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## ADDITIONAL RECORDS OF BIRDS FROM FORMOSA (TAIWAN)

by

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With 2 text-figures and 3 tables

Since the publication of my paper on birds from Formosa (Mees, 1970), a few more collections have been received from the same source.

A ban has now been placed on hunting and export of wild birds by the government of the Republic of China — an enlightened and overdue piece of legislation — with the result that the connection has come to an end and no more material is to be expected from Formosa. Although the later collections do not contain anything spectacular, a few records merit publication and for the reason stated this is a good moment for doing so. I take the opportunity to report on a few specimens from our old collection and from other sources. Appended are a bibliography of ornithological papers that have appeared since Hachisuka & Udagawa's (1950, 1951) comprehensive work was published, and lists of the species and subspecies that have been added to the avifauna of the island in this period.

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***Egretta eulophotes*** (Swinhoe)

♂, April 1862, North Formosa, leg. Swinhoe, purchased from Swinhoe in 1863 (cat. no. 1); an unsexed adult, April 1861, Formosa, leg. Swinhoe, purchased from Swinhoe in 1864 (cat. no. 2).

The first of these specimens was already listed by Schlegel (1863: 29). *E. eulophotes* is well-known to occur on Formosa, but it is an uncommon bird with a restricted range and for that reason it appears worth recording our two specimens. The British Museum has one of Swinhoe's specimens from Formosa.

Swinhoe (1863a: 418) found this species not uncommon, in parties of four or five, on the Tamsuy River (now transcribed as Tam Shui) in northern Formosa; he proceeds to discuss its nesting habits and this has, naturally, led to the assumption that *E. eulophotes* was a resident in Formosa (Ogilvie-Grant & La Touche, 1907: 262-263; Iredale, 1914; La Touche, 1934: 451; Vaurie, 1965: 70). Amadon (1951) boldly referred to: "The colonies in Formosa". Swinhoe, however, did not state clearly that his observations on nesting were made in Formosa, and probably they pertained to the Chinese mainland. Hachisuka & Udagawa (1951: 106) regarded the statement quoted above, that the species would be a resident in northern Formosa, as doubtful, and considered it an accidental visitor. They could mention only one definite record since the days of Swinhoe: of three males captured at Anping, Tainan Prefecture, in May 1933.

*Egretta eulophotes* remains a rare and little-known species. Although Austin (1948) recorded it as an apparently "locally common summer resident in northern Korea", I am not aware that there is any information on its status there from later than 1939, except that a specimen was collected on an island near the mouth of the Yalu River on 8.V.1949 (Won H. K., 1956). Some of the older records may be due to confusion with other species of egret; indeed some of the older records were made under different names and only subsequently assigned to the present species, apparently on geographical grounds. At the time this may have seemed to be justified, but in recent years both *Egretta intermedia* and *Egretta garzetta* have been found breeding in Korea (cf. Won P.O., 1969; Gore & Won, 1971). Note that Won H. K. (1956) has nothing new to say about breeding of *E. eulophotes* in North Korea although he mentions breeding on Cheju-do, South Korea, evidently in error.

On the other hand there are a number of comparatively recent records from southern Ussuriland, summarized by Panov (1973: 51), all from the months May and June, as well as some from Japan (Ornithological Society of Japan, 1974: 32) and these indicate that the species still breeds somewhere in the far north.

The southernmost definite records of breeding are from Hong Kong, where since 1956 a few pairs (up to ten in one year) have bred annually (Macfarlane & Macdonald, 1966; Webster, 1975), although I note that in the two most recent years on which information is available, 1973 and 1974, there was no proof of breeding (Webster & Viney, 1974; Viney, 1975)<sup>1</sup>).

Cheng (1976: 25 with map, 974) gives the species a southern distribution, from Foochow to Hainan. It is ominous that he does not know it as more than a straggler from anywhere along the Chinese coast between Foochow and the Korean border. The apparent disappearance of *E. eulophotes* from many of its former breeding places has been generally ascribed to excessive killing by plume hunters (cf. Iredale, 1914; Vincent, 1966) and Murton's (1972) attempt to give its near-extinction an ecological twist and to shift part of the blame to *E. garzetta* for supposed competition, appears to me unfounded.

#### **Porzana fusca phaeopyga** Stejneger

In a previous paper (Mees, 1970) I discussed specimens of *Porzana fusca* from Formosa and gave reasons for assigning them to the subspecies *P. f. phaeopyga* originally described from the Riu Kiu Islands. Mr. Thomas has since drawn my attention to the name *Porzana fusca dieni* Deignan, appearing as a nomen nudum in a list published by Kuntz & Dien (1970: 23). I cannot find that this name has ever been validly published, and therefore do not know if Deignan had found characters to separate the Formosan populations from those inhabiting the Riu Kiu Islands, which his decease prevented him from publishing. In the circumstances I see no reason to change the opinion expressed in my previous paper, that the Formosan populations are referable to *P. fusca phaeopyga*.

#### **Chlidonias hybridus hybridus** (Pallas)

♂, 24 June 1971, Mai-Liau (no. 65783). The bird is in off-season plumage, there is no trace of dark feathers on the under surface of body and wings. Wing 217 mm.

