

EXPLOITATION AND REDISTRIBUTION OF FLAX SNAIL (*PLACOSTYLUS*) BY THE PREHISTORIC MAORI

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SUMMARY: In a rock shelter on Tawhiti Rahi, one of the Poor Knights Islands, northern New Zealand, shells of *Placostylus hongii* (some of which are broken and charred) occur in a hearth and on the floor in association with adze-worked wood. This provides conclusive evidence that the flax snail was eaten by the prehistoric Maori. While some may have been eaten raw, it seems most *Placostylus* were cooked on the embers of a fire, then the shell broken open and the meat extracted.

Powell (1938) suggested that the populations of *P. hongii* on the Poor Knights and some other northern offshore islands were accidentally introduced there in leaf mould by the prehistoric Maori when transplanting karakas from the mainland. This previously unrecorded exploitation of *Placostylus* for food, however, provides an incentive for the Maoris to purposely transfer these snails to the offshore islands and possibly also around other parts of Northland.

INTRODUCTION

In New Zealand the flax snail (*Placostylus*) is limited in distribution to the northern half of Northland and adjacent offshore islands. Powell (1979) recognised two subgenera and three species - *P. (Basileostylus) bollonsi* (with 3 subspecies) restricted to the Three Kings Islands (50 km northwest of North Cape), *P. (Maoristylus) ambagiosus* (with 15 subspecies) occurring between Cape Maria van Dieman and North Cape, and the most widespread species *P. (M.) hongii* (no recognised subspecies) which once occurred in numerous mainland localities north of Whangarei and on several offshore islands (Fig. 1), but today only survives in a few locations.

The Poor Knights Islands have a large number of endemic organisms, particularly flightless insects and land snails, which supports the opinion that they have been isolated from mainland Northland for some considerable time. In view of the apparent ability of *Placostylus* to rapidly subspeciate when isolated, it is somewhat surprising therefore to find *P. hongii* on the Poor Knights Islands. Its presence there led Powell (1938, p. 142) to conclude that the Poor Knights' *Placostylus* population was distributed there "either intentionally or by accident through the Maori people". He suggested that "the young could easily have been transported amongst leaf mould in the transplanting of karaka trees by the natives" as karakas were often transplanted by

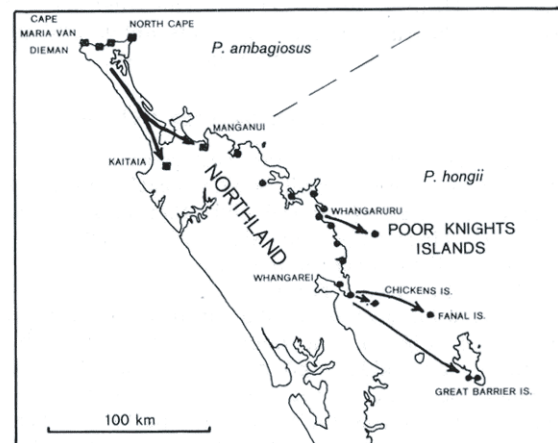


FIGURE 1. Early European distribution of *Placostylus ambagiosus* (■) and *P. hongii* (●) in Northland, New Zealand (after Powell, 1938). Arrows indicate some of the suggested transferrals of populations by the prehistoric Maori.

the prehistoric Maori for their food source and *Placostylus* often occurs in the leaf mould beneath.

Some *P. hongii* populations contain albinos, identified by the white to pale yellow rather than bright orange or red colour within the aperture. In some albinos the periostracum is paler brown but in all other shell characters the two forms appear identical. Albinos are apparently absent from most surviving mainland colonies, but Powell (1938, 1979) noted that the population at Whangaruru North Head comprised 90% albinos, and at Mokau (Whangaruru South Head) and on the Poor Knights

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Islands (30 km to the east) the population comprised about 5 % albinos. These observations resulted in Powell's (1938) inference that the Poor Knights' *P. hongii* were transferred from the Whangaruru area.

Climo (1971, p. 68) in discussing the land snail fauna of the Poor Knights also concluded that "in view of the peculiar distribution of albino specimens, the apparent absence of subspeciation trends in *Placostylus* on the Poor Knights, and probable Maori movement in the area, it is fairly safe to say that *Placostylus* was introduced to the islands by man."

During a visit to Tawhiti Rahi, one of the Poor Knights Islands, in September 1980, shells of *Placostylus hongii* (some of which were broken and charred) were found in a hearth in a prehistoric Maori rock shelter (site number NI7146 of the New Zealand Archaeological Association and New Zealand Historic Places Trust). This find has an important bearing on the arguments above and on the distribution of *Placostylus* in general.

