Southwestern Willow Flycatchers in the Grand Canyon

by
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The southwestern willow flycatcher (*Empidonax traillii extimus*) occurs, as its name implies, throughout most of the southwestern United States (Fig. 1). It is a Neotropical migrant songbird, i.e., one of many birds that return to the United States and Canada to breed each spring after migrating south to the Neotropics (Mexico and Central America) to winter in milder climates. In recent years, there has been strong evidence of declines in many Neotropical migrant songbirds (e.g., Finch and Stangel 1993), including the southwestern willow flycatcher (Federal Register 1993). The flycatcher appears to have suffered significant declines throughout its range, including total loss from some areas where it historically occurred. These declines, as well as the potential for continued and additional threats, prompted the U.S. Fish and Wildlife Service (USFWS) to propose listing the southwestern willow flycatcher as an endangered species (Federal Register 1993).

The southwestern willow flycatcher is one of four distinct races of willow flycatchers that breed in North America. All races breed in shrubby or woodland habitats, usually adjacent to, or near, surface water or saturated soil. Riparian areas—woodland and shrub areas along streams and rivers—are particularly favored. In fact, the southwestern willow flycatcher is a riparian obligate, breeding only in riparian vegetation. It prefers tall, dense willows and cottonwood habitat where dense vegetation continues from ground level to the tree canopy. Southwestern willow flycatchers appear to breed in stands of the exotic and invasive tamarisk (*Tamarix* spp.) only at locations above 625 m (2,051 ft) elevation (Federal Register 1993), and where the tamarisk stands have suitable structural characteristics (Fig. 2). Thus, many areas dominated by tamarisk are not suitable flycatcher habitat. Being a riparian obligate, the southwestern willow flycatcher is particularly sensitive to the alteration and loss of riparian habitat (including tamarisk invasion), which is a widespread and pervasive problem throughout the Southwest.

Because of the decline and precarious status of southwestern willow flycatchers, it is important to document the status of the species, where it occurs, how many individuals are present, and where they are successfully breeding. Information on trends is also important in managing and protecting the species. Grand Canyon

Fig. 1. Breeding distribution of the southwestern willow flycatcher. Dotted line represents areas where distribution is uncertain.

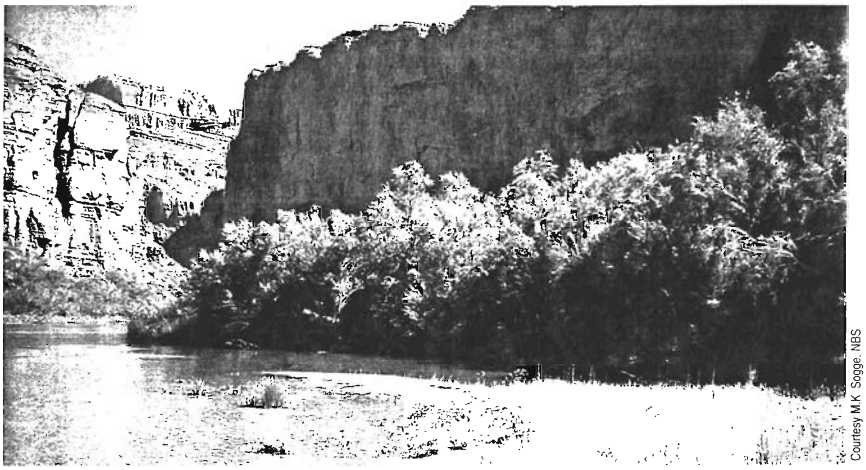


Fig. 2. Southwestern willow flycatcher breeding territory in tamarisk habitat along the Colorado River in the Grand Canyon.

National Park, the USFWS, and the U.S. Bureau of Reclamation have been regularly monitoring the status of the southwestern willow flycatcher in the Grand Canyon since 1982. The National Biological Service's Colorado Plateau Research Station at Northern Arizona University has conducted this monitoring since 1992. The Grand Canyon is one of the few areas with such a long record of willow flycatcher population data; the only others are the Santa Margarita and Kern rivers in southern California.

Methods

Our monitoring program involved intensive surveys of about 450 km (280 mi) of the Colorado River in Arizona between Glen Canyon Dam (Lake Powell) and upper Lake Mead. This portion of the river flows from elevation 945 m (3,100 ft) at the dam to 365 m (1,200 ft) at Lake Mead. We walked through or floated along all potential southwestern willow flycatcher habitat patches along the river corridor and looked and listened for willow flycatchers. Although willow flycatchers look very similar to several other flycatchers, they can be readily identified by their distinctive "fitz-bew" song. To increase the chance of detecting resident flycatchers, we played a tape recording of willow flycatcher songs and calls (Fig. 3) as we moved through our survey areas. This technique usually elicits a response from any resident southwestern willow flycatchers that may be present (Tibbitts et al. 1994). We conducted surveys from May through July at about 160 habitat patches each year (1992 and 1993), and made repeated trips to each site (Sogge et al. 1993).