Under the name of *Hydrochelidon indica*, Swinhoe (1863a: 428) listed this tern as: "... not uncommon on the marshy lands of S. W. Formosa ... A fine male, brought to me 28th August ...", and: "A common resident on the marshy plains of S. W. Formosa" (Swinhoe, 1863b: 328). Ogilvie-Grant & La Touche (1907: 269-270) copied this: "The Whiskered Tern frequents the marshy lands of S. W. Formosa", but they had no new material. Two of Swinhoe's specimens found their way to the British Museum (Saunders, 1896: 16). Hachisuka & Udagawa (1951: 156) knew of only a single record

<sup>1</sup>) In 1975 there were two nests (Viney, 1976).

during the period of Japanese administration (Anping, 17 September 1922) and Vaurie (1965: 487) stated that it winters "very rarely" in Formosa. In the MAPS reports one is listed without particulars as having been ringed in 1966 (McClure, 1967: 65). Finally Severinghaus, Kang & Alexander (1970: 30) described it as possibly a permanent resident, but most common in winter. It appears from this last reference that the status of the species is still much as Swinhoe found it a century earlier; as, however, few formal records exist, I considered it useful to mention our specimen.

Cheng (1964: 222) listed *C. hybridus* as a breeding-bird in Formosa, but probably this was no more than another interpretation of Swinhoe's publications. Hachisuka & Udagawa (l.c.) applied the subspecific name *C. h. swinhoei* Mathews to birds from Formosa, but I regard this as a synonym of the nominate race (cf. Mees, in press).

#### ***Strix aluco yamadae* Yamashina**

♀, 2 August 1971, Chu-Shan (no. 65698), weight 450 gr., wing 293 mm.

A second specimen of this scarce subspecies. Kuntz & Dien (1970) record both this and the following species as having been taken by them, but without giving particulars.

#### ***Strix leptogrammica caligata* (Swinhoe)**

♂, Formosa, "voyage de Swinhoe", purchased from Verreaux in 1867.

In my previous paper I omitted mentioning that our collection contains a mounted specimen, as listed above. This bird was recorded by Schlegel (1873: 21) as: "un des types du *Bubo caligatus* de Swinhoe", but certainly in error as Swinhoe's type was a holotype and moreover was so poorly stuffed that Swinhoe (1863a) believed it to have ear-tufts and consequently described it as a *Bubo*. Our specimen is in reasonably good condition. As Swinhoe (1864), in a letter dated 8th March 1864, knew only the type-specimen and a female obtained in February 1864, our individual must have been collected between March 1864 and 1867. The type-specimen was, according to Swinhoe, much damaged, and as it is not listed by Warren (1966) I suspect that it does not exist any longer.

#### ***Hirundapus cochinchinensis* (Oustalet)**

♂, ♀, 22 June 1961, Huan-shan, T'ai-chung Hsien, 1700 m, leg. H. Morioka (YPM nos. 40084, 40085).

In a previous paper (Mees, 1973), I observed that *Chaetura caudacuta formosana* Yamashina does not belong to that species but is evidently referable

to *C. cochinchinensis*. No material from Formosa was available to me, so that I was unable to give a definite opinion on the subspecific validity of *formosana*. Subsequently, Dr. Collins informed me of the presence in the Peabody Museum of the two specimens listed above, which I have now examined. Comparison of these birds with a series of 17 specimens from Java (12), Sumatra (2), Selangor (1) and Cambodia (2) did not reveal any differences which might be of subspecific value. The Formosan birds have the gloss on the upperparts rather more blue, less green, than the majority of the other birds, but this is easily explained by the worn condition of their plumage (cf. Mees, 1973: 201). There is no difference in measurements (table 1). I conclude therefore that *Chaetura caudacuta formosana* Yamashina is a synonym of *Hirundapus (Chaetura) cochinchinensis*.

TABLE I  
Additional specimens of *H. cochinchinensis* examined  
(cf. Mees, 1973: table II)

sex	date	locality	collector	wing	reg. no.
♂	17.II.1908	Semangko Pass, Selangor	"nat. coll."	183	BM 1936.4.12.677
♂	5.XII.1927	Le Bokor, Cambodia	Delacour & Lowe	181	BM 1928.6.26.560
♂	10.XII.1927	"	"	185	BM 1928.6.26.558
♂	22.VI.1961	Huan-shan Formosa	Morioka	184	YPM 40084
♀	"	"	"	192	YPM 40085

It is of interest to mention that of the two Formosan specimens the male has the inner webs of the tertials light smoky brown, whereas the female has them almost white, the same variation as also found in birds collected in Java (cf. Mees, 1973: 203), and further evidence that this is a matter of individual and not of geographical variation.

When I prepared my previous paper, I was unable to find on what Deignan's (1963: 67) records of *H. cochinchinensis* from Thailand (Phrae and Nakhon Sawan) were based. Information now received from Mr. Galbraith is that the British Museum collection contains five specimens (2♂, 3♀) from Mek Lem, Phrae, collected 15-22 April 1916 by C. Chungat for W. J. F. Williamson, and one (♂) from 40 miles east of Um Pang, collected on 14 February 1924 by W. P. Lowe. The last-mentioned specimen was recorded by Lowe (1933: 261, 481), and I ought not to have overlooked this reference. It should be mentioned, however, that when I wrote my paper the British Museum collection was in transit from London to Tring, and no information could be obtained from it. The collection of the Museum Zoologicum Bogoriense contains two specimens. One is insufficiently labelled, the other constitutes

an additional record from Java: ♂, 28.XII.1924, Tjibeber Andir, West Java, leg. v. Polanen Petel, MZB no. 3580. The testes were noted to have been small, as would be expected from a migrant in its winterquarters.

Being reluctant to change familiar nomenclature I have previously retained this and related species in the genus *Chaetura*, the type of which is the North American *C. pelagica* (L.), but now I agree with the increasing number of authors who consider that the four or five large species inhabiting southern and eastern Asia constitute a separate genus *Hirundapus* (cf. Collins & Brooke, 1976).

### **Halcyon coromanda major** (Temminck & Schlegel)

An unsexed bird, probably from the mountains 15 to 30 km south-east of Taipei (no. 69786).

