Gallinago gallinago and *Calidris temminckii* are likely to occur occasionally in western Wallacea. From the evidence from western and north-western Australia *Calidris canutus*, *Philomachus pugnax* and *Limnodromus semipalmatus* must reach Wallacea, though the last two are probably infrequent.

Dates of collected specimens indicate that *Pluvialis dominica*, *Charadrius leschenaultii*, *Numenius phaeopus*, *Tringa glareola*, *T. brevipes*, *T. nebularia*, *T. hypoleucos*, *Limosa lapponica*, *Calidris tenuirostris*, *Gallinago megala* and *Phalaropus lobatus* winter to some extent in Wallacea apart from transients of most of these species that pass through to Australia. Dates of specimens also suggest that many other species are predominantly or wholly passage migrants in Wallacea to or from Australia. As a whole, the material well supports Marchant's views quoted by Thomas that Wallacea is not an important wintering ground for Palaearctic waders.

The many specimens collected between August and October contrasts with the few obtained from March to May. For some species there are no specimens in the latter period. Possibly waders on the northward migration from Australia pass through Wallacea more rapidly than they do on the southward. Also some species may take a different migration route in the spring or local conditions may be more favourable for collection on autumn passage. These are questions that invite the attention of anyone who does field work in this area.

Some species present points of special interest. The numerous specimens of *Numenius phaeopus* seem remarkable but Smythies (1960) recorded that in Borneo it is a great lover of mangrove swamps. This may account for the frequent specimens from Wallacea. The great disparity in numbers of specimens of *Calidris ruficollis* and *C. subminuta* may also reflect Smythies's observation that *C. ruficollis* in Borneo is a bird of the sea-shore but that *C. subminuta* avoids the shore and frequents paddy fields and marshes.

Some species wintering commonly in Western Australia present contrasting pictures in Wallacea; *Calidris acuminata* and *C. ruficollis* have been collected there often, but *Pluvialis squatarola* and *Calidris ferruginea* are represented by few specimens. Perhaps these latter are rapid transients. Species that Smythies associates with mudflats in Borneo, *Tringa stagnatilis*, *T. terek*, *Calidris ferruginea*, *Limicola falcinellus*, have been collected seldom in Wallacea.

A puzzling feature is that *Charadrius leschenaultii* has been obtained four times as often as *C. mongolus*. Smythies thought *C. leschenaultii* was 'probably the commoner of the two' in Borneo, which hardly implies such a disparity. Dates of specimens suggest that *C. mongolus* is mainly a passage migrant to Australia, but that *C. leschenaultii* winters in Wallacea, thus exposing it to more frequent collecting. Because both species occur in the same habitats on beaches and are very similar in winter plumage, any deliberate bias to obtaining *C. leschenaultii* seems unlikely.

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THE AUSTRALIAN SUBSPECIES OF LEWIN'S RAIL

Lewin's Rail *Rallus pectoralis*, Temminck, 1831, was also described as *Rallus brachipus* by Swainson from a Tasmanian specimen in 1837, and was known by the latter specific name until Mathews (1910) showed that the earlier name was valid. Mathews treated *R. brachipus* as a synonym of *R. pectoralis pectoralis* and in the same work described another subspecies from Western Australia, *R. p. clelandi*. In his Systema Avium Australasianarum, Mathews (1927) listed three subspecies, treating *R. p. brachipus* as a separate Tasmanian subspecies, and this arrangement was followed by Peters (1934).

Because no description appears to have been published to show how *pectoralis* and *brachipus* differ, the characters of the three subspecies, as shown by

specimens in the collection of the British Museum (Natural History) and in literature, are here described.

The main criterion for the separation of the three is size. Measurements (mm) are as follows:

pectoralis (9 specimens), wing 90–98, bill 29–32, tarsus 28–30

brachipus (2 specimens), wing 101–102, bill 35–37, tarsus 31–32

clelandi (3 specimens), wing 109–114, bill 39–45, tarsus 35–37

A little more data on *brachipus* are available. Littler (1910) gave these measurements (mm) for Tasmanian birds: wing 104, bill 36, tarsus 32. Skemp (1955) gave the length of bill as one and a half inches (= *c.* 38 mm). These measurements would appear to confirm those already given. Mathews (1910) gives measurements (mm) for *clelandi*: wing 114, bill 42, tarsus 36, but his data for *pectoralis* represent an average of the other two subspecies.

From the material available there appear to be differences of colour between the three. *Clelandi* is generally darker than *pectoralis*, particularly as regards the chestnut of the head and the olive-brown of the back. It is a clearer grey on breast and neck and whiter on the throat. *Pectoralis* has olive tips to the grey feathers on head, throat and sides of the breast, giving less well-defined areas of colour. *Brachipus* is similar to *pectoralis* but the colour of head and breast is still more obscured by olive tips to the feathers, and the belly, which is white in the other subspecies, has a distinct buffish tint, described by Littler as 'isabelline'.

The distribution of the subspecies, with *pectoralis* occurring on the eastern side of Australia from Queensland to Victoria, and *clelandi* in the south-west, suggests subspeciation based on early separation in 'refuges' during an arid period, such as is apparent for many other Australian birds (Gentilli 1949; Keast 1961). *Brachipus* probably represents a later isolation of a part of the population of *pectoralis*.

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DEVICES FOR REDUCING AGGRESSION IN THE WHITE-PLUMED HONEYEATER AND THE WILLIE WAGTAIL

INTRODUCTION

Dow (1973) in part discussed the significance of the oral flange in adult Australian honeyeaters and the unreliability of ageing specimens on the basis of colour and type of flange. He suggested that this characteristic might be useful in promoting certain types of social organization by reducing aggression towards individuals exhibiting a pale flange. He demonstrated in the White-plumed Honeyeater a statistically significant trend between type and colour of flange: pale with fleshy flange; intermediate colour equally associated with fleshy and non-fleshy flanges; dark with non-fleshy. Graphically he showed smooth monthly changes of colour of flange in his sample. He stated that no irregularity of type or colour of flange had been described in this species and implied that a pale flange was associated with immaturity.

My observations of the White-plumed Honeyeater *Meliphaga penicillata* in aviculture, however, show the situation to be more complex. Six individuals of this species housed in one of my planted aviaries, measuring 3 × 7 × 2 m, exhibit a clear gradation in intensity of colour of plumage as well as colour and type of flange. These birds were taken on 8 October 1971 near the Murchison River at Twin Peaks Station, Western Australia (27°21′37″ S, 115°53′42″ E). Each had adult plumage with similar intensity of colour. Although characteristics of their flanges were not noted at the time of capture, all had black bills. All birds were individually identified with coloured bands (see Table I). Two birds, already mated, were given green bands; the bird with an orange band on the left leg subsequently lost its left eye, possibly as a result of fighting. In keeping with many Meliphagidae, *M. penicillata* proved very quarrelsome, but by May 1972 erratic scrapping had given way to systematic bullying. The dominant bird proved to be an unmated male.