Baker River Project Terrestrial Working Group Analysis Species

Tree Swallow (Tachycineta bicolour)

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**Habitat Type:** Snag/Log Dependent

**Note:** Bird Accounts from the Birds of North America series will accompany this review for additional detailed information on species biology, population status and habitat requirements.

**Species Biology and Population Status:**

- A member of the order Passeriformes, the tree swallow is a secondary cavity nester, depending on woodpeckers and other primary cavity nesters to provide cavities for nesting and roosting (Robertson et al 1992).
- The North American breeding range of this species is shown in Figure 1.
- This species is typically 14 cm in length (Cornell Laboratory of Ornithology 2000).
- Tree sparrows are monogamous, however polygyny is reported, particularly when food resources are abundant (Ehrlich et al. 1988).
- Tree swallows typically nest in standing dead trees, hollow stumps, and will readily nest in nest boxes (Robertson et al. 1992).
- Clutch sizes in tree swallows range from 4-6 eggs. Incubation typically takes 13-16 days, and fledging takes place within 16-24 days (Ehrlich et al. 1988).
- Second broods are rare in this species, particularly in northern latitudes. Tree swallows will renest if eggs are destroyed or brood failure occurs (Robertson et al. 1992).
- The tree swallow is not listed by the State of Washington as threatened or endangered, however it is classified as protected wildlife (US Department of Fish and Wildlife). No significant population trends are reported by the Breeding Bird Survey for the state of Washington over the last 20 years.
- One of the limiting factors in breeding population is nest site availability (Stutchbury and Robertson 1985). This species competes for nest sites both intraspecifically and interspecifically. Interspecific competitors include European starlings (Sturnus vulgaris), house sparrows (Passer domesticus), and house wrens (Troglodytes aedon) (Robertson et al. 1992).
- The home range size of the tree swallow varies with geographic area and food abundance. However, breeding success generally requires good foraging areas within 4 km of nest site (Robertson et al. 1992).
Habitat Requirements:

- The breeding range of the tree swallow is in open areas, often near water, that contain dead trees that provide cavities (Robertson et al. 1992). Early breeders tend to choose nest sites farther away from forest edge than later breeders, suggesting that sites further from the forest edge are preferred by this species (Rendell and Robertson 1990).
- A study in Washington found that tree swallow densities were greater in areas where snags were not removed during forest management. They also tended to prefer early successional stage forests, where plant cover consisted of bushes and tree seedlings, and snags were found in clusters resulting from fires (Zarnowitz and Manuwal 1985).

Food Resources and Foraging Behavior:

- Tree swallows primarily feed on insects, pursuing prey in air (Ehrlich et al. 1988).
- Tree swallows will also eat vegetable matter, particularly in unfavorable weather conditions (Robertson et al. 1992).
- Tree swallows have the ability to digest bayberry (*Myrica* spp.), a waxy berry that allows them to survive over harsh winters (Hausman 1927).
- Male tree swallows tend to range farther than females (Robertson et al. 1992).

Responses to Habitat Alteration and Effects of Human Activity:

- An important factor in tree swallow and other cavity nesters’ breeding success is nest site availability. Minimising the amount of snag and stump removal in forest management may help to ensure adequate sites are available.
- House wrens exhibit behaviors that can cause nest abandonment by tree swallows, and they will also destroy tree swallow eggs. Tree swallows tend to choose nest sites that are far away from forest edges, presumably to avoid interactions with house wrens, who tend to nest near (i.e. $\leq 20$ m) to forest edges (Rendell and Robertson 1990). Maintaining snags and logs and providing nest boxes in open areas away from forest edges may increase nest site availability and minimise nest failure due to competition.
- Tree swallows are faced with increasing competition for nest sites as numbers of European starlings increases, a species that is often associated with human habitation (Weitzel 1988).
- Many studies have shown high levels of chemical contaminants in tree swallows (e.g. Bishop et al. 1999, McCarty and Secord 1999a, McCarty and Secord 1999b). There are several negative consequences that may be related to chemical contamination. For example, one study conducted along the Hudson River showed decreased reproductive success and increased nest abandonment in contaminated sites. As well, clutch sizes tended to be much larger in
contaminated sites, which may have long-term effects on nestling success with the increased parental load (McCarty and Secord 1999b). In another study, it was suggested that contamination lead to abnormal nest-building behaviour in one population of tree swallows (McCarty and Secord 1999a). Bishop et al. (1999) found depressed hepatic vitamin A in tree sparrows exposed to chlorinated hydrocarbon contaminants. Vitamin A deficiency can lead to immune dysfunction and reduced egg production and hatchability in domestic birds (Bermudez et al. 1993 as cited in Bishop et al. 1999).

- Tree swallows may also have reduced reproductive success due to acid precipitation. It has been shown that tree swallows nesting near an acidified lake had smaller eggs, lower hatching success, and abnormal growth functions in nestlings (St. Louis and Barlow 1993).

**Studies Conducted in the Baker River Watershed:**

Local information has been requested and will be added when it is received.

**Literature cited:**


Figure 1. Breeding Bird Survey (BBS) map of Tree Swallow distribution throughout breeding season.
From: http://www.mbr-pwrc.usgs.gov/id/framlst/i6140id.html