This bird was presented by Mr. Thomas, who, in June 1973, purchased it from a dealer at Wulai, an aborigine town near Taipei. Mr. Thomas found forty-five stuffed specimens in this one dealer's shop, perhaps an indication that the species is less rare in Formosa than it appeared to be, but also evidence of the wholesale slaughter that took place before the recent protection law was passed.

Two subspecies of this kingfisher have been recorded from Formosa, *H. c. major* and *H. c. bangsi*. The last-mentioned subspecies is an apparently common breeding-bird of the Riu Kiu Islands, which winters in the Philippines. The geographical position of Formosa makes it almost inevitable that numbers pass through the island. I note, however, that according to Hubbard & du Pont (1974: 19), the specimen on which Vaurie (1965: 667) based the Formosan record was misidentified and is a dark individual of *major*. Also, although the mentioned authors examined 11 specimens of *H. coromanda* from Formosa, there was not a single one they could refer to *bangsi*. It appears that the occurrence of *H. c. bangsi* on Formosa requires confirmation.

### **Pitta nympha** Temminck & Schlegel

♂, 11 June 1967, Chang Hwa (no. 49512); 11 ♂, 2 ♀, 18 and 19 May 1968, Chi Shan, Kao Hsuing (nos. 53780-53791, 53793); ♂, 19 May 1968, Nankong Village, Nantou Hsien (no. 53792); ♂, 30 May 1968, Pei Shan Kun (no. 53794); ♂, 2 July 1971, Chu San (no. 65865).

This fine series was particularly welcome as the species was previously unrepresented in our collection, a hiatus to which attention was drawn over a century ago (Ibis 5, 1863: 359). Although the species was originally described by ornithologists of Leiden, this description was based on a drawing, not on a specimen.

*Pitta nympha* is usually regarded as a subspecies of *P. brachyura*, but I incline to the view that it is better treated as a separate species, although it is undoubtedly closely allied to *P. brachyura*. In the species *P. nympha* as thus defined, two subspecies are currently recognized: the nominate race from Japan, South Korea, north-east China and Formosa, and *P. n. melli* Stresemann from south China.

The subspecies *melli* was exclusively based on size. According to its describer (Stresemann, 1923) the wings of seven specimens of *P. n. melli* from Kwangtung measured 113, 114, 115, 115, 117, 118, 120 mm, as opposed to 118-127 mm in the nominate race. Evidently the last mentioned measurements were not taken by Stresemann personally, but copied from Hartert (1922: 2178), who gave ♂ 124-125, ♀ 118-121 (eight specimens), to which he added his own single specimen from Canton with a wing length of 127 mm (regarded by him as a migrant of the nominate race). Yen (1933: 756) has certainly copied his wing-lengths for the nominate race (♂ 124-127) from Stresemann-Hartert; for *melli* he gives ♂ 113-120, copied from Stresemann, who, however, did not mention the sex of his birds. Yen's own two specimens of *melli* from near the type locality, ♂ and ♀, measured 118-120 mm.

My series from Formosa is surprisingly uniform in wing-length, the measurements being 15 ♂ 119-123, 2 ♀ 120, 121 mm, the variation being only 4 mm in seventeen specimens. All specimens fall within the range of variation of the nominate race as given by Stresemann, but six come also in the range of *melli*. Thus, it seems hardly useful to apply a trinomial to the Formosan birds. It must be kept in mind that there is no proof that all these birds are members of a breeding population, they might be migrants from farther north.

In the northern part of its range *P. nympha* is a rare bird, and no material from there is available to me. Whereas published information suggests that northern birds (e.g. those from Japan and Korea) are a little larger than southern birds, it is very doubtful that the difference is enough to base a nomenclatural distinction on. If, however, a southern race can be recognized, its name would probably not be *P. n. melli*, but *Pitta bertae* Salvadori, 1868. This name was based on a specimen from Sarawak and according to Salvadori (1874: 238) its wing measured 115 mm; I have failed to locate this specimen, it is not in Genoa (Tortonese, in litt., 31.X.1975). A specimen from Mt. Dulit, Sarawak, was also recorded as having a wing-length of 115 mm (Banks, 1949), but I measured in the same specimen: left wing 119, right wing 121 mm. A female from Riam, south Borneo, reported as *P. nympha nympha*, had a wing of 120 mm (Mayr, 1938: 34); on the basis of published measurements of the two races it is not apparent why Mayr assigned this bird without comment to the nominate race. It should be mentioned that previously Yen

(1932: 249) had expressed doubt about the validity of *P. n. melli*: he examined in Paris a specimen from Anhwei with a wing-length of 117 mm and therefore by Stresemann's standards referable to *melli*. From the adjacent province of Honan, Fu (1937: 85) mentioned a male, a definite breeding-bird, with a wing of 124 mm.

As *P. nympha* remains so insufficiently known, I have considered it useful to append a map of its distribution, as a breeding bird and as a migrant, mainly based on literature records.

