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January 1980

## Assemblages of Tree Swallows as Information Centers

Florida Field Naturalist

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### Recommended Citation

Florida Field Naturalist (1980) "Assemblages of Tree Swallows as Information Centers," *Florida Field Naturalist*. Vol. 8 : Iss. 1 , Article 12.

Available at: <https://digitalcommons.usf.edu/ffn/vol8/iss1/12>

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Fig. 1. Tropical Kingbird on Hypoluxo Island, Florida, 12 May 1979. Photo by Brooks Atherton.

Prior to the above sightings, there were five records for *T. melancholicus* for Florida; one from the Panhandle and the rest from the southern part of the State (Stedman and Lohrer 1976, Florida Field Nat. 4: 40-41). Of the seven records, four are in the spring, two in the fall and one in the winter.

Just recently, Traylor (1979, Auk 96: 221-233) presented evidence that the Couch's Kingbird (*T. couchii*), usually considered a subspecies of *T. melancholicus*, is a distinct species (Note: we were unaware of Traylor's paper prior to arrival of the April issue of *The Auk* in early June 1979). The distribution of *couchii* is from southern Texas south to Yucatan Peninsula, northern Guatemala and Belize and *melancholicus* is from southern Arizona south into South America. The two are sympatric from east central Mexico to Belize. The two species can be safely identified under field conditions only by call, thus silent extralimital birds, such as occur in Florida, are a problem. In the hand the two can be distinguished by the wing tip index and bill/wing ratio (Traylor 1979). Specimens are needed from Florida, as both species are likely to occur. Also, visible means of separating *couchii* from *melancholicus* in the field is urgently needed for silent birds occurring out of their usual range. Thus, all the records of the Tropical Kingbird in Florida are in a state of limbo until a voucher specimen is obtained.

We wish to thank Brooks Atherton for permission to use his photograph.—ANN Y. AYERS, 2944 Creek Road, West Palm Beach, Florida 33406, and PAUL W. SYKES, JR. AND WESLEY J. SYKES, 4195 Maurice Drive, Delray Beach, Florida 33445.

Fla. Field Nat. 8(1): 26-28, 1980

Assemblages of Tree Swallows as information centers.—Tree Swallows (*Iridoprocne bicolor*) are known to have dramatic aerial displays (Jones 1910, Stone 1965). Stone (1965) regarded them as among the most striking avian performances that he witnessed at Cape May, New Jersey. But his descriptions, for the most part, do not include the time of day, the weather, nor any interpretation. It is the aim of this report to describe assemblages that my wife and I observed in Florida and Georgia in 1979, then to suggest that their selective advantage stems from being pre-roosting displays of a type Ward and Zahavi (1973) describe for a

variety of avian species. This is in relation to social foraging, a phenomenon recently discussed for Bank Swallows (*Riparia riparia*) by Emlen (1975).

I stopped my car at 1450 on 4 March 1979 on seeing several thousand Tree Swallows clustered and beating their wings in three wax myrtle (*Myrica cerifera*) bushes 7 m from the road at Venus, Highlands County, Florida. This was while my wife and I were staying at the Archbold Biological Station at Lake Placid. It was easy to see with 8 × 30 binoculars that the birds were not feeding. They streamed from the bushes within a minute and were soon widely dispersed. The sky was overcast and there were sounds of thunder. We drove on 200 m, then stopped on finding that the swallows had aggregated in another clump of myrtles, where they remained only a minute. After dispersing the swallows assembled in a vortex, gliding around on outstretched wings. The vortex appeared to act as a magnet, drawing swallows from all directions for nearly 20 min. At times there were thousands not far above my head. As rain began to fall the swallows mounted high against the clouds, then swooped in a dense mass above the tops of low trees and bushes and disappeared.

We made further observations a month later on Sapelo Island, McIntosh County, Georgia, while staying as guests of the Marine Institute of the University of Georgia. Here we saw assemblages at the south end of the island in intermittent light rain on the mornings of 5 April (3-4000 swallows) and 14 April 1979 (an estimated 10,000). Features of these assemblages, watched from 45 to 90 min, were that in addition to alighting in clumps of wax myrtles (2 occasions) they alighted briefly along 300-400 m of beach and sand dune on six occasions. At no time did they appear to be feeding. When skies got lighter they dispersed.

We visited the south end of Sapelo Island daily. On most mornings we saw single Tree Swallows, and later Barn Swallows (*Hirundo rustica*), seemingly feeding as they migrated northward. On three mornings of sunshine (8, 17 and 24 April) there were sudden small assemblages of from 30-150 Tree Swallows, all between 0800 and 0900. These dispersed within 15 min. In the interim the swallows swirled about the end of the island, alighting on the beach repeatedly only to take off again. None of them appeared to be feeding.