Fig. 3. Surveyor broadcasting taped vocalizations and looking for response from willow flycatchers.

Status and Trends

Surveys conducted between 1982 and 1991 looked only at the upper 114 km (71 mi) of the river and counted primarily singing males. Within this same stretch, we detected only two singing male willow flycatchers in 1992, and three in 1993. These willow flycatchers were found only in the dense riparian habitat dominated by tamarisk, but including some willows along the river corridor above 860 m (2,800 ft) elevation. The breeding population of southwestern willow flycatchers in the Grand Canyon was very low: we found only one nest in 1992, and only three in 1993. Worse yet, each of the three 1993 willow flycatcher nests was brood-parasitized by brown-headed cowbirds (*Molothrus ater*), and none produced young willow flycatchers. With such a small breeding population, and the potential for severe loss of breeding effort due to cowbirds, there is concern over the continued survival of the species within Grand Canyon.

Based on comparison with past willow flycatcher surveys in the Grand Canyon (river mi 0-71; Brown 1988, 1991), willow flycatchers have declined since the mid-1980's (Fig. 4). Because we could conduct more surveys and our methods were more likely to detect flycatchers than the pre-1992 surveys (conducted without using tape playback), the population decline of the southwestern willow flycatcher in Grand Canyon may be even more dramatic than our data indicate.

We did find willow flycatchers in areas of the river corridor where surveys had not been previously conducted: three in 1992 and five in 1993. Two other willow flycatchers were also found during separate bird studies on the river corridor. These birds were found in tamarisk (above 530 m; 1,900 ft) or willow (below 530 m; 1,900 ft) habitats. None of these willow flycatchers established territories or bred, however, and most were probably migrants simply passing through the area (Sogge et al. 1993).

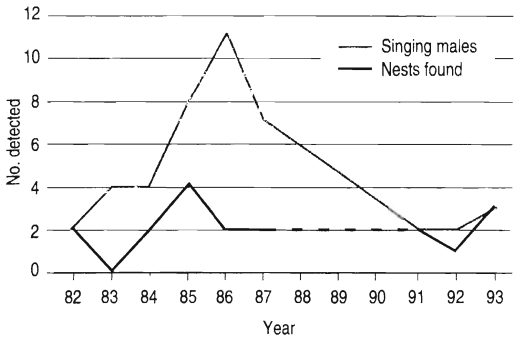
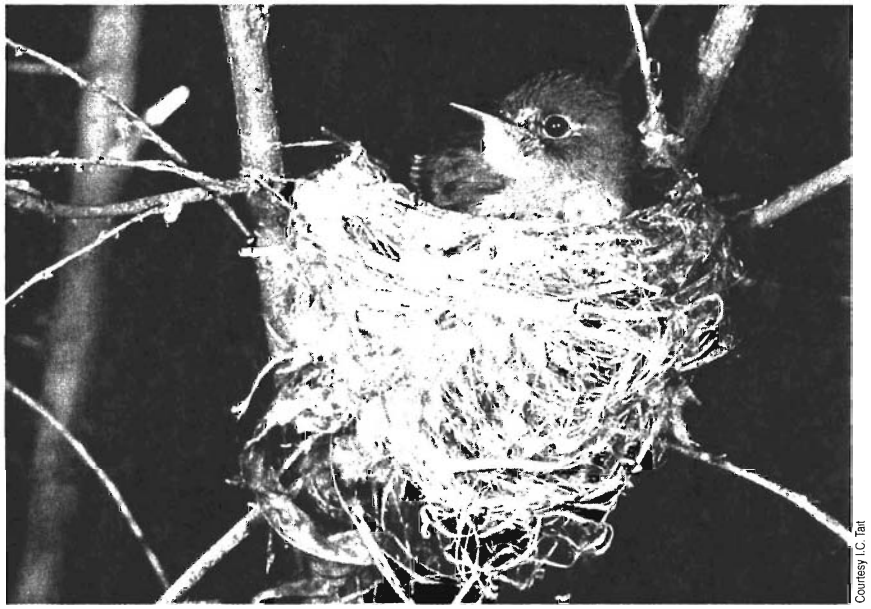


Fig. 4. The numbers of singing male southwestern willow flycatchers and flycatcher nests detected in the Grand Canyon (river mi 0 to 71), 1982-93. Dotted lines represent years when surveys were not conducted.

