Zanzibar Sustainable Seafood Guide

Best practice to protect our ocean

CHUMBE ISLAND
CORAL PARK

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INTRODUCTION

Welcome to the new Zanzibar Sustainable Seafood Guide, which builds on the Sustainable Seafood Guide produced by Chumbe Island Coral Park (CHICOP) in 2017.

This project has been implemented voluntarily by CHICOP, in partnership with the Ministry of Blue Economy and Fisheries, Zanzibar Commission for Tourism, Zanzibar Association of Tourism Investors, and Rotary Club of Stone Town Zanzibar.

Seafood represents a large portion of Zanzibar's dietary protein, and with a growing population and increase in tourism, demand is rising. Increasingly, hotels, restaurants and tourists want to make responsible seafood choices, not only in Zanzibar – but as part of a concerted global effort.

This guide is an awareness tool to help the tourism industry and consumers make informed choices about seafood, with the aim to specifically shift demand away from over-exploited and/or vulnerable species that are critical to marine ecosystem services.

Disclaimers: this guide takes best practice approaches. Certain seafood can be more sustainable in various scenarios, and a sustainable fish caught with unsustainable methods would still be unsustainable. As populations and conditions change, what is advisable at the time of writing this guide may not be appropriate in the future.

WHAT IS SUSTAINABLE SEAFOOD?

Throughout this guide, '**seafood**' is defined as **aquatic organisms that are regarded as food by humans,** which typically includes fish and shellfish (such as mollusks and crustaceans). '**Sustainable**' means **fishing or fish farming within rates that can be replaced through natural reproduction and without damage to the biodiversity of the ocean, while ensuring the wellbeing of surrounding communities**.

We assessed seafood sustainability using the criteria:

- Stock levels
- Catch volume
- Global conservation status
- Environmental impact from fishing gear
- Incidental catch, also known as bycatch
- Effectiveness of fisheries management
- Benefit to local communities

Fisheries science and management are highly complex, but the following key biological traits are useful indicators to assess sustainability:

KEY TRAITS	HIGH SUSTAINABILITY SCORING
Longevity	Short life span
Age at maturity	Young age of maturity
Fecundity	High number of eggs likely to be produced during spawning season
Maximum length	Species selected which have reached a minimum size before harvesting
Breeding	Fast growing/early breeders
Migratory	No/little migration
Trophic level	Ranges from 1–5; lower levels are better (see page 7)

The Most Vulnerable

1. Fish that aggregate to spawn, such as groupers.
2. Reproducing females, such as berried crabs and other shellfish, with thousands of eggs or spawn attached to their tails.

Both of these present vulnerabilities for the seafood fishery and need the highest protection from exploitation.

Carbon footprint

Other important sustainability factors include transportation (boats, planes, and trucks), processing and packaging, and refrigeration of seafood. These factors contribute to the seafood's carbon footprint, which is greatly reduced when seafood is sourced and consumed locally, especially here in Zanzibar.

ZANZIBAR'S SMALL SCALE FISHERIES

Understanding how fisheries are managed and what regulations and policies are in place is crucial when looking at sustainability.

Zanzibar, which merged with Tanzania mainland in 1964 to become the United Republic of Tanzania, is formed by two main islands, Unguja and Pemba, and about 50 other small islets.

The Ministry of Blue Economy and Fisheries of Zanzibar has full mandate over marine resource management and governance within its territorial waters (12 nautical miles), while Tanzania's Exclusive Economic Zone (EEZ) is a union matter and under the mandate of the Deep Sea Fishing Authority.

Fisheries in Zanzibar is dominated by artisanal fishing that operates in an open-access system along the entire coastline, typically in less than 20–30 meters depth. This small-scale inshore fishery still uses traditional vessels (small wooden boats, dhows, canoes, outrigger canoes).

A variety of fishing techniques including drag nets, gill nets, ring nets, basket traps (*demas*), longlines, as well as hook and line are used to target a large number of species in shallow-water coral reefs, mangroves, sand-banks, and seagrass beds. Only a few fishers reach deeper waters with bigger boats, such as dhows, to practise drift gillnetting and line fishing for larger pelagic species. Most fishing vessels lack cooling facilities.

