

NOTES ON THE PEGU SPARROW, *PASSER FLAVEOLUS*

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ABSTRACT

Observations have been carried out on Pegu Sparrows in March 1980 at three breeding colonies in Thailand. A major aim of this study was to provide data for the determination of the evolutionary history of the southern Asian sparrows, genus *Passer*. The available information suggests that the Pegu Sparrow is closely related to the House Sparrow, *Passer domesticus*.

INTRODUCTION

The genus *Passer* includes 19 species (SUMMERS-SMITH, *in press*); 10 of these are restricted to the Afrotropical Region, with a slight extension of one (*P. luteus*) into the southern Arabian peninsula; *P. simplex* is a desert species, occurring in both Africa and Asia—in the Sahara in Africa and in the Iranian and Transcaspian deserts in Asia. The remaining eight species are found in the Palearctic and Oriental Regions, three with very extensive distributions: *P. domesticus* occurs over the whole Palearctic with extensions into the Oriental Region in Pakistan, India and Burma; *P. montanus*, in addition to occurring over the whole Palearctic, is also found in the eastern Oriental Region from Indonesia to Japan and *P. hispaniolensis* from Spain to Afghanistan and Turkmenistan. Four of the remaining five species occur in southern Asia, have somewhat restricted distributions and are largely allopatric; the fifth, *P. ammodendri*, is found from Transcaspia to the Gobi. *P. domesticus* and *P. hispaniolensis* are closely related and are thought to have evolved in the Middle East and Mediterranean Basin; whereas *P. montanus* probably evolved in south-east China (SUMMERS-SMITH, 1963).

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The reason for the restricted distributions of the five predominantly Asian species and their evolutionary history presents an interesting problem. This paper is based on somewhat limited field observations on the Pegu Sparrow, *P. flaveolus*, with the objective of throwing some light on these questions. I hope to continue this investigation with similar studies on *P. moabiticus* (scattered discrete breeding from Jordan and Turkey to the Seistan (Iran-Afghanistan)), *P. pyrrhonotus* (Sind Valley) and *P. rutilans* (Japan through China and the Himalayas to eastern Afghanistan) at a later date.

Passer are placed in Passerinae, a sub-family of the family Ploceidae. They are stout-billed seed eaters, whose major characteristic is their predilection for grain crops and a tendency for close association with man; nesting on occupied buildings has been reported in at least 11 of the 19 species. The Afrotropical species are conveniently divided into two groups: those in which the plumage of both sexes is essentially similar and somewhat plain (7 species) and those which are sexually dimorphic with the male having a black bib. This latter feature is possessed by all the Palearctic-Oriental species and in *P. montanus* the sexes are monomorphic with the female having adopted the black bib of the male.

Where relevant in this study comparisons are made with *P. domesticus* as this species has been the most closely studied of the genus.

DESCRIPTION

The male Pegu Sparrow is one of the most attractive members of the genus. The crown, nape, upper back and rump are greyish-green, the grey of the crown outlined with chestnut; the cheeks and underparts, except for a small black bib, are a pale yellowish-green; the wing coverts are chestnut, with the tips of the median coverts forming a yellow wing bar and the primaries and secondaries streaked black. This gives a plumage pattern, apart from minor details, very similar to that of the male House Sparrow with the grey parts washed a yellowish-green. The female Pegu Sparrow is a dull olive brown above with a pale supercilium and is pale below. It is very similar to the female House Sparrow, but less streaky above so that it has very 'clean' appearance; this unmarked plumage tends to accentuate the black eye, which stands out very prominently.

DISTRIBUTION

P. flaveolus was first described from Arakan in Burma by Blyth in 1844. It occurs in west Burma from Arakan on the coast, where it is local, north through the Chin Hills to the Upper Chindwin about 23°N. The northern limit extends through central Burma and the Shan States, central Laos to the Annam region of Vietnam at about 16°N on the coast. Southwards it extends to the Pegu Division of Burma, where it is found sparingly as far south as Rangoon, through Thailand north of the peninsula, Campuchea and the Cochinchina Region of Vietnam (DEIGNAN, 1945; DELACOUR & JABOUILLE, 1931; KING, DICKINSON & WOODCOCK, 1975; LEKAGUL & CRONIN, 1974; RILEY, 1938; SMYTHIES, 1953; WILDASH, 1968).

