United States Department of the Interior

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October 20, 2006

Cons. # 22420-2006-F-0166

Memorandum

To: Refuge Manager, Bitter Lake National Wildlife Refuge, Roswell, New Mexico

From: Acting Field Supervisor, New Mexico Ecological Services Field Office, Albuquerque, New Mexico

Subject: Formal Section 7 Consultation on the Application of Milestone Herbicide to Russian Knapweed on the Bitter Lake National Wildlife Refuge in Chaves County, New Mexico

This transmits our response to your March 31, 2006, and June 29, 2006, requests for intra-Service consultation on the proposed application of Milestone to Russian knapweed (*Acroptilon repens*) on the Bitter Lake National Wildlife Refuge (Refuge) in Chaves County, New Mexico. Your March 31, 2006, intra-Service Section 7 Biological Evaluation (BE) form requested consultation and concurrence with a finding that the proposed herbicide application "may affect, is not likely to adversely affect" the endangered least tern (*Sternula antillarum*; tern) and the endangered Koster's springsnail (*Juturnia kosteri*; springsnail), but "may affect, and is likely to adversely affect" the threatened Pecos sunflower (*Helianthus paradoxus*; Pecos sunflower). This response is provided in accordance with the requirements of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act).

The proposed action is to apply the herbicide called "Milestone" (active ingredient aminopyralid, a pyridine carboxylic acid herbicide, Chemical Abstract Service No. 150114-71-9, manufactured by Dow AgroSciences, LLC, Indianapolis, IN) to areas infested with Russian knapweed as allowed under the manufacturer's label instructions and the Material Safety Data Sheet (MSDS). Herbicide application would occur on the Refuge lands wherever Russian knapweed persists. Russian knapweed can commonly be found along roadsides, irrigation ditches, cropland and other disturbed areas.

We concur that the proposed action is not likely to adversely affect the tern or the springsnail (see Appendix 1). This consultation addresses the effect of the proposed action to the Pecos sunflower and recommends conservation measures for conservation of the Pecos sunflower. We have assigned file number 02420-2006-F-0166 to this consultation; please reference this number in any future correspondence. A complete administrative record is on file at the New Mexico Ecological Services Field Office (NMESFO).

BIOLOGICAL OPINION

CONSULTATION HISTORY

March 15, 2006: Our staff discussed that the loss of even a few individual Pecos sunflowers by herbicide application would require formal consultation.

March 30, 2006: Our staff discussed the potential content of our biological opinion, what it would need to be completed, including the information for the species location, the areas of the proposed action, the potential effects to the species, the severity, duration and intensity of those potential effects, and what might be done to lessen those potential effects.

March 30, 2006: Refuge staff, in discussions with the Region 2 Invasive Species Coordinator, changed the selected herbicide formulation for the proposed activity from one containing picloram to Milestone, in order to use a herbicide that is not restricted. Milestone has the added benefit of being more targeted towards the plant species of concern.

May 30, 2006: The Region 2 Invasive Species Coordinator approved the use of the Pesticide Use Proposal (PUP) R2-06-22510-05, but recommended that the Milestone be applied late in the year when Russian knapweed was near-dormant.

July 6, 2006: Proposed action changed from the non-ionic surfactant Chemsurf 90, to Agri-dex. In this way, a safer non-ionic surfactant (or adjuvant) would be used instead.

July 13, 2006: Deadline mutually extended by Refuge and NMESFO staff to August 30, 2006.

September 18, 2006: We coordinated with R. Sivinski, botanist, New Mexico Energy, Minerals and Natural Resources Department, Forestry Division, and primary author of the Final Pecos Sunflower Recovery Plan on the recommended conservation measures contained herein.

September 26, 2006: We transmitted to you, via electronic mail, a draft biological opinion on the proposed action, and discussed it with your staff.

October 4, 2006: You and your staff concluded that the herbicide spraying plan "may affect, but is not likely to adversely affect" the Pecos bluntnose shiner. Another draft biological opinion was informally provided via electronic mail for your review.

