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S. A. HALSE, *Department of Surgery, University of Western Australia, Nedlands, WA 6009.*
Present address: *Department of Zoology, University of Witwatersrand, Jan Smuts Avenue, Johannesburg 2001, Republic of South Africa.*
16 October 1979.

DOES HUTTON'S SHEARWATER CIRCUMNAVIGATE AUSTRALIA?

Halse (1981, Emu 81: 42-44) reports seeing several hundred Hutton's Shearwaters *Puffinus huttoni* about five kilometres offshore and some twenty-five kilometres north of Point Cloates, WA, at 22°30'S, 113°40'E. In conjunction with other recent sightings round Australia this report suggests that part of the population of this Shearwater may circumnavigate Australia in a counterclockwise direction.

Halse's birds were seen between 31 July and 6 August 1978 and 30 July to 9 August 1979. All were travelling south. The identification was clinched by the collection of a specimen now in the Western Australian Museum. However, between June and September 1965–70 Shuntov (1974, Seabirds and the biological structure of the ocean. Translation; US Dept. of Commerce) recorded 'small sized white-bellied shearwaters' as common over the continental shelf off north-western Australia. He provisionally identified them as *P. gavia*. It now seems possible that they were the very closely related *P. huttoni*. The only banded bird recorded from Australia seems to be the one marked near Christchurch, NZ, on 31 March 1969 and found dead at Hopetoun, WA, on 11 December 1970 (1973, Aust. Bird Bander 11: 85).

On the other side of the continent sightings off Queensland as far north as 17°S by Corben *et al.* (1974, Sunbird 5: 55-56) in May, June and August suggest that Hutton's Shearwaters are more common off eastern Australia than has hitherto been supposed. Now comes D. P. Vernon's record (1977, Sunbird 8: 92) of a specimen from Booby Island, Q, and another from the same place found weak but alive on 5 May 1976 which show that the species may penetrate Torres Strait. Both specimens, collected by A. Hersom, are in the Queensland Museum.

The bird is known to breed only in the mountains inland from Kaikoura where it was discovered in 1965 by G. Harrow. He reported (1976, Notornis 23: 269-288) its occurrence in New Zealand waters throughout the year and suggested that birds in Australian seas belonged to the pre-breeding part of the population. The purpose of the present note is to draw attention to the possibility that such birds may circumnavigate Australia during their pre-breeding years and for the need for further sightings, specimens and even *nil* reports from the coasts and seas off northern Australia.

The timing of such a movement could possibly be unravelled from the dates of sightings at different places along the migration path but, should the birds remain overseas before returning to the colonies (probably not before they are two years old), then the pattern may be hard to resolve.

JOHN WARHAM, *Department of Zoology, University of Canterbury, Christchurch, NZ.*
11 September 1980.

UNEQUAL SEX RATIOS AMONG SEABIRDS FOUND BEACH-WASHED

Examples of unequal sex ratios among seabirds found beach-washed have been explained by segregation of the sexes at sea (e.g. Dell 1952; Hindwood and McGill 1955; Serventy 1967). A possible example of such segregation was described for Wilson's Storm-Petrel *Oceanites oceanicus* by Huber (1971). He collected birds at sea on their post-breeding migration in the central western Pacific Ocean; females appeared to be more abundant in

TABLE I

Sex ratios of petrels found beach-washed in mid-northern New South Wales, September 1974 - January 1977. Figures show numbers sexed, males upper, females lower.

SPECIES	S	O	N	D	J	F	M	A	M	J	J	O	N	D	J	F	M	A	M	Jn	O	N	D	J	TOTAL
Pterodroma																1									1
macroptera																0									0
P. lessonii																				1					1
																				0					0
P. leucoptera									1				1			1									3
									0				0			0									0
Pachyptila										1										1					2
desolata										0										0					0
P. turtur		0								13	9														22
		1								25	1														27
Procellaria																							0		0
westlandica																							1		1
Puffinus		0	1	1	1	1																			4
carneipes		1	0	0	0	0																			1
P. pacificus	1	1	4		3	1	1	0					6	0									1		18
	0	1	1		0	0	0	1					2	2									0		7
P. griseus			5										13												18
			1										9												10
P. tenuirostris	1	46	35	17	0			2	1			6	8	11	0			0	2		4	14	3	1	151
	1	28	13	11	2			3	2			3	8	16	1			1	2		6	16	3	1	117
P. gavia		0	1		2	1				1				0		2									7
		2	0		0	1				0				1		1									5

English names not in text: *P. lessonii* White-headed Petrel; *Pachyptila desolata* Antarctic Prion; *Procellaria westlandica* Westland Petrel; *Puffinus carneipes* Flesh-footed Shearwater; *P. gavia* Fluttering Shearwater.

