

2020

Biological Assessment

For the

Rangeland Grasshopper and Mormon

Cricket Suppression Program

in

New Mexico

01/24/2020

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**BIOLOGICAL ASSESSMENT (BA) FOR STATE CONSULTATION AND  
CONFERENCE FOR 2020 GH/MC PROGRAMS IN NEW MEXICO**

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## **1.0 INTRODUCTION**

The Animal and Plant Health Inspection Service (APHIS), in conjunction with other Federal agencies, State departments of agriculture, land management groups, and private individuals, is planning to conduct grasshopper control programs in New Mexico in 2020. This document is intended as state-wide consultation and conference with the U.S. Fish and Wildlife Service (FWS) regarding the APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program.

Beginning in 1987, APHIS has consulted with the FWS on a national level for the Rangeland Grasshopper Cooperative Management Program. Biological Opinions (BO) were issued annually by FWS from 1987 through 1995 for the national program. A letter dated October 3, 1995 from FWS to APHIS concurred with buffers and other measures agreed to by APHIS for New Mexico and superseded all previous consultations. Since then, funding constraints and other considerations have drastically reduced grasshopper/Mormon cricket suppression activities.

APHIS is requesting initiation of informal consultation for the implementation of the 2020 Rangeland Grasshopper and Mormon Cricket Suppression Program on rangeland in New Mexico. Our determinations of effect for listed species, proposed candidate species, critical habitat, and proposed critical habitat are based on the October 3, 1995 FWS letter, the analysis provided in the 2019 Environmental Impact Statement (EIS) for APHIS suppression activities in 17 western states, and local discussions with FWS.

APHIS has determined that the proposed action will have no effect on the black-footed ferret, (*Mustela nigripes*), Canada lynx (*Lynx canadensis*), jaguar (*Panthera onca*), Mexican long-nosed bat (*Leptonycteris nivalis*), Mexican gray wolf (*Canis lupus baileyi*), least tern --- interior populations (*Sterna antillarum*), Mexican spotted owl (*Strix occidentalis lucida*), Northern Aplomado falcon (*Falco femoralis septentrionalis*), Piping plover (*Charadrius melodus*), southwestern willow fly-catcher (*Empidonax traillii extimus*), Yellow-billed cuckoo (*Coccyzus americanus*), Narrow-headed gartersnake (*Thamnophis rufipunctatus*), New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*), Northern Mexican gartersnake (*Thamnophis eques megalops*), Chiricahua leopard frog (*Rana chiricahuensis*), Jemez Mountains salamander (*Plethodon neomexicanus*), Arkansas River shiner (*Notropis girardi*), beautiful shiner (*Cyprinella formosa*), Chihuahua chub (*Gila nigrescens*), Colorado pikeminnow (*Ptychocheilus lucius*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentalis*), Gila trout (*Oncorhynchus gilae*), Loach minnow (*Tiroga cobitis*), Pecos bluntnose shiner (*Notropis simus pecosensis*), Pecos gambusia (*Gambusia nobilis*), Razorback sucker (*Xyrauchen texanus*), Rio Grande silvery minnow (*Hybognathus amarus*), spikedace (*Meda fulgida*), Zuni bluehead sucker (*Catostomus*

*discobolus yarrowi*), Texas hornshell (*Popenaias popei*), Alamosa springsnail (*Psuedotryonia alamosae*), Chupadera springsnail (*Pyrgulopsis chupaderae*), Koster's springsnail (*Juturnia kosteri*), Pecos assiminea snail (*Assiminea pecos*), Roswell springsnail (*Pyrgulopsis roswellensis*), Socorro springsnail (*Pyrgulopsis neomexicana*), Noel's Amphipod (*Gammarus desperatus*), Socorro isopod (*Thermosphaeroma thermophilus*), Holy Ghost Ipomopsis (*Ipomopsis sancti-spiritus*), Knowlton's cactus (*Pedicactus knowltonii*), Kuenzler hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*), Lee pincushion cactus (*Coryphantha sneedii* var. *leei*), Mancos milk-vetch (*Astragalus humillimus*), Mesa Verde cactus (*Sclerocactus mesae-verdae*), Sacramento Mountain thistle (*Cirsium vinaceum*), Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*), Todsen's pennyroyal (*Hedeoma todsenii*), or the Zuni fleabane (*Erigeron rhizomatus*), APHIS has determined the suppression program may affect, is not likely to adversely affect the New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), lesser prairie-chicken (*Tympanuchus pallidicinctus*), Gypsum wild-buckwheat (*Eriogonum gypsophilum*), Pecos sunflower (*Helianthus paradoxus*), and the Sacramento prickly poppy (*Argemone pleiacantha* spp. *pinnatisecta*), APHIS has determined that the suppression program may affect, is not likely to adversely affect critical habitat.

With this letter, APHIS is requesting concurrence with our determination for listed and proposed species, and listed and proposed critical habitat that may occur in New Mexico within the area of the proposed 2020 grasshopper suppression program.

## **2.0 PURPOSE**

This Biological Assessment (BA) is for rangeland grasshopper/Mormon cricket control activities in the grasslands around the state of New Mexico. APHIS is requesting Endangered Species Act (ESA), section 7, informal consultation for those species that have been listed or proposed for listing in New Mexico since the October 3, 1995 FWS letter to Carl Bausch and for all listed species in those counties for the use of the growth regulator, diflubenzuron; insect ryanodine receptor inhibitor, chlorantraniliprole and contact spray insecticides; malathion and carbaryl, and carbaryl bran bait application.

The agreements for New Mexico reached between APHIS and FWS will be in effect until a Biological Opinion (BO) for the entire Rangeland Grasshopper Cooperative Management Program is issued and the nationwide, formal consultation process is completed which is anticipated during 2020.

Therefore, this BA will address species which have been proposed for listing since 1995 and may not have been addressed in previous Biological Opinions. This BA also addresses the use of diflubenzuron as it relates to species previously addressed in past biological opinions.

All rangeland treatments, and most crop protection programs, will be applied utilizing the reduced area agent treatments (RAAT's) techniques. These treatments differ from traditional programs by applying less suppressive agent to fewer acres while maintaining efficacy.

APHIS respectfully requests informal Endangered Species Act (ESA) consultation on listed and proposed species in the counties of New Mexico. A written response from FWS is requested regarding FWS concurrence under Section 7 with the determinations in this assessment.

### **3.0 DESCRIPTION OF ACTION**

This document incorporates by reference portions of the 1987 APHIS Rangeland Grasshopper Cooperative Management Program, Final Environmental Impact Statement (2002 APHIS FEIS), which discuss the purpose and needs, alternative strategies, affected environments, standard operational procedures, and environmental consequences of the grasshopper program. This document is available at the program web site: <http://www.aphis.usda.gov/ppd/es/ppqdocs.html>.

An environmental assessment (EA), tiered to the 2019 Rangeland Grasshopper and Mormon Cricket Suppression Program Final Environmental Impact Statement (FEIS), is being prepared in anticipation of treatments in New Mexico. When specific treatment areas are identified and become imminent, a site-specific addendum to the EA will be prepared. Grasshopper Program decisions are then based on the conclusions reached in the EA and any addendums. Only the program operational procedures and alternatives found in the 2019 FEIS are available to APHIS for use in any site-specific treatment.

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 2019 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.

The chemical control methods will include the use of carbaryl, Malathion, chlorantraniliprole and diflubenzuron. Three alternatives are considered: 1) No action, 2) insecticide applications at conventional rates and complete area coverage, and 3) reduced agent area treatments (RAATs).

Conventional rates for these agents are:

- 16 fluid ounces (0.50 pound active ingredient (lb a.i.)) of carbaryl spray per acre,
- 10 pounds (0.50 lb a.i.) of 5 percent carbaryl bait per acre,
- 1.0 fluid ounce (0.016 lb a.i.) of diflubenzuron per acre, or
- 8 fluid ounces (0.62 lb a.i.) of Malathion per acre, or
- 4 fluid ounces (0.0135 lb a.i.) of chlorantraniliprole per acre.

Rates utilizing RAAT's are:

- 8 fluid ounces (0.25 pound active ingredient (lb a.i.)) of carbaryl spray per acre,
- 10 pounds (0.20 lb a.i.) of 2 percent carbaryl bait per acre,
- 1.0 fluid ounce (0.012 lb a.i.) of diflubenzuron per acre, or
- 4 fluid ounces (0.31 lb a.i.) of malathion per acre, or
- 2 fluid ounces (0.00675 lb a.i.) of chlorantraniliprole per acre.

