Site-Specific Environmental Assessment

Rangeland Grasshopper and Mormon Cricket Suppression Program

BIG HORN, CARBON, CARTER, CUSTER, DANIELS, DAWSON, FALLON, GARFIELD, GOLDEN VALLEY, McCONE, MUSSELSHELL, POWDER RIVER, PRAIRIE, RICHLAND, ROOSEVELT, ROSEBUD, SHERIDAN, STILLWATER, SWEET GRASS, TREASURE, WHEATLAND, WIBAUX, YELLOWSTONE counties, and that portion of VALLEY county falling within the Fort Peck Indian Reservation, MONTANA

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Prepared by:

Animal and Plant Health Inspection Service
1220 Cole Ave
Helena MT 59601

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1. Need for Proposed Action

1.1. Purpose and Need Statement

An infestation of grasshoppers and/or Mormon crickets may occur in Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, Golden Valley, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Treasure, Wheatland, Wibaux, Yellowstone counties, and that portion of Valley County falling within the Fort Peck Indian Reservation, Montana. The Animal and Plant Health Inspection Service (APHIS) may, upon request by land managers or State departments of agriculture, conduct treatments to suppress grasshopper infestations.

Populations of grasshoppers that trigger the need for a suppression program are normally considered on a case-by-case basis. Participation is based on potential damage such as stressing and\or causing the mortality of native and planted range plants or adjacent crops due to the feeding habits of large numbers of grasshoppers. The benefits of treatments include the suppressing of over abundant grasshopper populations to lower adverse impacts to range plants and adjacent crops. Treatment would also decrease the economic impact to local agricultural operations and permit normal range plant utilization by wildlife and livestock. Some populations that may not cause substantial damage to native rangeland may require treatment due to the secondary suppression benefits resulting from the high value of adjacent crops and damage to re-vegetation programs.

The goal of the proposed suppression program analyzed in this EA is to reduce grasshopper populations below an economic infestation level[1] in order to protect rangeland ecosystems and/or cropland adjacent to rangeland.

This environmental assessment (EA) analyzes potential environmental consequences of the proposed action and its alternatives. This EA applies to a proposed suppression

[1] The "economic infestation level" is a measurement of the economic losses caused by a particular population level of grasshoppers to the infested rangeland. This value is determined on a case-by-case basis with knowledge of many factors including, but not limited to, the following: economic use of available forage or crops; grasshopper species, age, and density present; rangeland productivity and composition; accessibility and cost of alternative forage; and weather patterns. In decision-making, the level of economic infestation is balanced against the cost of treating to determine an "economic threshold" below which there would not be an overall benefit for the treatment. Short-term economic benefits accrue during the years of treatments, but additional long-term benefit may accrue and be considered in deciding the total value gained by treatment. Additional losses to rangeland habitat, cultural and personal values (e.g., aesthetics and cultural resources), although a part of decision-making, are not part of the economic values in determining the necessity of treatment.

program that would take place from 05/15/16 to 09/30/16 in Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, Golden Valley, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Treasure, Wheatland, Wibaux, Yellowstone counties, and that portion of Valley county falling within the Fort Peck Indian Reservation, Montana.

This EA is prepared in accordance with the requirements under the National Environmental Policy Act of 1969 (NEPA) (42 United States Code § 4321 et. seq.) and the NEPA procedural requirements promulgated by the Council on Environmental Quality, United States Department of Agriculture (USDA), and APHIS.

1.2. Background Discussion

In rangeland ecosystem areas of the United States, grasshopper populations can build up to levels of economic infestation despite even the best land management and other efforts to prevent outbreaks. At such a time, a rapid and effective response may be requested and needed to reduce the destruction of rangeland vegetation. In some cases, a response is also needed to prevent grasshopper migration to cropland adjacent to rangeland.

APHIS conducts surveys for grasshopper populations on rangeland in the Western United States, provides technical assistance on grasshopper management to land owners/managers, and cooperatively suppresses grasshoppers when direct intervention is requested by a Federal land management agency or a State agriculture department (on behalf of a State or local government, or a private group or individual) and deemed necessary. The need for rapid and effective suppression of grasshoppers when an outbreak occurs limits the options available to APHIS. The application of an insecticide within all or part of the outbreak area is the response available to APHIS to rapidly suppress or reduce (but not eradicate) grasshopper populations and effectively protect rangeland.

In June 2002, APHIS completed an Environmental Impact Statement (EIS) document concerning suppression of grasshopper populations in 17 Western States (Rangeland Grasshopper and Mormon Cricket Suppression Program, Environmental Impact Statement, June 21, 2002). The EIS described the actions available to APHIS to reduce the destruction caused by grasshopper populations in 17 States (Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming).

APHIS' authority for cooperation in this suppression program is based on Section 417 of the Plant Protection Act of 2000 (7 U.S.C. § 7717).

In April 2014, APHIS and the Forest Service (FS) signed a Memorandum of Understanding (MOU) detailing cooperative efforts between the two groups on suppression of grasshoppers on national forest system lands (Document #14-8100-0573-MU, April 22, 2014). This MOU clarifies that APHIS will prepare and issue to the public, site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper populations. The MOU also states that these documents will be prepared under the APHIS NEPA implementing procedures with cooperation and input from the Forest Service.

The MOU further states that the responsible FS official will request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on national forest land is necessary. The FS must also approve a Pesticide Use Proposal (Form FS-2100-2) for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate decision document and FS approves the Pesticide use proposal.

In February 2015, APHIS and the Bureau of Land Management (BLM) signed a memorandum of understanding (MOU) detailing cooperative efforts between the two groups on suppression of grasshoppers on BLM system lands (Document # 15-8100-0870-MU, October 15, 2015). This MOU clarifies that APHIS will prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper populations. The MOU also states that these documents will be prepared under the APHIS NEPA implementing procedures with cooperation and input from BLM.

The MOU further states that the responsible BLM official will request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on BLM land is necessary. The BLM must also approve a pesticide use proposal for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate document and BLM approves the pesticide use proposal.

In June 2010, APHIS and the Bureau of Indian Affairs (BIA) signed a Memorandum of Understanding (MOU) detailing cooperative efforts on suppression of grasshoppers on BIA-managed lands (10-8100-0941-MU, June 14, 2010). This MOU clarifies that APHIS will prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper populations. The MOU also states that these documents will be prepared under the APHIS NEPA implementing procedures with cooperation and input from BIA.

The MOU further states that the responsible BIA official will request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on Tribal land is necessary. The BIA must also approve a pesticide use proposal for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate document and BIA approves the pesticide use proposal.

1.3. About This Process

The EA process for grasshopper management is complicated by the fact that there is very little time between requests for treatment and the need for APHIS to take action with respect to those requests. Late summer and early fall surveys help to determine general areas, among the scores of millions of acres that potentially could be affected, where grasshopper infestations may occur in the spring. There is considerable uncertainty, however, in the forecasts, so that framing specific proposals for analysis under NEPA would waste limited resources. At the same time, the program strives to alert the public in a timely manner to its more concrete treatment plans and avoid or minimize harm to the environment in implementing those plans.

The 2002 EIS provides a solid analytical and regulatory foundation; however, it may not be enough to satisfy NEPA completely for actual treatment proposals, and the "conventional" EA process will seldom, if ever, meet the program's timeframe of need. The following approach to NEPA compliance for anticipated requests to treat for grasshopper infestations will be followed: This EA will analyze aspects of environmental quality that could be affected by grasshopper treatment in Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, Golden Valley, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Treasure, Wheatland, Wibaux, Yellowstone counties, and that portion of Valley county falling within the Fort Peck Indian Reservation, Montana. This EA and an anticipatory finding of no significant impact (FONSI) will be made available to the public with a comment period. When the program receives a treatment request and determines that treatment is necessary, the specific treatment site within in Big Horn, Carbon, Carter, Custer, Daniels, Dawson, Fallon, Garfield, Golden Valley, McCone, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Treasure, Wheatland, Wibaux, Yellowstone counties, and that portion of Valley county falling within the Fort Peck Indian Reservation, Montana will be extensively examined to determine if environmental issues exist that were not covered in this EA. If no changes to the EA, FONSI, or APHIS' Guidelines for Treatment of Rangelands for Grasshopper and Mormon Crickets (treatment guidelines) (Appendix 1) are warranted, based on the comments received and examination of the treatment site, an addendum to the EA will be prepared stating this. If changes need to be made to the EA, FONSI, or treatment guidelines, the program will prepare a supplement to the EA describing the changes and/or additional site-specific issues that were not covered in the EA. Whether an addendum or supplement is prepared, these documents will be provided to all parties who comment on this EA.

2. Alternatives

The alternatives presented in the 2002 EIS and considered for the proposed action in this EA are: (A) no action; (B) insecticide applications at conventional rates and complete area coverage; (C) reduced agent area treatments (RAATS); and (D) modified RAATs. Each of these alternatives, their control methods, and their potential impacts were described and analyzed in detail in the 2002 EIS. Copies of the complete 2002 EIS document are available for review at USDA, APHIS, PPQ offices at 1220 Cole Ave., Helena Montana and 1629 Ave. D, Suite A-5, Billings, MT. It is also available at the Rangeland Grasshopper and Mormon Cricket Program web site, http://www.aphis.usda.gov/plant_health/ea/downloads/fgheis.pdf In addition to the above alternatives; a limited, experimental grasshopper/Mormon cricket treatment may be planned in 2016 (Please see 2.4 Below).

The 2002 EIS is intended to explore and explain potential environmental effects associated with grasshopper suppression programs that could occur in 17 Western States (Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New

Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming). The 2002 EIS outlines the importance of grasshoppers as a natural part of the rangeland ecosystem. However, grasshopper outbreaks can compete with livestock for rangeland forage and cause devastating damage to crops and rangeland ecosystems. Rather than opting for a specific proposed action from the alternatives presented, the 2002 EIS analyzes in detail the environmental impacts associated with each programmatic action alternative related to grasshopper suppression based on new information and technologies.

All insecticides used by APHIS for grasshopper suppression are used in accordance with applicable product label instructions and restrictions. Representative product specimen labels can be accessed at the Crop Data Management Systems, Inc. web site at http://www.cdms.net/Label-Database. Labels for actual products used in suppression programs will vary, depending on supply issues. All insecticide treatments conducted by APHIS will be implemented in accordance with APHIS' treatment guidelines, included as Appendix 1 to this EA.

2.1. No Action Alternative

Under Alternative A, the no action alternative, APHIS would not fund or participate in any program to suppress grasshopper infestations. Under this alternative, APHIS may opt to provide limited technical assistance, but any suppression program would be implemented by a federal land management agency, a state agriculture department, a local government, or a private group or individual.

2.2. Insecticide Applications at Conventional Rates and Complete Area Coverage Alternative

Alternative B, insecticide applications at conventional rates and complete area coverage, is generally the approach that APHIS has used for many years. Under this alternative, carbaryl, diflubenzuron (Diflubenzeron®), or malathion will be employed. Carbaryl and malathion are insecticides that have traditionally been used by APHIS. The insect growth regulator, diflubenzuron, is also included in this alternative. Applications would cover all treatable sites within the infested area (total or blanket coverage) per label directions. The application rates under this alternative are as follows:

16.0 fluid ounces (0.50 pound active ingredient (lb a.i.) of carbaryl spray per acre; 10.0 pounds (0.50 lb a.i.) of 5 percent carbaryl bait per acre; fluid ounce (0.016 lb a.i.) of diflubenzuron per acre; or 8.0 fluid ounces (0.62 lb a.i.) of malathion per acre.

In accordance with EPA regulations, these insecticides may be applied at lower rates than those listed above. Additionally, coverage may be reduced to less than the full area coverage, resulting in lesser effects to non-target organisms.

The potential generalized environmental effects of the application of carbaryl, diflubenzuron, and malathion, under this alternative are discussed in detail in the 2002 EIS (Environmental Consequences of Alternative 2: Insecticide Applications at Conventional Rates and Complete Area Coverage, pp. 38–48). A description of anticipated site-specific impacts from this alternative may be found in Part IV of this document.

2.3. Reduced Agent Area Treatments (RAATs) Alternative

Alternative C, RAATs, is a recently developed grasshopper suppression method in which the rate of insecticide is reduced from conventional levels, and treated swaths are alternated with swaths (or partial swaths) that are not directly treated. The RAATs strategy relies on the effects of an insecticide to suppress grasshoppers within treated swaths while conserving grasshopper predators and parasites in swaths not directly treated. Carbaryl, diflubenzuron, or malathion would be considered under this alternative at the following application rates:

8.0 fluid ounces (0.25 lb a.i.) of carbaryl spray per acre; 10.0 pounds (0.20 lb a.i.) of 2 percent carbaryl bait per acre; 0.75 fluid ounce (0.012 lb a.i.) of diflubenzuron per acre; or 4.0 fluid ounces (0.31 lb a.i.) of malathion per acre.

The area not directly treated (the untreated swath) under the RAATs approach is not standardized. In the past, the area infested with grasshoppers that remains untreated has ranged from 20 to 67 percent. The 2002 EIS analyzed the reduced pesticide application rates associated with the RAATs approach but assumed pesticide coverage on 100 percent of the area as a worst-case assumption. The reason for this is there is no way to predict how much area will actually be left untreated as a result of the specific action requiring this EA. Rather than suppress grasshopper populations to the greatest extent possible, the goal of this alternative is to suppress grasshopper populations to a desired level.

As specific treatment areas are identified, the specific agent and treatment methodologies will be identified in supplemental documents.

The potential environmental effects of application of carbaryl, diflubenzuron, and malathion under this alternative are discussed in detail in the 2002 EIS (Environmental Consequences of Alternative 3: Reduced Agent Area Treatments (RAATs), pp. 49–57). A description of anticipated site-specific impacts from this proposed treatment may be found in Part IV of this document.

2.4. Experimental Activities

Experimental Treatments: (applied using air and/or ground equipment)

APHIS continues to refine its methods of grasshopper control in order to make the program more economically feasible and environmentally acceptable. These refinements can include reduced rates of currently used pesticides, improved formulations, development of more target specific baits and development of biological pesticide suppression alternatives or improvements to aerial and ground application equipment. A division of APHIS, the Center for Plant Health Science and Technology (CPHST) located in Phoenix, AZ conducts methods development and evaluations for our agency.

To accomplish this work, experimental plots are used to refine equipment and methods or develop formulations that will possibly be used in future rangeland grasshopper programs. The experimental plot investigations are typically located throughout the western United States, including Montana.

During the local informal field level consultation with the appropriate agencies, locations of experimental trials will be made available in order to ensure these activities are not conducted near sensitive species or habitats. Due to the small size of experimental plots, location of plots away from sites with endangered species conflicts, EPA approval and informal field level consultations, no adverse effects to the environment or its components are expected from these research activities.