In the last 60 years it has spread south of the Isthmus of Kra into Malaysia, being first recorded at about 10°N in 1919; the first reported occurrence in Malaysia was at Alor Star (6°7'N 100°22'E) in 1938 and it now extends south to northern Pahang State (Kuantan, 3°50'N, 103°19'E) on the east coast (1976) and central Selangor (Kuala Selangor, 3°20'N, 100°15'E) on the west (1969). It has also reached the islands of Langkawi (6°20'N, 99°45'E) and Penang (5°25'N, 100°15'E) (MEDWAY & WELLS, 1976; Wells, pers. comm.). WARD (1968) has suggested that massive deforestation in the peninsula creating continuous corridors of open land has opened the way for the spread of *P. flaveolus* and other open country birds; he has predicted that it would not be long before the Pegu Sparrow reaches Singapore. However, Wells has pointed out to me that the species is by no means successful in peninsular Thailand and Malaysia, being restricted to small pockets in low lying coastal areas, so that there may be ecological factors that limit its widespread colonisation other than that previously provided by the forest barrier.

The present distribution is shown in Fig. 1.

STUDY AREA

Observations were made on Pegu Sparrows in three areas in March 1980: The Bang Phra Nature Reserve Headquarters area and the Bang Phra Horse Serum Farm, Chon Buri Province, and Hat Karon, Phuket Island. The

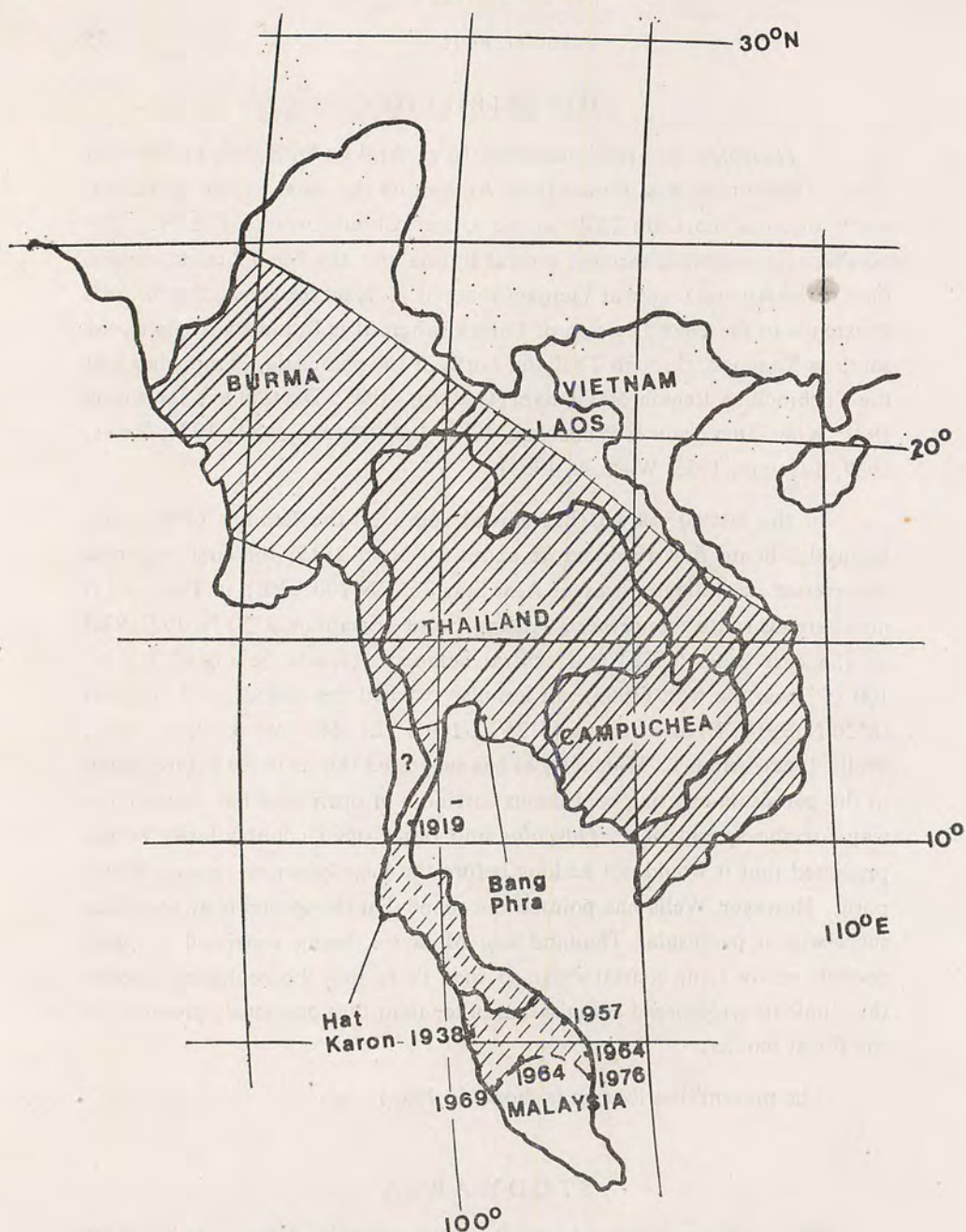


Fig. 1. Range of Pegu Sparrow, *Passer flaveolus*.
 The cross hatching shows the well-established range, the interrupted hatching the expansion this century. The two places where observations were made—Bang Phra and Hat Karon—are marked.

