

Appendix H

Life History of Five Federally-Listed T&E Species with Habitat Potentially Occurring in the RGCP

This section provides a detailed discussion of each of the five federally-listed T&E species with habitat potentially occurring in the RGCP. Shorelines, sandbars, and emergent wetlands are the sites in the RGCP most likely to contain T&E species habitat.

INTERIOR LEAST TERN (*Sterna antillarum*)

Status and Distribution

The interior population of the least tern was listed as an endangered species May 28, 1985 without critical habitat. Historically in New Mexico, interior least terns bred on sandbars on the Canadian, Red, and Rio Grande River systems. They now occur as remnant colonies within their historic distribution. Interior least terns nest in three reservoirs along the Rio Grande: Falcon, Amistad, and Lake Casa Blanca. The adult populations in these reservoirs ranged from 64 to 525 birds between 1985 and 1988.

Their winter home is not known, but probably includes coastal areas of Central and South America. Sightings have been made in Guyana and El Salvador. A recovery plan has been developed (USFWS 1990).

Life History and Ecology

Interior least terns are the smallest of the terns, measuring only 8 to 9 inches long, and have a black crown on the head, a white underside and forehead, grayish back and wings, orange legs, and a yellow bill with a black tip. Their diet consists of small fish which they catch in shallow waters of lakes or streams.

Nesting areas are used from late April to August. Interior least terns nest in small colonies in sparsely vegetated sandbars along rivers, sand and gravel pits, lakes or reservoirs. The nest is a shallow depression scraped in an open sandy area, gravelly patch, or barren flat. Chicks leave the nest a few days after hatching, but parental attention continues until migration in early September.

Habitat Description

Habitat requirements center around three ecological factors: presence of bare or nearly bare alluvial islands or sandbars, favorable water levels during nesting season, and food availability, mainly fish. Nesting habitat is sparsely vegetated beaches and sandbars along rivers, sand and gravel pits, lakes or reservoirs. Wide river channels with scattered sand bars are the preferred habitat. With loss of natural habitat, interior least terns have begun to utilize sand and gravel pits and dredge islands.

Reasons for Decline

Interior least terns were nearly exterminated by plume hunters. The USFWS stated that threats and reasons for decline of the interior least tern included: (1) permanent inundation or destruction of nesting areas by reservoirs and channelization projects; (2) alteration of natural river or lake dynamics causing unfavorable vegetation succession on remaining islands; (3) recreational use of sandbars; (4) nest inundation by reservoir water releases and annual spring floods; (5) water pollution; and (6) predation (Arroyo 1992). The primary threat to the interior least tern is loss and degradation of habitat. Dams, reservoirs, and other alterations to river systems have reduced their preferred sandbar nesting habitat. Fluctuating water levels in streams may cause scouring of sandbars or high flows that wash away chicks and nests. Increased recreational use of beaches and sandbars results in reduced use of such areas by the interior least tern.

Presence/Absence Analysis

At least one interior least tern was observed during fall surveys in September 2000, presumably in the process of migrating south. Altered flow conditions in the river have eliminated any suitable nesting habitat in the RGCP; however, interior least terns may use the area for feeding or resting during migration.

SOUTHWESTERN WILLOW FLYCATCHER (Empidonax traillii extimus)

Status and Distribution

The southwestern willow flycatcher (*Empidonax traillii extimus*) was placed on the federal endangered species list on February 17, 1995. Critical habitat was designated on July 22, 1997; however, there is no recovery plan in place. The southwestern willow flycatcher is also classified as endangered by the State of Texas. Historically, the southwestern willow flycatcher was widely distributed and fairly common throughout its range, especially in southern California and Arizona (Unitt 1987); however, southwestern willow flycatcher populations have apparently declined. In 1993, USFWS estimated that only 230 to 500 nesting pairs existed throughout the bird's entire range.

Life History and Ecology

The southwestern willow flycatcher (Order *Passeriformes*; Family *Tyrannidae*) is a subspecies of one of the 10 North American species in the genus *Empidonax*. The *Empidonax* flycatchers are renowned as one of the most difficult groups of birds to distinguish by sight. A.R. Phillips described the southwestern willow flycatcher in 1948 (Phillips 1948). It is generally paler than other willow flycatcher subspecies, although this difference is indistinguishable without considerable experience and training. The southwestern species differs in morphology (primarily wing formula) but not overall size. The southwestern willow flycatcher's diet is composed mainly of aerial insects. Flycatchers catch their food on the wing and will glean them from leaves. The birds forage within and above dense riparian

vegetation, water edges, backwaters, and sandbars adjacent to nest sites. Details on specific prey items are not currently known (Tibbitts *et al* 1994).

