rats have poor eyesight beyond 3-4 feet, relying more on their hearing and excellent senses of smell, taste and touch. Norway rats are very sensitive to motion up to 30-50 feet away, but are considered colorblind.

- Rats use their keen sense of smell to locate food items and to recognize other rats. Norway rats also have an excellent sense of touch due to very sensitive body hairs and whiskers they use to explore their environment. Much of a rodent's movement in a familiar area relies heavily on the senses of touch and smell to direct it around its home range.

- Rodents prefer a stationary object on at least one side of them as they travel, so they commonly move along walls. This is helpful in deciding where to place traps.

- Rats' sense of taste is excellent, and they can detect some contaminants in their food at levels as low as 0.5 parts per million. This highly developed taste sensitivity can lead to bait rejection if the rodent baits are contaminated with insecticide odors or other chemicals.

- Norway rats typically construct nests in below-ground burrows or at ground level that may be lined with shredded paper, cloth, or other fibrous material.

- Litters of 6 to 12 young are born 21 to 23 days after conception. Newborn rats are naked and their eyes are closed, but they grow rapidly and start eating solid food at 2½ to 3 weeks. They become completely independent at about 3 to 4 weeks and reach reproductive maturity at 3 months of age, sometimes as early as 8 weeks.

- Female Norway rats may come into heat every 4 or 5 days, and they may mate within a day after a litter is born. The average female rat has 4 to 6 litters per year and may successfully wean 20 or more offspring annually.

Roof Rats

- The roof rat (*Rattus rattus*) is one of two introduced rats found in the contiguous 48 states. The Norway rat is the other species and is better known because of its widespread distribution. To distinguish between Norway rats and roof rats, pull the tail back over the body. The tail of a roof rat will reach the nose. The tail of the Norway rat will not reach beyond the ears.

- Roof rats range along the lower half of the East Coast and throughout the Gulf States and upward into Arkansas. They also exist along the Pacific Coast and are found on the Hawaiian Islands. Occasionally isolated populations are reported from areas not within their normal distribution range, but these instances are rare.

- Roof rats are prefer higher areas than Norway rats and often will live in trees or on vine covered fences. Landscaped areas and vegetation along waterways provide good habitat. Being agile climbers, roof rats frequently enter buildings from the roof or openings near utility lines that they use to travel from area to area. They have been found in sewer systems, but this is not very common.

- The food habits of roof rats resemble those of tree squirrels. They mainly eat fruit and nuts, but also feed on a variety of ornamental and native plant materials. Like the Norway rat, they are omnivorous and will feed on most anything if hungry. Roof rats usually require water daily, though their local diet may provide an adequate amount if high in water content.

- Litters containing 5-8 young are born about 21 to 23 days after conception. The young rats are naked and their eyes are closed when born, but develop rapidly, growing hair within a week. When they are 9 to 14 days old, their eyes open and they begin to explore for food and move about near their nest. In the third week they begin to take solid food.

Roof Rats (continued)

- The young may continue to nurse until 4 or 5 weeks old. Young rats generally cannot be trapped until about 1 month old. At about 3 months of age, they are completely independent of the mother and are reproductively mature.
- In tropical or semitropical regions, the breeding season may be nearly year-round. Usually the peaks in breeding occur in the spring and fall.
- Roof rats usually begin searching for food shortly after sunset. If the food is in an exposed area and too large to be eaten quickly, they often carry it to a safe hiding place before eating it. Many rats will hoard considerable amounts of solid food, which they may or may not eat later.
- When necessary, roof rats will travel considerable distances for food. They can often be seen at night running along overhead utility lines. They may live in trees or attics and climb down to a food source.
- All rats see poorly, relying more on smell, taste, touch and hearing. They are considered to be colorblind, responding only to the degree of lightness and darkness of colors. Roof rats also have an excellent sense of balance. They use their tails for balance while traveling along overhead utility lines and are very agile climbers.
- From the standpoint of pest control, traditional trapping on the ground or floor will not catch many roof rats. Traps are best set along roof rafters and beams that show signs (rub marks) of frequent roof rat travel.
- Roof rats have a strong tendency to avoid new objects in their environment and this can influence control efforts. These rats may take several days before they will approach a trap.
- Roof rats can be very difficult to trap and their control may often be beyond the scope of the Self-Help program.

SELF-HELP IPM Outline
Spiders

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products by installation maintenance and AKARNG personnel who encounter spiders during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Control Record form.
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of spiders in their work and billeting areas. These Self-Help control efforts supplement spider control done at the site by Pest Management Professionals (PMPs).
- Spiders and their webs can be a general nuisance. Some spider bites may trigger allergic reactions in susceptible people. A few types of spiders, like the black widow and brown recluse, have toxic venom that can cause illness and, rarely, death.

C. ACTIONS

STEP 1. Surveillance.

- Identify the type of spider.
- It is important to identify the type of spider since some spiders pose a human

health and safety hazard.

- Use the fact sheets attached to this outline to identify the type of spider, or contact the AKARNG IPMC for assistance with the identification.

STEP 2. Decide if Self-Help is appropriate.

- The decision to use Self-Help for control of spiders is often based on personal judgement and common sense. If you have **any** doubts the spider infestation can be controlled with Self-Help actions or do not feel safe controlling spiders such as black widow or brown recluse, contact the IPMC or Facilities Maintenance Office to arrange for control by a Pest Management Professional (PMP).

- Approved Self-Help products are tools to assist Self-Help Program participants with the control of spiders in their work and billeting areas. These Self-Help control efforts supplement spider control done at the site by Pest Management Professionals (PMPs). Attempting to control spiders with methods that are not effective will result in loss of work time, higher costs and unnecessary exposure of AKARNG personnel to pesticides.

STEP 3. Perform Physical and Cultural Controls.

- Using pesticides as the only control method will rarely provide effective control of spiders.

- Habitat modification (removing sources of food and spider resting/breeding locations), sanitation and exclusion are important for controlling spiders.

- If all the actions in STEP 3 and 4 have been done and there are still on-going significant spider infestations at the same facility, contact the AKARNG IPMC (907-428-7157). Further assessment and more extensive control methods may need to be done by contract or the CFMO.

STEP 4. Perform Chemical Control (aerosol insecticides).

- Self-Help products for spiders can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.

- Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.

- Do **NOT** eat, drink or smoke while using any pesticide.

- Use product only as directed on the label.

- See Chemical Control options below for further guidance on aerosol insecticides.

- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.

- Use of chemical controls only will rarely provide sufficient control of spiders. Habitat modification (removing sources of food and spider resting/breeding locations), sanitation and exclusion are necessary for controlling spider infestations.

STEP 5. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.

- If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC.

STEP 6. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC (907-428-7157) using the Self-Help Pest Management Treatment Record form (Appendix D) or via phone call/email to the IPMC.

- The AKARNG IPMC should be notified of pest management treatment immediately.

STEP 7. Follow-up and Assessment.

- If the Self-Help control methods in this outline do not control the spiders to acceptable levels within 30 days, put in a Work Order Request with the Facilities Maintenance Office or contact the AKARNG IPMC.

SPIDER CONTROL

WHY IS CONTROL NEEDED?

Spiders and their webs can be a general nuisance. Some spider bites may trigger allergic reactions in some people. A few types of spiders, such as the black widow and brown recluse, have toxic venom that can cause illness and, rarely, death.

3. GENERAL BIOLOGY

Spiders come in various sizes, shapes and colors. Spiders are different from insects in that they have eight legs instead of six legs. They body of a spider is divided into two parts unlike insects that have bodies with three separate parts.

More than 35,000 species of spiders occur worldwide. About 3,400 species of spiders in 64 families are found in North America.

Spiders can be found around the outside of buildings where insects congregate (such as near outdoor lights or on window sills). They often enter buildings through cracks, crevices and holes in walls and foundations, through open doors and unscreened windows.

There may be several hundred eggs in a single spider egg case. A female spider can produce several egg cases in her lifetime. Young spiders begin development in the egg sac. After emerging, they begin to grow and complete 5-12 molts, depending on the species, before reaching adulthood. The typical spider lives for approximately one year.

Spiders feed on insects and they can help in controlling insect pests.

Spiders inject a toxic venom to kill their prey. With a few exceptions, this venom is not harmful to people or animals.

Spiders only bite people when provoked or accidentally touched.

2. INSPECTION AND SURVEY

Identify the type of spider using the fact sheets attached to this outline. It is important to identify the type of spider since some spiders pose a human health and safety hazard.

If a spider is suspected to be a black widow or brown recluse, notify the AKARNG IPMC at 907-428-7157. Further control by a Pest Management Professional (PMP) may be required.

<u>Visual Sighting:</u>

- Observation of spiders or webs.

Trapping:

- Sticky (glue) traps can be used to determine presence of spiders.

  Sticky (glue) traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

3. CONTROL METHODS

An occasional spider in a building is not out of the ordinary, but encountering large numbers of spiders indoors is not normal. Sanitation, habitat modification (removing sources of food and spider resting/breeding locations) and exclusion are the best methods for controlling spiders.

Other than a few types of spiders (such as black widow and brown recluse), most spiders are harmless.

Cultural:

Avoidance: Always use caution when entering areas that are infrequently visited and disturbed, such as warehouses, wood piles, crawl spaces, attics, utility sheds, etc.

Sanitation: Removing resting and breeding sites is important for effective spider control.

- Routinely clean out storage areas.
- Regularly rotate boxes of stock and minimize use of cardboard boxes.
- Routinely vacuum carpets and furniture.
- Remove webs.

Habitat Modification: Reducing insects in or near buildings will removes spiders' source of food.

- Reduce exterior lighting to avoid attracting flying insects to buildings.
- Save energy and turn off lights, or use motion detectors or colored lamps that do not attract insects readily.
- Remove live or dead insects from window sills, door frames and outside light

fixtures.

Physical:

Exclusion:

- Seal cracks in the foundation and other parts of the structure.
- Seal cracks and other openings around doors and windows.
- Use tight-fitting screens on windows and doors.
- Do not leave unscreened doors and windows open.

Mechanical:

Fly Swatters: Fly swatters are an effective control method for spiders.

Vacuums:

- Vacuum up spiders and webs while cleaning.
- Use a wet/dry vacuum filled with water or carefully empty bag when done.

Non-lethal alternative:

- Place a jar over the spider and slip a piece of paper under the opening. Relocate the spider outdoors.

Sticky (Glue) Traps:

- Sticky (glue) traps can also be used to help control spiders.
- Place traps in areas where spiders are present.
- Sticky (glue) traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

Ultrasonic and/or Electromagnetic Repellent Devices: These devices have been proven to be ineffective for control of spiders and may **NOT** be used.

Chemical:

Self-Help Chemical Control of Spiders using Aerosol Insecticides:

- Aerosol insecticides that kill spiders on contact can be used for black widow, brown recluse spiders or when there is a need to control large numbers of spiders.
- Self-Help aerosol insecticides for spider control can be obtained by request from the Facilities Maintenance Office. Only use products that are pre-approved for use in the AKARNG Self-Help Program.
- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do NOT eat, drink or smoke while using any pesticide product.
- Use the aerosol insecticide as directed on the label.
- Always thoroughly wash hands with soap and water after using Self-Help products and before eating, drinking or smoking.

Always follow the label directions for the use, placement and disposal of pesticide-containing products.

4. AFTER TREATMENT SURVEILLANCE

Sticky (glue) traps can be used to determine the effectiveness of spider control.

Sticky (glue) traps should never be placed outdoors or in areas where non-target wildlife (such as birds, bats or snakes) may be accidentally trapped. If non-target wildlife is found alive on a sticky trap, talcum powder, cornstarch or vegetable oil can be applied to the exposed glue around the trapped wildlife and the animal can then usually free itself. For birds and bats, it is best to immediately take the trap, without attempting to remove the animal, to a licensed wildlife rehabilitator for assistance.

If there is a reduction in the number of spiders, Self-Help control efforts are working.

If there is not a reduction in the number of spiders after 30 days of starting control efforts, Submit a Work Order Request to the Facilities Maintenance Office or contact the AKARNG IPMC for Pest Management Professional (PMP) assessment and possible additional control measures.

Black Widow Spiders

- There are 31 species of “widow” spiders in North America. The most common are: the southern widow (*Latrodectus mactans*) found in the south and northeast; the western black widow (*Latrodectus hesperus)* found in the west; the brown widow (*Latrodectus geometricus*) found in the south; and the northern widow (*Latrodectus variolus*) found in the northeast.

- Black widow spider females are most easily identified. The female is about 1½-inches long and shiny black with a red (or orange/yellow) hourglass on the underside of her abdomen. In some species the females may be brown and/or have a series of red spots and two crosswise bars on the underbelly.

- Males are about half the female's size, lighter in color, with smaller bodies and longer legs. Male black widows frequently have yellow, pink or red bands and spots over their backs, as do both sexes of black widows in their immature stages. Juveniles of both sexes resemble the male.

- Newly hatched spiderlings are predominately white or yellowish-white, gradually acquiring more black and varying amounts of red/orange/yellow with each molt.

- Only the female black widow is dangerous to people. Males and juveniles are harmless.

- The female black widow will, on occasion (usually only when in captivity), kill and eat the male after mating.