Stressor tests, mixtures of native pathogen isolates combined with low doses of insecticides, will be conducted on native species of grasshoppers in a series of field cage exposures. Each test will consist of a series of mini-plots to be treated with Field Aerial Application Spray Simulation Tower Technique (FAASSTT). The treated plots, ten for each treatment, will be 14 inches in diameter. Grasshoppers confined in field cages on these areas will be followed to determine if the combination enhances field mortality of grasshoppers. Likely insecticides are diflubenzuron, Neem oil and chlorantraniliprole.

A series of experiments using ATV application equipment to apply labeled materials using RAATs and blanket applications to determine expected mortalities associated with barrier or crop protection and hot spot treatments. This may include baits or liquid applications.

A study to look at a CP® nozzle and tip configuration, in cooperation with USDA, APHIS, PPQ Aircraft and Equipment Operations, McAllen TX. The objective would be to look at tips that would be equivalent to the 8004 TeeJet® tip recommended in the statement of work (SOW). The test would be conducted on grasshopper populations that are present, expansive and warrant control applications at a chosen location.
The study will consist of four replicated plots of 40 acres each to be treated to determine the effect of CP nozzles oriented 90 degrees to the slip stream of the aircraft (CPdown) as well with the airflow (CPdown), a common practice in commercial application industry to be compared with the standard nozzle and tip orientation as specified in the current SOW. This would allow direct comparison of the effect of CP nozzle design and orientation with the treatments consisting of Dimilin and Prevathon applied as a RAATs application.
Dimilin would be applied at 1.0 fl. oz., 10 fl. oz. crop oil concentrate and 20 fl. oz. water applied in a RAATs application. The Prevathon would be applied at 2 fl. oz. with 0.32 fl. oz. methylated seed oil and water up to a total volume of 32 fl. oz. per acre applied as a RAATs application.
These treatments would be applied and monitored by USDA personnel.

Treatments will be SOW standard (nozzle and tip stainless steel flat fan (8004))

compared to CPdown, C, (3)
Replicates 40 acre plots (4)
Chemistries Dimilin and Prevathon each a RAATs treatment (2)
Untreated Checks -4 plots-
Total Plots:
3 treat. X 4 rep X 2 chemicals = 24 + 4 Untreated = 32 plots
32 plots X 40 acres each = 1280 total.

3. Affected Environment

APHIS conducts adult grasshopper surveys throughout the assessment area in the late summer and early fall of each year and identifies areas where grasshopper populations could indicate significant infestations in the following year. Appendix 3 illustrates the results of the 2015 adult grasshopper survey, and where problem areas may exist.

Appendix 2 indicates the boundaries of the area covered by this EA. Control programs may occur throughout the assessment area as per program guidelines (Appendix 1) and as agreed to by cooperators (private, State and Federal land managers).

The 2002 programmatic Final Environmental Impact Statement (APHIS FEIS 2002) contains detailed analyses of impacts of selected grasshopper control methods. In addition, APHIS FEIS 2002 contains a hazard, exposure, and risk analysis for grasshopper control chemicals on terrestrial wildlife, aquatic species, and humans. Those analyses serve as the basis for the determination of impacts in this EA, and are here incorporated by reference. The following components of the affected area are identified as being within the scope of this EA.

3.1. Description of Affected Environment

The proposed suppression program area included in the EA encompasses 35,854,005 acres within 24 counties in Southern, Central and Eastern Montana. The counties are: Big Horn (population-13,042), Carbon (10,340), Carter (1,174), Custer (11,951), Daniels (1,791), Dawson (9,445), Fallon (3,079), Garfield (1,290), Golden Valley (859), McCone (1,709), Musselshell (4,629), Powder River (1,748), Prairie (1,179), Richland (11,214), Roosevelt (11,125), Rosebud (9,329), Sheridan (3,668), Stillwater (9,318), Sweet Grass (3,669), Treasure (700), Valley (7,630), Wheatland (2,134), Wibaux (1,121), and Yellowstone (154,162). Ownership or stewardship of the land in this area is as follows: Private – 25,827,992 acres, BLM – 3,252,611 acres, Indian Trust – 2,847,400 acres, State – 2,041,700 acres, USFS – 1,409,183 acres, and Other Federal – 319,442 acres. Appendix 2 indicates the boundaries of the area covered by this EA. Specific treatment areas will be identified as an addendum to this document as they become identified.

The vast majority of this area is in the short-grass prairie region but also includes smaller areas in the mountain region. The elevation ranges from 2,000 feet along the lower river valleys to over 12,000 feet in the Beartooth Mountains. The area is composed of glaciated and sedimentary plains with rolling hills, foothills with moderate to steep slopes, and complex mountains that can be very rugged with deep canyons and sparse vegetation or timber covered with open meadows. Annual precipitation varies from less than 10 inches a year in some semi-arid plains regions along the Missouri River and the Montana-Wyoming border to over 40 inches in the mountain areas in the south. The largest portion of the region falls within the 10-18 inches of precipitation per year range.

Major water resources include, but are not limited to: Missouri River, Yellowstone River, Bighorn River, Musselshell River, Stillwater River, Boulder River, Powder River, Tongue River, Little Bighorn River, Clarks Fork of the Yellowstone River, Little Missouri River, Little Powder River, Poplar River, Redwater River, Rosebud Creek, Cabin Creek, O'Fallon Creek, Beaver Creek, Pumpkin Creek, Mizpah Creek, Big Muddy Creek, Dry Creek, Little Dry Creek, Sunday Creek, Cottonwood Creek, Wolf Creek, Porcupine Creek, Little Porcupine Creek, Rock Creek, Sweet Grass Creek, Lodge Grass Creek, Fort Peck Lake, Bighorn Lake, Medicine Lake, Mystic Lake, Tongue River Reservoir, Lodge Grass Storage Reservoir, Cooney Reservoir, and Deadman's Basin Reservoir. Numerous small streams, ponds, reservoirs, lakes, seasonal streams, and stock ponds are located throughout the area.

Agriculture being the number one industry in the Montana economy, livestock grazing (primarily cattle, sheep and horses) occurs in every county in the state. Typical vegetation types can be found in TABLE 2 - representative plant species. Generally the crops grown in the area covered by this EA are small grains such as wheat, barley, and oats, irrigated and non-irrigated hay (alfalfa and grass), and irrigated row crops – sugar beets, corn (silage and grain) and beans.

The 24 county seats represented in this EA have a very large variance in population totals - 8 county seats have less than 1,000 residents, 7 have 1,000-1,999 residents, 3 have 2,000-2,999 residents, 2 have 3,000-3,999 residents, 2 have 4,000-4,999 residents, 1 has over 8,000 residents and 1 nearly 104,000 residents. The county seat of Golden Valley County is Ryegate with a population of 243 and the county seat of Yellowstone County is Billings with a population of 109,059 (approximately 10% of the total state population). Miles City, the county seat of Custer County, has the second largest population with 8,646. Jordan with a population of 381 is the second smallest and the county seat of Garfield County.

There are three Indian Reservations within the boundaries of this EA. They are the Crow Indian Reservation within parts of Big Horn and Yellowstone Counties, the Fort Peck Indian Reservation within parts of Roosevelt, Daniels, Sheridan, and Valley Counties, and the Northern Cheyenne Indian Reservation in parts of Big Horn and Rosebud Counties.

Custer National Forest covers portions of southern Rosebud and eastern Powder River Counties, north central and eastern Carter County, southeastern and southwestern areas in Carbon County, and southern Stillwater and Sweet Grass Counties. A small portion of Lewis and Clark National Forest is in the northwest areas of Golden Valley and Wheatland Counties.

In addition to the National Forests, other major recreational areas include Fort Peck Lake, Bighorn Lake, Missouri River, Yellowstone River, Bighorn River, Tongue River Reservoir, Deadman's Basin Reservoir, Cooney Reservoir, Charles M. Russell National

Wildlife Refuge, Medicine Lake National Wildlife Refuge, Makoshika State Park, Medicine Rocks State Park, Little Bighorn Battlefield, BLM lands including Pompey's Pillar National Monument, and many smaller wildlife refuges, historic sites and numerous streams, rivers, lakes, and other bodies of water used for recreational activities.

3.2. Site-Specific Considerations

3.2.1. Human Health

The population of the area covered by this EA is concentrated primarily in cities and towns. Hospitals are located in Baker (population – 1,776), Billings (105,546), Circle (611), Columbus (1,928), Culbertson (728), Ekalaka (328), Forsyth (1,891), Glendive (4,995), Hardin (3,720), Harlowton (991), Jordan (372), Miles City (8,478), Plentywood (1,763), Poplar (819), Red Lodge (2,143), Roundup (1,892), Scobey (1,028), Sidney (5,492), Terry (594), and Wolf Point (2,640). In addition licensed ambulance service is available in Absarokee (1,234), Big Timber (1,653), Bridger (728), Broadus (474), Colstrip (2,314), Fairview (943), Hysham (306), Joliet (648), Judith Gap (122), Lame Deer (2,018), Laurel (7,036), Lodge Grass (432), Lustre, Nye (272), Park City (870), Richey (182), Savage (718), Wibaux (652), and Worden (506). Schools are located in most of the cities and towns. Since treatments are conducted in rural rangeland, no impact to these facilities is expected. Agriculture is a primary economic factor for the area and single rural dwellings are widely scattered throughout the region. In the event a rural school house or inhabited dwelling is encountered, mitigative measures will be implemented to ensure no treatments occur within the required buffer zones.

Potential exposures to the general public from traditional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Program use of carbaryl, malathion, and diflubenzuron had occurred routinely in many past programs, and there is a lack of any adverse health effects reported from these projects. Therefore, routine safety precautions are anticipated to continue to provide adequate protection of worker health. Immunotoxic effects from carbaryl and malathion exposure are generally expected at concentrations much higher than those from grasshopper applications, but individuals with allergic or hypersensitive reactions to the insecticides or other chemicals in the formulated product could be affected. These individuals will be advised to avoid treatment areas at the time of application until the insecticide has time to dry on the treated vegetation.

3.2.2. Non-target Species

The area assessed by this EA is inhabited by a large variety of organisms, including: terrestrial vertebrates and invertebrates, migratory birds, biocontrol agents, pollinators, aquatic organisms, plants (both native and introduced), etc.

See Table 1 for list of Threatened, Endangered, and Proposed T&E species.
See Table 2 for list of representative wildlife, and plant spp.

Under the no action alternative, destruction of grasses and forbs by grasshoppers could cause localized disruption of food and cover for a number of wildlife species. Under chemical control there is a possibility of indirect effects on local wildlife populations, particularly insectivorous birds that depend on a readily available supply of insects, including grasshoppers, for their own food supply and for their young. We have found no valid data which suggests that (absent a spill) any species other than certain mice would be subjected to a dosage in excess of 1/5 of the LD50 for carbaryl (Pg B-37 GH EIS.) Therefore, it is not apparent that any fatalities would be likely to occur as a result of carbaryl intoxication.

Malathion and carbaryl have been shown to reduce brain cholinesterase (ChE) (an enzyme important in nerve cell transmissions) levels in birds. Effects of ChE inhibition are not fully understood but could cause inability to gather food, escape predation, or care for young.

In any given treatment season, only a fraction (less than 1 percent) of the total rangeland in a region is likely to be sprayed for grasshopper control. For species that are wide spread and numerous lowered survival and lowered reproductive success in a small portion of their habitat would not constitute a significant threat to the population.

The wildlife risk assessment in APHIS FEIS 2002 estimated wildlife doses of malathion and carbaryl to representative rangeland species and compared them with toxicity reference levels.

No dose of malathion will approach or exceed the reference species LD50. Some individual animals may be at risk of fatality or behavioral alterations that make them more susceptible to predation resulting from ChE level changes in malathion spraying for grasshopper control. However, most individual animals would not be seriously affected.

Carbaryl also poses a low risk to wildlife, with few fatalities likely to occur and a low risk of behavioral anomalies caused by cholinesterase depression.

There is some chance of adverse effects on bird reproduction through the use of any of these chemicals or diesel oil through direct toxicity to developing embryos in birds' eggs.

Some species of herbivorous mammals and birds may consume wheat bran bait after it has been applied to grasshopper-infested areas. Carbaryl is moderately toxic to mammals and slightly toxic to birds. We have found no valid data which suggests that (absent a spill) any species other than certain mice would be subjected to a dosage in excess of 1/5 of the LD50 for carbaryl (Pg B-37 GH EIS.) Therefore, it is not apparent that any fatalities would be likely to occur as a result of carbaryl intoxication. Additionally, we note that carbaryl 5% bait is labeled at 3 lbs/1000 sq ft in poultry houses when poultry are present. http://www.cdms.net/Label-Database.)

Chitin or chitin-like substances are not as important to terrestrial mammals, birds, and other vertebrates as chitin is to insects; therefore, the chitin inhibiting properties of diflubenzuron applications under the conditions of Alternative 2 such as reductions in the food base for insectivorous wildlife species, especially birds. As stated above, diflubenzuron is practically nontoxic to birds, including those birds that ingest moribund grasshoppers resulting from diflubenzuron applications, as described in Alternative 2.

While immature grasshoppers and other immature insects can be reduced up to 98 percent in area covered with diflubenzuron, some grasshoppers and other insects remain in the treatment area. Although the density of grasshoppers and other insects may be low, it is most likely sufficient to sustain birds and other insectivores until insect populations recover. Those rangeland birds that feed primarily on grasshoppers may switch to other diet items. However, in some areas the reduced number of invertebrates necessary for bird survival and development may result in birds having less available food. In these cases, birds will either have less than optimal diets or travel to untreated areas for suitable prey items, causing a greater foraging effort and a possible increased susceptibility to predation. It also should be noted that suppressing grasshopper populations conserves rangeland vegetation that often is important habitat to rangeland wildlife. Habitat loss is frequently the most important factor leading to the decline of a species, and reducing grasshopper densities can be an aid in reducing habitat loss.

Domestic bees will be protected in accordance with operational procedures. Field level contacts with local beekeepers and the Montana State Department of Agriculture will ensure safeguards for bees.

Biological Control agents used for controlling introduced weeds may be encountered within treatment areas. Local mitigation will be determined on a case by case basis in consultation with the local land managers.

3.2.3. Socioeconomic Issues

Recreation use is moderate over most of the affected area. There are several dispersed camping sites. Outdoor recreation in areas of high grasshopper/Mormon cricket populations may be adversely impacted due to annoyance of these insects.

Livestock grazing is one of the primary uses of most of the covered area, which provides summer range for ranching operations. Ranchers may graze cattle, sheep and/or horses in these areas. This rangeland may be utilized during the summer or reserved for fall and winter grazing.