DESCRIPTION OF THE PROPOSED ACTION

Herbicide Treatment

The proposed action involves the removal of Russian knapweed where found on the Refuge. Russian knapweed has been observed near the east shore of the Pecos River on the North Tract of the Refuge, the north shore of the Bitter Lake, along the west ditch and west edge of Unit 15, at the southern end of the Hunter Oxbow near the Pecos River on the Middle Tract of the Refuge, and amongst the field borders, roads, and disturbed areas near the Rio Hondo on the Southern Tract of the Refuge (Service 2006). The proposed action's duration is two years; however Refuge monitoring will be used to evaluate efficacy and the need for additional Milestone treatments for missed or new plants is expected to continue for at least three, but up to five years following initial treatment. The Milestone herbicide and a non-ionic surfactant will be applied directly to Russian knapweed using a back-pack sprayer on the Middle Tract and by using a back-pack sprayer and an All Terrain Vehicle on the South Tract in August through October (Service 2006). The maximum application rate is 6 fluid ounces of herbicide per acre.

Spraying of Milestone onto Russian knapweed will be done when winds are less than 5 miles per hour (mph) within 25 yards of the Pecos sunflower, and less than 10 mph when Pecos sunflowers are over 25 yards from the knapweed or when no Pecos sunflowers are known to be within 100 yards down-wind. The Refuge use of a low-pressure spray nozzle will also reduce the chance of drift. Where both Russian knapweed and the Pecos sunflower are in close proximity, the Refuge will use back-pack sprayers with hand-held wands to better control the application of the herbicide. Additionally, the majority of the Pecos sunflower canopy is physically higher than that of the Russian knapweed where herbicide spray will be directed. Where both Russian knapweed and the Pecos sunflower are at a distance greater than 10 yards, the Refuge will use an ATV with a boom-mounted sprayer. Treatment will occur in August through October so that Pecos sunflowers are easily detected, and during the near dormancy and optimal application for Russian knapweed.

Herbicide and adjuvant will be used only in accordance with product labeling and the respective Material Safety Data Sheet (MSDS). Herbicide application will be under the direct supervision of a State of New Mexico-certified herbicide applicator or a certified contractor. A Service Pesticide Use Proposal document will be approved for each herbicide before beginning application. In the event of an herbicide spill, the Service and/or the contractor will remove the contaminated soil. The contaminated soil will be taken to an appropriate handling facility for disposal. Spill site location, size of spill, and disposal site will be documented and monitored.

STATUS OF THE SPECIES

Pecos Sunflower

The Pecos sunflower is an annual that is a member of the sunflower family (Asteraceae). It is an annual, herbaceous plant. It grows 1-3 meters (m) (3.3-9.9 feet (ft)) tall and is branched at the top (Service 2005). The leaves are opposite on the lower part of the stem and alternate at the top, lance-shaped with three prominent veins, and up to 17.5 centimeters (cm) (6.9 inches (in)) long by 8.5 cm (3.3 in) wide (Service 2005). The stem and leaf surfaces have a few short, stiff hairs. Flower heads are 5-7 cm (2.0-2.8 in) in diameter with bright yellow rays around a dark purplish brown center (the disc flowers) (Service 2005). Pecos sunflower looks much like the common sunflower seen along roadsides throughout the west, but differs from common sunflower by having narrower leaves, fewer hairs on the stems and leaves, smaller flower heads, and narrower bracts (phyllaries) around the bases of the heads (Service 2005).

Habitat

Pecos sunflower is a wetland plant that grows in areas with permanently saturated soils in the root zone (Service 2005). Habitat is most commonly desert springs and seeps that form wet meadows called cienegas. The word 'cienega' or 'cienaga' is derived from the Spanish 'cien aguas' meaning hundred waters, which indicates a large area where water is seeping from the ground in numerous places (Service 2005). Pecos sunflower also can occur around the margins of lakes, impoundments and creeks. When Pecos sunflowers grow around lakes or ponds, these are usually impoundments or subsidence areas within natural cienega habitats (Service 2005). The soils of these desert wetlands are typically saline or alkaline because the waters are high in dissolved solids and high rates of evaporation leave deposits of salts, including carbonates, at the soil surface (Service 2005). Soils in these habitats are predominantly silty clays or fine sands with high organic matter content. Studies by Van Auken and Bush (1995) show that Pecos sunflower grows in saline soils, but seeds germinate and establish best when precipitation and high water tables reduce salinity near the soil's surface. Like all sunflowers, this species requires open areas that are not shaded by taller vegetation (Service 2005).