Distributional data on which the map is based:

Borneo: ♀, 28 October 1865, type of *Pitta bertae* from Sarawak = Kuching, fide Beccari (1904) who was in Kuching on the date of collecting; it should be kept in mind that the name Kuching dates from August 1871, before that time the town was known as Sarawak (cf. Buck, 1962: 78). A specimen, sex not given, November 1897, Punang River, Brunei, now in Lawas District, Sarawak (Blasius, 1901, s.n. *Pitta berthae*). An unsexed specimen, March 1898, Tutong River, Brunei (AMNH no. 553540). ♂, 23 October 1932, Mt. Dulit (specimen examined, see also Banks, 1949). ♀, 9 December 1935, Riam (AMNH no. 447700, see also Mayr, 1938). A specimen from Satang Island, sex and year not given (Smythies, 1957). A specimen, 17 November, from Kelabit, Pa Bangan, 3000', sex and year not given (Smythies, 1957). A specimen, sex not given, 5 February 1965, Tutoh River, 1200' (Fogden, 1966). My attempts to obtain the Sarawak Museum specimens on loan, or at least to be supplied with more complete data, have not met with response. Finally there is in the British Museum an unsexed and undated bird collected by Low, merely labelled N.W. Borneo (specimen examined), but according to Sharpe (1879a: 234, 235, 263) from Lumbidan, a Kadayan settlement on the coast opposite Labuan; its position was indicated by Ussher in Sharpe (1879b: 319-320). Fogden (1966) and Smythies (1968: 363) would have it that altogether seven specimens had been collected in Borneo, but without much effort I traced two more as listed above (Punang R. and Tutong R., both collected by Waterstradt) and this strengthens the evidence that N.W. Borneo is an important winter quarter.

Indo-China: 2 ♂, April 1928, Thua-Luu (Delacour, 1929: 405; Delacour & Jabouille, 1929 and 1931: 25-26), wing-length given as 124, 125 mm. According to the same authors, the locality Thua-Luu also yielded two specimens in preceding years, both taken in the month April. I have examined one of these.

Kwangsi: Six specimens collected in April 1929 and/or 1930 at Loshiang (Yen, 1930: 23). Two specimens, 4 May 1929 and 1 May 1931, Yaoshan

(Yen, 1933: 756). Loshiang is part of the Yaoshan range, the topography of which was discussed by Yen (1930).

Kwangtung: Canton (Stresemann, 1923; Yen, 1933: 756). Drachenkopf (Stresemann, 1923); this locality is Lungt'ou Shan, northern Kwangtung (La Touche). ♂, 27 April 1930 at ca. 25°N, 113°E (Yen, 1932: 249). Swatow (La Touche, 1930: 470).

Hong Kong: Webster (1975) knew of only two observations: April 1962, Bethanie, Pokfulam, and July 1967, Deepwater Bay.

Fukien: ♂, 25 April 1901, Foochow (Rickett, 1903; specimen examined).

Shanghai: The first to record the species from Shanghai was Styan (1891: 359), who mentioned a specimen taken on the Tungsha lightship outside Shanghai, and two specimens from the town itself (one of his specimens was examined by me). Courtois (1907, 1912) mentioned a specimen collected on 17 May 1897 at Zikawei, and La Touche & Rickett (1912) could add Shaweishan Island as a locality, where La Touche obtained two specimens in May 1911 (specimens examined).

Anhui: Leoufang, found breeding (Courtois, 1927).

Honan: Sin-Yang, "aux grandes altitudes", found breeding (Fu, 1937).

Records from Peking and Chefoo concerned cage-birds (cf. Shaw, 1936: 568 footnote), although the appearance of the occasional straggler at the last-mentioned locality would not be beyond the bounds of possibility.

Korea: The most recent summary of occurrences in Korea is by Won P.O. (1969: 92-93), who reports an apparently regular breeding on the islands Cheju (or Quelpart) and Koje. He further lists from the Korean mainland specimens collected at Kwangnung (♀, 7 June 1965) and Kaesong Pagyon (♂, ♀, 12 June 1957, 2 August 1958), and an observation from Togyusan. The northernmost record in Korea was provided by the bird collected in 1932 at Anju by Won H. K. (1932, 1956). These cases of occurrence in several parts of mainland Korea make it likely that breeding takes place, but this has not yet been confirmed by nest finds.

Japan: "Uncommon and local breeding summer visitor in Shikoku (Ehime, Kochi), Kyushu (Nagasaki at Mt. Unzen), and Tsushima . . . Casual, but frequent, visitor in Honshu and Oki"; stragglers have been recorded to as far north as Akita Prefecture (ca. 39°40' N), cf. Ornithological Society of Japan (1974: 194). An earlier discussion of the status of the species in Japan by Austin & Kuroda (1953: 494-495) remains of value as it includes an enumeration of specimens collected.

A look at the map shows several interesting features of the distribution and migration of *Pitta nympha*. The first is that there is a number of records from the mainland of Korea and from Honshu, Japan, well north of the

TABLE 2

## Specimens examined in the British Museum

sex	date	locality	collector	wing	reg. no.
—	—	N.W. Borneo	Low	119	no number
♂	23. X.1932	Mt. Dulit, Sarawak	Oxford Univ. Exp.	121	1935.10.22.213
♂	27.IV.1926	Thua-Luu(Huê), Annam	Delacour & Jabouille	125	1926.9.8.519
♀	4. V.1929	Jaoschan, Kwangsi	Yen	120	1934.6.20.5
♂	25.IV.1901	Foochow	Rickett	122	1905.12.24.405
♀	10. V.1894	Lak-Ku-Ii, N. Formosa	Holst	119	98.11.10.376
—	X.1885	Shanghai	Styan	121 +	1914.7.16.581
♂	26. V.1911	Shaweishan Island	La Touche	129	1912.12.15.62
♂	V.1911	Shaweishan Island	La Touche	127	1912.12.15.63

known breeding places (north to  $39^{\circ}40'$ ). Although it is possible that occasional breeding takes place farther north than at present known, chances that a population of any size or permanence has been overlooked on the main island of Japan seem rather remote. As regards migration: the records from around Shanghai suggest strongly that the population breeding in southern Korea and Japan migrates in a south-western direction to the Chinese mainland (note that the two specimens collected on Shaweishan are very large and therefore are probably referable to the Japanese/Korean population). This fits the fact that there is not a single record from the Riu Kiu Islands. If Stresemann (1923) was right calling a bird from Canton with a wing-length of 127 mm a migrant, as I think he was, the Japanese/Korean birds migrate at least as far as there.