Under the development of a new Zanzibar Fisheries Masterplan (2019–2033), fisheries policies, law regulations and standards will be reviewed and aligned with international sustainability and conservation principles.

The existing Fisheries Act 2010 prohibits dynamite fishing, the use of poison, and beach seines of small mesh size. It is not permitted to catch, retain or sell any fish of less than a minimum size. However, these species-specific minimum size regulations are yet to be developed and not mentioned in the existing act.

Sustainable fishing practices

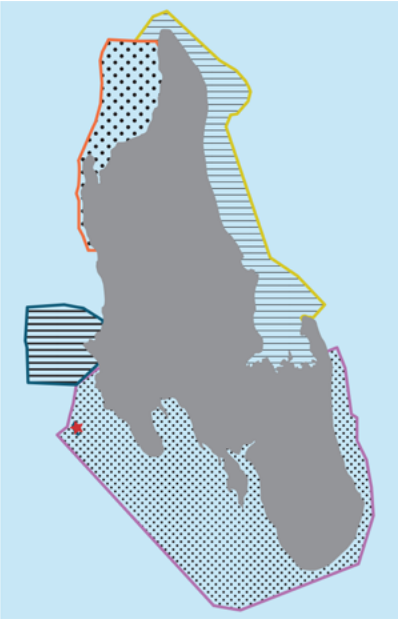
- **Hook and line fishing** is a sustainable method that minimizes environmental damage. It requires minimal gear and does not require wild baitfish. However, it takes considerable skill and experience to be effective.
- The **dema fish trap** is a typical Zanzibar trap, built originally with palm leaves and wood of large mesh size. More recent modifications with chicken wire and small mesh size are considered less sustainable.
- **Temporary reef closures**, once practised in several Zanzibari communities for around 6 months at a time to allow stocks to recover, are being reintroduced to improve local octopus stocks.

MARINE CONSERVATION AREAS

Marine Conservation Areas (MCAs) as a tool for fisheries management geared towards fish stocks re-building or restoration has been particularly promoted in Zanzibar. In Unguja, a network of MCAs has been developed with the support of various partners:

Marine Managed Areas in Unguja Island

- Tumbatu Marine Conservation Area (TUMCA)
- Changuu-Bawe Marine Conservation Area (CHABAMCA)
- Menai Bay Conservation Area (MBCA)
- Mnemba Island-Chwaka Bay Marine Conservation Area (MIMCA)
- Chumbe Island Coral Reef Sanctuary (CHUMBE)



Chumbe Island Coral Reef Sanctuary

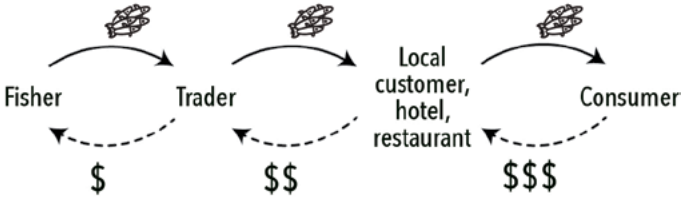
Chumbe Island is an internationally acclaimed conservation area, hosting a fully protected Coral Reef Sanctuary and Forest Reserve, both gazetted by the Revolutionary Government of Zanzibar in 1994 following campaigning by CHICOP. The Chumbe Reef Sanctuary (> 55 ha) is a fully enforced no-take zone, i.e. no fishing or extractive resource use is permitted. The reef supports a vibrant diversity of marine life, including over 500 species of reef fish, an array of invertebrates, turtles and other species.

As a **not-for-profit enterprise**, the revenue generated by ecotourism on the island funds all conservation activities and an extensive environmental education programme with local schools and communities in Zanzibar. Operational for more than 25 years, Chumbe is the **world's first financially self-sustaining Marine Protected Area (MPA)** and has in recent years been recognised, among others, with the "**Oscar for Marine Conservation**".

FROM OCEAN TO PLATE

How much do we know about the seafood that is consumed in Zanzibar, and how sustainable are the available seafood options?

In Zanzibar, the fish value chain appears relatively simple: fish catches are brought to landing sites where fishers sell them to traders via auctions, who then sell to local customers, hotels and restaurants.