Malathion and carbaryl inhibit acetyl cholinesterase (AChE) function in the nervous system. Reduced area/agent treatments (RAAT's) rates for carbaryl are 8-12 ounces per acre containing 280-420 grams of a.i. in 100 foot treated swaths alternating with 100 foot untreated swaths; 50% coverage. With RAAT's techniques, Malathion is applied at a rate of four fl. oz. per acre or 342 grams of active ingredient in 100 foot treated swaths alternating with 25 foot untreated swaths: 80 % coverage.

Diflubenzuron is an insect growth regulator that functions as a chitin inhibitor affecting the formation and/or deposition of chitin in the insect's exoskeleton, thus disrupting the normal molting process of insect larvae. Application rates range from 0.75 to 1.0 fluid ounces (fl. oz.) per acre in rangeland; 50-33% coverage, and 1.0 fl. oz. per acre in crop protection situations where nearby crops are being threatened by grasshoppers originating in adjacent rangeland.

Chlorantraniliprole is an anthranilic diamide class of insecticide that acts on insect ryanodine receptors. After exposure and consumption, insects will rapidly stop feeding and become paralyzed. Application rates range from 2 fl. Oz. per acre when RAATs method is applied to 4 fl. Oz. per acre when using conventional methods.

## **4.0 SPECIES ASSESSMENTS**

### **4.1 MAMMAL Group:**

#### **4.1.1 Mouse, New Mexico meadow jumping**, (*Zapus hudsonius luteus*)

##### 4.1.1.1 Status:

This small mammal was designated by F&WS as an endangered species on June 10, 2014.

##### 4.1.1.2 Habitat and Distribution:

This mostly nocturnal species is most commonly found in grassy or weedy fields with shrub cover near riparian and floodplain habitat in western plains and rolling hills, where they use runways made by other rodents. This species is primarily nocturnal or crepuscular. These jumping mice have litters of 3 to 6 young after a short gestation period.

##### 4.1.1.3 Assessment:

APHIS determines that the proposed action “may affect, is not likely to adversely affect” the species or its critical habitat, because of the low risk from a pesticide application, and the food base will not be noticeably affected.

##### 4.1.1.4 Protective measures:

APHIS proposes the use of a 500 foot buffer around known locations at this time.

##### 4.1.1.5 Determination:

APHIS believes the use of the buffer zones to protect any known population of this species will be adequate.

#### **4.1.2 Wolf, Mexican Gray**, (*Canis lupus baileyi*)

##### 4.1.2.1 Status:

First listed by FWS on March 11, 1967 and designated endangered in the U.S.A. FWS issued on January 12, 1998, 63 FR 1752-1772, their recovery plan for reintroduction of nonessential

experimental population extirpated in the historical range of Arizona, New Mexico and Texas under section 17.84 k. This species has been listed as endangered and separated from the determination of the proposal to delist the gray wolf. This rule became effective on February 17, 2015.

#### 4.1.2.2 Habitat and Distribution:

This canine species is a carnivore and is a general predator of warm-blooded wildlife. It is the largest of the wild dogs in North America and is usually found as a member of a family pack with a dominance hierarchy. The pack is territorial throughout much of each year. The home range is very large and the habitat is quite variable with preference to remote terrain. In the pack, only the dominant male and female mate and rear young. These young are borne in late March to early April; and both parents and young vacate the den when the young are about three months old. Litter size maybe between four to ten pups.

#### 4.1.2.3 Assessment:

UVL applications have a very low risk for the gray wolf and its young, and will not affect its prey base or habitat. Survey and on-site treatment activities by our personnel will not affect the recovery program efforts. If an APHIS proposed treatment is in an area where the wolf may occur, we will communicate and coordinate with the Interagency Wolf team.

#### 4.1.2.4 Protective Measures:

No buffers are anticipated, and it is unlikely that any suppression application would occur near a den or the immediate prey area.

#### 4.1.2.5 Determination:

Treatments will have no effect on the Mexican gray wolf as a result of proposed pesticides at the proposed rates of application.

### **4.1.3 Jaguar, (*Panthera onca*)**

#### 4.1.3.1 Status:

This species was listed by FWS on March 28, 1972 and designated endangered in the entire range. A final rule was listed by F&WS on July 22, 1997 to extend its endangered status in the southwestern U.S.A.

#### 4.1.3.2 Habitat and Distribution:

This feline species is a carnivore and is predator of various mammals, reptiles and ground nesting birds. It is a solitary and somewhat territorial species, except during the breeding season. This jaguar is found in tropical and semi-tropical biomes; it disperses large distances, and is at the extreme limits of its range in Hidalgo County.

#### 4.1.3.3 Assessment:

UVL applications have a very low risk for the jaguar and its young, and will not affect its prey base or habitat.

#### 4.1.3.4 Protective Measures:

No buffers are anticipated, and it is unlikely that any suppression application would occur near a den or the immediate prey area.

#### 4.1.3.5 Determination:

No buffers are anticipated, and it is unlikely that any suppression application would occur near a den or the immediate prey area.

### **4.1.4 Bat, Mexican long-nosed, (*Leptonycteris nivalis*)**

#### 4.1.4.1 Status:

This species was listed by FWS on September 30, 1988 and designated endangered in the entire range.

#### 4.1.4.2 Habitat and Distribution:



This species is well adapted for life in arid zones, and is found mainly in desert scrub. It is an effective pollinator of and feeds on cacti and agave (these plants depend greatly on bats for sexual reproduction). This species roost in colonies, usually caves, or abandoned mine tunnels. Also it is found in culverts, hollow trees, and unused buildings. This species migrates, breeds, and spends the winter in Mexico. It returns in late April and females give birth in May. By late June, young bats are able to fly and the maternity colonies disperse in late July.

#### 4.1.4.3 Assessment:

APHIS determines that the proposed action “may affect, is not likely to adversely affect” the species, because of the low risk from pesticide use, and the plant food base will not be affected.

#### 4.1.4.4 Protective Measures:

APHIS proposes to use a buffer of 500 feet from any known colony or roosting location.

#### 4.1.4.5 Determination:

APHIS believes that the buffer will adequately protect this species and its special habitat from any suppression program activity.

### **4.1.5 Lynx, Canada, (*Lynx canadensis*)**

#### 4.1.5.1 Status:

This species was listed by FWS as threatened on March 24, 2000. A final rule extending protections to this species wherever it may occur in the contiguous United States, including New Mexico became effective October 14, 2014.

#### 4.1.5.2 Habitat and Distribution:

The range of this species extends south from the classic boreal forest zone into the subalpine forest of the western United States, and the boreal/hardwood forest ecotone in the eastern United States. Forests with boreal features extend south into the contiguous United States along the North Cascade and Rocky Mountain Ranges in the west, the western Great Lakes Region, and northern Maine. This species is known or believed to occur in the subalpine areas of Colfax, Mora, Rio

Arriba, San Juan and Taos Counties. This species is a carnivore feeding mainly on snowshoe hares but also various other small mammals.

#### 4.1.5.3 Assessment:

APHIS determines that the proposed action will have a very low risk for this species and will not affect its prey base or habitat.

#### 4.1.5.4 Protective Measures:

No buffers are anticipated, and it is unlikely that any suppression application would occur near a den or the immediate prey area.

#### 4.1.5.5 Determination:

Treatments will have no effect on the Canada lynx as a result of proposed pesticides at the proposed rates of application.

### **4.2 BIRD Group:**

#### **4.2.1 Falcon, Northern Aplomado,** (*Falcon femoral is septentrionalis*)

##### 4.2.1.1 Status:

This subspecies, Northern Aplomado falcon, was designated endangered on February 25, 1986. A Final Rule to reintroduce the falcon into its historical habitat in southern New Mexico was registered on July 26, 2006. This final rule provides a plan for establishing the NEP and provides for limited allowable legal taking of the Northern Aplomado falcon within the defined NEP area. The geographic boundary of the NEP includes all of New Mexico and Arizona.

##### 4.2.1.2 Habitat and Distribution:

The Northern Aplomado falcon requires open habitats that have scattered trees for hunting, roosting, and nesting, and an understory of grass and shrubs. These falcons historically occur in the Chihuahuan Desert's yucca grasslands. Sporadic sightings in southern New Mexico, as in Luna

County in 2001 and 2002 have been recorded, FR 70-26 pg. 6823. Currently based on the best available information, none of this subspecies have been observed in the other southern counties.

#### 4.2.1.3 Assessment:

APHIS determines that the proposed action “may affect, is not likely to adversely affect” the Northern Aplomado falcon or its habitat.

#### 4.2.1.4 Protective measures:

The BA prepared by APHIS in January 1987 and the FWS Biological Opinion of 1992 determine the need for protective measures. The measures include a one-mile radius no fly-over and treatment-free buffer around occupied nests. To protect foraging areas, chemical sprays would not be used within 2.5 miles upstream and downstream of a nesting site and to protect for disturbance within 0.25 miles of waters considered foraging areas. APHIS has also adapted these measures for the use of diflubenzuron.

