Short-eared Owls prefer to hunt in open plains and marshes where they feed chiefly on smaller mammals (primarily *Microtus* spp. and *Peromyscus* spp.) plus occasional small birds and insects (Errington 1937, Clark 1975). Great Horned Owls usually feed near wooded areas and prefer to feed on medium-size mammals (snowshoe hare, *Lepus americanus*; skunk, *Mephitis mephitis*) and birds (ducks, geese, pheasants, quail, and gulls; Bent 1938). However, Great Horned Owls are opportunistic and take their prey much in the order of the ease with which it may be secured (Errington et al. 1940). Hence, preferred feeding areas of the two owls probably overlap at the woodland-marsh interface and their potential prey size also overlaps. These factors would allow the two species to come in contact. Clark (1975) indicated that Short-eared Owls tend to be crepuscular; Smith and Smith (1972) observed newly-fledged Great Horned Owls hunting between 20:00 and 24:00 in July and August. Thus their hunting times may regularly coincide. A Short-eared Owl is well within the size range of food consumed by a Great Horned Owl.

When a large raptor kills and feeds upon smaller raptors of the same trophic level (Mikkola 1976, Levin et al. 1977) the larger animal not only procures food but also annihilates a potential competitor. Our data are, however, too circumstantial to allow evaluation of this side effect.

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Department of Ecology and Behavioral Biology, University of Minnesota, Minneapolis, Minnesota 55455, and the Delta Waterfowl Research Station, RR1, Portage la Prairie, Manitoba, Canada R1N 3A1. Accepted for publication 3 November 1978.

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NESTING OF THE WHITE-WHISKERED TREE SWIFT IN MALAYA

H. ELLIOTT McCLURE

Two of the four species of crested-swifts (Hemiprocnidae) are common in central Malaya: the Crested Tree Swift (Grey-rumped Tree Swift; *Hemiprocne longipennis*) and the White-whiskered Tree Swift (Lesser Tree Swift; *H. comata*). The Crested Tree Swift is the better known because it inhabits more urban places and open forests, while the White-whiskered Tree Swift prefers deep forest. The nesting of the former species has been described by Madoc (1947, 1956). The nest of the White-whiskered Tree Swift was mentioned by Sharpe (1879) and Baker (1927) and was described by Shelford (1916 *in* Chasen 1939) as "a tiny cup of feathers and down closely cemented together with mucin, and the single pure white egg—fits accurately into it. The nest itself is attached to some slender twig at the top of a lofty tree." Activities at the nest of this species do not appear to have been reported. Accordingly, I present here my observations, made from 1959 into 1963 in the Gombak watershed in the central cordillera east of Kuala Lumpur, Malaya.

White-whiskered Tree Swifts are 14–16 cm long with 13-cm long wings. They get their "whiskered" appearance from white superciliary and mustachial feathers which extend beyond the head. The sexes are distinguishable by the color of the ear coverts, bright chestnut in males, blue-black in females.

STUDY AREA AND METHODS

I worked in a small forested valley (about 3°N, 120°E) 40 km E of Kuala Lumpur. The valley and hills were covered with very dense lowland dipterocarp tropical rain forest. A primary forest only lightly thinned by lumbering, it contained up to a thousand species of trees per square kilometer and had a canopy nearly 60 m thick. The dominant genera of Dipterocarpaceae were *Anisoptera, Balanocarpus, Dipterocarpus, Shorea,* and *Hopea.*

During 1959 and 1960, I made weekly observations of the birds along a four-km forest trail at about 200 m altitude. In 1960, at about 600 m altitude, I attached a ladder to a large tree, *Anisoptera laevis,* on the hillside and built a platform 45 m above the forest floor, from which I could look out over the valley. There were 65 species of trees in the immediate vicinity, all of which reached or rose above the forest canopy. The platform and its surroundings have been described by McClure (1964, 1966, 1977) and Medway (1972).

After I built the platform I made weekly studies from it until June 1963 and discontinued those along the trail. I usually climbed into the tree at dawn, 06:00, and remained until nearly noon. Both 7× binoculars and a 40× telescope were used in watching the animals.

GENERAL OBSERVATIONS

The Crested Tree Swift was more abundant than the White-whiskered Tree Swift at the 600-m level; in 123 observations, the former was present 92% of the time (average of four individuals per observation) while the latter was present 59% of the time ($\bar{x} = 2$). In 90 ob-

TABLE 1. Summary of observations at a nest of White-whiskered Tree Swifts near Kuala Lumpur, Malaysia.

