

while those in the lower part of the basin and on the south hummock were without eggs. It was noted twice that nests left unoccupied for a few moments were appropriated *in toto* by a next-door neighbour. Unattached birds were gathered mostly at the lowest end of the basin.

Continuous north-easterly weather rendered impossible any further attempts to visit the colony until 6/2/56, when a change to westerly conditions occurred. When I arrived off the rock in the early afternoon, again through the kindness and keen interest of Mr Hall, a landing was out of the question, but by 4.30 p.m., when the tide had fallen, this was successfully accomplished. The light was good for photography, both colour and black and white. A count of the young birds gave a total of 78, in all stages from the youngest three to four weeks old up to birds ready to fly, in addition to two dead chicks and four added eggs. One bird was still brooding on an egg which was probably infertile. A heavy rainstorm caused a hurried take-off at 5.45 p.m.

The following morning an easy landing was made at 6.30 a.m., and shortly afterwards one young bird took flight from a rock ledge about ten feet above the sea. It was observed for about a mile flying north-east fairly steadily, but it then seemed to waver and probably dropped into the water. It is impossible to say whether any young birds had left the colony already, but if so they would be few in number. Ten young birds which had lost their fluff and were nearly ready for flight were congregated on the northern hummock, and this approximated the number of nests made by early arrivals at the beginning of the nesting season. A further 49 young were in black and white stages with fluff, and 18 were in the white down stage.

The remains of three dead adult birds at the colony somewhat mystified me, but seemed to be explained by the discovery of a badly wounded bird, obviously shot by a heavy calibre bullet. Access to the nearest point of the mainland is only possible through a station property some miles to the south and through another several miles north, and apparently the shooting had taken place at a range of 500 yards from the mainland. The co-operation of these station owners is being sought to prevent the taking of rifles through their properties.

Otherwise the colony is almost completely free from the possibility of interference, and the rock itself is suited to unlimited expansion of the breeding ground.

Information as to the history of the colony is scanty. Mr Hall states that gannets have been seen by him on the rock for seven years past, but he cannot estimate any numbers; and Mr Norman Loisel, owner of Waihou Station, and the nearest resident, states that as a boy 30 years ago, while fishing in Waihou Bay, he used to see gannets heavy with food disappearing off Moutara Point. Inquiries have failed to show that anyone has previously landed on the rock, and the colony's history may remain obscure.

TWO NESTING COLONIES OF STEWART ISLAND SHAGS

By MAIDA L. SANSOM

On 20/11/55, with my mother, Mrs Olga Sansom, I visited a colony of Stewart Island Shags (*Phalacrocorax (Leucocarbo) carunculatus chalconotus*) on Papa-kaha, at the entrance to Bluff Harbour. This shag is a dimorphic subspecies in which the white-breasted phase has been named *huttoni* (Buller) and *stewarti* (Ogilvie-Grant).

We were accompanied ashore by Messrs C. Barwell and J. Mackintosh, of Invercargill, who took colour photographs, and Mr Maro Bradshaw, of Bluff. Mr Olaf Wiig of the pilot boat *Takitumu* remained aboard.

Papa-kaha is a low reef of rocks separated from the mainland of Tiwai Point by deep water. It is accessible only by boat, handled by experienced men. Papa-kaha is the old Maori name for these rocks. 'They were a rookery for the kind of shag known as "kaha"' (Herries Beattie). The rookery must be ancestrally old. Until 1953 Papa-kaha had been untenanted for

many years, but in that year Mr Wiig noticed that a few shags were using it again. With my mother, he made a landing in October 1953, when nine nests were counted. In 1954 Mr Wiig estimated the number of nests at about thirty. Our count on 20/11/55 was as follows: Nests, 90; nestlings, c. 94; fully-fledged young, c. 40; adults, 160 plus.

