

# Memorandum

To : Mr. Harold Cribbs, Executive Secretary  
Fish and Game Commission

Date : January 3, 1990

From : Department of Fish and Game

Subject: Agenda Item, February 5-6, Sacramento, Petition to List Willow Flycatcher (*Empidonax traillii*) as Endangered (Amend Section 670.5, Title 14, California Code of Regulations)

Research conducted by the Department staff and other workers confirms that Willow Flycatchers have declined precipitously and face extirpation in the State if current trends are not reversed soon.

The attached petition details the historic and current population status as well as threats to the species and its habitat. Based on this information, we are recommending that the Commission take action to list this species as endangered in California. An Executive Summary is also attached.

This petition is submitted for inclusion on the Fish and Game Commission agenda for the February 5-6, 1990 meeting in Sacramento. If there are any questions please contact Mr. Kent Smith, coordinator of the Nongame Bird and Mammal Section at 5-1146.

COPY Original Signed By:  
P. S. Jensen  
FOR

Pete Bontadelli  
Director

Attachment

cc: ✓ Ms. Susan Cochrane,  
Natural Heritage Division  
Environmental Services Division  
Regional Managers,  
Regions 1, 2, 3, 4 and 5

January 3, 1990

## WILLOW FLYCATCHER PETITION

### EXECUTIVE SUMMARY

The Willow Flycatcher (*Empidonax traillii*), a small songbird, was formerly a common summer resident throughout California. Its breeding range extended wherever extensive willow thickets occurred. The species has now been eliminated as a breeding bird from most of its former range in California. Only five populations of significance remain in isolated meadows of the Sierra Nevada and along the Kern, Santa Margarita, San Luis Rey and Santa Ana rivers in southern California. The smallest of these consists of about six pairs and the largest about 44 pairs. The total population estimate for California is about 200-240 pairs of Willow Flycatchers.

The loss of riparian habitat is the principal reason for the decline of California's Willow Flycatcher population and contraction of the species range. Impacts to habitat and breeding birds associated with livestock grazing have also been implicated in the decline of the species. Nest parasitism by Brown-headed Cowbirds (*Molothrus ater*) may have contributed significantly to population reductions.

More than a decade ago the California Department of Fish and Game designated the Willow Flycatcher a Bird Species of Special Concern, highest priority. This finding prompted several years of Department studies to further assess the status of Willow Flycatchers in California. Reports from the Pacific Coast and Southwest resulted in addition of the Willow Flycatcher to the National Audubon Society's Blue List of declined bird species in 1980 and 1986. In 1984, the Willow Flycatcher was added to the U.S. Forest Service, Region 5, Sensitive Species list. The U.S. Fish and Wildlife Service has also designated the Willow Flycatcher as a sensitive species for Region 1 (Washington, Idaho, Oregon, California and Nevada) based on significant declines in this region. The Southwestern Willow Flycatcher (*E. t. Extimus*), with small populations in southern California, is also a U.S. Fish and Wildlife Service candidate species.

The Willow Flycatcher is seriously endangered in a significant portion of its range in California due primarily to habitat loss and degradation as a result of various human activities including livestock grazing and nest parasitism by Brown-headed Cowbirds. This bird species qualifies for classification as Endangered pursuant to Section 2062 of the California Fish and Game Code. The Department recommends Endangered status for the Willow Flycatcher based on studies conducted by the Nongame Bird and Mammal Section of the Wildlife Management Division and independent researchers over the past eleven years.

A PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION

for action pursuant to section 670.1, Title 14, California Administrative Code, and sections 2072 and 2072.3 of the Fish and Game Code, relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Common Name: Willow Flycatcher  
Scientific Name: *Empidonax traillii*

II. RECOMMENDED ACTION:

Endangered: X      List: X  
Threatened:      Delist:

III. SUMMARY OF REASONS FOR RECOMMENDED ACTION:

The Willow Flycatcher was formerly a common summer resident throughout California, breeding wherever extensive willow thickets occurred (Grinnell and Miller 1944). It has now been extirpated as a breeding bird from most of its California range. Most of the remaining populations occur in isolated meadows of the Sierra Nevada and along the Kern, Santa Margarita, San Luis Rey and Santa Ana rivers (Remsen 1978, Serena 1982, Unitt 1987, Laymon pers.comm.).

The loss of lowland riparian woodlands is probably the principal reason for the reduction of California's Willow Flycatcher population and the contraction of their range (Remsen 1978, Serena 1982). Livestock grazing has been suggested as a factor in the decline of this species in the Sierra Nevada and elsewhere (Serena 1982, Stafford and Valentine 1985, Taylor 1986, Taylor and Littlefield 1986, Flett and Sanders 1987). Nest parasitism by Brown-headed Cowbirds (*Molothrus ater*) associated with grazing may also have contributed significantly to population reductions (Gaines 1977, Serena 1982, Beedy and Granholm 1985, Sharp 1986, Taylor 1986, Taylor and Littlefield 1986).

Over ten years ago the California Department of Fish and Game designated the Willow Flycatcher a Bird Species of Special Concern, highest priority, because of its greatly reduced population and range in the state (Remsen 1978). In 1980, reports from the Pacific Coast and Southwest resulted in addition of the species to the National Audubon Society's Blue List (Arbib 1979). The Willow Flycatcher was again included on the Blue List in 1986 (Tate 1986). In 1984, the Willow Flycatcher was added to the U.S. Forest Service Region 5 Sensitive Species list. The U.S. Fish and Wildlife Service has also designated the Willow Flycatcher as a sensitive species for Region 1 (Washington, Idaho, Oregon, California, and Nevada) based on significant declines in this region (Sharp 1986).

The Willow Flycatcher is seriously threatened in a significant portion of its range in California due primarily to habitat loss and degradation and nest parasitism by Brown-headed Cowbirds. This species qualifies for classification as endangered pursuant to Section 2062 of the California Fish and Game Code.