Distribution and Abundance

Pecos sunflower is presently known from only six general locations in New Mexico and west Texas (Service 2005). The type locality near Fort Stockton in Pecos County, Texas is probably the largest population with several hundred thousand plants in a desert cienega (Service 2005). There is a smaller group of plants in a highway right-of-way, also near Fort Stockton, and another population in the Balmorhea area of Reeves County, Texas. In New Mexico, Pecos sunflower occurs at 11 spring seeps and cienegas near the towns of Roswell and Dexter in the Pecos River valley in Chaves County (Service 2005). Three of these locations support many thousands of Pecos sunflowers, but the remainder are smaller, isolated occurrences. Springs and cienegas within and near the Town of Santa Rosa in Guadalupe County have 8 sites with Pecos sunflower, one of which consists of a few hundred thousand plants in good years (Service 2005). Two areas of spring seeps and cienegas in the Rio San Jose valley of western New Mexico support populations of Pecos sunflower. One occurs on the lower Rio San Jose in Valencia County and

the other is in Cibola County in the vicinity of Grants. Neither are especially large populations (Service 2005).

Four Pecos sunflower habitats are on properties managed principally for wildlife and endangered species conservation. A major site is on the Refuge that contains a series of spring-fed seeps and impoundments totaling several hundred hectares in the waterfowl ponds and farms. There is also a small group of Pecos sunflowers on an impoundment at Dexter Fish Hatchery and Technology Center near Dexter, New Mexico (Service 2005).

Most Pecos sunflower sites are limited to less than 2 hectares (5 acres) of wetland habitat. Some are only a small fraction of a hectare. Two sites, one near Fort Stockton and another near Roswell, are considerably more extensive. The number of Pecos sunflowers per site varies from less than 100 to several hundred thousand. Because Pecos sunflower is an annual, the number of plants per site can fluctuate greatly from year to year with changes in precipitation and depth to ground water (Sivinski 1992). This sunflower is completely dependent on water-saturated soil conditions within the soil root zone. If a wetland habitat dries out, even a large population of Pecos sunflower would disappear (Service 2005).

Population Dynamics and Threats

The number of plants per site varies from less than 100 to several hundred thousand for the two more extensive sites. Because the Pecos sunflower is an annual, the number of plants per site can fluctuate greatly from year to year with changes in water conditions. The Pecos sunflower is totally dependent on the persistence of wetland habitat. Even large populations will disappear if the wetland dries (Service 1999).

When Pecos sunflower was listed as threatened on October 20, 1999, threats pertaining to each of the listing factors (habitat destruction, over-utilization, disease and predation, inadequacy of existing regulatory mechanisms, and other natural or manmade factors) were documented (Service 1999). Threats to the species have not changed significantly since listing, with the exception of the regulatory protection that the species is now provided under the Act (Service 2005). Threats to the Pecos sunflower include degradation or loss of wetland habitat, grazing, exotic plant invasion, vegetation removal and hybridization. A recovery plan for this species has been completed (Service 2005). Critical habitat was not designated for the Pecos sunflower, but it is now being considered by the Service (P.Zenone, NMESFO, personal communication, 2006).

Pecos sunflower will naturally hybridize with common sunflower. There is concern about the extent to which backcrosses from common sunflower could effect the genetic integrity of small Pecos sunflower populations. Obvious hybrid plants have been found on the drier peripheries of the Pecos sunflower population at Santa Rosa, New Mexico. However, the dense stands of Pecos sunflower on wetter habitats appear to remain genetically pure based upon consistent morphology (B. Sivinski, written communication, 2005). Populations near agricultural fields might be more severely affected, if those fields were devoted to the production of a commercial crop of a common sunflower cultivar (Service 2005).

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area; the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of State and private actions that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Russian Knapweed Invasion

Russian knapweed has colonized various portions of the Refuge and its population is expanding (Service 2006). Russian knapweed, native to Eurasia, was introduced into North America in the late 1800's (Carpenter and Murray 1998). Russian knapweed is a bushy rhizomatous perennial herbaceous plant of the aster family (Asteraceae) and can grow up to 3 feet tall. The genus name Acroptilon, meaning feathery tip, refers to the plume-like bristle at the tip of the flower head bracts. The specific epithet, repens, refers to the creeping growth of the rootstocks (Carpenter and Murray 1998). The flower heads of Russian knapweed are urn-shaped, solitary, pink to purplish, and the marginal blooms not enlarged (Carpenter and Murray 1998).