Bang Phra Nature Reserve offices are located in an open area with coconut palms, pheasant breeding pens and a few occupied buildings, the whole lying in an extensive area of cassava cultivation and coconut plantations. The Pegu Sparrow population here was estimated at 50–60 birds. Breeding had not started, but the birds were seen nest building in the coconut palms and house eaves. The Horse Serum Farm is about 5 km away and consists of an area of grazing land supporting about 130 horses. There are fields of watered grass to provide food for the horses and a number of large shade trees, including mangoes and rain trees. Here six nests were found in mango trees with young being fed in four. A more detailed description of the area and some observations on Pegu Sparrow there have already been given by PANTUWATANA, IMLARP & MARSHALL (1969). The Hat Karon colony was established along the shore where there were groups of casuarinas, backed by a line of sugar palms with a number of fishermen's huts and beach bungalows, behind which there was an extensive area of paddy. One rice crop is grown per year with planting in October and harvesting in February. Here there was a colony of 60–70 birds, with recently fledged young, including a few birds still being fed by their parents. A second cycle of breeding was just starting with at least two occupied nests in sugar palms. This appeared to be the only colony of Pegu Sparrows on Phuket Island.

SOCIAL AND PAIR BEHAVIOUR

At Bang Phra Nature Reserve and Hat Karon the birds were using communal roosts. At Bang Phra the roost was in a line of four bushy trees, about 5 m high, 30–50 m apart, at Hat Karon in one casuarina in a group of 16. The birds occupied the roosts as follows: the first arrived in the roost about 25 min before sunset and the colony took about 40 min to settle down; in the morning the first calls were heard about 15 min before sunrise and the roost was vacated over a 20 min period from about 5 min before to 15 min after sunrise.

This means that there is a 30–40 min period of intense social activity at the roost. This is a period of considerable excitement with much calling

and chasing among the branches. The majority of the birds at the roost appeared to be already paired and coition was seen on one occasion in the evening at the Hat Karon roost. At Bang Phra the birds were well concealed in the heavily foliated trees and appeared to occupy the same places each night. At Hat Karon, where the birds roosted in a casuarina, they were much less well hidden and a new site was occupied each evening on one of the top branches at 15–20 m above the ground. In both places the birds roosted closely together; it is the conflict between the birds' antipathy to close approach and the social drive for communal roosting that appears to be the cause of the obvious roosting excitement. The behaviour at the roost is very similar to that of *P. domesticus*.

It was apparent at both Bang Phra Nature Reserve and at Hat Karon [no communal roost was located at the Horse Serum Farm, though PANTUWATANA *et al.* (1969) reported a communal roost there 5–8 m high in rain trees and bamboos in 1966–67] that most of the birds using the roost were not breeding. Females with occupied nests roosted in the nest and the males in the communal roost if this was close by, otherwise in a tree close to the nest. At Bang Phra where three pairs were just establishing nest sites about 1 km from the communal roost, these birds roosted together in a tree close to the nesting sites.

Not only were most of the birds using the roost already paired, but the pair bond is very strong. Before breeding starts the pairs remain together at the nest or when feeding. On two occasions at Bang Phra Nature Reserve when a pair was present at a nesting tree, the male was seen to present nesting material to the female; she dropped this after about a minute. The significance of this behaviour is not clear; it could have been pair formation behaviour or an attempt by the male to interest the female in the nest or to induce her to take part in nest building. Both sexes take part in nest building and in the feeding of the young in the nest. Frequently these activities are carried out at any one time by only one member of the pair, the other accompanying it to and from the nest. If both are taking part, the first bird waits at the nest till the partner has finished and then they both fly off together.

Pre-copulatory behaviour as well as coition was seen in the roost. The male displayed in front of the female by bowing and flicking the tail with the wings held out and slightly opened. If the female is not ready for mating she flies at the male and displaces him. This display is very similar to that of *P. domesticus*, but with this latter species the bowing display by the male in front of the female attracts any neighbouring males and the well-known communal display in which a noisy party of males chases one female results (SUMMERS-SMITH, 1963). Such a communal display does not take place with *P. flaveolus*, though nearby males hop around excitedly.