#### 4.2.1.5 Determination:

APHIS believes the use of buffer zones to protect Northern Aplomado falcon nests and foraging areas would adequately protect the Northern Aplomado falcon and its habitat, as reviewed in the informal conference. Thus, grasshopper control operations “may affect, is not likely to adversely affect” the Northern Aplomado falcon or its habitat as a result of protective measures, the proposed pesticides, and the proposed rates of application.

### **4.2.2 Owl, Mexican spotted,** (*Strix occidentalis lucida*)

#### 4.2.2.1 Status:

The Mexican Spotted Owl was designated threatened by FWS on March 16, 1993, and designated critical habitat on August 31, 2004.

#### 4.2.2.2 Habitat and Distribution:

This species lives in dense, uneven age, mixed conifer forests of mountains and canyons. FWS has designated critical habitat on Federal lands in Arizona, Colorado, New Mexico and Utah for this species. Only portions of these counties are mentioned for these counties. State and private lands

are not designated as critical habitat. The proposed treatment will not affect potential habitat for this species in these counties.

#### 4.2.2.3 Assessment:

The 1995 Biological Opinion letter dated 10/03/95 to Mr. Bausch details the agreed measures for protecting endangered and threatened bird species.

#### 4.2.2.4 Protective Measures:

The June 1, 1987, FWS Biological Opinion determined the need for protective measures to be used around Mexican Spotted Owl nesting sites. The measure includes a ground and aerial buffer of 300 feet from the known nesting locations and critical habitat. Aerial application will be made in swaths parallel to a Mexican spotted owl's nest and its aerial buffer zone.

#### 4.2.2.5 Determination:

APHIS believes the use of the buffer zones to protect Mexican spotted owl nests and foraging areas would adequately protect the Mexican spotted owl and its habitat. Thus grasshopper control operations "may affect, is not likely to affect" the Mexican spotted owl or its critical habitat as a result of protective measures, the proposed pesticides, and the proposed rates of application.

### **4.2.3 Tern, least -- (interior population), (*Sterna antillarum*)**

#### 4.2.3.1 Status:

The interior population of the least tern was listed by FWS and designated endangered on May 28, 1985.

#### 4.2.3.2 Habitat and Distribution:

Interior populations of the least terns breed in the Mississippi and Rio Grande River basins from Montana to Texas, and from eastern New Mexico and Colorado to Indiana and Louisiana. From late April to August, they occur primarily on barren to sparsely vegetated river line sandbars, dike field sandbar islands, sand and gravel pits, and at lake and reservoir with clear shorelines. In New Mexico this species had been previously found nesting on alkali (salt) flats also. The interior least tern had been recorded at the Bitter Lakes Wildlife Refuge in Chaves County. This species usually migrates for the winter to South America.

#### 4.2.3.3 Assessment:

Since this species and its habitat are basically riparian; its habitat influenced mostly by natural vegetation disturbance and seasonal changes of stream water flow, APHIS does not foresee any effect on either this species or its habitat from suppression program activity. Grasshopper suppression program avoids areas of this type or classification.

#### 4.2.3.4 Protective measures:

APHIS will use a 0.25 mile buffer from all known sources of perennial water flow and potential nesting areas.

#### 4.2.3.5 Determination:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity.

### **4.2.4 Cuckoo, yellow-billed,** (*Coccyzus americanus*)

#### 4.2.4.1 Status:

This species was listed as threatened by FWS on October 23, 2014.

#### 4.2.4.2 Habitat and Distribution:

This bird is found east of crest of the Rocky Mountains in riparian habitat. It breeds where the undergrowth is thick in open deciduous woodlands and parks. It nests from one to three meters above ground in streamside tall cottonwood and willow groves.

#### 4.2.4.3 Assessment:

APHIS does not foresee any effect on either this species or its habitat from suppression program activity. Grasshopper suppression program avoids areas of this type or classification.

#### 4.2.4.4 Protective measures:

APHIS will use a 0.25 mile buffer from all known sources of perennial water flow and potential nesting areas.

#### 4.2.4.5 Determination:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. Therefore, APHIS believes that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

#### **4.2.5 Fly-catcher, willow, southwestern, (*Empidonax traillii extimus*)**

##### 4.2.5.1 Status:

This species was listed by FWS on February 27, 1995 as endangered on the entire range. FWS finalized this species’ critical habitat on January 3, 2013.

##### 4.2.5.2 Habitat and Distribution:

This species is found in riparian habitat from the Trans-Pecos area of southwest Texas into southern California; and northward into southern Colorado, Utah and Nevada. Historically this bird nested primarily in willows, buttonbush, seep willow, and coyote brush with a scattered overstory of cottonwood. It is known also to nest in thickets dominated by dense tamarisk. It is closely dependent on nearby continuous water flow.

##### 4.2.5.3 Assessment:

APHIS grasshopper suppression activities do not make applications in these riparian areas, nor in tamarisk thickets.

##### 4.2.5.4 Protective Measures:

To protect the southwestern willow fly-catcher and its prey from ULV applications a 500 foot ground buffer and a 0.25 mile aerial buffer will be used at the edge of known locations of their critical habitat.

##### 4.2.5.5 Determination:

APHIS believes the use of the buffer zones to protect the southwestern willow fly-catcher nests and foraging areas would adequately protect this species and its habitat. Thus grasshopper control operations “may affect, not likely to adversely affect” the southwestern willow fly-catcher or its

critical habitat as a result of protective measures, the proposed pesticides, and the proposed rates of application.

**4.2.6 Chicken, Prairie, lesser,** (*Tympanuchus pallidicinctus*)

4.2.6.1 Status:

The lesser prairie chicken was listed by FWS as threatened on May 12, 2014.

4.2.6.2 Habitat and Distribution:

This species is primarily found on sand sagebrush (*Artemisia filifolia*) and shinnery oak (*Quercus harvardii*) rangeland. Breeding occurs from late March through May, with nesting from mid-April through late May. If the first clutch is destroyed, second nesting may be initiated from late May through early June, with hatching extended through early July. Nests are bowl-shaped depressions lined with dried grasses and are constructed on north- or northeast-facing slopes with abundant tall grass cover.

4.2.6.3 Assessment:

The APHIS grasshopper suppression program may affect a local lek by operational noise and movement disturbance, but not adversely affect the species or its habitat.

4.2.6.4 Protective Measures:

APHIS proposes to use a 500 foot buffer from known nests to protect this species and its habitat. APHIS will work with local FWS biologists to identify lek sites and apply appropriate buffers.

4.2.6.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore, APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

**4.2.7 Plover, piping** (*Charadrius melodus*)

4.2.7.1 Status:

The piping plover was listed by FWS as threatened in New Mexico on December 11, 1985.

#### 4.2.7.2 Habitat and Distribution:

This species is known or believed to occur in Chaves, Colfax, Eddy, Guadalupe and Socorro Counties in New Mexico. Its habitat is mainly sandy beaches or rocky shores. They migrate north beginning mid-March and winter along the Gulf of Mexico. Mating and nesting occur in their habitat mid-April.

#### 4.2.7.3 Assessment:

Since this species and its habitat are basically riparian, APHIS does not foresee any effect on either this species or its habitat from suppression program activity. Grasshopper suppression program avoids areas of this type or classification.

#### 4.2.7.4 Protective Measures:

APHIS will use a 0.25 mile buffer for all aerial applications and a 500 foot buffer for all ground applications from all known sources of perennial water flow and potential nesting areas.

#### 4.2.7.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore, APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.2.8 Migratory Birds:**

In accordance with Executive Order 13186, Migratory Bird Treaty Act, 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 grasshopper control actions. Impacts will be minimized as a result of buffers to water, habitat, nesting areas, subsequently riparian areas, and the use of RAATs. For any given treatment, only a portion of the environment will be treated, therefore minimizing any potential impact to migratory bird populations. APHIS will work with local land managers and FWS personnel in treatment area to determine if buffers are appropriate and feasible to protect species of concern.



#### **4.2.9 Bald Golden Eagle in Flight and Golden Eagle Protection Act:**

Bald Eagles were removed from the endangered species list in June 2007, because their population had recovered sufficiently. Conservation permits will authorize limited, non-purposeful take of Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*), authorizing to disturb or otherwise take this species in the course of conducting lawful activities in the protection of human safety.

#### **4.3 PLANT Group:**

##### **4.3.1. Pennyroyal, Todsens's, (*Hedeoma todsenii*)**

###### 4.3.1.1 Status:

This species was listed by FWS on January 19, 1981 and designated endangered with critical habitat in the entire range.

###### 4.3.1.2 Habitat and Distribution:

This perennial herb occurs on steep, gravelly north- and east-facing hillsides in the San Andres Mountains upon gypsum limestone within the White Sands Missile Range in Sierra County. There are only two known locations of this species. The surrounding plant community is open pinyon-juniper woodland. This plant flowers from July through September.