Black Widow Spiders (continued)

- The female black widow spider is considered the most venomous spider in North America. Their venom is 15 times more toxic then the venom of the prairie rattlesnake. However, their bite is rarely fatal to people.

- Black widow spiders will not attack, but will bite if provoked.

- Black widow spiders can be found anywhere, inside or outside. They may be found in dark, dry shelters such as storage areas, garages, basements, outdoor toilets, hollow stumps, rodent holes, trash, brush and dense vegetation. They prefer dry and dark locations, and will seek warm dwellings in winter.

- Black widows build messy, irregular webs close to the ground and often under a protected ledge such as under equipment or wood piles. They spin webs during the daytime.

- Like many spiders, the black widow spider eats other arachnids and insects that get caught in their webs. They hunt at night and the female spider often hangs upside down from her web as she waits for prey.

- After a prey animal is ensnared in the web, the black widow wraps it in silk. Then, the black widow punctures its prey with its fangs and injects digestive enzymes that liquefy the corpse. The spider then sucks up the fluid.

- Like most spiders, the black widow is capable of living for several months without food. Some specimens have been known to survive almost one year in the absence of prey.

- Black widow spiders are primarily solitary, with the exception of late spring when mating occurs. Female spiders can live up to three years. Males typically live for one or two months.

- After mating, the female creates papery white, tan or gray egg sacs that are ½-inch in diameter. They may be pear-shaped or round, and contain between 200 and 900 eggs each. The eggs hatch after about 30 days. The baby spiders are cannibalistic and few survive the three-month development to adulthood.

- Surviving hatchlings leave the web within a few days by ballooning. During the ballooning process, black widow spiderlings release strands of silk into the air and are carried by air currents to new locations.

Brown Recluse Spiders

- The brown recluse spider (*Loxosceles reclusa*) is found throughout the south central and midwestern United States.
- Other species of Loxosceles spiders occur in the southwestern United States and southern California, but the brown recluse is the most notable and widespread.
- Recluse spiders are rare outside their native range and are often over-reported. Recluse spiders may occasionally be transported to a non-native area in boxes or furnishings, but such infestations seldom become established.
- Brown recluse spiders are 5/8-1 inch long and range in color from tan to dark brown. The legs and underside of the abdomen are plain with no stripes, bands or mottling. The legs are long and thin and lack spines.
- The most distinguishing feature of a brown recluse is a dark violin-shaped mark on its back, with the neck of the violin pointing toward the rear (abdomen) of the spider. This feature is seen on most adult brown recluse spiders, but is sometimes less obvious in younger spiders.

Brown Recluse Spiders (continued)

- The best way to identify a brown recluse spider is by its eye pattern. Brown recluse spiders have a semi-circular arrangement of 6 eyes in 3 groups of 2 while most other spiders have 8 eyes. Seeing their eyes clearly requires a good quality hand lens.
- The molted (shed) skins of the brown recluse have a distinct "rigid" appearance and can be useful in confirming infestation.
- Brown recluse spiders often live outdoors where they are typically found around rocks, utility boxes and woodpiles.
- Indoors, brown recluse spiders can be found in any undisturbed area, such as inside boxes, among papers, in seldom-used apparel and shoes, under furniture or in crevices of window moldings. Closets, attics, crawl spaces and basements are the most common brown recluse spider hiding spots. Clothing left hanging in storage areas should be checked for spiders.
- Like black widow spiders, brown recluse spiders bite in defense and do not bite people unless provoked or accidentally touched. However, both female and male brown recluse spiders can bite and inject venom.
- The bite of a brown recluse spider is toxic, but not fatal. Bites can require medical treatment and cause scarring.
- Brown recluse spiders build webs close to the ground and eat soft-bodied insects such as cockroaches and crickets.

Brown Recluse Spiders (continued)

- The brown recluse hunts at night for insect prey, either alive or dead.
- During daylight hours, brown recluse spiders typically retreat to dark, secluded areas. They often line their daytime area with irregular webbing.
- Adult female brown recluse spiders seldom venture far from their resting area. Males and older juveniles are more mobile and tend to travel farther.
- At times, brown recluse spiders can be seen during daylight hours crawling on floors, walls and other exposed surfaces. This behavior can be triggered by hunger, overcrowding, pesticide application, or other factors.
- Brown recluse spiders mature in about a year and have an average lifespan of 2 to 4 years. The females produce up to 5 egg sacs in a lifetime. About 40-50 eggs are contained within 1/3-inch diameter off-white silken egg sacs. The baby spiders gradually increase in size, molting five to eight times before becoming adults.
- Brown recluse spider infestation levels in buildings vary greatly, ranging from one or a few spiders to several hundred.

Wolf Spiders

- There are about 200 types of wolf spiders in the United States.
- Wolf spiders are usually brown, grey, black or tan, with dark markings, usually stripes. Their coloring is effective camouflage, helping them catch their prey and keep safe from predators.
- Wolf spiders are often big, ¼ to 1-inch long, and hairy. Males are typically smaller than the females.

- Wolf spiders have a distinctive eye arrangement. They have a front row of four small eyes set in almost a straight row. The back row of eyes is arranged in a V-pattern with the apex next to the front row.
- Wolf spiders have excellent night vision, and primarily hunt in the dark. They are sometimes detected at night due to the shine of lights off their eyes.

Wolf Spiders (continued)

- Wolf spiders will bite when threatened but their venom is not very harmful to people. Some people may have some redness or swelling after being bitten but no serious medical problems have ever been reported.
- Unlike most spiders, wolf spiders don't hunt with webs. Instead, they usually chase their prey using their ability to run fast.
- Some species of wolf spiders do not chase their prey, but wait for it to walk by and ambush it.
- Wolf spiders often jump on their prey, hold it between their legs and roll over on their backs, trapping their prey with their limbs, before biting it.
- Wolf spiders may enter buildings in search of prey. Although they normally live and reproduce outdoors, they often stay indoors once inside.
- Indoors, wolf spiders usually remain at or near floor level, especially along walls and under furniture.
- Outside, wolf spiders can be found under stones, landscape timbers, firewood, leaves and other debris.
- Wolf spiders use visual cues in mating. The males signal their interest to females by waving their pedipalps (short, sensory appendages near their mouths) in special patterns or banging them together.
- After mating, female wolf spiders lay several dozen or more eggs and wrap them in a silk egg sac. Female wolf spiders carry their egg sacs and, if the female is separated from the egg sac, she will search furiously for it. Females may exhibit aggressive behavior when carrying their egg sacs.
- After hatching, the wolf spiderlings climb on their mother’s back and she carries them around for several days.
- Male wolf spiders typically live for one year or less and females can live for several years.
- Because wolf spiders feed on a variety of insects, including crop pests, they are considered beneficial.
- The Carolina wolf spider (*Hogna carolinensis*) is the official state spider of South Carolina, which is the only state that has a state spider.

Daddy Longlegs (Harvestmen) & Cellar Spiders

- What most people refer to as daddy longlegs aren't really spiders!
- They are arachnids, but so are mites, ticks, scorpions and other eight-legged creatures. Daddy longlegs (also called harvestmen) belong to the order Opiliones and are more closely related to mites or scorpions than spiders.

- To further confuse things, cellar spiders (above) are also sometimes called “daddy longlegs”. They are spiders that belong to the order Pholcidae.
- There are more than 6,500 species of daddy longlegs (the real kind, aka harvestmen, not cellar spiders) found all over the world.
- True daddy longlegs live in moist, dark places and eat mostly decomposing vegetable and animal matter.

Daddy Longlegs (Harvestmen) & Cellar Spiders (continued)

- There is a common urban legend that daddy longlegs have the most toxic venom of all spiders but their fangs are too small to bite. In fact, daddy longlegs don't have venom glands or even fangs.
- Daddy longlegs spiders (aka cellar spiders) do have fangs and can bite, but they don't have venom that is harmful to people.
- Unlike spiders, daddy longlegs don't build webs and cannot make silk. They have a one-segment, pill-shaped body, without the "waist" that spiders have between body segments. They also have only two eyes rather than eight eyes like spiders.
- Daddy longlegs curl their legs in and play dead for several minutes if they're disturbed.
- Daddy longlegs spiders (aka cellar spiders) are true spiders and, like all spiders, have 2 body basic body parts (cephalothorax and abdomen), have 8 eyes, most often clumped together in the front of the body, have 8 legs all attached to the front body part (the cephalothorax), and they make webs out of silk.
- The most common two types of cellar spiders found the United States are both non-native spiders that originated in Europe.
- *Pholcus phalangioides* is an overall grey spider with a long, rectangular abdomen and is found throughout the United States.
- *Holocnemus pluchei* also have a long, rectangular abdomen but have a brown stripe on the underside. These spiders are very common along the Pacific coast and southwest deserts.

Approved Self-Help Products for Control of Spiders:

Ortho Home Defense MAX Insect Killer for Indoor & Perimeter I (EPA registration no. 279-9534-239)

SELF-HELP IPM Outline
Stinging Insects

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (ready-to-use aerosol bee, wasp, and hornet control pesticides) by installation maintenance and AKARNG personnel who encounter stinging insects during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Management Treatment Record form

C. ACTIONS

STEP 1. Surveillance.

- Identify the type of stinging insect using the information in this outline.
- Self-Help Program participants **MUST** identify the stinging insect(s) before control is attempted. Controlling some stinging insects and/or the nests may be too dangerous for Self-Help Program participants.
- Many types of stinging insects are “social” and can act together as a single unit. This can increase the risk during control operations since numerous insects can attack simultaneously to defend their nest.
- Additionally, several different species of bees, wasps, and hornets are capable of inflicting severe stings and can sting multiple times.
- Some people are allergic to venomous stings and can have a serious physical reaction if stung. More people die annually from allergic or severe allergic (anaphylactic) reaction caused by insect stings than from snake bites.

- If it is determined the type of stinging insect is not appropriate for Self-Help Program control, contact the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional (PMP).

STEP 2. Decide if Self-Help is appropriate.

- After identifying the stinging insect (and/or the nest) using the information in this outline and determining the type of stinging insect is **NOT** appropriate for Self-Help Program control, contact the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional (PMP).
- The decision to use Self-Help for control of stinging insects is often based on personal judgement and common sense. If you have **any** doubts that the stinging insects cannot be controlled with Self-Help actions, contact the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional (PMP).
- Approved Self-Help products are tools to assist Self-Help Program participants with the control of small, non-threatening stinging insect nests so that designated tasks can be completed without loss of time waiting for a Pest Management Professional (PMP) to arrive. Trying to control too large a nest could result in multiple stings, loss of work time, and unacceptable risk to AKARNG personnel.

STEP 3. Perform Chemical Control (aerosol spray)

- Self-Help products for stinging insects can be obtained by request from the Facilities Maintenance Office.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program.
- Read the entire product label. **The Label is the Law!**
- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do **NOT** eat, drink or smoke while using any pesticide.
- Use product as directed on the label for control of the stinging insect and/or nest.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.

STEP 4. Storage and Disposal of Self-Help Products.

- Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP.
- If you have any questions on storage or disposal of the Self-Help products,

contact the AKARNG IPMC (907-428-7157).

STEP 5. Recording and Reporting.

- Report Self-Help product use to the AKARNG IPMC using the Self-Help Pest Control Record Form (Appendix D) or via phone call/email to the IPMC.
- The AKARNG IPMC should be notified of pest management treatment immediately.

STEP 6. Follow-up and Assessment.

- If the Self-Help control methods in this outline do not control the pest to acceptable levels, submit a Work Order Request to the Facilities Maintenance Office or contact the AKARNG IPMC.

STEP 7. Perform Physical and Cultural Controls.

- Use of chemical controls (pesticides) will only provide temporary control. Habitat modification, building practices (exclusion), or nest removal are more permanent controls.
- Report repeated encounters with stinging insects to the AKARNG IPMC (907-428-7157) so that more permanent controls can be implemented.

Honey Bees

- Honey bees are about ½" long, black and yellow, with fuzzy hair on most of their body.
- Honey bees are highly-organized social group insects with a queen, drones, and potentially hundreds to thousands of workers.
- Nests are found in building walls, hollow trees and hollow pillars.
- Honey bees are active during the day and tend to be quiet during the cooler evenings and night, staying close-by or in the nest.
- In most cases, honey bees are fairly docile and will not attack humans unless the nest is disturbed.

Do Not Kill Honey Bees Unless Necessary!

Honey bees are excellent pollinators of plants and are considered beneficial insects.

Honey Bee Nest Control:

- Nest removal by a bee keeper should always be the first control option.
- **Honey bee nest removal is NOT done by Self-Help Program participants!**
- Most honey bee nests will be large. Self-Help Program participants should **NOT** attempt control.
- Contact the AKARNG IPMC (907-428-7157) for honey bee nest removal.

Bumble Bees

- Bumble bees are larger than honey bees (approximately ½ to ¾-inch long).
- The whole insect is covered in yellowish, orange, blackish, or brownish fuzzy hairs.
- Bumble bees normally nest in holes in the ground, however, their nests can be found in other locations including empty cardboard boxes, trash piles, under logs, in piles of grass clippings, under cement slabs, etc.
- Adult bumble bees are frequently found flying about flowers or ornamental plants.
- Bumble bees are generally docile unless disturbed and single bees should generally be ignored.
- Individual bumble bees can sting repeatedly, unlike honey bees that can sting only once.