When the female is ready to mate, she solicits the male by crouching and wing-shivering; this was seen both in the trees and on the ground. Coition by a nesting pair was seen on the ground close to the nesting tree, as well as by a pair in the roost in the evening.

At Wat Phai Lom, where the Pegu Sparrow breeds, birds were seen only from January to July (McCLURE & KWANYUEN, 1973); whereas, McClure (pers. comm.), in weekly roadside counts in a farming area NW of Bangkok, only saw birds from May to December, and numbers were available for sale in the Bangkok bird market only between March and November. This led McClure to the conclusion that the Pegu Sparrow was somewhat nomadic outside the breeding season. On the other hand, PANTUWATANA *et al.* (1969) found the sparrows resident at the Horse Serum Farm throughout the year. No doubt this behaviour is influenced by the availability of food.

VOICE

The main call is a disyllabic 'chirrup', with the second syllable rather slurred. It is used by both sexes at the nest and in the roost; it is slightly harsher than the otherwise very similar call used by *P. domesticus*. Variants on the basic call are a rather more excited 'chit-chit-chit' or 'chi-chi-chip-chip', which is heard from the roost and is given by the male at the nest site when the female is present, and a 'chu chu' or 'chu chu weet'; this latter is probably a mild alarm call akin to the 'quer quer' alarm of *P. domesticus*.

BREEDING

Some 20 nests were seen. The sites included the outer branches of trees, where the nests were lodged in the forks and well concealed by the leaves; the crowns of coconut and sugar palms; a hole in a tree and the eaves of houses. The heights ranged from 5 to 20 m. The nests were untidy bundles of dried grass, rootlets and other dry vegetation, lined with feathers; those built openly in the branches were roughly spherical, 25–30 cm in diameter with a side entrance, very like those of *P. domesticus* built in a similar situation.

Nest building and feeding of the young, both in the nest and after they have left the nest, but before they have become independent, is shared between the sexes. The adults were seen collecting caterpillars and aphids (Homoptera) by searching acrobatically in the small branches; bugs (Heteroptera) and larger insects were caught on the ground and taken to the nests.

The presence of fledged young in the Hat Karon colony suggests that breeding must have started in January; published information suggests that in Thailand breeding continues at least into June (PANTUWATANA *et al.*, 1969; McCLURE & KWANYUEN, 1979) and even to July in the north (DEIGNAN, 1945). Mrs. J. Dawson (pers. comm.) saw birds nest building at Bangpoo (ca. 30 km SE of Bangkok) in June 1979. Observations at the Bang Phra Serum Farm on nesting behaviour and the presence of brood patches on trapped birds by PANTUWATANA *et al.* (1969) suggested a breeding season there from March to June. As already mentioned birds were present at the breeding colony at Wat Phai Lom only from January to July, whereas the nomadic birds seen by McClure were present in the fields from May to December. These observations give further support to the start of the breeding season occurring in January.

In the sparrows, sexual development of the male is shown by the change in bill colour from horn to black. D.R. Wells has kindly examined for me 14 skins in Thai collections. Details of these are given in Table 1.

Table 1. Bill colour of male *P. flaveolus* in Thai collections

Date	No.	Location	Bill colour
1.10.05	1	Nakhon Pathom, 13°50'N, 100°01'E	black
12.10.30	1	Khlong Rangsit	yellow-horn
12.11.50	2	Thonburi, 13°45'N, 100°27'E	black with horn lower base to lower mandible
21.11.69	1	Bang Phra, 13°12'N, 100°57'E	yellow-horn
21.11.69	2	ditto	black
24.12.72	4	Ratchathani, 15°15'N, 104°50'E	black
19.6.55	1	Thonburi	black
20.8.56	2	Pathum Thani, 14°30'N, 100°21'E	horn

There is some variation in the time of year when the males' bill colour changes to black, but it is probable that first-year birds develop later than full adults. The results in the table are again consistent with a breeding season in Thailand from January to June/July.

FOOD

Apart from the animal food that was collected for the young, the birds were seen feeding on casuarina seeds, the seeds of small ground plants and berries on trees. PANTUWATANA *et al.* (1969) also reported birds feeding on scattered grain on the ground.