###### 4.3.1.3 Assessment:

The remoteness of these populations and the restrictive nature of the White Sands Missile Range afford considerable protection to this species. APHIS has no agreement for doing applications on military administrative lands.

###### 4.3.1.4 Protective Measures:

APHIS would use a 2 mile buffer from known locations of this species.

###### 4.3.1.5 Determination:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity

#### **4.3.2 Fleabane, Zuni, (*Erigeron rhizomatus*)**

##### **4.3.2.1 Status:**

This plant was listed by FWS on April 26, 1985 and designated as threatened in the entire range.

##### **4.3.2.2 Habitat and Distribution:**

This plant is a perennial herb found in pinyon-juniper woodlands on steep easily eroded sandstone slopes and clay banks, usually in association with Baca and Chinle shale formations. Flowering occurs from May to June.

##### **4.3.2.3 Assessment:**

APHIS believes that the occurrence of this species' specific habitat restricted to woodlands will preclude it from any impact of the grasshopper suppression program.

##### **4.3.2.4 Protective Measures:**

A 2 mile buffer both ground and aerial will be used for RAAT's with the first swath adjacent to the buffer being skipped.

##### **4.3.2.5 Determination:**

APHIS believes that the use of buffers will mitigate any risk to this species, and will not adversely affect the species or its habitat.

#### **4.3.3 Cactus, Kuenzler hedgehog, (*Echinocereus fendleri* var. *kuenzleri*)**

##### **4.3.3.1 Status:**

The Kuenzler hedgehog cactus was designated endangered by FWS on October 26, 1979.

##### **4.3.3.2 Habitat and Distribution:**

This typical cactus habitat is the lower fringes of the pinyon-juniper woodland. The dominant tree species being the one-seed juniper (*Juniperus monosperma*) though the species can be found associated with alligator juniper (*Juniperus deppeana*) and pinyon pine (*Pinus edulis*). Soils can

best be described as skeletal decomposed limestone (FWS 1985). Records show that this species occurs in Chaves, Lincoln, and Otero Counties, mostly on U.S Forest Service land, Bureau of Land Management land, and some on private lands.

#### 4.3.3.3 Assessment:

APHIS rangeland grasshopper control operations are not likely to adversely affect the Kuenzler's hedgehog cactus or its habitat (Biological Opinion of 1987).

#### 4.3.3.4 Protective measures:

To protect pollinators of the Kuenzler hedgehog cactus, there will be a 2-mile buffer (ground or aerial) for RAATs applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAATs applications, the first swath will be a skipped swath. The flowering period for this plant species is during May. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

#### 4.3.3.5 Determination:

The planned protective measures to mitigate any habitat disturbance are not likely to affect the Kuenzler hedgehog cactus.

### **4.3.4 Poppy, Sacramento prickly, (*Argemone pleicanthus* ssp. *pinnatisecta*)**

#### 4.3.4.1 Status:

This species was listed by FWS on August 24, 1989 and designated endangered in the entire range.

#### 4.3.4.2 Habitat and Distribution:

This plant occurs at from 4,200 to 7,100 feet elevation. At lower elevation it is found in the semi-arid grasslands and at the upper elevations it occurs in Great Basin conifer woodlands. The species grows usually where there is enhanced, but not wet, soil moisture, such as on north-facing slopes, in canyon bottoms, along roadsides, and near leaks in pipelines. This plant is found on Federal, State, city, and private lands.

#### 4.3.4.3 Assessment:

APHIS would be diligent in identifying location in semi-arid grasslands and employing protective buffers. APHIS would not do suppression applications in woodlands.

#### 4.3.4.4 Protective Measures:

APHIS would use a 2 mile buffer from known locations of this species.

#### 4.3.4.5 Determination:

APHIS believes the use of buffer zones to protect the Sacramento prickly poppy would adequately protect this species and its habitat. Grasshopper suppression operations may affect some pollinators and the proposed action “may affect, not likely to adversely affect” the species or its habitat as a result of our protective measures, the proposed pesticides, and the proposed rates of application.

### **4.3.5 Thistle, Sacramento Mountain, (*Cirsium vinaceum*)**

#### 4.3.5.1 Status:

This species was listed by FWS on June 16, 1987 and designated threatened in the entire range.

#### 4.3.5.2 Habitat and Distribution:

This perennial thistle occurs on steep calcium carbonate deposits immediately adjacent to flowing springs and moist area above 7,300 feet. It is found in plant association with Ponderosa pine, Douglas fir, locust, and Gambel’s oak. The species flowers from July to August. Only 14 small populations are known to exist.

#### 4.3.5.3 Assessment:

APHIS would not do suppression applications in woodlands.

#### 4.3.5.4 Protective Measures:

APHIS would use a 2 mile buffer from known locations of this species.

#### 4.3.5.5 Determination:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity

**4.3.6 Ipomopsis, Holy Ghost, (*Ipomopsis sancti-spiritus*)**

**4.3.6.1 Status:**

This species was final listed by FWS on March 23, 1994 and designated endangered on the entire range.

**4.3.6.2 Habitat and Distribution:**

This biennial to short-lived perennial herb is known only from San Miguel County and restricted to single canyon. It is found along roadsides and in small woodland clearings beneath Ponderosa pine on steep, south to southwest-facing slopes. These are open, disturbed areas on sandy to pebbly limestone conglomerate substrate derived from Terrero and Espiritu Santo formations.

**4.3.6.3 Assessment:**

The known location of this species foregoes any need for APHIS to conduct a grasshopper suppression application in the area.

**4.3.6.4 Protective measures:**

To protect pollinators of this species, there will be a 2-mile buffer (ground or aerial) for RAAT's applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAAT's applications, the first swath will be a skipped swath adjacent to the buffer. The flowering period for this plant species is during July. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

**4.3.6.5 Determination:**

The planned protective measures to mitigate any habitat disturbance will not affect the Holy Ghost Ipomopsis or its habitat.

**4.3.7 Sunflower, Pecos (puzzle = paradox), (*Helianthus paradoxus*)**

#### 4.3.7.1 Status:

The Pecos sunflower was listed by FWS and designated a threatened species on October 20, 1999.

#### 4.3.7.2 Habitat and Distribution:

The Pecos sunflower is annual species dependent on open permanent desert wetlands with relatively high saline soils and with natural hydrologic regimes. Commonly found in association with saltgrass (*Distichlis stricta*) along stream and catchment margins. Lowering water tables and ground water depletion are detrimental to the survival of this species. It has been recorded in Guadalupe and Chaves Counties.

#### 4.3.7.3 Assessment:

To protect pollinators of this species, there will be a 2-mile buffer (ground or aerial) for RAAT's applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAAT's applications, the first swath will be a skipped swath adjacent to the buffer. The flowering period for this plant species is during July. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

#### 4.3.7.4 Protective Measures:

A 2 mile buffer both ground and aerial will be used for RAAT's with the first swath adjacent to the buffer being skipped.

#### 4.3.7.5 Determination:

APHIS believes that the use of buffers will mitigate any risk to this species. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.3.8 Cactus, Knowlton, (*Pediocactus knowltonii*)**

#### 4.3.8.1 Status:

This species was listed by FWS on October 29, 1979 and designated as endangered in the entire range.

#### 4.3.8.2 Habitat and Distribution:

This small succulent occurs among sagebrush in pinyon-juniper woodlands of northwestern San Juan County. It is found on soils from Tertiary alluvial deposits that have formed rolling gravelly hills; mainly on slopes or hillsides under shade of trees and shrubs, and in open areas of dry pinyon-juniper and sagebrush. (*Pinus edulis*, *Juniperus scopulorum*, and *Artemisia tridentata*). It flowers from mid-April to early May. According to F&WS, it is reliably reported from only one general area in northeastern San Juan County.

#### 4.3.8.3 Assessment:

APHIS believes that the occurrence of this species' specific habitat restricted to woodlands will preclude it from any impact of the grasshopper suppression program.

#### 4.3.8.4 Protective Measures:

To protect pollinators of the Knowlton cactus, there will be a 2-mile buffer (ground or aerial) for RAATs applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAATs applications, the first swath will be a skipped swath. The flowering period for this plant species is during mid-April to early May. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

#### 4.3.8.5 Determination:

APHIS believes that the use of buffers will mitigate any risk to this species. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.3.9 Cactus, Mesa Verde, (*Scleroocactus mesae-verdae*)**

#### 4.3.9.1 Status:

This species was listed by FWS on October 30, 1979 and designated as threatened in the entire range.

