

# Queensland marine worm

## identification guide



Cribb Island worm

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## Background

The marine bait worm fishery is a very important natural resource in Queensland. Many people from different parts of the community harvest marine worms for their own recreational fishing, and there are significant commercial activities involving the harvest of marine worms. Marine worms are also important food sources for numerous bird and inshore finfish species. To ensure sustainability of this fishery, both types of harvest must be regulated and monitored.

To minimise the impact of harvesting on the natural environment, and to maintain stocks into the future, limits are in place. Possession limits are an important part of fishery regulations—they are designed to ensure the sustainability of these marine resources, provide equitable shares to different community sectors, and prevent the illegal sale of commercial species.

Effectively identifying the different regulated species is integral to managing and enforcing possession limits. Several species of marine worms in Queensland waters are commonly harvested for bait. All are segmented bristle worms belonging to the class Polychaeta (see the table below). This guide will help harvesters identify these worms and understand current management arrangements.

### Marine worms harvested in Queensland

Common name	Family	Species	Also known as	Possession limit	Size limit
Beachworm	Onuphidae	<i>Australonuphis parateres</i>	Surf worm	30	No limit
	Onuphidae	<i>Australonuphis teres</i>	Surf worm, giant beachworm, king worm		
Bloodworm	Eunicidae	<i>Marphysa mullawa</i>	Cribb Island worm	50	
	Eunicidae	<i>Marphysa</i> spp.	Mangrove bloodworm	No limit	
	Eunicidae	<i>Marphysa</i> spp.	Rock worm, rockies	No limit	
Sand wriggler	Nereididae	<i>Perinereis nuntia</i>	Wiggler	No limit	

## Common marine bait worms

### Beachworm (family Onuphidae)

The two main species of beachworm harvested commercially and recreationally in Queensland are *Australonuphis parateres* and *Australonuphis teres* (Figure 1).



**Figure 1 (a)** A beachworm (*Australonuphis parateres*) **(b)** Close-up of head and mouth parts

Beachworms are widely distributed along the eastern and south-eastern coasts of Australia. They are commonly found from Yeppoon in Queensland to Noarlunga in South Australia (Paxton 1986). Beachworms often have a patchy distribution and prefer open beach sections that have gentle slopes and long swash periods (Figure 2).



**Figure 2** The preferred habitat of beachworms (Image © Gary Bell/OceanwideImages.com)

Beachworms can grow to more than 1.5 m in length (Paxton 1979). They build temporary burrows by secreting mucus onto the sand to create a thin tube to live in. They are omnivores, scavenging seaweed and animal matter that washes around in the drift zone of beaches. Pipis and fish frames are often used to catch them when their heads emerge from the sand to feed.

When they are about 40 cm long, beachworms reach sexual maturity. They reproduce by external fertilisation, with male and female beachworms releasing gametes into the water column in a synchronous spawning that peaks during the summer months. The fertilised eggs develop within the water column as pelagic larvae, feeding on phytoplankton until they are about 3 cm long, then settle on sandy ocean beaches.



## Bloodworm (family Eunicidae)

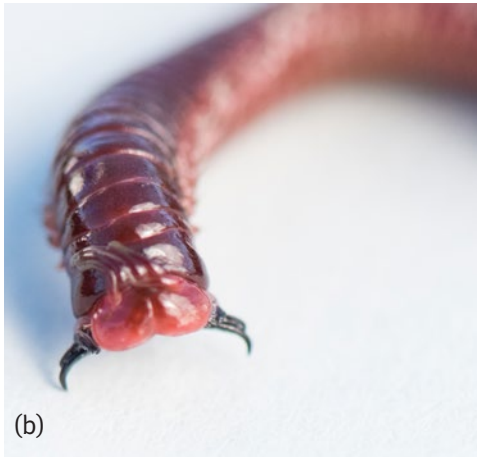
The main species of bloodworm that is harvested commercially and recreationally in Queensland is the Cribb Island worm (*Marphysa mullawa*, Figure 3). The mangrove bloodworm (*Marphysa* spp., Figure 4) and the rock worm (*Marphysa* spp., Figure 5) are not harvested commercially, but a small number of people harvest them recreationally.