All birds recorded from Borneo, on the other hand, are smaller, and appear to belong to the Chinese mainland population, which therefore has a route of migration almost straight north-south. In this case it is interesting to note that there are no records from the Philippines. It looks as if birds visiting Borneo cross over the length of the South China Sea, or alternately they may follow the coast line to southern Indo-China and cross from there. Note that the specimens from Borneo, as far as I could ascertain, were collected from 23 October to March and that the four specimens from Indo-China were all taken in April: possibly the latter were passage migrants on their way back from Borneo to the breeding quarters.

As regards the breeding distribution, it is evident that the mainland of China, together with the mountains of Formosa, constitutes the most important part of the range. Although breeding has not been established in the Yaoshan, Yen (1933: 756) found it: "sédentaire et commune au Yaoschan,

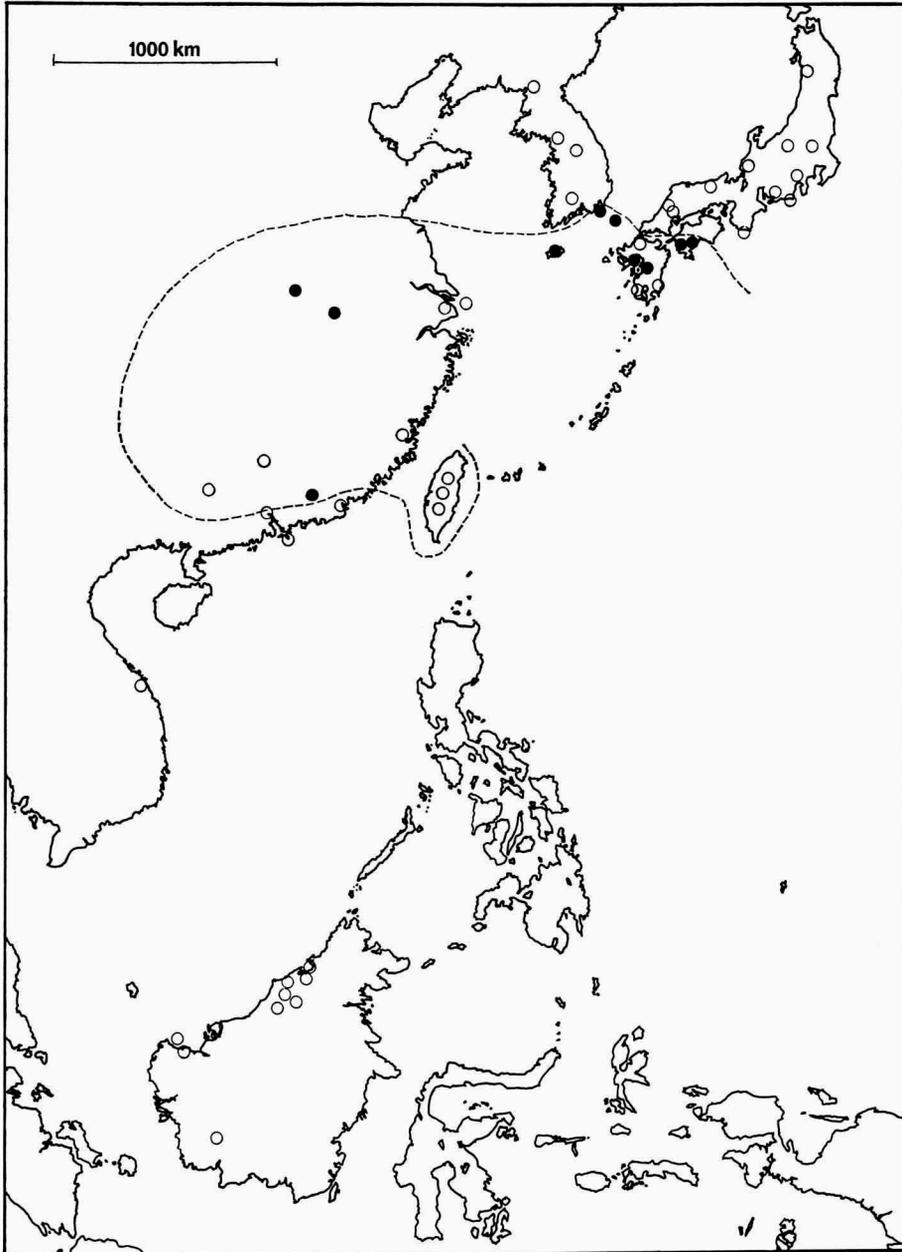


Fig. 1. Map showing the distribution of *Pitta nympha*. Dots indicate definite records of breeding; circles indicate individual locality records. The dashed line indicates the probable extent of the breeding range. In Formosa no nests appear to have been found, but breeding is practically certain as Seebohm (1895) recorded a specimen: "with half-developed eggs in the ovary". Note the concentration of circles in N. W. Borneo, showing that this is an important winter quarter; note also the surprising number of records from Japan and Korea north of the actual breeding range.

depuis le pied jusqu'à une haute altitude", and there is no reason to suspect that in other forested regions in China the situation is different.

Much of the movements of *Pitta nympha* remains unexplained. For example in the Yaoshan it is supposed to be sedentary (Yen, as just quoted), but on Formosa, on the same latitude, it is a summer visitor, arriving in early May and leaving in November (Hachisuka & Udagawa, 1951: 75). Unless these birds fly straight to Borneo, which appears unlikely (in the absence of records from the Philippines), their initial direction of migration would have to be almost pure west to the Chinese mainland.

