TABLE 3 — Food occurrences in 110 specimens

Food Items	*No. of specimens*	
Bird only	28	
Mammal only	25	
Insect only	10	Fourteen specimens not listed
Bird and mammal	15	were trapped, containing
Bird and insect	12	mammal only.
Bird and frog	3	
Mammal and insect	8	
Mammal and frog	1	Mammalian occurrences
Insect and frog	1	include permissible
Bird, mammal, insect	5	trapped rabbit.
Bird, mammal, frog	1	
Mammal, insect, frog	1	

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WELCOME SWALLOWS IN NORTHERN HOKIANGA, 1965 - 1967

By BOB COWAN

A general survey of nest sites of the Welcome Swallow (*Hirundo neoxena*) in Northern Hokianga was made in 1965, and the results are on record (Edgar, *Notornis* 13, 53). Observations since 1965 indicate a steady increase in the swallow population of the area, and this is confirmed by my nest records for 1966 and 1967 seasons. In the following table, 1965 figures are those recorded in the 1965 survey: 1966 and 1967 figures are the result of annual checks on the same areas.

TABLE 1

Locality	*Occupied Nest Sites*		
	1965	1966	1967
Herekino to Panguru turn-off	22	26	27
Whangape harbour area	7	9	10
Runaruna area	2	5	9
Kohukohu area	4	5	8
Panguru-Mitimiti	2	4	6
Totals	37	49	60

Sites occupied in 1965 have been used again in 1966 and in 1967 with only a few exceptions, due mainly to bridge reconstruction. Two large bridges in the area were occupied in 1965 and 1966, each by three pairs of birds, and in 1967 two pairs nested in a box culvert: apart from these examples, the rule has been one site, one nest. Plenty of suitable bridge and culvert sites are still available, except perhaps in the Herekino area.

On the south side of Whangape harbour where there has been extensive bridge reconstruction, birds have been seen around, and in one case have nested on, farm buildings in this area. Also in this area, during the 1966 season, birds nested successfully on a rafter in an open shed. In the Herekino area a woolshed site has been occupied for several successive seasons. Apart from these three instances nests have been either under bridges or in culverts, except for one 1966 nest built in a shallow rock cave at Whangape.

In most cases the mudwork of nests does not last more than one season, and winter floods, of course, contribute to its destruction. Frequently, new nests are built on the exact site of a previous year's nest which has disappeared. Occasionally a new nest is constructed on top of what remains of the base of last year's nest. One 1966 nest was used again in September 1967, but abandoned after two eggs had been laid. The birds built another nest several feet away, and had success. A nest from which two families flew in 1965 was used again in 1966, when two clutches hatched and young flew: a third laying of two eggs was deserted. This is my only record of successful use of the same nest in successive seasons.

One nest, which was used successfully in 1966 and in which two eggs were laid in 1967, was recovered after it had been abandoned. It was of the unsupported variety (Edgar, *Notornis* 13, 38) but was somewhat unusual, in that at the back both sides were almost vertical, providing a greater area of support and giving the base of the nest a slightly square appearance.

TABLE 2

Measurements of above nest	
Greatest breadth (side to side), mm.	168
Greatest width (back to front), mm.	95
Greatest depth, mm.	90
Depth of egg chamber, mm.	38
Weight in ounces	12

The main bracket was constructed of mud, held together with straw, roots, and cow's hair; the rim being reinforced with a few small pebbles. The under-lining consisted of cows' hair, straw and thirty-one (31) pale brown and black poultry feathers, while the upper lining consisted of a few cows' hairs and thirty-six (36) pale brown and white poultry feathers.

In the early part of the season nests normally have an ample feather lining, but December and January nests may have only a few feathers. One December nest, which contained two eggs, was peculiar in that the outside mudwork and rim were very roughly put together and the lining consisted of a few wisps of straw with no feathers at all.

In a three-foot culvert near my home a nest was built in 1966 and another in 1967. Both were attached partly to the culvert wall and partly to a stone which protrudes through a hole in the wall. It may be of interest to record details of these nests, because in both seasons the incubation period was longer than the normal fifteen days.

1966

Date	*Time*	*Data*
October 28	13.35 hrs.	First mud brackets just finished.
November 2	09.15 hrs.	Mudwork almost complete.
„ 6	17.30 hrs.	Birds carrying feathers for lining
„ 9	07.30 hrs.	One egg.
„ 10	07.20 hrs.	Two eggs.
„ 11	06.15 hrs.	Three eggs.
„ 12	05.20 hrs.	Three eggs.
	06.03 hrs.	Four eggs.
„ 13	07.30 hrs.	Five eggs.
„ 29	18.00 hrs.	Four eggs, one young.
„ 30	06.00 hrs.	One egg, four young. The egg did not hatch.

Assuming that the last egg was laid on the morning of 13th November the period of incubation was $16\frac{1}{2}$ - 17 days.

The young birds flew, not very strongly, at 07.35 hrs. on 21st December.

1967

Date	*Time*	*Data*
October 4	07.50 hrs.	One egg.
„ 5	06.30 hrs.	One egg.
	07..40 hrs.	Two eggs.
„ 6	06.15 hrs.	Two eggs.
	08.00 hrs.	Three eggs.
„ 7	06.14 hrs.	Four eggs.
	08.30 hrs.	Five eggs.
„ 23	15.00 hrs.	Four eggs, one young.
„ 24	06.40 hrs.	Three eggs, two young.
	12.15 hrs.	One egg, four young.

The remaining egg, which proved to be infertile, was the third laid. It was unusually large, and measured 22 x 12.5 mm.

The last egg of the clutch was laid between 06.12 and 08.30 hrs. on 8th October, and the last chick hatched between 06.40 and 12.15 hrs. on 24th October, giving an incubation period of sixteen (16) days.

The young birds first took flight on 13th November (the 20th day after hatching) but returned to the nest, from which they were seen to fly at 07.45 hrs. on 15th November (22nd day after hatching).

In conclusion I would like to say that although I was unable to visit all possible nest sites in the survey area, it is obvious that the Swallow population is steadily increasing.

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