



## The giant purple pedinid—a new species of *Caenopedina* (Echinodermata: Echinoidea: Pedinidae) from New Zealand and Australia

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### Abstract

Echinoids of the genus *Caenopedina* are widely distributed in continental shelf and slope waters of tropical to sub-Antarctic regions. A new species, *Caenopedina porphyrogigas* **sp. nov.** is described from temperate and sub-Antarctic areas of New Zealand and southeastern Australia in depths of 350–1200 m. This species is distinctive for the rich brown colour of its spines, purple apical and oral regions, large size, wide interambulacral plates, lack of obvious sexual dimorphism, and few forms of pedicellariae. The first confirmed records outside of the Hawaiian Islands and neighbouring atolls of another species in the genus, *C. pulchella*, reveal its existence also in northern New Zealand, and *C. otagoensis*, previously considered endemic to New Zealand is recorded from additional locations in the region as well as from a seamount west of Tasmania. An updated key to the species of *Caenopedina* is provided to include the four Australasian species most recently described.

**Key words:** Echinoid, Pedinoidea, *Caenopedina porphyrogigas* **sp. nov.**, *C. pulchella*, taxonomy

### Introduction

The order Pedinoidea is unusual within the class Echinoidea in that it is represented by a single extant genus, *Caenopedina* Agassiz 1869, with thirteen living representatives. Pedinoid urchins are readily distinguished from other echinoids by the combination of their strongly dicyclic apical disc, aulodont lantern, distinctive perignathic girdle with its paired peg-like auricles, and solid primary spines. The test is usually small to medium size, up to about 45 mm maximum test diameter (TD). The new species described here is by far the largest known living pedinid, with a maximum recorded size of 102 mm TD. The genus *Caenopedina* is characterized by diadematoïd style trigeminate ambulacral plating, a regular series of primary ambulacral tubercles or a series of large, broadly confluent interambulacral tubercles in each column of plates, and males with distinctive slit-like genital pores which cross onto and down the interambulacral midline. The primary spines of the test are often banded and brightly coloured, finely thorny, and long—up to two or three times the diameter of the test in some species. The periproct is generally large and covered in small plates which often bear small spines. The peristome carries paired buccal plates bearing spines and pedicellariae, as well as numerous platelets. The buccal slits are shallow and the “gills” elongate and branched, containing irregular, fenestrated plates. The tube feet also have large, fenestrated, and spiny, plates. Up to four types of pedicellariae are found: tridentate (a large, short-necked and a small, long-necked type); globiferous (highly characteristic, the blade reduced to a slender rod with 2 or 3 prominent end-teeth and pigmented poison gland, and often in two sizes); ophicephalous (those on the test with highly characteristic blades bearing multiple rows of teeth and no neck, those on the buccal plates with a single row of teeth and a distinct neck); and simple triphyllous pedicellariae lacking marginal teeth. Not all forms of pedicellariae are found on all species. Where tridentate pedicellariae are richly developed, globiferous forms are generally few and may be lacking, and vice versa. In *C. diomedae*, tridentate pedicellariae are well developed but there are no ophicephalous