Russian knapweed is a deep-rooted long lived perennial. Some stands have been in existence for 75 years (Carpenter and Murray 1998). It forms dense colonies in cultivated fields, orchards, pastures, and roadsides. Once established, it is difficult to eradicate. It is poisonous to horses causing "chewing disease"(Carpenter and Murray 1998). Instead of emphasizing mass seed production like the other knapweeds, Russian knapweed puts much of its energy into a deep and spreading root system (Carpenter and Murray 1998). New plants shoot up from the roots, forming dense patches of cloned plants. Thus the plant is slower to establish, but more difficult to eradicate than the other knapweeds (Carpenter and Murray 1998).

Russian knapweed can commonly be found along roadsides, riverbanks, irrigation ditches, pastures, waste places, clearcuts, and croplands. Russian knapweed does not establish readily in healthy, natural habitats (Carpenter and Murray 1998). It typically invades disturbed areas, forming dense single-species stands. Once established, Russian knapweed uses a combination of adventitious shoots and allelopathic chemicals such as polyacetylene to spread outward into previously undisturbed areas (Carpenter and Murray 1998). Russian knapweed invades many disturbed western grassland and shrubland communities, as well as riparian forests. Once established, Russian knapweed can dominate an area and significantly reduce desirable vegetation (e.g. perennial grasses).

The most effective method of control for Russian knapweed is to prevent its establishment through proper land management (Carpenter and Murray 1998). The healthier the natural community, the less susceptible it will be to Russian knapweed invasion (Carpenter and Murray 1998). Areas should be monitored three times a year (spring, summer, and fall) and all plants

should be destroyed immediately (Carpenter and Murray 1998). Since Russian knapweed is so persistent, it is important to kill all of the plants in the targeted area.

There is no single "silver bullet" control method for Russian knapweed. Lasting control requires an integration of mechanical control, chemical control, biological control, proper land management, and vegetative suppression (Carpenter and Murray 1998). An effective management program must first control existing infestations, and then promote repopulation by native plants. Continued monitoring and follow-up treatments should be conducted annually to eliminate any re-infestation of knapweed.

According to Carpenter and Murray (1998), the keys to controlling Russian knapweed are to 1) stress the weed and cause it to expend nutrient reserves in its root system, 2) eliminate new seed production, and 3) control its vegetative spread. If sufficient human resources are available, mechanical control is good place to start. Pulling Russian knapweed plants two to three times per year contained, but did not eliminate, an infestation in Washington. Cutting, mowing or disking several times annually will also control the existing top growth. Often, the plants that do re-emerge are smaller in size and lower in vigor. This is a good indication that the plants are under stress and that their nutrient reserves are declining.

Once the initial infestation has been controlled, native species should be replanted to act as a vegetative suppressant. Suppresser species must remove a significant amount of moisture from the soil during the seedling stage, when knapweeds are most vulnerable. Early emergence, rapid dense growth, and maintenance of high vigor until frost are attributes required by plant species to suppress Russian knapweed.

Therefore, the potential for natural re-vegetation of native plants for the Refuge's Middle Tract is good. Russian knapweed does not establish readily in healthy, natural habitats like those found on the Middle Tract. It typically invades disturbed areas, forming dense single-species stands. The Refuge's Southern Tract, therefore, may represent more of a challenge for natural re-vegetation as crop fields are frequently disturbed. Annual monitoring, at a minimum, by the Refuge staff will provide data for determining the success rate of naturally reoccurring native plants. Photo points should be established for clumps of Russian knapweed at the time of treatment. Annual monitoring and re-photographing of these sites will illustrate herbicide effectiveness, non-target plant mortality, and regeneration.