Ward and Zahavi (1973) point out that a variety of birds having communal roosts perform pre-roosting displays. These birds, including Starlings (*Sturnus vulgaris*) and Red-billed Queleas (*Quelea quelea*) appear to exploit food that is patchily distributed over wide areas. If individuals fail to find good foraging one day, they may, by flying to the communal roost, join some group that has been successful and knows where to go the next day. The lengthy displays involving thousands of Tree Swallows that we witnessed in Florida and Georgia were apparently triggered by the darkness of approaching storms making the swallows feel that night was coming on. Jones (1910) speaks of Tree Swallows forming "the characteristic funnel group before settling into the vegetation for the night." Queleas assemble at mid-day at lesser distances, forming what Ward and Zahavi term secondary information centers. The small assemblages of Tree Swallows we saw on the beach on sunny days may have been of this nature.

Two papers on hirundines are pertinent. One by Rudebeck (1955), describes the pre-roosting displays of the European swallow *H. rustica*, in South Africa, giving two descriptions of their feeding on well isolated patches of highly concentrated insects. Another paper, by Emlen (1975) applies the idea of the "information center" to the synchronized colonial breeding of Bank Swallows. His descriptions of the various factors that can lead to a patchy distribution of aerial insects may hold also for Tree Swallows. These birds, wintering farther north than other hirundines, may be particularly subject to resource patchiness because of cold and winds. While they do feed on wax myrtle berries, the berries may come to have an irregular abundance as a winter progresses. The attraction to myrtle bushes when the swallows are in dense aggregates is probably caused by the dense branching that can accommodate thousands of birds in a small space. Stone (1965) noted that the swallows may come to bushes with few or no berries or, in one case, bushes lacking leaves. The problem of the assemblages is a broad one, obviously open to further study.

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Fla. Field Nat. 8(1): 28-29, 1980

**Eastern coachwhip predation on nestling Blue Jays.**—Snakes are considered major predators of birds' eggs and young (Skutch 1976) but the act of predation is so brief that it usually is not witnessed and the identity of the predator remains unknown. Thus this record of eastern coachwhip (*Masticophis f. flagellum*) predation on nestling Blue Jays (*Cyanocitta cristata*) at a nest 5 km south of Lake Placid, Highlands County, Florida, seems worthy of note.

At 1600 on 24 June 1979, a hot sunny day, Blue Jay alarm calls in my back yard led me to discover a 2 m eastern coachwhip at a nest 4 m high in a 8 m heavily-branched sand pine (*Pinus clausa*). A bulge in the snake's body about 0.3 m from the head indicated that probably at least one nestling had been eaten before I arrived. I watched the snake remove two well-feathered nestlings (primaries ca. 2-3 in. long), one by one, keeping its head concealed within the densely-needled branch as it swallowed between visits to the nest. The four adult Blue Jays and four Scrub Jays (*Aphelocoma coerulescens*) scolding in the tree repeatedly struck the snake's body with their bills and occasionally pulled at its tail. However, these attacks did not appear to bother the snake. After emptying the nest, the snake dropped from branch to branch almost straight down to the ground, where it crawled a short distance to coil under a dense saw palmetto (*Serenoa repens*). When the snake was thus concealed only two Blue Jays continued to scold it; the other jays departed. Two Mockingbirds (*Mimus polyglottos*), a House Sparrow (*Passer domesticus*), a male Boat-tailed Grackle (*Quiscalus major*), and a male Rufous-sided Towhee (*Pipilo erythrophthalmus*) were attracted to the tree by the scolding jays but did not attack the snake and left the tree when the snake left.

Nicholson (1936) commented that many fledgling Blue Jays in Florida "fall easy prey to cats and various snakes" perhaps based in part on his (1929) record of black racer (*Coluber constrictor*) predation on a fledgling Blue Jay.

The diurnal coachwhip, active and agile, is considered an excellent climber (Ditmars 1946). Prey includes mammals, lizards and snakes, as well as "birds and (their) eggs" (Ditmars 1946, Wright and Wright 1957, Collins 1974, Mount 1975). Birds recorded as prey of this species include "a young dove" (Van Denburg 1922), nestling (Westcott 1970) and juvenile (Webber 1980) Scrub Jays, nestling Brown-headed Cowbird, *Molothrus ater*, (Carpenter 1958), nestling House Finches, *Carpodacus mexicanus*, (Miller and Stebbins 1964) and Savannah Sparrow, *Passerculus sandwichensis*, (Hamilton and Pollack 1957).

I thank Thomas A. Webber and Larry David Wilson for their helpful comments on this manuscript.

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