

WILLOW FLYCATCHER
Riparian Communities

General

The willow, or traill's, flycatcher (Empidonax traillii brewsteri) is a summer resident within the Willamette Valley-Puget Trough Ecoregion (Larrison and Sonnenberg 1968). Dense deciduous brush, low alder thickets (Alnus spp.), birches (Betula spp.), and willows (Salix spp.) adjacent to swamps, lakeshores, and streams within the Transition Zone provide suitable habitat conditions for the willow flycatcher.

Food Requirements

The willow flycatcher is essentially insectivorous. Wasps and bees (Hymenoptera), beetles (Coleoptera), flies (Diptera), caterpillars and moths (Lepidoptera), grasshoppers (Orthoptera) and occasionally berries are eaten by willow flycatchers in the Sierra Nevada (Summer and Dixon 1953). The bird forages in the short air-ways between brush patches (Gabrielson and Jewett 1940; Larrison and Sonnenberg 1968). King (1955) found the foraging area of willow flycatchers extended only a few yards from hawthorne thickets into fields.

Water Requirements

No specific drinking water requirements were found in the literature.

Cover Requirements

In California, willow flycatchers preferred semi-open brushy habitats, such as found in clearings, low thickets, and along river banks (Dawson 1923). Willow thickets are highly suitable habitats for the willow flycatcher (Dawson 1923; Grinnell and Miller 1944; and Stein 1963). Nesting, perching, roosting, and feeding activities may all take place in willow thickets (Hand 1941).

Reproductive Requirements

Willow flycatchers usually nest close to the ground in low shrubs and bushes (Gabrielson and Jewett 1940). Stein (1963) stated that willow flycatchers nested along streams or lakes where suitable brush occurred. Willow, rose (Rosa spp.), dogwood (Cornus spp.), honeysuckle (Lonicera spp.), alders, and serviceberry (Amelanchier spp.) are preferred brush species for nesting. The nest is constructed in the peripheral foliage of shrubs, and in thickets it will typically be found along the outer edge (King 1955).

Nests are generally located within 6-7 feet (1.8-2.1 m) of the ground (Jewett et al. 1953). King (1955) reported that 83% of 41 nests in southeast Washington were between 20 and 40 inches (0.5-1.0 m) above the ground. In Michigan, Walkinshaw (1966) found the average height of 93 nests to be 4.3 feet (1.3 m) above ground.

Stein (1963) located willow flycatcher nests in New York in willow and alder that were 19.6 to 22.9 feet (6-7 m) in height. The nests were in the lower brush. Nests were constructed in areas with a minimum of 20% shrub cover. Suitable nesting habitat must provide low crotches or forks of branches sufficiently small so that willow flycatchers can

weave their nests around them (King 1955). Twigs between 1/8 and 1/4 inch (3.2-6.3 mm) in diameter are optimal for nest support structures.

Special Habitat Requirements

Willow flycatchers need twigs which extend above the shrub canopy for singing perches. King (1955) found that principal song perches were the highest exposed twigs in the territory ranging from 7 to 28 feet (2.1-8.5 m).

Interspersion Requirements

In southeastern Washington, the average distance of 40 nests from surface water was 123 feet (37.5 m), ranging from 3-600 feet (0.9-183 m).

Walkinshaw (1966) reported mean territory sizes ranging from 1.5 acres (0.6 ha) in brushy habitat between a lake and dry land to 2.1 acres (0.8 ha) in a dry marsh situation.