RELATIONSHIP WITH *PASSER MONTANUS*

P. flaveolus is sympatric with *P. montanus* over all of its range; in Burma *P. domesticus* is present in addition. In the absence of *domesticus*, *montanus* behaves as a complete 'house sparrow' and is very common in all built-up areas. *P. flaveolus* is a more rural species, but the two overlap in the smaller rural communities. For example, *montanus* was nest building in the same houses as *flaveolus* at Bang Phra Nature Reserve; at the Serum Farm, *montanus* was nesting in the stables and the office buildings close to the mango trees used by *flaveolus*, whereas at Hat Karon one pair of

montanus was using a 'nest box' made from an old coconut hung from the eaves of a beach bungalow close to the sugar palms where *flaveolus* was nesting. In none of the situations where the two species were seen breeding close together was any agonistic behaviour seen. At the Serum Farm, where both species were collecting food for young in the nests, the birds were collecting from different places and did not appear to be in competition.

COMPARISON OF *PASSER FLAVEOLUS* AND *PASSER DOMESTICUS*

A comparison is made between *flaveolus* and *domesticus* in Table 2. This suggests that these two species are very closely related to each other. The major point of difference is that *domesticus* is almost exclusively a commensal of man adapted to a built-up habitat with a slight penetration of surrounding cultivated land, whereas *flaveolus* is primarily adapted to open country with scattered trees, particularly cultivated land, with a slight penetration of the outskirts of inhabited areas. *P. montanus* occupies the 'house sparrow' niche in south-west Asia and is much less closely related to *flaveolus*. *P. montanus* appears to have evolved as a commensal of man in south-east China and probably spread to Indochina before the arrival of *flaveolus* so that the latter was forced into the more rural niche in a similar way that *montanus* has been forced into the more rural habitat when it spread westwards and came into the range already occupied by *domesticus*. Little competition is currently obvious between either of the species pairs, *flaveolus/montanus* and *montanus/domesticus*. It would be interesting to have information on the relationship between the three species in Burma, where they all occur.

ACKNOWLEDGEMENTS

It is a pleasure to make acknowledgement to the large number of people who responded to my enquiries as to the best place to go to in Thailand to see Pegu Sparrows. Particular thanks are due to Khun **Schwann Tunhikorn**, Director of the Bang Phra Nature Reserve, for his hospitality and assistance, to Mrs. **Joy Dawson** for her help and patience in dealing with my enquiries and to Dr. **D.R. Wells**, University of Malaya, for the information he gave me on Pegu Sparrows in Malaysia, for comments on a draft of this paper and numerous other kindnesses.

Table 2. Comparison of *P. flaveolus* and *P. domesticus*

Characteristic	Comments																				
Appearance of male	Basic pattern is very similar, though the grey in <i>domesticus</i> is washed greenish-yellow in <i>flaveolus</i> ,																				
Appearance of female	Very similar, though <i>flaveolus</i> is plainer and much less marked than <i>domesticus</i> .																				
Size*	<i>flaveolus</i> is slightly smaller than the tropical subspecies of <i>domesticus</i> , <i>P. d. indicus</i> .																				
	<table> <tr> <td></td> <td>length</td> <td>wing</td> <td>weight</td> </tr> <tr> <td>♂ ♂ <i>flaveolus</i></td> <td>130–140 mm</td> <td>70–76 mm</td> <td>17–22 gm</td> </tr> <tr> <td><i>domesticus</i> ca.</td> <td>150</td> <td>70–82</td> <td>22–33</td> </tr> <tr> <td>♀ ♀ <i>flaveolus</i></td> <td>125–135</td> <td>65–70</td> <td>16.5–23</td> </tr> <tr> <td><i>domesticus</i></td> <td></td> <td>70–80</td> <td>ca. 21</td> </tr> </table>		length	wing	weight	♂ ♂ <i>flaveolus</i>	130–140 mm	70–76 mm	17–22 gm	<i>domesticus</i> ca.	150	70–82	22–33	♀ ♀ <i>flaveolus</i>	125–135	65–70	16.5–23	<i>domesticus</i>		70–80	ca. 21
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Voice	basic chirrup call is very similar.																				
Nest	<p><i>flaveolus</i>: mainly open nests in trees and in the crowns of palms, but also in buildings; tree holes are used, a site not used by <i>domesticus</i>.</p> <p><i>domesticus</i>: mainly in holes in buildings, but frequently open nests in trees and in the crowns of palms.</p> <p>The free nest of both species is a globular structure, untidily built of dry grasses, etc., with a side entrance and lined with feathers.</p>																				
Behaviour	Both species form communal roosts; away from the roost <i>domesticus</i> is rather more social; pair bond is strong, more so in <i>flaveolus</i> ; bowing display with tail flicked, wings slightly open and held out from the body is identical in both species; in both species, both sexes take part in nest building and feeding the young.																				

*Data for *flaveolus* from PANTUWATANA *et al.* (1969), MEDWAY & WELLS (1976); for *domesticus* from ALI & RIPLEY (1974).

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