DESCRIPTION OF ROCK SHELTER (N 17/46)

The rock shelter is on the west coast of Tawhiti Rahi, 60 m above a small boulder beach and at the foot of a series of vertical cliffs that make access difficult. There was no sign of fossicking or European disturbance of the site.

The shelter has a flat floor (13 x 8 m), with a stone retaining wall across the entrance, and a 2-3 m high roof (Fig. 2). The floor is dusty with a thin scattering of midden and much charcoal (Table 1) around the back of the shelter. Twelve pieces of unburnt wood (several with adze marks on them) and a few beach-rounded stones lie on the floor (Fig. 2). Six of the stones have been used to form a hearth at the very back of the shelter and a further

shallow, dug-out hearth (0.8 m diameter, 0.1 m deep) containing charcoal occurs against the south wall. The roof and walls above both hearths are fire blackened. The dug-out hearth also contains six *Placostylus* shells (Fig. 3) and eleven more of these shells were found scattered over the floor (Fig. 2).

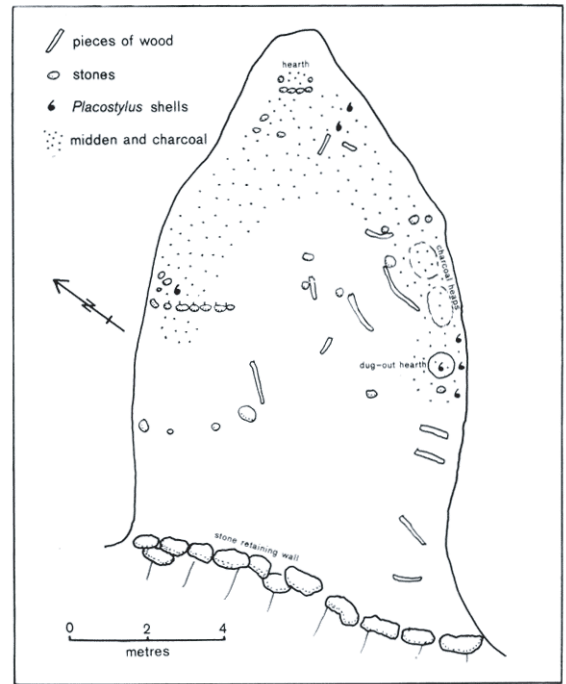


FIGURE 2. Sketch plan of the rock shelter (NI7/46) floor.



FIGURE 3. Five of the six broken and charred *Placostylus hongii* shells in a shallow, dug-out hearth in the prehistoric rock shelter on Tawhiti Rahi, Poor Knights Islands. Photograph: R. V. Grace.

TABLE 1. Contents of midden found scattered over floor of rock shelter (N 17 /46), Tawhiti Rahi, Poor Knights Islands.

Contents	Number
<i>Cellana stellifera</i> (limpet)	1
<i>Melagraphia aethiops</i> (dark top shell)	1
<i>Nerita melanotragus</i> (black Nerita)	2
<i>Paphies australis</i> (pipi)	2
<i>Placostylus hongii</i> (flax snail)	17
<i>Thais orbita</i> (hopetea)	2
fish bones	numerous
<i>Deinacrida fallai</i> (giant weta)	numerous pieces
charcoal	abundant

DESCRIPTION OF *Placostylus* SHELLS

The *Placostylus* shells found in the rock shelter comprise one immature individual (60 mm length) and sixteen adults (68-82 mm length). Only four of the shells (all adults) are unbroken, although three of the remainder may have been unbroken but now have holes in them that could have developed through shell degradation while lying on the rock shelter floor. The other ten shells are broken in one of two ways. In seven the lip is broken back as far as 1/3 to 3/4 of the body whorl and in three a hole (c. 20 x 10 mm) occurs in the early half of the body whorl.

Four shells (including two broken) have the periostracum complete or traces of it remaining whereas half of the remainder (including one unbroken) are charred on the outside.

EVIDENCE OF MAORI FEEDING ON *Placostylus*

There is no evidence of any European influence in the remains found in the rock shelter and it is therefore presumed from the adze-worked wood that occupation of the shelter took place in pre-European times or at least pre-dated to reported abandonment of the Poor Knights by the Maoris about 1823 (I. A. Bartle, pers. comm.), after many of the inhabitants were massacred there (Fraser, 1925). Although *Placostylus* lives in abundance on Tawhiti Rahi (Choat and Schiel, 1980) they would not have moved into the back of this extremely dry, dusty rock shelter by themselves. It is concluded therefore that they were taken there by the prehistoric Maori.