#### ***Hirundo tahitica namiyei* Stejneger**

2 ♂, 15 July 1968, Wanta (nos. 54122, 54123); ♀, 9 September 1968, Wanta (no. 58892); 3 ♂, 2 ♀, 16 March 1969, Wanta (nos. 59035-59038, 59446); ♂, 19 March 1969, Wanta (no. 59039); 2 ♀, 4 April 1969, Wanta (nos. 59040, 59041); ♂, 16 April 1969, Wanta (no. 59042); 2 ♀, 19 April 1969, Wanta (nos. 59043, 59044); ♀, 19 April 1969, Puli (no. 59310); ♂, ♀, 21 April 1969, Puli (nos. 59311, 59312); ♂, 12 May 1969, Mei Shi (no. 59313); ♂, 20 May 1969, Mei Shi (no. 59314); ♂, 21 May 1969, Puli (no. 59315); ♀, 21 May 1969, Mei Shi (no. 59316); ♀, 1 June 1969, Mei Shi (no. 59317).

The main character in which this subspecies differs from the widely-distributed *H. t. javanica* is the larger size. The specimens of *H. t. namiyei*, listed above have a wing-length of 11 ♂ 109-119, 11 ♀ 111-116 mm. In a small series of *H. t. javanica* from Java I measured: 10 ♂ 101-106, 12 ♀ 101-106 mm.

*Hirundo tahitica namiyei* is well-known to occur in Formosa (Hachisuka & Udagawa, 1951: 73; Severinghaus, Kang & Alexander, 1970), but through an apparent oversight Formosa was omitted from its range by Peters (1960), and recently Short (1973) wrote: "*Hirundo tahitica*, has an endemic race in the Ryukyu Islands, but occurs neither in Japan (in fact, it fails to reach the Palaearctic Region) nor Taiwan. It may have invaded the Ryukyus directly from the south. Swallows generally and this species particularly cross water barriers readily". It is mainly to prevent this misconception from spreading, that I have included the species in this paper.

#### ***Zoothera dauma dauma* (Latham)**

♂, 15 April 1969, Puli (no. 59076); sex ?, 16 January 1960, Lu-Chou, Taïpe Hsien (W. H. Wells & R. E. Kuntz, USNM no. 471871).

There is no agreement about the numbers and names of the subspecies of this thrush that can be found on Formosa. Considering only the most recent literature, the opinions are strikingly diverse. Hachisuka & Udagawa (1951: 60-61) admitted two races, *Zoothera aurea aurea* (Holandre), with as a synonym *Oreocincla hancii* Swinhoe, as "a common winter resident", and

*Z. a. horsfieldi* (Bonaparte) as a presumed rare breeding-bird. Vaurie (1959: 413) established the presence of two migrant subspecies, viz. *Z. dauma aurea*, and *Z. d. toratugumi* (Momiya), the latter a breeding-bird of Japan. Vaurie made no mention of a resident race on Formosa, which is outside the geographical limits of the Palaearctic. Finally Ripley (1964: 155-157) came with an improbable arrangement in which Formosa is inhabited by two resident races: *Z. d. dauma* (Latham) and *Z. d. hancii* (Swinhoe), and one migrant, *Z. d. toratugumi*, especially mentioned from the Pescadores Islands. Vaurie had recognized as valid a race *Z. d. socia* (Thayer & Bangs) from Northern Yunnan, Sikang and north-western Szechwan; this was placed as a synonym of *Z. d. dauma* by Ripley.

Out of a series of nineteen specimens of *Z. dauma* from Formosa which I received, eighteen are without doubt referable, on the basis of large size, greyish-golden coloration and wing-formula, to *Z. d. aurea*, hence are migrants from eastern Siberia. They agree well with one specimen from Lake Baikal and three from Holland in our collection. The description of *Oreocincla hancii* Swinhoe (1863a: 275) leaves no doubt that Hachisuka & Udagawa were right in synonymizing this name with *Z. d. aurea*, and that Ripley erred in resurrecting it, and even more in regarding it as a resident.

One specimen in my series and a second specimen borrowed from the U.S. National Museum, are clearly different from the others; they are much deeper golden in colour and their wing-lengths are only 141 and 142 mm. In colour these birds are not unlike specimens from Japan, but the latter are much larger (wings of eleven specimens in our collection: 155-166 mm, measurements which agree well with those given by Vaurie).

The specimens from Formosa must be breeding-birds as no population with such small measurements is found anywhere to the north of Formosa. The occurrence of a resident population of *Z. dauma* on Formosa has been recognized for many years but, as already noted, there has been no unanimity about its subspecific identity. Japanese authors (Kuroda, 1925: 76; Hachisuka & Udagawa, 1951: 60-61) have associated this Formosan resident population with *Z. d. horsfieldi*, a race originally described from Java, and also occurring in Sumatra, Lombok and possibly the Malay Peninsula. In a subsequent publication, however, Kuroda (1933: 303) expressed doubt about this identification.

It is evident that the authors just mentioned did not have adequate topotypical material of *Z. d. horsfieldi*. Fortunately a large series was available to me, and a comparison showed that, whereas the Formosan birds are indeed very close to those from Java, they are not identical, the latter being even deeper golden-yellow in colour. Moreover, whereas it is true that birds from

Java and Formosa have the same wing-formula, nevertheless birds from Java have the wing-tip still blunter (fig. 2). In view of the geographical distance separating the two populations (no resident subspecies is known from Borneo, Celebes and the Philippines), this is not unexpected.

Having established that the population from Formosa does not belong to *Z. d. horsfieldi*, the problem remains how it has to be called. As the relationship of many Formosan birds is with the opposite mainland of China, and with south-east Asia generally, that was the obvious place to look for its affinities.

