

State of Knowledge of the Christmas Island Hawk-Owl *Ninox squampila natalis*

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ABSTRACT

The Christmas Island Hawk-Owl *Ninox squampila natalis* is confined to a small, isolated island. It is often heard, less frequently seen and virtually unstudied. The most recent guesstimate of numbers is of the order of 100 pairs. The population is believed to have declined by at least a quarter since settlement of the island in 1888 as a result of clearing. The owl is probably secure at present but any further clearing of primary rainforest may threaten its survival.

INTRODUCTION

The Christmas Island Hawk-Owl *Ninox squampila natalis* is confined to Christmas Island in the Indian Ocean (10°25'S, 105°43'E). The island, which has been an Australian territory since 1958, is an isolated volcanic mountain, 360 km south of Java, the nearest landmass, and about 135 km² in area. A plateau, 360 m a.s.l. at its highest point, is separated from shore terraces by inland cliffs, and sea-cliffs all but surround the island. Before settlement in 1888, the island was almost wholly covered by rainforest. After nearly a century of mining for phosphate, one-quarter of the primary forest is cleared and some of the remainder is fragmented and degenerating from the effects of exposure. Mining leaves a 'moonscape' of limestone pinnacles, and access roads and prospecting scar the forest. There is virtually no regeneration in early, man-quarried areas and little in more recent machine-mined parts. The human population numbers about 2,000 and is concentrated near Flying Fish Cove. The island has a unique collection of birds, particularly seabirds, none of which has become extinct since settlement.

DESCRIPTION

First described by Lister (1888), the Christmas Island Hawk-Owl is known only from museum specimens and random observations. It is a small (see Table 1), typical hawk-owl with feathered tarsi and indistinct facial ruff. As is typical for small forest-dwelling *Ninox* (see Schodde & Mason 1980), the tail is relatively long (over 60% of wing length) and the wing relatively round. The tenth (outermost) primary is shorter than the third, the ninth shorter than the fifth and the eighth shorter than the sixth. The female is slightly larger than the male (Chasen 1933). There is little individual variation in plumage and the sexes are similar (Gibson-Hill 1947).

Table 1. Weights and measurements of museum specimens of the Christmas Island Hawk-Owl. Range (mean, sample size).

	<u>Female</u>	<u>Male</u>
Total length	273-287 mm (281, 5)	258-284 mm (273 mm, 6)
Wing	194-200 mm (197 mm, 10)	188-200 mm (192 mm, 9)
Tail	118-142 mm (127 mm, 8)	113-125 mm (119 mm, 9)
Bill (without cere)	14.2-16.2 mm (15.4 mm, 8)	14.7-16.0 mm (15.2, 8)
Weight	130-190 g (153 g, 3)	130-165 g (145 g, 4)

Adult: upper parts rich red-brown with several white spots on wing coverts and shoulders. Tail chestnut narrowly barred darker brown. Underparts rich red-brown barred with white, more spotted on breast and somewhat spot-like on abdomen. Faint whitish brows and dusky facial mask.

Immature (?): differs from adult in that the head, neck and back are spotted, the underparts are more widely barred and the tail is buffy chestnut rather than chestnut.

Soft parts: rich yellow eyes; feet yellow; beak grey; cere light grey or lemon yellow.

VOICE

The characteristic call is a loud 'boo-book' (Stokes pers. obs.). A repetitive 'chuk chuk' is also frequently heard throughout the night (Gray 1981). Another call, described as a cricket-like, continuous cheeping (G. Nathan pers. comm.), may be the food-soliciting contact call of the nestlings and fledglings.

