NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act* 1995, has made a Final Determination to list the Mount Lidgbird Charopid Land Snail *Pseudocharopa ledgbirdi* (Etheridge, 1889) as a CRITICALLY ENDANGERED SPECIES in Part 1 of Schedule 1A of the Act. Listing of Critically Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Pseudocharopa ledgbirdi* (Etheridge, 1889) (family Charopidae), the Mount Lidgbird Charopid Land Snail has "a pretty little turreted and variegated shell" (Etheridge 1889). "Shell small to medium-sized, white with brown flammulations, turbinate with a low spire; whorls loosely coiled, last flared, sutures deeply impressed; protoconch initially with fine punctations grading to low radials on the latter half, teleoconch with coarse, widely spaced, curved radial ribs; microsculpture of microradial threads and low microspiral cords; umbilicus narrow, V-shaped; diameter 10mm." (Stanisic *et al.* 2010).

2. *Pseudocharopa ledgbirdi* was first published by Etheridge (1889) as *Helix ledgbirdi* with the statement that this species would subsequently be described by Mr J. Brazier. Etheridge (1889) also provided a rudimentary description, notes on its distribution on Lord Howe Island, including altitudinal range and two figures of the species under the name *Helix* (*Rhytida*) *ledgbirdi*. As Etheridge (1889) published a name, description, locality and figures of the species, this established the name. Mr Brazier did not subsequently publish on the species due to "stress of professional duties" according to Hedley (1891) who also noted that the figures published by Etheridge (1889) were confused and reversed. Iredale (1944) suggested that Etheridge's details were based on a Brazier draft manuscript. The Australian Faunal Directory credits the name to "Brazier, in Etheridge (1889)", presumably based on Smith (1992), and the Atlas of Living Australia credits it to "Brazier (1889)" as does Stanisic *et al.* (2010) but it is clear that Etheridge (1889) was the first publisher of the name. Iredale (1944) confirmed Hedley's (1891) assertion that Etheridge had confused and reversed the figures in his work and has determined that Etheridge's Pl. iv, Figs 13, 14, 26, which are captioned as *Helix balli* are *Pseudocharopa ledgbirdi* and not Figs 19, 20 which are captioned as *Helix ledgbirdi.* The species was reduced to a variety of *Patula whiteleggei* Brazier by Hedley (1891) but was restored as a valid species and transferred to the new genus *Pseudocharopa* by Peile (1929) who made it the type species of the genus. Etheridge's (1889) use of the spelling "ledgbirdi" and his reference both to "Mt Ledgbird" and "Lieut. Ledgbird Ball" shows that the spelling was not a misprint but based on a mispelt name which therefore does not allow an automatic emendation. Hedley (1891) also used "*ledgbirdi*" but Iredale (1944) used the unjustified emendation "*lidgbirdi*". Prevailing use has been established by Smith (1992), the Australian Faunal Directory and Stanisic *et al.* (2010), all of which use *Pseudocharopa ledgbirdi*.

3. Little is known about the biology of the species. Etheridge (1889) noted that the species "may be found after rain crawling on the basaltic boulders and blocks strewn over the flanks of this inaccessible hill, but in dry weather it takes refuge in the large vesicular cavities of the basalt" (Etheridge 1889). Stanisic *et al.* (2010) state that the species lives in rainforest habitats, living on rock faces. All species of the Charopidae are non-carnivorous (Tillier 1989).

4. The species is endemic to Lord Howe Island where it is confined to the southern half of the island extending from west of the summit of Intermediate Hill in the centre of the island to the south of the

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summit of Mount Gower. The geographic distribution of *Pseudocharopa ledgbirdi* is very highly restricted. The extent of occurrence and area of occupancy for *P. ledgbirdi* are estimated to be approximately 12 km^2. This estimate is based on three 2 x 2 km grid cells, the scale recommended for assessing area of occupancy by IUCN (2011).

5. There are limited quantitative data available to judge that the species has undergone a reduction in numbers. Collection records at The Australian Museum indicate a sharp decline in the numbers of specimens of the Mount Lidgbird Charopid Land Snail collected since 1981 (six specimens) compared to the number collected before this period (233 specimens from 1887 to 1979). Given that there has been an increase in overall snail collecting activity (predominantly dead specimens) from 1925 onwards, the decline in the number of Mount Lidgbird Charopid Land Snails collected suggests that the species has undergone a decline in numbers. The most recent survey, in 2002, found only two dead specimens on Mount Gower. The last live specimen was recorded in 1979 (TSSC 2008). As evidenced by the decline in specimens collected since 1979, the Mount Lidgbird Charopid Land Snail is suspected to have undergone a reduction in numbers with a continuing trend of decline. Although the species' actual numbers are not known, it can be inferred from the decline from 233 specimens collected prior to 1980 (including the last living specimen in 1979) to six specimens collected since 1997, despite increased collection activity, that the past decline in the species' numbers is likely to have been very severe (TSSC 2008).

6. The key threat to the Mount Lidgbird Charopid Land Snail is likely to be predation by introduced rats although the evidence is largely circumstantial. The Black Rat, *Rattus rattus*, also known as the Ship Rat, was accidentally introduced to the island in 1918 from a wrecked ship and was prolific across the Island by 1930 (Billing 1999). Rats are voracious predators of invertebrates and have been implicated in the extinction of at least 13 invertebrates, including two endemic land snails (Ponder 1997, in Lord Howe Island Board 2009). Ponder & Chapman (1999) reported that Black Rats prey extensively on the endangered Lord Howe Island Flax Snail, *Placostylus bivaricosus*, particularly on juvenile snails, and are considered to be a major predator to the species and a significant threat to its survival. Wilkinson & Priddel (2011) state that several species of land snails on Lord Howe Island, including *Pseudocharopa ledgbirdi*, "are so threatened by rat predation, if rats are not removed they are likely to become extinct". The program of baiting of rats currently undertaken on the island is likely to benefit the snail species if it persists on Mount Gower. However, this baiting program is unlikely to completely mitigate the effect of predation by Black Rats on the Mount Lidgbird Charopid Land Snail as it is not undertaken across the species' entire range. The recovery plan for the Lord Howe Island Flax Snail (NSW NPWS 2001) also identifies habitat clearing and modification for development, predation and habitat disturbance by exotic bird fauna (Common Blackbird (*Turdus merula*), Song Thrush (*Turdus philomelos*), domestic chickens), use of snail bait against the introduced Garden Snail (*Helix aspersa*) and trampling by cattle as threats to the survival of that species but these are associated with human habitation and may be less threatening to the Mount Lidgbird Charopid Land Snail because of its location on the higher parts of the island.

7. *Pseudocharopa ledgbirdi* (Etheridge, 1889) is eligible to be listed as a Critically Endangered species as, in the opinion of the Scientific Committee, it is facing an extremely high risk of extinction in New South Wales in the immediate future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation* 2010:

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Clause 7 Restricted geographic distribution and other conditions
The geographic distribution of the species is estimated or inferred to be:
(a) very highly restricted
and
(d) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:
(a) an index of abundance appropriate to the taxon, or
(b) the geographic distribution, habitat quality or diversity, or genetic diversity.

Dr Mark Eldridge
Chairperson
NSW Scientific Committee

Exhibition period: 22/05/15 – 17/07/15 Proposed Gazettal date: 22/05/15

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