When approaching Papa-kaha in the pilot boat we noticed that the birds were massed in two groups, the eastern group being at a slightly lower level than the western. When the boat hove to, and while we were transferring to the dinghy, the birds of the eastern group (about 40) flew off in alarm, most of them later landing on the sea. Most of these birds were brown in colour and only about ten were white-breasted; they had no white wing-bars or dorsal patches, and no crests or red gular pouches were seen. Few birds on the western 'plateau' flew and on landing we found that all the nests were on this western area. On making a reconnaissance of the islet I found the eastern area covered with guano; there were a few shallow pools of foul water in which were bits of fish bone, tufts of feathers and down, and four corpses. There was on this area no sign of any attempt at nest-building. It seemed obvious to me that this area was used (and in no sanitary fashion!) by unemployed birds. From the fact that the birds flew early, and from the colour of the plumage as it appeared to us, we assumed that these birds were the fully-fledged young of the season. This compares with the findings of Guthrie-Smith (*Mutton-birds and Other Birds*), who records that the Kane-te-toe colony was distributed over three areas. He says: 'The main rock . . . is unevenly and roughly terraced, and its altitudes occupied by the older and more experienced breeders. Towards the southern end of these nesting grounds, where the land slopes off into almost unbroken and smooth slabs of granite, is the Alsatia of Kane-te-toe, wholly given over to thieving and riots, where might is right, and where only present possession is respected. To the north-west dwell the youngsters of the season, fully fledged and of varying ages, and thereabouts the crags and ledges are densely peopled by these immature citizens. It is their school, playground, and particular home.'

In the nesting colony there were several empty nests; two nests with eggs, one of these containing a new-hatched chick and two chipping eggs; and in the remaining nests were young birds in all stages, from black wriggling nudists to down-covered birds of all sizes. Oliver records this as 'black down, sometimes white on underparts' ('Stewart Island' variety), and 'blackish-brown down' ('Bronze' variety). Guthrie-Smith describes the young of the colony at Kane-te-toe as 'with two or three exceptions only . . . clothed in dark down, the abnormal birds showing down mottled and spotted on breast and belly.' With two exceptions, the woolly young birds on Papa-kaha were covered with dark greyish-brown down — 'donkey-brown' was the term the members of our party agreed upon. We did not disturb the birds to examine the underparts. The two exceptions showed mottled pale patches on neck, breast and belly. This appeared to be down, and not next-stage plumage showing through.

Another individual, which we assumed to be a fully-fledged immature bird, had glossy greenish-black back and wings as of the bronze phase (no white alar bar or dorsal patch), white belly and dappled dark breast.

The adult birds were approachable and we were able to get within a few yards without disturbing them. We saw one bird with nesting material — a mouthful of seaweed. We were looking closely for any evidence of breeding between the two types and were retreating, unsatisfied, when my mother drew my attention to two birds, a 'bronze' and a 'white-breasted', posturing and stroking each other with their bills. On Kane-te-toe Guthrie-Smith counted eleven mixed couples simultaneously on their nests.

We made no definite count of the corpses — all young birds — but one at least appeared to be fully fledged. We estimated the number at about twelve. Most of these were lying in shallow pools on the rocks about the nesting colony.

The live chicks were in very good condition — plump and active. The adult birds were in excellent feather, showing no signs of incubation wear and tear.

All members of the party agreed that of the adult birds the proportion was about ten bronze to eight white-breasted.

A dancing umbrella of Red-billed Gulls was in constant attendance three or four feet above the nesting area, individual birds continually dropping down to filch what food they could get. The only other birds on the islet were one Black Oystercatcher, resting, and one Black-backed Gull with a nest containing two eggs. We could hear the calls of the gulls through the wind which swept the area; later, when comparing notes in the warm comfort of the *Takitumu's* engine room, we realised that we had not heard the shags utter a syllable. It was at this time, too, that Mr Mackintosh said he had noticed that the gular pouch of the white-breasted variety looked a brighter red than that of the bronze. I had not noted this at the time, nor had my mother, but on reflection we agreed with him. We have since taken particular note of the individual birds we see heading up the harbour or out to the straits, but have not been close enough to confirm the impression. Since visiting Papa-kaha, the only birds from this colony seen at close quarters have been in the harbour. None of these has shown any sign of a gular pouch, or a crest, and many have been dark brown with only a hint of green sheen on the back. We assume that these are immature birds of the bronze variety. One such bird we saw fishing close in, about the piles of the main wharf at Bluff.

We have yet to see a Stewart Island Shag of either bronze or white-breasted phase showing a crest.