## SUPPORTING INFORMATION

### IV. NATURE AND DEGREE OF THREAT:

Threats to Willow Flycatcher populations are primarily due to destruction and modification of lowland and valley riparian habitat due to agriculture expansion, inundation of habitat for hydroelectric development, construction of housing projects, mountain meadow livestock grazing, and nest parasitism by Brown-headed Cowbirds. Other factors that might be involved in the decline of this species include loss of meadow habitat due to fires set by grazers, lodgepole pine encroachment on meadows, and habitat loss on the wintering grounds (Serena 1982).

The majority of California's breeding Willow Flycatchers are concentrated in the following areas: Little Truckee River, Shaver Lake, Santa Margarita River, San Luis Rey River, the Nature Conservancy's Kern River Preserve, and the adjacent South Fork Wildlife Area lands, owned by the U.S. Army Corps of Engineers but managed by the Department of Fish and Game. The Little Truckee population appears to be declining and is vulnerable to weather fluctuations (Sanders and Flett 1989), the Shaver Lake population was recently threatened by hydroelectric development (although this threat has abated for now), and two dams have been proposed on the Santa Margarita River, which would flood much of the existing riparian habitat. The Kern River Preserve population is suffering heavy nest parasitism by Brown-headed Cowbirds (Harris pers. obs). Whitfield (pers. comm.) noted 18 of 35 nests parasitised in 1989. The South Fork Wildlife Area is threatened by periodic inundation and possible livestock grazing.

Without protective measures, the trend of habitat loss, nest parasitism by Brown-headed Cowbirds, and the failure of scattered populations to replace themselves will result in the further decline of Willow Flycatcher populations and may lead to their extirpation as a breeding species in California (Sanders and Flett 1989).

### V. HISTORIC AND CURRENT DISTRIBUTION

The Willow Flycatcher was formerly found as a breeding species throughout California wherever its habitat, riparian willow thickets, could be found (Fig. 1) (Grinnell and Miller 1944). It nested at all elevations from sea level to about 2500 meters (8000 feet), and was apparently absent as a breeding species only from the hot deserts, the northwest coastal forest (though present locally along some rivers and streams) and the higher elevations above 8000 feet in the Sierra Nevada, Cascades, and Klamath Mountains (Grinnell and Miller 1944). Ridgeway referred to the Willow Flycatcher as the most abundant and widely distributed *Empidonax* flycatcher in the state of California (in Belding 1890).

The historic breeding distribution of Willow Flycatchers in California probably included representatives of three subspecies (Phillips 1948, Unitt 1987). *Empidonax traillii extimus* (the southwestern subspecies) occurred in southern California (Fig. 1) with its northern limits represented by specimens from Independence (Inyo Co.), the south fork

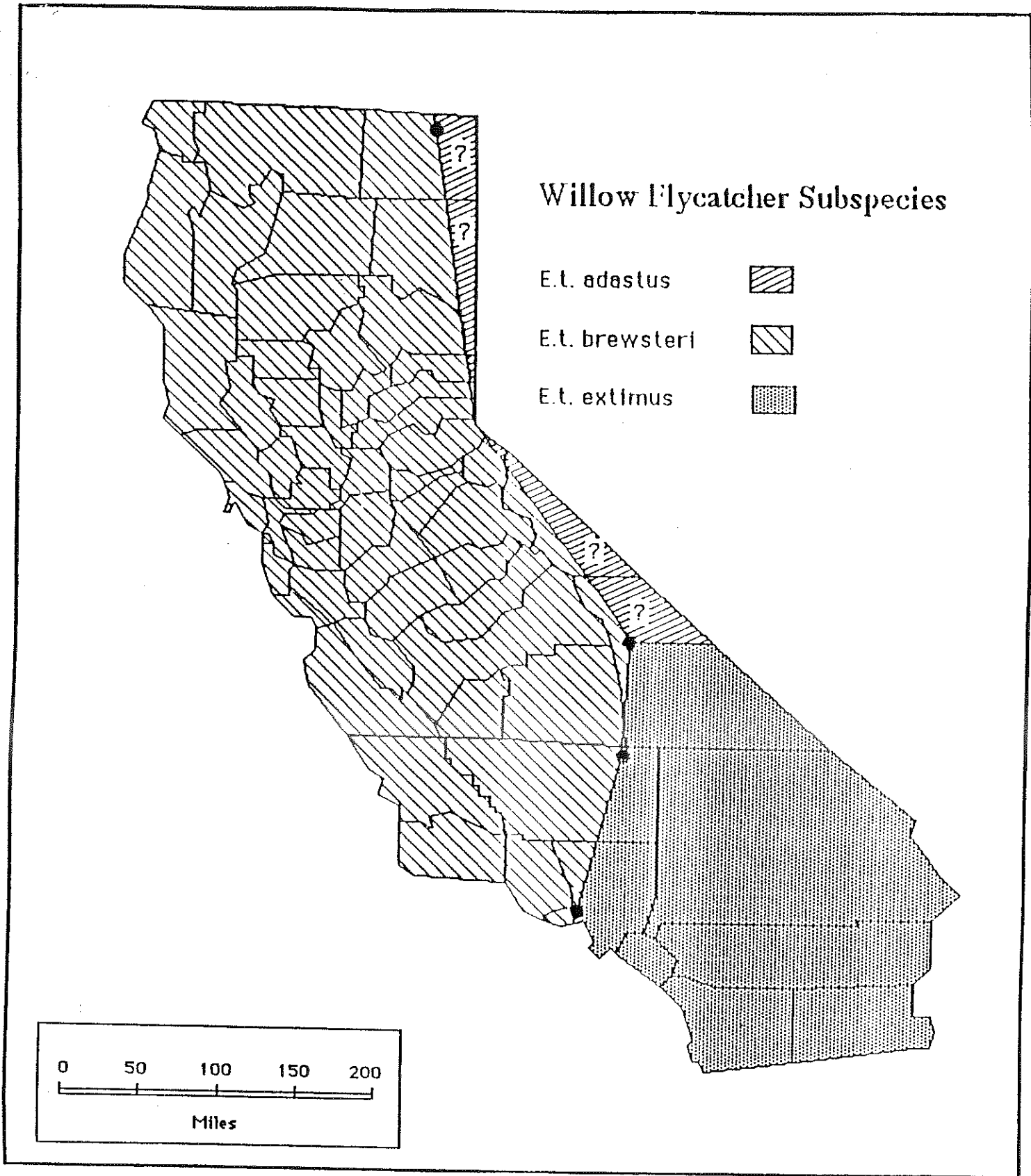


Figure 1. Historic distribution of subspecies of *Empidonax traillii* in California.