Special Considerations

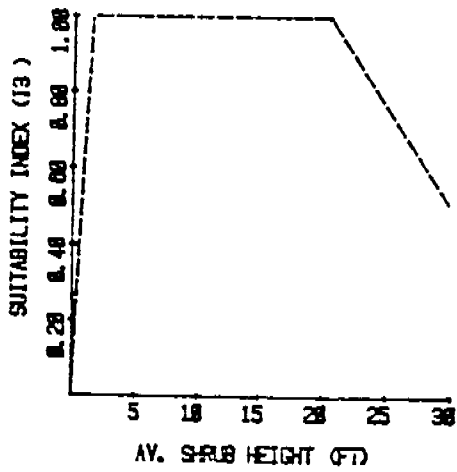
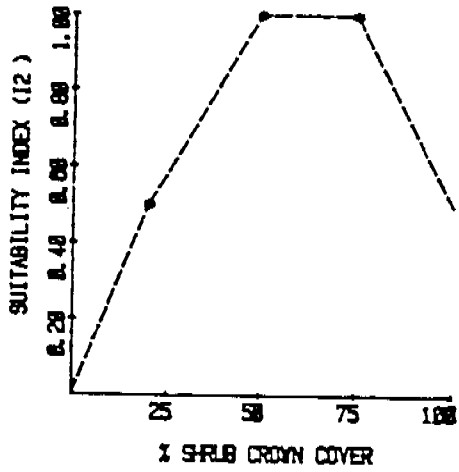
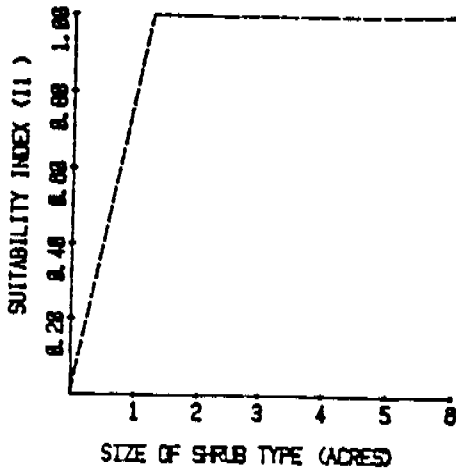
The willow flycatcher seems to be declining in numbers in Washington for unknown reasons (Larrison and Sonnenberg 1968).

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WILLOW FLYCATCHER

RIPARIAN COMMUNITIES



IV-C-80

DRAFT

HABITAT SUITABILITY INDEX
Willow Flycatcher in Riparian Communities
Ecoregion 2410

$$\text{Reproductive Value } (X_1) = \frac{(I_2 \times I_3)^{1/2} + I_1}{2}$$

Where: I_1 = Suitability Index (SI) of size of shrub type.

I_2 = SI of percent shrub crown cover.

I_3 = SI of average shrub height.

Cover and Food Requirements are satisfied when reproductive needs are met.

The Habitat Suitability Index is X_1 .

SAVANNAH SPARROW
Grassland/Agricultural Type

General

Open grasslands are the preferred habitat of the savannah sparrow (*Passerculus sandwichensis*) (Gabrielson and Jewett 1940). Within this Ecoregion it occurs primarily as a summer breeder in the transition zone, and is commonly found in open fields, plains, and meadows at lower elevations throughout western Washington and Oregon (Larrison and Sonnenberg 1968).

Food Requirements

The savannah sparrow eats mostly grass seed and insects (Norris 1960; Wiens 1969). Dragonflies (Odonata), butterflies (Lepidoptera), true bugs (Hemiptera), wasps, ants, and bees (Hymenoptera), aphids (Homoptera), spiders (Arachnida) and oligochaete worms were invertebrates eaten by the savannah sparrow in Wisconsin (Wiens 1969). Wiens (1973) stated that savannah sparrows concentrated their feeding around the perimeter of grass clumps and foraged primarily in low grass cover that was mostly under four inches (10 cm) in height (Wiens 1969). Cody (1968) found that savannah sparrows foraged on vegetation below 3 inches (7.6 cm) in height.

Water Requirements

No specific drinking water requirements were found in the literature. Moisture seems to be a factor through its influence on the density of low vegetation (Wiens 1969).

Cover Requirements

No specific information on cover requirements, other than for reproduction, was found in the literature. In most inland locations, cover needs seem to be satisfied by low-lying, moist, open grassy fields with scattered forbs in which the ground layer vegetation (grasses and accumulated litter) is fairly dense (Tester and Marshall 1961). Litter was found to be one of the most important features of savannah sparrow habitat. Linsdale (1938) concluded that the factor determining the local presence of the savannah sparrow in the Great Basin was the dense cover of low vegetation.

Reproductive Requirements

Male savannah sparrows establish territories during the breeding season (Wiens 1973). Territory size on a Wisconsin field ranged from .4 to 4.3 acres (.2-1.7 ha) with a mean size of 1.7 acres (.7 ha) (Wiens 1969). The breeding territory must satisfy all of the life requirements of the mated pairs and their young throughout the nesting season, as they will not travel outside their territorial boundaries. Scattered tall forbs, low shrubs, or fence posts and fence lines, if available, are used by the male bird to advertise and defend his territory through singing displays. Where sufficiently tall forbs are not present, small deciduous shrubs may be used as song perches (Johnsgard and Rickard 1957).

