The Australian

BIRD BANDER

Penguin Study Group—First Report

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A study of the Little Penguin (*Eudyptula minor*) is being conducted at Phillip Island, Victoria as a Victorian Ornithological Research Group (VORG) Survey. This report covers the period 24 February 1968 to 30 June 1969, during which a total of 282 birds has been banded. Five recoveries have been recorded away from the Island, the longest being 355 miles.

Preliminary work carried out in February and March 1968 comprised the banding of nine birds at the Summerland Penguin Reserve and 68 birds at the nearby Cat Bay rockery. The study began in earnest on 17 August 1968 with the selection of a study area in the sandhills at Summerland measuring approximately 60 x 30 yards. This area, in a depression in the centre of the rookery, is reasonably well screened from public observation. Seventy-three burrows were marked by a series of numbered pegs and adults therein were banded. Chicks were banded wherever found but outside the study area no serious search was made.

On each daytime visit and on some evening visits the contents of the burrows were examined and recorded. On some evening visits a watch was kept for birds moving into the study area from the sea. Mr A. H. West, who conducts the 'Penguin Parade', made some limited observations on birds which he had banded.

Thirty-five visits to Phillip Island (each involving one or more visits to the study area) have been made since 17 August 1968.

TABLE 1

Penguins banded on Phillip Island, 24 February 1968 to 30 June 1969.

Location	Adults	Chicks	Total
Study area (Summerland)	115	35	150
By A. H. West	10	29	39
Other Summerland areas		25	25
Cat Bay	62	6	68
Total	187	95	282

Live Recoveries in Study Area

None of the 35 banded chicks has yet been recovered after having gone to sea. Of the 115 banded adults 100 were recovered alive on subsequent visits a total of 561 times. This appears to be indicative of low mortality in breeding birds and apparent indifference to regular handling.

Many of these recoveries were, of course, during the incubation and moulting periods. Few recoveries were made when both the parent birds were on land only at night to feed advanced

chicks. It is clear that penguins do frequently resort to the rookery at other times as set out in Table 2. This does not accord with an experience of J. Warham (1958) who stated "By the time we left the island* on 5 April there were apparently no penguins ashore at all, no tracks on the beaches and there was no calling after dark."

* Cat Island, Furneaux Group, Bass Strait.

TABLE 2

Recoveries of adult penguins in the study area in each month compared with the total banded population (excluding dead recoveries).

	Total Number Banded in Previous Months	Total Number Recovered During Month**	Number of Visits during Month
August	0	0	2
September	42	32	2
October	90	60	3
November	99	54	3
December	103	59	4
January	106	11	2
February	107	37	4
March	109	19	3
April	109	24	4
May	111	32	5
June	111	29	3

** A bird recovered more than once in the same month has only been included once for that month.

The total of 85 birds recovered in April, May and June comprised 59 individuals. Of these, 34 were seen in only one of those months, 24 in two months and one in all three months. Of those 59 birds, seven were seen only when in moult.

It can be said therefore, that out of a banded population of 111 adult birds (two known to be dead and two banded late in June are excluded), 52 were seen on one or more of twelve visits during April, May and June and that none of the 52 was present in the rookery for reasons connected with the incubation of eggs, the rearing of chicks or the purpose of moulting.

Dead Recoveries

Ten birds have been recovered dead, five away from Phillip Island. These five were all found to the west but that may reflect no more than the incidence of observers. Only one bird was recovered outside Victoria (at The Coorong, South Australia—see Table 3). As young penguins are believed to leave the rookery when about eight weeks old, this bird apparently covered a distance of 355 miles (in a direct line) in little more than a month.

