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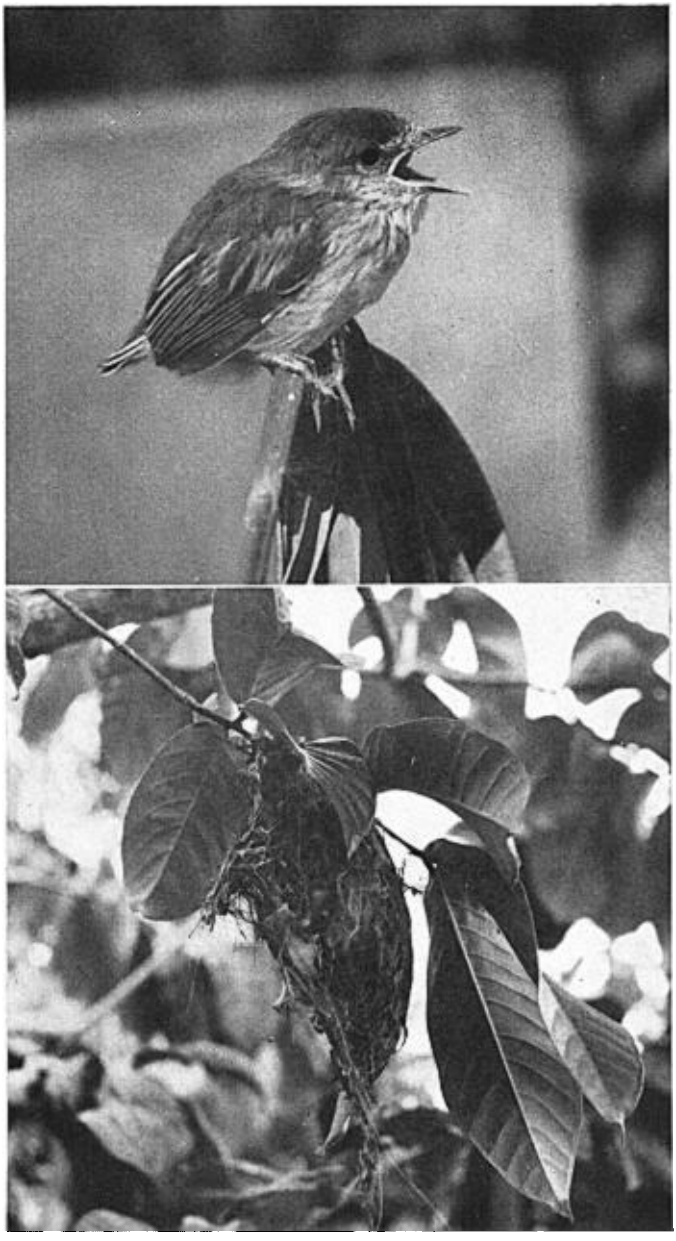
NOTES ON THE LIFE HISTORY OF *TODIROSTRUM MACULATUM* IN SURINAM

BY F. HAVERSCHMIDT

THE tody-tyrants (Family Tyrannidae, genus *Todirostrum*) are small, rather short-tailed birds, characterized by a peculiarly shaped bill, which resembles an elongated spatula. In the Spotted Tody-tyrant (*T. maculatum*), the crown is dark gray with white margins, the upperparts are olive-green, and the cheeks and throat are white with dark pear-shaped marks which extend over the yellow breast and abdomen. The sexes are indistinguishable. Specimens which I collected in Surinam weighed 7.3 and 7.6 grams (males), and 7.2 grams (female). The range of *T. maculatum* extends from northern Venezuela (Orinoco Delta), the Guianas, and the eastern slope of the Andes in Ecuador and Peru throughout the greater part of northern Brazil. Hellmayr (1927) recognizes two races, of which the nominate is found in Surinam.

In the coastal area of Surinam, two species of *Todirostrum* are of common occurrence. *T. cinereum*, the smaller of the two, is a common garden bird, which as a rule frequents rather dry ground. It is numerous on the sand reefs and in waste land, as well as in brushy savannas behind the coastal area. *T. maculatum*, on the other hand, is a bird of wet places. It is particularly numerous in the broad strip of mangroves (*Avicennia nitida*) bordering the coast, and it also frequents the bushes along creeks. There is, however, some overlapping in the habitats of the two species; I have sometimes found *T. cinereum* nesting in mangroves (December 15, 1953, and April 3, 1954). On the other hand, I have never found *T. maculatum* in the dry habitat where *T. cinereum* is common.