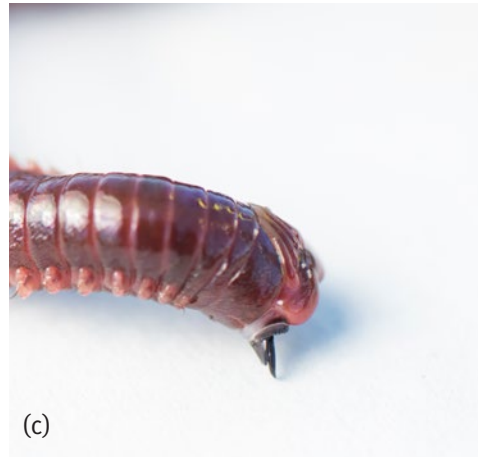
**Figure 3** (a) A Cribb Island worm (*Marphysa mullawa*) (b) and (c) Close-up of head and mouth parts



(a)



(b)



(c)

**Figure 4** (a) A mangrove bloodworm (*Marphysa* spp.) (b) and (c) Close-up of head and mouth parts





**Figure 5 (a)** A rock worm (*Marphysa* spp.) **(b)** Close-up of head and mouth parts

There are many different species of Eunicid worms and much of their biology is still unknown. Cribb Island worms live in defined burrows in the first 50 cm of substrate in muddy sediments of seagrass meadows in intertidal areas and shallow bays, such as in Moreton Bay (Figure 6). These worms are large opportunistic feeders, and can aggressively prey on other invertebrates as well as feed on algae and fish remains. They breed when water temperatures exceed 24 °C and spawning occurs over an extended breeding season.



**Figure 6** The preferred habitat of Cribb Island worms

Until recently, it was thought the mangrove bloodworm and the rock worm were not part of the Eunicidae family group. However, new work completed by Dr Chris Glasby of the Museum and Art Gallery of the Northern Territory identified both of these as being within the Eunicidae family group. Mangrove bloodworms live in soft muddy sediments in intertidal areas in creeks (Figure 7). Rock worms live in muddy and rocky substrates in the intertidal areas of rocky foreshores (Figure 8).



**Figure 7** The preferred habitat of mangrove bloodworms





**Figure 8** The preferred habitat of rock worms

## Sand wriggler (family Nereididae)

The sand wriggler or wriggler (*Perinereis nuntia*, Figure 9) has a limited distribution.



**Figure 9** (a) A sand wriggler (*Perinereis nuntia*) (b) and (c) Close-up of head and mouth parts

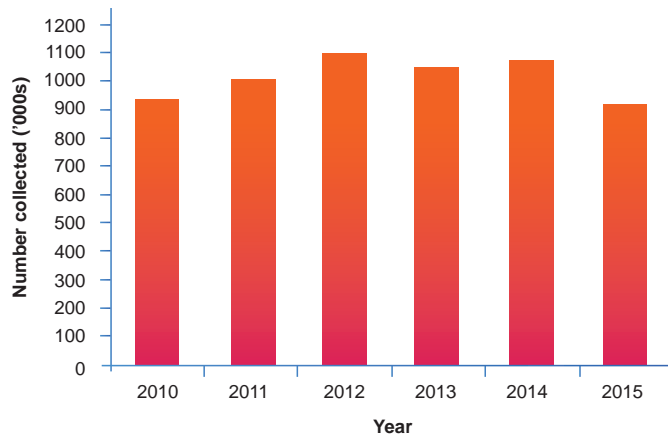
Sand wrigglers are confined to the sandy foreshores around Moreton Bay (Figure 10). There is currently very little known about the biology, life cycle and feeding habits of these worms.



**Figure 10** The preferred habitat of sand wigglers

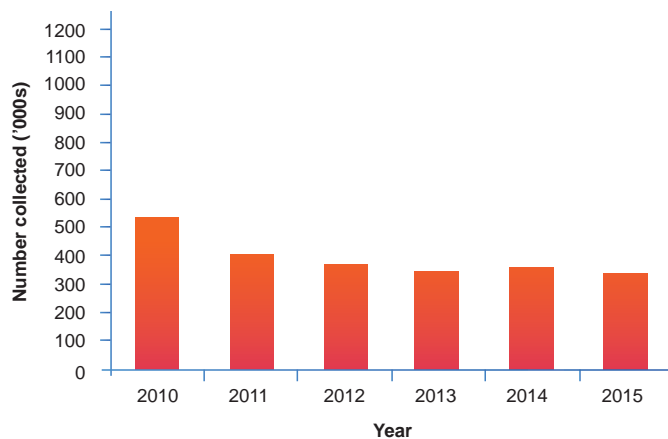
## Commercial harvest

The commercial beachworm fishery in Queensland (Figure 11) is based on the collection of beachworms to be sold as bait. The worms are enticed to the surface with the aid of bait bags and are harvested by hand, then sold (live or preserved and frozen) to recreational anglers. Anglers use them mainly to target whiting from surf beaches, but also in general fishing to catch dart, bream, mulloway and flathead.



**Figure 11** Queensland's commercial beachworm harvest

The commercial bloodworm fishery in Queensland (Figure 12) is based on the collection of Cribb Island worms. The worms are harvested by hand or by digging using a wide-pronged fork, then sold live as bait to recreational anglers. Anglers use them mainly to target whiting in estuarine environments, but also in general fishing to catch dart, bream and flathead.



**Figure 12** Queensland's commercial bloodworm harvest

## Recreational harvest

Recreational fishers also harvest marine worms for bait. It is popular in some areas and the 2013–14 statewide recreational fishing survey (Webley et al. 2015) estimated that approximately 3000 recreational fishers harvested worms in Queensland during that year.