Do Not Kill Bumble Bees Unless Necessary!

Bumble bees are excellent pollinators of plants

and are considered beneficial insects.

Bumble Bee Nest Control:

- Bumble bee nests do not tend to be as large as honey bee nests, but because the insect can sting multiple times, and large numbers can attack when the nest is disturbed, caution is required when considering control.
- Bumble bee nests should **NOT** be controlled with Self-Help, contact the IPMC for a Pest Management Professional to remove the nest.

Mud Daubers

- Mud Daubers are “solitary” wasps (i.e. one adult maintains one nesting site) that build small pipe-shaped mud nests on the underside of roofs, soffits, porches, and other structural members.
- The adults are brown and about ¾” long.
- The mud tube nest is the key to identification of this species.
- Mud daubers can sting repeatedly, but seldom sting unless disturbed.

Mud Dauber Nest Control:

- Mud dauber nests are commonly encountered by maintenance personnel and can generally be controlled by using Self-Help products that have been approved for use on stinging insects.
- Exercise caution when multiple nests are in the same location or if the nests are in a confined location.
- Spray the attending adult with the Self-Help product and quickly move away from the area, then knock off the mud tubes using a screw driver or some other tool.
- It is best to control mud daubers at dawn, dusk, or at night, when the adult is present, and most docile.

Paper Wasps

- Paper wasps are ½" to 1" in length, typically a black, red or brownish color, and may have yellow or orange highlights.
- Many people call this group "umbrella wasps" because of the umbrella-shaped paper comb nest, and identifying the nest is the easiest way to identify this group of wasps.
- The nest is usually a single tier, open paper comb with the cells pointed downwards.
- The nests will be found beneath eaves, soffits, window enclosures, under porches, under wooden shelves, below or in electrical enclosures, in tightly enclosed ornamentals plantings, etc.
- Paper wasp colonies can contain from a few up to a few hundred adults.
- The size of the nest is a direct indicator of the number of adult wasps attending the nest.
- Paper wasps are generally docile and will not attack as a large group like some types of bees. However, paper wasps can sting repeatedly.

Congregations of Paper Wasps:

- Paper wasps over-winter as adults and, in the fall, hundreds to thousands of them may congregate (group together) on the highest structure in an area, such as a church bell tower, an airport control tower, or the peak of an administrative building.
- While this may seem threatening, control is not usually required because the wasps will move on after a while.

Paper Wasps (continued)

- After congregation, these insects will hunt for protected sites to overwinter and will enter buildings around windows, under soffits, past loose flashing, and into any location that may provide shelter.
- On warm winter days, paper wasps can become active and enter the interior of the buildings, causing a nuisance to occupants.
- Generally, these wasps are not aggressive in this situation and a fly swatter or rolled up magazine is the most effective control for small numbers that are found inside of buildings.

Paper Wasp Nest Control:

- Paper wasp colonies are commonly encountered by maintenance personnel and most of them can be controlled using Self-Help products that have been approved for use on stinging insects.
- The nests increase in size as the summer season progresses.
- Exercise common sense if the nest appears large or if there are multiple nests in the area.
- When a nest is sprayed, the adult wasps at the nest will get aggressive, so quickly move away from the area after spraying.
- After the adults die, knock the nest down (if possible).
- It is best to control paper wasps at dawn, dusk, or at night when the adults are at the nest site and the insects are quietest.

Cicada Killers

- The cicada killer is a very large wasp (1” to 2” long) that is usually seen flying close to the ground.
- The body is shiny black with bright yellow highlights.
- These wasps nest in the ground.
- Because of the large size, many fear this insect.
- Cicada killers are semisocial wasps, but are typically not aggressive.
- There is little chance of being stung unless the insect is handled, agitated, or stepped on with bare feet.
- Control is usually **NOT** required.

Other Solitary Ground-Nesting Wasps & Bees

- Some species of wasps and bees are solitary ground or lawn nesters.
- The nests are typically single round holes in turf or ground with a small untidy mound of excavated soil around the entrance.
- **Control is NOT done by Self-Help Program participants!**
- Control of these ground or lawn-nesting wasp or bee species should **NOT** be performed unless there is a huge number of nests causing turf damage or their presence in a frequently occupied area threatens human health. In such cases, contact the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional.

Yellowjackets

- Yellowjacket wasps are black and yellow insects about ½-inch in length.
- This group of wasps is social and builds large paper comb nests in the ground, in wall voids, or other well protected areas.
- A yellowjacket colony will grow throughout the summer and have thousands of workers by the fall of the year.
- Yellowjackets can sting repeatedly and will attack as a group if the nest is disturbed.
- Yellowjackets are sometimes described as an insect with a bad attitude and many feel that this is the most dangerous of the stinging wasps because of their unpredictable behavior.
- Yellowjacket wasps tend to scavenge at human food sources. Often, they will be found foraging around open trash cans, trash dumpsters, outdoor food serving areas, etc.
- Keeping areas clean, trash cans covered, soda cans properly disposed of etc. will lessen the attractiveness of an area and generally result in adequate control.

Yellowjackets (continued)

Yellowjacket Nest Control:

- **Extreme CAUTION is required.**
- Yellowjackets will fiercely defend their nest. Most incidents of people being repeatedly stung occur when a person unknowingly disturbs an underground nest.
- The nests can be hidden in an ornamental garden, in tall un-mowed grass, under foundations, under large rocks, or in some location that offers concealment for the yellowjacket entrance.
- Self-Help products are inadequate for controlling a nest full of yellowjackets.
- Self-Help Program participants should **NOT** attempt to control yellowjacket nests that are underground or in wall voids unless positive the nest is small.
- To gauge the size of a yellowjacket colony:
    1. Consider the time of year – nests start small in the spring and get larger as the season progresses.
    2. Watch the entrance. If it is late summer and yellowjackets are observed coming and going every second or two, assume it is a large colony and do **NOT** attempt control.
- When controlling small yellowjacket nests, perform the work at dawn, dusk, or at night when most of the adults are in the nest, and the insects are least active.
- Usually the best choice for yellowjacket nest control is to contact the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional

Hornets (Bald-faced and European)

- Bald-faced and European hornets are wasps that are about 3/4” in length, generally brown and black in color, with vivid yellow or white markings on the face.
- This group of social, stinging insects will build spectacular aerial nests in plain view. The nests are large, grayish-brown, teardrop-shaped, paper carton structures.
- Nests can be found hanging from a tree branch, in a tall ornamental bush, or attached to the eve of a dwelling.
- The nest encloses many tiers and may be tended by thousands of insects by the end of the summer.
- The Bald-faced and European hornets are two common varieties found throughout the United States. They are very aggressive when disturbed, can sting repeatedly, and will attack as a group.
- Generally, hornets should only be controlled by experienced Pest Management Professionals.

Hornets (Bald-faced and European) (continued)

Hornet Nest Control:

- Self-Help Program participants should **NOT** attempt control of aerial hornet nests unless the nest is very small (smaller than a softball).
- If the nests are bigger than a softball, or if there is any doubt about personal safety or risk, do **NOT** attempt Self-Help control and report nest location(s) to the Facilities Maintenance Office or the IPMC to arrange for control by a Pest Management Professional (PMP).
- Spraying an aerial nest with an aerosol pesticide will generally split open the nest and agitate the hornets to a stinging frenzy, resulting in their attack of anything nearby. Self-Help products are a very poor defense against frenzied hornets.
- If control is attempted, perform it at dawn, dusk, or after dark when the hornets are in the nest, and quietest.

Carpenter Bees

- Carpenter bees are semisocial bees that look very much like large bumble bees.
- The size of carpenter bees make them appear intimidating, but they are not aggressive unless handled or agitated.
- Carpenter bees can sting repeatedly.
- Carpenter bees are most likely seen flying close to flowers to collect pollen or hovering near wooden structures where they nest.
- These insects make a ½" to ¾"-round hole in wood such as eves, porch ceilings, window sills, telephone poles, fence posts, etc.
- Unpainted, soft woods are preferred.
- Carpenter bees lay their eggs in the holes.
- Maintenance personnel usually encounter the holes of the carpenter bee rather than the bee itself.
- Do not spray Self-Help products into the hole since it will likely splash back out of the hole.
- Since these holes are often used year after year by succeeding generations or carpenter bees, they should be sealed. Report the carpenter bee holes to the Facilities Maintenance Office or the IPMC so the holes can be caulked and the surface repainted.

Approved Self-Help Products for Control of Stinging Insects:

Ortho Hornet & Wasp Killer (EPA Registration No. 1021-1780-239)

Raid Wasp & Hornet Killer (EPA Registration No. 4822-553)

Raid Flying Insect Killer, Outdoor Fresh Scent (EPA Registration No. 4822-569)

Chemisco (Spectricide/Hot Shot) Wasp & Hornet Killer (LE) (EPA Registration No. 9688-190-8845)

SELF-HELP IPM Outline
Weeds

A. PURPOSE

The Self-Help pest management program authorizes the use of approved Self-Help products (low-toxicity, ready-to-use herbicides) by installation maintenance and AKARNG personnel who control weeds during the normal course of their assigned duties.

B. RESPONSIBILITIES

- Self-Help Program participants are responsible for proper use, recording, reporting, storage and disposal of Self-Help products.
- **All** label instructions must be read and followed – **The Label is the Law!**
- A Safety Data Sheet (SDS) should accompany the Self-Help product and be readily available to personnel using the product and working in the area where the product is used.
- Only use products that are pre-approved for use in the AKARNG Self-Help Program. Contact the AKARNG IPMC (907-428-7157) for a current list of approved Self-Help products.
- Self-Help products can be obtained by request from the Facilities Maintenance Office.
- Record and report usage of Self-Help products to the AKARNG IPMC immediately using the Self-Help Pest Control Record form.

C. ACTIONS

STEP 1. Estimate the area of the weeds to be treated.

If the area to be treated is more than 500 square feet or 200 linear feet of fenceline/roadside/building foundation, a Pest Management Professional (PMP) may be needed to control the weeds. The number of weeds in the area should also be considered.

If it is determined the area to be treated is not appropriate for Self-Help Program control, contact the IPMC to arrange for control by a Pest Management Professional (PMP).

STEP 2. Review the attached training slides and/or attend training provided by the IPMC.

STEP 3. Self-Help products for weeds can be obtained by request from the Facilities

Maintenance Office. Only use products that are low-toxicity, ready-to-use (do not require dilution or mixing) and pre-approved for use in the AKARNG Self-Help Program.

STEP 4. Read the entire product label. **The Label is the Law!**

- Wear appropriate Personal Protective Equipment (PPE) as directed on the label.
- Do **NOT** eat, drink or smoke while using any pesticide.
- Use product as directed on the label for control of the weed.
- Always thoroughly wash hands with soap and water after using product and before eating, drinking or smoking.

STEP 5. Store and/or dispose of any leftover Self-Help products as directed on the label and the AKARNG IPMP. If you have any questions on storage or disposal of the Self-Help products, contact the AKARNG IPMC (907-428-7157).

STEP 6. Report Self-Help product use to the AKARNG IPMC using the AKARNG Self-Help Pest Control Record form (Appendix D) or via phone call/email to the IPMC.

The AKARNG IPMC should be notified of pest management treatment immediately.

STEP 7. If the Self-Help control methods in this outline do not control the weeds to acceptable levels, submit a Work Order Request to the Facilities Maintenance Office or contact the AKARNG IPMC.

Approved Self-Help Products for Control of Weeds:

Roundup Weed & Grass Killer Ready-to-Use Plus (EPA Reg. No. 71995-33)

Arctic Gro Weed & Feed Fertilizer granular formula (EPA Reg. No. 2217-559-72400)

Scotts Turf Builder Weed & Feed (EPA Reg. No. 538-333)

Ortho GroundClear (EPA Reg. No. 91151-1-239)

Spectracide Weed & Grass Killer (EPA Reg. No. 9688-293-8845)


AKARNG Integrated Pest Management Program
Self-Help Program Training for Vegetation Control
Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)
EPA Registration No. 71995-33
Active Ingredient: Glyphosate-isopropylammonium (2.0%)

Roundup® Ready-To-Use products may be used by AKARNG personnel after completion of the following steps:

1. Read and understand training slides within this PowerPoint.
2. Print final slide - Acknowledgement of Understanding.
3. Sign/Date Acknowledgement of Understanding demonstrating you have received training (training to be repeated annually).
4. Keep (original) as part of your permanent training record.
5. Send (copy) to AKARNG Integrated Pest Management Coordinator: Mandy Hope, mandy.hope@alaska.gov, 907-428-7157

Roundup® Weed & Grass Killer Ready-To-Use Plus

EPA Registration No. 71995-33

Active Ingredient: Glyphosate-isopropylammonium (2.0%)

- AKARNG Integrated Pest Management Self-Help Program (Vegetation Control) authorizes the use of Roundup® Weed & Grass Killer Ready-To-Use products by AKARNG personnel who have received this training and are not certified pesticide applicators.
- This training program is designed to ensure that personnel who will be applying this herbicide receive adequate training and guidance prior to performing the operation.
- The purpose of this program is to ensure that the herbicide is used safely and with environmental responsibility.

Roundup® Weed & Grass Killer
Ready-To-Use Plus

EPA Registration No. 71995-33

Active Ingredient: Glyphosate-isopropylammonium (2.0%)

Important!