of the Kern River near Weldon (Kern Co.) and the San Fernando Valley (Los Angeles Co.). This subspecies has suffered severe declines throughout its range, and the Kern River population in California is the largest remaining population (Unitt 1987). The majority of the remainder of the state was occupied by *E. t. brewsteri* (coastal subspecies extending to British Columbia). One specimen of *E. t. adastus* (Great Basin subspecies) is known from Goose Lake (Modoc Co.), and Phillips (1948) thought that portions of northern California might be a zone of intergradation between *brewsteri* and *adastus*. The taxonomic status of populations east of the Sierra/Cascade crest between Goose Lake and Independence is unclear, though they are likely to be *E. t. adastus* (Unitt 1987).

The current distribution of this species consists of a small number of isolated populations (Fig. 2), with a somewhat larger number of sites at which one or two individuals have been sighted during the 1980s (Remsen 1978, Serena 1982, Harris et al. 1987, 1988, Unitt 1987) (Fig. 3). Willow Flycatchers have disappeared as a breeding species from the Central Valley, central coast, and most of the south coast regions (Gaines 1974, Stallcup and Greenberg 1974, McCaskie et al. 1979, Garrett and Dunn 1981, Unitt 1984, Roberson 1985). The current distribution map includes all known records during this period. Most of the sites with one or two birds have not been occupied consistently throughout this period. The majority of populations are in isolated mountains in the Sierra Nevada, Cascade, Klamath, and Siskiyou Mountain regions. These populations are all marginal because they are at high elevations relative to the species' historical breeding range, and they are geographically at the edge or far from the areas in which the species was most abundant. As noted elsewhere in this petition, all of these populations, because of their marginal habitat, small size, and isolated nature, are subject to local extirpation. The principal populations within this general area are the McCloud River (Siskiyou Co., 6 singing males in 1987), Westwood meadow (Lassen Co., 6 singing males in 1986), the Little Truckee River (about 25 singing males), and several meadows in the Shaver Lake area (total of about 10 singing males).

The remaining populations of significance are within the range of *E. t. extimus*. These include the largest remaining population in California, along the south fork of the Kern River (Kern Co., 35-44 singing males). Two additional populations occur in San Diego Co., along the Santa Margarita River (about 15 singing males) and along the San Luis Rey River (about 12 singing males). As in northern California, there are a few additional locations in which singing males have been found in recent years, but most of these have not been consistently occupied and none have had more than 4 singing males. These three populations occur within the area in which Willow Flycatchers were historically abundant. The sites thus represent the prime habitat types for this species. However, such lowland sites are more vulnerable to Brown-headed Cowbird parasitism, as historic records (Hanna 1928, Rowley 1930, Gaines 1974) and current studies (Harris in prep.) (Whitfield in prep.) suggest. The Santa Margarita River population is somewhat protected because Brown-headed Cowbirds are being trapped and removed as part of efforts to recover Least Bell's Vireo (*Vireo bellii pusillus*) populations.

# Major Populations of Willow Flycatchers

- 1. Little Truckee River
- 2. Shaver Lake
- 3. Kern River Preserve
- 4. Santa Margarita River
- 5. San Luis Rey River

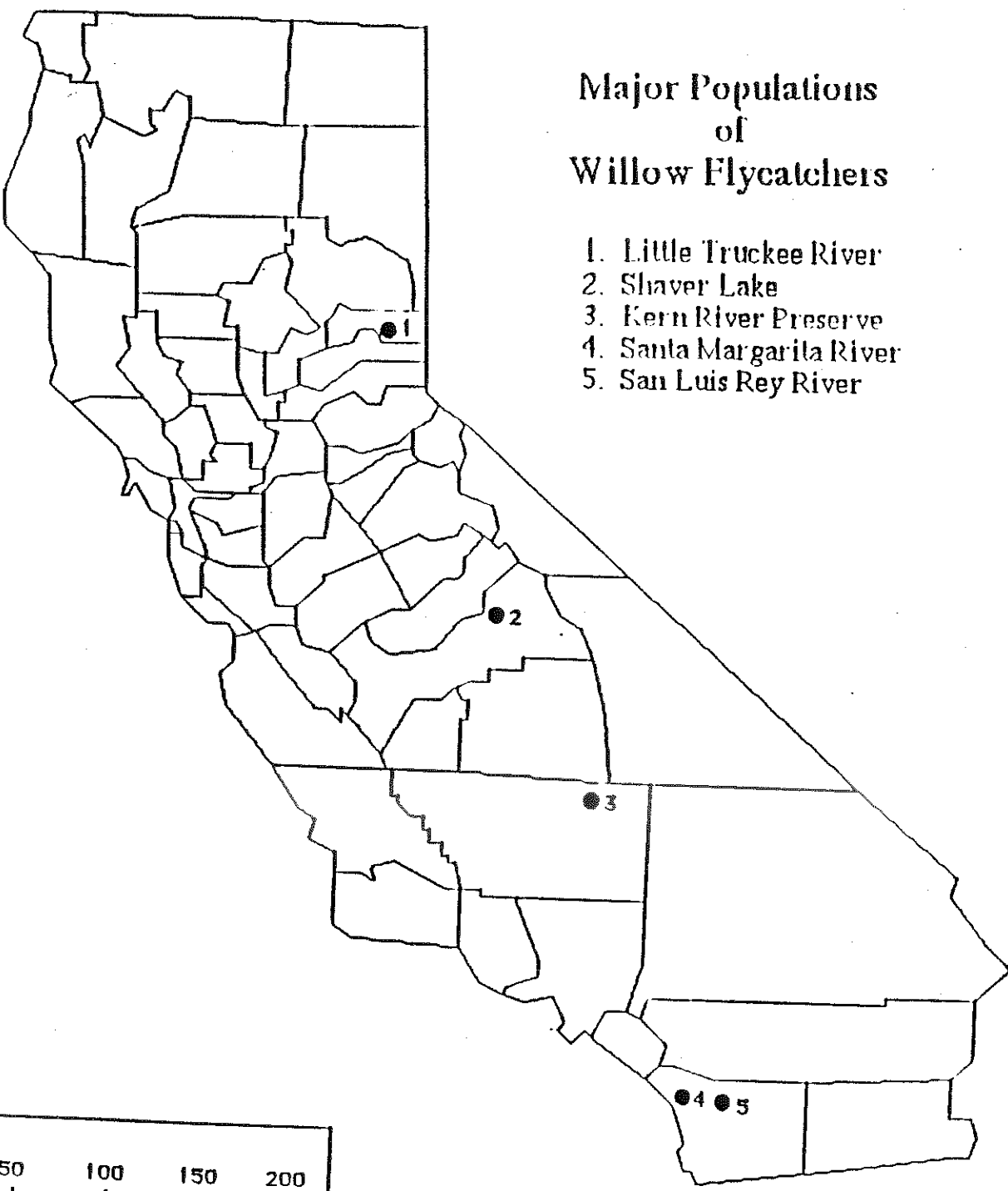
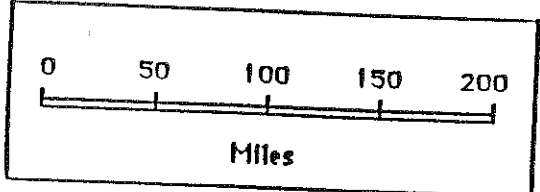