Feeding.—Tody-tyrants feed on insects and have a peculiar way of obtaining their food. From a sitting position on a branch, they suddenly jump to a leaf and, in flight, take an insect, with a distinct



The Spotted Tody-tyrant (*Todirostrum maculatum*) in Surinam. (*Top*) Fledgling. (*Bottom*) Nest (Entrance at left). Photographs by F. Haverschmidt.

snap of the mandibles. They also catch flying insects in the usual flycatcher fashion, as for instance, when they are feeding on flying termites.

Breeding season.—In my garden, where most of my notes were taken, I have found nests in all months of the year, but my material is still too meager to show seasonal peaks.

Nest.—The nest is a pouch with a roofed side entrance and hangs from a branch, usually at a height of from one to nine feet from the ground (Plate 15). It is somewhat larger than the similarly shaped nest of *T. cinereum* but lacks the long "tail" at the bottom, which is such a feature of nests of *T. cinereum.* (Compare with the pictures in Skutch, 1930.) It is built largely of dead plant material, but spider webs are used in considerable amounts. The lining consists of plant wool; I have never found any feathers in it.

Nest building.—The nest is built and lined by both sexes and can be completed in about a fortnight, although the period of construction is very variable. One nest, started on May 10, 1953, contained the first egg on May 24. I watched this nest for two hours on May 14; from 9:09 to 10:09, the birds brought nest material 51 times, from 10:09 to 11:09 A.M., only 29 times. By May 17, the tempo had lessened considerably; from 9:40 to 10:40, they arrived only 8 times with nesting material and from 10:40 to 11:40, 15 times. On this day they worked only on the lining of the nest. Each time after emerging from the nest they wiped their bills on a branch, often uttering their harsh call note *tee* or *tee tee* a few times.

Almost always, a new nest is built when the preceding one comes to grief, which is very often the case as we will see later. Material for the new nest is to a great extent taken from the old one; sometimes, it is even taken from other birds' nests. On April 2, 1953, I observed a pair busily taking material from a disused nest of a hummingbird (*Amazilia fimbriata*).

In two cases, old nests of earlier broods were repaired and used for a new brood. On September 18, 1952, a nest with two eggs which did not hatch was deserted. It again contained two eggs on October 14. In another nest, the first egg was laid on October 19, 1953. This nest was robbed on November 11; on December 20, it was repaired; and an egg was laid in it on December 31.

A very large percentage of nests is robbed of eggs and nestlings by predators. I suspect the Crested Oropendola (*Xanthornus decumanus*) of most of this predation. Some eggs and young may also be taken by Smooth-billed Anis (*Crotophaga ani*), which often inspect the row of *Lagerstroemia indica* trees in which the tody-tyrants make

most of their nests in my garden. On April 11, 1953, I surprised an oropendola inserting its bill into the entrance of a *Todirostrum* nest which was ready for eggs.

Between April, 1953, and January, 1954, the ten successive nests with eggs of a single pair of birds all met disaster. Although the birds were not marked, I am sure all ten nests belonged to the same pair as there was only a single pair in my garden and each new nest was made in the immediate neighborhood of the preceding one in the row of Lagerstroemias already mentioned. Most of these nests were within a few yards of each other, and in all cases, the material for the construction of a new nest was taken from the preceding one. The history of these nests follows:

Nest 1.—Nest started on April 2, 1953. (I was absent from April 16 to 20.) April 21 and 22, one egg; April 23, nest empty.

Nest 2.—April 24, nest started; May 3, still empty. (I was absent on May 4 and 5.) May 6, one egg; May 7, egg missing. Interval between destroying of nest 1 and laying of egg in nest 2, less than 13 days.

Nest 3.—May 10, new nest started; May 24, one egg (no more laid); June 8, egg gone. Interval between loss of egg in nest 2 and laying of egg in nest 3, 17 days.