A substantial threat to the animal productivity of these rangeland areas is the proliferation of grasshopper/Mormon cricket populations. These insects have been serious pests in the Western States since early settlement. Weather conditions favoring the hatching and survival of large numbers of insects can cause outbreak populations, resulting in damage to vegetation. The consequences may reduce grazing for livestock and result in loss of food and habitat for wildlife. Livestock grazing contributes to important cultural and social values to the area. Intertwined with the economic aspects of livestock operations are the lifestyles and culture that have co-evolved with Western ranching.

Ranchers displaced from grazing lands due to early loss of forage from insect damage will be forced to search for other rangeland, sell their livestock prematurely or purchase feed hay. It will affect other ranchers by increasing demand, and consequently, cost for hay and/or pasture in the area. This will have a beneficial effect on those providing the hay or range, and a negative impact on other ranchers who use these same resources throughout the area. In addition, grazing on impacted lands will compound the effects to vegetation of recent drought conditions over the last five years (e.g., continual heavy utilization by grasshoppers/crickets, wildlife and wildfire), resulting in longer-term impacts (e.g., decline or loss of some preferred forage species) on grazing forage production on these lands. The lack of treatment would result in the eventual magnification of grasshopper problems resulting in increased suppression efforts, increased suppression costs and the expansion of suppression needs onto lands where such options are limited. For example, control needs on crop lands where chemical options are restricted because of pesticide label restrictions. Under the no action alternative, farmers would experience economic losses. The suppression of grasshoppers in the affected area would have beneficial economic impacts to local landowner, farmers and beekeepers. Crops near infested lands would be protected from devastating migrating hordes, resulting in higher crop production; hence, increased monetary returns.

3.2.4. Cultural Resources and Events

To ensure that historical or cultural sites, monuments, buildings or artifacts of special concern are not adversely affected by program treatments, APHIS will confer with BLM, USFS, BIA, or other appropriate land management agencies on a local level to protect these areas of special concern. APHIS will also confer with the appropriate Tribal Authority and with the BIA office at a local level to ensure that the timing and location of planned program treatments do not coincide or conflict with cultural events or observances, on Tribal and/or allotted lands.

3.2.5. Special Considerations for Certain Populations

3.2.5.1. Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (E.O.) 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, was signed by President Clinton on February 11, 1994 (59 Federal Register (FR) 7269). This E.O. requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Consistent with this E.O., APHIS will consider the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations for any of its actions related to grasshopper suppression programs.

The human population at most sites in grasshopper programs is diverse and lacks any special characteristics that implicate greater risks of adverse effects for any minority or low-income populations. A demographic review in the APHIS EIS 2002 revealed certain areas with large populations, and some with large American Indian populations. Low-income farmers and ranchers would comprise, by far, the largest group affected by APHIS program efforts in this area of concern.

Three Indian Reservations exist within the boundaries of this EA. They are the Crow Indian Reservation (11,357 members), the Fort Peck Indian Reservation (11,876 members), and the Northern Cheyenne Indian Reservation (10,840 members). Member numbers are approximations and may or may not include tribal members living off and/or near each of the reservations.

3.2.5.2. Executive Order No. 13045, Protection of Children from Environmental Health Risks and Safety Risks

The increased scientific knowledge about the environmental health risks and safety risks associated with hazardous substance exposures to children and recognition of these issues in Congress and Federal agencies brought about legislation and other requirements to protect the health and safety of children. On April 21, 1997, President Clinton signed E.O. 13045, Protection of Children From Environmental Health Risks and Safety Risks (62 FR 19885). This E.O. requires each Federal agency, consistent with its mission, to identify and assess environmental health risks and safety risks that may disproportionately affect children and to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. APHIS has developed agency guidance for its programs to follow to ensure the protection of children (USDA, APHIS, 1999).

Treatments used for grasshoppers programs are primarily conducted on open rangelands where children would not be expected to be present during treatment or enter during the restricted entry period after treatment. Based on review of the insecticides and their use in programs, the risk assessment concludes that the likelihood of children being exposed to insecticides from a grasshopper program is very slight and that no disproportionate adverse effects to children are anticipated over the negligible effects to the general population.

4. Environmental Consequences

Each alternative described in this EA potentially has adverse environmental effects. The general environmental impacts of each alternative are discussed in detail in the 2002 EIS. The specific impacts of the alternatives are highly dependent upon the particular action and location of infestation. The principal concerns associated with the alternatives are: (1) the potential effects of insecticides on human health (including subpopulations that might be at increased risk); and (2) impacts of insecticides on non-target organisms (including threatened and endangered species). Assessments of the relative risk of each insecticide option are discussed in detail in the 2002 EIS document.

4.1. Environmental Consequences of the Alternatives

Site-specific environmental consequences of the alternatives are discussed in this section.

4.1.1. No Action Alternative

Under this alternative, APHIS would not fund or participate in any program to suppress grasshoppers. If APHIS does not participate in any grasshopper suppression program, Federal land management agencies, State agriculture departments, local governments, or private groups or individuals, may not effectively combat outbreaks in a coordinated effort. In these situations, grasshopper outbreaks could develop and spread unimpeded.

Grasshoppers in unsuppressed outbreaks would consume agricultural and nonagricultural plants. The damage caused by grasshopper outbreaks could also pose a risk to rare, threatened, or endangered plants that often have a low number of individuals and limited distribution. Habitat loss for birds and other wildlife and rangeland susceptibility to invasion by nonnative plants are among the consequences that would likely occur should existing vegetation be removed by grasshoppers. Loss of plant cover due to grasshopper consumption will occur. Plant cover may protect the soil from the drying effects of the sun, and plant root systems hold the soil in place that may otherwise be eroded.

Another potential scenario, if APHIS does not participate in any grasshopper suppression programs, is that some Federal land management agencies, State agriculture departments, local governments, or private groups or individuals may attempt to conduct widespread grasshopper programs. Without the technical assistance and program coordination that APHIS can provide to grasshopper programs, it is possible that a large amount of insecticides, including those APHIS considers too environmentally harsh but labeled for rangeland use, could be applied, reapplied, and perhaps misapplied in an effort to suppress or even locally eradicate grasshopper populations. It is not possible to accurately predict the environmental consequences of the no action alternative because the type and amount of insecticides that could be used in this scenario are unknown.

4.1.2. Insecticide Applications at Conventional Rates and Complete Area Coverage Alternative

A number of insecticides are labeled by the U.S. Environmental Protection Agency (EPA) for use against grasshoppers on rangeland but are not considered by APHIS for use. APHIS chooses and approves insecticides based on (1) effective performance against grasshoppers on rangeland and (2) minimal or negligible impact on the environment and non-target species (Foster and Reuter, 1996).

Carbaryl, diflubenzuron, and malathion are the insecticides APHIS would use in the rangeland grasshopper program based on several factors, including efficacy, cost, and environmental concerns. Although diflubenzuron's mode of action is very different than the mode of action for carbaryl and malathion, the "insecticide" used in this document usually refers to carbaryl, diflubenzuron, and/or malathion.

When direct intervention is requested by land managers, APHIS' role in the suppression of grasshoppers is achieved through insecticide application. Generally, APHIS would apply carbaryl, diflubenzuron, or malathion one-time to a treatment site. There may be situations where it is appropriate to use one insecticide or formulation in one part of a treatment area and a different insecticide or formulation in another part of that same treatment area. All applications will be conducted according to the label directions. For example, ultra-low-volume malathion may be used over the majority of a treatment area, but areas of special consideration may be treated with carbaryl bait. Should these situations occur, no area would be treated with more than one insecticide, nor would insecticides be mixed or combined.

A detailed description and mode of action of each available alternative can be found in the 2002 EIS Chapter V. Environmental Consequences. The impacts to resources will be minimized by the implementation of the program guidelines found in Appendix 1.

To ensure that historical or cultural sites, monuments, buildings or artifacts of special concern are not adversely affected by program treatments, APHIS will confer with BLM, BIA, Tribal, Forest Service, or other appropriate land management agency on a local level to protect these areas of special concern. APHIS will specifically confer with the appropriate Tribal Authority and with the BIA office at a local level to ensure that the timing and location of planned program treatments do not coincide or conflict with cultural events or observances, such as Sun Dances, on Tribal and/or allotted lands.

Under Alternative 2, APHIS would participate in grasshopper programs with the option of using one of the insecticides carbaryl, diflubenzuron, or malathion, depending upon the various factors related to the grasshopper outbreak and the site-specific characteristics. The use of an insecticide would occur at the conventional rates. With only rare exceptions, APHIS would apply a single treatment in an outbreak year that would blanket affected rangeland areas in an attempt to suppress grasshopper outbreak populations by a range of 35 to 98 percent, depending upon the insecticide used.

Carbaryl

Carbaryl is of moderate acute oral toxicity to humans. The mode of toxic action of carbaryl occurs through inhibition of acetylcholinesterase (AChE) function in the nervous system. This inhibition is reversible over time if exposure to carbaryl ceases. The Environmental Protection Agency (EPA) has classified carbaryl as a Apossible human carcinogen@ (EPA, 1993). However, it is not considered to pose any mutagenic or genotoxic risk.

Potential exposures to the general public from conventional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. The potential for adverse effects to workers are negligible if proper safety procedures are followed, including wearing the required protective clothing. Carbaryl has been used routinely in other programs with no reports of adverse health effects. Therefore, routine safety precautions are expected to provide adequate worker health protection.

Carbaryl is of moderate acute oral toxicity to mammals (McEwen et al., 1996a). Carbaryl applied at Alternative 2 rates is unlikely to be directly toxic to upland birds, mammals, or reptiles. Field studies have shown that carbaryl applied as either ultra-low-volume (ULV) spray or bait at Alternative 2 rates posed little risk to killdeer (McEwen et al., 1996a), vesper sparrows (McEwen et al., 1996a; Adam et al., 1994), or golden eagles (McEwen et al., 1996b) in the treatment areas. AChE inhibition at 40 to 60 percent can affect coordination, behavior, and foraging ability in vertebrates. Multi-year studies conducted at several grasshopper treatment areas have shown AChE inhibition at levels of no more that 40 percent with most at less than 20 percent (McEwen et al., 1996a). Carbaryl is not subject to significant bioaccumulation due to its low water solubility and low octanol-water partition coefficient (Dobroski et al., 1985).

Carbaryl will most likely affect non-target insects that are exposed to ULV carbaryl spray or that consume carbaryl bait within the grasshopper treatment area. Field studies have shown that affected insect populations can recover rapidly and generally have suffered no long-term effects, including some insects that are particularly sensitive to carbaryl, such as bees (Catangui et al., 1996). The use of carbaryl in bait form generally has considerable environmental advantages over liquid insecticide applications: bait is easier than liquid spray applications to direct toward the target area, bait is more specific to grasshoppers, and bait affects fewer non-target organisms than sprays (Quinn, 1996).

Should carbaryl enter water, there is the potential to affect the aquatic invertebrate assemblage, especially amphipods. Field studies with carbaryl concluded that there was no biologically significant effect on aquatic resources, although invertebrate downstream drift increased for a short period after treatment due to toxic effects (Beyers et al., 1995). Carbaryl is moderately toxic to most fish (Mayer and Ellersieck, 1986).

Diflubenzuron

The acute oral toxicity of diflubenzuron formulations to humans ranges from very slight to slight. The most sensitive indicator of exposure and effects of diflubenzuron in humans is the formation of methemoglobin (a compound in blood responsible for the transport of oxygen) in blood.

Potential exposures to the general public from Alternative 2 rates are infrequent and of low magnitude. These low exposures to the public pose no risk of methemoglobinemia (a condition where the heme iron in blood is chemically oxidized and lacks the ability to properly transport oxygen), direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Potential worker exposures are higher than the general public but are not expected to pose any risk of adverse health effects.

Because diflubenzuron is a chitin inhibitor that disrupts insects from forming their exoskeleton, organisms without a chitinous exoskeleton, such as mammals, fish, and plants are largely unaffected by diflubenzuron. In addition, adult insects, including wild and cultivated bees, would be mostly unaffected by diflubenzuron applications (Schroeder et al., 1980; Emmett and Archer, 1980). Among birds, nestling growth rates, behavior data, and survival of wild American kestrels in diflubenzuron treated areas showed no significant differences among kestrels in treated areas and untreated areas (McEwen et al., 1996b). The acute oral toxicity of diflubenzuron to mammals ranges from very slight to slight. Little, if any, bioaccumulation of diflubenzuron would be expected (Opdycke et al., 1982).

Diflubenzuron is most likely to affect immature terrestrial insects and early life stages of aquatic invertebrates (Eisler, 2000). While this would reduce the prey base within the treatment area for organisms that feed on insects, adult insects, including grasshoppers, would remain available as prey items. Many of the aquatic organisms most susceptible to diflubenzuron are marine organisms that would not be exposed to rangeland treatments. Freshwater invertebrate populations would be reduced if exposed to diflubenzuron, but these decreases would be expected to be temporary given the rapid regeneration time of many aquatic invertebrates.

Malathion

Malathion is of slight acute oral toxicity to humans. The mode of toxic action of malathion occurs through inhibition of AChE function in the nervous system. Unlike carbaryl, AChE inhibition from malathion is not readily reversible over time if exposure ceases. However, strong inhibition of AChE from malathion occurs only when chemical oxidation results in formation of the metabolite malaoxon. Human metabolism of malathion favors hydroxylation and seldom produces much malaoxon.

Potential exposures to the general public from conventional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Potential worker exposures are higher, but still have little potential for adverse health effects except under accidental scenarios. Malathion has been used routinely in other programs with no reports of adverse health effects. Therefore, routine safety precautions are expected to continue to provide adequate protection of worker health.

EPA has recently reviewed the potential for carcinogenic effects from malathion. EPA's classification describes malathion as having Asuggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (EPA, 2000). This indicates that any carcinogenic potential of malathion cannot be quantified based upon EPA's weight of evidence determination in this classification.

The low exposures to malathion from program applications would not be expected to pose carcinogenic risks to workers or the general public.

Malathion is of slight acute oral toxicity to mammals. There is little possibility of toxicity-induced mortality of upland birds, mammals, or reptiles, and no direct toxic effects have been observed in field studies. Malathion is not directly toxic to vertebrates at the concentrations used for grasshopper suppression, but it may be possible that sub-lethal effects to nervous system functions caused by AChE inhibition may lead directly to a decrease in survival. AChE inhibition at 40 to 60 percent affects coordination, behavior, and foraging ability in vertebrates. Multi-year studies at several grasshopper treatment areas have shown AChE inhibition at levels of no more than 40 percent with most at less than 20 percent (McEwen et al., 1996a). Field studies of birds within malathion treatment areas showed that, in general, the total number of birds and bird reproduction were not different from untreated areas (McEwen et al., 1996a). Malathion does not bioaccumulate HSDB, 1990; Tsuda et al., 1989).

Malathion will most likely affect non-target insects within a treatment area. Large reductions in some insect populations would be expected after a malathion treatment under Alternative 2. While the number of insects would be diminished, there would be some insects remaining. The remaining insects would be available prey items for insectivorous organisms, and those insects with short generation times may soon increase.