Figure 2. Major populations of Willow Flycatchers in California (from Harris et al. 1988)

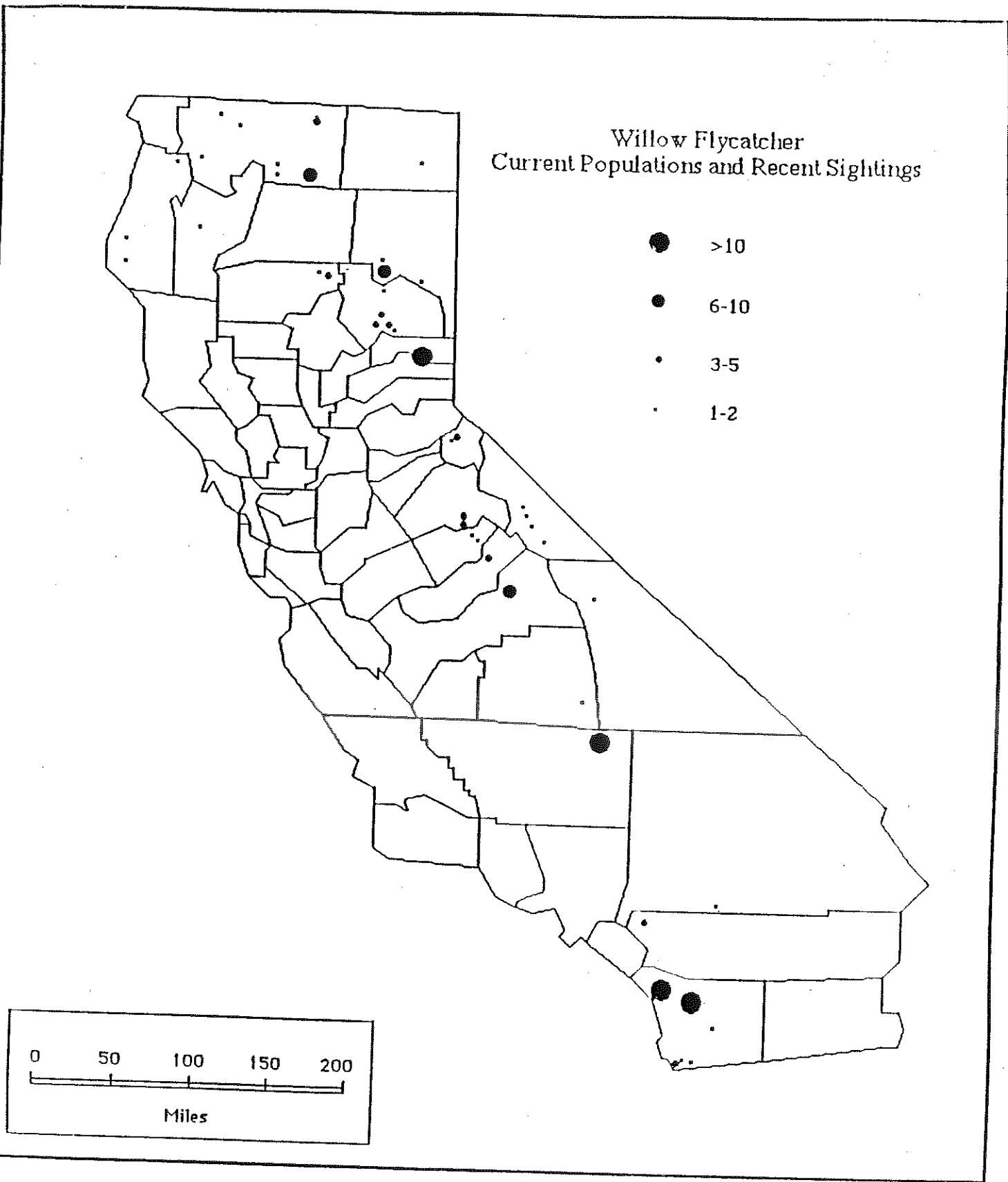


Figure 3. Current populations and recent sightings of Willow Flycatchers in California. This figure is based on field surveys and literature reviews conducted in 1986.



