

Mainland Tiger Snake

Details of attacks observed are given in Table II. The contents of twenty stomachs also were examined. Three contained remains of birds: two adult Spotted Crakes *Porzana fluminea* and one, a Straw-necked Ibis *Threskiornis spinicollis* chick. Other material in the twenty stomachs included the remains of House Mice, frogs, spiders, centipedes, grasshoppers, bugs, beetles, moths, fly-larvae and ants.

It appears that the avian food taken by the Lace Monitor consists mainly of birds' eggs and that of the Mainland Tiger Snake, young birds. Although the Tiger Snake generally feeds on frogs, it may concentrate on other food when available. During the summer and autumn of 1970 when a plague of House Mice occurred on the shores of Lake Cowal, hundreds of Snakes concentrated on the shore; very few were on trees and lignum bushes in the lake. Observations in colonies of Straw-necked Ibis each year showed an increase in the number of Snakes in parts of the colonies when hatching occurred. During one observation seventeen Snakes were found in approximately forty square metres and three chicks were observed to be taken but the number of birds taken by Tiger Snakes compared with the number present is very small.

The Tiger Snake at Lake Cowal has been observed in the food of several birds including: White Ibis *Threskiornis molucca*; Whistling Kite *Haliastur sphenurus*; Brown Goshawk *Accipiter fasciatus*; Swamp Harrier *Circus aeruginosus*, Laughing Kookaburra *Dacelo novaeguineae* and Pied Butcherbird *Cracticus nigrogularis*.

TABLE II
Observed predation by the Mainland Tiger Snake *N. s. scutatus*

Species	No. obs.	No. chicks	Site
Little Pied Cormorant			tree above
<i>Phalacrocorax melanoleucos</i>	1	2	water
Little Grebe			water
<i>Tachybaptus novaehollandiae</i>	1	1	surface
Straw-necked Ibis			lignum
<i>Threskiornis spinicollis</i>	21	21	in water
Glossy Ibis			"
<i>Plegadis falcinellus</i>	1	1	"
Black Duck			tree hollow
<i>Anas superciliosa</i>	1	1	above water
Pink-eared Duck			"
<i>Malacorhynchus membranaceus</i>	1	1	"
Spotted Crane			lignum
<i>Porzana fluminea</i>	3	3	in water
Dusky Moorhen			tree stump
<i>Gallinula tenebrosa</i>	1	2	above water
Coot			lignum
<i>Fulica atra</i>	2	3	in water
Masked Plover			"
<i>Vanellus miles</i>	1	1	shore
Silver Gull			tree hollow
<i>Larus novaehollandiae</i>	1	1	above water
Crested Pigeon			lignum
<i>Ocyphaps lophotes</i>	1	2	in water
Sacred Kingfisher			tree hollow
<i>Halcyon sancta</i>	1	2	above water
Welcome Swallow			old
<i>Hirundo neoxena</i>	1	4	building
Little Grassbird			lignum
<i>Megalurus grammurus</i>	1	2	in water
Clamorous Reed Warbler			"
<i>Acrocephalus stentoreus</i>	2	5	"
Willie Wagtail			tree above
<i>Rhipidura leucophrys</i>	2	6	water
White-plumed Honeyeater			"
<i>Lichenostomus penicillatus</i>	1	3	"

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MIGRATION OF PALAEARCTIC PASSERINE BIRDS IN WALLACEA

This paper completes a survey of the migration of Palearctic landbirds to Wallacea and summarizes the occurrence there of passerine species. Only ten species winter there regularly, of which four have been recorded rarely from Australia. The picture is essentially similar to that presented by the non-passerines (White 1976).

Conventions of details in the list of species are as in White (1975).

LIST OF SPECIES

Hirundo rustica Barn Swallow
Sixty-five: September–March. Winters throughout Wallacea including series from Timor and Wetar. It is surprising that Australian records are so few.

Anthus gustavi Pechora Pipit
Seventeen: September–February. Records from all parts of Wallacea, including Timor and Damar. Thus a possible vagrant to north-western Australia.

Anthus cervinus Red-throated Pipit
One: April. North Celebes, probably vagrant.

Motacilla flava Yellow Wagtail
Seventy-three: September–April. These are grey-crowned birds and all have been identified as *simillima* where racial identification was possible. None has been identified as *tschutschensis*, which has been reported from Australia. Nine from Celebes, Butung, Ambon, Tanimbar and Kai Islands are green-crowned *taivana*.

Motacilla cinerea Grey Wagtail
Sixty-one: September–April. Throughout Wallacea including a dozen from Timor and adjacent islands. There is only a single sight record from Australia. It winters commonly on

streams and rivers in Papua New Guinea, where Marchant (pers. comm.) saw it often south of Aitape in March and April.

Lanius tigrinus Thick-billed Shrike
One, April, northern Celebes. Probably vagrant.

