

# SOLITARY SANDPIPER

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## TAXONOMY

**Scientific name:** *Tringa solitaria* Wilson, 1813

**Common name:** Solitary Sandpiper

**Family:** Scolopacidae

**Taxonomic comments:**

The Solitary Sandpiper is the nearctic counterpart to the palearctic Green Sandpiper (*Tringa ocrophus*). Two subspecies are recognized: *Tringa solitaria solitaria* (breeds east of eastern British Columbia) and *T. s. cinnamomea* (breeds in Alaska and western Canada; Moskoff 1995). The two subspecies have been found together on neotropical wintering grounds (Moskoff 1995).



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Recent mtDNA studies by Hebert et al. (2004) identified a deep divergence within the species which could result in splitting the species in two; further taxonomic investigation is required.

## DESCRIPTION

**Basic description:** A small wading bird.

**General description:**

A small, slender, drab wading bird that resembles other sandpipers. Adults are dark olive-brown above; with back, nape, tail, and wings heavily spotted in buffy-white. Throat, breast, and flanks are greatly streaked in blackish brown; the belly is bright white. Dark underwing contrasts with white belly in flight. The iris is brown, the bill is blackish at the tip and greenish basally, legs and toes are olive greenish (Johnsgard 1981). Juveniles resemble adults but the neck is white and streaking on the breast and flanks is diminished (Bent 1929).

Subspecies *T. s. solitaria* is generally smaller and has darker upperparts than *T. s. cinnamomea*, which is slightly larger and has paler, more gray-olive upperparts with less distinctive brownish buff spotting, sometimes almost cinnamon (Moskoff 1995, Johnsgard 1981, Hayman et al. 1986, Gabrielson and Lincoln 1959).

**Length (cm):** 22

**Weight (g):** 51

**Reproduction:**

Breeding begins late May to early June (Harrison 1978). Four eggs are typically laid (Bent 1929). Nestlings are precocial (Harrison 1978).

**Ecology:**

The only North American shorebird that nests in trees; uses the old nests of boreal forest songbirds such as American Robin (*Turdus migratorius*), Rusty Blackbird (*Euphagus carolinus*), Eastern Kingbird (*Tyrannus tyrannus*), Gray Jay (*Perisoreus canadensis*), and Cedar Waxwing (*Bombycilla cedrorum*; Oring 1973, Moskoff 1995). Chiefly associated with the Rusty Blackbird and its ecological preferences (Bent 1929, Palmer 1967, Oring 1973, Johnsgard 1981). Preyed upon by Peregrine Falcon (*Falco peregrinus*) in Alaska (Cade et al. 1968); Gray Jay (*Perisoreus canadensis*) takes eggs (Moskoff 1995). Usually seen singly or in small loose groups during the non-breeding season.

**Migration:**

Migrates singly or in small groups; flocks rarely larger than 10 individuals. Migrates from boreal forest habitats primarily through freshwater habitats to tropical and subtropical wintering grounds; both an inland and offshore migrant (Moskoff 1995). In fall, mid-continental migration is broadly dispersed. In spring, migration is highly concentrated, e.g., 60% of recorded migrants were found within just two 0.1 degree lat-long blocks in central Arkansas and at Great Salt Lake, respectively (Skagen et al. 1999).

Begins northward migration March and early April; migrates through U.S. April to May. Southward migration from breeding areas begins late June or early July. In British Columbia, fall migration is mid July to late September (peaks in August; Moskoff 1995). Migrates through Costa Rica mainly August to early October and mid-March to early May (Stiles and Skutch 1989). Arrives in northern South America in July or early August, departs by early April (Hilty and Brown 1986).

**Food:**

Primarily an insectivore, relying on small crustaceans, mollusks, spiders, worms, fish, frogs, and tadpoles. Primary prey includes fly and mosquito larvae (Culicidae) and young midges. Wades through water catching aquatic insects (Chironomidae; Bent 1929, Palmer 1967, Johnsgard 1981, Moskoff 1995) and also snatches insects (dragonflies, grasshoppers, etc.) in mid-air (Bent 1929).

**Habitat:**

*Breeding:* Wooded wetlands in muskeg bogs, spruce forests, and deciduous riparian woodlands (Moskoff 1995); occasionally riparian tall shrub thickets (Spindler and Kessel 1980, McCaffery and Harwood 2004). On the Kenai Peninsula, Alaska, associated with wet forest gaps 10 to 20 m wide (Collins et al. 1999). Nests in trees in abandoned arboreal passerine nests near muskeg and woodland ponds or pools (Street 1923, Bent 1929, Oring 1973). Habitat preferences are virtually identical to those of the Rusty Blackbird (Johnsgard 1981).