Wiens (1969) found an average of 600 forbs per .01 acre (.004 ha) on the savannah sparrow territories in his Wisconsin study. The mean

percentage of forb cover on savannah sparrow territories ranged from 20 to 35% depending on the time of territorial establishment with a range of approximately 15 to 42% (Wiens 1973). Wiens (1969) found that forb height within breeding territories ranged from 2.7 to 19.6 inches (7 to 50 cm) with a mean of 7.8 inches (20 cm). Savannah sparrow nests were constructed on the ground in dense grass vegetation and were well concealed. Nineteen of 27 nests were either partially domed or well placed under overhanging litter. All nests were located in areas having 100% litter cover. The entire nesting territory had greater than 64% litter coverage. The mean litter depth for nests was 3 inches (7.8 cm) with the majority of nest sites in litter greater than .4 inches (1 cm) in depth. The percentage of grass cover over most of the nesting territories ranged from 62 to 100% with a mean of 88%.

Special Habitat Requirements

No special habitat requirements were found in the literature.

Interspersion Requirements

Savannah sparrows remain within the grassland vegetation type throughout the year and they show no special need for any adjacent cover types.

Special Considerations

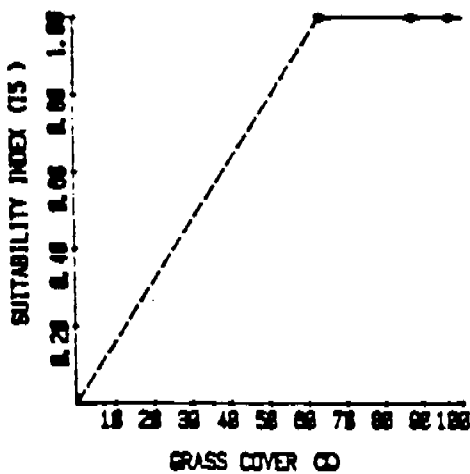
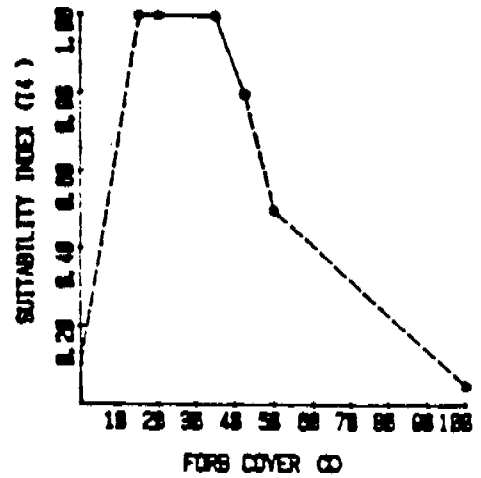
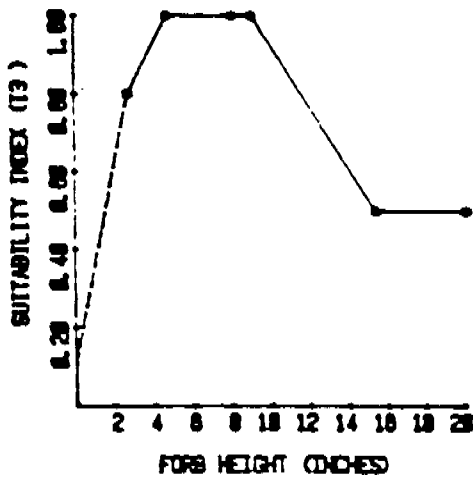
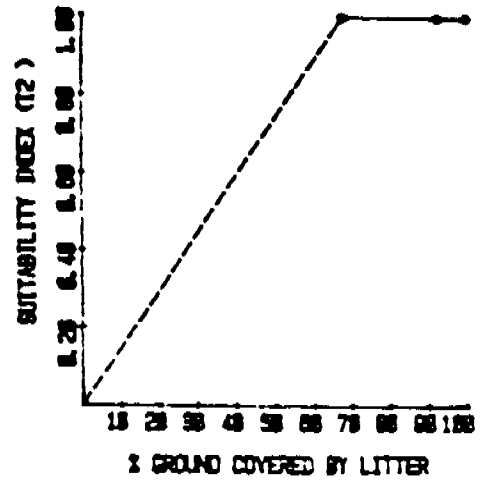
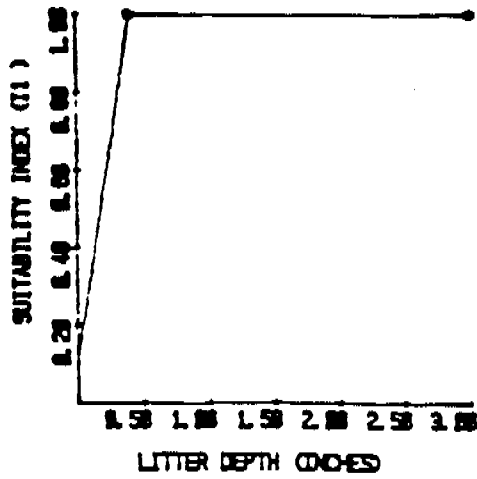
Hayfields and grain fields are utilized by savannah sparrows in place of natural grasslands (Larrison and Sonnenberg 1968). Of the three subspecies of the savannah sparrow that occur in western Washington, Brook's Savannah Sparrow (*P. sandwichensis brooksi*) is the subspecies which breeds within the ecoregion. The three subspecies are listed as winter visitors West of the Cascades (Sonnenberg and Larrison 1968).