In summary, the current range of the Willow Flycatcher consists of isolated sites which are largely in marginal locations. The majority of sites are in isolated meadow systems in the Sierra Nevada and Cascade mountains and at two locations in San Diego County. The species has been virtually extirpated from the heart of its former breeding range in central California.

Reintroduction of Willow Flycatchers to their historic range would be difficult, given the lack of knowledge and tested techniques for reintroduction of migratory passerine birds. The more likely means of recovery for the species is by habitat restoration. However, if such restoration is attempted in lowland California, control of Brown-headed Cowbird populations will be necessary to remove the threat of nest parasitism.

## VI. HISTORIC AND CURRENT ABUNDANCE

The Willow Flycatcher was formerly considered common in the state wherever riparian thickets existed (Grinnell and Miller 1944). Although it is not possible to determine the historic population number, Ridgeway considered it to be the most abundant *Empidonax* species in California (cited in Belding 1890). Areas where it was most abundant included the Central Valley and the southern and central coastal region (Fig. 1). Specific areas mentioned in which Willow Flycatchers were common or abundant include the Kings River (Goldman 1908), the vicinity of Buena Vista Lake (Linton 1908), the south and central coast in general (Willetts 1912, 1933), the swampy thickets near Los Angeles (Belding 1890), the valley rivers of central California (Belding 1890), the San Francisco Bay region (Barlow 1900), and the Colorado River (references in Unitt 1987). In the Sierra Nevada, Willow Flycatchers were common along willow-lined streams, especially in broad river bottomlands such as Yosemite Valley (Grinnell and Storer 1924, Grinnell et al. 1930, Sumner and Dixon 1953). Based on these reports and current sightings, Willow Flycatchers were probably fairly common, though restricted to localized suitable habitat, in montane northern California and the northern coast ranges. Based on the absence of suitable habitats in arid interior coast ranges and northeastern California, and the lack of reports of concentrations of Willow Flycatchers, the species is probably uncommon and localized east of the Sierra Nevada and Cascade mountains and in the interior coast ranges. As noted in the distribution section, Willow Flycatchers were historically and are currently absent from elevations above 8000 feet and from the hot deserts.

Surveys funded by the Department in 1986 (Harris et al. 1988) resulted in sightings of 118 singing males in the Sierra Nevada and Cascades. The majority of Sierra Nevada Flycatchers were located in three general areas. Forty-three singing males were found between the Little Truckee River (Tahoe National Forest) and Westwood Meadow (Lassen National Forest), 25 of which were along the Little Truckee River. Nineteen singing males were found in the central Sierra, from Ackerson Meadow (Stanislaus National Forest) to the Shaver Lake area (Sierra National Forest). The south fork of the Kern River had the largest population of any single location with 39 singing males. In addition to these major population concentrations, small numbers were located on the east

side of the Sierra Nevada, near Mono Lake (3 singing males) and in the vicinity of Carson Pass (5 singing males). There is a large gap in the distribution of sightings between the central Sierra and the Kern River. There have been a few reports in recent years of Willow Flycatchers in the Sequoia and Kings Canyon National Parks (L. Norris, pers. comm.) but no birds were found during a 1987 survey, and there seems to be insufficient habitat to support large populations.

Northern California sightings outside the Sierra/Cascade region have been sporadic and generally have involved one or two individuals. Singing males have been reported in recent years from Forks of Salmon (1), vicinity of Mt. Shasta (1), and Lower Klamath Lake (3 nests in 1985) (M. Robbins, pers. comm.). Singing males have been reported from Humboldt County in the vicinity of Garberville (R. LeValley, pers. comm.) and from Willow Creek (Serena 1982); these sightings probably were migrants (R. LeValley, pers. comm.) and have not been included on the distribution map. Recent U.S. Fish and Wildlife Service Breeding Bird Surveys have produced a few sightings in the northern counties (S. Droege, pers. comm.). There are 29 survey routes in Humboldt, Trinity, Del Norte, Siskiyou, Shasta, and Modoc counties. Only seven of these routes have recorded Willow Flycatchers during the period from 1982 to 1985 (4,3,3, and 6 total birds respectively in the four years). A single male was observed at Modoc National Wildlife Refuge for the first time in 1985, and a pair fledged a single young at the NWR in 1986 (W. Radke, pers. comm.). This successful nesting may have resulted from protection of riparian habitat from grazing over the last 6 years. During summer 1987, U.S. Forest Service biologists located 6 singing males at scattered locations along seven miles of the McCloud River (Shasta-Trinity National Forest). Further surveys in northern California will likely produce more sightings, but there is no indication that large populations occur in this part of the state.

In southern California, Unitt (1987) and L. Salata (pers. comm.) suggested breeding populations of about 15 pairs on the Santa Margarita River and about 12 pairs on the San Luis Rey River (both in San Diego County). Unitt (1987) lists several southern California sites at which small numbers of Willow Flycatchers have been reported in recent years, including the Prado Flood Control Basin (Riverside Co.), Big Morongo Wildlife Preserve (San Bernardino Co.), Lake Cuyamaca, Sweetwater Reservoir, Tijuana River Valley, and Lower Otay Lake (all in San Diego Co.). These sites have not been occupied consistently. (There was a statewide total for the 1986 known population of about 145 singing males. About 70% of the statewide total were from the five largest populations: Little Truckee River, Shaver Lake area, Kern River, Santa Margarita River, and San Luis Rey River.