Date	Situation	Incubating time in minutes			Brooding time in minutes			Number of feedings	
		Male	Female	Unattended	Male	Female	Unattended	Male	Female
25 Aug.	one egg	10	40						
29 Aug.	one egg	no record							
1 Sept.	one egg	135	124	41					
8 Sept.	newly hatched young				45	271	17	4	4
15 Sept.	one week				140	157	5	4	4
22 Sept.	two weeks				92	137	101	2	6
29 Sept.	three weeks				104	125	39	2	3
6 Oct.	four weeks					40	260	2	4
13 Oct.	fledged				no record				
20 Oct.	juvenile							4	3
27 Oct.	juvenile							occasionally fed	
3 Nov.	juvenile still in home territory							no longer fed	
10 Nov.	juvenile left home territory								

servations at the 200-m level, I saw Crested Tree Swifts 75% of the time ($\bar{x}$ = 5.4) and White-whiskered Tree Swifts 97% of the time ($\bar{x}$ = 8.1).

On 11 April 1959, in the lower study area, I saw a nest of the White-whiskered Tree Swift in an unidentified tree 50 cm in diameter. It had a half-moon shape and was attached to the side and top of a pencil-sized twig on the west side of the tree at a height of about ten meters, five meters out from the trunk. Both birds appeared to be adding saliva to it. They alternately incubated the single egg and were still incubating when I checked the nest one week later. On 2 May I found the egg broken on the ground, possibly dislodged by the wind or a predator.

I found another nest of this species in the same valley at about the same altitude on 12 July 1959. It was in a 40-cm *Saraca thaipinensis*, on the south side of the tree at a height of about 20 m, 5 m, out from the bole. Looking into the nest from a nearby hillside I could see one egg. The egg hatched by 18 July and by 24 July the nestling was quite large but I do not know what happened thereafter.

NEST ACTIVITY AND DEVELOPMENT OF YOUNG

In August 1962, a pair of White-whiskered Tree Swifts built a nest within view from my platform and below it but more than 50 m away. The nest was near the tip of a parasitic vine, *Aeschananthus* sp., in the top of a large dipterocarp, *Shorea resina-nigra*, more than 50 m above the ground. It was several meters above the forest crown, approachable from all directions though mainly from the east and south.

23 August. A pair of birds was active near the platform all morning but it wasn't until 11:00 that I discovered the nest with its single egg. The female did most of the incubating during the next hour; while on the nest she continued to add mucin to it, building up the sides. While incubating, both birds preened and watched (for prey?). Table 1 and Figure 1 show parental periods of incubation and brooding from now until the young fledged.

29 August. Both birds incubated and time on the nest (not recorded) appeared to be related to feeding and disturbances. Whenever the bird that was incubating flew off to catch an insect it was replaced by its mate. The female seemed to do more nest construction than the male while incubating.

1 September. I do not know which bird incubated during the night but the male was on the nest at first light. Between 06:30 and 11:30, the male incubated for 35 min, the female for 124 min, and nest was unattended for a total of 41 min. There was considerable interaction between the birds. One would perch near the nest while the other was incubating. At the moment of exchange, the approaching bird would fly up to the nest and alight on it just as the other bird dropped away.

The nest happened to be unattended when a Raffles's Malcoha (*Phoenicophaeus chlorophaeus*) began foraging nearby in the tree crown. The male tree swift immediately returned to incubate while the malcoha moved on.

Once while the female was incubating, she saw a green feather floating by, probably that of a pigeon. She caught it and returned to the nest, spending the next five minutes industriously glueing it into the side of the nest. During the morning she picked up two more feathers and added them to the nest also.

8 September. The female was on the nest from 06:40 until 10:30. The nestling hatched at approximately 10:00 and she worked with it as it hatched for more than 30 min. When she was away for two minutes I could see half of the shell remaining in the nest. The nestling was blind, naked except for sparse grey down, and grey-skinned. Immediately upon her return, she fed it by regurgitation and it was able to stagger its head upward and feed from her throat.

As there had been no nest on 18 August and an egg was present on 25 August, the egg was incubated between 14 and 20 days. I suggest that the incubation period is probably about 18 days. The remaining half of the shell was pushed from the nest by the female at about 11:15. Within 1.5 hours of hatching, the nestling was fed four times by each parent. It appeared to gain strength rapidly after drying and within an hour had turned around on the nest.

15 September. The male was present on the nest when I climbed to the platform at 06:20. The nestling was so large that it was necessary for the brooding parent to sit on the edge of the nest with its body up and over the nestling. The young bird was still grey and sparsely downy but pinfeathers had appeared. Throughout its development it rested with head up and eyes closed.

A brooding parent sometimes left the nest to catch a passing insect; it either returned directly or was replaced by the other parent. The nestling was apparently fed by regurgitation from the throat or floor of the mouth. I never saw it given a recently captured insect.