Southwestern willow flycatchers begin arriving along the Rio Grande before breeding in mid-May. Southwestern willow flycatcher territory size, as defined by song locations of territorial birds, probably changes with population density, habitat quality, and nesting stage. Early in the season, territorial flycatchers may move several hundred meters between singing locations. It is not known whether these movements represent polyterritorial behavior or is an active defense of the entire area encompassed by singing locations. However, during incubation and nesting phases, territory size, or at least the activity centers of pairs, can be very small and restricted to an area less than 0.5 hectare. Estimated breeding territory size of 0.2 hectares for a pair of flycatchers occupying a 0.6-hectare patch on the Colorado River has been documented. Activity centers may expand after young are fledged but still dependent on adults.

Once a territory and a mate are defined, nest building and egg laying occurs. The nest site plant community is typically even-aged, structurally homogenous, and dense (Brown 1988). Nests are usually found in the fork of a shrub or tree from 4 to 25 feet above the ground (Unitt 1987; Tibbitts *et al* 1994). Nests are typically made of a collection of grasses and forbs lined with small fibers. Typically, only one clutch of three to four eggs is laid. If something happens to the first clutch (parasitism or loss of young), a pair may lay another clutch later in the season. The female will incubate the eggs for approximately 12 days, and the young fledge (are fully feathered) approximately 13 days after hatching (King 1955). The young fledge by late June or early July (Tibbitts *et al* 1994). Flycatchers begin to migrate to their winter habitat around September.

Habitat Description

The southwestern willow flycatcher breeds in dense riparian habitats along rivers, streams, or other wetlands. Vegetation can be dominated by dense growth of willows (*Salix* sp.), seepwillow (*Baccharis* sp.), or other shrubs and medium sized trees. Almost all southwestern willow flycatcher breeding habitats are within proximity (less than 20 yards) of water or very saturated soil. Nesting habitat for the southwestern willow flycatcher varies greatly by site and includes such species as cottonwood, willow, tamarisk, box elder, and Russian olive. Species composition, however, appears less important than plant and twig structure.

Four main “types” of preferred habitat have been described. They are as follows (adapted from Sogge, *et al* 1997):

1. Monotypic high - elevation willow: nearly monotypic stands of willow, 9-21 ft in height with no distinct overstory layer; often associated with sedges, rushes, nettles and other herbaceous wetland plants; usually very dense structure in lower 6 ft; live foliage density is high from the ground to the canopy.
2. Monotypic exotic - nearly monotypic, dense stands of exotics such as salt cedar or Russian olive, 12-30 ft in height forming a nearly continuous, closed canopy (with

no distinct overstory layer); lower 6 ft often difficult to penetrate due to branches; however, live foliage density may be relatively low, 3-6 ft above ground, but increases higher in the canopy; canopy density uniformly high.

3. Native broadleaf dominated - composed of single species or mixtures of native broadleaf trees and shrubs, including cottonwood, willows, boxelder, ash, alder, and buttonbush, height from 9-45 ft; characterized by trees of different size classes; often a distinct overstory of cottonwood, willow, or other broadleaf tree, with recognizable subcanopy layers and a dense understory of mixed species; exotic/introduced species may be a rare component, particularly in the understory.
4. Mixed native/exotic - Dense mixtures of native broadleaf trees and shrubs mixed with exotic/introduced species such as salt cedar or Russian olive; exotics are often primarily in the understory, but may be a component of overstory; the native and exotic components may be dispersed throughout the habitat or concentrated as a distinct patch within a larger matrix of habitat; overall, a particular site may be dominated primarily by natives or exotics, or be a more-or-less equal mixture.

Reasons for Decline

The most significant historical factor in the decline of the southwestern willow flycatcher is the extensive loss, fragmentation, and modification of riparian breeding habitat. Large-scale losses of southwestern wetlands have occurred, particularly the cottonwood-willow riparian habitats of the southwestern willow flycatcher (Johnson *et al* 1987; Unitt 1987). Changes in the riparian plant community have reduced, degraded, and eliminated nesting habitat for the southwestern willow flycatcher, curtailing its distribution and numbers (Cannon and Knopf 1984; Taylor and Littlefield 1986; Unitt 1987).