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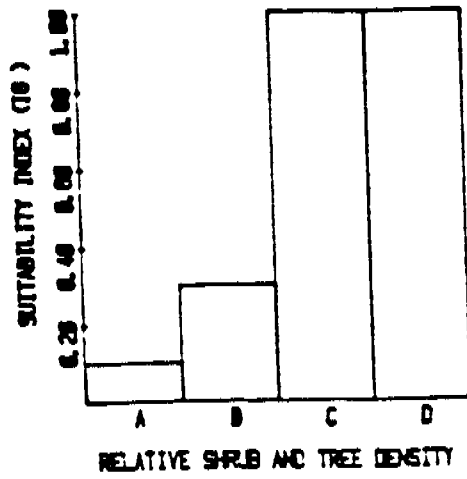
SAVANNAH SPARROW

GRASSLAND/AGRICULTURAL

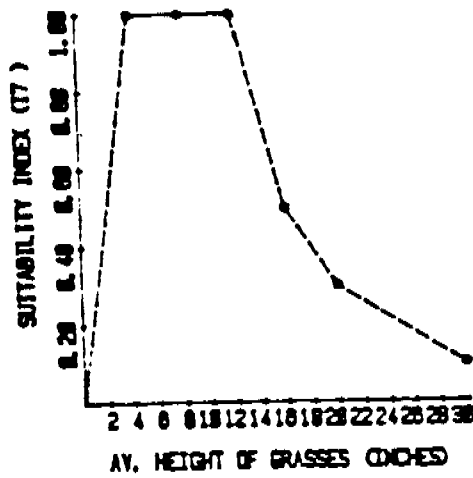


SAVANNAH SPARROW

GRASSLAND/AGRICULTURAL



A-TREES OR SHRUBS PREVALENT THROUGHOUT SAMPLE SITE
 B-WIDELY SCATTERED TREES OR SHRUBS THROUGHOUT SAMPLE SITE (SAVANNAH)
 C-NO TREES OR TALL SHRUBS PRESENT; A FEW LOW SHRUBS SCATTERED THROUGHOUT SAMPLE SITE
 D-NO TREES OR SHRUBS PRESENT ON SAMPLE SITE



HABITAT SUITABILITY INDEX

Savannah Sparrow in Grassland/Agricultural Type

Ecoregion 2410

$$\text{Reproductive Value} * (X_1) = \frac{(I_1 + I_2 + I_3 + I_4 + I_7)}{5} \times (I_5 \times I_6)^{1/2}$$

Where: I_1 = Suitability Index (SI) of litter depth.

I_2 = SI of percent of ground covered by litter.

I_3 = SI of forb height.

I_4 = SI of percent forb cover.

I_5 = SI of percent grass cover.

I_6 = SI of relative shrub and tree density.

I_7 = SI of average height of grasses.

* If reproductive needs are satisfied, all other food and cover needs will also be satisfied.

The Habitat Suitability Index is X_1 .