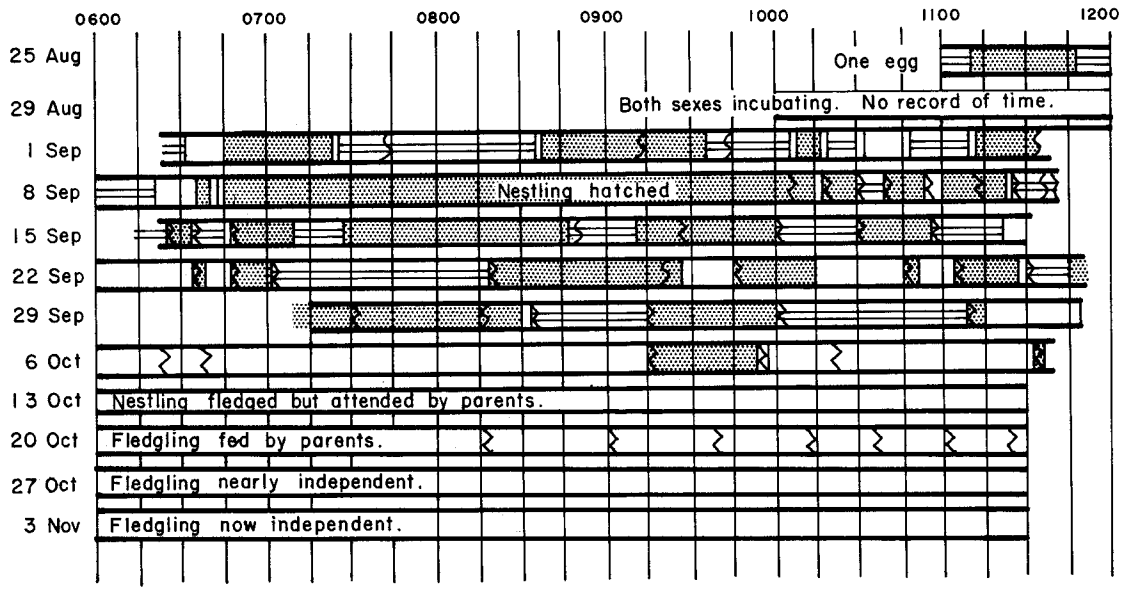

FIGURE 1. Activity at the nest of a pair of White-whiskered Tree Swifts during 1962 in Malaya. Stippling: female in attendance. Barring: male in attendance. The zigzag and s-shaped breaks indicate, respectively, parents feeding the nestling and parents briefly leaving the nest. Blank areas: nest unattended by adult. Length of bar indicates the period of observation.

22 *September.* When I arrived on the platform at 06:00 the nestling, now 14 days old, was alone. The parents were roosting at the top of the nest tree and did not attend the young until 06:35. The female then sat beside it and fed it small amounts of predigested food. After giving the nestling each mouthful she worked her throat muscles in preparation for the next.

The nestling was now larger than the nest, which was flattened by its activities, and it moved about on the nest and twig. The skin and feathers were a neutral grey. The primaries and rectrices were larger but still unopened, breast feathers were opening at the tips, and the belly was bare. Auricular feathers were beginning to open but not those on the head. The eyes were fully open. The feet appeared to be large and strong, clinging to the nest and twig, but when the nestling stretched and yawned it nearly fell off the nest from the pressure of its mother's body beside it.

During the morning, the nestling exercised, preened, basked in the sun, and watched its parents and other birds and insects. It occasionally defecated over the edge of the nest, which remained clean.

29 *September.* The weather was inclement and the three-week-old nestling received more attention than in the sunny weather of the previous observations. The male protected it for 104 min, the female for 125 min, and it was unattended for 39 min in about 4.5 h of my observation. As the morning grew warmer, the chick was left alone for longer periods. It was now well feathered, with flight feathers open, iridescent brown with tan tips. The breast was mottled pale tan and grey, and the upper parts a mottled brown and cream.

6 *October.* At 06:00 the 28-day-old nestling was being attended by the female, who soon left. The young bird was now fully feathered and nearly as large as its parents. It exercised on the nest, vibrating its wings and stretching. The breast had darkened since the previous week but the feathers appeared to be still tipped with natal down. White whisker marks were now conspicuous, although shorter than those of adults. Both parents continued to feed the nestling but they brooded it for only 40 min during five hours of observation. They spent much time flying by and coaxing the young bird or resting on nearby limbs.

13 *October.* The young bird had now fledged. It appeared with its mother at 07:50 and then went off with her to roost out of my sight. Its pale ear patches indicated that it was a male.

20 *October.* Both parents continued to feed the fledgling, which was in sight most of the morning. The ear patches were not yet red-brown, the breast remained mottled and rough, and the primaries were still pale-tipped. The juvenile remained on one perch in the tree top and begged from its parents by bobbing the head in the same motion used while it was a nestling. When bothered by a sweat-bee (*Trigona* sp.) around its eyes, it jerked its head repeatedly to ward off the small insect.