In the Self-Help Program, glyphosate can only be purchased as a Ready-To-Use product (commercially available) in order to avoid mixing and formulation requirements and to allow for application by personnel who have not yet obtained pesticide certification.

Self-Help Vegetation Control: Training in the Use of Ready-To-Use Glyphosate at AKARNG Installations

Roundup® Ready-To-Use products approved for use:

- Roundup® Ready-To-Use Weed & Grass Killer III with Sure Shot™ Wand
- Roundup® Ready-To-Use Weed & Grass Killer III
- Roundup® Ready-To-Use Weed & Grass Killer III Refill
- Roundup® Ready-To-Use Weed & Grass Killer III in the Pump 'N Go®2 Sprayer
- Roundup® Ready-To-Use Weed & Grass Killer with Comfort Wand®

Reporting

- Records of all pesticide/herbicide use (including the use of Ready-To-Use products in the Self-Help program), will be maintained by the local Facility Manager and by the AKARNG Pest Management Coordinator.
- When pest control operations are accomplished, record the action on **Self-Help Pest Control Record** (examples of a blank and completed form follow).
- Submit a copy to the Pest Management Coordinator: Mandy Hope, mandy.hope@alaska.gov, 907-428-7157
- File the original **Self-Help Pest Control Record** on-site as part of your permanent maintenance record.

AKARNG Pest Management Treatment Record

Self-Help/Non-Chemical/Chemical

Facility: _____ **Treatment Date:** _____

Location of Treatment: _____

Type of Pest Problem: _____

Indicators of Pest Problem: _____

(What did you observe and where? Number of pests seen, signs of damage...)

Self-Help & Non-Chemical Pest Management Actions:

Mandatory Self-Help training is required prior to application pesticides. Only pesticides listed as "Approved for Self-Help Program" on the State Pesticide Use List (SPUL) are allowed to be used as Self-Help.

Self-Help Applicator Name: _____

Methods Applied/Product(s) Used: _____

_____

Chemical Pesticide/Herbicide Application:

With the exception of pesticides listed as "Approved for Self-Help Program" on the SPUL , no other pesticides may be applied by AKARNG personnel without current State or DOD Pesticide Applicator Certification.

Applicator Name: _____ **Certification #:** _____

(print clearly)

Size of Treated Area: _____ **Man Hours Used:** _____

(approximate sq ft or acreage)

Pesticide/Herbicide Trade Name: _____

EPA Registration Number: _____

Active Ingredient(s) and % Concentration: _____ %

_____ %

_____ %

Ready-To-Use Formulation? ☐ **Yes** or ☐ **No**

or **If yes, quantity applied:** _____

(indicate oz/gal/lbs)

Concentrate Formulation? ☐ **Yes** or ☐ **No**

If yes, quantity of concentrate used: _____

(indicate oz/gal/lbs)

If yes, quantity and type of diluent: _____ _____

(indicate oz/gal/lbs) (type of dliuent)

If yes, quantity of mixture applied: _____

(indicate oz/gal/lbs)

If Outdoor Pesticide/Herbicide Application:

Wind Speed: _____ **Temperature:** _____

Wind Direction: _____ **Other Notable Conditions:** _____

File the original of this record on site as part of your permanent record.
Submit a copy to AKARNG IPMC:

Patrick Geary
State of Alaska DMVA/ AKARNG CFMO Environmental
P.O. Box 5169 JBER, AK 99505
Office (907) 428-7157
patrick.geary@alaska.gov

AKARNG Pest Management Treatment Record
Self-Help/Non-Chemical/Chemical

Facility: Camp Denali CSMS Bldg 49150 **Treatment Date:** 3 Aug 2023

Location of Treatment: Spot treatment with RTU product along the exterior building walls and pavement cracks

Type of Pest Problem: Weeds-White Sweetclover, Dandelions, Vetch, Narrowlead Hawksbeard

Indicators of Pest Problem: Weeds are growing through cracks along the base of the building
(What did you observe and where? Number of pests seen, signs of damage...)

Self-Help & Non-Chemical Pest Management Actions:
Mandatory Self-Help training is required prior to application pesticides. Only pesticides listed as "Approved for Self-Help Program" on the State Pesticide Use List (SPUL) are allowed to be used as Self-Help.

Self-Help Applicator Name: FMO Maintenance Chris Caswell

Methods Applied/Product(s) Used: Ready-to-Use Weed-B-Gon, spray bottle spot treatment

Chemical Pesticide/Herbicide Application:
With the exception of pesticides listed as "Approved for Self-Help Program" on the SPUL , no other pesticides may be applied by AKARNG personnel without current State or DOD Pesticide Applicator Certification.

Applicator Name: Chris Caswell (print clearly) **Certification #:**

Size of Treated Area: 338,000 (approximate sq ft or acreage) **Man Hours Used:** 3 hrs

Pesticide/Herbicide Trade Name: Weed B Gone

EPA Registration Number: 2217-896-239

Active Ingredient(s) and % Concentration:

Dicamba, dimethylamine salt	0.06 %
Dimethylamine 2,4-D	6.42 %
Quinclorac	2.13 %

Ready-To-Use Formulation? ☒ Yes or ☐ No

or **If yes, quantity applied:** 1 gal (indicate oz/gal/lbs)

Concentrate Formulation? ☐ Yes or ☐ No

If yes, quantity of concentrate used: _____ (indicate oz/gal/lbs)

If yes, quantity and type of diluent: _____ (indicate oz/gal/lbs) _____ (type of dliuent)

If yes, quantity of mixture applied: _____ (indicate oz/gal/lbs)

If Outdoor Pesticide/Herbicide Application:

Wind Speed: 0 mph **Temperature:** 60F

Wind Direction: **Other Notable Conditions:** partly cloudy, muggy

File the original of this record on site as part of your permanent record.
Submit a copy to AKARNG IPMC:

Patrick Geary
State of Alaska DMVA/ AKARNG CFMO Environmental
P.O. Box 5169 JBER, AK 99505
Office (907) 428-7157
patrick.geary@alaska.gov

Self-Help Training (Vegetation Control)

Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)

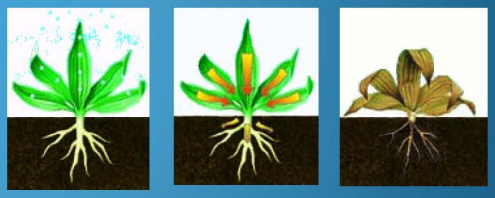
Glyphosate

Glyphosate is an herbicide (pesticide) used to control unwanted plants. It will most likely kill any vegetation that is sprayed, so be very careful where it is applied.

Glyphosate will control almost all vegetation including grasses, broad-leaved weeds, and woody plants. It can be used around desirable ornamental plants as long as the desirables are not sprayed directly or misted with pesticide drift.

Glyphosate is easy to use because the applicator simply sprays the herbicide on the plants to be controlled.

Glyphosate works by being absorbed by the plant where contact occurs:



Once on the plant, glyphosate is transported throughout the plant's vascular tissue, resulting in death of the entire plant, including the roots.

Self-Help Training (Vegetation Control)

Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)

Glyphosate

You may see visible signs that the treatment is working within 24 hours (such as wilting and yellowing), but complete kill of the weed usually takes about 1 – 2 weeks.

Any glyphosate that reaches the soil is broken down by microbes in the soil over time. Spraying soil will generally not control plants.

Ornamental flowers, trees, and shrubs may be planted one (1) day after application.

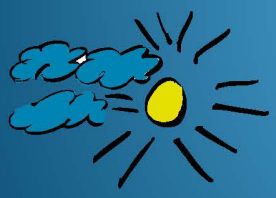

Self-Help Training (Vegetation Control)
Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)
Sites for Weed Control
Sites where ready-to-use glyphosate product may be used will be written on the label attached to the container. It is important to read this label to be sure that application in a specific area is permitted.
Examples of Common Sites
Sidewalks
Driveways
Motor pool areas
Edging around trees, shrubs, & ornamentals
Brush and vine control

Self-Help Training (Vegetation Control)

Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)

Conditions for Weed Control

Herbicide application should be conducted when weather conditions are favorable:



Temperatures should be between 60°F and 80°F.

Rain should not be expected within the next 12 hours.

Wind should also be taken into consideration. NEVER apply this product if the wind speed is greater than 10 mph as the wind may carry the product to non-target sites. There is no reversal of glyphosate effects once it comes in contact with a plant.

Self-Help Training (Vegetation Control)

Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)

Precautions

Applications of this product should be conducted with care and caution. Always take into consideration the weather conditions and be aware of those around you. Do not apply this product in an area with small children or animals. Although the product dries fairly quickly, people and animals need to be kept clear of the area until you can be sure that it is dry. The product is normally dry within 15 minutes after application (however complete drying can take as long as 4 hours after application in humid conditions).

Remember: Glyphosate kills all types of plants and will kill any vegetation that it contacts. If you are spraying near flowerbeds or ornamental plants, be careful not to let the product contact any part of desirable plants.

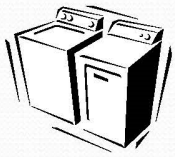
Around desirable ornamental plants or flowers a piece of sheet metal, plexiglass, or other non-absorptive substance can be used to block the spray from reaching desirable vegetation.

Self-Help Training (Vegetation Control)

Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)

Precautions

Following application of a glyphosate product, the user should wash hands well with soap and water.



In addition, the clothing that was worn during application should be washed in a washing machine separately from any other laundry. After this clothing has been washed in the machine, a water cycle should be run before other clothing is washed.

All precautions should be taken to avoid getting glyphosate in your eyes. Wear eye protection when using this product. If an accident does occur, and the product comes in contact with your eyes, flush with water continuously for 15 minutes. While you are doing this, have someone call for medical assistance and be sure to explain what product you were using. Medical personnel will need access to the label from the product container.


Self-Help Training (Vegetation Control)
Applying Ready-To-Use Glyphosate
(Roundup® Weed & Grass Killer Ready-To-Use Plus)
•Read and understand the product label
•Do not eat, drink, or smoke while applying this pesticide
•Wear personal protective equipment as recommended on label
•Never spray non-target vegetation
•Return any remaining Ready-To-Use Roundup® to the location it was issued from
•Follow label instructions to properly dispose of empty containers and never re-use the container
•Do not put glyphosate down any storm or sanitary drain

XXARNG SELF-HELP TRAINING

Acknowledgement of Understanding

Type of Pest: Vegetation

Control Methods: Applying Ready-To-Use Glyphosate (Roundup® Weed & Grass Killer Ready-To-Use Plus)

1. I have read and understand the instructions for performing Self-Help pest control for Vegetation and have read and understand the pesticide label(s). I will follow the label instructions and all other instructions given to me. If I do not understand the instructions, I will have a qualified person explain them to me before continuing. I understand that any pesticide application not in accordance with the label is a violation of the Federal Insecticide, Fungicide, and Rodenticide Act.
2. I will make sure pets, children, and individuals who may be sensitive or allergic to pesticides will not be present during any application nor will they be allowed back into the treated area(s) before thorough post-treatment ventilation.
3. I will perform the control procedures myself, at my facility area only.
4. Once I have received the Self-Help pest control items, I will not use any of the products in a manner inconsistent with the label. Unused items and empty containers will be disposed of as specified by the Integrated Pest Management Coordinator (IPMC) and the product label.
5. I will record and report Self-Help actions as directed by the IPMC.

