Information describing deepwater rock lobster (*Projasus parkeri*) fisheries relating to the South Pacific Regional Fishery Management Organisation

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Deepwater rock lobster (*Projasus parkeri*)

1. Overview

This palinurid lobster appears to be widespread in the western South Pacific Ocean between approximately 33°S and 45°S. It has most often been found associated with seamounts, banks, and ridges, at depths of 330–1200 m. There is no known commercial fishing of this lobster in the South Pacific, but it is likely that in some locations this lobster exists in commercial quantities. Little is known of its biology. Based on similarities with closely related lobster species it is assumed that there is a long-lived (many months) phyllosoma larval stage that is reasonably widespread in the South Pacific Ocean.

P. parkeri has been commercially fished (down to >1000 m) on seamounts north and northeast of St Paul and Amsterdam Islands in the Indian Ocean (W.R. Webber, MONZ, pers. comm.). *P. bahamondei* has been, and probably still is being, fished in international waters in the eastern South Pacific Ocean by vessels using crab pots on trot lines.

There are no restrictions, conservation measures, management procedures, or population monitoring in place for lobster spp. on the high seas within the South Pacific region. *P. parkeri* may be locally common in places, and with successful commercial fishing of it in the Indian Ocean, it is expected that it will eventually be targeted in the South Pacific.

2. Taxonomy

2.1 Phylum
Arthropoda

2.2 Class
Crustacea

2.3 Order
Decapoda

2.4 Family
Palinuridae

2.5 Genus and species
Projasus parkeri (Stebbing, 1902)

2.6 Scientific synonyms

None.

2.7 Common names

Deepwater rock lobster, Parker's crayfish, Cape jagged lobster.

2.8 Molecular (DNA or biochemical) bar coding

No information available.

3. Species characteristics

3.1 Global distribution and depth range

P. parkeri has been reported from the western South Pacific Ocean at depths of 330–1200 m, all records have been reported from between 33°S and 45°S (Webber & Booth 1988; Griffin & Stoddart 1995; Museum of New Zealand records). *P. parkeri* is also found in the Indian Ocean (at and near St Paul and Amsterdam Islands, and off Natal) and in the Atlantic Ocean. It is expected that *P. parkeri* will be widespread in the western part of the South Pacific region between 33°S and 45°S, but it is not clear how far east its distribution extends: The eastern-most record is from the Louisville Ridge (168°W), further east of 85°W the species is replaced by *P. bahamondei* (Parin et al. 1997; Retemal & Arana 2000).

3.2 Distribution within South Pacific area

The general area assumed to be occupied by this lobster is about 80 000 km^2 between 33°S and 45°S along the Lord Howe Rise.

3.2.1 Inter-annual and/or seasonal variations in distribution

There is no information available.

3.2.2 Other potential areas where the species may be found

The area of potential habitat, based on being found predominantly between 33° S and 45° S, is a further ~ 3 million km^2.

3.3 General habitat

In the South Pacific, *P. parkeri* has most often been taken from and observed on firm substrates—particularly those associated with ridges, banks, and seamounts and when trawls have inadvertently touched hard substrates. However, off southern Africa, *P. parkeri* has also been taken on generally soft '*Nephrops* grounds' (Berry 1971).

3.4 Biological characteristics

Morphology: Prominent supraorbital horns with a row of two spines behind each. A single median spine followed by two submedian rows of eight spines. Low median carina on the first five segments of abdomen; sixth segment with two pairs of submedian spines and others on posterior margin Light orange to straw brown in life (Webber & Booth 1988; Tracey et al. 2005).

Sexes co-occur but are often segregated. Females reach at least 92 mm carapace length (CL), males 82 mm CL, but it is expected that on average males reach a larger size than females. Size at onset of breeding in females is <68 mm CL, and because egg-bearing females have been taken virtually all year round, either spawning is also year-round or there is a very prolonged egg development period.

The phyllosoma larva has not been confirmed, but based on other palinurids it can be expected to be long-lived (many months) and widespread. Settlement is by the post larval puerulus stage, described by Webber & Booth (1988).

There is no information on age and growth, but these lobsters are probably long-lived (decades).

3.5 Population structure

No information available.

3.6 Stock productivity

Stock Productivity is low. The onset of maturity is late, fecundity is low, annual growth rate is relatively slow and the species is long-lived, which indicates that the proportion of the total biomass that can be harvested is small.

3.7 Role of species in the ecosystem

The role of this lobster in the seamount ecosystem is unknown, apart from it presumably being one of the larger predatory crustaceans. Submersible and ROV observations on

seamounts in and north of the Bay of Plenty have frequently shown this lobster out on the open seafloor.

Rock lobsters are prey at various stages of their life to fishes such as tunas and bramids (phyllosoma and puerulus) and to octopuses, and sharks and other bottom-feeding fishes (juveniles and adults). The precise diet of this lobster is unknown, but it is expected that it consumes a wide range of foods, probably with particular focus on other invertebrates. It has been taken in pots using finfish as bait in the Indian Ocean.

4. Fisheries characterisation

4.1 Distribution of fishing activity

P. parkeri appears not to have been fished in the South Pacific Ocean—although there are reports that it is has been commercially taken (down to >1000 m) on seamounts north and northeast of St Paul and Amsterdam Islands in the Indian Ocean (W.R. Webber, pers. comm.). *P. bahamondei* has been—and may still be—fished in international waters in the eastern South Pacific Ocean by vessels using crab pots on trot lines.

4.2 Fishing technology

The main fishing method is baited pots. Given the deep habitat of the species, pots are set as a series connected to a single main line to reduce hauling time.

4.3 Catch history

No information available.

4.4 Stock status

Not known or uncertain – Insufficient information is available to make a judgment.

4.5 Threats

No threat status known.

4.6 Fishery value

No direct information available, although palinurid lobsters generally have a high per unit value, in particular where they are landed and sold live.

5. Current Fishery Status and Trends

5.1 Stock size

No information available.

5.2 Estimates of relevant biological reference points

No information available.

5.2.1 Fishing mortality

No information available.

5.2.2 Biomass

No information available.

5.2.3 Other relevant biological reference points

No information available.

6. Impacts of Fishing

6.1 Incidental catch of associated and dependent species

No information available.

6.2 Unobserved mortality of associated and dependent species

No information is available however, unobserved mortality is unlikely given the method of fishing.

6.3 Bycatch of commercial species

No information available.

6.4 Habitat damage

Potting has been the main fishing method used in this fishery. It is a relatively benign method, probably causing little direct damage to the environment.

P. parkeri has also been taken by trawl, but catches appear to be accidental and it seems unlikely that trawling of this species will ever be widespread.

7. Management

7.1 Existing management measures

There are no restrictions, conservation measures, management procedures, or population monitoring in place for this lobster.

7.2 Fishery management

This species may be locally common in places, and with successful commercial fishing of it in the Indian Ocean, it is expected that it will eventually be targeted in the South Pacific.

7.3 Ecosystem Considerations

This fishery is sporadic and total harvest is thought to be small therefore it poses little if major threat at an ecosystem; however, localised depletion may be a serious issue if a fishery develops.

8. Research

8.1 Research underway

There is currently no research underway.

8.2 Research needs

If a fishery were to develop biological sampling should include length and sex data. Catch per unit effort data could also be analysed as a proxy for biomass trajectories.

9. Additional remarks

There is one other *Projasus* species, *P. bahamondei* (see Holthuis 1991), but little is known of its biology, except that it is generally a smaller, shallower species that forms potentially significant fisheries (Pakhorukov et al. 2000; Retemal & Arana 2000).

10. References

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