Analysis of Breeding Success

Penguins were recorded by the Group as being male or female in accordance with the method of distinguishing the sexes put forward by F. C. Kinsky (1960) and based on a comparison of beaks. The male beak has greater depth than that of the female (Kinsky, p. 153). Confirmation was possible in a number of cases

TABLE 3

Recoveries of dead penguins reported to 30 June 1969

Band Number	Age	Date Banded	Banding Place	Date Recovered	Location	Distance and Direction
190 00014[1]	P	24.2.68	Cat Bay	8. 6.68	Apollo Bay	80 miles WSW.
00034	?	24.2.68	Cat Bay	2. 3.69	Between Point Lonsdale and Queenscliff	32 miles WNW.
00050[1]	?	24.2.68	Cat Bay	28. 3.68	Indented Head	34 miles NW.
00153	A	14.9.68	Study area	8. 6.69	Study area	
00172	A	14.9.68	Study area	23.12.68	Phillip Island	4 miles E.
00410	P	20.1.69	Summerland	11. 5.69	McCrae	17 miles NW.
00411[2]	P	20.1.69	Summerland	8. 3.69	The Coorong	355 miles WNW.
00272	P	29.3.69	Study area	12. 4.69	Study area	
00273	P	29.3.69	Study area	19. 4.69	Study area	
00275	P	6.4.69	Summerland	12. 4.69	Summerland	

[1] See Recovery Round-up, vol. 6, p. 62.
[2] See Recovery Round-up, vol. 7, p. 40.

• Members of the Penguin Study Group at work in the rockery. The pegs indicate marked burrows.
Photo: P. N. Reilly

by examination of the cloaca at the time of egg laying. Bill measurement cannot be accurately applied in the case of larger females and smaller males.

The fact that two birds believed to be of the opposite sex are found together in the one burrow does not necessarily mean that they have mated. If it does, there is a great deal of promiscuity in the rockery. It was necessary to adopt as a criterion the persistent appearance over several visits of both birds either together or separately in the one burrow while eggs or chicks were present.

The usual clutch comprised two eggs, but there were a number of single egg clutches and in one case an apparent clutch of three eggs. This pattern accords with Kinsky's observations (p. 160).

It appears that 27 pairs were responsible for only one clutch each, 17 pairs had two clutches each and one pair had three clutches. Of the 17 pairs with two clutches, two pairs were successful with both and two pairs were successful with their first clutch but not with their second. Three pairs succeeded with their second clutch after an unsuccessful first clutch and ten pairs did not succeed with either clutch. These observations do not accord with the experience of Kinsky who stated (p. 183) that he never observed penguins to lay a second clutch following the successful raising of one brood. He said however that a small number of pairs would nest again if their first clutch was not successful. Warham (1964) said "Re-laying sometimes occurs after the loss of a clutch".

In many cases the second clutch was laid in the same burrow as the first, but sometimes a different burrow was used. There did not appear to be any relation between a change in burrow and success, or lack of success, on the first occasion.

The criterion of breeding success was arbitrarily selected as whether or not a chick was raised to the banding stage and actually banded. This criterion is simple in application and was adopted for that reason. In the majority of cases,

the ages of the chicks were not precisely known but they were banded between five and eight weeks after hatching, the average age at banding being six to seven weeks. No chick was banded until the flipper was free from down at the point near the body where the band is fastened.

In two cases, a banded chick was found dead in the study area in circumstances suggesting that it had never been to sea. None the less, on the criterion adopted, those chicks are treated as having been successfully raised.

In one case, it was possible to ascertain that a chick was successfully raised despite the death of one parent. On 1 December 1968 a male (190-00172) and a female (190-00098) were found with two warm eggs in Burrow 337. The male was not seen again until found dead some miles away on 23 December. On 15 December the burrow contained one chick and the female, one chick on 22 December, one chick and a different adult female (190-00193) on 28 December, one chick on 11 and 24 January and on 2 February when it was banded 190-00301.

Some detailed information on breeding success is given in Table 4. This deals only with observations in the study area and it is possible that some of these adult birds laid eggs and raised chicks outside of this area. Again, there was some evidence of well-grown chicks moving from one burrow to another, and possibly into or out of the study area. These difficulties arise from the arbitrary nature of the study area boundaries and can hardly be avoided.

General Observations

Reference has already been made to the fact that chicks wander occasionally from one burrow to another. Some marked burrows which were recorded as empty on several successive visits were found to contain well-grown chicks on the next visit. One of a pair of chicks banded in a particular burrow was found at the next visit in an adjacent burrow, while the other was found in the original burrow with an unbanded chick of equal size which had come from elsewhere.