However, the reef-fish trade in particular involves a range of actors with different preferences. Consequently, both low and high trophic species, as well as small and large fishes, are fished and sold; which puts heavy pressure on the marine ecosystems.

Tracing where and how a particular seafood has been caught is often impossible for buyers and consumers — a global challenge not unique to Zanzibar. Hence, many environmentally conscious consumers choose a vegetarian or vegan option.

Our hope is that this seafood guide will provide helpful recommendations based on international best practices and promote sustainable seafood options in support of small-scale fisheries livelihoods in Zanzibar.

HEALTH & HYGIENE

Eating seafood is associated with health benefits including a reduction in the risk of cardiovascular diseases (i.e. high blood pressure and stroke), inflammatory diseases and cancer. Regular seafood consumption provides high-quality proteins, essential amino acids, micronutrients (A, D, E, K, and B12) and important minerals (calcium, selenium, and phosphorus).

On the other hand, parasites, Ciguatera poisoning (produced by a marine microalgae called *Gambierdiscus toxicus*), pathogens, viruses, as well as exposure to heavy metals and microplastics can cause a wide range of well-known adverse effects on human health.

In Zanzibar, preventing secondary contamination after catch or harvest, ensuring an unbroken cold chain, and applying sufficient time and temperature for heat-treated seafood products are the most critical factors in preventing potential hazards and delaying spoilage.

FOOD EDUCATES US

Seafood is an integral part of the culinary experience in Zanzibar and shouldn't be missed. Yet, Zanzibar's rich food culture goes way beyond seafood and includes diverse African-, Arab- and Indian-influenced dishes.

KITAMU is a cookbook collection of delicious recipes from Chumbe Island, reflecting the diverse flavors and spices of Zanzibar. KITAMU also features community recipes derived from a Sustainable Food Event and Recipe Competition in 2023.

Order a digital or print version of KITAMU via marketing@chumbeisland.com

Print version pick up point: CHICOP Office in Mbweni

ZaSeRa –

Zanzibar Seafood Rating

As scientific data on commonly consumed seafood species in Zanzibar and their stock assessments in the Western Indian Ocean were limited at the time of writing, recommendations from an expert workshop conducted in January 2023 were brought together with international best practice guidelines to develop the **Zanzibar Seafood Rating (ZaSeRa)**.

In line with WWF SASSI, the only regionally available sustainable seafood initiative in Africa, ZaSeRA uses a simple 'traffic light' system to rate the top 20 seafood choices in Zanzibar.

Best Choice	**Be encouraged to choose**: species that produce lots of eggs, grow fast and reach sexual maturity at an early age, have minimal associated environmental concerns
Choose with caution	**Think twice**: these species have associated reasons for concern e.g., the lifestyle of the species makes it vulnerable to high fishing pressure, or is associated with environmental damage
Avoid eating	**Stay away:** species that are overfished, listed as endangered, and vital to the overall health of coral reefs

Tired of eating/serving the same seafood?

Eating diversely can have a positive impact on seafood consumption and sustainability. Check for our selection of 'Alternatives' (page 17).

Alternatives	**Try them out:** less well-known species, lower on the trophic food chain; diversification helps reduce pressure on the usual suspects – and you might find a new 'favorite'

What is a trophic level?

The trophic level is a well-documented indicator of ecosystem structure. A species' trophic level is determined by scientific diet composition studies.

The trophic level ranges from 1 for primary producers (plants) to 5 for marine mammals and humans. Decimal numbers are possible along this range. For example, an anchovy whose diet consists of 50% phytoplankton (troph = 1) and 50% herbivorous zooplankton (troph = 2) has a TL of 2.5.

Check the trophic level of your favorite seafood

@ https://education.nationalgeographic.org/resource/marine-food-pyramid-1/

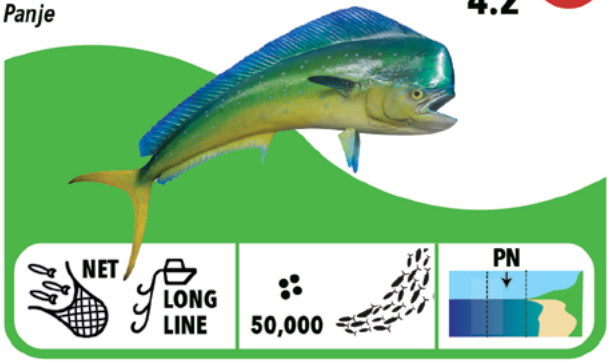
ZaSeRa KEY

Names

COMMON
Other English
Kiswahili

DORADO

Dolphinfish, Mahi-mahi
Panje



Trophic level

Lower is better (see page 7)