One way of estimating the current state population would be to simply take the maximum number of individuals observed at all of the sites known to be occupied in the 1980s. This gives a figure of approximately 240 singing males. However, the number of singing males in any single year is certainly less, as most of the smaller sites are occupied intermittently (Serena 1982, Unitt 1987, Harris et al. 1987, 1988). In addition, there is considerable evidence that not all singing males are indicative of breeding pairs (Stafford and Valentine 1985, Flett and Sanders 1987, Valentine 1987, Sanders and Flett 1988,

Harris in prep.). A conservative estimate would suggest that the number of breeding pairs might be 10-20% fewer than the number of singing males. This further supports the conclusion that there are probably not many more than 200 pairs remaining in California.

#### VII. SPECIES DESCRIPTION AND BIOLOGY:

Willow Flycatchers perch vertically on leafless twigs while they sing, survey their territories for intruders, and sally forth to catch flying insects. The birds' average length is about 15 cm (5.75 in). The brownish-olive back contrasts with the pale throat and breast. The base of the beak is relatively wide and well-suited to catching food in mid-air. The Willow Flycatcher closely resembles other *Empidonax* species in California, but the slightly browner coloration, generally lighter appearance through the breast and throat, and lack of an eye ring helps to distinguish it from other species. The sexes are similar and cannot be separated by plumage. Willow Flycatcher males are best distinguished by their song, a sneezy-sounding "fitz-bew" call, which begins at daybreak.

The description above refers primarily to Willow Flycatchers inhabiting montane meadows. Habitat used by subspecies of Willow Flycatchers (*E. t. extimus* and *E. t. adastus*) along the Kern, Santa Margarita, San Luis Rey, and Santa Ana Rivers differs from the montane habitat described above, although the basic requirements of water and shrubby, dense willows are the same. A more detailed description of their lowland habitat in California appears in the Habitat Requirements section of this petition.

Willow Flycatchers build open-cup nests. Trailing grasses hang below the woven cup, giving the nest a beard-like appearance. In the meadows along the Little Truckee River, nests were composed of grasses and sedges on the outside and lined inside with finer grasses. Some were additionally lined with sheep wool, string, feathers, and bits of tissue paper. Nests were usually anchored on willow twigs, but were sometimes insecurely woven onto thin twigs, making them vulnerable to tipping. Along the Little Truckee River and in the Shaver Lake area nests were always built in willows in the meadow, although lodgepole pines (*Pinus Murrayana*) were also available for nesting; they were consistently placed about one meter above the ground (Stafford and Valentine 1985, Flett and Sanders 1987). The nests were typically found two meters (6.5 ft) from the edge of a willow clump or were invariably less than two meters (6.5 ft) from a livestock trail through or near the willows (Flett and Sanders 1987, Sanders and Flett 1989).

Willow Flycatchers arrive and breed relatively late in the season compared to other passerines nesting in Sierran meadows. Studies conducted by Stafford and Valentine (1985) in the Shaver Lake area suggest that Willow Flycatchers frequently arrive at their breeding location as late as mid-June, and occasionally as late as early July. In the same area, Willow Flycatchers depart at any time from the end of July to late August, with a peak in mid-August. Studies conducted along the Little Truckee River in 1986 (Flett and Sanders 1987) indicated that the birds arrived in early June. Breeding territories began to break down by the last week in July, and all of the birds

departed by late August. In 1987, timing of the early part of the breeding season at the Little Truckee River was similar to 1986, but territories broke down by mid-August. This was probably accelerated by a mid-July snowstorm which killed most of the eggs and young in the study area (Sanders and Flett 1989). In general, Willow Flycatchers can be expected to arrive in California in mid-May (Stafford and Valentine 1985). Garrett and Dunn (1981) state that Willow Flycatchers used to arrive in southern California in late April in some years, but have not been recorded that early in recent years.

The peak time for egg-laying and hatching in the Sierra Nevada occurs from late June to late July. Two to four eggs are laid, with three to four most common (Bent 1963). The eggs are creamy white in color and are marked at their large end with spots or blotches of brown. Incubation takes about twelve to thirteen days, and is performed only by the female (King 1955). The nestling period lasts approximately fourteen days (King 1955).

Willow Flycatchers are "sit-and-wait" predators that catch insects on the wing. Their two feeding behaviors are hawking (sallying forth from a perch to capture flying insects) and gleaning (capture of an insect which is sitting on vegetation) (Verbeek 1975). Males generally perch on bare twigs that provide vantage points for catching flying insects, while females are less conspicuous, perching and foraging from lower willow branches (Sanders and Flett 1989).

The life expectancy of Willow Flycatchers is unknown. The lifespans of passerines in general vary between species and individuals. There is only one report of a Willow Flycatcher that was trapped and banded and then recaptured in the same area when it was four years, one month old (Kennard 1975). Continuing ecological studies of Willow Flycatchers in the Little Truckee River and Shaver Lake areas could provide valuable information about the lifespan of these birds.

#### VIII. HABITAT REQUIREMENTS

Breeding - Sierra Nevada Populations. Several studies have documented the habitat requirements of Willow Flycatchers breeding in California (Serena 1982, Flett and Sanders 1987, Harris et al. 1987, Sanders and Flett 1988). These studies consistently describe water and willows as essential elements on Willow Flycatcher territories. Some of these studies have also documented the need for large meadow size or clearings in the vicinity of territories.

Willow Flycatcher territories always include standing or running water or saturated soils. Twenty out of 22 territories (91%) along the Little Truckee River contained standing or running water, and all had saturated soils during the early stages of breeding and pair formation (Sanders and Flett 1989). Kings River Conservation District biologists (Stafford and Valentine 1985) also noted that free water is required for Willow Flycatcher breeding territories. Harris et al. (1988) found that Willow Flycatchers were twice as frequent at sites where the meadows were at least 40% wet than at sites where wetness was less than 40%. Serena (1982) noted that within meadows with substantial dry areas, Willow Flycatchers were invariably found in the wettest sites.