Name/Title (print): _____

Signature: _____ Date: _____

Facility Name/Building Number: _____

Appendix F – Points of Contacts

AKARNG

Name Patrick Geary *Title* Integrated Pest Management Coordinator	*Phone* 907-428-7157 *Email* patrick.geary@alaska.gov
Name Patrick Geary *Title* Pest Management Quality Assurance Evaluator	*Phone* 907-428-7157 *Email* patrick.geary @alaska.gov
Name Tom Wolforth *Title* Cultural Resources Manager and Environmental Tribal Liaison	*Phone* 907-428-7184 *Email* tom.wolforth@alaska.gov
Name Alyssa Murphy *Title* Environmental Team Lead	*Phone* 907-428-7176 *Email* Alyssa.murphy@alaska.gov
Name Donald Flournoy *Title* Environmental Program Manager	*Phone* 907-428-7197 *Email* donald.flournoy@alaska.gov
Name Joshua Hicks *Title* Facilities Branch Chief	*Phone* 907-519-2100 *Email* joshua.p.hicks4.civ@army.mil
Name Mike Leslie *Title* Facility Maintenance Superintendent	*Phone* 907-428-7159 *Email* michael.leslie@alaska.gov
Name Joshua Hicks *Title* Design and Programs Manager	*Phone* 907-519-2100 *Email* joshua.p.hicks4.civ@army.mil
Name Jeffrey Herrick *Title* Installation Status Report Program Manager	*Phone* 907-428-7185 *Email* jeffrey.herrick@alaska.gov
Name Steven Ernst *Title* Safety/Occupational Health Manager	*Phone* 907-428-6486 *Email* steven.a.ernst2.civ@army.mil
Name Elmendorf Fire and Emergency Services	*Phone* 907-552-2801
Name Anchorage Fire Department Headquarters	*Phone* 907-267-4936
Name Jim Wendland JBER Conservation Law Enforcement Office	*Phone 907-552-9453*
Name JBER Security Forces Squadron	*Phone* 907-552-7070
Name Bryon Kacprzyk Army National Guard Pest Manager	*Phone* 703-601-8275 *Email* bryon.j.kacprzyk.civ@army.mil

State Resources

Alaska Department of Natural Resources, Division of Agriculture	*Phone* 907-269-8400
Name Doug Warner *Title* State Apiarist	*Phone* 907-745-7200 *Email* douglasw@dnr.state.ak.us
UAF Cooperative Extension Service (Anchorage)	*Phone* 907-786-6300
Alaska Department of Environmental Conservation (Pesticide Control)	*Phone* 907-376-1856
Name Adam Crum *Title* Commissioner, Department of Health and Social Services	*Phone* 907-269-7800
Name Justin Fulkerson *Title* Botanist, Alaska Natural Heritage Program	*Phone* 907-786-6387
Name Dr. Robert Gerlach, VMD *Title* State Veterinarian	*Phone* 907-375-8215 *Email* bob.gerlach@alaska.gov
Alaska Department of Fish and Game, Hunting, Trapping, and Wildlife-Related Information (Anchorage area)	*Phone* 907-267-2257
Alaska Department of Natural Resources, Plant Materials Center Programs	*Phone* 907-745-4469

Kelly Registration Systems State Regulatory Data

Search for Registered Pesticides: http://www.kellysolutions.com/

National Pesticide Information Retrieval System (NPIRS) - State

Search for Registered Pesticides: http://npirspublic.ceris.purdue.edu/state/

Federal Resources – Department of Defense

Office of the Assistant Chief of Staff Installation Management (OACSIM)

Senior Army Pest Management Consultant 571-256-9725

Steve Sekscienski steven.w.sekscienski.civ@mail.mil

Army Environmental Center (AEC)

Pest Management Consultant 210-466-1302

Dr. William B. Miller william.b.miller54.civ@army.mil

Army Medical Department Center and School (AMEDD C&S)

Army Pest Management Trainer 210-221-8261

Anthony Schuster
anthony.l.schuster.civ@army.mil

Army Regional Health Command – Pacific

MAJ Lewis (Scotty) Long DSN: 315-263-8447

Chief, Environ Health Services lewis.s.long.mil@mail.mil

USAPHCR-Pacific

ATTN: MCHB-RP

Unit 45006

APO AP 96343-5006

Armed Forces Pest Management Board (AFPMB)

Forest Glen Section 301-295-7476

Walter Reed Army Medical Center FAX: 301-295-7473

http://www.acq.osd.mil/eie/afpmb/

Walter Reed Army Institute of Research (WRAIR)

Center for Infectious Diseases Research 301-319-3226

Entomology Branch, UWF-B

503 Robert Grant Avenue

Silver Spring, MD 20910

DOD Pesticide Hotline 410-436-3773 / DSN 312-584-3773

usarmy.apg.medcom-phc.mbx.pesticide-hotline@mail.mil

Non-DOD Federal Resources

US Environmental Protection Agency (EPA)

https://www.epa.gov/pesticides

EPA Region 10 Office 800-424-4372

https://www.epa.gov/aboutepa/epa-region-10-pacific-northwest

National Pollutant Discharge Elimination System (NPDES) Permitting for Pesticide Applications:

https://www.epa.gov/npdes#476

United States Department of Agriculture (USDA) Natural Resources Conservation Service

https://www.nrcs.usda.gov/wps/portal/nrcs/ak/home/

USDA Animal Plant Health Inspection Service (APHIS), Plant Protection and Quarantine

State Plant Health Director 253-944-2040

https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/sphd/alaska

USDA APHIS, Wildlife Services

Bryant Army Airfield Wildlife Specialist 907-862-2473

Brandon Streadbeck brandon.a.streadbeck@usda.gov

State Wildlife Services State Director 360-753-9884

https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/sa_informationalnotebook/ct_alaska_info

US Fish and Wildlife Service (USFWS)

Threatened & Endangered Species finder: https://www.fws.gov/endangered/?ref=topbar

Alaska Offices: https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=2

US Forest Service (USFS)

https://www.fs.fed.us/organization/Alaska%20Region%20%28R10%29

Other Resources

CHEMTREC

Emergency Number 1-800-424-9300

(For assistance in a chemical emergency involving a spill, leak, or exposure.)

Non-emergencies 1-800-262-8200

National Pesticide Telecommunications Network

Provides up-to-date technical reference material on toxicity, human and environmental effects, disposal, and proper use of pesticides.

http://npic.orst.edu/ 1-800-858-7378

Mobile Access to Pesticides and Labels (MAPL)

US EPA-sponsored pesticide and label finding tool for mobile devices.

http://pi.ace.orst.edu/mapl/

Appendix G – National Environmental Policy Act (NEPA) Documentation

Enviro Tracking #:	ARNG ENVIRONMENTAL CHECKLIST	State ARNG
2024PST001	Enter information in the yellow shaded areas.	AKARNG

PART A - PROJECT INFORMATION

1. PROJECT NAME:

AKARNG Integrated Pest Management Plan (IPMP) 5-year Recertification

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:
n/a	6 December 2023

4. DESCRIPTION AND LOCATION OF THE PROJECT/PROPOSED ACTION:

a. Location (Include a detailed map, if applicable):

The IPMP is to be implemented at all Alaska Army National Guard (AKARNG) Facilities and units throughout Alaska.

b. Description:

The IPMP is a framework that defines how pest management is accomplished by AKARNG. Elements of the Pest Management program include health and environmental safety, pest identification, and pest management including pesticide storage, transportation, use and disposal. The Proposed Action is Recertifying the IPMP every 5-years, as required by DoDI 4150.07 Pest Management Program.

c. The proposed action will involve (check all that apply):

- ☐ Training activities/areas
- ☐ Maintenance/repair/rehabilitation
- ☐ Innovative readiness training project
- ☐ Other (Explain):
- ☐ Construction
- ☐ Real estate action
- ☐ Natural resource management
- ☒ Environmental plans/surveys

d. Project size (acres): (if applicable) n/a Acres of new surface disturbance (proposed): (if applicable) n/a

5. START DATE of PROPOSED ACTION (dd-mmm-yy):	15-DEC-23	Note: This must be a future date.
6. PROGRAMMED FISCAL YEAR (if applicable):	FY24	
7. END DATE (if applicable):	2028	

PART B - DECISION ANALYSIS GUIDE

To use a categorical exclusion, the project must satisfy the following three screening criteria: no segmentation, no exceptional circumstances and a qualifying categorical exclusion that covers the project. The following decision tree will guide the application and documentation of these three screening criteria. The criteria were extracted from 32 CFR Section 651.29 and represent the most common screening conditions experienced in the ARNG. NOTE: Each question in Part B must have an applicable block checked for concurrence with REC.

1. Is this action segmented (the scope of the action must include the consideration of connected, cumulative, and similar actions)? ☐ YES (go to #30) ☒ NO (go to #2)

2. Is there reasonable likelihood of significant environmental effects (direct, indirect,and cumulative)? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #3)

3. Is there a reasonable likelihood of significant effects on public health, safety or the environment? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #4)

4. Is there an imposition of uncertain or unique environmental risks? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #5)

5. Is the project of greater scope or size than is normal for the category of action? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #6)

6. Does the project introduce or employ unproven technology? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #7)

PART B - DECISION ANALYSIS (continued)

7. Will there be reportable releases of hazardous or toxic substances as specified in 40 CFR Part 302? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question.
☐ YES (go to #30) ■ NO (go to #8)

8. If proposed action is in a non-attainment or maintenance area, will air emissions exceed de minimus levels or otherwise require a formal Clean Air Act (CAA) conformity determination? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ■ NO (go to #9) ☐ NA (go to #9)

9. Will the project have effects on the quality of the environment that are likely to be highly controversial? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question.
☐ YES (go to #30) ■ NO (go to #10)

10. Will the project establish a precedent (or make decisions in principle) for future or subsequent actions that are reasonably likely to have future significant effects? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ■ NO (go to #11)

11. Has federal funding been secured for the Innovative Readiness Training (IRT) project?
■ N/A (go to #13) ☐ YES (go to #13) ☐ NO (go to #12)

12. NOTE: IRT projects not currently funded can secure approved NEPA documentation. However, once funding is secured State ARNG is required to coordinate with ARNG-ILE-T to complete natural and cultural surveys via proponent funding.
☐ CONFIRMED (go to #27)

13. Do you have a species list from the U.S. Fish and Wildlife Service that is less than 90 days old?
■ YES (go to #14) Date of List: 6 December 2023 ☐ NO (update species list return to #13)

14. In reviewing the species list, what determination was made by the State ARNG?
☐ No species present (go to #16)
■ No affect (go to #16)
☐ May affect but not likely to adversely affect (go to # Date of USFWS concurrence:
☐ May affect likely to adversely affect (go to #15)

15. Does an existing Biological Opinion cover the action?
☐ YES (go to #16) Date of BO: ■ NO (go to #30)

16. Have the Endangered Species Act, Section 7 requirements completed?
■ YES (go to #17) Date of Documentation: 6 December 2023 ☐ NO (complete documentation, return to #16)

17. Does the project involve an undertaking to a building or structure that is 50 years of age or older?
☐ YES (go to #18) ■ NO (go to #20)

18. Has the building or structure been surveyed for the National Register of Historic Places?
☐ YES (go to #19) ☐ NO (complete inventory, return to #18)

19. Is the building or structure eligible for or listed on the National Register of Historic Places?
☐ YES (go to #20) ☐ NO (go to #20)

20. Does the action involve ground disturbing activities?
☐ YES (go to #21) ■ NO (go to #22)

21. Has an archaeological inventory or research been completed to determine if there are any archeological resources present?
☐ YES (go to #22) ☐ NO (complete inventory or conduct research, return to #21)

22. In reviewing the undertaking, under the National Historic Preservation Act (NHPA) (for both above and below ground resources), what determination was made by the State ARNG?
■ No 106 undertaking; no additional consultation required under NHPA (go to question #27)
☐ No properties affected (go to #24) Date of SHPO Concurrence:
☐ No adverse effect (go to #24) Date of SHPO Concurrence:
☐ Adverse effect (go to #23)

23. Has the State ARNG addressed the adverse effect?
☐ YES (place date of MOA or existing PA and explanation of mitigation in box below, go to #24) ☐ NO (go to #30)

23a.

ARNG Checklist FEB 12 *Previous Editions are Obsolete After DEC 12* Page 2

PART B - DECISION ANALYSIS (continued)

24. Per DoDI 4710.02 did the state ARNG determine that tribal consultation was necessary for this project?

☐ YES (go to #25)
☐ NO (Provide reason in this block 24a, go to #27)

24a.

25. Did the Tribes express an interest or respond with concerns about the project?

☐ YES (go to #26) ☐ NO (go to #27) Date of Documentation:

26. Has the State ARNG addressed the Tribal concerns?

☐ YES (place date of MOU or explanation of how State ARNG addressed tribal concerns in box below, go to #27)
☐ NO (address concerns, return to #26)

Complete only if additional documentation is required in question #26

26a.

27. Does the project involve an unresolved effect on areas having special designation or recognition such as those listed below? For any yes responses go to #30 otherwise go to #28. If any No response is a result of negotiated and/or previously resolved effects please describe resolution in box 27a below.

TYPE	Unresolved Effects?	TYPE	Unresolved Effects?
a. Prime/Unique Farmland	no	e. Wild/Scenic River	no
b. Wilderness Area/National Park	no	f. Coastal Zones	no
c. Sole-Source Aquifer	no	g. 100-year Floodplains	no
d. Wetlands	no	h. National Wildlife Refuges	no

27a. d) Pest Management activities that are within the scope of this analysis are not anticipated to have an impact on any wetlands. If there are any doubts as to whether the Proposed Action will affect a wetland, the Pest Management Coordinator should be consulted before proceeding g) Some of the AKARNG facilities are located in areas that have some flood risk, however the AKARNG does not anticipate the Proposed Action to impact floodplains.

28. Is this project addressed in a separate EA or EIS review?

☑ YES (complete table below; go to Part C, Determination) ☐ NO (go to #29)

Document Title:	Final Programmatic Environmental Assessment for Implementation of U.S. Army Integrated Pest Management Program
Lead Agency:	Army
Date of Decision Document:	August 2010

29. Does the project meet at least one of the categorical exclusions listed in 32 CFR 651 App B?

☐ YES (complete table below; go to Part C, Determination) ☐ NO (go to #30)

List primary CAT EX code	
Descibe why CAT EX applies	

30. At this time your project has not met all the qualifications for using a categorical exclusion under 32 CFR 651. Unless the scope of the project is changed, it will require an Environmental Assessment or possibly an Environmental Impact Statement. If you feel this is in error, please call your NEPA Regional Manager to discuss. If needed, go to Part C Determination.

Additional Information (if needed):

This document is meant to provide environmental analysis for implementing the DoD required pest management program, as evaluated in the 2010 Programmatic EA for Implementing a Pest Management Program. Large scale, outsourced pesticide treatments or other specific pest management treatments/projects may require further evaluation and separate documentation.

Personnel should handle equipment, approved pesticides, petroleum, oil, and lubricants with care to prevent spills, keep spill kits readily accessible. Any spills must be cleaned up and reported to the Water Resources Program Manager at 907-428-7151, in accordance with the attached Installation Spill Contingency Plan.