Nest 4.—June 16, new nest found, apparently almost finished; June 23, first egg laid; July 5, nest robbed. Interval, 14 days.

Nest 5.—July 9, new nest being built; July 19, one egg (no more laid); nest robbed after a few days. Interval, 14 days.

Nest 6.—July 25, new nest under construction; August 4, two eggs; August 25, eggs taken. Exact interval not known.

Nest 7.—September 8, new nest being built; September 14, appeared ready for eggs; September 19, one egg; September 21, two eggs; October 6, nest robbed. Interval, 25 days, the longest of all.

Nest 8.—October 10, new nest under construction; October 19, one egg; October 21, two eggs; November 11, eggs missing. Interval, 13 days.

Nest 9.—November 19, new nest nearly finished; November 28, one egg; November 30, two eggs; December 13, nest robbed. Interval, 17 days.

Nest 10.—December 20, nest 8 is repaired; December 30, one egg; January 1, 1954, two eggs; January 26, eggs missing. Interval, 18 days.

The interval between the destroying of the eggs and the laying of the first egg in a new nest varied from 13 to 25 days. The birds did not make an eleventh attempt although they remained in my garden for some time.

Twice a nest was built beside a nest of wasps. A nest found on March 26, 1952, was near a nest of *Nectarina bilineolata* var. *smithi* Sauss. Nest 8 of the above list, which was later repaired and used again (as nest 10), was beside a nest of *Polybia occidentalis* var. *parvula* F. However, it is certainly not the rule for *T. maculatum* to build near wasps' nests as it is in the case of some birds in this region, for example, *Tolmomyias flaviventris* and *Pachyramphus polychopterus*.

Copulation.—I only observed copulation on November 18, 1952. The fledglings, which had left the nest on November 8, were still about when suddenly the male jumped on the back of the female. Shortly afterwards, the act was repeated once more.

Egg laying.—When the nest is (or appears) ready for eggs, it is left for a few days before the first egg is laid. This period is difficult to ascertain because without damaging the nest, it is impossible to determine whether or not its inner lining is finished. In all cases in which the full clutch consisted of two eggs, they were laid at two-day intervals: February 1 and 3, 1951; August 28 and 30, 1952; and October 19 and 21, 1953.

TABLE 1

ATTENTIVENESS DURING THE INCUBATION PERIOD

Date	*Period of observation*	*On nest*	*Off nest*	*Minutes on nest*	*Minutes off nest*
May 26, 1953[1]	13:44–14:44		13:44–13:48		
		13:48–14:08	14:08–14:24		
		14:24–14:44		40	20
June 4	15:03–16:03	15:03–15:50	15:50–16:03	47	13
June 5	13:15–14:15	13:15–13:52	13:52–14:15	37	23
June 6	10:13–11:13		10:13–10:38		
		10:38–10:55	10:55–11:13	23	37
June 7	9:37–10:37	9:37– 9:42	9:42–10:07		
		10:07–10:25	10:25–10:37	23	37
	16:00–17:00		16:00–16:08		
		16:08–16:56	16:56–17:00	48	12

[1] Third day of incubation.

Clutch size.—In most cases, the clutch consisted of two eggs, but in some of only a single one. Of eleven nests in which I was able to establish the full clutch, nine contained two eggs and two only one. The eggs are white with a few dark brown spots at the larger end. For measurements, I refer the reader to the material from the Penard Oölogical Collection (Hellebrekers, 1942). The weight of a fresh unblown egg which measured 16.3 × 11.3 mm. was 1.17 grams.

Incubation.—In one case (nest 3 of the list), I observed that one of the parent birds spent the night in the nest two days before the first egg was laid. On May 22 at 7 P.M. (it is dark by that time in this region), I observed, with the help of a flashlight, the bird sitting in its nest. The first egg was laid on May 24. Incubation starts after the laying of the second egg. Only one bird (probably the female) incubates, and I never saw any kind of nest relief. Table 1 gives some data on attentiveness at nest 3 during the incubation period. At this particular nest, I observed twice (on June 4 and 6)