#### 4.3.9.2 Habitat and Distribution:

This plant is found in barren areas of desert grassland on dry exposed hills and mesas of Mancos and Fruitland clay soils with typically high selenite. A common associate plant is Nuttall saltbush (*Atriplex nutallii*).

#### 4.3.9.3 Assessment:

APHIS reviewed the species habitat requirements, and believes that it is unlikely that any suppression applications would occur in these areas.

#### 4.3.9.4 Protective Measures:

To protect pollinators of the Mesa Verde cactus, there will be a 2-mile buffer (ground or aerial) for RAATs applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAATs applications, the first swath will be a skipped swath. The flowering period for this plant species is during mid-April to early May. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

#### 4.3.9.5 Determination:

APHIS believes that the use of buffers will mitigate any risk to this species. Therefore APHIS determines that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

### **4.3.10 Milk-vetch, Mancos, (*Astragalus humillimus*)**

#### 4.3.10.1 Status:

This species was listed by FWS on June 27, 1985 and designated as endangered in the entire range.

#### 4.3.10.2 Habitat and Distribution:

This plant is found on sandstone ledges or mesa tops, often in cracks in the sandstone substrate or in shallow pockets of sandy soil from Cretaceous origin in Mesa Verde soil series. It flowers from late April or early May. This species is only known from northwestern part of San Juan County.

#### 4.3.10.3 Assessment:



APHIS believes it would be able to identify habitat areas for this species to exclude these areas from suppression program application.

#### 4.3.10.4 Protective Measures:

To protect pollinators of the Mancos milk-vetch, there will be a 2-mile buffer (ground or aerial) for RAATs applications of carbaryl, Malathion and dimilin from known locations of this plant. Within the two-mile buffer, only carbaryl bran bait will be used. In addition, for RAATs applications, the first swath will be a skipped swath. The flowering period for this plant species is during late-April to early May. Pollinators active during this time may be affected, but not adversely affected, by the proposed treatment.

#### 4.3.10.5 Determination:

APHIS believes that the use of buffers will mitigate any risk to this species. Therefore APHIS determines that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

### **4.3.11 Cactus, Sneed pincushion,** (*Coryphantha sneedi* var. *sneedii*)

#### 4.3.11.1 Status:

This species was first listed by FWS on November 7, 1979 and designed as endangered on the entire range.

#### 4.3.11.2 Habitat and Distribution:

This cactus grows in semi-desert grasslands or lechuguilla-sotol shrublands on limestone outcrops and rocky slopes, and is restricted to limestone outcrops and rocky slopes, growing in cracks on vertical cliffs or edges. It is known from the Anthony Gap in the Franklin Mountains and the southern end of the Organ Mountains in Dona Ana County, and in the Guadalupe Mountains of southern Eddy County.

#### 4.3.11.3 Assessment:

APHIS avoids mesa and butte topography for the grasshopper suppression program. Adjacent areas will have protective measures provided.

4.3.11.4 Protective Measures:

A 2 mile buffer both ground and aerial will be used for RAATs with the first swath adjacent to the buffer being skipped.

4.3.11.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment.

**4.3.12 Cactus, Lee pincushion,** (*Coryphantha sneedii* var. *leei*)

4.3.12.1 Status:

This species was final listed by FWS on October 27, 1979, and designated as threatened on the entire range.

4.3.12.2 Habitat and Distribution:

This species is found in semi-desert grasslands in the Chihuahua Desert biome. It is restricted to limestone that is generally hard, resistant to erosion, and supports sparse low shrubs and other vegetation. Primarily found on north-facing slopes. It is only known to occur in the Carlsbad Caverns National Park in Eddy County.

4.3.12.3 Assessment:

APHIS does not anticipate any proposed treatments within National Park Service boundaries. Should areas adjacent to these boundaries be considered, then the protective measures will be adequate.

4.3.12.4 Protective Measures:

A 2 mile buffer both ground and aerial will be used for RAATs with the first swath adjacent to the buffer being skipped.

4.3.12.5 Determination

APHIS believes that the use of buffers will mitigate any risk to this species or its habitat, and that grasshopper suppression program will not affect the species or its habitat

**4.3.13. Wild-buckwheat, gypsum, (*Eriogonum gypsophilum*)**

**4.3.13.1 Status:**

First listed by FWS on January 19, 1981 and designated as threatened on the entire range.

**4.3.13.2 Habitat and Distribution:**

This species is reported only from 3 general locations in Eddy County. It is found in open, semi-arid grama grasslands on gypsic soils.

**4.3.13.3 Assessment:**

APHIS believes that a grasshopper suppression program may affect this species, but not adversely affect the species or habitat.

**4.3.13.4 Protective Measures:**

APHIS will use a 0.5 miles buffer from known populations to protect this species.

**4.3.13.5 Determination:**

APHIS believes that the use of buffers will mitigate any risk to this species or its habitat. Therefore APHIS determines that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

**4.4 FISH Group:**

**4.4.1 Minnow, Rio Grande silvery, (*Hybognathus amarus*)**

**4.4.1.1 Status:**

This species was first listed by FWS on July 20, 1994 and designated endangered in the entire range. On February 19, 2003 critical habitat was designated in entire range.

#### 4.4.1.2 Habitat and Distribution:

This species is extirpated from most of its original reaches. Currently it is recorded as limited to the Rio Grande River between Cochiti Dam and Elephant Butte Reservoir. Prefer large streams with slow to moderate current over mud, sand, or gravel bottoms in perennial sections of this river or irrigation canals. It spawns in stiller water with sandy-silt streambeds.

#### 4.4.1.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial waters.

#### 4.4.1.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.4.1.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.4.2 Shiner, beautiful, (*Cyprinella formosa*)**

#### 4.4.2.1 Status:

This species was listed by FWS on August 31, 1984 and designated threatened in the entire range. There are no known locations of the species in the United States.

#### 4.4.2.2 Habitat and Distribution:

This fish is a mid-water column species, remaining near, but rarely within beds of plants or other cover along pond margins. This species spawns in late spring. Historically it occurred in the Mimbres River, and has been extirpated in the U.S since 1968, but persists in northern Mexico.

4.4.2.3 Assessment:

APHIS does not do suppression applications near perennial waters.

4.4.2.4 Protective Measures:

There are also no known locations of the species in New Mexico.

4.4.2.5 Determination:

Because there are no known locations, APHIS determines the proposed action will have no effect on the species or its habitat.

**4.4.3 Trout, Gila, (*Oncorhynchus gilae*)**

4.4.3.1 Status:

This species was listed by FWS on March 11, 1967 and designated endangered in the entire range; and on July 18, 2006 this specie's designation was changed to threatened.

4.4.3.2 Habitat and Distribution:

This fish inhabits clear, cold runs in mountain headwater streams that are typically narrow and shallow. During prolonged droughts it is confined to deep pools for survival, as well as where it usually congregates, if there is protective debris or plant beds.

4.4.3.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial waters.

4.4.3.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

4.4.3.5 Determination:

APHIS believes that the use of buffers will mitigate any risk to this species, and will not adversely affect the species or its habitat. Therefore APHIS determines that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

#### **4.4.4 Chub, Gila, (*Gila intermedia*)**

##### **4.4.4.1 Status:**

This species was listed by FWS on August 9, 2002 and proposed endangered in the entire range.

##### **4.4.4.2 Habitat and Distribution:**

This fish commonly inhabits pools in smaller streams, springs, and cienegas, and can survive in small artificial impoundments. It prefers quiet, deep pools, and remains near cover, such as terrestrial vegetation, boulders, fallen branches, or logs. It has critical habitat designated for parts of the upper Gila reaches of Catron and Grant Counties.

##### **4.4.4.3 Assessment:**

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial waters.

##### **4.4.4.4 Protective Measures:**

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

##### **4.4.4.5 Determination:**

APHIS believes that the proposed buffers will adequately protect this species and its’ habitat from any proposed treatment. Therefore APHIS determines that the proposed action “may affect, not likely to adversely affect” the species or its habitat.

#### **4.4.5 Minnow, Loach, (*Tiaroga cobitis*)**

##### **4.4.5.1 Status:**

This species was listed by FWS on October 28, 1986 and designated threatened in the entire range.

4.4.5.2 Habitat and Distribution:

This fish prefers turbulent, rocky riffles in mainstream rivers and tributaries, and lives on the bottom of permanent flowing, unpolluted creeks. The most common habitat occupied by this species is relatively shallow with moderate to swift currents, and with gravel-to-cobble substrate. Recurrent flooding is important in keeping substrate free of sediments. This species is currently restricted to streams in the reaches of the upper Gila basin.

4.4.5.3 Assessment:

APHIS believes that the buffer will adequately protect this species and its special habitat from any suppression program activity.