Malathion is highly toxic to some fish and aquatic invertebrates; however, malathion concentrations in water, as a result of grasshopper treatments, are expected to be low presenting a low risk to aquatic organisms, especially those organisms with short generation times.

The implementation of pesticide label instructions and restrictions and the APHIS treatment guidelines will reduce potential impacts from the program use of insecticides (see Appendix 1 treatment guidelines).

Chlorantraniliprole

Chlorantraniliprole (Ryanaxypyr™) is a recently introduced insecticide that belongs to the anthranilic diamide insecticide class. The mode of action is the activation of insect ryanodine receptors which causes an uncontrolled release of calcium from smooth and striated muscles that impairs muscle regulation and causes paralysis in insects (EPA, 2008; Health Canada, 2008). Although these receptors occur in mammals, the insecticide is very selective to insect ryanodine receptors with more than 350-fold differential selectivity compared to mammalian receptors (Lahm et al., 2007; EPA, 2008). Primary activity of chlorantraniliprole is through ingestion with some contact toxicity against lepidopteran pests but also against Orthoptera, Coleoptera, Diptera, and Hemiptera pests (Hannig et al., 2009). The formulation proposed in the Grasshopper and Mormon Cricket Suppression Program (Program) is Prevathon® that can be applied by air or ground at a maximum rate of 8 fluid ounces per acre (fl oz/ac). The proposed treatment rates for this study are full coverage at 4 fl oz/ac and 2 fl oz/ac using RAAT on approximately 1920 acres per treatment.

Human Health:

Chlorantraniliprole is considered practically nontoxic via oral, dermal, and inhalation exposures (DuPont, 2010; EPA, 2008). Median lethality values (LD50) from oral and dermal exposure to the active ingredient, chlorantraniliprole, and the proposed formulation exceed the highest test concentration tested (5,000 milligrams/kilogram (mg/kg)). Inhalation toxicity is also very low for the technical material and the formulation with median lethality values exceeding the highest test concentration (2.1 mg/L). Available acute toxicity data suggests that the acute toxicity between the active ingredient and the formulation are comparable. Prevathon® is not considered an irritant to the eyes or skin, and is not a skin sensitizer. In addition chlorantraniliprole is not considered to be carcinogenic or mutagenic, and is not known to cause reproductive or developmental toxicity. The no observable effect level (NOEL) in reproductive and developmental toxicity studies was 1,000 mg/kg/day, or the highest concentration tested (EPA, 2008). Studies designed to assess neurotoxicity and effects on the immune system show no effects at a range of doses from the low mg/kg range to greater than 1,000 mg/kg.

Exposure and risk to all population groups is expected to be negligible. The potential for exposure is greatest for workers from handling and applying Prevathon®, however the very low toxicity and label required personal protective equipment result in minimal exposure and risk to this subgroup of the population. Exposure and risk to the general public will also be negligible based on Program use of Prevathon®. Applications will be made to rangeland over an area of approximately 1920 acres for each treatment rate. These areas are part of a proposed three year study and no plant material would be harvested for human consumption or used as feed for domestic stock. Therefore dietary human exposure from consuming food containing residues of chlorantraniliprole would not occur. Conservative estimates of potential groundwater contamination using standard USEPA models suggest residues would be orders of magnitude below any levels of concern for the general public, including children. Drift may occur during applications however Program restrictions regarding treatment proximity to schools, and other measures to reduce drift, will minimize the potential for exposure and risk to the general public (USDA, 2013).

Ecological Resources:

Toxicity to most non-target organisms is low based on available toxicity data. Acute fish toxicity is low with median lethality values (LD50) for freshwater and marine test species above the highest test concentration tested. Amphibian toxicity data does not appear to be available however based on the reported toxicity values for fish the toxicity to amphibians is expected to be low. Aquatic invertebrates are more sensitive to the effects of chlorantraniliprole with median lethality and effect concentrations ranging from 0.0098 milligrams per liter (mg/L) for the freshwater cladoceran, Daphnia magna, to 1.15 mg/L for marine mysid shrimp (Barbee et al., 2010; EPA, 2012). Chronic no observable effect concentrations (NOEC) range from 0.0045 mg/L for D. magna to 0.695 mg/L for a marine mysid (EPA, 2012). Available aquatic plant toxicity data suggests low toxicity of chlorantraniliprole to diatoms, algae, and aquatic macrophytes with median effect concentrations exceeding the highest test concentration (EPA, 2008). Primary and secondary metabolites that could occur in aquatic environments are less toxic than the parent material when comparing toxicity values for the freshwater cladoceran, D. magna (EPA, 2012).

The exposure and risk to aquatic organisms from the proposed applications of Prevathon® will be negligible based on the low toxicity of chlorantraniliprole, and program restrictions regarding applications near surface water. The Program currently uses a 200 foot ground and 500 foot aerial application buffer from surface water. Using standardized drift modeling at the highest application rate proposed in this study results in shallow water residues of chlorantraniliprole that are approximately ten fold below the most sensitive sublethal endpoint for aquatic invertebrates (USDA, 2014). Residue values were also approximately ten fold below the most sensitive acute toxicity value for aquatic vertebrates and four orders of magnitude below the acute toxicity values for fish. No indirect effects would be expected for aquatic vertebrates that depend on aquatic plants and invertebrates for habitat and prey from the proposed use of Prevathon®.

Acute toxicity for terrestrial wildlife such as mammals and birds is very low with median lethality values exceeding the highest test concentration for mammals and birds, such as bobwhite quail and the mallard (EPA, 2012). Laboratory toxicity data for technical and formulated chlorantraniliprole shows that the product is practically non-toxic to honey bees in oral or contact exposures. In semi-field studies using two formulations reported NOECs ranging from 52.5 to 156.16 g a.i.chlorantraniliprole/ha (Dinter et al., 2009; EPA, 2008). Three semi-field honey bee tunnel tests demonstrated no behavioral or flight intensity effects nor were any hive related impacts noted at a dose of 52.5 g/ha (Dinter et al., 2009). The lowest reported NOEC is approximately four times the proposed RAATs application rate for chlorantraniliprole and two times the proposed full rate. Similar NOECs have been observed for other invertebrates such as the hover fly, Episyrphus balteatus, ladybird beetle larvae, Coccinella septempunctata, green lacewing, Chrysoperla carnea, the plant bug, Typhlodromus pyri, and predatory mite, Orius laevigatus (EPA, 2008; EPA, 2012). The low toxicity to non-target terrestrial invertebrates has also been observed in greenhouse and field applications. Gradish et al. (2011) reported low acute toxicity of formulated chlorantraniliprole to the parasitoid, Eretmocerus eremicus, the pirate bug, Orius insidiosus and the predatory mite, Amblyseius swirskii, in 48-hour exposures. Brugger et al. (2010) evaluated lethal and sublethal impacts of formulated chlorantraniliprole to seven parasitic hymenopterans and found no negative impacts on adult survival, percentage parasitism, or emergence when compared to controls at rates well above the full and RAATs program rates. The lack of toxicity in other insect groups at rates that are toxic to grasshoppers is related to the activity of chlorantraniliprole which is primarily through ingestion. Insects such as grasshoppers and larval Coleoptera and Lepidoptera would receive a larger dose consuming treated plant material compared to many of the non-target pests that have been evaluated in the literature. The impacts to this group of non-target invertebrates, as well as others, will be evaluated in the proposed three year study.

Exposure and risk to terrestrial vertebrates that may consume treated plant material or insects in the proposed spray blocks will be negligible. USEPA exposure models to this group of non-target organisms from treated plant material and insects at maximum Prevathon® rates show that residues are at least two orders of magnitude below the most sensitive toxicity endpoint for wild mammals or birds (USDA, 2014). Indirect risk to this group of organisms is also not anticipated based on the selectivity of chlorantraniliprole to certain insect taxa and the relatively small areas of treatment. Treatment blocks will be approximately 1920 acres at the 2 and 4 fl. oz/ac rate which would be smaller than the potential foraging range for many mammals and birds that are insectivores. Additionally the selective nature of chlorantraniliprole to certain insect taxa and the low application rates suggest that impacts to all terrestrial invertebrates would not be anticipated. Any decrease in chlorantraniliprole-sensitive terrestrial invertebrate numbers would be expected to be local in nature due to the size of the treatment plots and recovery would occur more rapidly than in larger treatment areas due to immigration and the selective nature of chlorantraniliprole to certain life stages of invertebrates. There is some uncertainty in this assumption however the intent of the proposed study is to quantify the potential non-target impacts from the proposed applications.

Environmental Quality

The potential for impacts to soil, air and water quality are expected to be negligible based on the proposed use pattern and available environmental fate data for chlorantraniliprole. Air quality is not expected to be significantly impacted since chlorantraniliprole has chemical properties that demonstrate it is not likely to volatilize into the atmosphere (EPA, 2008). There will be some insecticide present in the atmosphere within and adjacent to the spray block immediately after application as drift but this will be localized and of short duration. Chlorantraniliprole has low solubility in water (<1 mg/L) and is susceptible to sunlight with a half-life of 0.31 days. Microbial degradation in water and pH-related effects to chlorantraniliprole are minor with half-lives greater than 125 days (EPA, 2008). Slow degradation in soil is also anticipated with half-lives ranging from 228 to 924 days in various soil types (EPA, 2008). Chlorantraniliprole has a varying affinity for binding to soil, but is generally low, suggesting that it may be susceptible to run-off during storm events. However the proposed use rates and program restrictions regarding buffers suggest that surface and ground water quality will not be impacted from the proposed Program use of chlorantraniliprole.

Summary:

Chlorantraniliprole use in the proposed study will have negligible risk to human health. Risk to workers will be greatest due to a greater chance of exposure however the risk is very low based on favorable toxicity data and the use of personal protective equipment. Risk to the general population is not expected based on available toxicity data and the lack of significant exposure from the proposed study. Risk to most non-target fish and wildlife is also expected to be negligible based on the very low toxicity to most non-target organisms and low probability of exposure due to the proposed study design and Program restrictions to protect water quality. There is some risk to certain life stages of terrestrial insect taxa that may be sensitive to chlorantraniliprole but these impacts are expected to be localized within the treatment blocks and will be quantified in the proposed study.

4.1.3. Reduced Area Agent Treatments (RAATs) Alternative

The goal of grasshopper suppression under the RAATs alternative is to economically and environmentally suppress grasshopper populations to a desired level rather than reduce those populations to the greatest possible extent. The efficacy of the RAATs alternative in reducing grasshoppers is therefore less than conventional treatments. The RAATs efficacy is also variable. Foster et al. (2000) reported that grasshopper treatment mortality using RAATs was reduced 2 to 15 percent from conventional treatments while Lockwood et al. (2000) reported 0 to 26 percent difference in mortality between the conventional and RAATs alternatives. During grasshopper outbreaks when grasshopper densities can be 60 or more per square meter (Norelius and Lockwood, 1999), grasshopper treatments that have 90 to 95 percent mortality still leave a number of grasshoppers (3 to 6) that is generally greater than the average number found on rangeland, such as in Wyoming, in a normal year (Schell and Lockwood, 1997).

Refer to the 2002 EIS Chapter V. Environmental Consequences. The impacts identified for this alternative will be reduced compared to Alternative 2. The impacts to these resources will be minimized by the implementation of the program guidelines described in Appendix 1.

Under Alternative 3, the insecticide carbaryl, diflubenzuron, or malathion would be used at a reduced rate and over reduced areas of coverage. Rarely would APHIS apply more than a single treatment to an area per year. The maximum insecticide application rate under the RAATs strategy is reduced 50 percent from the conventional rates for carbaryl and malathion and 25 percent from the Alternative 2 rate for diflubenzuron. Although this strategy involves leaving variable amounts of land not directly treated, the risk assessment conducted for the 2002 EIS assumed 100 percent area coverage because not all possible scenarios could be analyzed. However, when utilized in grasshopper suppression, the amount of untreated area in RAATs often ranges from 20 to 67 percent of the total infested area but can be adjusted to meet site-specific needs.

Carbaryl

Potential exposures to the general public and workers from RAATs application rates are lower than those from conventional application rates, and adverse effects decrease commensurately with decreased magnitude of exposure. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. The potential for adverse effects to workers is negligible if proper safety procedures are followed, including wearing the required protective clothing. Routine safety precautions are expected to provide adequate protection of worker health at the lower application rates under RAATs.

Carbaryl will most likely affect non-target insects that are exposed to liquid carbaryl or that consume carbaryl bait. While carbaryl applied at a RAATs rate will reduce susceptible insect populations, the decrease will be less than under Alternative 2 rates. Carbaryl ULV applications applied in alternate swaths have been shown to affect terrestrial arthropods less than malathion applied in a similar fashion.

Direct toxicity of carbaryl to birds, mammals, and reptiles is unlikely in swaths treated with carbaryl under a RAATs approach. Carbaryl bait also has minimal potential for direct effects on birds and mammals. Field studies indicated that bee populations did not decline after carbaryl bait treatments, and American kestrels were unaffected by bait applications made at a RAATs rate. Using alternating swaths will furthermore reduce adverse effects because organisms that are in untreated swaths will be mostly unexposed to carbaryl.

Carbaryl applied at a RAATs rate has the potential to affect invertebrates in aquatic ecosystems. However, these affects would be less than effects expected under Alternative 2. Fish are not likely to be affected at any concentrations that could be expected under Alternative 3.

Diflubenzuron

Potential exposures and adverse effects to the general public and workers from RAATs application rates are commensurately less than conventional application rates. These low exposures to the public pose no risk of methemoglobinemia, direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Potential worker exposures pose negligible risk of adverse health effects.

Because diflubenzuron is a chitin inhibitor that disrupts insects from forming their exoskeleton, organisms without a chitinous exoskeleton, such as mammals, fish, and plants are largely unaffected by diflubenzuron. Diflubenzuron exposures at Alternative 3 rates are not hazardous to terrestrial mammals, birds, and other vertebrates. Insects in untreated swaths would have little to no exposure, and adult insects in the treated swaths are not susceptible to diflubenzuron's mode of action. The indirect effects to insectivores would be negligible as not all insects in the treatment area will be affected by diflubenzuron.

Diflubenzuron is most likely to affect immature terrestrial insects and, if it enters water, will affect early life stages of aquatic invertebrates. While diflubenzuron would reduce insects within the treatment area, insects in untreated swaths would have little to no exposure. Many of the aquatic organisms most susceptible to diflubenzuron are marine organisms that would not be exposed to rangeland treatments. Freshwater invertebrate populations would be reduced if exposed to diflubenzuron, but these decreases may be temporary given the rapid regeneration time of many aquatic invertebrates.

Malathion

Potential exposures to the general public and workers from RAATs application rates are of a commensurately lower magnitude than conventional rates. These low exposures to the public pose no risk of direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity.