Status of the Species within the Action Area

On the Refuge, the Pecos sunflower occurs from Bitter Creek south to Hunter Marsh. It also occurs on the Southern Tract mostly around the small wetland complex west and alongside the Rio Hondo. The plants grow in moist, saline soils adjacent to permanent water or in seasonally flooded areas. It grows in association with inland saltgrass, salt-marsh bulrush and alkali sacaton; less commonly on relatively bare areas. It has the capacity (rather unusual for an annual) to germinate and grow successfully from beneath relatively dense mats of accumulated litter, but producing many more seedlings and flowering plants after such an area is burned in winter.

Apparently, the seeds can lie dormant for several years, germinating when light penetration and soil temperatures are higher following a fire. If winter moisture is lacking, seeds will likely also remain dormant. Seedlings have been located in the last week of February on a burned site; the first week of March is typical for unburned sites. Seeds can germinate into the first week of April, but the end of the germination period is not known. Removal of salt cedar over-story by burning or cutting has led to the establishment of Pecos sunflowers beneath the former canopy. Although Refuge impoundments are generally in decline during the summer, adult plants can withstand a few days of inundation of its roots. Plants senesce and die after flowering in September and setting seed in October.

Since first discovered on the Refuge in 1991, the estimated area of occupancy of the Pecos sunflower has increased by more than three-fold due to water and fire management (Refuge 1996). The population density of Pecos sunflower increased from 360 acres to 710 acres (Refuge 1997). However, estimating an acreage figure is difficult, as plants occur in nearly pure stands in the most favorable environments, and as scattered individuals in more peripheral areas. Refuge staff estimates that nearly 1,000,000 plants may be found on the Refuge in an average year (Refuge 1996). The seed-bank could be 5 to 10 times that amount. Thus the population is secure if the habitat is secure, regardless of the number of plants producing seed in any given year.

A spring or early summer water drawdown appears necessary to germinate seeds, and such water management has produced an estimated 300% increase in the population density of Pecos sunflowers on the refuge since 1993 (Refuge 1997). The occurrence of this species on the Refuge was extensively mapped during 1995, 1996, and 1997 and continues to document an overall dynamic increase in abundance of this species in wetland areas (Refuge 1997). Drawing down impoundments in late winter has provided additional sites for seed germination, while lowering salinity levels in impoundments. However, higher elevation plants will likely suffer drought effects when a wetland unit is dewatered unless ample summer rains occur. Drought stressed plants remain small and produce fewer seeds than those receiving sufficient moisture. Plants growing near springs have not been substantially affected by drought.

EFFECTS OF THE ACTION

Direct Effects

The active ingredient in Milestone herbicide is an aminopyralid, which is a pyridine carboxylic acid herbicide in the chemical class of a chloropyridinyl, and that has the Chemical Abstract Service Number 150114-71-9. This active ingredient provides a broad-spectrum of broadleaf weed control at very low labeled use rates (4 to 7 fluid ounces/acre, or 0.06 to 0.1 lb active ingredient/acre, or 10.8 to 18 grams/hectare [g/ha]), compared to herbicides with the same mode of action, including 2,4-D, clopyralid, triclopyr, picloram and dicamba. Milestone herbicide translocates throughout the entire plant and accumulating in meristematic tissues, including the roots. It disrupts plant growth metabolic pathways affecting the growth process of the plant. The label warns that sensitive nontarget plants present may be killed at the time of spraying and that

their regeneration or establishment may be adversely affected by soil residues in the following season. Spray drift may harm sensitive nontarget plants where it exceeds about 1 g/ha. Testing with a range of plants found that some dicotyledonous plants are highly sensitive to aminopyralid, particularly with foliar exposure as seedlings.

Milestone is primarily a post-emergence herbicide and can be applied to weeds at any stage of growth, but specific weeds may have optimal growth stages for control (Dow AgroSciences 2006). Within hours or days of application, the stems and leaves of many weeds will then stop growing and turn brown. Most annual susceptible weeds will be controlled within four to eight weeks after application; however, complete control of main stems and roots may take longer. Because of its residual activity, control can last all season long, or into the season after application on certain weed species. Foliar absorption of aminopyralid applied post-emergence is relatively rapid (Dow AgroSciences 2006). The time required for aminopyralid rainfastness depends on environmental conditions and the species targeted for control. The treatment will be rainfast within two hours after application when applied at labeled rates (Australian Pesticides and Veterinary Medicines Authority [APVMA 2006]).

