

**Information describing *Jasus caveorum* fisheries relating to the South
Pacific Regional Fisheries Management Organisation**

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Rock lobster (*Jasus caveorum*)



1. Overview

This palinurid lobster appears to be confined to one chain of seamounts, southeast of Pitcairn Island, where it has been sporadically fished over the past 10 years yielding catches in the tens of tonnes. Little is specifically known of its biology, although it is likely to be very similar to that of all other *Jasus* species and particularly its nearest neighbours *J. frontalis* at Juan Fernandez Islands and *J. edwardsii* in New Zealand. It is assumed that there is a long-lived (many months) phyllosoma larval stage that is reasonably widespread within the south-east Pacific Ocean.

It is not envisaged that this species will be the subject of anything but sporadic targeted fishing because of the remoteness of the Foundation Seamounts and apparently small size of the stock; none of the several visits to the area seems to have returned large quantities of product. Other isolated *Jasus* stocks have been quickly fished down to uneconomic levels (e.g., *J. tristani* on the Vema Seamount—Heydorn 1969), and the impression is that these relatively small populations developed over the eons and are unable to sustain heavy fishing pressure. There are currently no management practices in place to protect this species.

2. Taxonomy

2.1 Phylum
Arthropoda

2.2 Class
Crustacea

2.3 Order
Decapoda

2.4 Family
Palinuridae

2.5 Genus and species
Jasus caveorum (Webber & Booth, 1995)

2.6 Scientific synonyms

None.

2.7 Common names

None.

2.8 Molecular (DNA or biochemical) bar coding

No information available.

3. Species characteristics

3.1 Global distribution and depth range

Jasus caveorum has been reported only from the non-emergent Foundation Seamount Chain, near 35°S 120°W in the south-east Pacific Ocean, where it has been taken between 140 m (the shallowest depth fished) and 180 m (Webber & Booth 1995).

3.2 Distribution within South Pacific area

The general area assumed to be occupied by this lobster is about 90 000 km² of the Foundation Seamount Chain.

3.2.1 Inter-annual and/or seasonal variations in distribution

No information available.

3.2.2 Other potential areas where the species may be found

None known.

3.3 General habitat

This lobster lives on firm substrates on and near seamount crests.

3.4 Biological characteristics

Morphology: Rostrum smaller and less robust than supraorbital horns; short, squat carapace spines; a broad, shallow carapace transverse groove; antennal flagellum with many narrow pale rings; a smooth first abdominal tergum; small, flat squamae confined to a single lateral transverse row on each side of abdominal terga two to six, rows not meeting medially; a large, distoventral spine on the first pereopod propodus in males, a row of two or three tufts of setae and two or three small spines on ventral margin of second pereopod merus; all surfaces of merus of male fifth pereopod smooth; and body and legs spotted red on an off-white to yellow-orange background (Webber & Booth 1995).

Sexes co-occur but are often segregated. Males reach at least 129 mm carapace length. Egg-bearing is during winter, and spring hatching can be expected. Most of the commercial catch has been comprised of males.

Based on other species of *Jasus* (for example, *J. edwardsii*—Frusher et al. 1999; MacDiarmid & Booth 2003) and on the specimens of this species available, it can be expected that males grow larger than females. Recently mature males and females will moult once or twice per year (including in the case of females just before the winter egg-bearing season); there will be a long (many months) phyllosoma larval period that will be distributed reasonably or very widely in the east South Pacific Ocean; and settlement will be by the postlarval puerulus stage. Furthermore, this lobster will be nocturnally active, and feed on a wide range of foods, but particularly invertebrates.

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

3.5 Population structure

There is no information on population structure.

3.6 Stock productivity

Stock productivity is probably 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. Most of the lobsters taken in June-July 1995 bore numerous small, unidentified stalked barnacles, some specimens being heavily infested ventrally at the anterior of the abdomen, on the pleopods, and around the mouthparts (Webber & Booth 1995). Crabs of the genus *Chaceon* were caught in the same traps and were also infested with similar barnacles.

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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.

4. Fisheries characterisation

4.1 Distribution of fishing activity

Known to have been fished on the Foundation seamount chain in the Southeast Pacific using crab pots on trot lines.

4.2 Fishing technology

Baited pots.

4.3 Catch history

A rock lobster best fitting the description of *Jasus* was taken in quantity (tonnes) in the early 1960s on South Pacific Ocean seamounts southeast of the Foundation Seamount Chain, near 40° S 100° W (Booth in press). No specimens are available and recent fishing in this general area has failed to relocate the source of these lobsters. Given their location, these lobsters could be either *J. caveorum*, or, the other nearby species, *J. frontalis*.