Unfortunately it appeared that the nomenclatural confusion on the mainland of south-east Asia is even greater than on Formosa. There is a surfeit of names available, and almost every author has arranged these in a different way. There is little point in giving a survey of the conflicting opinions; instead I list here the names that have been applied in this area, and by elimination attempt to arrive at a conclusion regarding their validity and their applicability to the birds from Formosa.

*Zoothera dauma dauma* (Latham, 1790)

*Zoothera dauma varia* (Pallas, 1811)

*Zoothera dauma aurea* (Holandre, 1825)

*Zoothera dauma horsfieldi* (Bonaparte, 1857)

*Zoothera dauma hancii* (Swinhoe, 1863)

*Zoothera dauma affinis* (Richmond, 1902)

*Zoothera dauma socia* (Thayer & Bangs, 1912)

*Turdus aureus angustirostris* Gyldenstolpe, 1916

Although the name *Z. d. varia* (Pallas) was used by Deignan (1963) and Cheng (1964), it is invalid, as it was originally described as *Turdus varius*, a primary homonym of *Turdus varius* Vieillot. *Z. d. hancii*, recorded by Ripley (1964) from Tenasserim, peninsular Thailand and South Viet Nam, has already been shown to be a synonym of *Z. d. aurea* in the preceding discussion: whether the specimens from the localities listed by Ripley really belong to the subspecies *aurea* is to the problem here discussed irrelevant. For the same reason *Z. d. aurea*, the identity of which as a migrant from northern Asia has been well-established, need not be further considered. The name *Z. d. horsfieldi* has been discussed above. This leaves only the races described from the mainland of south-east Asia to be discussed: *Z. d. dauma*, *affinis*, *socia* and *angustirostris*.

A revision of the forms occurring in the critical area of Thailand was given by Deignan (1938), and his conclusion that resident birds of northern Thailand must be assigned to the nominate race, *Z. d. dauma*, appears to be

well-founded. He also synonymized *Z. d. affinis* of Peninsular Thailand with *Z. d. horsfieldi*. I would have been glad to accept all these conclusions, were it not for the fact that Deignan (1963: 168-169) himself came later with an entirely different arrangement, in which *Z. d. affinis* is resurrected and *Z. d. socia* is added to the list. No explanation or justification for these changes was given by Deignan.

A loan from the U.S. National Museum consisting of a dozen specimens from Thailand, the majority of which belonged to the material studied by Deignan, and an additional specimen from Formosa as already mentioned, enabled me to form an own opinion. A few Himalayan specimens of *Z. d. dauma* available in Leiden were also examined. No toptotypical material of *Z. d. affinis* has been available, but if it is a valid race, it would be confined to the mountains of Peninsular Thailand and cannot affect the nomenclature of the Formosan birds.

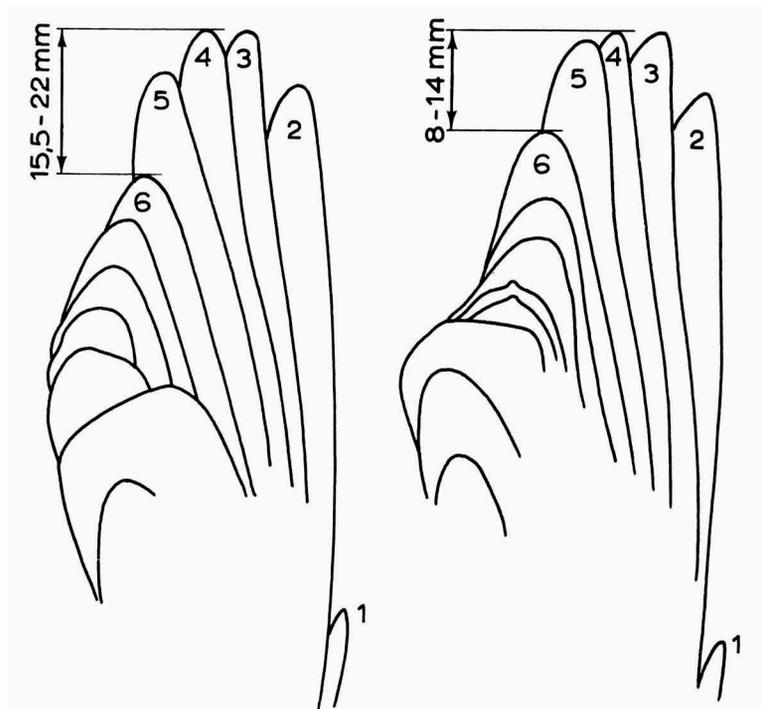


Fig. 2. Wings of *Zoothera d. dauma* (left, RMNH old coll.) and *Z. d. horsfieldi* (right, RMNH no. 48395), showing subspecific differences in shape. In *Z. d. dauma* primary no. 5 is slightly but distinctly shorter than the nos. 3 and 4, and no. 6 is 15½-22 mm shorter than the longest primary (33 specimens). In *Z. d. horsfieldi* the nos. 3, 4 and 5 are subequal, and no. 6 is 8-14, usually 10-12 mm shorter than the longest primary (40 specimens). Included in these figures are measurements taken by Mr. Galbraith from material in the British Museum. Natural size.