Attachments:
1. Statewide AKARNG Facilities Map
2. ESA Sec 7 MFR
3. USFWS Species List
4. ISCP
5. 2010 IPMP Programmatic EA Exec Summary

PART C - DETERMINATION

On the basis of this initial evaluation, the following is appropriate:

- ☐ IAW 32 CFR 651 Appendix B, the proposed action qualifies for a Categorical Exclusion (CX) that does not require a Record of Environmental Consideration.
- ☐ A Record of Environmental Consideration (REC).
- ☑ An Environmental Assessment (EA).
- ☐ A Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

PATRICK GEARY Digitally signed by PATRICK GEARY Date: 2023.12.13 13:22:54 -09'00'	FLOURNOY.DONALD.B.1128517657 Digitally signed by FLOURNOY.DONALD.B.1128517657
Signature of Proponent (Requester)	Environmental Program Manager
Patrick Geary, IPMC, AKDMVA	Don Flournoy, AKDMVA
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
	12-29-2023
Date Signed	Date Signed

Other concurrence (as needed):

BARTH.RICHARD.DUANE.1168907660 Digitally signed by BARTH.RICHARD.DUANE.1168907660 Date: 2023.12.26 10:56:10 -09'00'	Thomas Wolforth Digitally signed by Thomas Wolforth Date: 2023.12.13 14:11:05 -09'00'
Signature	Signature
Richard D. Barth, Chief Environmental Branch, CFMO AKARNG	Tom Wolforth, CRM and Tribal Liaison, AKDMVA
Printed Name	Printed Name
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed

Enviro Tracking #:	ARNG Record of Environmental Consideration	State ARNG
2024PST001	Enter information in the yellow shaded areas.	AKARNG

1. PROJECT NAME:
AKARNG Integrated Pest Management Plan (IPMP) 5-year Recertification

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:
n/a	6 December 2023

4. START DATE of PROPOSED ACTION (dd-mmm-yy): 15-DEC-23 Note: This must be a future date
5. PROGRAMMED FISCAL YEAR: FY24
6. END DATE (if applicable): 2028
7. DESCRIPTION AND LOCATION OF THE PROPOSED ACTION:
a. Location (Include a detailed map, if applicable):
The IPMP is to be implemented at all Alaska Army National Guard (AKARNG) Facilities and units throughout Alaska.

b. Description:
The IPMP is a framework that defines how pest management is accomplished by AKARNG. Elements of the Pest Management program include health and environmental safety, pest identification, and pest management including pesticide storage, transportation, use and disposal. The Proposed Action is Recertifying the IPMP every 5-years, as required by DoDI 4150.07 Pest Management Program.

8. CHOOSE **ONE** OF THE FOLLOWING:

- [x] An existing environmental assessment* adequately covers the scope of this project. Attach FNSI if EA was completed by another federal agency (non-ARNG).
  EA Date (dd-mmm-yy): August 2010 Lead Agency: Army
- [ ] An existing environmental impact statement* adequately covers the scope of this project.
  EIS Date (dd-mmm-yy): Lead Agency:
- [ ] After reviewing the screening criteria and completing the ARNG environmental checklist, this project qualifies for a
  Categorical Exclusion Code: See 32 CFR 651 App. B
  Categorical Exclusion Code: **See 32 CFR 651 App. B**
  Categorical Exclusion Code: **See 32 CFR 651 App. B**
- [ ] This project is exempt from NEPA requirements under the provisions of:
  Cite superseding law:

*Copies of the referenced EA or EIS can be found in the ARNG Environmental Office within each state.

9. REMARKS:

PATRICK GEARY Digitally signed by PATRICK GEARY Date: 2023.12.13 13:23:08 -09'00'	FLOURNOY.DONALD.B.1128517657 Digitally signed by FLOURNOY.DONALD.B.1128517657 Date: 2023.12.29 07:57:22 -09'00'
Signature of Proponent (Requester)	Environmental Program Manager
Patrick Geary, IPMC, AKDMVA	Don Flournoy, AKDMVA
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
	12-29-2023
Date Signed	Date Signed

Proponent Information:

10. Proponent:	Alaska Army National Guard
11. Address:	P.O. Box 5169, JBER, AK 99505
12. POC:	Patrick Geary
13. Comm. Voice:	(907) 428-7157
14. Proponent POC e-mail:	patrick.geary@alaska.gov

ARNG REC Form FEB 12 *Previous Editions Are Obsolete After DEC12*

DEPARTMENT OF THE ARMY
ALASKA ARMY NATIONAL GUARD ELEMENT, JOINT FORCES HEADQUARTERS
49000 ARMY GUARD ROAD
JOINT BASE ELMENDORF - RICHARDSON AK 99505-0800

NGAK-FMO-ENV 6 December 2023

MEMORANDUM FOR RECORD

SUBJECT: Endangered Species Act (ESA) Section 7 Consultation for the Alaska Army National Guard (AKARNG) Integrated Pest Management Plan (IPMP) 5-year Review

1. The Proposed Action is an update of the AKARNG IPMP, as required by DODI 4150.07, "DOD Pest Management Program". Per DODI 4150.07, installations are required to develop, maintain, and annually review their IPMPs as well as revise them every 5 years. The current AKARNG IPMP is outdated and in need of the 5-year revision. As this is a Federally-funded action, a NEPA analysis is required.

2. The IPMP is a framework that defines how pest management is accomplished by AKARNG for its properties around the state of Alaska. Elements of the Pest Management Program include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal.

3. The AKARNG has reviewed the available Threatened, Endangered, and Candidate (TEC) species information for the possibility of impacts to TEC species in the action area (the state of Alaska) associated with the Proposed Action.

4. The U.S. Fish and Wildlife Service (USFWS) maintains a current list of TEC species for Alaska. Coordination was conducted with the USFWS through their Information for Planning and Conservation (IPaC) website. The following table shows federally listed species and critical habitat for all boroughs in the state of Alaska.

Common Name	Scientific Name	Status	Critical Habitat	Determination
Northern Sea Otter	*Enhydra lutris kenyoni*	Threatened	Yes	No effect
Polar Bear	*Ursus maritimus*	Threatened	No	No effect
Wood Bison		Threatened	No	No effect
Short-tailed Albatross	*Phoebastria (=Diomedea) albatrus*	Endangered	No	No effect
Spectacled Eider	*Somateria fischeri*	Threatened	Yes	No effect
Steller's Eider	*Polysticta stelleri*	Threatened	Yes	No effect
Bald Eagle	*Haliaeetus leucocephalus*	Protected	No	No effect
Golden Eagle	*Aquila chrysaetos*	Protected	No	No effect
Aleutian Shield Fern	*Polystichum aleuticum*	Endangered	No	No effect

5. If any future pest management activities require ground disturbance or other effects to potential wildlife habitat (i.e. specific actions outside of the normal scope of IPMP implementation to address pest issues) the AKARNG will make a determination of effects to federally-protected species on a project- and site-specific basis, depending on the scope and nature of the pest management activity.

6. Because no wildlife habitat is likely to be affected by the continued routine implementation of the AKARNG IPMP, it has been determined that the Proposed Action will have **no effect** on any listed species that are known, likely, or possibly to occur in the action area.

7. **Migratory Bird Treaty Act.** Fifty-one (51) migratory birds of conservation concern are present in the state of Alaska. The Proposed Action is not anticipated to have an effect on any of these species or to result in the take of migratory birds. Any activity that results in the take of migratory birds or eagles, including their parts, nests, or eggs, is prohibited unless authorized by the USFWS. "Take" is defined by the USFWS as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb". Take of migratory birds or eagles that are unintentionally injured or killed is also prohibited. Prior to removal of an inactive nest, it must be ensured that the nest is not protected under the Endangered Species Act (ESA) or the Bald and Golden Eagle Protection Act (BGEPA). Nests protected under ESA or BGEPA cannot be removed without a valid permit. Birds (live or dead) or their parts (e.g., feathers) or nests may not be collected without a valid permit.

8. The point of contact for this action is Patrick Geary, National Environmental Policy Act (NEPA) Program Manager, 907-428-7157, or via email at patrick.geary@alaska.gov.

FLOURNOY.DONALD.B.1128517657 Digitally signed by FLOURNOY.DONALD.B.1128517657 Date: 2023.12.07 07:02:35 -09'00'

Encl

DONALD FLOURNOY
DMVA-FMO-ENV
Environmental Program Manager

DMVA INSTALLATION SPILL CONTINGENCY PLAN

CAN YOU CLEAN UP WITH THE MATERIALS AND PERSONNEL YOU HAVE ON HAND?

This includes a leak, fuel spill, or a finding of fuel-stained soil.

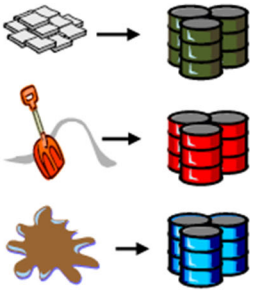
YES

Incidental Release

Put on personal protective equipment, such as gloves and goggles, found in the spill response kits.

Remove ignition sources and avoid vapors.

Stop flow of spill by closing valves, up-righting container, or creating a berm with boom, dirt, or snow. (See page 3 for location of piping shut-off valves.)



Place pooled material and contaminated sorbent, snow, soil, and debris into 55-gallon drum(s) or onto plastic sheeting using non-sparking tools. This should be done as quickly as is feasible after a spill to prevent further migration of oil.

Label drum(s). Example:

POL Spill Residue
October 2018

Contact AKARNG/DMVA Environmental Office to arrange for disposal: (907) 428-7182.

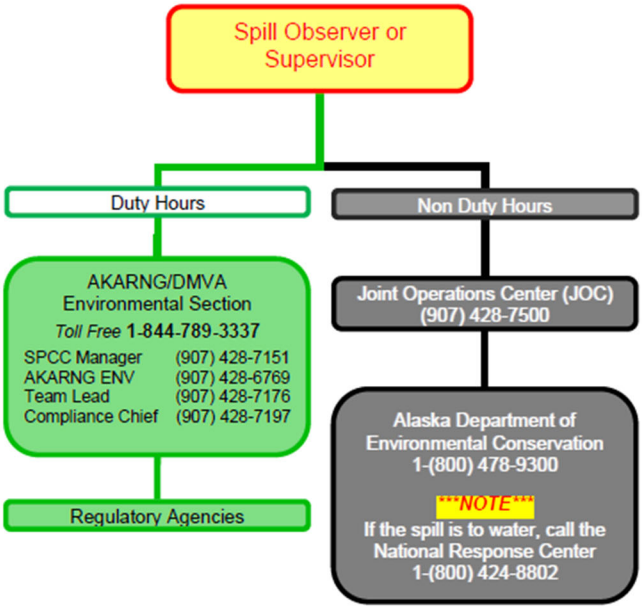
Use the adjacent notification chart for spill reporting once the spill response is complete.

NO

Uncontrolled Release

Evacuate Personnel if Necessary.

Use the following flow chart to notify Chain of Command and Environmental Section.



Do not leave only a voice mail. Notification is not complete until speaking with a person.

AKARNG Environmental Office will contract outside resources for cleanup when necessary.

FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

for the

IMPLEMENATION OF US ARMY

INTEGRATED PEST MANAGEMENT PROGRAM

Prepared by Pest Management Program
U.S. Army Environmental Command
Fort Sam Houston, Texas 78234

August 2010

FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR THE IMPLEMENTATION OF THE U.S. ARMY INTEGRATED PEST MANAGEMENT PROGRAM

LEAD AGENCY: U.S. Army Installation Management Command

COOPERATING AGENCIES: None

TITILE OF PROPOSED ACTION: Programmatic Environmental Assessment for the US Army Integrated Pest Management Program

AFFECTED JURISDICTIONS: Various (Army installations throughout US)

POINT OF CONTACT FOR FURTHER INFORMATION: Dr. William B. Miller, US Army Environmental Command Pest Management Consultant

PROPONENTS: Army, U.S. Army Environmental Command

DOCUMENT DESIGNATION: Programmatic Environmental Assessment

REVIEWED and Approved BY:

SCOTT D. KIMMEL
Colonel, CM
Commanding

Enviro Tracking #:	ARNG ENVIRONMENTAL CHECKLIST	State ARNG
2017PST001	Enter information in the yellow shaded areas.	AKARNG

PART A - PROJECT INFORMATION

1. PROJECT NAME:

Alaska Army National Guard Integrated Pest Management Plan (IPMP) Update 2017-2022

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:
N/A	1/24/18

4. DESCRIPTION AND LOCATION OF THE PROJECT/PROPOSED ACTION:

a. Location (Include a detailed map, if applicable):

The updated AKARNG IPMP (2017) will be continuously implemented at all AKARNG Units and Facilities throughout Alaska.

b. Description:

The IPMP is a framework that defines how pest management is accomplished by the AKARNG. Elements of the Pest Management program include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. The Proposed Action is an update of the AKARNG IPMP, as required by DODI 4150.07, "DOD Pest Management Program". Per DODI 4150.07, installations are required to develop, maintain, and annually review their IPMPs as well as revise them every 5 years. The current AKARNG IPMP is outdated and in need of revision.

c. The proposed action will involve (check all that apply):

- ☐ Training activities/areas
- ☐ Maintenance/repair/rehabilitation
- ☐ Innovative readiness training project
- ☐ Other (Explain):
- ☐ Construction
- ☐ Real estate action
- ☐ Natural resource management
- ☒ Environmental plans/surveys

d. Project size (acres): (if applicable) NA

Acres of new surface disturbance (proposed): (if applicable) NA

5. START DATE of PROPOSED ACTION (dd-mmm-yy):	02/01/2018	Note: This must be a future date.
6. PROGRAMMED FISCAL YEAR (if applicable):	FY 2018	
7. END DATE (if applicable):	2022	

PART B - DECISION ANALYSIS GUIDE

To use a categorical exclusion, the project must satisfy the following three screening criteria: no segmentation, no exceptional circumstances and a qualifying categorical exclusion that covers the project. The following decision tree will guide the application and documentation of these three screening criteria. The criteria were extracted from 32 CFR Section 651.29 and represent the most common screening conditions experienced in the ARNG. NOTE: Each question in Part B must have an applicable block checked for concurrence with REC.