27 *October.* The juvenile, still with a mottled breast, remained with its parents, sharing the usual resting places with them. It appeared nearly independent and did not beg from it parents, yet they fed it occasionally.

3 *November.* At eight weeks the juvenile was recognizable only by its shorter "whiskers" and mottled breast. It appeared to be independent but it was still in the parental territory.

10 *November.* Two adults, who I assumed were the original pair, were in the territory but the juvenile was gone. The nest remained glued to its twig about two months longer. The territory was still occupied by a pair when I ended the study in June 1963.

SUMMARY

Nesting activity of a family of White-whiskered Tree Swifts in the Gombak Valley, Malaysia was observed weekly between 25 August and 15 November 1962. One egg was laid and hatched after 14–21 days. The juvenile remained under parental care at least 56 days.

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A CONGREGATION OF WINTERING BALD EAGLES

R. E. FITZNER

AND

W. C. HANSON

In 1961, aerial counts of migratory waterfowl were initiated as part of a U.S. Atomic Energy Commission (now Department of Energy) research program designed to investigate waterfowl use of the Hanford reach of the Columbia River. Bald Eagles (*Haliaeetus leucocephalus*) also regularly visit this area in winter months and they were counted along with the waterfowl. The Hanford reach is the last undammed portion of the Columbia River in Washington above Bonneville Dam. The area has been mostly closed to public access until recently and acts as a refugium for wildlife.

The study area extends from the northern boundaries of the city of Richland upstream to the Vernita Bridge, a distance of about 80 km (Fig. 1). Riparian vegetation along the Columbia River is poorly developed. Small shrub willows (*Salix* spp.) provide much of the available cover, but ornamental trees constitute most of the vegetation over 3 meters in height. The trees, mostly white and Lombardy poplars (*Populus alba*; *Populus* sp.), black locust (*Robinia pseudacacia*) and Siberian elm (*Ulmus* sp.), were planted as wind breaks or shade trees prior to the establishment of the Hanford Reservation in 1943.

Census flights were made twice each month during November and December of one calendar year and January and February of the next, including the winters of 1961–1962 through 1969–1970, and from 1974–1975 through 1977–1978. Two observers counted birds

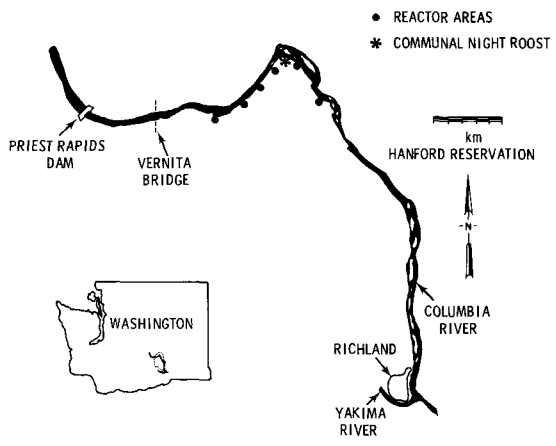

FIGURE 1. The Hanford U.S. Department of Energy Site in southcentral Washington.

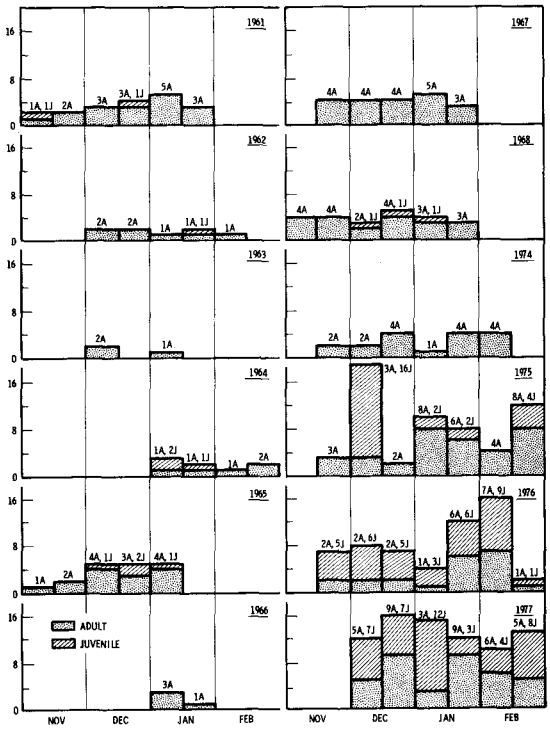

FIGURE 2. Numbers of adult and juvenile Bald Eagles found wintering on the Hanford reach of the Columbia River. Each annual survey spans two calendar years (e.g., winter of 1961 spans 1961–1962).