

Papua New Guinea sea cucumber and beche-de-mer identification cards



These sea cucumber and beche-de-mer identification cards are produced by the Papua New Guinea National Fisheries Authority in collaboration with the Secretariat of the Pacific Community.

Underwater photographs of live sea cucumbers are reproduced with kind permission from the French Institute of Research for Development (IRD) and the WorldFish Center. Photographs of dried beche-de-mer by Eric Aubry, Noumea, New Caledonia.

The information presented in these identification cards was gathered from personal communications with fishermen, processors and traders, and from the following publications:

Conand, C. 1998. Holothurians. In: K.E. Carpenter and V.H. Niem (eds). FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 2. Cephalopods, crustaceans, holothurians and sharks. FAO, Rome.

Guille, P., P. Laboute and J.-L. Menou. 1986. Handbook of the sea-stars, sea-urchins and related echinoderms of New Caledonia lagoon. Editions de l'ORSTOM, Paris, France. (in French).

SPC. 1994. Sea cucumbers and beche-de-mer of the tropical Pacific: A handbook for fishers. Handbook N° 18. Secretariat of the Pacific Community, Noumea.

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Contact: SPC Marine Resources Division Information Section
BP D5, 98848 Noumea, New Caledonia. E-mail: cfpinfo@spc.int
Layout by Jipé Le-Bars

Amberfish

Thelenota anax

Habitat: Reef slopes, outer lagoon and near passes, on hard bottoms, large rubble and sand patches.

Depth range : 10–30 m

Average length : 55 cm

Average weight : 3.5 kg

Body thickness : 15 mm

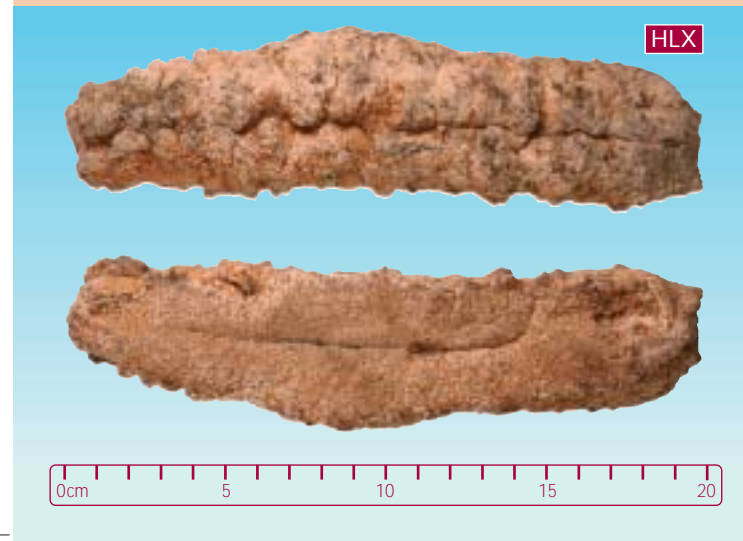


Amberfish

Thelenota anax

Processed appearance:

- Long shape with a rectangular cross-section.
- Upperside rough covered with irregular warts.
- Underside grainy.
- Entire body different shades of brown.
- Small cut across mouth, or one single long cut in the underside for large specimens.
- Common size: 15–20 cm.



Black teatfish

Holothuria (Microthele) nobilis

Habitat: Reef flats, slopes and shallow seagrass beds.

Depth range : 0–20 m

Average length : 37 cm

Average weight : 1.7 kg

Body thickness : 12 mm



Black teatfish

Holothuria (Microthele) nobilis

Processed appearance:

- Flat and chunky shape with obvious teats along each side.
- Surface powdery, smooth to slightly wrinkled.
- Powdery cover greyish-brown, but skin underneath black.
- One single long straight cut in the upperside.
- Common size: 18–24 cm.



Blackfish

Actinopyga miliaris

Habitat: Reef flats of fringing and lagoon-islet reefs;
never found on barrier reefs.