Potential risks to workers are negligible if proper safety procedures are adhered to, including the use of required protective clothing. Malathion has been used routinely in other programs with no reports of adverse health effects. The low exposures to malathion from program applications are not expected to pose any carcinogenic risks to workers or the general public.

Malathion applied at a RAATs rate will cause mortalities to susceptible insects. Organisms in untreated areas will be mostly unaffected. Field applications of malathion at a RAATs rate and applied in alternate swaths resulted in less reduction in non-target organisms than would occur in blanket treatments. Birds in RAATs areas were not substantially affected. Should malathion applied at RAATs rates enter water, it is most likely to affect aquatic invertebrates. However, these effects would soon be compensated for by the surviving organisms given the rapid generation time of most aquatic invertebrates and the rapid degradation of malathion in most water bodies.

The implementation of pesticide label instructions and restrictions and the APHIS treatment guidelines will reduce potential impacts from the program use of insecticides (see Appendix 1 treatment guidelines).

Chlorantraniliprole

Chlorantraniliprole (Ryanaxypyr™) is a recently introduced insecticide that belongs to the anthranilic diamide insecticide class. The mode of action is the activation of insect ryanodine receptors which causes an uncontrolled release of calcium from smooth and striated muscles that impairs muscle regulation and causes paralysis in insects (EPA, 2008; Health Canada, 2008). Although these receptors occur in mammals, the insecticide is very selective to insect ryanodine receptors with more than 350-fold differential selectivity compared to mammalian receptors (Lahm et al., 2007; EPA, 2008). Primary activity of chlorantraniliprole is through ingestion with some contact toxicity against lepidopteran pests but also against Orthoptera, Coleoptera, Diptera, and Hemiptera pests (Hannig et al., 2009). The formulation proposed in the Grasshopper and Mormon Cricket Suppression Program (Program) is Prevathon® that can be applied by air or ground at a maximum rate of 8 fluid ounces per acre (fl oz/ac). The proposed treatment rates for this study are full coverage at 4 fl oz/ac and 2 fl oz/ac using RAAT on approximately 1920 acres per treatment.

Human Health:

Chlorantraniliprole is considered practically nontoxic via oral, dermal, and inhalation exposures (DuPont, 2010; EPA, 2008). Median lethality values (LD50) from oral and dermal exposure to the active ingredient, chlorantraniliprole, and the proposed formulation exceed the highest test concentration tested (5,000 milligrams/kilogram (mg/kg)). Inhalation toxicity is also very low for the technical material and the formulation with median lethality values exceeding the highest test concentration (2.1 mg/L). Available acute toxicity data suggests that the acute toxicity between the active ingredient and the formulation are comparable. Prevathon® is not considered an irritant to the eyes or skin, and is not a skin sensitizer. In addition chlorantraniliprole is not considered to be carcinogenic or mutagenic, and is not known to cause reproductive or developmental toxicity. The no observable effect level (NOEL) in reproductive and developmental toxicity studies was 1,000 mg/kg/day, or the highest concentration tested (EPA, 2008). Studies designed to assess neurotoxicity and effects on the immune system show no effects at a range of doses from the low mg/kg range to greater than 1,000 mg/kg.
Exposure and risk to all population groups is expected to be negligible. The potential for exposure is greatest for workers from handling and applying Prevathon®, however the very low toxicity and label required personal protective equipment result in minimal exposure and risk to this subgroup of the population. Exposure and risk to the general public will also be negligible based on Program use of Prevathon®. Applications will be made to rangeland over an area of approximately 1920 acres for each treatment rate. These areas are part of a proposed three year study and no plant material would be harvested for human consumption or used as feed for domestic stock. Therefore dietary human exposure from consuming food containing residues of chlorantraniliprole would not occur. Conservative estimates of potential groundwater contamination using standard USEPA models suggest residues would be orders of magnitude below any levels of concern for the general public, including children. Drift may occur during applications however Program restrictions regarding treatment proximity to schools, and other measures to reduce drift, will minimize the potential for exposure and risk to the general public (USDA, 2013).

Ecological Resources:
Toxicity to most non-target organisms is low based on available toxicity data. Acute fish toxicity is low with median lethality values (LC50) for freshwater and marine test species above the highest test concentration tested. Amphibian toxicity data does not appear to be available however based on the reported toxicity values for fish the toxicity to amphibians is expected to be low. Aquatic invertebrates are more sensitive to the effects of chlorantraniliprole with median lethality and effect concentrations ranging from 0.0098 milligrams per liter (mg/L) for the freshwater cladoceran, Daphnia magna, to 1.15 mg/L for marine mysid shrimp (Barbee et al., 2010; EPA, 2012). Chronic no observable effect concentrations (NOEC) range from 0.0045 mg/L for D. magna to 0.695 mg/L for a marine mysid (EPA, 2012). Available aquatic plant toxicity data suggests low toxicity of chlorantraniliprole to diatoms, algae, and aquatic macrophytes with median effect concentrations exceeding the highest test concentration (EPA, 2008). Primary and secondary metabolites that could occur in

aquatic environments are less toxic than the parent material when comparing toxicity values for the freshwater cladoceran, D. magna (EPA, 2012).

The exposure and risk to aquatic organisms from the proposed applications of Prevathon® will be negligible based on the low toxicity of chlorantraniliprole, and program restrictions regarding applications near surface water. The Program currently uses a 200 foot ground and 500 foot aerial application buffer from surface water. Using standardized drift modeling at the highest application rate proposed in this study results in shallow water residues of chlorantraniliprole that are approximately ten fold below the most sensitive sublethal endpoint for aquatic invertebrates (USDA, 2014). Residue values were also approximately ten fold below the most sensitive acute toxicity value for aquatic vertebrates and four orders of magnitude below the acute toxicity values for fish. No indirect effects would be expected for aquatic vertebrates that depend on aquatic plants and invertebrates for habitat and prey from the proposed use of Prevathon®.

Acute toxicity for terrestrial wildlife such as mammals and birds is very low with median lethality values exceeding the highest test concentration for mammals and birds, such as bobwhite quail and the mallard (EPA, 2012). Laboratory toxicity data for technical and formulated chlorantraniliprole shows that the product is practically non-toxic to honey bees in oral or contact exposures. In semi-field studies using two formulations reported NOECs ranging from 52.5 to 156.16 g a.i.chlorantraniliprole/ha (Dinter et al., 2009; EPA, 2008). Three semi-field honey bee tunnel tests demonstrated no behavioral or flight intensity effects nor were any hive related impacts noted at a dose of 52.5 g/ha (Dinter et al., 2009). The lowest reported NOEC is approximately four times the proposed RAATs application rate for chlorantraniliprole and two times the proposed full rate. Similar NOECs have been observed for other invertebrates such as the hover fly, Episyrphus balteatus, ladybird beetle larvae, Coccinella septempunctata, green lacewing, Chrysoperla carnea, the plant bug, Typhlodromus pyri, and predatory mite, Orius laevigatus (EPA, 2008; EPA, 2012). The low toxicity to non-target terrestrial invertebrates has also been observed in greenhouse and field applications. Gradish et al. (2011) reported low acute toxicity of formulated chlorantraniliprole to the parasitoid, Eretmocerus eremicus, the pirate bug, Orius insidiosus and the predatory mite, Amblyseius swirskii, in 48-hour exposures. Brugger et al. (2010) evaluated lethal and sublethal impacts of formulated chlorantraniliprole to seven parasitic hymenopterans and found no negative impacts on adult survival, percentage parasitism, or emergence when compared to controls at rates well above the full and RAATs program rates. The lack of toxicity in other insect groups at rates that are toxic to grasshoppers is related to the activity of chlorantraniliprole which is primarily through ingestion. Insects such as grasshoppers and larval Coleoptera and Lepidoptera would receive a larger dose consuming treated plant material compared to many of the non-target pests that have been evaluated in the literature. The impacts to this group of non-target invertebrates, as well as others, will be evaluated in the proposed three year study.

Exposure and risk to terrestrial vertebrates that may consume treated plant material or insects in the proposed spray blocks will be negligible. USEPA exposure models to this group of non-target organisms from treated plant material and insects at maximum Prevathon® rates show that residues are at least two orders of magnitude below the most sensitive toxicity endpoint for wild mammals or birds (USDA, 2014). Indirect risk to this group of organisms is also not anticipated based on the selectivity of chlorantraniliprole to certain insect taxa and the relatively small areas of treatment. Treatment blocks will be approximately 1920 acres at the 2 and 4 fl. oz/ac rate which would be smaller than the potential foraging range for many mammals and birds that are insectivores. Additionally the selective nature of chlorantraniliprole to certain insect taxa and the low application rates suggest that impacts to all terrestrial invertebrates would not be anticipated. Any decrease in chlorantraniliprole-sensitive terrestrial invertebrate numbers would be expected to be local in nature due to the size of the treatment plots and recovery would occur more rapidly than in larger treatment areas due to immigration and the selective nature of chlorantraniliprole to certain life stages of invertebrates. There is some uncertainty in this assumption however the intent of the proposed study is to quantify the potential non-target impacts from the proposed applications.

Environmental Quality

The potential for impacts to soil, air and water quality are expected to be negligible based on the proposed use pattern and available environmental fate data for chlorantraniliprole. Air quality is not expected to be significantly impacted since chlorantraniliprole has chemical properties that demonstrate it is not likely to volatilize into the atmosphere (EPA, 2008). There will be some insecticide present in the atmosphere within and adjacent to the spray block immediately after application as drift but this will be localized and of short duration. Chlorantraniliprole has low solubility in water (<1 mg/L) and is susceptible to sunlight with a half-life of 0.31 days. Microbial degradation in water and pH-related effects to chlorantraniliprole are minor with half-lives greater than 125 days (EPA, 2008). Slow degradation in soil is also anticipated with half-lives ranging from 228 to 924 days in various soil types (EPA, 2008). Chlorantraniliprole has a varying affinity for binding to soil, but is generally low, suggesting that it may be susceptible to run-off during storm events. However the proposed use rates and program restrictions regarding buffers suggest that surface and ground water quality will not be impacted from the proposed Program use of chlorantraniliprole.

Summary:

Chlorantraniliprole use in the proposed study will have negligible risk to human health. Risk to workers will be greatest due to a greater chance of exposure however the risk is very low based on favorable toxicity data and the use of personal protective equipment. Risk to the general population is not expected based on available toxicity data and the lack of significant exposure from the proposed study. Risk to most non-target fish and wildlife is also expected to be negligible based on the very low toxicity to most non-target organisms and low probability of exposure due to the proposed study design and Program restrictions to protect water quality. There is some risk to certain life stages of terrestrial insect taxa that may be sensitive to chlorantraniliprole but these impacts are expected to be localized within the treatment blocks and will be quantified in the proposed study.

4.2. Other Environmental Considerations

4.2.1. Cumulative Impacts.

Cumulative impact, as defined in the CEQ NEPA implementing regulations (40 CFR § 1508.7) "is the impact on the environment which results from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Individual landowners may conduct treatments of their own. These localized hotspot treatments are likely to be small in area such as garden plots or crop border treatments. Other Federal or non-Federal grasshopper control actions would not be conducted in the same area.

4.2.2. Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The human population at most sites in grasshopper programs is diverse and lacks any special characteristics that implicate greater risks of adverse effects for any minority or low-income populations. A demographic review in the APHIS EIS 2002 revealed certain areas with large populations, and some with large American Indian populations. Low-income farmers and ranchers would comprise, by far, the largest group affected by APHIS program efforts in this area of concern.

Three Indian Reservations exist within the boundaries of this EA. They are the Crow Indian Reservation (11,357 members), the Fort Peck Indian Reservation (11,876 members), and the Northern Cheyenne Indian Reservation (10,050 members). Member numbers are approximations and may or may not include tribal members living off and/or near each of the reservations.

When planning a site-specific action related to grasshopper infestations, APHIS considers the potential for disproportionately high and adverse human health or environmental impacts of its actions on minority and low-income populations before any proposed action. In doing so, APHIS program managers will work closely with representatives of these populations in the locale of planned actions through public meetings.

APHIS intervention to locally suppress damaging insect infestations will stand to greatly benefit, rather than harm, low-income farmers and ranchers by helping them to control insect threats to their livelihood. Suppressing grasshopper/Mormon cricket infestations on adjacent federally administered or private range lands will increase inexpensive available forage for their livestock and will significantly decrease economic losses to their crop lands by invading insects. Suppression would reduce/negate the need to perform additional expensive crop pesticide treatments or to provide supplemental feed to their livestock which would further impact low-income individuals.

In past grasshopper programs, the U.S. Department of the Interior's (USDI) Bureau of Land Management or Bureau of Indian Affairs (BIA) have notified the appropriate APHIS State Plant Health Director when any new or potentially threatening grasshopper infestation is discovered on BLM lands or Tribal and/or allotted lands held in trust and administered by BIA. Thus, APHIS has cooperated with BIA when grasshopper programs occur on trust lands. APHIS program managers will work with BIA and local Tribal Authorities to coordinate treatment programs.

4.2.3. Executive Order No. 13045, Protection of Children from Environmental Health Risks and Safety Risks

Treatments used for grasshopper programs are primarily conducted on open rangelands where children would not be expected to be present during treatment or enter during the restricted entry period after treatment.

The human health risk assessment for the 2002 EIS analyzed the effects of exposure to children from the three insecticides. Based on review of the insecticides and their use in the grasshopper program, the risk assessment concluded that the likelihood of children being exposed to insecticides is very slight and that no disproportionate adverse effects to children are anticipated over the negligible effects to the general population. Treatments are primarily conducted on open rangelands where children would not be expected to be present during treatment or enter should there be any restricted entry period after treatment.

Impacts on children will be minimized by the implementation of the treatment guidelines:

Aerial Broadcast Applications of Liquid Insecticides

Notify all residents in treatment areas, or their designated representatives, prior to proposed operations. Advise them of the control method to be used, the proposed method of application, and precautions to be taken (e.g., advise parents to keep children and pets indoors during ULV treatment). Refer to label recommendations related to restricted entry period.

No treatments will occur over congested urban areas. For all flights over congested areas, the contractor must submit a plan to the appropriate Federal Aviation Administration District Office and this office must approve of the plan; a letter of authorization signed by city or town authorities must accompany each plan. Whenever possible, plan aerial ferrying and turnaround routes to avoid flights over congested areas, bodies of water, and other sensitive areas that are not to be treated.

Aerial Application of Dry Insecticidal Bait

Do not apply within 500 feet of any school or recreational facility.

Ultra-Low-Volume Aerial Application of Liquid Insecticides

Do not spray while school buses are operating in the treatment area.

4.2.4. Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

In accordance with various environmental statutes, APHIS routinely conducts programs in a manner that minimizes impact to the environment, including any impact to migratory birds. In January 2001, President Clinton signed E.O. 13186 to ensure that all government programs protect migratory birds to the extent practicable. To further its purposes, the E.O. requires each agency with a potential to impact migratory birds to enter into a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (FWS). In compliance with the E.O., APHIS is currently working with FWS to develop such an MOU.