1. Is this action segmented (the scope of the action must include the consideration of connected, cumulative, and similar actions)? ☐ YES (go to #30) ☒ NO (go to #2)

2. Is there reasonable likelihood of significant environmental effects (direct, indirect,and cumulative)? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #3)

3. Is there a reasonable likelihood of significant effects on public health, safety or the environment? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #4)

4. Is there an imposition of uncertain or unique environmental risks? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #5)

5. Is the project of greater scope or size than is normal for the category of action? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #6)

6. Does the project introduce or employ unproven technology? If action meets screening criteria but is assessed in an existing EA or EIS, check NO and proceed to the next question. ☐ YES (go to #30) ☒ NO (go to #7)

PART B - DECISION ANALYSIS (continued)

24. Per DoDI 4710.02 did the state ARNG determine that tribal consultation was necessary for this project?

☐ YES (go to #25)
☐ NO (Provide reason in this block 24a, go to #27)

24a.

25. Did the Tribes express an interest or respond with concerns about the project?

☐ YES (go to #26) ☐ NO (go to #27) Date of Documentation:

26. Has the State ARNG addressed the Tribal concerns?

☐ YES (place date of MOU or explanation of how State ARNG addressed tribal concerns in box below, go to #27)
☐ NO (address concerns, return to #26)

Complete only if additional documentation is required in question #26

26a.

27. Does the project involve an unresolved effect on areas having special designation or recognition such as those listed below? For any yes responses go to #30 otherwise go to #28. If any No response is a result of negotiated and/or previously resolved effects please describe resolution in box 27a below.

TYPE	Unresolved Effects?	TYPE	Unresolved Effects?
a. Prime/Unique Farmland	no	e. Wild/Scenic River	no
b. Wilderness Area/National Park	no	f. Coastal Zones	no
c. Sole-Source Aquifer	no	g. 100-year Floodplains	no
d. Wetlands	no	h. National Wildlife Refuges	no

27a.

28. Is this project addressed in a separate EA or EIS review?

☑ YES (complete table below; go to Part C, Determination) ☐ NO (go to #29)

Document Title:	Final Programmatic Environmental Assessment for the Implementation of the Army National Guard Bureau's Pest Management Program
Lead Agency:	National Guard Bureau
Date of Decision Document:	June 2004

29. Does the project meet at least one of the categorical exclusions listed in 32 CFR 651 App B?

☐ YES (complete table below; go to Part C, Determination) ☐ NO (go to #30)

List primary CAT EX code	
Descibe why CAT EX applies	

30. At this time your project has not met all the qualifications for using a categorical exclusion under 32 CFR 651. Unless the scope of the project is changed, it will require an Environmental Assessment or possibly an Environmental Impact Statement. If you feel this is in error, please call your NEPA Regional Manager to discuss. If needed, go to Part C Determination.

Additional Information (if needed):

Attachments:
1. USFWS Alaska species lists (Anchorage and Fairbanks field offices)
2. ESA Section 7 compliance MFR

ARNG Checklist FEB 12 *Previous Editions Are Obsolete After DEC 12* Page 3

PART C - DETERMINATION

On the basis of this initial evaluation, the following is appropriate:

- ☐ IAW 32 CFR 651 Appendix B, the proposed action qualifies for a Categorical Exclusion (CX) that does not require a Record of Environmental Consideration.
- ☐ A Record of Environmental Consideration (REC).
- ☑ An Environmental Assessment (EA).
- ☐ A Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

Kelly Hope	Donald B. Flournoy
Signature of Proponent (Requester)	Environmental Program Manager
Ms. Kelly Hope, NEPA Program Manager, AKDMVA	Mr. Donald Flournoy, AKDMVA
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
1/24/18	1-24-218
Date Signed	Date Signed

Other concurrence (as needed):

Eric Marcellus	
Signature	Signature
LTC Eric Marcellus, CFMO, AKARNG	
Printed Name	Printed Name
24 JAN 2018	
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed
Signature	Signature
Printed Name	Printed Name
Date Signed	Date Signed

Enviro Tracking #:	ARNG Record of Environmental Consideration	State ARNG
2017PST001	Enter information in the yellow shaded areas.	AKARNG

1. PROJECT NAME:

Alaska Army National Guard Integrated Pest Management Plan (IPMP) Update 2017-2022

2. PROJECT NUMBER: (MILCON if applicable)	3. DATE PREPARED:
N/A	1/24/18

4. START DATE of PROPOSED ACTION (dd-mmm-yy): 02/01/2018 Note: This must be a future date

5. PROGRAMMED FISCAL YEAR: FY 2018

6. END DATE (if applicable): 2022

7. DESCRIPTION AND LOCATION OF THE PROPOSED ACTION:

a. Location (Include a detailed map, if applicable):

The updated AKARNG IPMP (2017) will be continuously implemented at all AKARNG Units and Facilities throughout Alaska.

b. Description:

The IPMP is a framework that defines how pest management is accomplished by the AKARNG. Elements of the Pest Management program include health and environmental safety, pest identification, and pest management, as well as pesticide storage, transportation, use and disposal. The Proposed Action is an update of the AKARNG IPMP, as required by DODI 4150.07, "DOD Pest Management Program". Per DODI 4150.07, installations are required to develop, maintain, and annually review their IPMPs as well as revise them every 5 years. The current AKARNG IPMP is outdated and in need of revision.

8. CHOOSE **ONE** OF THE FOLLOWING:

- [x] An existing environmental assessment* adequately covers the scope of this project. Attach FNSI if EA was completed by another federal agency (non-ARNG).
  EA Date (dd-mmm-yy): June 2004 Lead Agency: National Guard Bureau
- [ ] An existing environmental impact statement* adequately covers the scope of this project.
  EIS Date (dd-mmm-yy): Lead Agency:
- [ ] After reviewing the screening criteria and completing the ARNG environmental checklist, this project qualifies for a
  Categorical Exclusion Code:
  See 32 CFR 651 App. B
  Categorical Exclusion Code:
  See 32 CFR 651 App. B
  Categorical Exclusion Code:
  See 32 CFR 651 App. B
- [ ] This project is exempt from NEPA requirements under the provisions of:
  Cite superseding law:

*Copies of the referenced EA or EIS can be found in the ARNG Environmental Office within each state.

9. REMARKS:

The FONSI for the June 2004 EA is dated 09 August 2004.

Signature of Proponent (Requester)	Environmental Program Manager
Ms. Kelly Hope, NEPA Program Manager, AKDMVA	Mr. Donald Flournoy, AKDMVA
Printed Name of Proponent (Requester)	Printed Name of Env. Program Manager
1/24/18	1-24-2018
Date Signed	Date Signed

Proponent Information:

10. Proponent:	Alaska Army National Guard ENV Office
11. Address:	PO Box 5800, JBER, AK 99505
12. POC:	Kelly Hope
13. Comm. Voice:	907-428-7157
14. Proponent POC e-mail:	mandy.hope@alaska.gov

ARNG REC Form FEB 12 *Previous Editions Are Obsolete After DEC12*

Appendix H – Plan Update Form (PUF)

FY23 Annual Plan Update Form (PUF)

Alaska **Army National Guard**

1. PEST MANAGEMENT OPERATION:

a. The following table shows the distribution of the pest management workload in terms of specific in-house and contracted operations. (For each area, check the appropriate box or leave blank if not applicable).

Area	In-house	Contract	Government Purchase Card w/o Formal Contract
Ranges & Other Training Areas	☐	☐	☐
Barracks, BEQ, BOQ, Guest Housing	☐	☐	☐
Miscellaneous Buildings (Offices, warehouses, depots)	☑	☑	☐
All Food Handling Buildings (Indoors)	☐	☐	☐
Lawn & Ornamental	☑	☐	☐
Ground Maintenance & Roadsides	☑	☐	☐
Nuisance Wildlife	☐	☐	☐
Forestry & Conservation Areas	☐	☐	☐
Golf Course	☐	☐	☐
Government Housing (Indoors & Outdoors)	☐	☐	☐
Other _____	☐	☐	☐

2. PESTICIDE USE:

a. Total Pounds Active Ingredient (PAI) applied to Federally-owned sites during the last FY (1 Oct 21–30 Sep 22) 0.00.

b. Provide an itemized list below (or attach spreadsheet or PAI calculator).

Type of Pesticide	PAI	Location
Contrac All-Weather Blox EPA#1245579	.000541	Camp Denali Old USPFO, CSMS, Armory, OMS Shop

c. Based on FY22 PAI, list the three most-treated pests:

1. Rodents (shrew and vols)
2.
3.

d. If there was more than a 25 percent increase or decrease in PAI between FY21 and FY22, provide the reason why:

Late winter/early spring, the AKARNG enclave Camp Denali (located on Joint Base Elmendorf-Richardson) had a number of rodents (shrews or vols) getting into a number of office-admin-warehouse buildings. A Certified Pest Management consultant (American Pest Management) was contracted out to install bait stations containing Contrac All-Weather Blox bait. They used a total of 264oz (16.5lbs) of bait, containing Bromadiolone 0.005% of active ingredient. Follow up inspections were conducted in-house and the pest issue subsided throughout the summer.

e. Do you have an Agriculture Outlease program? YES ○ NO ◉

f. What was the amount of PAI from Agriculture Outlease of Federally-owned sites during FY22? 0.00

g. Did you use any biological control agents (fungi, bacteria, insects) during this FY? YES ○ NO ◉ If yes, please list:

3. AERIAL APPLICATION OF PESTICIDES:

a. Planned aerial application at Federally-owned sites during FY23? ○ NO ◉
YES

b. If "YES", do you have an approved Aerial Spray Statement of Need (ASSON) that has been signed by the ARNG PMC?
YES ○ NO ◉

4. INTEGRATED PEST MANAGEMENT PLAN (IPMP) MAINTENANCE:

a. Does your State/Territory have an IPMP? YES ◉ NO ○

b. Date IPMP was signed by TAG: 4/18/18

c. Please list any minor program changes (i.e., personnel changes, certifications, changes to recording forms, other program changes, etc.) to the IPMP in FY22. Major plan revisions require re-submittal of the entire updated plan.

IPMC is now Patrick Geary. Aaron Vliet from American Pest Management was the only certified pesticide applicator to apply pesticides.

5. INTEGRATED PEST MANAGEMENT COORDINATOR (IPMC):

a. Has an IPMC been designated in writing? YES ◉ NO ○

b. Name, email and phone number of IPMC(s):

Patrick Geary patrick.geary@alaska.gov 907-428-7157

6. ON-SITE HELP? Please indicate if you would like an assistance visit this year and briefly describe the reason for such a visit.

Return this form, PAI calculator/spreadsheets (if using), and spreadsheet listing IPMC, PMQAE and Pesticide Applicator certification numbers, names and expiration dates to: the ARNG PMC (bryon.j.kacprzyk.civ@army.mil) by **31 January 2023**.

Appendix I – IPMC Appointment Memo

DEPARTMENT OF THE ARMY
ALASKA ARMY NATIONAL GUARD
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE
PO BOX 5169
JOINT BASE ELMENDORF-RICHARDSON, AK 99505-5800

NGAK-FMO-ZA 16 August 2022

MEMORANDUM FOR RECORD

SUBJECT: Appointment of the AKARNG Integrated Pest Management Coordinator

1. References:

a. DOD Instruction 4150.07, DOD Pest Management Program, 29 May 2008

b. AR 200-1, Environmental Protection and Enhancement, 13 December 2007

c. ARNG-ILE Memorandum for Environmental Program Managers and Construction and Facilities Management Office for 54 states, Territories, and District of Columbia, Integrated Pest Management Policy, 4 February 2016

d. NGAK-TAG Memorandum for Construction and Facilities Maintenance Officer (CFMO), Delegation of Authority to CFMO to appoint AKARNG Environmental personnel to required offices, duties, and responsibilities, 17 December 2020

2. Per reference (a), (b), (c), and (d), I hereby appoint Patrick Geary as the AKARNG Integrated Pest Management Coordinator (IPMC).