TROPHIC LEVEL 4.2

IUCN Red List Rating

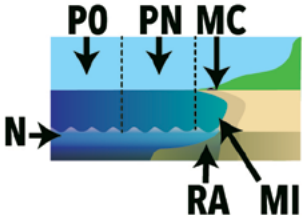
LC

NE - Not Evaluated
DD - Data Deficient
LC - Least Concern
NT - Near Threatened
VU - Vulnerable
EN - Endangered
CR - Critically Endangered

ZaSeaRa color code

Best choice
Choose with caution
Avoid eating
Alternatives

Habitat



N Upper layers of the ocean
PO Pelagic oceanic, open water away from shore
PN Pelagic neritic, shallow waters away from shore
RA Reef associated
MI Marine intertidal
MC Marine coastal

Source: iucnredlist.org

Common harvesting methods

Life history /reproduction

FECUNDITY Abundance of eggs

(less vulnerable) (more vulnerable)

SPAWNING AGGREGATION

(most vulnerable)

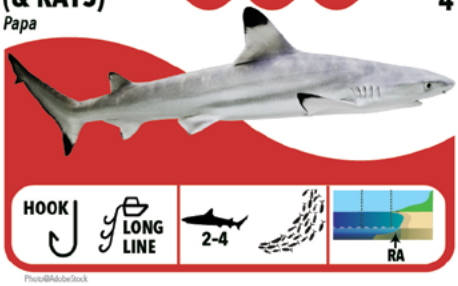
AVOID EATING

SHARKS (& RAYS)

CR EN VU

TROPHIC LEVEL 4

Papa



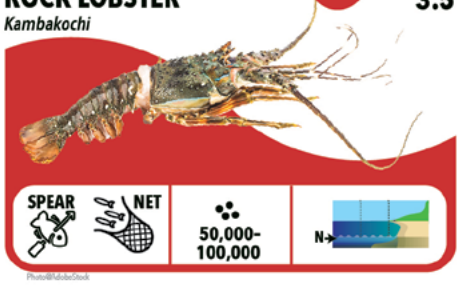
- Sharks are apex predators.
- Sharks and rays are vulnerable to overfishing because they grow slowly, mature late, and produce few young.
- Globally shark and ray fisheries are unregulated; sharks and rays are often caught as bycatch in inshore or long-line fisheries. Every year more than 100 million sharks are killed in commercial fisheries.
- Legally not protected in Tanzania.
- **Please do not buy any shark or ray products!**

SPINY LOBSTER / ROCK LOBSTER

LC

TROPHIC LEVEL 3.5

Kambakochi



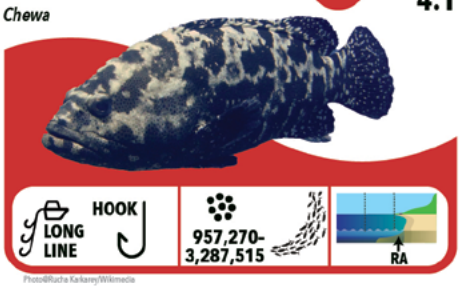
- High priced, high demand for live animals from Asia (export).
- Harvesting during spawning season can have detrimental effects on spawning stock abundance and egg production with increased risk of stock collapse.

GROUPER

VU

TROPHIC LEVEL 4.1

Chewa



- Globally heavily exploited because of high prices offered by the international market.
- Some species categorised as Threatened or Near Threatened by IUCN.
- Life history traits (slow growth, delayed reproduction, large size, spawning aggregations and longevity) contribute to overfishing susceptibility.