4.4.5.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

4.4.5.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

**4.4.6 Topminnow, Gila -- (incl.Yaqui), (*Poeciliopsis occidentalis*)**

4.4.6.1 Status:

This species was final listed by FWS on March 11, 1967 and designated endangered in the U.S.A only.

4.4.6.2 Habitat and Distribution:

This fish prefers shallow, warm, fairly quiet waters with dense vegetated margins. It occupies headwater springs and backwater areas of intermittent and perennial streams and marches. Currently the species is known to be in Arizona and Mexico.

#### 4.4.6.3 Assessment:

APHIS believes that the buffer will adequately protect this species and its special habitat from any suppression program activity.

#### 4.4.6.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.4.6.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.4.7 Spikedace, (*Meda fulgida*)**

#### 4.4.7.1 Status:

This species was listed by FWS on July 1, 1986 and designated threatened in the entire range.

#### 4.4.7.2 Habitat and Distribution:

This fish is endemic to the upper Gila River basin of Arizona and New Mexico. This species is found in moderate to large perennial streams with moderate to swift currents. The specific habitat for the spikedace consists of shear zones where rapid flow borders slower flow over shallow riffles with sand, gravel, and rubble bottoms.

#### 4.4.7.3 Assessment:

APHIS believes that the buffer will adequately protect this species and its special habitat from any suppression program activity.



#### 4.4.7.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.4.7.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

### **4.4.8 Sucker, Zuni bluehead, (*Catostomus discobolus yarrowi*)**

#### 4.4.8.1 Status:

This species was listed as endangered by FWS on August 25, 2014 where it is known or believed to occur.

#### 4.4.8.2 Habitat and Distribution:

Currently found in a section of the Zuni River in McKinley and Cibola Counties of New Mexico and in Arizona.

#### 4.4.8.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

#### 4.4.8.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile, and a 500 feet ground buffer for UVL treatment from any permanent water.

#### 4.4.8.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. Therefore APHIS determines that the proposed action "may affect, not likely to adversely affect" the species or its habitat.

**4.4.9 Pikeminnow (=squawfish), Colorado, (*Ptychocheilus lucius*)**

4.4.9.1 Status:

The species was listed by FWS on March 11, 1967 and designated as endangered in the entire range. On March 21, 1994 critical habitat was listed.

4.4.9.2 Habitat and Distribution:

This fish is mainly frequents shorelines over sand in medium to large rivers, Adults use various aquatic habitats from turbid strongly flowing water, eddies, runs, flooded bottoms to backwaters, although the young prefer small, quiet backwaters. Currently found in the Animas and San Juan Rivers.

4.4.9.3 Assessment:

APHIS does not perform grasshopper suppression programs near edges of riparian zones or perennial flowing waters.

4.4.9.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

4.4.9.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.4.10 Sucker, razorback, (*Xyrauchen texanus*)**

4.4.10.1 Status:

The species was listed by the FWS on October 23, 1991 and designated endangered in the entire range. Final critical habitat was listed on March 21, 1994.

4.4.10.2 Habitat and Distribution:

This fish apparently uses a wide variety of lacustrine, riverine and palustrine habitats including backwaters, sloughs, oxbow lakes, and seasonally inundated flood plains. It appears to prefer shallow swift waters of mid-channel sandbars during summer months, and slow runs, slack waters and eddies in the winter. Currently for New Mexico, only recorded in the San Juan River.

#### 4.4.10.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

#### 4.4.10.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

#### 4.4.10.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

### **4.4.11 Shiner, Arkansas River, (*Notropis girardi*)**

#### 4.4.11.1 Status:

The Arkansas River shiner was listed as threatened by FWS on November 23, 1998. On August 1, 2005, a proposal for critical habitat designation was issued.

#### 4.4.11.2 Habitat and Distribution:

Historically and currently found in Harding, Quay and Union Counties along the perennial Southern Canadian River watershed. This species typically occurs in turbid waters of broad, shallow, unshaded channels of creeks and of small to moderate rivers, over mostly silt and shifting sand bottom. Spawning may occur from early May to August.

#### 4.4.11.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.4.11.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile, and a 500 feet ground buffer for UVL treatment from any permanent water.

4.4.11.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.4.12 Shiner, Pecos bluntnose**, (*Notropis simus pecosensis*)

4.4.12.1 Status:

The Pecos Bluntnose shiner was listed as threatened by FWS on February 20, 1987 along the entire range.

4.4.12.2 Habitat and Distribution:

This subspecies historically was found from Santa Rosa Lake downstream along the Pecos River to Carlsbad, New Mexico. Currently the species is reported from near Fort Sumner downstream to Artesia, New Mexico. It is most frequently encountered in the main stream channel, over a sandy substrate with low velocity water flow.

4.4.12.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.4.12.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

4.4.12.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.4.13 Gambusia, Pecos**, (*Gambusia noblis*)

4.4.13.1 Status:

This species was first listed by FWS on October 13, 1970, and designated endangered on the entire range.

4.4.13.2 Habitat and Distribution:

This species lives in the Pecos River channels and its spring-fed creeks in Chaves, De Baca and Eddy Counties. It is found typically in the shallow margins of clear vegetated bottom spring waters (pools and overflows) that have a stable flow and constant temperature.

4.4.13.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.4.13.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile, and a 500 feet ground buffer for UVL treatment from any permanent water.

4.4.13.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.4.14 Chub, Chihuahua, (*Gila nigrescens*)**

4.4.14.1 Status:

This species was listed by the FWS on October 11, 1983 as designated as threatened in the entire range.

4.4.14.2 Habitat and Distribution:

This species inhabits deep quiet pools with undercut banks or over-hanging vegetation which provide both escape cover and suitable foraging. Juveniles tend to inhabit shallower areas with or without cover. It is presently endemic only to stretches of the Mimbres River and its spring fed tributaries.

4.4.14.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.4.14.4 Protective measures:

APHIS will provide an aerial buffer of 0.25 mile, and a 500 feet ground buffer for UVL treatment from any permanent water.

4.4.14.5 Determination:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters. APHIS believes there will be no effect on this species or its habitat.

**4.5 ARTHROPOD - Invertebrate Group:**

**4.5.1 Amphipod, Noel's, (*Gammarus desperatus*)**

4.5.1.1 Status:

The final rule for this species was listed by FWS on August 9, 2005 and designated endangered with critical habitat.

4.5.1.2 Habitat and Distribution:

This species is a freshwater crustacean known only from one location in Chaves County. It is found in isolated limestone and gypsum springs, seeps, and wetlands located in and around Roswell.

4.5.1.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.5.1.4 Protective Measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

#### 4.5.1.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

### **4.5.2 Isopod, Socorro, (*Thermosphaeroma thermophilus*)**

#### 4.5.2.1 Status:

This species was listed by FWS on March 27, 1978 and designated endangered in entire range.

#### 4.5.2.2 Habitat and Distribution:

This species is endemic to three thematic springs (Socorro, Sedillo, and Cook) in Socorro County. It occupies the outflow of warm springs with a constant temperature around 32 degree C and less than 1/3 meter in depth.

#### 4.5.2.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.5.2.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.5.2.5 Determination:

APHIS believes that the buffer will adequately protect this species and its special habitat from any suppression program activity. APHIS believes there will be no effect on this species or its habitat.

### **4.6 REPTILE Group:**

**4.6.1 Rattlesnake, New Mexican ridge-nosed,** (*Crotalus willardi obscurus*)

4.6.1.1 Status:

This species was listed by FWS on August 4, 1978 and designated threatened in the entire range.

4.6.1.2 Habitat and Distribution:

This snake appears to be endemic to Hidalgo County only. It is found at higher elevations (6,200 to 8,500 feet) in the Animas Mountains. This area has a gambel's oak (*Quercus gambelii*), mountain mahogany (*Cercocarpus* spp.) and juniper (*Juniperus* spp.) plant association.

4.6.1.3 Assessment:

APHIS grasshopper suppression historically has not been done, nor is it expected in the future, in this biome and topography.

4.6.1.4 Protective Measures:

None planned. APHIS will consult with F&WS should such program action be needed in this biome.

4.6.1.5 Determination:

APHIS believes that a buffer agreed upon by F&WS will adequately protect this species and its special habitat from any suppression program activity. APHIS believes there will be no effect on this species or its habitat.

**4.6.2 Snake, narrow-headed garter,** (*Thamnophis rufipunctatus*)

4.6.2.1 Status:

The narrow-headed gartersnake was listed by FWS and designated as a threatened species with critical habitat on July 8, 2014.

4.6.2.2 Habitat and Distribution:

The narrow-headed gartersnake is one of the most aquatic of the gartersnakes. This species is strongly associated with clear, rocky streams using predominantly pool and riffle habitat that



includes cobbles and boulders, but it has also been observed using lake shoreline habitat in New Mexico. The historical range has been found in Catron, Grant, Hidalgo and Sierra Counties in southwestern New Mexico. The species may still persist in the Upper Gila River subbasin, the Middle Gila River subbasin and the San Francisco River subbasin.

