NOTES ON THE FEEDING OF TWO *CHLIDONIAS* TERNS

Notes on the occurrence of White-winged Terns *Chlidonias leucoptera* and Whiskered Terns *C. hybrida* in the Darwin area of the Northern Territory have been given by Crawford (1972, Emu 72: 140), where details of four specimens of *C. hybrida* and five of *C. leucoptera* collected on 23 December 1971 and of another specimen of *C. hybrida* collected on 29 November 1970 may be found. The birds, collected about the CSIRO farm, forty-five kilometres south-east of Darwin, were feeding in a mixed flock over fallow rice-paddy bays. This area had been cleared of vegetation before being flooded by heavy rain. The flock of about forty birds, of which approximately one quarter were *C. leucoptera*, was observed for about thirty minutes before collecting started. Both species were feeding in the same way: fluttering one to three metres above the water with periodic dips to take prey on or just below the surface. The head during flight was held so that the bill pointed downwards. Though wing-beats were fast, progress was slow at times, the birds appearing almost to hover. They concentrated on the edges of the bays where there was much floating debris. Every so often, birds would break away to patrol a new feeding area.

This type of feeding behaviour was the one most commonly seen in the area of Darwin for both species. It was usually carried out over still water devoid of floating vegetation, as at Fogg Dam in the late dry season, but was occasionally seen over seawater on very calm days.

Stomach contents of the nine specimens are summarized in Table I. The rather large numbers of terrestrial insects in the contents is probably because they had been flushed out by the flooding. The occurrence of dytiscid larvae (water-beetles) suggests that both terns were getting food from just below the surface. This modifies the discrepancy noted by Crawford (loc. cit.) between his observations and those of Rix (1970, S. Aust. Orn. 25: 147-191) but the main point regarding identification by method of feeding remains valid. Stomach contents of the terns were not available at the time of writing the 1972 paper.

The specimen (NT Mus. 5529) from Harrison Dam, taken on 29 November 1970, was hawking with other *C. hybrida* when collected. Birds in the flock rose to twenty metres at times, no attention being paid to the surface of the water during my observations, which lasted for about fifteen minutes before collecting. Its stomach contained the remains of over 100 winged ants. Two ants were also found in the upper oesophagus, leaving no doubt that they were taken on the wing just before the bird was shot. The same species of ant was making nuptial flights from several nests in the area.

At Fogg Dam on 27 September 1971, a *C. hybrida* was seen to take a dragonfly on the wing. The insect was about 40 millimetres long and was swallowed with some difficulty. The observation was made in good light with 12 x 50 binoculars at about twenty metres. *C. leucoptera* has also been seen hawking as if catching insects on the wing but only on a few occasions were the insects large enough to be seen clearly from a distance; they could not be positively identified but their slow flight suggested ants. Most hawking took place over or near water. Occasionally during the dry season *C. hybrida* was seen hawking over dry sedge-plains far from water.

Similarity of hunting technique and apparently of diet suggests that in the fresh-water habitat the two species occupy similar niches, the only difference being that *C. hybrida* may take larger prey.

Moreau (1952, J. Anim. Ecol. 21: 250-271) and Morel and Bourlière (1962, Terre et Vie 4: 371-393) suggest that in Africa Palaearctic migrants do not compete with resident species. Instead, they utilize sources of food not exploited by the residents or, because they move about more, are able to make better use of superabundant sources. Both species of *Chlidonias* are migrants to the area of Darwin: *C. leucoptera* from the northern hemisphere and *C. hybrida* from breeding areas in inland Northern Ter-

TABLE I

Stomach contents of nine specimens of *Chlidonias* terns

Contents	*C. leucoptera* Total No.	*C. leucoptera* Frequency	*C. hybrida* Total No.	*C. hybrida* Frequency
Coleoptera				
Dytiscid larvae	15	1	4	2
Hydrophilid larvae	2	1	19	1
Weevils (Curculionidae)	6	3	5	1
Formicidae				
Green Tree-ant *Oecophylla virescens*	18	3	—	—
Other ants	1	1	5	2
Earwigs (Dermaptera)	—	—	6	3
Lepidopteran larvae	—	—	1	1
Grasshoppers (Acrididae)	7	2	—	—
Spiders (Arachnida)	2	2	1	1
Crustacea	—	—	tr	1
Frog (Amphibia)	—	—	1	1

ritory and perhaps farther afield. The taking of terrestrial insects flushed out by rain and of flying ants are both examples of the exploitation of abundant sources of food.