Testing with a range of plants found that some dicotyledonous plants are highly sensitive to aminopyralid, particularly with foliar exposure as seedlings. Vegetative vigor in some soybean seedlings was impaired at rates in the order of 1 g/ha(APVMA 2006). Environmental exposure to fish or wildlife by aminopyralid may primarily involve the soil in treated areas (APVMA 2006). Aminopyralid will largely remain in soil pore water because of its hydrophilicity, with some potential for aquatic exposure but very limited atmospheric exposure. The predicted residues of aminopyralid on vegetation and in soil are well below levels that might cause harmful effects in birds and soil dwelling organisms (APVMA 2006). Residues entering aquatic environments will partition only slowly to sediment and will not bioaccumulate in fish.

No harmful effects were seen from acute exposures in rainbow trout, bluegill sunfish, sheepshead minnow, leopard frog tadpoles, Daphnia magna, mysid shrimp and eastern oysters (APVMA 2006). Similarly, there were generally no harmful effects from chronic exposures of Daphnia magna and midge larvae. Emergence of the latter was reduced at very high exposures (500 and 1000 mg/L) but this effect appears to be related to low pH associated with the acidity of aminopyralid (APVMA 2006). The most sensitive endpoint was a NOEC of 1.36 mg/L from early life stage testing in fathead minnow (*pimephales promelas*; APVMA 2006). As with the midge test, acidity appears to be largely responsible for the slight acute toxicity that was seen in testing with aminopyralid in green algae, blue-green algae and freshwater diatoms. No such toxicity was seen in green algae exposed to the aminopyralid salt, or to marine diatoms exposed to aminopyralid in seawater with its greater buffering capacity (APVMA 2006). The growth of duckweed was not harmed by exposure to aminopyralid (APVMA 2006). The predicted residues of aminopyralid in shallow water contaminated by direct overspray are well below concentrations that could be harmful to fish, tadpoles, aquatic invertebrates, algae or aquatic plants (APVMA 2006). The risk of aminopyralid to aquatic life is assessed as minimal (APVMA 2006).

Aminopyralid is practically non-toxic to birds on an acute or dietary basis (Dow AgroSciences 2006). Survival, growth and reproduction in bobwhite quail and mallard ducks were not affected by acute oral or by subacute or chronic dietary exposures to aminopyralid (APVMA 2006). According to the US Environmental Protection Agency (USEPA 2004), aminopyralid has low acute toxicity. The rat oral lethal dose (LD)50 is greater than 5,000 milligrams/kilogram (mg/kg) and the rat inhalation LC50 is greater than 5.5 milligrams per liter (mg/L) (USEPA 2004). In addition, aminopyralid is not adermal sensitizer in guinea pigs, has no dermal irritation in rabbits, and shows ocular irritation in rabbits (USEPA 2004). Aminopyralid shows a lack of genotoxicity and is not teratogenic nor will it interfere with *in utero* development (USEPA 2004). Based on chronic testing with aminopyralid in the mouse, dog, and rat, the USEPA (2004) proposed a reference dose of 0.5 mg/kg/day.

Similarly, the predicted exposure of bees to spray will be well below levels that could be harmful (Dow AgroSciences 2006). Testing with honeybees, earthworms, parasitic wasps and predatory mites found no harmful effects from exposure to aminopyralid (Dow AgroSciences 2006). Soil microbial function remained unaffected by aminopyralid, even at highly exaggerated exposures.

Pesticide solution spray or spray drift are likely to land upon the Pecos sunflower and translocate throughout the plant, and accumulating in meristematic tissues, including the roots. There, the herbicide will disrupt the Pecos sunflower plant growth and thereby kill the plant. Soil that receives spray may contain the herbicide in an active state for up to 4 months (APWVA 2006) depending on temperature. Herbicide that remains in the soil may affect the regeneration or establishment Pecos sunflower seeds in the following season. Using best management practices, avoidance and spray minimization, the Refuge anticipates that up to 500 individual plants or seedlings will be taken incidental to and over the course of the Russian knapweed eradication plan (Refuge 2006).

Indirect Effects

Over the long term, removal of the Russian knapweed should result in additional habitat for native plant species including native grasses and the Pecos sunflower.