In Sierra Nevada meadows, breeding Willow Flycatchers are riparian obligate species and are only found where willow thickets are present. This species uses willows for nesting, cover, insect gleaning, and as perches from which they sing and forage aerially. Willow Flycatchers prefer to use willows with dense foliage for nesting and cover (Whitmore 1977, Stafford and Valentine 1985, Flett and Sanders 1987). Because nests are usually placed about one meter (3 ft) above the ground in willows and need some foliage cover above the nest, willows on territories must be at least 1.5 meters (4.9 ft) tall (Sanders and Flett 1989).

Several authors have suggested that Willow Flycatchers prefer meadows in which the willow cover is divided into clumps separated by openings, rather than solid masses of willows (Grinnell and Storer 1924, King 1955, Serena 1982, Sanders and Flett 1989).

Serena (1982) and Harris et al. (1988) found most Willow Flycatchers in the Sierra Nevada occur in meadows larger than 8 ha (26 ac). The majority of sites with more than one singing male were larger than 16 ha (40 ac) (Harris et al. 1988). On the other hand, Valentine (KRCD 1985) found that a pair of Willow Flycatchers bred successfully for several years in a meadow only 2,500 square meters (26,874 ft<sup>2</sup>). Serena (1982) and Harris et al. (1988) noted that the absence of Willow Flycatchers from small meadows may actually reflect a transient state in a colonization-extinction process rather than an actual preference for them.

Willow Flycatchers do not require trees on their territories, but if trees or snags are present they are often used for singing and foraging perches. Tree cover that is too dense (greater than 50% canopy cover) creates unsuitable conditions for Willow Flycatchers.

Willow Flycatchers breed from sea level to about 2400 meters (8000 ft) (Grinnell and Miller 1944, Garrett and Dunn 1981).

Breeding: Foothill and Lowland California. The preceding description of habitat requirements for breeding Willow Flycatchers is based chiefly on studies conducted at relatively high elevation meadows in the Sierra Nevada. California's foothill and lowland populations of Willow Flycatchers differ somewhat from mountain meadow populations in their habitat affinities. These habitat requirements have been well-described by early ornithologists. Dawson (1923, p.885) describes the Willow Flycatcher as: "a lover of the half-open situations, bushy rather than timbered, of clearings, low thickets, and river banks. Above all it is wedded to the lesser willows, *Salix flavescens*, *S. lasiolepis*, *S. sessifolia*, and the rest." Grinnell and Miller (1944, p.257) found Willow Flycatchers to be "strikingly restricted to thickets of willows, whether along streams in broad valleys, in canyon bottoms, around mountainside seepages, or at the margins of ponds or lakes."

As with high elevation populations of Willow Flycatchers, willows and water are the dominant habitat theme for lowland birds. Unlike Willow Flycatcher territories in montane meadows, arborescent willows and other riparian woodland species can be included on their breeding

grounds. The nests may be placed in willow shrubs but are also found in elderberry bushes, roses, nettles, grapevines, and blackberry (Dawson 1923, Unitt 1987). The elevation of the nest is also considerably more variable than for montane meadow Willow Flycatchers, ranging from 0.6 meters (2 ft) to 5.5 meters (18 ft) (Unitt 1987).

In summary, the habitat requirements for breeding Willow Flycatchers in California include water and shrubby, dense clumps of willows. In the Sierra Nevada this species prefers large, flat, wet meadows that contain patches of willow clumps. At lower elevation sites, Willow Flycatchers require riparian woodland that includes water and low thickets of willows.

Migration. Willow Flycatchers are less selective about their choice of habitats while in migration in California. According to Grinnell and Miller (1944, p.257): "In migration, other kinds of woody plants, especially those growing on damp ground, are frequented as well as willows, just so they show the same habit of growth." During spring and fall migration, Willow Flycatchers are frequently observed in riparian woodland throughout coastal and lowland California.

Wintering. Willow Flycatchers winter in Central American south to Columbia (Grinnell and Miller 1944). Relatively little information is available about Willow Flycatcher habitat preferences on its winter range. Gorski (1969) observed a singing Willow Flycatcher defending a foraging territory about 700 meters (2,300 ft) from the Chagres River at Gamboa, Canal Zone, Panama. The vegetation in this area was transitional from a wet, grassy field at the edge of the river to low-lying shrubs interspersed with tall grass. As the dry season progressed, Willow Flycatchers were found only in areas containing open water or saturated soils. Based on this study it seems likely that Willow Flycatchers have an affinity for wet sites on both breeding and wintering grounds.

#### IX. CURRENT AND RECOMMENDED MANAGEMENT

No state or federal laws explicitly protect California's riparian woodland and montane meadows, habitats which provide essential resources for the state's remaining populations of Willow Flycatchers. The only Willow Flycatcher population in the state whose habitat is protected in perpetuity is that on the Nature Conservancy's Kern River Preserve.

The U.S. Fish and Wildlife Service has developed management guidelines for this species in Region 1 (Sharp 1986), and studies by the Kings River Conservation District also provide recommendations for protecting and enhancing Willow Flycatcher habitat (Valentine 1987). Several studies by the California Department of Fish and Game and others (Flett and Sanders 1987, Harris et al. 1988, Sanders and Flett 1989) offer additional management recommendations for this species.

All of these sources consistently recommend a policy of protecting riparian woodland and montane meadows that support Willow Flycatcher populations. Implementing this policy on private lands would require land purchases or conservation easements with landowners. Public lands

occupied by Willow Flycatchers should be managed to protect riparian vegetation rather than for livestock grazing or other incompatible uses. One of the most important elements in protecting riparian habitats that support Willow Flycatchers is to eliminate or reduce grazing or to fence riparian areas to exclude livestock from willow clumps where nests are located.

To avoid further depression of Willow Flycatcher reproduction, particularly for lowland populations, Brown-headed Cowbird numbers must be reduced. To avoid creating conditions conducive to cowbird reproduction and survival, development of campgrounds, feedlots, corrals, dairies, horse stables, garbage dumps, and housing should be discouraged in areas adjacent to habitats supporting Willow Flycatchers. Cowbird removal programs in riparian areas may also be successful in reducing cowbird parasitism.