## Management arrangements

The Department of Agriculture and Fisheries manages the marine worm fishery under the *Fisheries Act 1994* and the Fisheries Regulation 2008. The Queensland Boating and Fisheries Patrol is responsible for the enforcement of Queensland legislation relating to fisheries.

The Department of National Parks, Sport and Racing is responsible for the management of the three state marine parks—Moreton Bay Marine Park, Great Sandy Marine Park and Great Barrier Reef Coast Marine Park. Harvesting of bait species is allowed in accordance with the zoning plan for each marine park. Recreational harvesting of beachworms and bloodworms is allowed in general use, habitat protection and conservation park zones but is prohibited in marine national park zones (green zones) of state marine parks. Commercial fishers require permission to harvest worm species in marine parks.

In Moreton Bay Marine Park, recreational and commercial bloodworm fishers must restore any habitat in the marine park disturbed while gathering bloodworms

## Recreational possession limits

Currently two families of marine worms have recreational possession limits—beachworms have a limit of 30 and bloodworms a limit of 50. These amounts include whole and part worms. There are no size limits for these or other worms. It is an offence under the *Fisheries Act 1994* for recreational fishers to sell any type of worm as bait.

## Closures to recreational harvest

Recreational bloodworm digging is prohibited on the foreshores between Lota Creek and the rock groyne near the northern end of Wynnum North Esplanade for a distance of 100 m from the foreshore rock wall. Between Cedar Street and Charlotte Street, the closure extends from the foreshore rock wall to the low-water mark.

The closure was introduced because of community concerns over excess digging along certain sections of the foreshore and in areas close to the rock retaining wall, as this was causing erosion problems.

## Movement restrictions

Marine worms can be carriers of the virus that causes white spot disease. To reduce the likelihood of white spot disease spreading, under the *Biosecurity Act 2014*, movement restrictions are in place in some areas. Commercial bait collectors and recreational fishers should check if there are any movement restrictions in their area before moving worms.

## Disturbance to seagrass

Seagrass meadows are highly productive and support many important fisheries by protecting juvenile fish from strong tidal currents and predators. Many species of Queensland fish, prawns and shellfish (including popular eating species) depend on seagrass beds for all or part of their life cycles. Larger predatory animals such as herons, cormorants, sharks, barramundi and salmon are attracted to the seagrass meadows by the schools of bait fish that seek shelter there.

Seagrass meadows are fragile habitats, and activities that damage them may also affect associated fish populations. Uncontrolled bait digging can damage or destroy seagrasses (Figure 13). People harvesting bloodworms (commercially or recreationally) must level the working area and replace all seagrass in an upright position either during digging or immediately afterwards. Studies have shown that if seagrass is returned properly to an upright position, it can grow back relatively quickly with few long-term impacts to seagrass communities (Skilleter et al. 2006). Disturbance to seagrass is an offence under fisheries legislation, so all harvesters must be vigilant during their operations.



**Figure 13** An area of seagrass that has not been returned properly to an upright position and so cannot grow back

## Changes to regulation

The identification of the mangrove bloodworm and the rock worm as members of the Eunicidae family means that these popular recreational bait worms have a possession limit of 50 under the current fisheries legislation. However, Fisheries Queensland has decided that regulation of these two worm species is not required. This is because:

- the regulation was originally intended to protect the commercially valuable species Cribb Island worm, and
- mangrove bloodworms and rock worms are not sought by the commercial sector as they have a limited shelf life.

Recreational fishers are able to collect mangrove bloodworms and rock worms without the possession limit (50 per person). Possession limits will still apply to beachworms of the family Onuphidae (30 per person) and Cribb Island worms of the species name *Marphysa mullawa* (50 per person).

Fisheries Queensland will reflect this decision in the next scheduled amendment of the Fisheries Regulation 2008.

## Further reading

Paxton, H 1979, 'Taxonomy and aspects of the life history of Australian beachworms (Polychaeta: Onuphidae)', *Australian Journal of Marine and Freshwater Research*, vol. 30, pp. 265–94.

Paxton, H 1986, 'Generic revision and relationships of the family Onuphidae (Annelida: Polychaeta)', *Records of the Australian Museum*, vol. 38, no. 1, pp. 1–74.

Skilleter, GA, Cameron, B, Zharikov, Y, Boland, D & McPhee, DP 2006, 'Effects of physical disturbance on infaunal and epifaunal assemblages in subtropical, intertidal seagrass beds', *Marine Ecology Progress Series*, vol. 308, pp. 61–78.

Webley, JAC, McInnes, K, Teixeira, D, Lawson, A & Quinn, R 2015, *Statewide recreational fishing survey 2013–14*, Fisheries Queensland, Department of Agriculture and Fisheries, Queensland Government.

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