4.2.5. Endangered Species Act

Local consultations are being conducted between APHIS and USFWS regarding the ESA. Determinations of proposed protective measures in the APHIS Biological Assessment (BA) are incorporated below. The USFWS Letter of Concurrence is located at Appendix 4.

Section 7 of the Endangered Species Act and its implementing regulations require Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat. APHIS has prepared a biological assessment that considers the effects of Grasshopper suppression programs on all federally listed species and designated critical habitat in the state of Montana.

Through local consultation with United States Fish and Wildlife Services, APHIS has determined that, with the implementation of certain protection measures, proposed action will have no effect on Grizzly Bear, Lynx, Black-footed Ferrets, Eskimo Curlew, Whooping Crane, Bald Eagle or its habitat, Ute Ladies'-Tresses, Water Howellia, or Spalding's Catchfly as a result of the proposed pesticides at the proposed rates of application. Based on the determined protection measures, proposed pesticides and the proposed rates of application, grasshopper treatments are not likely to adversely affect the Woodland Caribou, Piping Plover, Yellow-Billed Cuckoo, Red Knot and are not likely to adversely modify critical habitat of the Piping Plover, Least Tern and Least Tern breeding habitat. Proposed pesticides applied at proposed rates of application for grasshopper treatments are not likely to adversely affect Pallid Sturgeon, White Sturgeon and would not likely adversely modify White Sturgeon critical habitat. Bull Trout would not likely be adversely affected, nor would proposed Bull trout critical habitat be adversely modified.

4.2.6. Species of Concern

Rangeland Grasshopper and Mormon Cricket Suppression Program: APHIS-BLM Coordination and Mitigation Measures to Protect BLM Sensitive Species

Grasshopper and Mormon Cricket treatments could potentially disturb sensitive status species during critical life stages. In addition, grasshoppers provide a food source for many species, for instance grasshoppers and other insects are important for sage-grouse chicks during early brood rearing. However, extreme grasshopper outbreaks can cause massive defoliation and the loss of forbs, reducing nesting cover for the following spring and reducing another important food source for sage-grouse. An effective rangeland treatment program will balance these short and long term impacts. The goal is to reduce grasshopper numbers to what would be encountered in a normal year, leaving an ample food base while protecting rangeland resources. To coordinate treatment actions with the BLMs sensitive species program's goals some general guidelines are provided to ensure effective communication and timely responses to treatment requests.

General Guidelines for Treatment

1. Notify BLM local and state offices in a timely manner of proposed treatments.
2. Coordinate with local BLM offices to identify areas containing sensitive status species (see the BLM Montana list).
3. Coordinate with local BLM offices to identify exclusion areas, other mitigation measures, and sensitive site monitoring needed for the protection of important fish, wildlife, and plant habitat.

Mitigation Measures for Sage-grouse

1. RAATs are to be used in all sage-grouse habitat and for crop protection in priority sage-grouse areas.
2. Exclude priority areas from treatment in May.
3. No disruptive activity[2] within sage-grouse priority areas or within 3 miles of a sage-grouse lek outside of these areas from March 15 – June 30.
4. Treat priority areas through aerial application only and limit ground treatments within 3 miles of a sage-grouse lek outside a priority area to after June 30.
5. Avoid treatment in wet meadows areas as identified by field offices as important for sage-grouse brood rearing.
6. Use malathion and carbaryl inside priority areas only with approval from local field manager.
7. Provide local and state BLM offices with effectiveness monitoring results including grasshopper density before and after treatment.

[1] Disruptive activities are activities likely to alter the behavior, displace, or cause excessive stress to existing animal populations occurring at a specific location and/or time, generally considered to be for more than one hour during a 24-hour period in a site specific area. This does not include aerial RAATs.

4.2.7. Monitoring

Monitoring involves the evaluation of various aspects of the grasshopper suppression programs. There are three aspects of the programs that may be monitored. The first is the efficacy of the treatment. APHIS will determine how effective the application of an insecticide has been in suppressing the grasshopper population within a treatment area and will report the results in a Work Achievement Report to the Western Region.

The second area included in monitoring is safety. This includes ensuring the safety of the program personnel through medical monitoring conducted specifically to determine risks of a hazardous material.

The third area of monitoring is environmental monitoring. APHIS Directive 5640.1 commits APHIS to a policy of monitoring the effects of Federal programs on the environment. Environmental monitoring includes such activities as checking to make sure the insecticides are applied in accordance with the labels, and that sensitive sites and organisms are protected. The environmental monitoring recommended for grasshopper suppression programs involves monitoring sensitive sites such as bodies of water used for human consumption or recreation or which have wildlife value, habitats of endangered and threatened species, habitats of other sensitive wildlife species, edible crops, and any sites for which the public has expressed concern or where humans might congregate (e.g., schools, parks, hospitals, cultural events and observances).

Tribal Wildlife Program managers will be consulted prior to any grasshopper/Mormon cricket suppression activities on reservations.

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6. Listing of Agencies and Persons Consulted (Draft EA Distribution)

PPQ- Science and Technology
PPQ- Field Operations
PPQ- Policy and Management

Darrin Old Coyote - Chairman
Crow Nation
PO Box 159
Crow Agency, MT 59022
Darrin.OldCoyote@crow-nsn.gov

Floyd Azure - Chairman
Fort Peck Tribe
PO Box 1027
Poplar, MT 59255
atstafne@fortpecktribes.net

Llevando Fisher, President
Northern Cheyenne Tribal Council
PO Box 128
Lame Deer, MT 59043
Llevando.fisher@cheyennenation.com

Ashley Taylor
Montana Fish, Wildlife and Parks
PO Box 7940
Harlowton, MT 59036
ataylor@mt.gov

Rick Northrup
Montana Fish, Wildlife and Parks
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620-0701
rnorthrup@mt.gov

Jeff Hagener,
Director, Montana Fish, Wildlife and Parks
2300 Lake Elmo Dr.
Billings, MT 59105
jhagener@mt.gov

Ardis R. Oelkers
Jeff Chilson
Roosevelt County Extension
P.O. Box 416
Culbertson, MT 59218
aoelkers@montana.edu
Jeffrey.chilson@montana.edu

Sheila Friedrich
Colleen Buck
Sheridan County Extension Office
Courthouse
100 West Laurel Avenue
Plentywood, MT 59254-1619
sfriedrich@montana.edu
colleen.buck@montana.edu

Bobbie Roos
Daniels County Extension Office
106 Railroad Avenue East
P.O. Box 187
Scobey, MT 59263-0187
broos@montana.edu

Ken Nelson
McCone County Extension Office

Vejtasa Bldg.
905 B Avenue
P.O. Box 200
Circle, MT 59215-0200
kennelson@montana.edu

Tim Fine
Richland County
Extension Office
123 West Main
Sidney, MT 59270
tfine@montana.edu

Bruce Smith
Dawson County Extension Office
207 West Bell
Glendive, MT 59330
acxbs@montana.edu

Wibaux County Extension
Wibaux County Extension Office
Courthouse
203 South Wibaux St.
P.O. Box 345
Wibaux, MT 59353-0345

Elin Kittelmann
Fallon/Carter Extension Office
P.0. Box 850
Baker, MT 59313
elin.kittelmann@montana.edu

Tara Andrews
Mike Schuldt
Custer County Extension Office
Courthouse
1010 Main St.
Miles City, MT 59301-3419
tandrews@montana.edu
acxms@montana.edu

Julie Riley
Mary Rumph
Powder River County
PO Box 200
101 Courthouse Square

Broadus, MT 59317
jriley@montana.edu
mrumph@montana.edu

Jennifer Anderson
Rosebud and Treasure County Extension Office
P.O. Box 65
Forsyth, MT 59327-0065
jenanderson@montana.edu

Steve Lackman
Roni Baker
Yellowstone County Extension Service
County Courthouse Rm. 106
P.O. Box 35021
Billings, MT 59107
stevelackman@montana.edu
ronibaker@montana.edu

Laurie Lautt
Molly Hammond
Big Horn County Extension
121West Third Street
P.O. Box 908
Hardin, MT 59034
acxll@montana.edu
molly.hammond@montana.edu

Sharla Sackman
Prairie County
217 W. Park St.
P.O. Box 7
Terry, MT 59349-0007
sackman@montana.edu

Nikki Bailey
Carbon County
128 Main St
P.O. Box 230
Joliet, MT 59041
nikki.bailey@montana.edu

Wendy Becker
Fort Peck Reservation
Fort Peck Community College
P.O. Box 1552

Poplar, MT 59255
wbecker@montana.edu

Eric Miller
Garfield County Extension
Courthouse
P.O. Box 81
Jordan, MT 59337
emiller@montana.edu

Mat Walter
Musselshell/Golden Valley County Extension
116 1st Street West
Roundup, MT 59072
m.petersonwalter@montana.edu

Lisa Terry
Lee Schmelzer
Stillwater County Extension
400 Third Avenue N. Courthouse
P.O. Box 807
Columbus, MT 59019
lterry@montana.edu
lees@montana.edu

Marc King
Sweet Grass County Extension
515 Hooper Street
P.O. Box 640
Big Timber, MT 59011
mking@montana.edu

Mandie Reed
Wheatland County Extension
201 A Avenue NW
P.O. Box 733
Harlowton, MT 59036
reed@montana.edu

Ryhal Rowland
Northern Cheyenne Extension
P.O. Box 128
Lame Deer, MT 59043
Ryhal.rowland@montana.edu

Lewis (John) Cook

Bureau of Indian Affairs
Soil Conservationist
Rocky Mountain Region
2021 4th Avenue North
Billings, MT 59101
lewis.cook@bia.gov

Howard Bemer
Superintendent BIA
Fort Peck Agency
P.O. Box 637
Poplar, MT 59255
Howard.bemer@bia.gov

Michael Addy
Superintendent BIA
Northern Cheyenne Agency
P.O. Box 40
Lame Deer, MT 59043
Michael.addy@bia.gov

Jocee Hedrick
Land Use Specialist
DNRC
Airport Industrial Park
1371 Rimtop Dr
Billings, MT 59105
jhedrick@mt.gov

Vianna Stewart
Superintendent BIA
Crow Agency
Bureau of Indian Affairs
P.O. Box 69
Crow Agency, MT 59022
vianna.stewart@bia.gov

Jim Sparks, Field Manager
Bureau of Land Management
5001 Southgate Dr
Billings, MT 59101
jsparks@blm.gov

Floyd Thompson
Bureau of Land Management
5001 Southgate Drive

Billings, MT 59101
fthompso@blm.gov

John Carlson
Conservation Biologist
Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101
jccarlso@blm.gov

Sandy Leach
Branch Chief, Planning & Biological Resources
Montana State Office
Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101
ssleach@blm.gov

Leonard Berry
Pesticide Specialist
MDoA
P.O. Box 200201
Helena, MT 59620
lberry@mt.gov

Craig R. Drake
Assistant Field Manager
Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101
cdrake@blm.gov

Larry Padden
Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101
lpadden@blm.gov

Eric Canton
Agricultural Specialist
MDoA
321 South 24th Street West
Billings, MT 59102
eclanton@mt.gov

Yulberton Alec Sandcrane

DES Coordinator
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, MT 59043
yulberton@yahoo.com

Marissa Spang
Natural Resource Administrator
Department of Environmental Protection & Natural Resources
Northern Cheyenne Nation
PO Box 128
Lame Deer, MT 59043
Marissa.spang@cheyennenation.com

Deb Madison, Environmental Programs Manager
Office of Environmental Protection
PO Box 1027
Poplar, Montana 59255
2horses@nemontel.net

Charlene Alden, Director
Northern Cheyenne Environmental Protection
PO Box 128
Lame Deer, Montana 59043
Cwalden2001@yahoo.com

Myrna Walking Eagle
Director, Natural Resources
Fort Peck Assiniboine and Sioux Tribes
P.O. Box 1027
Poplar, MT 59255
mwalkingeagle@fortpecktribes.net

Calvin Herrera Sr., Cabinet Head
Crow Tribe Natural Resources
PO Box 159
Crow Agency, Montana 59022
Calvin.herrera@crow-nsn.gov

Rob Magnan, Director
Fort Peck Fish & Game
PO Box 1027
Poplar, MT 59255
robertm@nemontel.net

Wilford Birdinground

Bureau of Indian Affairs
Weaver Dr. Bldg. #2
Crow Agency, MT 59022
wilford.birdinground@bia.gov

Robin Stewart
Environmental Protection Specialist
Bureau of Indian Affairs
Weaver Dr. Bldg. #2
Crow Agency, MT 59022
robin.stewart@bia.gov

Todd Yeager, Field Manager
Bureau of Land Management
111 Garryowen Rd
Miles City, MT 59301
tyeager@blm.gov

Brian Martin
Eastern MT Science & Stewardship Director
The Nature Conservancy
32 S. Ewing, Suite 215
Helena, MT 59601
bmartin@tnc.org

Jodi Bush
Brent Esmoil
U.S. Fish and Wildlife Service
585 Shepard Way
Helena, MT 59601
Jodi_Bush@fws.gov
Brent_Esmoil@fws.gov

Kim Reid
U.S. Forest Service
1310 Main Street
Billings, MT 59105
kreid@fs.fed.us

Scott Studiner
Walt Allen
U.S. Forest Service
Box 168, Hwy 212
Ashland, MT 59003
sstudiner@fs.fed.us
wallen@fs.fed.us

Wilhelmina "Willie" Keenan
USEPA FIFRA Federal Credential Inspector
Pesticide Specialist II, Pesticide Program Manager
Confederated Salish and Kootenai Tribe
Division of Environmental Protection
P.O. Box 278
Pablo, MT 59855
williek@cskt.org

Yvonneda Thompson
Chief Dull Knife College
#1 College Drive
P.O. Box 98
Lame Deer, MT 59043
henry@cdkc.edu

Latonna Old Elk
Little Big Horn College
1 Forestry Lane
P.O. Box 370
Crow Agency, MT 59022
latonna@lbhc.edu

7. Comments Received for EA MT-16-01

There were no comments received.

9. Response to comments for EA MT-16-01

There were no comments received.

APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program
FY-2016 Treatment Guidelines
Version 2/11/2016

The objectives of the APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program are to 1) conduct surveys in 17 Western States; 2) provide technical assistance to land managers; and 3) when funds permit, suppress economically damaging grasshopper and Mormon cricket outbreaks on Federal, Tribal, State, and/or private rangeland. The Plant Protection Act of 2000 provides APHIS the authority to take these actions.