Depth range : 0–10 m

Average length : 25 cm

Average weight : 0.4 kg

Body thickness : 6 mm

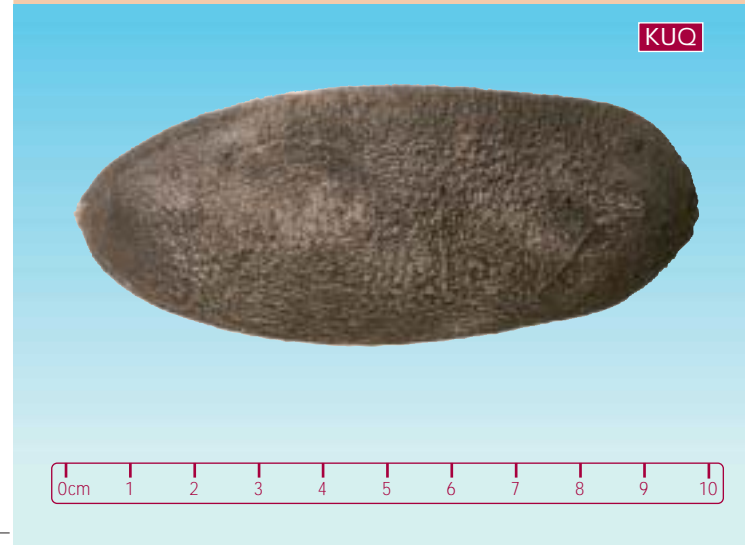


Blackfish

Actinopyga miliaris

Processed appearance:

- Roughly oval shape with a round cross-section.
- Entire body surface smooth and black.
- No cuts.
- Common size: 10–12 cm.



Brown sandfish

Bohadschia vitiensis

Habitat: Coastal lagoons and inner reef flats, often burrowed in sandy-muddy bottoms.

Depth range : 0–20 m

Average length : 32 cm

Average weight : 1.2 kg

Body thickness : 7 mm



Brown sandfish

Bohadschia vitiensis

Processed appearance:

- Cylindrical shape with an arched upperside and a flat underside.
- Upperside slightly wrinkled, brown to brown-black.
- Underside grainy, brown to brown-black.
- No cuts or small cut across mouth.
- Common size: 12–15 cm.



Chalkfish

Bohadschia similis

Habitat: Coastal lagoons and inner reef flats, often burrowed in sandy-muddy bottoms.

Depth range : 0–3 m

Average length : 18 cm

Average weight : 0.3 kg

Body thickness : 4 mm

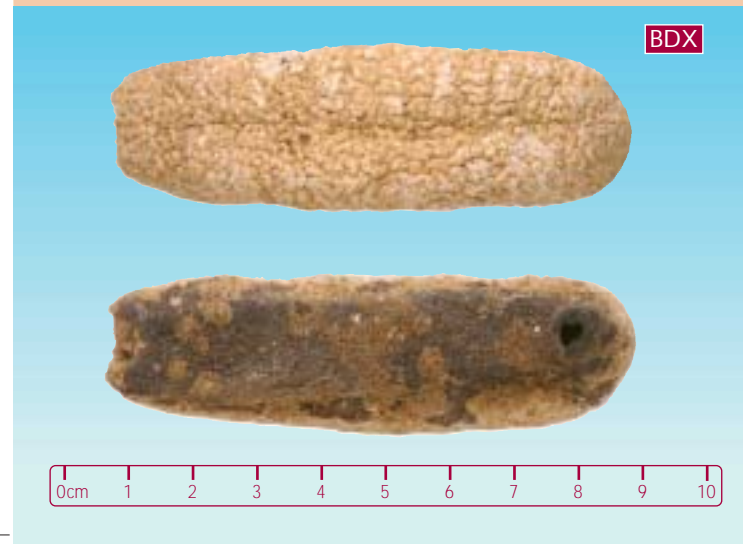


Chalkfish

Bohadschia similis

Processed appearance:

- Bent, narrow cylindrical shape, slightly flattened underside.
- Upperside granular, light beige (chalky).
- Underside smooth, black with brown marks.
- No cuts or small cut across mouth.
- Common size: 7–9 cm.



Curryfish

Stichopus hermanni

Habitat: Seagrass beds, rubble and sandy-muddy bottoms.

Depth range : 0–25 m

Average length : 35 cm

Average weight : 1.0 kg

Body thickness : 8 mm



Curryfish

Stichopus hermanni

Processed appearance:

- Long shape with a rectangular cross-section.
- Upperside wrinkled or deeply ridged with small black bumps.
- Underside smoother.
- Entire body different shades of beige to brown.
- No cuts or small cut across mouth.
- Common size: 12–18 cm.



