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The willow flycatcher subspecies are distinguished primarily by subtle differences in color and morphology. Unitt (1987) noted that these differences "* * are minor, but differ little in magnitude from those distinguishing the species *E. traillii* from *E. alnorum*. In *Empidonax*, small differences in morphology may mask large differences in biology."

The subspecies *E. t. extimus* was described by A.R. Phillips (1948) from a collection by G. Monson from the lower San Pedro River in southeastern Arizona. The taxonomy of *E. t. extimus* was critically reviewed by Hubbard (1987), Unitt (1987), and Browning (1993). Hubbard (1987) gave a qualified endorsement of the validity of E. t. extimus, recommending continued examination of the taxonomy. Unitt (1987) found that E. t. extimus was distinguishable from other willow flycatchers by color, being paler, and morphology (primarily wing formula) but not overall size. Browning (1993) also found that E. t. extimus was distinguishable as a more pale-colored subspecies. The song dialect of E. t. extimus may also be distinguishable from other willow flycatchers. Rather than the crisp, sneezy "fitz-bew" of the northerly subspecies, E. t. extimus sings a more protracted, slurred "fit-za-bew, with a burry "bew" syllable (recordings by M. Sogge and J. Travis). The subspecies *E. t. extimus* is accepted by most authors (e.g., Aldrich 1951, Behle and Higgins 1959, Phillips et al. 1964, Bailey and Niedrach 1965, Oberholser 1974, Monson and Phillips 1981, Harris et al. 1987, Schlorff 1990, Harris 1991). Section 3(15) of the Act and regulations at 50 CFR 424.02(k) defines the term "species" as any subspecies of fish or wildlife or plants, and any distinct population segment of any vertebrate species which interbreeds when mature. Based on the above information, the Service has determined that *E. t. extimus* is eligible for protection under the Act.

The southwestern willow flycatcher nests in thickets of trees and shrubs approximately 4-7 meters (m) (13-23 feet) or more in height, with dense foliage from approximately 0-4 m (13 feet) above ground, and often a high canopy cover percentage. The diversity of nest site plant species may be low (e.g., willows) or comparatively high (e.g., mixtures of willow, buttonbush, cottonwood, boxelder, Russian olive, Baccharis, and tamarisk). Nest site vegetation may be even- or uneven-aged, but is usually dense and structurally homogeneous (Brown 1988, Whitfield 1990, Sogge et al. 1993, Muiznieks et al. 1994). Historically, E. t. extimus nested

primarily in willows, buttonbush, and Baccharis, with a scattered overstory of cottonwood (Grinnell and Miller 1944, Phillips 1948, Whitmore 1977, Unitt 1987). Following modern changes in riparian plant communities, E. t. extimus still nests in native vegetation where available, but has been known to nest in thickets dominated by tamarisk and Russian olive (Hubbard 1987, Brown 1988, Sogge et al. 1993, Muiznieks et al. 1994). Sedgwick and Knopf (1992) found that sites selected as song perches by male willow flycatchers (E. t. traillii/campestris) exhibited higher variability in shrub size than did nest sites and often included large central shrubs. Habitats not selected for either nesting or singing were narrower riparian zones, with greater distances between willow patches and individual willow plants. Nesting willow flycatchers of all subspecies generally prefer areas with surface water nearby (Bent 1960, Stafford and Valentine 1985, Harris et al. 1987), but E. t. extimus virtually always nests near surface water or saturated soil (Phillips et al. 1964, Muiznieks et al. 1994). At some nest sites surface water may be present early in the breeding season but only damp soil is present by late June or early July (Muiznieks et al. 1994, M. Whitfield, Kern River Research Center, in litt. 1993, J. and J. Griffith, Griffith Wildlife Biology, in litt.-1993). Ultimately, a water table close enough to the surface to support riparian vegetation is necessary.

Defining a minimum habitat patch size required to support a nesting pair of *E. t. extimus* is difficult. Throughout its range, determining the capability of habitat patches to support southwestern willow flycatchers is confused by the species' rarity, unstable populations, variations in habitat types, and other factors. However, the available information indicates that habitat patches as small as 0.5 hectare (ha) (1.23 acres) can support one or two nesting pairs. Sogge et al. (1993) found territorial flycatchers in habitat patches ranging from 0.5 to 1.2 ha (1.23 to 2.96 acres). Two habitat patches of 0.5 and 0.9 ha (1.23 and 2.2 acres) each supported two territories. Muiznieks et al. (1994) also reported groups of territorial *E. t. extimus* in habitat patches of approximately one to several hectares.

The nest is a compact cup of fiber, bark, and grass, typically with feathers on the rim, lined with a layer of grass or other fine, silky plant material, and often has plant material dangling from the bottom (Harrison 1979). It is constructed in a fork or on a horizontal branch, approximately 1–4.5 m (3.2–15

feet) above ground in a medium-sized bush or small tree, with dense vegetation above and around the nest (Brown 1988, Whitfield 1990, Muiznieks *et al.* 1994).

The southwestern willow flycatcher is present and singing on breeding territories by mid-May, although its presence and status is often confused by the migrating individuals of northern subspecies passing through E. t. extimus breeding habitat [D. Kreuper, Bureau of Land Management (BLM), unpubl. data]. The southwestern willow flycatcher builds nests and lays eggs in late May and early June and fledges young in early to mid-July (Willard 1912, Ligon 1961, Brown 1988, Whitfield 1990, Sogge and Tibbitts 1992, Sogge et al. 1993, Muiznieks et al. 1994). Some variation in these dates has been observed (Carothers and Johnson 1975, Brown 1988, Muiznieks et al. 1994) and may be related to altitude, latitude, and renesting.

The southwestern willow flycatcher is an insectivore. It forages within and above dense riparian vegetation, taking insects on the wing or gleaning them from foliage (Wheelock 1912, Bent 1960). It also forages in areas adjacent to nest sites, which may be more open (M. Sogge, National Biological Survey, pers. comm. 1993). No information is available on specific prey species.

The migration routes and wintering grounds of *E. t. extimus* are not well known. *Empidonax* flycatchers rarely sing during fall migration, so that a means of distinguishing subspecies is not available (Blake 1953, Peterson and Chalif 1973). However, willow flycatchers have been reported to sing and defend winter territories in Mexico and Central America (Gorski 1969, McCabe 1991). The southwestern willow flycatcher most likely winters in Mexico, Central America, and perhaps northern South America (Phillips 1948, Peterson 1990). However, the habitats it uses on wintering grounds are unknown. Tropical deforestation may restrict wintering habitat for this and other neotropical migratory birds (Finch 1991, Sherry and Holmes 1993).

Breeding bird survey data for 1965 through 1979 combined the willow and alder flycatchers into a "Traill's flycatcher superspecies", because of taxonomic uncertainty during the 15-year reporting period. These data showed fairly stable numbers in central and eastern North America but strong declines in the West, the region including the range of the southwestern willow flycatcher, and where the alder flycatcher is absent (Robbins *et al.* 1986).