General Guidelines for Grasshopper / Mormon Cricket Treatments

1. All treatments must be in accordance with:
   a. the Plant Protection Act of 2000;
   b. applicable environmental laws and policies such as: the National Environmental Policy Act, the Endangered Species Act, the Federal Insecticide, Fungicide, and Rodenticide Act, and the Clean Water Act (including National Pollutant Discharge Elimination System requirements – if applicable);
   c. applicable state laws;
   d. APHIS Directives pertaining to the proposed action;
   e. Memoranda of Understanding with other Federal agencies.

2. Subject to the availability of funds, upon request of the administering agency or the agriculture department of an affected State, APHIS, to protect rangeland, shall immediately treat Federal, Tribal, State, or private lands that are infested with grasshoppers or Mormon crickets at levels of economic infestation, unless APHIS determines that delaying treatment will not cause greater economic damage to adjacent owners of rangeland. In carrying out this section, APHIS shall work in conjunction with other Federal, State, Tribal, and private prevention, control, or suppression efforts to protect rangeland.

3. Prior to the treatment season, conduct meetings or provide guidance that allows for public participation in the decision making process. In addition, notify Federal, State and Tribal land managers and private landowners of the potential for grasshopper and Mormon cricket outbreaks on their lands. Request that the land manager / land owner advise APHIS of any sensitive sites that may exist in the proposed treatment areas.

4. Consultation with local Tribal representatives will take place prior to treatment programs to fully inform the Tribes of possible actions APHIS may take on Tribal lands.

5. On APHIS run suppression programs, the Federal government will bear the cost of treatment up to 100 percent on Federal and Tribal Trust land, 50 percent of the cost on State land, and 33 percent of cost on private land. There is an additional 16.15% charged to any funds received by APHIS for federal involvement with suppression treatments.

6. Land managers are responsible for the overall management of rangeland under their control to prevent or reduce the severity of grasshopper and Mormon cricket outbreaks. Land managers are encouraged to have implemented Integrated Pest Management Systems prior to requesting a treatment. In the absence of available funding or in the

place of APHIS funding, the Federal land management agency, Tribal authority or other party/ies may opt to reimburse APHIS for suppression treatments. Interagency agreements or reimbursement agreements must be completed prior to the start of treatments which will be charged thereto.

7. There are situations where APHIS may be requested to treat rangeland that also includes areas where crops are being grown (typically less than 10 percent of the treatment area). In those situations the crop owner pays the entire treatment costs on the croplands.

   NOTE: the insecticide being considered must be labeled for included crop as well as rangeland.

8. In some cases, rangeland treatments may be conducted by other federal agencies (e.g., Forest Service, Bureau of Land Management, or Bureau of Indian Affairs) or by non-federal entities (e.g., Grazing Association or County Pest District). APHIS may choose to assist these groups in a variety of ways, such as:
   a. loaning equipment(an agreement may be required):
   b. contributing in-kind services such as surveys to determine insect species, instars, and infestation levels;
   c. monitoring for effectiveness of the treatment;
   d. giving technical guidance.

9. In areas considered for treatment, State-registered beekeepers and organic producers shall be notified in advance of proposed treatments. If necessary, non-treated buffer zones can be established.

<u>Operational Procedures</u>

GENERAL PROCEDURES FOR ALL AERIAL AND GROUND APPLICATIONS

1. Follow all applicable Federal, Tribal, State and local laws and regulations in conducting grasshopper and Mormon cricket suppression treatments.

2. Notify residents within treatment areas, or their designated representatives, prior to proposed operations. Advise them of the control method to be used, proposed method of application, and precautions to be taken.

3. One of the following insecticides that are labeled for rangeland use can be used for a suppression treatment of grasshoppers and Mormon crickets:
   a) Carbaryl
      a. solid bait
      b. ultra low volume spray
   b) Diflubenzuron ultra low volume spay
   c) Malathion ultra low volume spray

4. Do not apply insecticides directly to water bodies (defined herein as reservoirs, lakes, ponds, pools left by seasonal streams, springs, wetlands, and perennial streams and rivers).

   Furthermore, provide the following buffers for water bodies:
   - 500-foot buffer with aerial liquid insecticide.
   - 200 foot buffer with ground liquid insecticide.
   - 200-foot buffer with aerial bait.
   - 50-foot buffer with ground bait.

5. Instruct program personnel in the safe use of equipment, materials and procedures; supervise to ensure procedures are properly followed.

6. Conduct mixing, loading, and unloading in an approved area where an accidental spill would not contaminate a water body.

7. Each aerial suppression program will have a Contracting Officer's Representative (COR) OR a Treatment Manager on site. Each State will have at least one COR available to assist the Contracting Officer (CO) in GH/MC suppression programs.

   NOTE: A Treatment Manager is an individual that the COR has delegated authority to oversee the actual suppression treatment; someone who is on the treatment site and overseeing/coordinating the treatment and communicating with the COR. No specific training is required, but knowledge of the Aerial Application Manual and treatment experience is critical; attendance to the Aerial Applicators Workshop is very beneficial.

8. Each suppression program will conduct environmental monitoring as outlined in the current year's Environmental Monitoring Plan.

   APHIS will assess and monitor rangeland treatments for the efficacy of the treatment, to verify that a suppression treatment program has properly been implemented and assure that any environmentally sensitive sites were protected.

9. APHIS reporting requirements associated with grasshopper / Mormon cricket suppression treatments can be found in the APHIS Grasshopper Program Guidebook:
   http://www.aphis.usda.gov/import_export/plants/manuals/domestic/downloads/grasshopper.pdf

SPECIFIC PROCEDURES FOR AERIAL APPLICATIONS

1. APHIS Aerial treatment contracts will adhere to the current year's Statement of Work.

2. Minimize the potential for drift and volatilization by not using ULV sprays when the following conditions exist in the spray area:

a. Wind velocity exceeds 10 miles per hour (unless state law requires lower wind speed);
b. Rain is falling or is imminent;
c. Dew is present over large areas within the treatment block;
d. There is air turbulence that could affect the spray deposition;
e. Temperature inversions (ground temperature higher than air temperature) develop and deposition onto the ground is affected.

3. Weather conditions will be monitored and documented during application and treatment will be suspended when conditions could jeopardize the correct spray placement or pilot safety.

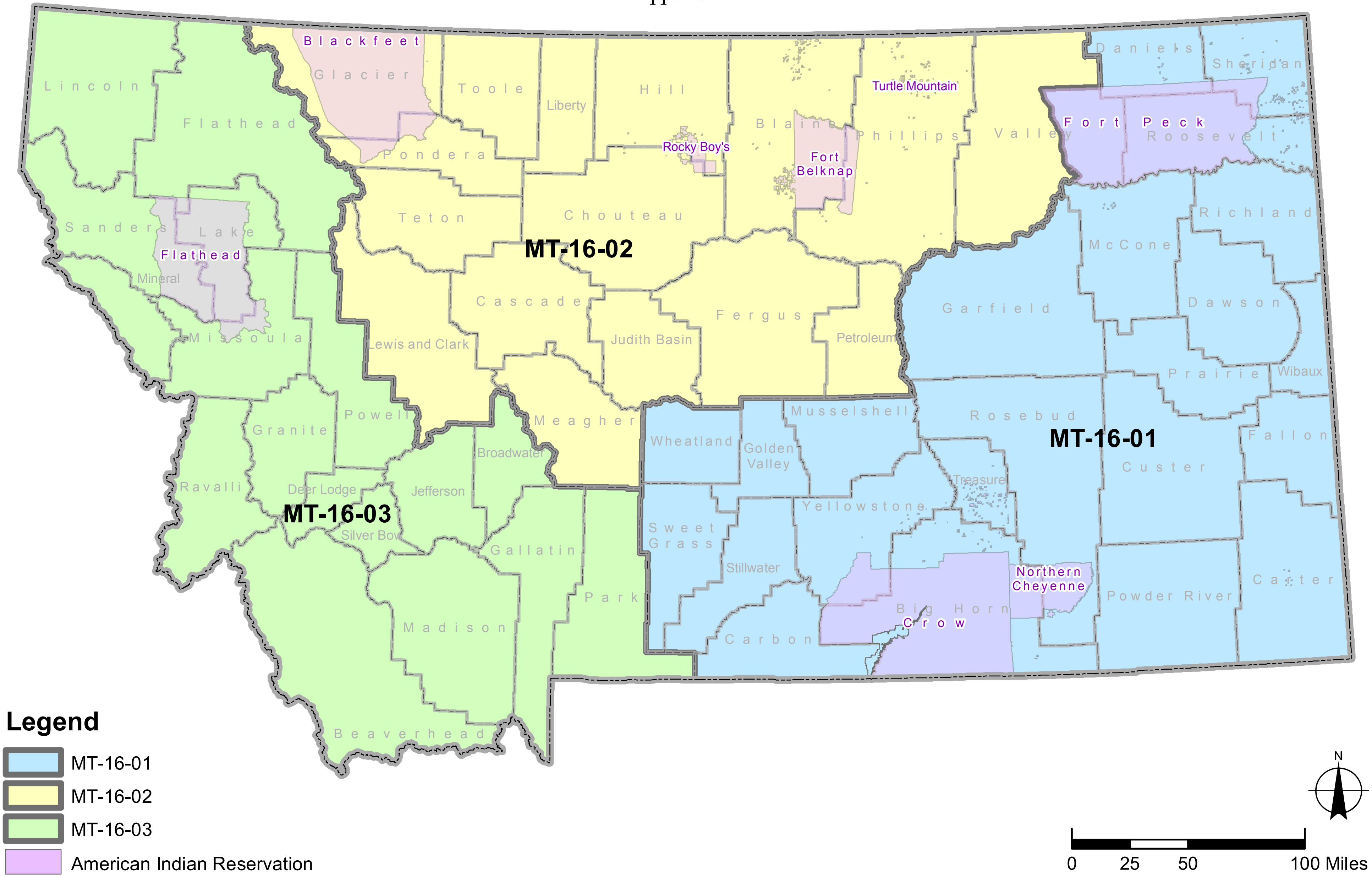
4. Application aircraft, if used, will fly at a median altitude of 1 to 1.5 times the aircraft's wingspan.

5. Whenever possible, plan aerial ferrying and turnaround routes to avoid flights over congested areas, water bodies, and other sensitive areas that are not to be treated.

USDA United States Department of Agriculture

Montana 2016 Grasshopper and Mormon Cricket Environmental Assessment Areas

Appendix 2



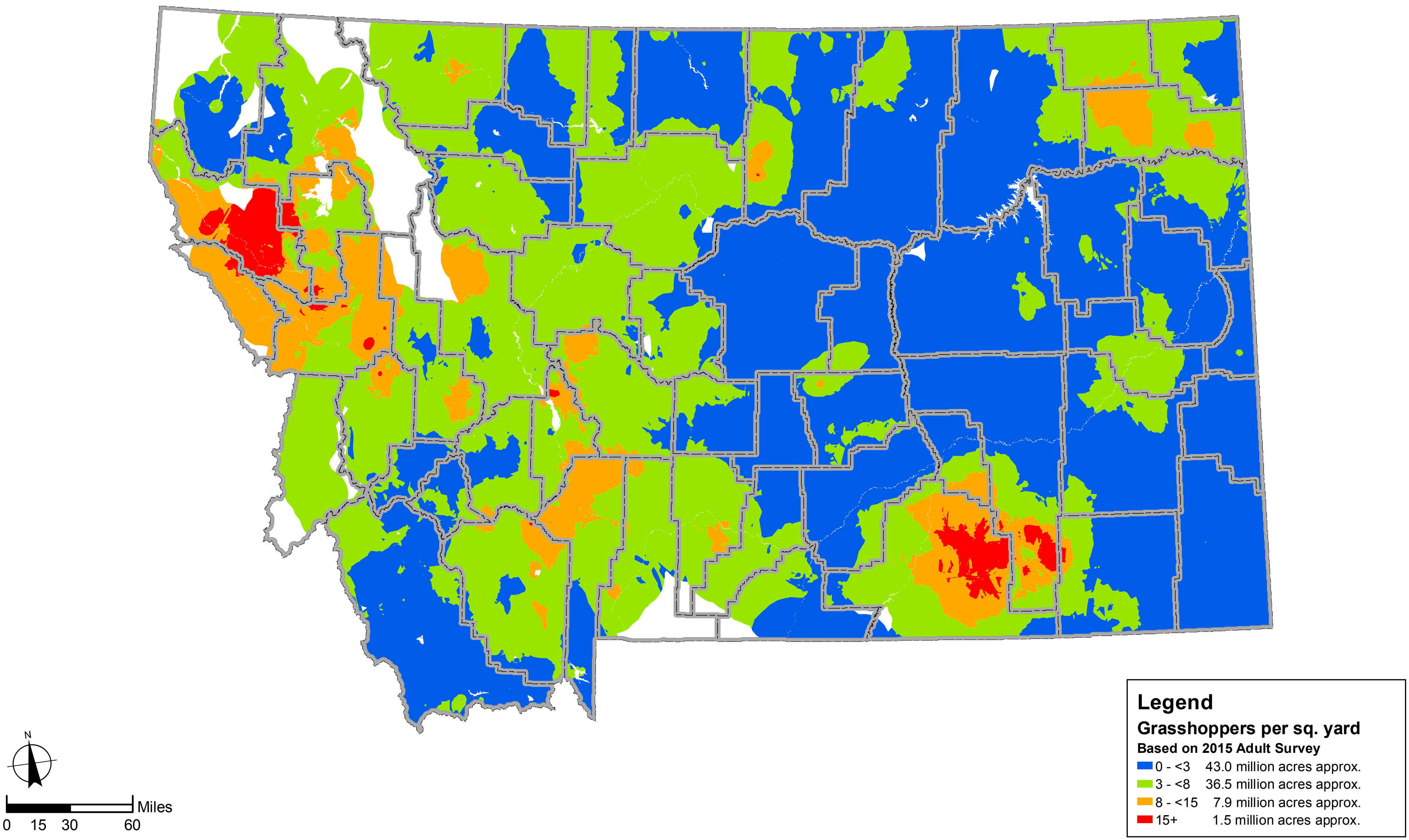
USDA APHIS PPQ
1220 Cole Avenue
Helena MT 59601

Date Modified: 21 March 2013
Projection: Lambert Conformal Conic
Coordinate System: NAD 1983 State Plane Montana FIPS 2500 Feet
Data Source: This map was prepared by USDA APHIS PPQ

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service collected the data displayed for internal agency purposes only. These data may be used by others; however, they must be used for their original intended purpose.

