House Swift Hime-Amatsubame (Jpn) *Apus nipalensis*

Morphology and classification

Classification: Apodiformes Apodidae

Total length: About 15cm Wing length: 12.7± 0.4cm (n = 611)
Tail length: 4.9±0.2cm (889) Weight: 28.8±2.5g (2623)

Total length after Chantler & Driessens (1995), other measurements are after Hotta et al.

Photo 1. House Swift [Nobutoshi Sato]

Appearance:
Both male and females are brownish black all over, with a white throat and rump.

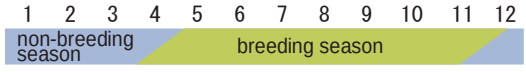
Vocalization:
They utter "Jyurrrrr" or "Churrrrr".

Distribution and Habitat

Distribution:
House Swifts range in the tropics and subtropics, such as south-central Africa, northern Africa (Morocco and Tunisia), India, Nepal, Bangladesh, southeastern China, Southeast Asia, the northern Philippines, Taiwan and Japan. Recently, however, House Swifts of the areas east of Nepal and Bangladesh, which include Japan, have been treated as a different species (House Swift *A. nipalensis*), separated from those of India and Africa (Little Swift *A. affinis*) because the former has darker plumage and a longer tail with a slightly M-shaped tip. House Swifts (*A. nipalensis*), which did not originally occur in Japan, came to be observed in Tanegashima Island (Kagoshima Prefecture, southern Japan), Kochi (Shikoku, western Japan) and Kamakura (Kanagawa Pref., central Japan) in the 1960s. And they were first confirmed to breed in Shizuoka City, Shizuoka Pref., central Japan in 1967. Since then, they have expanded their range along the Pacific coast south of the Kanto region, central Japan and locally occurred as a year-round resident. The species, which is highly gregarious, tends to form a breeding colony of several hundred pairs and roost in a large flock.

Habitat:
House Swifts primarily range in and around urban areas of the lowlands.

Life history



Breeding system:
House Swifts are monogamous and both sexes are equally responsible for incubation and feeding. The pairs in the same colony breed two or three times synchronously between mid-April and early December in Japan. They usually lay eggs in mid or late April, mid-July and late September to early October. Older females over three years lay eggs earlier than two-year-olds. Almost all pairs bred twice, but the third breeding was attempted by a little more than 60% of the females over three years old and a little less than 40% of the two-year-old females (Hotta 1996).

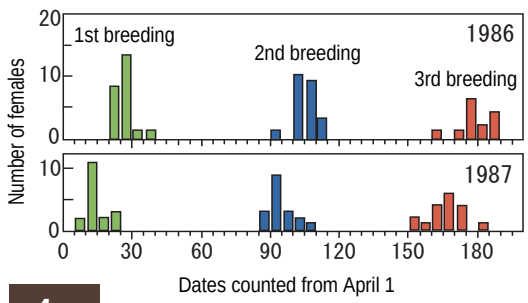


Fig. 1. First egg-laying dates of House Swifts in 1986 and 1987.

Nest:
Both male and females build a hemispherical nest primarily under the eaves of concrete structures, gluing feathers and plant leaves and stems collected in the air by their saliva. It takes a remarkably long period of time to complete a nest. Pairs of one-year-old and over two years old spend about five and two months in nest building, respectively. Since it takes such a long time to build a new nest, they usually use old nests of Asian House Martins (*Delichon dasypus*) and Red-rumped Swallows (*Hirundo daurica*) when available. Newly established pairs build a new nest by themselves if a usable old nest is not available in their breeding colony. The nest is an important resource for House Swifts not only because it takes a long time to build it but also because it is used as a roost site throughout the year as well as for breeding.

Photo. 2. Nesting colony of House Swifts with four nests (above). The soil partially remains on the wall shows that these are reused old nests of Red-rumped Swallows. Another colony composed of over 20 nests (below).

Egg:
The clutch size is 2-4 eggs, but it varies significantly depending on the breeding attempt and the age of females. Two-year-old females lay 3.3 eggs on average at the first breeding attempt, with 2.4 eggs at the second and 1.9 eggs at the third one. For females of over three years old, on the other hand, the mean clutch size is 3.6 eggs in the first breeding, 2.9 eggs in the second and 2.0 eggs in the third one (Two-year-old females: n = 24, females over 3 years old: n = 72).

Incubation and nestling periods and fledging rate:
The incubation period is about 20 days, and the nestling period lasts 36-51 days. There was no difference in hatching rate between the ages of females or the breeding attempts, but the fledging rate was significantly low in the third breeding attempt of two-year-old females.

Photo. 3. A collapsed nest with House Swift nestlings. This is the reused nest of Red-rumped Swallows the inner cup of which is lined firmly with feathers.