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*Postbreeding and staging:* Similar to breeding habitat, but may also use non-wooded wetlands such as margins of large lakes; rarely seen on coastal salt marshes (see sources in Moskoff 1995).

*Non-breeding:* Freshwater ponds, stream edges, temporary pools, flooded ditches and fields, more commonly in wooded regions, less frequently in mudflats and open marshes (AOU 1983); favors areas where vegetation extends to waters edge (Stiles and Skutch 1989).

*Foraging:* Prefers small stagnant pools of water, ditches that cut through marshes, and wet depressions in meadows (Moskoff 1995), conditions ideal for black flies, midges, and mosquitoes (Palmer 1967). Feeds from shallow water margin, floating mats of vegetation, or in soft mud (Palmer 1967).

## STATUS

**Global rank:** G5 (25Nov1996)

**Global rank reasons:**

Secure – widespread and abundant.

**State rank:** S2B (19May2006)

**State rank reasons:**

Alaska breeding population estimated at less than 4,000 birds. Breeding Bird Survey data indicate a population decline of 3.3%/year since 1980, suggesting population is about one third of what it was a quarter of a century ago. Potential threats include loss of boreal forest habitat to logging and development and drying of wetland habitats. Also, concern regarding declining Rusty Blackbird populations, whose nests this species uses.

## DISTRIBUTION AND ABUNDANCE

**Range:**

**Global range:**

*Breeding:* Central and south-coastal Alaska, northern Yukon, Mackenzie, northern Saskatchewan, northern Manitoba, and northern and central Ontario east through central Quebec to central and southern Labrador, and south to northwestern and central British Columbia, central Alberta, central Saskatchewan, southern Manitoba, and northern Minnesota; probably west-central Oregon (AOU 1983).

*Non-breeding:* From Baja California, Gulf Coast, southeastern Georgia, Florida, and Bahamas south through Middle America and South America to Peru, south-central Argentina and Uruguay. Accidental in Hawaii (AOU 1983, Moskoff 1995).

**State range:**

*Breeding:* Alaska subspecies, *T. s. cinnamomea*, is closely associated with boreal forests. Nests from within 25 km of the Bering Sea in western Alaska east to the Alaska/ Canada border, and from the northern Alaska Peninsula north to the Brooks Range including

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southcentral Alaska and the Kenai Peninsula (Gabrielson and Lincoln 1959, Irving 1960, Kessel and Schaller 1960, Johnson and Herter 1989, Kessel 1989, Collins et al. 1999, McCaffery and Harwood 2004); major nesting grounds are in the Yukon and Kuskokwim River valleys and the upper reaches of the Copper River drainage system (Gabrielson and Lincoln 1959).

*Non-breeding:* Concentration areas for migrants and post-breeders have not yet been identified in Alaska (ADFG 2005). Migrants are uncommon to fairly common along the North Gulf Coast and in Prince William Sound, especially in the fall (Isleib and Kessel 1973), uncommon in Cook Inlet (Gill and Tibbitts 1999), uncommon in southeastern Alaska (Gabrielson and Lincoln 1959), and casual on Kodiak Island (Kessel and Gibson 1978).

### **Abundance:**

#### **Global abundance:**

Population estimated at 25,000 individuals, but precision is poor (range 25,000 to 150,000; Morrison et al. 2001, Sinclair et al. 2004). Northwestern race, *T. s. cinnamomea*, estimated at only 4,000 individuals (Brown et al. 2001); if accurate, *T. s. cinnamomea* is among the rarest of North American shorebird taxa (McCaffery and Harwood 2004).

#### **State abundance:**

Alaska breeding race, *T. s. cinnamomea*, estimated at only 4,000 individuals (Brown et al. 2001); if accurate, *T. s. cinnamomea* is among the rarest of North American shorebird taxa (McCaffery and Harwood 2004). However, the quality of these estimates is considered quite poor (Alaska Shorebird Group 2004).

### **Trends:**

#### **Global trend:**

Little available data, but recent analyses suggest downward trends in all data sets with sufficient information to evaluate such trends (e.g., Breeding Bird Survey [BBS] in Alaska and Canada, and migrant monitoring in Ontario and Quebec; Sauer et al. 2005). BBS data from Canada show a non-significant annual rate of decline of -6.0% between 1966 and 2004 ( $P < 0.14$ ,  $n = 19$  routes; Sauer et al. 2005). Point estimates of trends for migrant birds in both Ontario and Quebec between the late 1970s and the late 1990s are also negative, but neither approaches significance (Aubry and Cotter 2001, Ross et al. 2001).