Lanius cristatus Brown Shrike
Two distinct forms have been recorded between October and April, with apparently distinct wintering areas. Ten from Talaud, Sangihe, Celebes, Seram and Halmahera are Chinese *lucionensis* with grey crown. Seven from Flores and Sumba are Japanese *superciliosus* with rufous crown.

Monticola solitarius Blue Rock-thrush
Twenty: September. Records from Celebes to northern and southern Moluccas, none from Lesser Sundas. The eastern form, *philippensis*, with chestnut abdomen.

Ficedula mugimaki Mugimaki Flycatcher
Six from northern and north-central Celebes, December and January were collected at altitudes of 1,500–1,800 metres, suggesting a specialized montane winter quarters. A single record from Ternate, northern Moluccas.

Muscicapa griseisticta Grey-spotted Flycatcher
Thirty-one: September–April. These are mostly from Celebes and Moluccas; the only Lesser Sunda records are single birds from Wetar and Leti, near Timor. This species winters only in the Philippines and Wallacea.

Muscicapa latirostris Brown Flycatcher
Probably only a vagrant. One collected by Heinrich in January in northern Celebes. Van Bemmelen (1948) gave Halmahera as a locality with a footnote: 'Rare visitor in the Moluccas'. I have been unable to trace the basis for this record.

Locustella fasciolata Gray's Grasshopper Warbler
Fifty-four: September–May. Widespread from Celebes through Moluccas to north-western Irian Jaya but no records from Lesser Sundas. The recently described *L. amnicola* (Stepanyan 1972) from Sakhalin and Hokkaido is probably a subspecies of *L. fasciolata*. One from Morotai in British Museum (Natural History) has been provisionally so identified.

Locustella certhiola Pallas' Grasshopper Warbler
One from south-eastern Celebes agrees better with this than with the following species.

Locustella ochotensis Middendorff's Grasshopper Warbler
Four: December and February, Celebes; one from Luang, South West Islands, November. Williamson (1963) is followed in treating this and the last as distinct species.

Locustella lanceolata Lanceolated Warbler
Once in December, Halmahera, northern Moluccas. Probably vagrant.

Acrocephalus arundinaceus Great Reed Warbler
Twenty-two: September–May. Apparently throughout, though the only record from Lesser Sundas is from Timor. There is one Australian record. Eastern *A. a. orientalis*.

Phylloscopus borealis Arctic Warbler
Seventy-one: September–May. Winters throughout. Some from Lesser Sundas can be identified as Japanese *xanthodryas*. Following Williamson (1962), others are referable to the nominate form or indeterminate. Van Bemmelen and Voous (1953) identified four from Halmahera as Alaskan *kennicotti* and mention a similar identification for Buru. Vaurie (1954) showed that the short wing, hitherto relied upon to distinguish that form in winter quarters, is invalid. This species has been recorded from Timor and could reach north-western Australia.

Sturnus philippensis Red-cheeked Starling
Three from northern Celebes and Batjan, a century or more ago: perhaps vagrants.

DISCUSSION

Only eighteen species of migrant Palaearctic passerine

birds have been recorded from Wallacea. Of these, it is clear that *Hirundo rustica*, *Anthus gustavi*, *Motacilla flava*, *M. cinerea*, *Lanius cristatus*, *Monticola solitarius*, *Muscicapa griseisticta*, *Locustella fasciolata*, *Acrocephalus arundinaceus* and *Phylloscopus borealis* winter regularly in Wallacea in some numbers. If experience from tropical Africa and Asia is a guide, mist-netting of Palaearctic migrants in Wallacea ought to add a few more species to the list and might reveal that secretive birds such as species of *Locustella* occur more often than is apparent. The Sulu Archipelago lies just north of Celebes, between Mindanao and Sabah. Intensive collecting was recently carried out there from September 1971 to January 1972. From du Pont's report (1973) the following Palaearctic passerine migrants not known from Wallacea were common: *Turdus obscurus*, *Ficedula narcissina*, *Muscicapa sibirica*. These appear to be the most likely additions to the list for Wallacea.

Among the eighteen species listed the contrast between those that winter regularly and those that occur seldom or as vagrants is exceptionally sharp. The passerine migrants present a picture similar to that already shown by non-passerines (White 1976). Ten species winter regularly but Wallacea in effect filters them off so that only four have been reported from Australia and these only rarely. Indeed four of the ten have not been recorded from the Lesser Sundas or only rarely found there.

Identification of subspecies among wintering birds is often unreliable. However, the presence of two forms of *Lanius cristatus* in different areas deserves note. Some of the birds from Korea and northern China (*lucionensis*) migrate to the Philippines and so to Celebes and Moluccas. The Japanese *superciliosus* migrates through China to Malaysia, with some spilling over to the western Lesser Sundas (Vaurie 1959).

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