These measures will help to preserve existing populations of Willow Flycatchers, but may not contribute significantly to the recovery of the species. To increase Willow Flycatcher numbers in California, these management guidelines must be applied to areas that are potentially suitable for, but currently unoccupied by this species.

#### X. INFORMATION SOURCES

##### Literature Cited

- Arbib, R. 1979. The blue list for 1980. *American Birds*. 33:830-835.
- Barlow, C. 1900. Some additions to Van Denburgh's list of land birds of Santa Clara Co., California. *Condor* 2:131-133.
- Belding, L. 1890. Birds of the Pacific District. *Proc. Calif. Acad. Sci.* 1890: 101-102.
- Bent, A.C. 1963. Life histories of North American flycatchers, larks, swallows and their allies. Dover Publications, Inc., New York. 555 pp.
- Dawson, W.L. 1923. The birds of California. South Noulton Company, San Francisco, Ca.
- Flett, M.A. and S.D. Sanders. 1987. Ecology of a Sierra Nevada population of willow flycatchers. *Western Birds* vol. 18 no. 1.
- Gaines, D. 1974. A new look at the nesting riparian avifauna of the Sacramento Valley, California. *Western Birds* 5:61-80.
- Gaines, D. 1977. Birds of the Yosemite Sierra. Cal-Syl press, Oakland, California.
- Garrett, K. and J. Dunn. 1981. Birds of southern California: Status and distribution. The Artesian Press, Los Angeles, California.
- Goldman, E.A. 1908. Summer birds of the Tulare Lake region. *Condor* 10:200-205.

- Grinnell, J., J. Dixon, and J.M. Linsdale. 1930. Vertebrate natural history of a section of northern California through Lassen Peak. Univ. Calif. Publ. Zool. 10:197-406.
- Grinnell, J. and A.H. Miller. 1944. The Distribution of the Birds of California. Pac. Coast Avifauna 27.
- Grinnell, J. and T.I. Storer. 1924. Animal Life in the Yosemite. University of California Press, Berkeley, California.
- Hanna, W.C. 1928. Notes on the dwarf cowbird in southern California. Condor 30:131-162.
- Harris, J.H. in prep. Brown-headed cowbird parasitism of willow flycatchers on the Kern River, California.
- Harris, J.H., S.D. Sanders, and M.A. Flett. 1987. Willow flycatcher surveys in the Sierra Nevada. Western Birds 18:27-36.
- Harris, J.H., S.D. Sanders, and M.A. Flett. 1988. The status and distribution of the willow flycatcher in California, 1986. California Department of Fish and Game, Wildlife Management Branch Administrative Report 87-2.
- Kennard, J.H. 1975. Longevity records of North American birds. Bird-banding 46(1):55-73.
- King, J.R. 1955. Notes on the life history of Traill's flycatcher (*Empidonax traillii*) in southeastern Washington. Auk 73:148-173
- Linton, C.B. 1908. Notes from Buena Vista Lake, May 20 to June 16, 1907. Condor 10:196-198.
- McCaskie, G., P. De Benedictis, R. Erickson, and J. Morlan. 1979. Birds of Northern California: An annotated field list. Golden Gate Audubon Society, Berkeley, California.
- Phillips, A.R. 1948. Geographic variation in *Empidonax traillii*. Auk 65:507-514.
- Remsen, J.V., Jr. 1978. Bird species of special concern in California. Cal. Dept. Fish and Game, Nongame Wildlife Investigations Report No. 78-1.
- Roberson, D. 1985. Monterey birds. Monterey Peninsula Audubon Society.
- Rowley, J.S. 1930. Observations on the Dwarf Cowbird. Condor 32:130.
- Sanders, S.D. and M.A. Flett. 1989. Ecology of a Sierra Nevada population of willow flycatchers (*Empidonax traillii*), 1986-87. California Department of Fish and Game, Wildlife Management Branch Administrative Report 88-3.



- Serena, M. 1982. The status and distribution of the willow flycatcher (*Empidonax traillii*) in selected portions of the Sierra Nevada, 1982. California Department of Fish and Game, Wildlife Management Branch Administrative Report 82-5.
- Sharp, B. 1986. Management guidelines for the Willow Flycatcher. U.S. Fish and Wildlife Service, Region 1. Portland, Or.
- Stafford, M.D. and B.E. Valentine. 1985. A preliminary report on the biology of the willow flycatcher in the central Sierra Nevada. Cal-Neva Wildlife Transactions 1985: 66-77.
- Stallcup, R. and R. Greenberg. 1974. The nesting season. Middle Pacific Coast region. American birds 28:943-947.
- Sumner, L. and J.S. Dixon. 1953. Birds and mammals of the Sierra Nevada. Univ. Calif. Press, Berkeley, California.
- Taylor, D.M. 1986. Effects of cattle grazing on passerine birds nesting in riparian habitat. J. Range Mgmt. 39:254-258.
- Taylor, D.M. and C.D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.
- Unitt, P. 1984. The birds of San Diego County. San Diego Society of Natural History, Memoir No. 13.
- Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. Western Birds 18:137-162.
- Valentine, B.E. 1987. Implications of recent research on the willow flycatcher to forest management. U.S.F.S., Region V, Annual Workshop. Fresno, California. 17pp.
- Verbeek, N.A.M. 1975. Comparative feeding behavior of three coexisting tyrannid flycatchers. Wilson Bulletin. 87:231-240.
- Whitmore, R.C. 1975. Habitat ordination of passerine birds of the Virgin River Valley, southwestern Utah. Wilson Bulletin 87:65-74.
- Willetts, G. 1912. Birds of the Pacific slope of California. Pacific coast Avifauna No. 7.
- Willetts, G. 1933. A revised list of the birds of southwestern California. Pacific Coast Avifauna No. 21.

#### Persons Cited

- Droege, Sam. Breeding Bird Survey, U.S. Fish and Wildlife Service, Laurel, Maryland 20708. Tel. (301)498-0330
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