April (6:1) and males predominated in May (38:18). Segregation of sexes may also be suspected in species where males return to the breeding islands before females. These include the Great-winged Petrel *Pterodroma macroptera* (Imber 1976) and Royal Penguin *Eudyptes schlegeli* (Warham 1971). In addition, Stuart-Sutherland (1922) reported that Sooty Shearwaters *Puffinus griseus* killed at a lighthouse near a colony in New Zealand were always of one sex on nights when deaths occurred. Here, I draw attention to the possibility that some examples of unequal sex ratios among dead seabirds may represent the actual ratio in the component of the population that has incurred mortality.

As part of a study of the general ecology of seabirds in waters on the continental shelf in mid-northern New South Wales, I sexed 396 petrels that were found freshly dead on beaches between the Evans River and Crowdy Head from September 1974 to January 1977. There was a clear preponderance of males among the eleven species concerned; there were more males in nine species and more females only in two (Table I). The small samples (< 6 birds in each of six species) support the trend observed in larger samples.

Serventy (1967) stated that sex ratio is equal among immature Short-tailed Shearwaters *Puffinus tenuirostris* during their southward migration in south-eastern Australia. Also, the sexes are equal in number at fledging; one sample contained sixty-nine males and seventy-five females (D. L. Serventy *in litt.*). In each month from October to December 1974 I found more males than females dead, totalling ninety-eight males and fifty-two females. The difference was significant ($\chi^2 = 14.10$, $P < 0.001$). Dead Shearwaters examined during these months in 1975 and 1976 showed no disparity in the sex ratios (1975: $\chi^2 = 0.08$, $0.70 < P < 0.80$; 1976: $\chi^2 = 0.35$, $0.60 < P < 0.70$). A large disparity in the sex ratio of beach-washed Short-tailed Shearwaters was also found in November 1962. A small sample on 8 November from Mallacoota in eastern Victoria contained seven males and three females (Anon. 1965). A sample on 20 November from southern New South Wales contained 435 males and 101 females, which Serventy (1967) attributed to segregation before laying. However, this explanation is not consistent with his assertion that most beach-washed Shearwaters are immature.

Segregation is an unlikely explanation for the disparity of sexes in the mortality of Short-tailed Shearwaters that I recorded in 1974. Mortality was continuous and males always predominated in the cumulative total of sexed birds. This observation supports Lack (1966), who concluded, from data on age of first breeding given by Serventy, that there was an excess of males in Short-tailed Shearwaters. Serventy (1967) showed that male

Shearwaters begin breeding on average at least one year later than females. This would result if there was a shortage of females with which the males could mate; shearwaters are monogamous.

An excess of male Short-tailed Shearwaters in some cohorts of the population could result from occasional large mortality among juvenile females. This cannot be tested in northern New South Wales where few juveniles are found beach-washed during their northward migration from late April to early July. However, there is evidence from other species of seabirds that suggests that juvenile females are more vulnerable than males. For example, a continuous mortality of Little Penguins *Eudyptula minor* that occurred in New Zealand during 1973 and 1974 affected mainly immature females (Crockett and Kearns 1975). In particular, several examples are provided by species that breed in cold waters of the southern hemisphere and disperse northward in winter. Most individuals of these species that are found dead are certainly immature (pers. obs.) and probably juvenile. In June 1975 I found thirteen male and twenty-five female Fairy Prions *Pachyptila turtur* (Table I) but the difference from an equal sex ratio was not quite significant ($\chi^2 = 3.79$, $0.05 < P < 0.10$). In contrast, I found nine male and one female of this species in July 1975. This was a significant difference ($\chi^2 = 6.40$, $P < 0.02$), which possibly represented a temporary local imbalance resulting from mortality of females in June. In the Southern Fulmar *Fulmarus glacialoides* Crockett and Reed (1976) reported that thirteen found dead in New Zealand in late 1975 were all females. About thirty petrels of seven species that were found dead near Sydney in July 1954 were all females (Hindwood and McGill 1955). Contrary evidence is provided by the Blue Petrel *Halobaena caerulea;* seven specimens sexed in New Zealand from 1924 to 1950 were all males (Dell 1952).

There is also evidence of greater mortality among females in older birds. In one of the longest studies yet attempted of survival rate in seabirds, Richdale (1957) found that a population of Yellow-eyed Penguins *Megadyptes antipodes* had a mean annual survival rate of 84.2 per cent in females and 88.8 per cent in males. There was no differential mortality among juveniles. Fisher (1975) found no consistent sexual variation in the mortality of breeding Laysan Albatrosses *Diomedea immutabilis* but, in two years when fewer birds bred than in other years, females experienced greater losses.

I examined 122 petrels of nineteen species in the Australian Museum in an attempt to find more examples of unequal sex ratios in beach-washed birds. Unfortunately, there were not sufficient specimens of any species to demonstrate significant difference from an equal sex ratio. In the Short-tailed Shearwater there were thirty-one males and eighteen females but the difference was not quite significant ($\chi^2 = 3.45$, $0.05 < P < 0.10$).