Deep-water redfish

Actinopyga echinites

Habitat: Reef flats of fringing and lagoon-islet reefs, seagrass beds, rubble reef and compact flats.

Depth range : 0–12 m

Average length : 20 cm

Average weight : 0.3 kg

Body thickness : 7 mm



Deep-water redfish

Actinopyga echinites

Processed appearance:

- Oval shape, with arched upperside and flat underside.
- Upperside rough and slightly ridged, grey-brown.
- Underside granular, grey-brown.
- No cuts.
- Common size: 15–18 cm.



Dragonfish

Stichopus horrens

Habitat: Rubble or hidden in reef flats.

Depth range : 0–15 m

Average length : 20 cm

Average weight : 0.2 kg

Body thickness : 2 mm

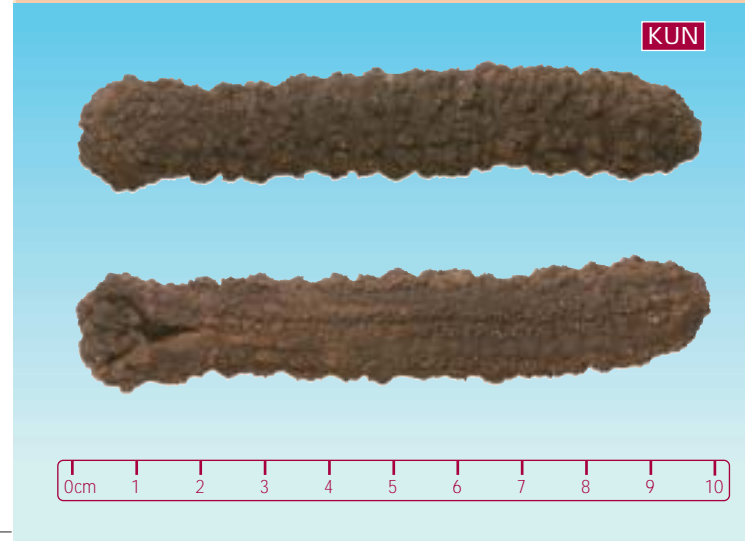


Dragonfish

Stichopus horrens

Processed appearance:

- Narrow shape with a squarish cross-section.
- Upperside knobbly, black-brown to brown.
- Underside smoother with two rows of tiny bumps, black-brown to brown.
- No cuts or small cut across mouth.
- Common size: 8–12 cm.



Elephant trunkfish

Holothuria (Microthele) fuscopunctata

Habitat: Reef slopes and shallow seagrass beds.

Depth range : 0–25 m

Average length : 36 cm

Average weight : 1.5 kg

Body thickness : 10 mm



Elephant trunkfish

Holothuria (Microthele) fuscopunctata

Processed appearance:

- Long cylindrical shape with an arched upperside and a flat underside.
- Upperside with deep grooves, of different shades of light brown to beige with tiny black spots.
- Underside smoother, of different shades of light brown to beige with tiny black spots.
- Small cut across mouth or one single long cut in the underside on large specimens.
- Common size: 20–25 cm.



Flowerfish

Pearsonothuria graeffei

Habitat: Reef slopes, close to the coast.
Abundant on bottoms of mixed corals
and calcareous red algae.

Depth range : 0–25 m

Average length : 35 cm

Average weight : 0.7 kg

Body thickness : 4 mm



Flowerfish

Pearsonothuria graeffei

Processed appearance:

- Narrow shape with a rectangular cross-section.
- Upperside rough, black to black-brown.
- Underside grainy, black to black-brown.
- No cuts or small cut across mouth.
- Common size: 15–20 cm.



Greenfish

Stichopus chloronotus

Habitat: Reef flats and upper slopes, mostly on hard substrates.

Depth range : 0–15 m

Average length : 18 cm

Average weight : 0.1 kg

Body thickness : 2 mm



Greenfish

Stichopus chloronotus

Processed appearance:

- Narrow shape with a squarish cross-section.
- Each of the four edges covered with pointy warts.
- Entire body light greenish brown.
- No cuts or small cut across mouth.
- Common size: 10–12 cm.