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OBSERVATIONS ON BIRDS ON NDENDI ISLAND, SANTA CRUZ GROUP

During the Whitney expedition in the 1930s a survey of the avifauna of the Santa Cruz group of islands was made and this information is readily available in Mayr (1945). Since then, there do not appear to have been any further publications on birds in this group of islands.

The group is politically part of the eastern Solomon Islands and is situated approximately 400 kilometres east of Makira (San Cristobal) and 240 kilometres north of the Torres Islands in the northern New Hebrides. The main island, Ndendi, is situated approximately 11° S and 166° E. This group of islands has the impoverished fauna expected on remote oceanic islands and a high proportion of endemic species and subspecies.

In the course of an epidemiological study in the northern New Hebrides and eastern Solomons I spent from 30 October to 6 November 1975 on Ndendi and was able to make some observations of birds. In view of the lack of recent information about this group two records appear to be worth noting and a third is surprising. These observations were made during a study supported by the Medical Research Council of New Zealand, whose assistance is gratefully acknowledged.

Ardea novaehollandiae White-faced heron

I saw a single bird on the air-strip at the northern end of Graciosa Bay on Ndendi on 5 November. The bird was present there throughout the afternoon. Dr Ed Fellowes told me that a heron of a species he did not know, but thought was probably *A. novaehollandiae*, had been resident in the same area when he was on the island six weeks previously. This was probably the same bird, which had been resident for some time.

The only ardeid normally resident in the group is the Eastern Reef Egret *Egretta sacra*, which is very common and predominantly in the dark phase. It would not be possible to confuse the two species and I have never seen *E. sacra* on an open grassed area similar to the strip where this bird was found. My field notes on its appearance were: 'Large grey heron, white face and front of neck, plumes on back of head and neck grey, black bill, legs lemon yellow. Length say about 25 inches [625 mm]'. Because I have known the bird for many years and handled a considerable number during field work in the Murray Valley in late November 1975 and January 1976, I have no doubt of the correctness of this identification.

Mayr (1945) records the species from New Caledonia and Condon (1975) from south-eastern New Guinea, but neither does so from the Solomons or New Hebrides. Medway and Marshall (1975) and Diamond and Marshall (1976) do not record it from the New Hebrides. There have been several papers on birds of the western Solomon Islands by C. G. Sibley and others but none of these records *A. novaehollandiae*.

Presumably this bird was a vagrant of a species that is increasing its range, and, certainly in New Zealand, increasing in numbers. However, it is surprising to find it 2,900 kilometres outside its previously recorded range.

Tyto alba Barn owl

This species has not previously been recorded from Ndendi. It is present in the New Hebrides, the Solomon Islands and the Santa Cruz group (Vanikoro). It is more surprising that it has not been previously recorded than that it has now been found on Ndendi. This was a single specimen seen near the head (southern end) of Graciosa Bay. According to Mayr (op. cit.) the subspecies on Vanikoro is the same as that in the New Hebrides (*interposita*) and different from that in the Solomons as far east as Santa Ana.

Porphyrio porphyrio Purple Swamphen

At least one bird of this species was resident close to the Government rest-house at the northern end of Graciosa Bay. This had been seen by Dr Fellowes and was seen every day during the week we were on the island by Dr F. J. Austin and me. I had previously seen at least one when I visited the island in January 1972. This species is now probably established on Ndendi although I do not know of any observation of its breeding there. In the Santa Cruz group it has previously been recorded from Tinakula, Utupua and Vanikoro Islands.