#### **State trend:**

North American Breeding Bird Survey (BBS) data for Alaska indicated a non-significant annual rate of decline of -3.3% since 1980 ( $P < 0.16$ ,  $n = 23$ ; Sauer et al. 2005). If this trend is accurate, the Alaska population is only about one third the size it was a quarter century ago (Alaska Shorebird Group 2004, McCaffery and Harwood 2004). The quality of these estimates, however, is thought to be quite poor (Alaska Shorebird Group 2004).

## **EXISTING PROTECTION**

### **Global protection:**

Protected in the U.S. and Canada under the Migratory Bird Treaty Act.

### **State protection:**

Breeding habitat protected where species occurs in National Wildlife Refuges including Arctic, Kanuti, Yukon Flats, Koyukuk/Nowitna, Selawik, Innoko, Tetlin, Yukon Delta, and Kenai (Igl 1996); also in Wrangell-St. Elias National Park (but uncommon; Igl 1996) and Lake Clark National Park (Tibbitts et al. 2004); and in state game refuges. The dispersed distribution of this species protects it somewhat from local catastrophes (e.g., oil spills). The species likely experiences localized, low levels of human disturbance during breeding and postbreeding (ADFG 2005).

Although afforded no formal protection through these designations, the Alaska breeding population is considered “highly imperiled” by the Alaska Shorebird Group (2004) and of “high conservation concern” by Boreal Partners in Flight (ADFG 2005); the continental population is considered a “species of high concern” in the Alaska Shorebird Conservation Plan (Brown et al. 2001, Alaska Shorebird Group 2004).

## **CHALLENGES**

### **Global challenges:**

Assessment of threats is speculative because species-specific research has been difficult due to remote breeding grounds, low densities, and the solitary nature of the species (McCaffery and Harwood 2004). Potential threats include logging of boreal forests and tropical woodland habitats, and wetland loss as a result of drying and human development (Moskoff 1995, McCaffery and Harwood 2004). Also, see State threats below.

### **State challenges:**

Potential threats include logging of boreal forest habitats and loss of wetland habitat (especially though drying; Moskoff 1995, McCaffery and Harwood 2004). Spruce mortality associated with spruce bark beetle infestations and associated salvage logging may also reduce this species’ habitat (Collins et al. 1999). This sandpiper uses the abandoned nests of boreal forest passerines, especially Rusty Blackbirds. It is possible that the dramatic decline observed in Rusty Blackbird populations (Greenberg and Droege 1999, 2003) may reduce the availability of adequate nests and thereby affect the reproductive success of Solitary Sandpipers (McCaffery and Harwood 2004).

## **RESEARCH AND INVENTORY NEEDS**

### **Global research needs:**

The degree of dependence on nests constructed by arboreal passerines should be assessed, and the possible indirect impacts of declining Rusty Blackbird populations (and

hence, reduction in nest availability) evaluated. Identify actual and potential threats to the population (McCaffery and Harwood 2004). Also, see State research needs below.

**State research needs:**

Identify causes of apparent decline in Alaska breeding population. Due to remote breeding areas, low densities, and solitary nature, this species remains poorly understood; breeding biology in particular needs research (Moskoff 1995).

**Global inventory needs:**

Monitor changes in the extent (e.g., loss of habitat due to development, climate change) and primary productivity of boreal forest wetlands and evaluate effects on Solitary Sandpipers (ADFG 2005).

**State inventory needs:**

A synthesis of survey results to date is needed; verify accuracy of existing trend data. Current population estimates are unreliable; adequate statewide monitoring protocols for the species need to be developed, tested, and implemented (McCaffery and Harwood 2004). This species can be distinguished on helicopter surveys only by skilled individuals, but there is potential for surveys coordinated with existing point count and ground-based wetland surveys for other species (Sinclair et al. 2004).

## **CONSERVATION AND MANAGEMENT NEEDS**

**Global conservation and management needs:**

Determine regions and habitats preferred by this species on Neotropical wintering grounds (McCaffery and Harwood 2004). Identify high-quality habitats in need of protection.

Unusual concentrations of Solitary Sandpipers occur during spring migration at Anderson's Fish Hatchery in central Arkansas and at Riverdale, Great Salt Lake, Utah (Skagen et al. 1999); these locations may warrant special protection.

**State conservation and management needs:**

Differences in breeding density and breeding success among habitats should be quantified to identify high-quality habitats in need of protection. Identify and, if possible, reverse the factors contributing to the apparent population decline in Alaska (McCaffery and Harwood 2004).

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