The low breeding population, historical declines, and potentially limited productivity in the Grand Canyon reflect the plight of the southwestern willow flycatcher throughout its range. Declines have been noted virtually everywhere the flycatcher occurs, and threats to its survival are widespread and immediate. As human activities such as urbanization, water diversion, agriculture, and grazing in riparian areas continue in the Southwest, so do the loss and alteration of riparian habitat. Vital wintering habitat in Mexico and Central America is also being lost to similar human activities.

Brood parasitism by brown-headed cowbirds is another significant threat to southwestern willow flycatchers within the Grand Canyon and in many other areas. In fact, cowbirds may be one of the greatest threats in areas where breeding habitat is protected, such as the Grand Canyon and other national parks and protected areas. Cowbirds lay their eggs in the nests of other birds (the host), who subsequently abandon the nests or raise the cowbird chicks. Female cowbirds will sometimes remove or destroy host eggs, and cowbird chicks often monopolize the parental care of the hosts. Thus, cowbird parasitism can reduce the number of host young produced, and in some cases, cowbirds may be the only young successfully raised by the host. Such effects have been recorded for southwestern willow flycatchers in the Grand Canyon and in other areas as well (Federal Register 1993). Conversely, control and removal of cowbirds have resulted in local increases in southwestern willow flycatchers and other songbirds. Cowbird brood parasitism is related to riparian loss and fragmentation because cowbird parasitism is highest in fragmented habitats.

The southwestern willow flycatcher is a unique and valuable part of the riparian community in the Southwest. Although recent and planned future surveys provide important status and distributional information on the flycatcher in the Grand Canyon and a few other areas within Arizona, there is a critical need for basic surveys and ecological research (including the effect of brown-headed cowbirds) on this species throughout most of its range, particularly in New Mexico, southern Utah, and Colorado. As a riparian obligate species whose continued existence is directly tied to the future of our remaining riparian habitats, its precarious status and historic decline help illustrate the need for riparian preservation and management. Such management is important not only for the southwestern willow flycatcher, but also for all plant and animal species that make up and depend on these valuable riparian areas.



Southwestern flycatcher (*Empidonax traillii extimus*).

References

Brown, B.T. 1988. Breeding ecology of a willow flycatcher population in Grand Canyon, Arizona. Western Birds 19(1):25-33.

Brown, B.T. 1991. Status of nesting willow flycatchers along the Colorado River from Glen Canyon Dam to Cardenas Creek, Arizona. U.S. Fish and Wildlife Service Endangered Species Rep. 20. 34 pp.

Federal Register. 1993. Proposal to list the southwestern willow flycatcher as an endangered species, and to designate critical habitat. U.S. Fish and Wildlife Service 23 July 1993. Federal Register 58:39495-39522.

Finch, D.M., and P.W. Stangel. 1993. Status and management of Neotropical migratory birds; 1992 September 21-25; Estes Park, CO. Gen. Tech. Rep. RM-229. U.S. Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 422 pp.

Sogge, M.K., T.J. Tibbitts, and S.J. Sferra. 1993. Status of the southwestern willow flycatcher along the Colorado River between Glen Canyon Dam and Lake Mead—1993. Summary report. National Park Service Cooperative Park Studies Unit, Northern Arizona University, U.S. Fish and Wildlife Service, and Arizona Game and Fish Department. 69 pp.

Tibbitts, T.J., M.K. Sogge, and S.J. Sferra. 1994. A survey protocol for the southwestern willow flycatcher (*Empidonax traillii extimus*). National Park Service Tech. Rep. NPS/NAUCPRS/NRTR-94/04. 24 pp.

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In Reply
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August 22, 1995

Memorandum

To: Dave Wegner
Glen Canyon Environmental Studies

From: Charles van Riper III, Station Leader
Mark Sogge, Ecologist
Colorado Plateau Research Station

Subject: New Publications on Grand Canyon Avian Fauna

Enclosed are copies of two new research articles dealing with the avian fauna of the Grand Canyon.

Sogge, M.K. 1995. Southwestern Willow Flycatchers in the Grand Canyon. Pages 89-91 *in* LaRoe, E.T., G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac, eds. 1995. Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems. U.S. Department of the Interior, National Biological Service, Washington, DC. 520 pp.

van Riper, C. III, M.K. Sogge and T.J. Tibbitts. 1995. Wintering Bald Eagles Along the Colorado River Corridor. Pages 328-330 *in* LaRoe, E.T., G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac, eds. 1995. Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems. U.S. Department of the Interior, National Biological Service, Washington, DC. 520 pp.

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