Lollyfish

Holothuria (Halodeima) atra

Habitat: Inner and outer reef flats and back reefs or shallow coastal lagoons. Abundant on sandy-muddy grounds with rubble or coral patches and in seagrass beds.

Depth range : 0–20 m

Average length : 20 cm

Average weight : 0.2 kg

Body thickness : 4 mm

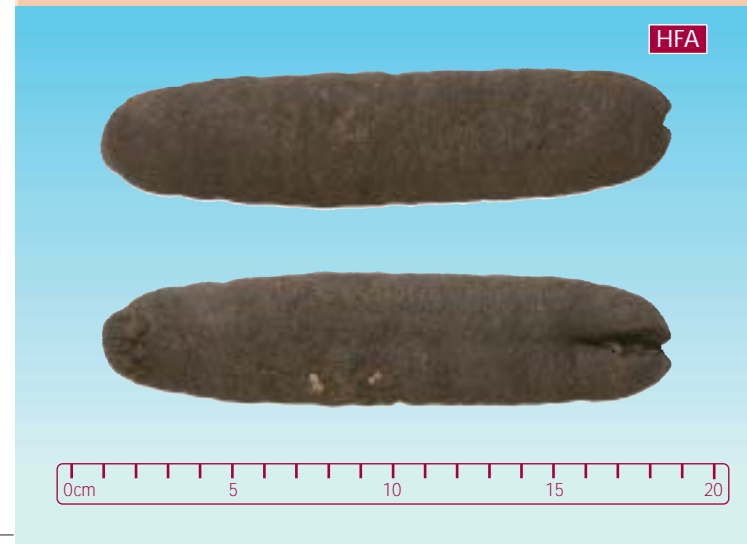


Lollyfish

Holothuria (Halodeima) atra

Processed appearance:

- Narrow cylindrical shape.
- Entire body surface smooth and black.
- No cuts or small cut across mouth.
- Common size: 15–20 cm.



Pinkfish

Holothuria (Halodeima) edulis

Habitat: Inner reef flats of fringing and lagoon-islets reefs, and shallow coastal lagoons, sandy-muddy grounds with rubble or coral patches.

Depth range : 0–30 m

Average length : 20 cm

Average weight : 0.2 kg

Body thickness : 3 mm



Pinkfish

Holothuria (Halodeima) edulis

Processed appearance:

- Narrow cylindrical shape, slightly flattened underside.
- Upperside with small wrinkles, dark brown.
- Underside smoother, light to medium brown.
- No cuts or small cut across mouth.
- Common size: 10–14 cm.



Prickly redfish

Thelenota ananas

Habitat: Reef slopes and near passes, on hard bottoms with large rubble and coral patches.

Depth range : 0–25 m

Average length : 45 cm

Average weight : 2.5 kg

Body thickness : 15 mm

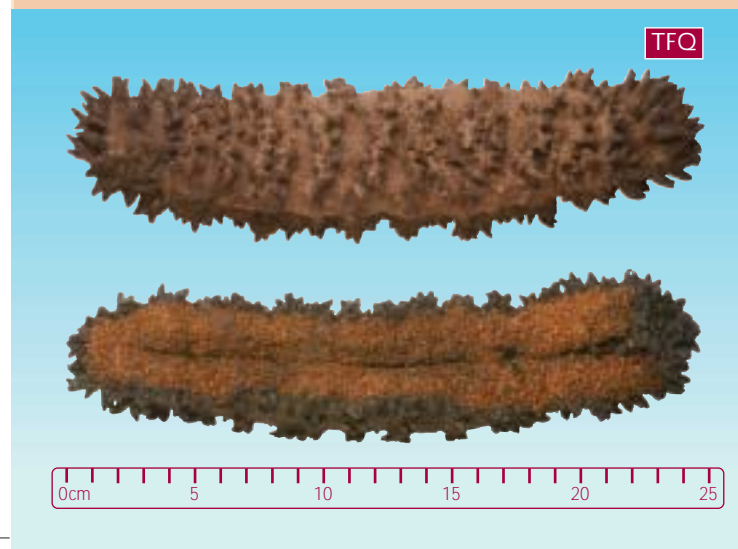


Prickly redfish

Thelenota ananas

Processed appearance:

- Long shape with a squarish cross-section.
- Upperside covered with spikes, brown to black-brown.
- Underside granular, lighter brown.
- Small cut across mouth, or one single long cut in the underside of large specimens.
- Common size: 20–25 cm.