We have been unable to find any mention in the literature (e.g. Best, 1942) of *Placostylus* (known as Pupuharakeke) having been eaten by the prehistoric Maori, or to find previous documented unequivocal evidence of *Placostylus* shells in middens and hearths. However, there is no doubting that *Placostylus* is edible and there seems no reason why the prehistoric Maori would not have exploited it, for although today the genus is fully protected in New Zealand, it is consumed as a delicacy in New Caledonia (J. C. Watt, pers. comm.). The poor Knights Islands' *Placostylus* shells, many of which are broken and charred and found in association with the remains of other human activities, are clear evidence that *Placostylus* was eaten by the prehistoric Maori.

The state of the shells suggests several different ways in which they may have been eaten. When live *Placostylus* snails are disturbed they retreat back into the shell at least as far as 1/3 of the body whorl so that to extract them the shell would have to be broken. The breaks on these Poor Knights

Islands' shells are consistent with such a process. Two broken shells retain their periostracum suggesting that they were eaten raw. However, a number of shells are blackened or occur in the hearth which indicates that others were probably cooked over a fire, which would have relaxed the retractor muscle and allowed easier extraction of the meat, sometimes without needing to break the shell. Although it is possible that these blackened shells are of snails eaten raw that were discarded afterwards into the fire, we believe they are not and that the most common method of preparation was to cook the *Placostylus* on the embers of a fire, then to break open the body whorl with a stone and lever the flesh out, possibly with a stick to eat it.

There is no evidence to suggest that *Placostylus* was ever an important part of the diet of the prehistoric Maori. Its recorded presence to date in only small numbers from one midden suggests that it was seldom used as a food source. Indeed it would have been an unsuitable major food source owing to its slow growth rates and apparent low recruitment rates (F. Brook, pers. obs.). Thus rather than being "farmed" by the prehistoric Maori, *Placostylus* was most likely only an occasional food source eaten in small quantities, maybe as a delicacy.

Now that it has been established that *Placostylus* was on occasions eaten by the prehistoric Maori, there is an acceptable reason for populations having been transferred to offshore islands, such as the Poor Knights where edible, easily accessible marine shellfish are not abundant. The presence of pipi valves (*Paphies australe*) in the rock shelter indicates that shellfish food from the mainland was taken to the Poor Knights Islands, as no suitable sandy beach habitat from which they could be collected occurs around the Islands. We therefore agree with Powell (1938, 1979) and Climo (1971) that *P. hongii* was probably introduced to the Poor Knights Islands by the prehistoric Maori, but in addition we believe the transferral was done either purposely to supplement the local food resources or by the accidental escape of live snails taken over for food rather than being accidentally introduced in karaka leaf mould. We also agree with Powell (1938) that it is highly likely that other populations of *P. hongii*, such as those on southern Great Barrier Island, Chickens Islands and Fanal Island were also introduced by the Maori (Fig. 1). Such prehistoric transferrals may also account for the two records of *P. ambagiosus* from Kaitaia and Manganui (Powell 1951, p. 140), both 100 km south of their North Cape stronghold (Fig. 1), and lead to further

TABLE 2. *Relative abundances of albino and non-albino Placostylus hongii in six quadrats on Tawhiti Rahi Poor Knights Islands.*

Quadrat	I	II	III	IV	V	VI
Number albino	7	1	0	0	0	1
Number non-albino	16	11	4	20	3	5
Percentage albino	30	8	0	0	0	17

speculation on the origin of the mainland distribution of *P. hongii*.

ORIGIN OF POOR KNIGHTS' *Placostylus*

Is Powell's (1938) suggestion that the Poor Knights' *Placostylus* population originated from the only other known area with albinos (Whangaruru) a reasonable one? On Tawhiti Rahi the percentage of live adult *P. hongii* that are albino was assessed in six quadrats (20 m² area each) in separate areas (Brook, unpubl.). The abundance of albinos is by no means uniform and varies between 0 and 30% (Table 2) on this one island. This leads us to suggest that as the distribution of *P. hongii* on the mainland is now very much reduced, albinism there may formerly have been a more common trait than is now apparent and that the Poor Knights' *Placostylus* could conceivably have originated from other than the Whangaruru area. Several factors, however, favour Powell's suggested Whangaruru origin. The first is that Whangaruru is the nearest large harbour to the Poor Knights Islands and therefore one of the most logical points of departure for canoes travelling out there. Secondly and perhaps more importantly, the Whangaruru Maoris were the ones

who claimed the Poor Knights Islands as their ancestral land when their ownership was being contested in the 1840s to 1880s. Thus, a combination of factors makes Whangaruru (possibly the Mokau locality because of the similar percentages of albinos in the populations) the most likely place of origin for the *Placostylus* on the Poor Knights Islands.

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