3. Your responsibilities are as follows:

a. Coordinate and staff the Integrated Pest Management Plan (IPMP) and submit annual updates to the Army National Guard Directorate Installation and Environmental (ARNG-IEZ) Pest Management Consultant (PMC) for review.

b. Notify the ARNG-IEZ PMC of program reviews by DOD and non-DOD government agencies (such as EPA or ADEC).

c. Maintain records on the certification status of Pest Management Quality Assurance Evaluators and certified pesticide applicators.

d. Ensure the completeness and accuracy of installation pest management records and summarize and report pest management information to the ARNG-IEZ PMC as requested.

e. Maintain records of hazardous pesticide disposal actions.

NGAK-FMO-ZA
SUBJECT: Appointment of the AKARNG Integrated Pest Management Coordinator

f. If applicable, prepare and coordinate the aerial validation plan for emergency aerial pesticide applications and notify the ARNG-IEZ PMC of planned state aerial applications by non-DoD government agencies if these involve the installation.

g. Review and address findings of adverse Safety and Occupational Health reports on the AKARNG pest management operations.

h. Forward all contracts for pest management services to the ARNG-IEZ PMC for review and maintain records of these contracts.

4. Your appointment and responsibilities, as the AKARNG IPMC, will continue until formally notified of changes.

5. The ARNG POC is Mr. Brian Webb, Interim ARNG Pest Management Coordinator, 804-436-3784, or via email at brian.j.webb14.civ@army.mil.

MARCELLUS.ERIC.LELAND.1161605685
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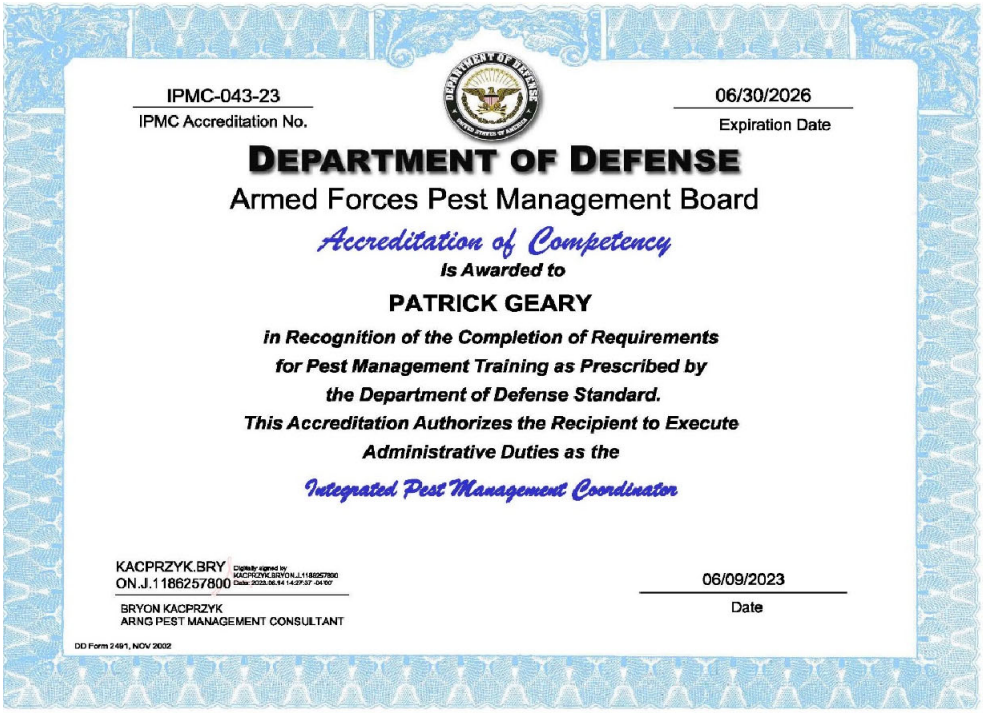
Date: 2022.08.31 17:21:34 -08'00'

ERIC L. MARCELLUS
LTC, AV, AKARNG
Construction and Facilities
Management Officer



IPMC-043-23
IPMC Accreditation No.

06/30/2026
Expiration Date

DEPARTMENT OF DEFENSE

Armed Forces Pest Management Board

Accreditation of Competency

Is Awarded to

PATRICK GEARY

in Recognition of the Completion of Requirements
for Pest Management Training as Prescribed by
the Department of Defense Standard.
This Accreditation Authorizes the Recipient to Execute
Administrative Duties as the

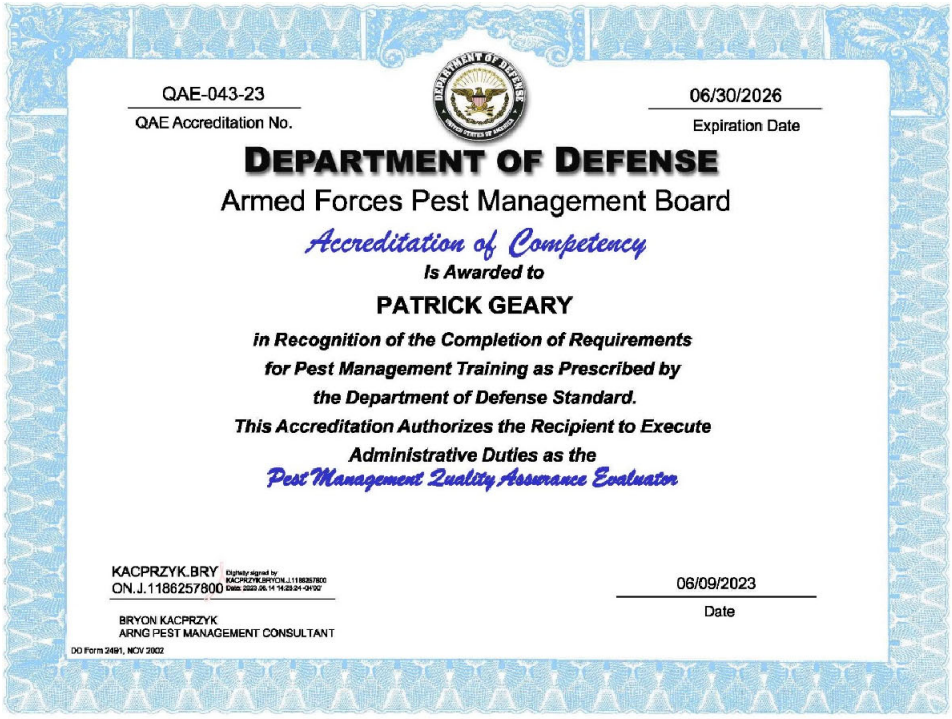
Integrated Pest Management Coordinator

KACPRZYK.BRY ON.J.1186257800 Digitally signed by KACPRZYK.BRYON.J.1186257800 Date: 2023.06.14 14:27:37 -04'00'

BRYON KACPRZYK
ARNG PEST MANAGEMENT CONSULTANT

06/09/2023
Date

DD Form 2491, NOV 2002



QAE-043-23
QAE Accreditation No.

06/30/2026
Expiration Date

DEPARTMENT OF DEFENSE

Armed Forces Pest Management Board

Accreditation of Competency

Is Awarded to

PATRICK GEARY

in Recognition of the Completion of Requirements
for Pest Management Training as Prescribed by
the Department of Defense Standard.
This Accreditation Authorizes the Recipient to Execute
Administrative Duties as the

Pest Management Quality Assurance Evaluator

KACPRZYK.BRY ON.J.1186257800 Digitally signed by KACPRZYK.BRYON.J.1186257800 Date: 2023.06.14 14:28:24 -04'00'

BRYON KACPRZYK
ARNG PEST MANAGEMENT CONSULTANT

06/09/2023
Date

DD Form 2491, NOV 2002

Appendix J – Definitions and Glossary

AEBD-EQ: Army Environmental Database Environmental Quality

AEC: Army Environmental Command

AFPMB: Armed Forces Pest Management Board

AMEDD C&S: Army Medical Department Center and School

AR: Army Regulation

ARNG: Army National Guard

ARNG-IEZ: Army National Guard Directorate Installation and Environment Division

AKARNG: Alaska Army National Guard

ARS: Agricultural Research Service

ASSON: Aerial Spray Statement of Need

BGEPA: Bald and Golden Eagle Protection Act

CAC: Common Access Card

FMO: Facilities Maintenance Office

CRM: Cultural Resources Manager

CWA: Clean Water Act

DA: Department of the Army

DEQ: Department of Environmental Quality

DOD: Depart of Defense

DODI: Department of Defense Instruction

EA: Environmental Assessment

EO: Executive Order

EPA: United States Environmental Protection Agency

ESA: Endangered Species Act

FIFRA: Federal Insecticide Fungicide and Rodenticide Act

General-use pesticide: Pesticides that may only be applied by Certified pesticide applicators (DOD or State) at AKARNG sites unless they are part of a Self-Help program as outlined in the State's IPMP. At State-owned AKARNG sites, need for certification is dependent on Alaska laws and regulations.

HAZCOM: Hazard Communication

HEPA: High-Efficiency Particulate Air

HQAES: Headquarters Army Environmental System

ICRMP: Integrated Cultural Resources Management Plan

INRMP: Integrated Natural Resources Management Plan

IPM: Integrated Pest Management

Integrated Pest Management Coordinator (IPMC): Oversees the AKARNG Integrated Pest Management Program.

IPMP: Integrated Pest Management Plan

ISR: Installation Status Report

NEPA: National Environmental Policy Act

NPDES: National Pollutant Discharge Elimination System

NRM: Natural Resources Manager

PAI: Pounds Active Ingredient (of a pesticide)

PEA: Programmatic Environmental Assessment

Pests: Arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds, and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

Pesticide: Any substance or mixture of substances intended to prevent, destroy, repel or mitigate any pest. The term pesticide includes herbicides, insecticides, fungicides, and various other substances used to control pests.

Pest Management Consultant (PMC): Command-level personnel who provide oversight of Command Integrated Pest Management Program and act as the Command's technical expert for all pest management actions.

Plan Update Form (PUF): Means of reporting requested annual IPM program data to the ARNG PMC.

PMP: Pest Management Provider

PMQAE: Pest Management Quality Assurance Evaluator

PPE: Personal Protective Equipment

OACSIM: Office of the Assistant Chief of Staff Installation Management

OSHA: Occupational Health and Safety Act

RCRA: Resource Conservation and Recovery Act

Ready-to-use (RTU) pesticide: Pesticides that require no dilution, mixing or addition of other products before use.

REC: Record of Environmental Consideration

Restricted-use pesticide (RUP): Pesticides not available to the general public in the United States that may only be applied by Certified Pesticide Applicators (DOD or State), regardless if applied at State or Federally-owned AKARNG site.

SDS: Safety Data Sheet

Self-Help Program: A program that allows for AKARNG facility managers or site personnel to use IPM measures for control of minor pests. The Self-Help Program is documented in the Appendix E of this plan and features ready-to-use, low toxicity pesticides pre-approved by the ARNG Pest Management Consultant, as well as training of participants, proper storage, accountability and disposal of pest control products, and reporting of pest control measures.

SPUL: State Pesticide Use List

TAG: The Adjutant General

USDA: United State Department of Agriculture

USDA APHIS: United State Department of Agriculture Animal Plant Health Inspection Service

USFS: United States Forest Service

USFWS: United States Fish and Wildlife Service

Virtual Installation: Each State, commanded by the Adjutant General, under which are Readiness Centers or sites. Per AR 600-20, Army Command Policy, 6 November 2014.

WRAIR: Walter Reed Army Institute of Research

Appendix K – Pest Management Contractor Certifications

STATE OF ALASKA
Department of Environmental Conservation
This is to attest that

Aaron Vliet

Is certified as a Pesticide Applicator

Categories: 7 Expires: 7/31/2024

Certification Number: 10720-2407-7

STATE OF ALASKA
Department of Environmental Conservation
This is to attest that

Jacob Thorn

Is certified as a Pesticide Applicator

Categories: 7 Expires: 5/31/2024

Certification Number: 10695-2405-7

Map of Anchorage

Location

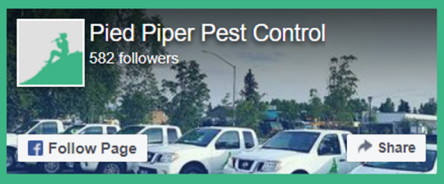
Pied Piper Pest Control
2440 E 88th Ave
Anchorage, AK 99507
Phone: (907) 344-2538

Fairbanks, AK 99701
Phone: (907) 456-5640

Juneau, AK 99801
Phone: (907) 789-2350

Ketchikan , AK 99901
Phone: (907) 789-2350

Follow Us!



Get In Touch!

Contact Us

Business Hours

Mon - Fri: 9 AM - 5 PM
Sat & Sun: Closed

The Department of Defense

Certificate of Competency

AF-1240-17-0922
Certificate No.

is Awarded to

09-29-2025
Expiration Date

Roger A. Safarik

in Recognition of the Completion of Requirements for
Certified Applicator in the Following Pest Control Categories

Category 3 - Ornamental and Turf, Category 5 - Aquatics, Category 6 - Right of Way, Category 7 - Industrial, Institutional, Structural and Health Related, Category 8 - Public Health

as Prescribed by Department of Defense Standards
This Certificate authorizes the Recipient to Select and Apply Pesticides

DO, ALYSHA M Maj USAF
AFMC AFCEC/COSP
Certifying Official

09-29-2022
Date

DD Form 1826
15 AUG 02

Appendix L – Emergency Disease Vector Response Plan

Appendix M – Pest Management Contracts