Sandfish

Holothuria (Metriatyla) scabra

Habitat: Inner reef flats of fringing reefs, lagoon-islet reefs, coastal areas affected by sediments, and near mangroves.

Depth range : 0–10 m

Average length : 22 cm

Average weight : 0.3 kg

Body thickness : 6 mm

Note: The golden sandfish (*H. scabra* var. *versicolor*) is also present in PNG waters, but the two species are not differentiated by traders



Sandfish

Holothuria (Metriatyla) scabra

Processed appearance:

- Cylindrical shape with an arched upperside and a flat underside.
- Upperside with grooves across entire body, black-brown to black.
- Underside smooth, amber-brown.
- No cuts or small cut across mouth. No smoky smell.
- Common size: 10–12 cm.



Snakefish

Holothuria (Acanthotrapeza) coluber

Habitat: Inner and outer reef flats and back reefs or shallow coastal lagoons. Abundant on sandy-muddy grounds with rubble or coral patches and in seagrass beds.

Depth range : 0–15 m

Average length : 40 cm

Average weight : 0.3 kg

Body thickness : 4 mm



Snakefish

Holothuria (Acanthotrapeza) coluber

Processed appearance:

- Long irregular skinny shape, clearly tapered at one end.
- Brown body covered with tiny white bumps.
- Small cut across mouth and/or in the middle of body.
- Common size: 18–25 cm.



Stonefish

Actinopyga lecanora

Habitat: Hard substrates. Nocturnal species. In daytime, found under large stones, in gaps in reef slopes or in sheltered areas.

Depth range : 0–20 m

Average length : 25 cm

Average weight : 0.4 kg

Body thickness : 6 mm



Photo: A. Desurmont, SPC

Stonefish

Actinopyga lecanora

Processed appearance:

- Roughly oval shape, with arched upperside and flat underside.
- Upperside with shallow grooves across body, brown-black.
- Underside smooth, brown-black.
- No cuts.
- Common size: 10–12 cm.



Surf redfish

Actinopyga mauritiana

Habitat: Outer reef flats and fringing reefs, mostly in the surf zone.

Depth range : 0–20 m

Average length : 20 cm

Average weight : 0.3 kg

Body thickness : 6 mm



Surf redfish

Actinopyga mauritiana

Processed appearance:

- Roughly oval shape, with arched upperside and flat underside.
- Upperside with grooves across body, black-brown.
- Underside granular, lighter reddish-brown.
- No cuts.
- Common size: 8–15 cm.



Tigerfish

Bohadschia argus

Habitat: Barrier reef flats and slopes, or outer lagoons on white sand.

Depth range : 0–30 m

Average length : 36 cm

Average weight : 1.8 kg

Body thickness : 10 mm

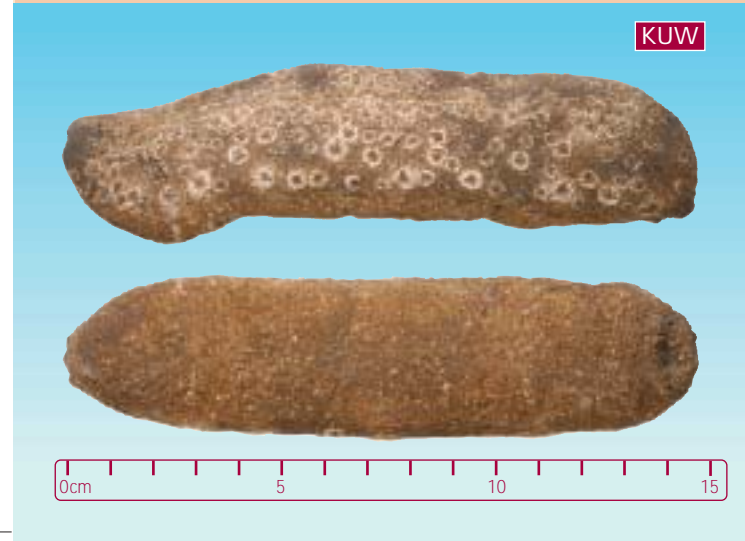


Tigerfish

Bohadschia argus

Processed appearance:

- Cylindrical shape slightly tapered at one end.
- Upperside smooth, brown to light-brown with obvious small white spots.
- Underside smooth, brown to light-brown.
- No cuts or small cut across mouth.
- Common size: 12–18 cm.