FOOD & HUNTING

The owls are seen hawking moths around street lights, particularly around August-September. In the forest they have been seen flying from tree to tree by rapidly swooping close to the ground, then rising again to land (H. Yorkston pers. comm.). Large insects are probably their main prey; the stomachs of seven owls contained beetles, crickets and mantids as well as the remains of reptiles (skink and gecko) and a bird, the Christmas Island Silvereye *Zosterops natalis* (Gibson-Hill 1947). The stomachs of three owls recently found dead near the settlement contained one House Gecko *Hemidactylus frenatus*, at least 12 Cockroaches *Periplaneta americana*, and mantid, grasshopper and beetle fragments (Kent & Boles 1984). The House Gecko and cockroach are both introduced species found around the settlement. The owl also may prey on a small bat, the Christmas Island Pipistrelle *Pipistrellus murrayi* (Tidemann 1985). Two extinct native rats and a once common but now rare shrew may have formerly been important prey (Andrew 1900; Stokes in prep.). Like the Oriental Hawk-Owl *N. scutulata* of Asia (Burton 1973), it may also feed on crabs, which are abundant on the island.

POPULATION ESTIMATES

In 1938-40 the owl was thought to be quite common and evenly distributed in the thick, undisturbed forest of the plateau and shore terraces (Gibson-Hill 1947). The population is believed to have declined by at least a quarter since settlement of the island in 1888 as a result of clearing (Stokes in prep.). From visits to the island in the 1960s and 1970s, van Tets (1975) estimated the number of breeding pairs to be between 10 and 100. Based on the frequency of calling and the area of the remaining rainforest (ca. 106 km²), Stokes (in prep.) believes that the higher figure may be accurate.

BREEDING

No nest has ever been found; Andrews (in Gibson-Hill 1947) quoted a resident who claimed it was made of twigs and placed in a screw-pine *Pandanus* sp.. However, this would be unusual behaviour for the *Ninox* group of owls.

The temperature on the island varies little throughout the year but there is a distinct, lush wet season between November/December and April/May, when most birds breed, and a quite harsh dry season (Gray 1981). An owl, thought possibly to be a fledgling, was found in January (H. Yorkston pers. comm.). However, observers have seen pairs of adults in July and recently fledged young begging from adults in September-October (Yorkston pers. comm.; Stokes pers. obs.), indicating that egg-laying may be in July-August.

RELATIONSHIPS

The plumage of the Christmas Island Hawk-Owl differs from various other subspecies of *N. squampila* (of the Moluccas and nearby islands) as described by Burton (1873) and White & Bruce (1986), being spotted dorsally rather than barred, and somewhat spotted ventrally rather than boldly barred, as in the other subspecies. It also has pale brows, a slight dusky facial mask and yellow eyes, none of which is illustrated in Burton's (1973) *N. squampila*. In view of this and its wide geographical separation from the other subspecies, it is doubtfully conspecific. Lister (1888) considered it 'sharply separated' from the Moluccan owl and he, and S. A. Parker (pers. comm.), believe it may be a distinct species. If the owl is a full species, then its conservation assumes even greater importance than at present.

CONSERVATION

The owl is fully protected and is classed as rare or endangered in the ICBP Red Data Book and by national legislation and interational agreements (CITES Resolutions 1976 Appendix I; Ovington 1978; King 1981). Nearly 18% of the island is now declared a National Park, ensuring preservation of some primary rainforest.

Prospecting is no longer permitted, but continued mining of phosphate and associated activities such as clearing for access roads must be considered a threat to the owl's survival. The development of a hotel-casino was approved in late 1986 and, although subject to strict environmental controls, this and related industries may infringe on the owl's habitat. Several owls have been found dead around the settlement through collision with cars (Kent & Boles 1984).

Although the owl is not confined to undisturbed forest and hunts in man-made clearings and around the settlement, nothing is known of its nesting requirements. If it needs a tree hollow, or perhaps epiphytes, as do other *Ninox*, then mature trees are necessary for its continued survival. If it uses holes in the inland or sea-cliffs (as Boobook Owls *N. boobook* occasionally do), then this requirement is not so vital. A study of the owl is essential and is given high priority in the recent Plan of Management for the National Park. The government-owned phosphate company is committed to the regeneration of an area of mined land equivalent to that which is cleared for mining each year. However, the operation has been winding down since 1984 and a recent decision was made to close it in 1990.

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