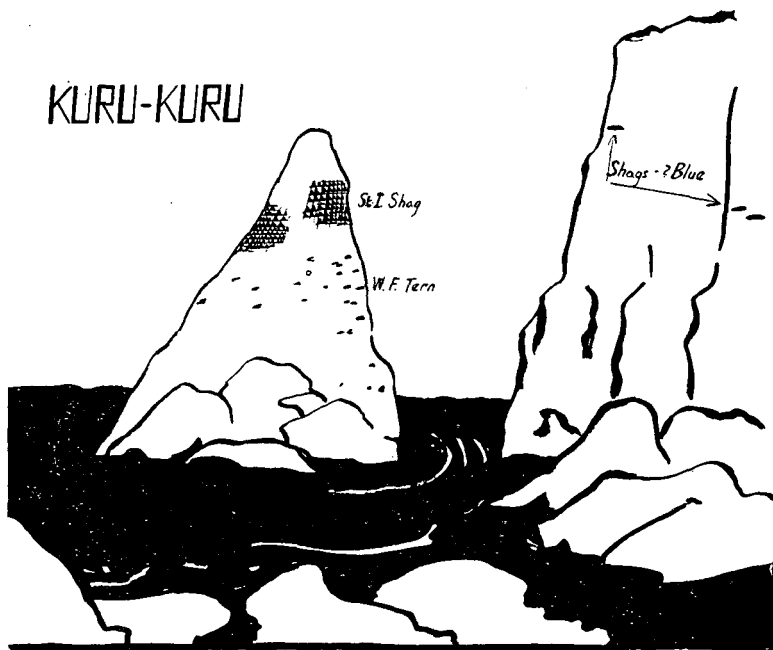
From our house at Stirling Point (a point guarding the harbour entrance, opposite Papa-kaha) from dawn to dark we see the shags, singly or in groups of two, three, and occasionally four, heading for and returning from the open sea. The line of flight is unswerving and direct as an arrow for its mark.

There is no likelihood of confusing these shags with other varieties. They look smaller than the Large Black Shag — Oliver quotes the length of the Large Black as 88 and Stewart Island Shag (both bronze and white-breasted) as 73. The Stewart Island Shag looks stockier, with a comparatively short, thick neck. Even when seen at some distance and without binoculars, the pale flesh-coloured feet are apparent. The white-breasted variety is immediately recognised by the two white flashes of alar bars. The white dorsal patch is sometimes, but not always, apparent.

When visiting Papa-kaha we were concerned about disturbing the birds, particularly when we remembered Guthrie-Smith's stories of thieving and immorality at Kane-te-toe. Most of the adult birds which flew eventually were back on the nests by the time we returned to the pilot boat. From our house, two hours later, the colony looked as usual — with binoculars and good visibility we can see the birds, and get an impression of numbers but not a count. On the following day, from midstream in the harbour channel I could see adult birds on all nests visible, and the 'teen-agers' were in residence.

On 21/11/55 my mother and I visited another colony of these shags on Kuru-kuru, a rocky pinnacle below the lighthouse on the south knob of Centre Island. Centre Island, which is of triangular shape, high, and three-quarters of a mile long, is three hours run from Bluff, steaming at ten knots. Once a lively Katimamoe tribal centre, its only inhabitants now are three lighthouse-keepers, their wives and families. Kuru-kuru is about 180 feet high and is separated by a deep channel from the main island. The approach is over large boulders and rocky slabs, with crashing sea uncomfortably close. A high wind and spray made visibility difficult, but we had a fair view of the colony. The nests are crammed close, in serried rows, on the steep rock face. They form a pattern of converging lines, dictated, we thought, by the rock formation. They are in an uneven ring, near the top of the pinnacle. We could see only one side of the pinnacle. Our estimate — a conservative one — was 300 nests. There were at least 500 birds, either on nests or in the air. The captain and crew of the m.v. *Wairua* say that the birds nest right round the pinnacle — 'there are as many on the other side'. This, then, is a colony of over 600 nests. We had less than ten minutes at our disposal and could do little more than get a rough count. Here again we had the impression that the bronze outnumbered the white-breasted. There are some sloping rock faces

KURU-KURU



covered with loose soil near the nests. We saw several birds fly in, land on these sloping faces, and scramble in ungainly haste up to their nests, causing minor earth slides with their pale splayed feet. Guthrie-Smith says the Kane-te-toe birds 'arrive invariably on the wing, settle on the edge of the nest, and from that stance feed their young'. Kane-te-toe is, of course, flat compared with Kuru-kuru, and any bird who valued his feathers (and his pride) would surely avoid any unnecessary promenading along the 'terrible lanes' between his neighbours' nests.