White teatfish

Holothuria (Microthele) fuscogilva

Habitat: Outer barrier reefs and passes, but also on shallow seagrass beds.

Depth range : 0–40 m

Average length : 42 cm

Average weight : 2.4 kg

Body thickness : 12 mm



White teatfish

Holothuria (Microthele) fuscogilva

Processed appearance:

- Flat and chunky shape with obvious teats along each side.
- Surface smooth to slightly wrinkled and powdery.
- Entire body different shades of grey-brown.
- One single long straight cut in the upperside.
- Common size: 18–24 cm.



Management measures for the PNG beche-de-mer fishery

The PNG beche-de-mer (BDM) fishery is governed by the National Beche-de-mer Fishery Management Plan. Management measures cover the areas of access, size and catch limits, storage and export. These measures include:

Access

- Open to PNG citizens only.
- Closed every year from 1 October to 15 January.
- The use of hookah, scuba and lights are prohibited for the harvesting of BDM.

Size and catch limits

- Each province is allocated a total allowable catch (TAC) for each of the two value groups (high and low) during the season.
- The fishery is closed when the TAC or the TAC of one value group is reached. If the allocated TAC for a province is exceeded by more than 5 tonnes, the excess amount will be taken off their next season's TAC.
- Minimum sizes are set for live and dry specimens of 17 species. Undersized and broken pieces of BDM cannot be traded and will be confiscated.

Storage and export

- A license is required for storing or exporting BDM.
- Exporters must provide NFA with a monthly summary of their purchases, including species trade names, weights in kg for each species, suppliers' and ward names.
- BDM product for export must be clearly labelled. Exporters must declare their stored holdings to NFA within 5 days after the season closing date.
- BDM movement between provinces is prohibited unless authorised by NFA Managing Director.
- Export samples are limited to 2 pieces of each species.
- Export for self-consumption is limited to 2 kg.

Value groups, trade names and minimum size restrictions for the PNG beche-de-mer fishery*

| PNG trade name | Scientific name | Minimum size | |
|---|---------------------------------|--------------|-------|
| | | Live | Dry |
| High grade species (value group H) | | | |
| Black teatfish | <i>Holothuria nobilis</i> | 22 cm | 10 cm |
| Blackfish | <i>Actinopyga miliaris</i> | 15 cm | 10 cm |
| Curryfish | <i>Stichopus hermanni</i> | 25 cm | 10 cm |
| Greenfish | <i>Stichopus chloronotus</i> | 20 cm | 10 cm |
| Prickly redfish | <i>Thelenota ananas</i> | 25 cm | 15 cm |
| Sandfish | <i>Holothuria scabra</i> | 22 cm | 10 cm |
| Stonefish | <i>Actinopyga lecanora</i> | 15 cm | 10 cm |
| Surf redfish | <i>Actinopyga mauritiana</i> | 20 cm | 8 cm |
| White teatfish | <i>Holothuria fuscogilva</i> | 35 cm | 15 cm |
| Low grade species (value group L) | | | |
| Amberfish | <i>Thelenota anax</i> | 20 cm | 10 cm |
| Brown sandfish | <i>Bohadschia vitiensis</i> | 20 cm | 10 cm |
| Chalkfish | <i>Bohadschia similis</i> | 25 cm | 7 cm |
| Deep-water redfish | <i>Actinopyga echinites</i> | 25 cm | 15 cm |
| Dragonfish | <i>Stichopus horrens</i> | none | none |
| Elephant trunkfish | <i>Holothuria fuscopunctata</i> | 45 cm | 15 cm |
| Flowerfish | <i>Pearsonothuria graeffei</i> | none | none |
| Lollyfish | <i>Holothuria atra</i> | 30 cm | 15 cm |
| Pinkfish | <i>Holothuria edulis</i> | 25 cm | 10 cm |
| Snakefish | <i>Holothuria coluber</i> | none | none |
| Tigerfish | <i>Bohadschia argus</i> | 20 cm | 10 cm |

* This information is partly extracted from the PNG National Beche-de-mer Fishery Management Plan. It is current at the date of printing (March 2003) but subject to change.