#### 4.6.2.3 Assessment:

Based on the fact that this species occurs in aquatic/riparian areas and treatments would occur on open rangeland areas, APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.6.2.4 Protective measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.6.2.5 Determination:

Based on the fact that this species occurs in aquatic/riparian areas and treatments would occur on open rangeland areas, APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

### **4.6.3 Gartersnake, northern Mexican** (*Thamnophis eques megalops*)

#### 4.6.3.1 Status:

The northern Mexican gartersnake was listed by FWS and designated as a threatened species where it is known or believed to occur on July 8, 2014.

#### 4.6.3.2 Habitat and Distribution:

The northern Mexican gartersnake is a riparian obligate (generally found in riparian areas when not engaged in dispersal, gestation, or hibernation behaviors) and occurs chiefly in the following general habitat types: (1) Small, often isolated wetlands (e.g., cienegas (mid-elevation wetlands with highly organic, reducing (basic or alkaline) soils), or stock tanks (small earthen impoundment)); (2) largeriver riparian woodlands and forests; and (3) streamside gallery forests

(as defined by well-developed broadleaf deciduous riparian forests with limited, if any, herbaceous ground cover or dense grass). This species is known or believed to occur in Catron, Grant and Hidalgo Counties in New Mexico.

#### 4.6.3.3 Assessment:

Based on the fact that this species occurs in aquatic/riparian areas and treatments would occur on open rangeland areas, APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.6.3.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its habitat.

#### 4.6.3.5 Determination:

Based on the determined protection measures, proposed pesticides and the proposed rates of application, grasshopper treatments occurring only on rangeland the proposed action is “may affect but not likely to adversely affect” this species.

### **4.7 MOLLUSK (snails) - Invertebrate Group:**

#### **4.7.1 Springsnail, Alamosa, (*Tryonia alamosae*)**

##### 4.7.1.1 Status:

This species was final listed by FWS on September 30, 1991 and designated endangered in the entire range.

##### 4.7.1.2 Habitat and Distribution:

This snail is found in a single complex of five thermal springheads of the Alamosa Creek. It occurs in minor rivulets out of the main channel in the canyon where these springs arise in slow current on gravel, pebbles, and sand among vegetation and algae mats.

##### 4.7.1.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.7.1.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.7.1.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. APHIS believes there will be no effect on this species or its habitat.

### **4.7.2 Springsnail, Socorro, (*Pyrgulopsis neomexicana*)**

#### 4.7.2.1 Status:

This species was final listed by FWS on September 30, 1991 and designated endangered in the entire range.

#### 4.7.2.2 Habitat and Distribution:

This snail is endemic to Socorro County and found only in one spring. This snail occurs in slow current water near the springhead on stones or in the uppermost layer of organic muck substrate among aquatic plants.

#### 4.7.2.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.7.2.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.7.2.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. APHIS believes there will be no effect on this species or its habitat.

### **4.7.3 Springsnail, Chupadera, (*Pyrgulopsis chuperaderae*)**

#### 4.7.3.1 Status:

This species was first listed by FWS and proposed as a candidate on May 22, 1984 in the entire range.

#### 4.7.3.2 Habitat and Distribution:

This species is a resident of a cienega system with multiple source springs that has a constant temperature of about 22 degrees C. It is believed to be able to survive in intermittent streams and ponds by settling into sediment on the bottom and aestivating in otherwise dry or frozen conditions.

#### 4.7.3.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or spring waters.

#### 4.7.3.4 Protective Measures:

To protect this species APHIS will use a 500 foot ground buffer and a 0.25 mile aerial buffer from the edge of any known locations or its critical habitat.

#### 4.7.3.5 Determination:

APHIS believes that the proposed buffers will adequately protect this species and its' habitat from any proposed treatment. APHIS believes there will be no effect on this species or its habitat.

### **4.7.4 Springsnail, Koster's, (*Juturnia kosteri*)**

#### 4.7.4.1 Status:

The final rule for this species was listed by FWS on August 9, 2005 and designated endangered with critical habitat.

#### 4.7.4.2 Habitat and Distribution:

The Koster's spring snail is a freshwater species and completely aquatic with a lifespan of 9 to 15 months. It is able to survive in seepage areas, but prefers perennial spring heads and runs with slow to moderate water flow over compact substrate.

#### 4.7.4.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

#### 4.7.4.4 Protective Measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

#### 4.7.4.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

### **4.7.5 Snail, Pecos Assiminea,** (*Assiminea Pecos*)

#### 4.7.5.1 Status:

The final rule for this species was listed by FWS on August 9, 2005 and designated endangered with critical habitat.

#### 4.7.5.2 Habitat and Distribution:

This species seldom occurs immersed in water, but prefers a humid microclimate created by wet mud or beneath vegetation mats close to running water. It is presently known in New Mexico from only the Bitter Lakes National Wildlife Refuge and sporadically along Bitter Creek in Chaves County.

#### 4.7.5.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

#### 4.7.5.4 Protective Measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

#### 4.7.5.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

### **4.7.6 Springsnail, Roswell, (*Pyrgulopsis roswellensis*)**

#### 4.7.6.1 Status:

The final rule for this species was listed by FWS on August 9, 2005 and designated endangered with critical habitat.

#### 4.7.6.2 Habitat and Distribution:

The Roswell springsnail is a freshwater species and completely aquatic with a lifespan of 9 to 15 months. It is able to survive in seepage areas, but prefers perennial spring heads and runs with slow to moderate water flow over compact substrate.

#### 4.7.6.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

#### 4.7.6.4 Protective Measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

#### 4.7.6.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.7.7 Hornshell, Texas, (*Popenaias popeii*)**

4.7.7.1 Status:

This species was listed by FWS on March 12, 2018 and designated endangered in the entire range.

4.7.7.2 Habitat and Distribution:

This species now is only confirmed from the Black River in Eddy County, although historically it occurred in the lower Pecos River into Texas as well.

4.7.7.3 Assessment:

APHIS does not perform grasshopper suppression programs near riparian zones or perennial flowing waters.

4.7.7.4 Protective Measures:

APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any permanent water.

4.7.7.5 Determination:

APHIS believes there will be no effect on this species or its habitat.

**4.8 AMPHIBIAN Group:**

**4.8.1 Frog, Chiricahua leopard, (*Rana chiricahuensis*)**

4.8.1.1 Status:

This species was listed by FWS on June 13, 2002 and designated threatened in the entire range.

4.8.1.2 Habitat and Distribution:

This frog is known from mid-elevation wetland communities; cienagas, pools, earthen livestock ponds, lakes, reservoirs, and streams at elevations between 3,250 to 8,880 feet. It is found in Arizona, New Mexico, and northern Mexico.

#### 4.8.1.3 Assessment:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial, permanent or spring waters.

#### 4.8.1.4 Protective Measures:

To protect this frog and its prey from UVL applications, a 500 foot ground and a 0.25 mile aerial buffer will be used from known locations of this frog.

#### 4.8.1.5 Determination:

APHIS believes that the buffers will adequately protect this species and its special habitat from any suppression program activity. APHIS does not do suppression applications near perennial or permanent waters. APHIS believes there will be no effect on this species or its habitat.

### **4.8.2 Salamander, Jemez Mountain, (*Plethodon neomexicanus*)**

#### 4.8.2.1 Status:

This species was listed by FWS on October 10, 2013 and designated endangered in the entire range with critical habitat.

#### 4.8.2.2 Habitat and Distribution:

The strictly terrestrial Jemez Mountains salamander predominantly inhabits mixed-conifer forest, consisting primarily of Douglas fir (*Pseudotsuga menziesii*), blue spruce (*Picea pungens*), Engelman spruce (*P. engelmannii*), white fir (*Abies concolor*), limber pine (*Pinus flexilis*), Ponderosa pine (*P. ponderosa*), Rocky Mountain maple (*Acer glabrum*), and aspen (*Populus tremuloides*). In total, there are approximately 90,716 acres (36,711 hectares) designating as critical habitat for this species in Los Alamos, Rio Arriba, and Sandoval Counties, New Mexico.

#### 4.8.2.3 Assessment:



APHIS determines that the proposed action “may affect, is not likely to adversely affect” this species. APHIS believes the proposed buffers will adequately protect this species and its critical habitat.

#### 4.8.2.4 Protective Measures:

APHIS will not perform suppression activities within the critical habitat of this species. In addition, APHIS will provide an aerial buffer of 0.25 mile and a ground buffer of 500 feet for UVL treatments from any known locations of this species. APHIS will consult with FWS biologists if any suppression activities are proposed in the three counties of concern.