Jasus caveorum has been fished sporadically by New Zealand (and probably other) vessels since its discovery on the Foundation Seamount Chain in 1995. At least 20 t have been taken, using traps (Booth in press), and it has been marketed in at least New Zealand (Booth & Webber 2001) and the US.

4.4 Stock status

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

4.5 Threats

No threats 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

There are no estimates of population size.

5.2 Estimates of relevant biological reference points

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No information available.

5.2.1 Fishing mortality

No information is available.

5.2.2 Biomass

No information is 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

Antipatharian and gorgonacean corals were significant in the bycatch associated with the potting of these lobsters.

6.2 Unobserved mortality of associated and dependent species

No information is available however, unobserved mortalities 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.

It is also believed that trawling has occurred on the Foundation seamounts. Bottom trawling has adverse effects on the habitat. The impact of bottom trawling on the lobster population is unknown.

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

It is not envisaged that this species will be the subject of anything but sporadic targeted fishing because of the remoteness of the Foundation Seamounts and apparently small size of the stock; none of the several visits to the area seems to have returned large quantities of product. Other isolated *Jasus* stocks have been quickly fished down to uneconomic levels (e.g., *J. tristani* on the Vema Seamount—Heydorn 1969), and the impression is that these relatively small populations developed over the eons and are unable to sustain heavy fishing pressure.

7.3 Ecosystem considerations

This fishery is sporadic and total harvest is small therefore it currently poses no major threat to the 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 this fishery develops biological sampling will be required and should include length and sex data. Catch per unit effort data could also be investigated as a proxy for biomass trajectories.

9. Additional remarks

There are five other *Jasus* species (Holthuis 1991; Ovenden et al. 1997), *J. edwardsii* and *J. lalandii* in particular being well researched (see Pollock 1986; Frusher et al. 1999; MacDiarmid & Booth 2003). The other nearby species is *J. frontalis* (see Arana 1987). Much of the information for these three species will also apply to *J. caveorum*.

10. References

Arana, P. (1987). Historical perspective and projections of the fisheries activity in the Archipelago of Juan Fernandez, Chile. In *Islas Oceanicas Chilenas: Conocimiento Cientifico y Necesidades de Investigaciones* (Ed. by J.C. Castilla), pp. 319–53. Ediciones Universidad Catolica de Chile.

Booth, J.D. (in press). *Jasus* species. In *Lobsters: biology, management, aquaculture and fisheries*. (Ed. by B.F. Phillips). Blackwell Science.

Booth, J.; Webber, R. (2001). All the pretty lobsters – part 1. *Seafood New Zealand* 9(11): 20–23.

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Cryer, M.; Nodder, S.D.; Thrush, S.F.; Lohrer, A.M.; Gorman, R.M.; Vopel, K.; Baird, S.J. (in press). The effects of trawling and dredging on benthic-pelagic coupling processes in the New Zealand EEZ. *New Zealand Aquatic Environment and Marine Biodiversity Report 2005/xx*. 66 p.

Frusher, S.; Prescott, J.; Edmunds, M. (1999). Southern rock lobsters. In *Under Southern Seas. The Ecology of Australia's Rocky Reefs* (Ed. by N. Andrew), pp. 106–13. University of New South Wales Press, Sydney.

Heydorn, A.E.F. (1969). The South Atlantic rock lobster *Jasus tristani* at Vema Seamount, Gough Island and Tristan da Cunha Islands. Sea Fisheries Branch Investigational Report 73.

Holthuis L.B. (1991). Marine lobsters of the world. *FAO Fisheries Synopsis 125*.

MacDiarmid, A.; Booth, J.D. 2003: Crayfish. In *The living reef. The ecology of New Zealand's rocky reefs*. (Eds Andrew, N.; Francis, M.) Craig Potton Publishing.

Kaiser, M.J.; Collie, J.S.; Hall, S.J.; Jennings, S.; Poiner, I.R. (2002). Modification of marine habitats by trawling activities: prognosis and solutions. *Fish and Fisheries 3*: 114–136.

Ovenden, J.R.; Booth, J.D.; Smolenski, A.J. (1997). Mitochondrial DNA phylogeny of red and green rock lobsters (genus *Jasus*). *Marine and Freshwater Research 48*: 1131–1136.

Pollock, D.E. (1986). Review of the fishery for and biology of the Cape rock lobster *Jasus lalandii* with notes on larval recruitment. *Canadian Journal of Fisheries and Aquatic Sciences 43*: 2107–17.

Webber, W.R.; Booth, J.D. (1995). A new species of *Jasus* (Crustacea, Decapoda, Palinuridae) from the eastern South Pacific Ocean. *New Zealand Journal of Marine and Freshwater Research 29*: 613–622.