Several species of seabirds may have an excess of males (Nelson 1970). Species in which males begin breeding at a later age than females, apart from the Short-tailed Shearwater, include the Yellow-eyed Penguin (Richdale 1957), Adelie Penguin *Pygoscelis adeliae* (LeResche and Sladen 1970), Royal Albatross *D. epomophora* (Westerskov 1963) and Kittiwake *Rissa tridactyla* (Coulson 1966). In a small sample of Manx Shearwaters *P. puffinus* the youngest females found breeding were five years and the youngest males were six years old (Harris 1966). Imber (1976) described an interesting phenomenon in the Great-winged Petrel in New Zealand, which provides strong evidence of an excess of males. On six occasions he found a female accompanying one male before incubation but sharing incubation with a different male. Cullen (1957) occasionally observed two males sharing incubation with one female in the Arctic Tern *Sterna paradisaea,* which he attributed to a shortage of females. Richdale (1957) stated that, although male Yellow-eyed Penguins occasionally bred at two years old, some did not breed even at five years because they failed to obtain mates, whereas most females bred when two or three years old.

Species of seabirds in which there might be an excess of females appear to be much fewer. Females begin breeding at a later age than males in the Herring Gull *Larus argentatus* (Drost *et al.* 1961) and Laysan Albatross (Fisher 1975).

The necessary relation of age at first breeding to rates of mortality in particular components of the population has not been demonstrated in seabirds. However, Carrick *et al.* (1962) showed that in the large unexploited population of Southern Elephant Seals *Mirounga leonina* at Macquarie Island both males and females grow more slowly and have a longer period of immaturity than in the exploited population at South Georgia.

If unequal sex ratios occur in several species of seabirds, resulting from occasional large mortality of juvenile females, the reasons for differential mortality remain obscure. Conceivably, the smaller average size of females places them at some disadvantage, perhaps competitively.

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GLENN HOLMES, *PO Box 258, Kyogle, NSW 2474.*
30 October 1979.

YELLOW WAGTAIL *MOTACILLA FLAVA* ON HERON ISLAND, QLD, WITH NOTES ON THE STATUS OF SOUTHERN INDIVIDUALS

On 27 June 1979 at 11:55 I observed a wagtail of the genus *Motacilla* on the north-eastern side of Heron Island, Great Barrier Reef, Qld. I approached to within twenty metres of where it was foraging in a grassy clearing where a walking track cuts the *Pandanus* and *Casuarina* vegetation of the shoreline. As I observed it with 9×21 binoculars, it approached within ten metres. Light conditions were excellent (full noon sun) and details of feathers could be easily discerned. From the following field description, the bird was diagnosed as an adult male Yellow Wagtail *M. flava* in breeding plumage:

Head:	medium grey with a clear-white superciliary line.
Underparts:	bright yellow from throat to under tail-coverts, possibly lighter on throat (but no white noted) with a very faint smudged grey 'necklace' across upper breast.
Back:	greenish with distinct contrast between head and back.
Wings:	greenish with two narrow but distinct yellowish wing-bars.
Tail:	dark with white outer feathers; bobbed constantly and somewhat faster than Richard's Pipit *Anthus novaeseelandiae*
Feet and bill:	dark slate grey.
Voice:	a single syllable, 'tcheep', given once or twice each time the bird took flight.
Habits:	most of the time spent gleaning food from grass and running erratically from one feeding site to another; occasionally stood erect and watched alertly for a few seconds.

After I had observed it for about two minutes, the bird flew to the other side of the clearing. As I approached it again at 12:00, it flushed and flew south along the beach.

At 12:15 I found the bird again at the original site and took four photographs. These were of poor quality but were sufficiently clear to confirm all noted field marks and verify the identification. They further showed that the colour of the wings was a darker green than that of the back with some black in the flight-feathers and that the ear-coverts were darker grey than the rest of the head.

The bird became increasingly wary and flew between this patch and other small areas of grass on the shoreline as I followed it. I lost it at 12:35. At 14:30 I saw the bird for a third time, feeding about fifty metres from the original place. I visited these sites often and searched the shoreline daily for the next week with no sign of the bird. Five ornithologists were present on Heron Island until 26 June and would almost certainly have noticed this bird had it occurred before 27 June. The nights of both 26 and 27 June, when the bird apparently arrived and left, were clear with light to moderate south-easterly winds.

The Yellow Wagtail was first reported in Australia when H. G. Barnard collected an adult male at Bimbi on the Dawson River, Qld, on 10 June 1905. The specimen was proposed as holotype of a new species (Anon. 1905) but is now assigned to *M.f. tschutschensis* (Crawford and Parker 1971). The species was not seen again until Lindgren and Slater (1961) reported a bird in 'immature or winter plumage' at Derby, WA, on 7 December 1960. Since that time, a number of irregular summer sightings along the northern and far north-eastern coast (Gill 1967; Crawford and Parker 1971; Crawford 1972) have stimulated and subsequently confirmed the change of status for the species in the RAOU checklist from 'casual' to 'regular' visitor (Condon 1967).