Interrelated and Interdependent Actions

The use of access roads and all-terrain vehicles in the project areas are considered interrelated with the implementation of the current project. Although the majority of vehicles will likely stay on roads and trails, effects of the project from interrelated actions may result in some erosion that may affect Pecos sunflowers either through smothering or providing additional disturbed habitat.

Summary

On the Refuge, the majority of the Pecos Sunflower that may be affected are along Unit 15 and on the Refuge's Southern Tract croplands near the Rio Hondo. It is possible that up to 300 individual plants or seedlings may be affected by either direct spray, spray drift or through herbicide-containing soil. It is possible that over the course of the Russian knapweed eradication

plan, an additional 200 individual plants and seedlings may be killed or injured during herbicide re-application.

The Refuge has selected the herbicide and adjuvant with the lowest toxicity to aquatic life and wildlife for use in this Russian knapweed eradication. The Refuge has timed the application of herbicide to coincide with readily observable Pecos sunflower plants, thereby avoiding occupied patches to the greatest extent possible. Application of the herbicide will follow all label instructions and MSDS and be applied in the most controlled manner near the Pecos sunflower. Pecos sunflowers will be avoided to the greatest extent possible while accomplishing the goals of Russian knapweed eradication plan. Perhaps as many as 500 individual plants and seedlings may be affected or killed. Resultant nuisance plant cleared habitat may result in a greater increase in the number of Pecos sunflower plants in the following years.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Current and future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Because the action area is fully contained within the Refuge, ongoing or future actions that may impact the Pecos sunflower must be authorized by the Service. As a result, most projects will be reviewed under section 7 of the Act for their impacts to Pecos sunflower prior to authorization. There are no known non-Federal actions likely to occur that might affect the Pecos sunflower within the action area at this time.

CONCLUSION

After reviewing the current status of the Pecos sunflower, the environmental baseline for the action area, the effects of the proposed Russian knapweed eradication plan using the herbicide Milestone, and the cumulative effects, it is our biological opinion that proposed activities are not likely to jeopardize the continued existence of the Pecos sunflower. No critical habitat has been designated for this species, therefore none will be affected.

The rationale for our conclusion is as follows:

- There will be no long-term injury to Pecos sunflower habitat. In the long-term, the proposed action is anticipated to result in an increase in Pecos sunflower habitat.

- Up to 500 individual plants and seedlings may be taken, but the loss of this portion of the Refuge population (0.05 %) is considered sustainable by the species. Additionally, 500 individual plants and seedlings represents only a small portion on the Refuge and the proposed action does not affect the other 5 known locations of Pecos sunflower.

- Herbicide and adjuvant will be used only in accordance with product labeling and the respective MSDSs and PUPs. The milestone label is explicit in the directions involving the spraying technique necessary to maximize the controlled delivery of the herbicide to the target plants. The step-by-step method of calibrating a backpack sprayer involves cleaning the sprayer and nozzle thoroughly. Using water only to check to see that the nozzle forms a uniform spray pattern. Then the number of seconds it takes to spray the measured area uniformly with water using gentle side-to side sweeping motion with the spray wand is recorded. Then, during application the applicator will be sure to maintain a constant sprayer pressure through the area for complete coverage and maximum effect.

- Herbicides will be applied by certified applicators in a manner intended to minimize drift, and thus contamination, of the aquatic environment and of the Pecos sunflower.

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including any Conservation Recommendations, below, that may be incorporated into the final project design.

INCIDENTAL TAKE STATEMENT

Section 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law (19 NMAC 21.2).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here relate only to the proposed action and do not represent complete fulfillment of the agency's section 7(a)(1) responsibility for this species.

1. Implement herbicide application in accordance with all label and MSDS instructions to maximize the effects to the target plants while minimizing the effects to non-target plants such as the Pecos sunflower.

2. Continue to manage impoundments and water conveyance structures to benefit listed and imperiled species that use the Refuge; include specific management goals in the Refuge water management plan that address the needs of the Pecos sunflower.

3. Implement a Pecos sunflower management plan that addresses the conservation of the species (i.e., habitat protection and improvement, protection of individuals, inventory, analysis, and monitoring, and education and awareness).