Habitat losses and changes occurred (and continue to occur) because of urban, recreational, and agricultural development, water diversion and impoundment, channelization, livestock grazing, and replacement of native habitats by introduced plant species. Hydrological changes, natural or human-induced, can greatly reduce the quality and extent of southwestern willow flycatcher habitat. Although riparian areas are often not considered fire-prone, several sites with relatively large numbers of breeding southwestern willow flycatchers were recently destroyed by fire (Paxton *et al* 1996), and many others are at risk to similar catastrophic loss. Fire danger in these riparian systems may be exacerbated by conversion from native to exotic vegetation (such as salt cedar), diversion or reduction of surface water, and drawdown of local water tables.

Presence/Absence Analysis

The southwestern willow flycatcher was recently documented in salt cedar communities in the Seldon Canyon region of the Rio Grande. These communities, however, are located outside the USIBWC project boundaries. Suitable habitat does not occur within the RGCP area. Although salt cedar does exist along the river banks, these communities do not meet the minimum patch size and density requirements for the southwestern willow flycatcher.

BALD EAGLE (*Haliaeetus leucocephalus*)

Status and Distribution

The bald eagle was listed as endangered on March 11, 1967 and a federal recovery plan was written and approved in 1995. A proposed rule to reclassify the bald eagle from endangered to threatened in most of the lower 48 states was published on July 12, 1994 (Federal Register [FR] 1994) and a final rule to reclassify the bald eagle from endangered to threatened in the lower 48 states was published on July 12, 1995 (FR Vol. 60:36000-36010). This ruling became effective August 11, 1995 (FR 1995). The U.S. Fish and Wildlife Service proposed to remove the bald eagle from the endangered species list on July 2, 1999.

Life History and Ecology

The species is primarily water-oriented, and the majority of the populations occurring in New Mexico are found near streams and lakes. On the other hand, there are some "dry land" areas where these eagles occur regularly, most notably in the region between the Pecos Valley and the Sandia, Manzano, Capitan, and Sacramento mountains, plus on the Mogollon Plateau. The birds typically night-roost in groups in trees, usually in protected sites such as canyons. Birds were most often seen soaring, but on occasion they were also found perched in trees or on snags. Bald eagles are often found in woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins. The bald eagle can also be found in grasslands dominated by wild oat (*Avena* spp.), ripgut brome (*Bromus rigidus*), soft chess (*Bromus mollis*), bur clover (*Medicago hispida*), and filaree (*Erodium* spp.) with less than 5 percent wood cover. These birds require large trees or cliffs near water with a good supply of fish. They winter beside oceans, rivers, lakes, or where carrion is available. Breeding habitat primarily consists of lakes and rivers within the Sonoran desert; winter habitat is usually lakes within coniferous forests (Haynes and Schuetze 1997).

At Caballo Reservoir, NM, gizzard shad were highly available to bald eagles for capture and consumption. The major food items of bald eagles in New Mexico appear to be waterfowl, fish, and carrion. Mammals such as jackrabbits (*Lepus* spp.) are also taken, especially by dry land eagles. The bulk of a bald eagle's diet is fish, however, they will also feed on waterfowl, small mammals (especially rabbits), and carrion (Haynes and Schuetze 1997).

Habitat Description

The bald eagle is primarily water-oriented, and the majority of the populations occurring in New Mexico are found near streams and lakes. On the other hand, there are some "dry land" areas where these eagles occur regularly, most notably in the region between the Pecos Valley and the Sandia, Manzano, Capitan, and Sacramento mountains, in addition to the Mogollon Plateau. The birds typically night-roost in groups in trees, usually in protected sites such as canyons. Bald Eagles are often seen in association with open expanses of water. Other than this one requirement, however, the species probably occurs in virtually all associated habitats. Birds are most often seen soaring, but on occasion they were also found perched in trees or on snags. Woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins provide suitable habitat for bald eagles. Grasslands dominated by wild oat (*Avena* spp.), ripgut brome (*Bromus rigidus*), soft chess (*Bromus mollis*), bur clover (*Medicago hispida*), and filaree (*Erodium* spp.) with less than 5 percent wood cover are also frequented by bald eagles. These birds usually require large trees or cliffs near water with a good supply of fish. They winter beside oceans, rivers, lakes, or where carrion is available. Bald Eagles prefer areas with high amounts of water-to-land edge and where prey is concentrated or generally available; in AZ, they are often associated with open waters, such as lakes and perennial streams. Breeding habitat primarily consists of lakes and rivers within the Sonoran desert; winter habitat is usually lakes within coniferous forests (Haynes and Schuetze 1997).