There is a need therefore for some means of identifying chicks prior to their reaching the banding stage. Various paints and dyes used on plumage or soft parts were unsatisfactory. Punching of the web has not been tried yet by the Group.

An attempt at first year breeding was noted by West. A penguin banded as a chick on 29 February 1968 was found investigating a burrow on 7 July 1968, 60 yards from the burrow

TABLE 4

Breeding success of penguins in the study area, 1968-1968 season.

	Adults	Eggs Laid	Eggs Failed	Chicks Failed	Chicks Banded
Apparent non-breeders	20	—	—	—	—
One clutch only					
Clutch successful	24(12)	24	1	5	18
Clutch unsuccessful	28(15)	28	14	14	—
Two clutches					
Both clutches unsuccessful	4(2)	9	—	4	5
One clutch successful	10(5)	19	7	6	6
Neither clutch successful	20(10)	37	23	14	—
Three clutches					
All unsuccessful	2(1)	5	5	—	—
Chicks of uncertain parentage					6
Totals	108	122	50	43	35

Notes: 1. Seven adults banded in the study area are excluded from this table because they were banded at or after the close of the breeding season.
2. The total of adults includes only banded birds. In two burrows the second parent was not present during any inspection.
3. The number of breeding pairs assumed to be represented is shown in parenthesis.
4. The total of chicks banded includes six of uncertain parentage that could be perhaps attributed to adults included in the table. If so, the totals of 'eggs failed' and 'chicks failed' are perhaps overstated.

where it was banded. On 16 November 1968 it was found in the July burrow and on 27 November it was there with one egg. No further eggs were found, and brooding appeared to be shared with another bird, but the egg was found deserted on 24 January.

From late February to the middle of May, many birds were in moult, with one bird not completing it until mid-June. Often moulting birds were in burrows where they had been found on previous occasions but this was by no means always the case.

One adult male penguin (190-00089) provided a particularly interesting example of weight-change during the moulting period:

Date	Burrow	Weight (grammes)	
17. 8.68	310	1,175	
26.10.68	310	1,175	
16. 2.69	359	1,800	(moult beginning)
23. 2.69	359	1,525	(in moult)
28. 2.69	359	1,225	(in moult)
8. 3.69	359	900	(moult finished)
12. 4.69	313	950	
17. 5.69	359	975	

Conclusion

The VORG Penguin Study is to continue indefinitely with regular weekly visits being maintained. The experience of the last ten months covered by this report should enable more useful work in the future. It is hoped that birds of known age will breed in the study area. Further recoveries and other observations may give a better indication of the movements of penguins at sea.

References

Kinsky, F. C. (1960), 'The Yearly Cycle of the Northern Blue Penguin (*Eudyptula minor novaehollandiae*) in the Wellington Harbour Area', *Records of the Dominion Museum*, 3:145-218.

Warham, J. (1958), 'The Nesting of the Little Penguin, *'Eudyptula minor,' Ibis*, 100:615.

Warham, J. (1964), 'Breeding Biology of Eudyptula' in "A New Dictionary of Birds", ed. Sir A. Lansborough Thomson, Nelson, London: 614-615.

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• Little Penguin showing the band in position on the flipper.

Photo: K. A. Reilly

Notice of Meeting

The **Annual General Meeting** of The Bird Banders' Association of Australia will be held in the Hallstrom Theatre, Australian Museum, College Street, Sydney, at 1.30 p.m. on Saturday, 17 January 1970.

The agenda will include:

1. Reports
2. Election of Officers
3. General Business.

A **Scientific Meeting** will follow the General Meeting and the speakers will be Dr Peter Fullagar and Mr R. K. (Sam) Carruthers. Dr Fullagar's subject is "Montagu, Mourners, Muttonbirds and Titi: The Story of an Island and Three Shearwaters". Mr Carruthers will talk on "The Status and Movements of Honeyeaters in the Mount Isa District".

You are assured of an interesting and informative afternoon. All visitors and friends will be welcome.