A few Red-billed Gulls were in attendance. Also nesting on the pinnacle, on narrow individual ledges, were 30 White-fronted Terns, and on the high steep face of the main island we saw three Spotted (? Blue) Shags on nests, also on narrow ledges where the bird could only sit sideways, parallel to the cliff.

It is hoped that these colonies will be visited again, when more time can be spent observing. On Papa-kaha there is an excellent 'hide' — a disused wooden-slatted light reflector — a few yards from the nesting colony.

Our thanks are due to the following people:

Captain N. B. Haszard, Harbourmaster, Bluff.

Mr Olaf Wiig, an O.S.N.Z. member. Mr Wiig, of the pilot boat *Takitumu*, has a lively interest in the bird life of the harbour. Without his co-operation the visit to Papa-kaha could not have been made.

Captain Ian Williams (skipper), Mr T. Fitzgerald (first mate) and Mr Cullen (engineer), of m.v. *Wairua*, for their co-operation, interest and unfailing courtesy.

The crew of the *Wairua*. They also gained our admiration for their skill and expert seamanship in a difficult landing and a tricky take-off.

Colonies previously recorded:

Otago Peninsula: Seymour, 1886.

Kane-te-toe: H. Guthrie-Smith, 1911. 4-500 birds. Mr George Moffett, of Invercargill, informs me that Mr G. M. Turner, of Stewart Island, has made an intensely interesting film of the life of the Kane-te-toe colony.

Knowing Mr Turner's interest in the birds, and his capabilities as a photographer, I consider that this film will be invaluable as a documentary of the life of the Stewart Island Shag.

Sealers Bay, off Codfish Island: Dell, 1948. In 1934 the late Mr E. F. Stead estimated this colony as containing about sixty nests. Mr Dell in 1948 could obtain no estimate of numbers, 'but it appeared that the nesting population was considerable'.

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A FRESHWATER COLONY OF PIED SHAGS (*P. varius*) AT TAKAPUNA

WITH OBSERVATIONS ON SOME OTHER SHAGS

Compiled from the notes of several observers

For many years the water of L. Pupuke was used for domestic purposes and as a result of the lowering of the level a variety of trees, mostly exotic pines, willows and wattles, and thickets of bamboo sprang up on what had been the floor of the lake. Some of the trees had reached the height of 50 to 60 feet. When pumping ceased the water level steadily rose till by 1953 it was almost back at the original shoreline and most of the encroaching vegetation was dead or dying. Now in 1955 the gaunt relics of big pines stand or lie more than a chain out from the shore. L. Pupuke is a large crater-lake, situated about a mile from the sea. Eels and introduced carp made it a good fishing ground for shags. Black, White-throated and Little Pied Shags were commonly present; the Little Black had been recorded and the Big Pied was an occasional visitor from Waitemata and the Hauraki Gulf.

About 1952 a few pairs of Pied Shag (*P. varius*) began to breed there. As a freshwater colony of these shags is unusual in New Zealand and as the colony has increased most remarkably, it seems worthwhile giving an account of it, based on the notes of various observers. In the Hauraki Gulf the typical colony of Pied Shags is in pohutukawas which are growing on a cliff and overhanging the sea. An atypical colony in ngaio (*Myoporum laetum*) at the Chickens has recently been described (*Notornis* 6, p. 154). The only other freshwater colony of *P. varius* known to the authors is in pohutukawas which overhang L. Paritu, one of the two lakes inside the great crater of Mayor I. in the Bay of Plenty. This colony differs from most others in lying snug and sheltered. These two lakes also are said to contain a species of introduced carp.

On 9/8/53 we were surprised to find Pied Shags breeding at L. Pupuke. There were six nests in one dead tree and one in another. Most nests had two adults in attendance and incubation was in progress. Nearly a score of fully-winged smudgy juveniles were also present. It seems safe to assume that the colony had been established at the latest during the previous autumn, but more probably in the winter or early spring of 1952. It is now known that at L. Pupuke breeding goes on all through the winter. Only two Black Shags (*P. carbo*) and one White-throated (*P. brevirostris*) were seen.

R. B. SIBSON, J. C. DAVENPORT

Donald Merton, who visited L. Pupuke in September 1953 and August 1954, has sent the following notes.

'Before 1953 only a few shags had nested. In 1952 some shags, reported as "black", nested in some bushy "basket" willows. So far they have not nested there this season (1953), probably because the water has risen. A colony of shags is now scattered along 200 yards of lake shore. On 9/9/53