Beche-de-mer processing methods

Method 1

Boil for a very short time (2–5 minutes) until it swells. Remove body content by gently pressing the beche-de-mer (if necessary, make a very small cut through the mouth). Put back in boiling water until hard and rubbery (should bounce like a ball when thrown on the ground). Bury in a sandpit for 12–18 hours. Rub to remove decomposed outer surface. Boil a third time in clean water until hard and rubbery. Hot air dry (\approx 2 days), but DO NOT SMOKE. Sun dry (4 days to 2 weeks).

Method 2

Boil for a very short time (2–5 minutes) until it swells. Remove body content by gently pressing the beche-de-mer (if necessary, make a very small cut through the mouth). Put back in boiling water until hard and rubbery (should bounce like a ball when thrown on the ground). Wash in seawater. Boil a third time in clean water until hard and rubbery. Hot air dry or smoke (\approx 2 days). Sun dry (4 days to 2 weeks).

Method 3

Boil until it swells (this first boil may take up to 10 minutes as this method is used for animals with very thick body walls). Slit upper dorsal side, up to 3 cm from each end, and remove body content, but don't remove the three longitudinal string muscles. Wash in seawater. Boil again, in clean water, until hard and rubbery (\approx 1/2 h). Remove remaining guts. Place sticks across the slit to keep it open. Hot air dry or smoke (12–48 h), then sun dry (1–2 days) with the slit downwards. Remove sticks and tie with string or vines. Sun dry again (4 days to 2 weeks). Remove strings/vines before packing.

Method 4

Same as Method 3, but slit along ventral, not upper dorsal side.

Processing recommendations

- All animals must be alive before processing.
- Before boiling, lay animals on a flat surface for 20 minutes so they can straighten themselves and expel most of the sand they contain (some species will also eviscerate).
- If cutting is needed to clean out the sea cucumber gut, use sharp knives and make cuts carefully.
- Don't mix species or sizes when boiling.
- If the water is too hot when boiling, the animals' skin will peel off. The water temperature is right if you can hold your finger in it for two seconds.
- Some species — dragonfish, curryfish, brown sandfish, tigerfish and greenfish — are fragile and need extra care with handling and processing as their body wall can easily degrade.
- Stir gently, regularly and keep an eye on the beche-de-mer while boiling. If the very first boil is too long, the stomach will form a carbuncle, expand and burst.
- If the weather is rainy or humid, keep smoking (or hot air drying) the beche-de-mer until sun drying is possible.
- Store the dried beche-de-mer in cardboard boxes or rice/copra bags, in a dry place.

Beche-de-mer processing methods

| PNG trade name | Method | |
|--------------------|-----------------|-----------------|
| | Small specimens | Large specimens |
| Amberfish | 2 | 4 |
| Black teatfish | 3 | 3 |
| Blackfish | 2 | 2 |
| Brown sandfish | 2 | 2 |
| Chalkfish | 2 | 2 |
| Curryfish | 2 | 2 |
| Deep-water redfish | 2 | 2 |
| Dragonfish | 2 | 2 |
| Elephant trunkfish | 2 | 4 |
| Flowerfish | 2 | 2 |
| Greenfish | 2 | 2 |
| Lollyfish | 2 | 2 |
| Pinkfish | 2 | 2 |
| Prickly redfish | 2 | 4 |
| Sandfish | 1 | 1 |
| Snakefish | 2 | 2 |
| Stonefish | 2 | 2 |
| Surf redfish | 2 | 2 |
| Tigerfish | 2 | 2 |
| White teatfish | 3 | 3 |



For more information on the PNG beche-de-mer fishery, please contact:

Philip Polon
 Fisheries Manager Sedentary, National Fisheries Authority
 PO Box 2016, Port Moresby, N.C.D.
 Ph.: 309 0444; Fax: 320 2061; E-mail: ppolon@fisheries.gov.pg