that the bird returning to its nest after a period of inattentiveness was accompanied by its mate. Once the nonincubating bird even clung at the entrance while the other was inside. Owing to the fact that such a large number of nests was robbed before the eggs hatched, I could establish the incubation period in only two cases. In the first one, the first egg was laid on February 1 and the second on February 3. The first egg hatched on February 19 at about 6 P.M. and the second one on the early morning of February 20, which gives an incubation period of 17 days. In the second case the first egg was laid on December 30, the second on January 1. Both eggs hatched on February 18 which again is 17 days. Skutch (1945) gives the incubation period of *T. cinereum* in Panama as 17 and 18 days. In two cases, the eggs did not hatch and incubation was prolonged. In a nest where the second egg was laid on August 30, the eggs did not hatch and were deserted on September 18, after 19 days of incubation. In another nest, incubation on two eggs started on October 21, incubation was still in progress on November 10, after 20 days, and the nest was robbed on November 11.

TABLE 2

FREQUENCY OF FEEDING THE NESTLINGS

Date	*Age of nestlings*	*Period of observation*	*Times fed*
October 22, 1952	one day	10:20–11:20	4
October 23	2	10:05–11:05	5
		11:30–12:30	5
October 25	4	10:20–11:20	10
		11:20–12:20	6
October 26	5	15:00–16:00	5
October 27	6	10:55–11:55	7
		11:55–12:55	7
October 28	7	10:57–11:57	12
October 29	8	9:50–10:50	11
November 1	11	11:15–12:15	5
November 2	12	14:30–15:30	11
		16:00–17:00	14
November 3	13	10:40–11:40	12
November 5	15	10:10–11:10	13
November 6	16	11:15–12:15	13

Rearing of the young.—The nestlings are fed by both parents. Table 2 gives data on the frequency of feeding at a nest with two young which hatched on October 21 and 22, 1952.

The young were hardly brooded at all. On October 22, one of the parents stayed with the young for only about three minutes. Usually the parents did not enter the nest with food but clung to the entrance

and fed the young from outside. The feces of the nestlings were swallowed by both parents. Other birds such as *Camptostoma obsoletum* and *Tolmomyias flaviventris* venturing in the neighborhood of the nest, were chased away and even pursued for rather long distances.

I was able to establish the fledging period in only two cases. From a clutch with two eggs which hatched on April 11, 1952, the single surviving young left the nest on April 28, a period of 17 days. In the second case, the eggs hatched on October 21 and 22, 1952, and the two young left the nest on November 8, fledging periods of 17 and 18 days. At that time, the young were able to fly well.

The nestlings were fed small insects, only one at a time being taken to them. Three times I noted that the food was small butterflies. As already mentioned, very few broods are undisturbed; of 14 nests containing full clutches, young were fledged from only two: two young from one nest and one from the other. Skutch (1930) also mentions a tremendous loss of nests of *T. cinereum* in Panama.

Bathing.—I frequently observed *T. maculatum* bathing. Most often this was the usual showerbath in the rain, in which the bird sits in an open situation during a heavy shower and lets the raindrops fall over it, making shivering movements with its wings and preening all the time. On June 11, 1949, I watched a different kind, resembling the normal way of feeding. The bird was sitting in a Frangipani (*Plumeria rubra*), its big leaves drenched after a heavy shower. Suddenly the bird jumped against a leaf so that a little shower of drops fell over it. Then it shivered its wings and started preening. This was repeated several times. I am certain that in this case it was not feeding but bathing.

SUMMARY

Todirostrum maculatum is a common bird in the coastal area of Surinam, frequenting wet places, especially the mangroves along the coast and creeks.

Nests with eggs may be found in all months of the year. The nest is a pouch with a roofed side entrance and hangs from a branch. It is built by both sexes. Nest building lasts about a fortnight. Nests are sometimes constructed near wasps' nests, though this is not the rule.

The clutch consists of two eggs, laid two days apart, or only a single egg. Only one bird (probably the female) incubates. In two cases, incubation lasted 17 days. The nestlings are fed by both parents. Data on the feeding frequency are given. In two

cases, the fledging period lasted 17 and 17–18 days. A great many nests are robbed. Particulars are given of ten successive unsuccessful nests of a single pair during the period April to January.

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P. O. Box 644, Paramaribo, Surinam, June 2, 1954.