Reasons for Decline

When America adopted the bird as its national symbol in 1782, as many as 100,000 nesting bald eagles lived in the lower 48 states. By 1963, only 417 nesting pairs remained due to habitat destruction and the use of DDT and other organochlorine pesticides which caused egg shells to thin and crack, resulting in nesting failures. Today, this number has risen to an estimated 5,748 nesting pairs. There are several reasons for the listing of bald eagles as threatened, these include: Loss of habitat, such as development near lakes, cutting of roosts and nest trees, and loss of riparian habitat; Reproductive impairment from certain pesticides and contaminants; Disturbance during nesting (e.g. boats, vehicles, or individuals approaching too close to nests); And, random shootings, lead shot ingestion from waterfowl carcasses, and entanglement in fishing line and tackle (Haynes and Schuetze 1997).

Presence/Absence Analysis

Marginal habitat exists in the northern most reaches of the RGCP near Percha Diversion Dam.

WHOOPING CRANE (*Grus americana*)

Status and Distribution

The whooping crane was listed as endangered on March 11, 1967 (35 FR 8495). Over 10 years later critical habitat was designated for the whooping crane (43 FR 20938). As of 1996 the adult whooping crane population numbered 205 in the wild (Meine and Archibald 1996). This is up from the all time population low of 15 birds in the winter of 1941-42. Today, this population of migrating whooping cranes is found between Wood Buffalo National Park (Canada, breeding range) and Aransas National Wildlife Refuge (Texas, U.S., wintering range). This Aransas-Wood buffalo population (AWP) remains the only self-sustaining wild population.

In the nineteenth century, the principal breeding range extended from central Illinois northwest through northern Iowa, western Minnesota, northeastern North Dakota, southern Manitoba, and Saskatchewan, to the vicinity of Edmonton, Alberta. A nonmigratory population of whooping cranes existed in Louisiana until they were extirpated in the 1940's.

In 1975, experimental efforts to establish a second migratory flock through cross-fostering began at Grays Lake National Wildlife Refuge in southeastern Idaho. Eggs were transferred from the nests of AWP whooping cranes to nests of greater sandhill cranes. Sandhill crane "foster parents" raised the whooping cranes and taught them their traditional migration route to wintering grounds along the middle Rio Grande Valley in New Mexico. These fostered cranes did not form pair bonds and therefore did not breed. Due to the failure of the experiment and other extenuating factors, the foster program was halted. There are only three whooping cranes left in the New Mexico foster population (NMNHP 1997). Due to failure of the experiment, the USFWS proposed to designate the whooping crane population in the Rocky Mountains (New Mexico) as an experimental nonessential population and remove whooping crane critical habitat designations from four national wildlife refuges: Bosque del Apache in New Mexico, Monte Vista and Alamosa in Colorado, and Grays Lake in Idaho. There is a reintroduced population in Florida consisting of 26 subadult captive-produced whooping cranes released in 1993-1995 in the Kissimmee Prairie. This population is considered an experimental nonessential population.

Life History and Ecology

The whooping crane is one of 15 species of cranes found on the planet. Whooping cranes are the tallest birds in North America with males averaging heights of 4.5 ft. These birds can weigh up to 7.5 kg, and have a wingspan up to 7.5 ft wide.

Whooping cranes eat snails, larval insects, leeches, frogs, minnows, small rodents, and berries. They may scavenge dead ducks, marsh birds, or muskrats. During migration they stop to eat aquatic animals, roots, and waste grain in stubble fields. At their wintering grounds, they eat shellfish, snakes, acorns, small fish, and wild fruit.