4. Monitor impacted areas to determine long term effects of herbicide use, surface disturbance and knapweed eradication success on the Pecos sunflower.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the effects of Russian knapweed eradication using Milestone on the Pecos sunflower. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; (2) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this consultation; or (3) a new species is listed or critical habitat designated that may be affected by the action.

We appreciate your efforts to restore native vegetation and to identify and minimize effects to listed species from such efforts. In future communication regarding this project, please refer to consultation #22420-2006-F-0166. Please contact Joel D. Lusk at the letterhead address or at (505) 761-4709, if you have any questions.

Brian Hanson

Brian Hanson

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APPENDIX 1: Concurrence with "may affect, is not likely to adversely affect" the endangered interior least tern, the endangered Koster's springsnail, and the threatened Pecos bluntnose shiner.

The interior least tern nests at locations within a ¼ mile of the proposed herbicide application activities. We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the tern. Our concurrence is based on the following analyses:

• The project locations will occur outside of the tern breeding season, so there should be no physical disturbance that affects breeding.

• The herbicide and the adjuvant are considered nontoxic at the concentrations used and therefore should not affect the population of fish. Therefore, the fish prey available to the tern should not affect feeding rate, predatory success or nutritional requirements.

• The herbicide and the adjuvant are considered nontoxic at the concentrations used and therefore should not directly affect Koster's springsnail. The bare ground associated with the loss of Russian knapweed should be quickly vegetated by native grasses that are unaffected by the herbicide. Therefore, erosion should not reach the Unit 15 ditch containing the Koster's springsnail, and therefore should not smother them, nor affect their food base.

• Adherence to label and MSDS restrictions on herbicide transport and application will increase the efficacy of Russian knapweed removal and minimize the inadvertent mortality of non-target native plant species. For example, the label instructions identify how to prepare the sprayer for optimal application rate and how to maintain the sprayer nozzle during application.

• The herbicide and the adjuvant are considered nontoxic at the concentrations used and therefore should not directly affect Pecos bluntnose shiner. The bare ground associated with the loss of Russian knapweed should be quickly vegetated by native grasses that are unaffected by the herbicide. Therefore, erosion should not affect the Pecos River containing the Pecos bluntnose shiner, and therefore should not affect their gill function, nor affect their food base.

• There is no tern, Koster's springsnail or Pecos Bluntnose shiner critical habitat within the Refuge lands.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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October 18, 2006

Ms. Katherine Slick
State Historic Preservation Officer
Department of Cultural Affairs
Historic Preservation Division
Bataan Memorial Building
407 Galisteo Street, Suite 236
Santa Fe, New Mexico 87501

Dear Ms. Slick:

In compliance with Section 106 of the National Historic Preservation Act, this provides the results of an archeological survey for a proposed Partners for Fish and Wildlife Program project in Catron County, New Mexico. The landowner proposes to install approximately 3,500 linear feet of 4-strand barbed wire fence to exclude livestock from his property. Enclosed is a report entitled, "An Archaeological Survey of a Proposed 0.6 Mile Fence Line Project, Catron County, New Mexico." Dos Rios Consultants, Inc., dated September 27, 2006, NMCRIS Project No. ?? (Report prepared when the ARMS server was down).

Also enclosed are copies of the consultation letters sent to the Native American Tribes of Catron County and copies of all comment letters received from these Tribes. The project is proposed to be funded by the Partners for Fish and Wildlife Program, under the authority of the Fish and Wildlife Act of 1956 and the Fish and Wildlife Coordination Act.

Questions regarding this notification may be addressed to me, Nancy D. Riley, Partners for Fish and Wildlife Program, at 1-800-299-0196, ext. 4707. If we have not received any response within 40 days of the date of this letter, we will assume you have no comments. Please copy me on any correspondence. Thank you for your review of this notification.

Sincerely,

Nancy D. Riley

Nancy D. Riley, State Coordinator
Partners for Fish and Wildlife Program

Enclosures

cc:

Gregory Smestad, 3061 Sombra Del Rio NW, Albuquerque, NM 87107 (with enclosures)
Dave Siegel, Southwest Region, Fish and Wildlife Service, Albuquerque, NM (with enclosures)
Mike McCollum, Southwest Region, Partners for Fish and Wildlife Regional Coordinator (without enclosures)