United States Department of Agriculture

2016 Rangeland Grasshopper Hazard Montana (Appendix 3)



USDA-APHIS-PPQ
5353 Yellowstone Rd., Ste 208
Cheyenne, WY 82009

Data Source: APHIS-PPQ, ESRI
Date Printed: 1/11/2016
Coordinate System: North America Albers Equal Area Conic

United States Department of the Interior
Fish and Wildlife Service
Ecological Services
Montana Field Office
585 Shepard Way, Suite 1
Helena, Montana 59601-6287
Phone: (406) 449-5225 Fax: (406) 449-5339

M.00 – APHIS

May 4, 2016

Gary D. Adams
State Plant Health Director, Montana
USDA, APHIS, PPQ
1629 Ave D. Suite A-5
Billings, Montana 59102

Dear Mr. Adams:

This letter responds to your March 15, 2016 request for our concurrence on your determination of effects for listed species, and listed and proposed critical habitat in your 2016 biological assessment (BA) for *Rangeland Grasshopper and Mormon Cricket Suppression Program* for Montana. This response is provided by the U.S. Fish and Wildlife Service (Service) under the authority of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543), the Migratory Bird Treaty Act (MBTA)(16 U.S.C. 703-712), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.).

The Animal and Plant Health Inspection Service (APHIS), in conjunction with federal agencies, State departments of agriculture, Native American Tribes, and private individuals is planning to conduct grasshopper/Mormon cricket control programs in Montana in 2016. This document is intended as statewide consultation and conference with the Service regarding the APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program.

Beginning in 1987, APHIS has consulted with the Service on a national level for the Rangeland Grasshopper Cooperative Management Program. For the national program, the Service from 1987 through 1995 issued biological opinions (BO) annually. The Service's October 3, 1995, letter to APHIS concurred with buffers and other conservation measures agreed to by APHIS for Montana and superseded all previous consultations. Since then, continuing APHIS funding constraints and other considerations has reduced grasshopper/Mormon cricket control activities in Montana. The agreements for Montana reached between APHIS and the Service each year will be in effect until a BO for the entire *Rangeland Grasshopper Cooperative Management Program* is issued and the nationwide, formal consultation process is completed.

Determinations of effect by APHIS for listed species, critical habitat, and proposed critical habitat are based on the October 3, 1995 Service letter, the analysis provided in the 2002 Final Environmental Impact Statement (FEIS) for APHIS suppression activities in 17 states (U.S. Department of Agriculture 2002), the 2014 Montana BA, and current on-going national (programmatic) and local discussions with the Service. Your BA addressed species which have been proposed for listing since 1995 and have thus not been addressed in previous BOs. The 2014 APHIS BA also addresses the use of diflubenzuron as it relates to species previously addressed in past biological opinions.

The APHIS has determined that the proposed action will not affect the grizzly bear *(Ursus arctos)*, Canada lynx *(Lynx canadensis)*, black-footed ferret (*Mustela nigripes)*, whooping crane *(Grus americana)*, Ute Ladies'-tresses *(Spiranthes diluvialis)*, water howellia *(Howellia aquatilis)*, and Spalding's catchfly *(Silene spaldingii)*. The APHIS has also determined the suppression program may affect, but is not likely to adversely affect the northern long-eared bat (*Myotis septentrionalis*) piping plover *(Charadrius melodus)*, least tern *(Sterna antillarum)*, red knot (*Calidris canutus rufa*), yellow-billed cuckoo (*Coccyzus americanus*) pallid sturgeon *(Scaphirhynchus albus)*, white sturgeon *(Acipenser transmontanus)*, bull trout *(Salvelinus confluentus)*,. APHIS has determined that the suppression program is not likely to adversely modify critical habitat for piping plover, white sturgeon, bull trout, and Canada lynx.

The Service concurs with your determination of effects of your project on listed species, designated and proposed critical habitat, and formal consultation is not required. The Service bases its concurrence on the utilization of reduced area agent treatment (RAATs) techniques and protective measures as stated in the BA. This concurrence is contingent upon the implementation of those committed protective measures and adherence to RAATs.

The Service concurs with your "not likely to adversely affect" determination for Spalding's catchfly, water howellia, and Ute Ladies'-tresses based on the following measures. To protect pollinators (e.g., bumblebees) of these listed plants, a 3-mile buffer (ground or aerial) will be used for conventional ultra-low-volume (ULV) applications of pesticides from known locations of these plants. Treatments within this buffer will only be conducted with carbaryl bait or diflubenzuron. No treatments will be performed on water howellia or Ute Ladies'-tresses habitat. The exception is for Spalding's Catchfly, allowing aerial or ground applications of diflubenzuron or carbaryl bait within the Spalding's Catchfly habitat. Prior to any treatments in Flathead, Lake, Lincoln, and Sanders counties, the local Service office will be consulted to determine presence of Spalding's Catchfly in the proposed treatments area. Buffered areas may be reduced if concurrence is obtained with the local Service office.

For listed plant species, the APHIS should identify all known occupied habitat and a survey conducted by a botanist familiar with these species in all suitable habitat before aerial application of pesticides. Due to the rapid response required for grasshopper or Mormon cricket suppression activities, the Service recommends that APHIS work with the Natural Heritage Program before control is needed, to develop the best and most current occupied habitat maps in areas most likely to require suppression programs.

Grasshopper populations may build up to levels of economic infestation despite even the best land management and other efforts to prevent outbreaks. At such time, a rapid and effective response may be requested and needed to reduce the destruction of rangeland vegetation, or in some cases, to also prevent grasshopper migration to cropland adjacent to rangeland. The 2002 FEIS analyzes the alternatives available to APHIS when a Federal land management agency or

State agriculture departments (on behalf of a State, a local government, or a private group or individual) requests APHIS to suppress economically damaging grasshopper populations.

All rangeland treatments, and most crop protection programs, will be applied utilizing RAATs techniques. These treatments differ from traditional programs by applying fewer agents to fewer acres while maintaining efficacy. The chemical control methods will include the use of carbaryl, Malathion, and diflubenzuron. Malathion and carbaryl inhibit acetyl cholinesterase (AChE) function in the nervous system. Reduced area/agent treatment rates for carbaryl are 8-12 ounces per acre containing 280-420 grams of active ingredient in 100-foot wide treated swaths alternating with 100-foot untreated swaths. With RAATs techniques, Malathion is applied at a rate of 4 fluid ounces per acre or 342 grams of active ingredient in 100-foot treated swaths alternating with 25-foot untreated swaths.

Diflubenzuron is a growth regulator that functions as a chitin inhibitor affecting the formation and/or deposition of chitin in the insect's exoskeleton. Dimilin may more significantly reduce grasshopper numbers for a longer period of time, and its low impact to insect predators and adult pollinators may make its use preferable over Malathion or carbaryl.

Candidate Species

The Service has determined that the whitebark pine (*Pinus albicaulis*) and meltwater lednian stonefly (*Lednia tumana*) are warranted for listing under the Act (75 FR 13910), but are precluded by other higher priority listing actions, and are thus listed as candidate species. The greater sage-grouse (*Centrocercus urophasianus*) and Sprague's pipit (*Anthus spragueii*) have been removed from the candidate list and are no longer considered warranted for listing under the Act. Candidate species are reviewed annually by the Service to determine if they continue to warrant listing or to reassess their listing priority. Ideally, sufficient threats can be removed to eliminate the need for listing. If threats are not addressed or the status of the species declines, a candidate species can move up in priority for a listing proposal. Federal agencies and non-federal applicants can conference with the Service pursuant to section 7(a)(4) of ESA to ensure that their actions do not negatively impact candidate species. Some federal agencies provide the same level of protection to candidate species as proposed or listed species and take appropriate measures to avoid impacts. While not required, we encourage this approach.

Both the greater sage-grouse and Sprague's pipit have been confirmed within the project vicinity. Management of the greater sage-grouse and Sprague's pipit is the responsibility of Montana Fish, Wildlife and Parks (FWP), and we encourage your coordination with FWP to assist in identifying specific lek locations and other seasonal habitats that may be affected by your proposed project. In addition, the *Management Plan and Conservation Strategies for Sage-Grouse in Montana*, includes information on the identification of important seasonal habitats and recommended management practices to avoid impacts. The document can be accessed at http://fwpiis.mt.gov/content/getItem.aspx?id=31187. Further, the proposed project appears to traverse lands administered by the Bureau of Land Management (BLM). As such, we recommend that you coordinate with BLM and comply with BLM Instruction Memorandum No. 2012-043, *Greater Sage-Grouse Interim Management Policies and Procedures*, which is available at http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2012/IM_2012-043.html. The *Sprague's Pipit (Anthus spragueii) Conservation Plan* prepared in 2010 provides similar information with respect to this species and can be accessed at http://www.fws.gov/mountain-prairie/species/birds/spraguespipit/SpraguesJS2010r4.pdf.

Migratory Birds

In accordance with Executive Order 13186, MBTA, APHIS will support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Impacts will be minimized as a result of buffers to water, habitat, nesting areas, riparian areas, and the use of RAATs. For any given treatment, only a portion of the environment will be treated, therefore minimizing any potential impacts to migratory bird populations. The Service encourages APHIS pursuant to Executive Order 13186 (January 17, 2001), *Responsibilities of Federal Agencies to Protect Migratory Birds*, to enter into a Memorandum of Understanding with the Service that outlines a collaborative approach to promote the conservation of migratory bird populations.

This concludes informal consultation pursuant to regulations in 50 CFR 402.13 implementing the ESA of 1973, as amended. Should there be species in the affected areas that become newly listed, proposed, or otherwise not considered in previous biological opinions, APHIS will adhere to buffers and other protective measures for similar species that have been specified in previous biological opinions and reinitiate informal consultation with the Service. This project should be re-analyzed if new information reveals effects of the action that may affect threatened, endangered or proposed species, if the project is modified in a manner that causes an effect not considered in this consultation, or if the monitoring requirements, timing and spacial restrictions listed in the protective measures will not be implemented.

The Service appreciates efforts by the Montana APHIS State Plant Health office to minimize negative impacts to listed and proposed species in Montana. Should you have any questions, please contact Brent Esmoil within our office at (406) 449-5225, extension 215.

Sincerely,

for Jodi L. Bush
Field Supervisor

References

U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 2002. Rangeland Grasshopper and Mormon Cricket Suppression Program, Final Environmental Impact Statement – 2002. Riverdale, MD. 81pp. + Appendices.

United States Department of the Interior

Fish and Wildlife Service

Ecological Services
Montana Field Office
585 Shepard Way, Suite 1
Helena, Montana 59601-6287
Phone: (406) 449-5225, Fax: (406) 449-5339

January 2016

THREATENED, ENDANGERED AND CANDIDATE SPECIES IN MONTANA
Endangered Species Act

ENDANGERED (E) - Any species that is in danger of extinction throughout all or a significant portion of its range.

THREATENED (T) - Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

PROPOSED (P) – Any species of that is proposed in the Federal Register to be listed under section 4 of the Act.

CANDIDATE (C) - Those taxa for which the Service has sufficient information on biological status and threats to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships, however, none of the substantive or procedural provisions of the Act apply to candidate species.

NON-ESSENTIAL EXPERIMENTAL POPULATION (XN) - A population of a listed species reintroduced into a specific area that receives more flexible management under the Act.

CRITICAL HABITAT, PROPOSED CRITICAL HABITAT (CH, PCH) - The specific areas (i) within the geographic area occupied by a species, at the time it is listed, on which are found those physical or biological features (I) essential to conserve the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed upon determination that such areas are essential to conserve the species.

COMMON NAME	SCIENTIFIC NAME	STATUS	RANGE - MONTANA
Black-footed Ferret	*Mustela nigripes*	E/XN	Prairie dog complexes; Eastern Montana
Whooping Crane	*Grus americana*	E	Wetlands; migrant eastern Montana
Least Tern	*Sterna antillarum*	E	Yellowstone, Missouri River sandbars, beaches; Eastern Montana
Pallid Sturgeon	*Scaphirhynchus albus*	E	Bottom dwelling; Missouri, Yellowstone Rivers

COMMON NAME	SCIENTIFIC NAME	STATUS	RANGE - MONTANA
White Sturgeon (Kootenai River population)	*Acipenser transmontanus*	E	Bottom dwelling; Kootenai River
Grizzly Bear	*Ursus arctos horribilis*	T	Alpine/subalpine coniferous forest; Western Montana.
Piping Plover	*Charadrius melodus*	T CH	Missouri and Yellowstone River sandbars, alkali beaches; northeastern Montana Alkali lakes in Sheridan County; riverine and reservoir shoreline in Garfield, McCone, Phillips, Richland, Roosevelt and Valley counties
Water Howellia	*Howellia aquatilis*	T	Wetlands; Swan Valley, Lake and Missoula Counties
Ute Ladies'-tresses	*Spiranthes diluvialis*	T	River meander wetlands; Jefferson, Madison, Beaverhead, Gallatin, Broadwater counties
Bull trout (Columbia River basin and St. Mary - Belly River populations)	*Salvelinus confluentus*	T CH	Clark Fork, Flathead, Kootenai, St. Mary and Belly river basins; cold water rivers & lakes Portions of rivers, streams, lakes and reservoirs within Deer Lodge, Flathead, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Mineral, Missoula, Powell, Ravalli, Sanders counties
Canada Lynx (contiguous U.S. population)	*Lynx canadensis*	T CH	Western Montana Resident – core lynx habitat, montane spruce/fir forests; Transient – secondary/peripheral lynx habitat Western Montana - montane spruce/fir forest
Spalding's Campion (or "catchfly")	*Silene spaldingii*	T	Upper Flathead River and Fisher River drainages; Tobacco Valley - open grasslands with rough fescue or bluebunch wheatgrass
Yellow-billed cuckoo (western population)	*Coccyzus americanus*	T	Population west of the Continental Divide; riparian areas with cottonwoods and willows
Red Knot	*Calidris canutus rufa*	T	Migrant; eastern Montana plains along shorelines
Northern Long-eared Bat	*Myotis septentrionalis*	T	Eastern Montana; caves, abandoned mines; roosts in live trees and snags
Sprague's Pipit	*Anthus spragueii*	C	Grassland habitats with little or no shrub cover east of the Continental Divide
Meltwater Lednian Stonefly	*Lednia tumana*	C	High elevation meltwater streams; Glacier National Park

COMMON NAME	SCIENTIFIC NAME	STATUS	RANGE - MONTANA
Whitebark Pine	*Pinus albicaulis*	C	Forested areas in central and western Montana, in high-elevation upper montane habitat near treeline

Table 2: Other representative fish, wildlife, and plant species

- Birds: http://fwpiis.mt.gov/content/getItem.aspx?id=30164
- Invertebrates: http://fieldguide.mt.gov/displayPhyDiv.aspx?kingdom=Animalia
- Amphibians: http://fieldguide.mt.gov/displayFamily.aspx?class=Amphibia
- Reptiles: http://fieldguide.mt.gov/displayFamily.aspx?class=Reptilia
- Mammals: http://fieldguide.mt.gov/displayFamily.aspx?class=Mammalia
- Fungi: http://fieldguide.mt.gov/displayClasses.aspx?Kingdom=Fungi
- Plants: http://fieldguide.mt.gov/displayClasses.aspx?Kingdom=Plantae