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Diet and foraging behavior

They catch flying insects, such as mosquitoes, flies and winged ants blown up by updraft while flying. They make a dense ball of captured insects in the mouth using saliva to carry them to the nestlings efficiently at a time from a considerable distance. It is easy to know whether the parent birds have returned to the nest with a food ball because the birds carrying it have a bulged throat. The wet weight of a food ball was 0.3-1.6g with an average of 0.8g (n = 50). They came back to the nest with a significantly heavier food ball during the first breeding than the second or third one. The analysis of 11 food balls showed that a food ball included 9-447 insects and spiders. The insects and arachnids consisted of 10 orders and 35 families, 17 (48.6%) of which belonged to order Diptera. The prey species varied greatly from one food ball to another, which applied to the food balls collected on the same day. For instance, one species of Stratiomyidae accounted for more than 80% of the prey in two of the three food balls collected on the same day and one species of Delphacidae represented more than 50% of the prey in the other.

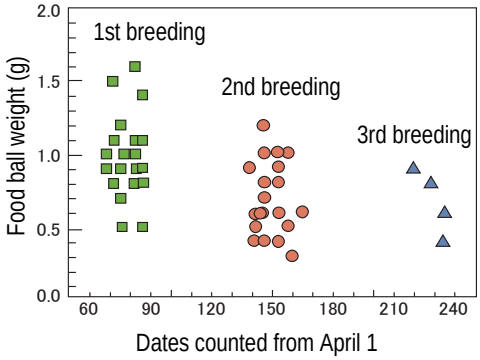

Fig. 2. Differences in the wet weight of a food ball between the breeding attempts.

Topics of ecology, behavior and conservation

Divorces and infanticide: In search of a favorable nest and an older partner

House Swifts are monogamous and maintain the pair bond throughout the year. Older pairs possessing a high quality nest have a strong tendency to maintain the pair bond as long as they do not lose their partner, but young pairs with an unfinished nest or no nest do not hesitate to divorce, especially when the opportunity arises to mate a partner of the older pair that possesses an optimal nest but has lost the other partner (due to death). Birds that have divorced and obtained a favorable nest and an older partner will be able to raise a larger number of young in the breeding attempt of the next year.

When a bird seized a nest with eggs or chicks, or mated a partner of the pair that had lost the other partner (due to death) in the breeding season, the bird killed the eggs or the nestlings. Infanticide is committed by both males and females that cannot start to breed because their own nest is not completed yet. The bird that killed the nestlings can mate one of their parent birds and start to breed earlier (Hotta 1994).

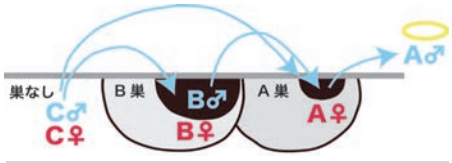

Fig. 3. A case of divorce and infanticide. Nest A is completed with a small entrance, while nest B is unfinished with larger entrance. In the colony is such a pair without nest (pair C). If the male of nest A dies, males of nests B and C will divorce their partners and try to acquire nest A and the bereaved female. The male that has gained both the female and nest will kill the eggs or nestlings if they remain in the nest.

Subsequent developments of breeding colonies

The Shizuoka Chapter of the Wild-Bird Society of Japan studied the distribution of House Swifts between 1981 and 1983 in Shizuoka and Yaizu Cities, Shizuoka Pref.. The study showed that there were 17 breeding colonies, one of which accommodated as many as 254 birds. When the 17 colonies were studied again in 2011, however, House Swifts were confirmed in none of them. House Swifts build a nest on man-made concrete structures, such as buildings and bridges. Buildings receive regular maintenance and are repaired if necessary. They are demolished if they have reached the end of life. The buildings had been demolished in three of the 17 breeding sites and they had been repaired in five sites. House Swifts sometimes use buildings which accommodate a large number of breeding pairs for more than 10 years. There is a stronger possibility, therefore, that their nesting buildings will be repaired or demolished if they are used for a longer period of time. Since House Swifts use their nests as a roost as well as for breeding all the year round, their excrements reach a considerable amount and their calls are very noisy in a large colony. House Swifts often nest in the buildings of urban areas and sightseeing spots, where few nests are destroyed due to their novelty at first, but they tend to outstay their welcome.

Literature

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Languages of literature cited other than English: [J] in Japanese, [J+E] in Japanese with English summary.

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In Nagano Prefecture, I have no chance of seeing House Swifts, but often see Pacific Swifts (*Apus pacificus*). Although I have searched for a study site suitable for Pacific Swifts, I have not found it yet. When I occasionally visit Shizuoka and Aichi Prefectures in the Pacific coast, I look up at the sky searching for House Swifts. When I visited my former study site last year, the entrance for the birds was closed with window panes, and the nests had been removed completely.

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