Whooping cranes mate for life. Adult birds are able to breed in their third or fourth year. In early spring, adults display elaborate courtship rituals, bobbing, weaving, jumping and calling with their mates. Experienced pairs may not breed every year, especially when habitat conditions are poor. The female lays two large eggs and both adults incubate them for the next month. The eggs will hatch at different times, and the second chick is often pushed out

of the nest or starves. Pairs will renest if their first clutch is destroyed or lost before mid-incubation.

Habitat Description

The nesting grounds of the AWP within Wood Buffalo National Park are in poorly drained areas where muskeg and boreal forest intermix. Nesting territories range widely in size from 1.3 to 47.1 km². Whooping cranes nest along the marshy areas among bulrushes, cattails, and sedges that provide food and protection from predators.

Most of the winter is spent in Texas in brackish bays, estuarine marshes, and tidal flats of the Gulf of Mexico in and near Aransas National Wildlife Refuge. Saltgrass, cordgrass, and other aquatic vegetation dominate these areas.

Reasons for Decline

Whooping cranes rapidly declined in the late 1800s and early 1900s as a result of hunting, collecting (eggs and feathers), and conversion of their habitat to agriculture. Habitat loss and alteration is the greatest threat to these birds, especially at Aransas National Wildlife Refuge. Pollution, waterway construction, oil drilling, and human recreational activities are threats whooping cranes face today. The primary cause of death of adult whooping cranes is collisions with power lines or fences during migration. Also, shooting (accidental) of whoopers is a cause of death for these protected birds when they are mistaken for sandhill cranes during sandhill crane hunting season. Loss of genetic diversity and subsequent inbreeding depression are general concerns for the small and narrowly based whooping crane population (Mirande *et al* 1993).

Presence/Absence Analysis

The whooping crane's preferred habitat of marshes and prairie potholes is rare to non-existent in the RGCP area. There are no prairie potholes, and marsh vegetation is generally confined to small sand bar islands, arroyo mouths, and wasteways. In addition, the migratory path of the whooping crane has been extensively documented, and the crane has never been observed to use the RGCP area.

PIPING PLOVER (*Charadrius melodus*)

Status and Distribution

The Piping Plover (*Charadrius melodus*) has been reported in New Mexico on only six occasions and is currently holds a federal status of threatened. In New Mexico, the Piping Plover is considered a species of concern (BISON-M # 041505, 2000).

Life History and Ecology

This species breeds (or bred) locally from Alberta and Manitoba south to Nebraska, in the Great Lakes region, and along the Atlantic Coast from New Brunswick south to North Carolina. The species migrates mainly through the Mississippi Valley and along the Atlantic Coast, and it winters primarily along the Atlantic and Gulf coasts from South Carolina to Texas. In New Mexico, this plover is known only as a rare spring (April) migrant, having been verified at Springer Lake (Colfax Co.) and reliably reported at Bosque del Apache National Wildlife Refuge in Socorro Canyon (BISON-M # 041505, 2000).

Habitat Description

At all seasons, the piping plover occurs on sandflats or along bare shorelines of rivers, lakes, or coasts. The species, which occupies its breeding grounds from late March to August, nests on beaches in the Great Lakes and Atlantic Coast areas, bare areas on islands in the upper Missouri River system, and patches of sand, gravel, or pebbly-mud on the alkali lakes of the northern Great Plains. Most adults return to their previous nesting sites, where males set up and defend territories spaced 0.25-2.0 km apart (Haig and Oring 1987). Both sexes participate in digging a shallow nest scrape in the sand and lining it with tiny pebbles or shells. They also share in the incubation of the four-egg clutch and the brooding of the young. When feeding, plovers run in short starts and stops. The piping plover forages on a variety of invertebrates, including marine worms, fly larvae, beetles, crustaceans, mollusks, and other small animals and their eggs (Bent 1929). During the winter, piping plovers use algal, mud, and sand flats along the Gulf Coast.

Reasons for Decline

Habitat destruction and poor breeding success are major reasons for the population decline. Plovers that use prairie alkali lakes suffer significant losses of eggs and chicks to predators that have increased in abundance in recent decades. Construction of reservoirs on the rivers and channelization has resulted in a loss of sandbar habitat. Plovers using the remaining sandbars on rivers are susceptible to predation, direct disturbance by people, and water fluctuations as the result of dam operations.

Presence/Absence Analysis

The piping plover's preferred habitat of mudflats and sandbars is present in the RGCP area, however, the piping plover is a rare migrant to New Mexico and never documented in the RGCP.

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