TABLE 3  
Measurements of *Zoothera dauma dauma*

sex	date	locality	wing	tail	tarsus	entire culmen	exposed culmen	number of rectrices	reg. no.
♂	15.IV.1969	Puli, Formosa	141	87	37	31½	23	14	RMNH 59076
-	16.I.1960	Lu-Chou, Taipe Hsien, Formosa	142	87	36	32	25	14	USNM 471871
-	-	Nepal	140	88	34	27	20	12	RMNH old coll.
-	-	"	143	86	31	28½	21	12	"
-	-	"	147	88	34	29	22	12	"
♂	3.XI.1930	Doi Nangka, Siam	148	91	35	29	22	14	USNM 330814
♂	11.XI.1930	"	141	89	32½	29	22½	12	USNM 330813
♂	19.XI.1930	"	140	85	35	27½	22	12	USNM 330816
♀	"	"	142	89	31	26½	21	12	USNM 330815
♂	14.II.1932	Khun Tan, Siam	147	86	32½	28	22	12	USNM 332100
♀	26.II.1932	"	145	82	34	28½	23	12	USNM 332099
♀	28.VIII.1934	Doi Hua Mot, Siam	143	84	35	28	23	12	USNM 334608
♂	26.XII.1936	Ban Muang Sum, Siam	141	91	31	27½	21	14	USNM 336464
♂	14.II.1955	Amphoe Dan Sai, Loei, Siam	140	86	32	27	21½	12	USNM 459831
♀	26.XI.1964	Doi Inharon, Chieng Mai, Siam	148	93	32	29½	23½	12	USNM 535182
♀	7.XI.1965	Doi Phathon Fok Chieng Mai, Siam	141	83½	32	27½	21½	12	USNM 535183
♀	26.II.1966	Khao Soi Dao Tai, Chanthaburi, Siam	140	92	33	29	24½	14	USNM 535184

The results of this examination are as follows (see table 3): birds from Nepal, Thailand and Formosa agree in measurements and in wing-formula, except that the two birds from Formosa have rather long bills and tarsi. The birds from Nepal all have 12 rectrices; out of twelve birds from northern Thailand, nine have 12 rectrices, and three have 14 rectrices; both birds from Formosa have 14 rectrices. I agree with Deignan (1938) that the apparent increase in number of rectrices from always 12 in the western part of the range to always (?) 14 in the eastern part is too gradual to be useful as a character to base subspecies on. The race *Z. d. toratugumi* from Japan also has either 12 or 14 rectrices.

Of the twelve birds from northern Thailand, two bear Deignan's identification *Z. d. socia*. One of these (USNM no. 330815), however, I am unable to distinguish from ten other birds of the same series and from the specimens from Nepal. The second specimen identified as *socia* (USNM no. 330814) is rather deeper in colour on the upperparts than the rest of the series and agrees completely with the birds from Formosa. Deignan (1963) evidently believed this bird to be a winter migrant from farther north. Without a good series of topotypical material of *Z. d. socia* I am unable to arrive at a definite opinion of its validity. For the present I follow Ripley in synonymizing *Z. d. socia* with the nominate race.

The rather large bill of the Formosan birds would be insufficient for nomenclatural separation, even if the character would be confirmed in larger series. Therefore I assign them to the nominate race, but with the postulation that if *Z. d. socia* might prove to be a valid race, they will have to be called by that name.

#### RECENT MUTATIONS IN THE AVIFAUNAL LIST

A summary of the mutations in the avifaunal list that have taken place since the publication of Hachisuka & Udagawa's (1951) paper may be of interest. Only the new species and subspecies are considered, not changes in subspecific assignment resulting from revisional work, unless these have actually led to an increase in the number of recognized forms.

Four new subspecies have been described from Formosa; none of these adds a species to the list, all belong to species previously known, of which the subspecific distinctiveness was only subsequently recognized:

*Apus affinis kuntzi* Deignan, 1958

*Ptilinopus leclancheri taiwanus* Ripley, 1962

*Prunella collaris fennelli* Deignan, 1964

*Accipiter virgatus fuscipectus* Mees, 1970

Five species and one subspecies are new to the avifauna of Formosa, but

one of these (*Hirundapus cochinchinensis*) is not an addition, as it had previously been recorded under an erroneous name.

*Zoothera dauma toratugumi* (Momiya), cf. Hachisuka et al. (1958: 73), Vaurie (1959: 413) and Ripley (1964: 157) <sup>1</sup>).

*Tringa erythropus* Pallas, cf. McClure (1967: 20).

*Emberiza pusilla* Pallas, cf. Kang (1968).

*Accipiter nisus nisosimilis* (Tickell), cf. Mees (1970).

*Phalaropus fulicarius* (Linnaeus), cf. Mees (1970).

*Hirundapus cochinchinensis* (Oustalet), cf. Mees (1973).

Removed from the list: *Chaetura caudacuta formosana* Yamashina, which proved to be *Hirundapus cochinchinensis*, and *Halcyon coromanda bangsi*: actually both *Hirundapus caudacutus* and *Halcyon coromanda bangsi* may be expected to occur on Formosa as migrants, but as yet the evidence is unsatisfactory.

It will be noted that I have omitted *Arborophila gingica* (Gmelin), recorded by McClure (1968: 68) and Kang (1969a). Dr. Severinghaus has informed me that this record was based on a misidentified specimen of *A. crudigularis*.

The fact that there are only four species new to the avifauna of Formosa, not a single one of which is a resident, indicates that the island is now well-known ornithologically and that few, if any, resident species remain to be discovered. The list of rare migrants, vagrants and casual visitors will probably continue to grow, as it does in even the best-known countries.

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<sup>1</sup>) As our material from Japan is easily distinguished by its deep colour, I recognize the subspecies *Z. d. toratugumi* (see Vaurie, 1955: 17-18), but no material from far eastern Siberia, where it is said to intergrade with *Z. d. aurea*, has been available for comparison. Meise & Seilkopf (1960) questioned the validity of *Z. d. toratugumi* and the Ornithological Society of Japan (1974: 245) synonymized it with *Z. d. aurea*.

<sup>2</sup>) It is unlikely that this bibliography is complete; I should like to be advised of omissions.

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