#### 4.8.2.5 Determination:

APHIS believes that the buffers and no suppression activities within its critical habitat area will adequately protect this species and its critical habitat from any suppression program activity. APHIS believes there will be no effect on this species or its critical habitat.

## **5.0 SUMMARY**

This BA addresses the effects of grasshopper program activities on species listed since the 1995 BO and additionally provides measures for all earlier species that may be impacted by applications of diflubenzuron. Information is provided on the biology and ecology of those species and protective measures are suggested when necessary because program activities could potentially affect those species or their habitats.

APHIS has determined that the proposed action will have no effect on the black-footed ferret, (*Mustela nigripes*), Canada lynx (*Lynx canadensis*), jaguar (*Panthera onca*), Mexican long-nosed bat (*Leptonycteris nivalis*), Mexican gray wolf (*Canis lupus baileyi*), least tern --- interior populations (*Sterna antillarum*), Mexican spotted owl (*Strix occidentalis lucida*), Northern Aplomado falcon (*Falco femoralis septentrionalis*), Piping plover (*Charadrius melodus*), southwestern willow fly-catcher (*Empidonax traillii extimus*), Yellow-billed cuckoo (*Coccyzus americanus*), Narrow-headed gartersnake (*Thamnophis rufipunctatus*), New Mexico ridge-nosed rattlesnake (*Crotalus willardi obscurus*), Northern Mexican gartersnake (*Thamnophis eques megalops*), Chiricahua leopard frog (*Rana chiricahuensis*), Jemez Mountains salamander (*Plethodon neomexicanus*), Arkansas River shiner (*Notropis girardi*), beautiful shiner (*Cyprinella*

*formosa*), Chihuahua chub (*Gila nigrescens*), Colorado pikeminnow (*Ptychocheilus lucius*), Gila chub (*Gila intermedia*), Gila topminnow (*Poeciliopsis occidentalis*), Gila trout (*Oncorhynchus gilae*), Loach minnow (*Tiroga cobitis*), Pecos bluntnose shiner (*Notropis simus pecosensis*), Pecos gambusia (*Gambusia nobilis*), Razorback sucker (*Xyrauchen texanus*), Rio Grande silvery minnow (*Hybognathus amarus*), spikedace (*Meda fulgida*), Zuni bluehead sucker (*Catostomus discobolus yarrowi*), Texas hornshell (*Popenaias popei*), Alamosa springsnail (*Psuedotryonia alamosae*), Chupadera springsnail (*Pyrgulopsis chupaderae*), Koster's springsnail (*Juturnia kosteri*), Pecos assiminea snail (*Assiminea pecos*), Roswell springsnail (*Pyrgulopsis roswellensis*), Socorro springsnail (*Pyrgulopsis neomexicana*), Noel's Amphipod (*Gammarus desperatus*), Socorro isopod (*Thermosphaeroma thermophilus*), Holy Ghost Ipomopsis (*Ipomopsis sancti-spiritus*), Knowlton's cactus (*Pedicactus knowltonii*), Kuenzler hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*), Lee pincushion cactus (*Coryphantha sneedii* var. *leei*), Mancos milk-vetch (*Astragalus humillimus*), Mesa Verde cactus (*Sclerocactus mesae-verdae*), Sacramento Mountain thistle (*Cirsium vinaceum*), Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*), Todsens pennyroyal (*Hedeoma todsenii*), or the Zuni fleabane (*Erigeron rhizomatus*), APHIS has determined the suppression program may affect, is not likely to adversely affect the New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), lesser prairie-chicken (*Tympanuchus pallidicinctus*), Gypsum wild-buckwheat (*Eriogonum gypsophilum*), Pecos sunflower (*Helianthus paradoxus*), and the Sacramento prickly poppy (*Argemone pleiacantha* spp. *pinnatisecta*), APHIS has determined that the suppression program may affect, is not likely to adversely affect critical habitat.

Should there be species in the affected areas that become newly listed, newly proposed, or otherwise not mentioned in previous biological opinions, APHIS will adhere to buffers and other protective measures for similar species that have been specified in previous biological opinions. This will ensure that Grasshopper Program activities will not likely jeopardize the continued existence of either listed species or species proposed for listing, or adversely modify critical habitat for listed species. APHIS will continue to incorporate, as appropriate, the results gained from the seven year, 30 million dollar Grasshopper Integrated Pest Management (GHIPM) project to ensure grasshopper control activities have little, if any, impact on the environment.

Additional information on the GHIPM project can be found on the USDA web site: [sidney.ars.usda.gov/grasshopper](http://sidney.ars.usda.gov/grasshopper). This web site provides a comprehensive source on the biology, ecology, identification and management of rangeland grasshoppers and Mormon crickets.

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N.B. (The Document Format):

1 Status:

2 Habitat and Distribution:

3 Assessment:

4 Protective Measures:

5 Determination:

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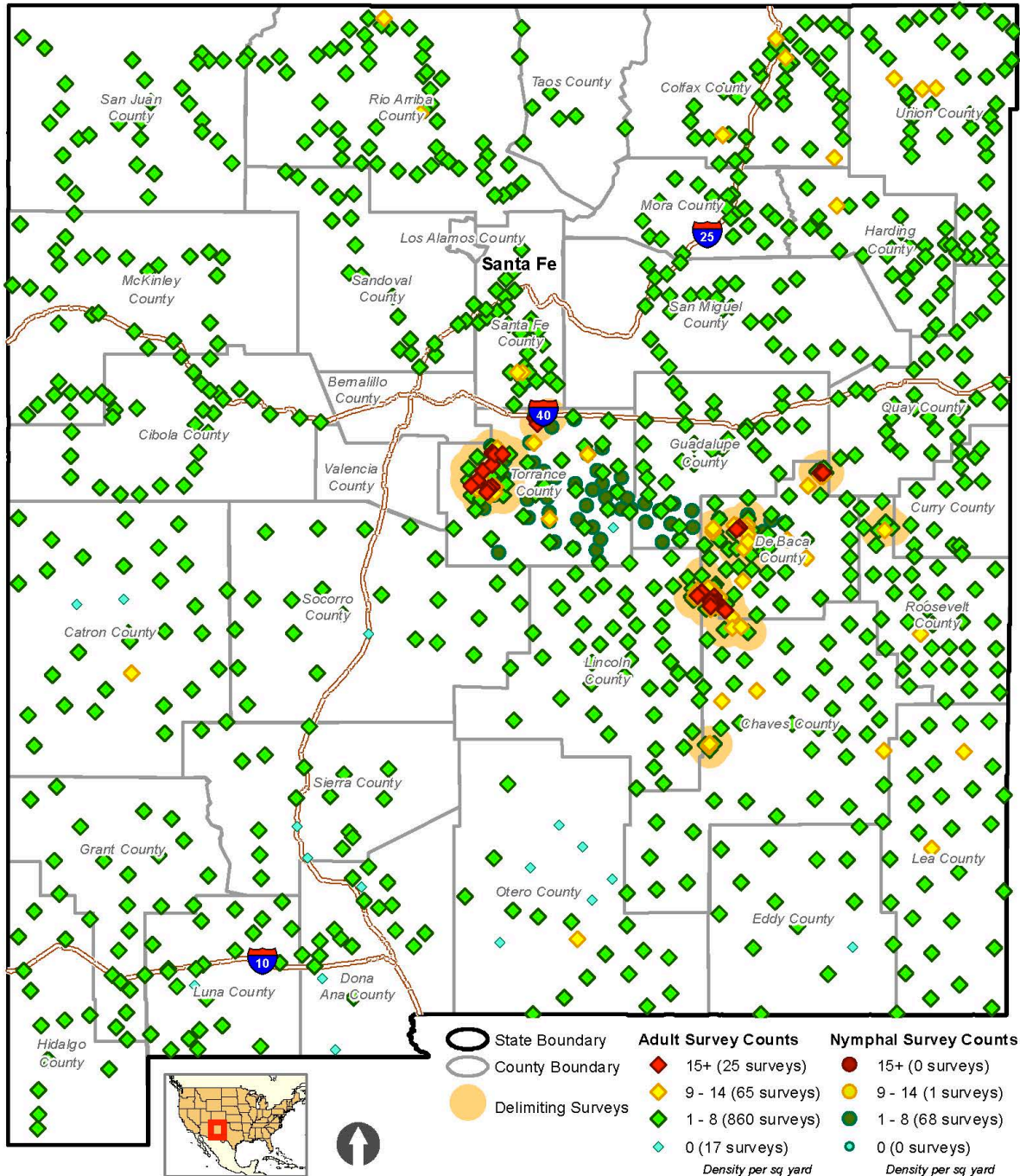


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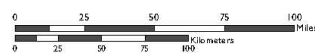
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## New Mexico 2019 Grasshopper Survey



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