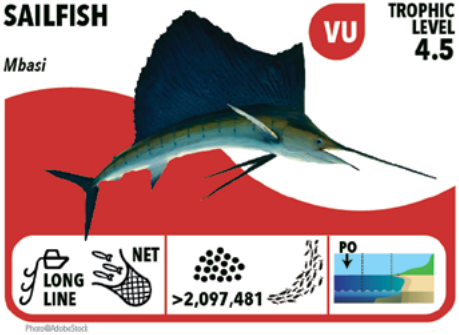
AVOID EATING

SAILFISH

Mbasi

VU

TROPHIC LEVEL 4.5



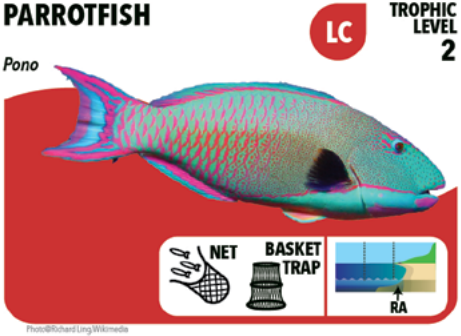
- One of the fastest fish in the sea (up to 70 miles / 113 km per hour).
- Top predator.
- Recent increase in coastal gillnet catch and fishing effort in the Indian Ocean is highly concerning.

PARROTFISH

Pono

LC

TROPHIC LEVEL 2



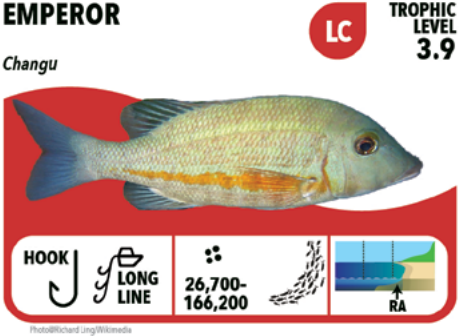
- Keystone species in coral reefs as they prevent algae from smothering coral reefs.
- Large-scale removal can be severely detrimental to tropical reef ecosystems.

EMPEROR

Changu

LC

TROPHIC LEVEL 3.9



- Widely distributed but relatively large-bodied and long-lived, which makes it susceptible to overexploitation.

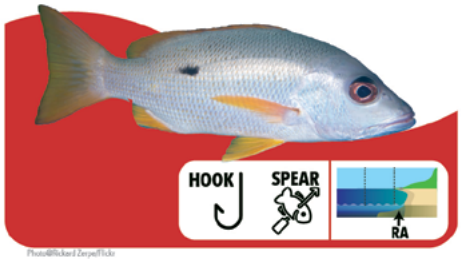
AVOID EATING

SNAPPER

LC

TROPHIC LEVEL 4.4

Fatundu



- Status of small-scale snapper fisheries in developing countries largely unknown.
- Studies indicate that number of overexploited fisheries has been increasing over the years.

CHOOSE WITH CAUTION

YELLOWFIN TUNA

Jodari

LC

TROPHIC LEVEL 4.4

- Highly prized food fish.
- Known to travel in schools with skipjack tuna.
- Some populations are fished more heavily than others, important to continue monitoring in order to prevent overfishing like in bluefin tuna.

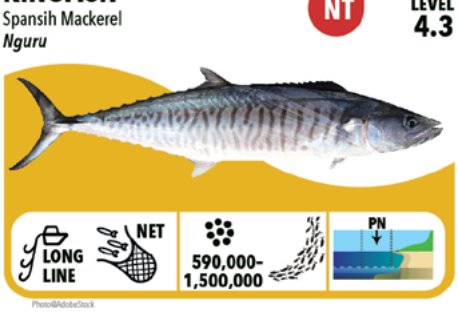
KINGFISH

Spansih Mackerel

Nguru

NT

TROPHIC LEVEL 4.3



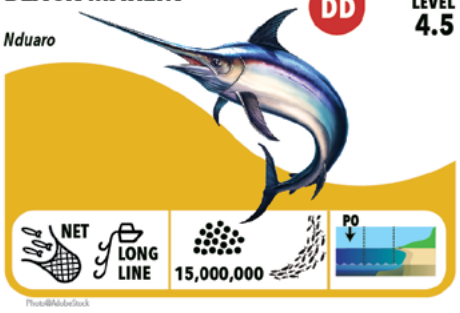
- Very popular in Zanzibar's restaurants and hotels.
- Globally stocks are decreasing, check for alternatives.

BLACK MARLIN

Nduaro

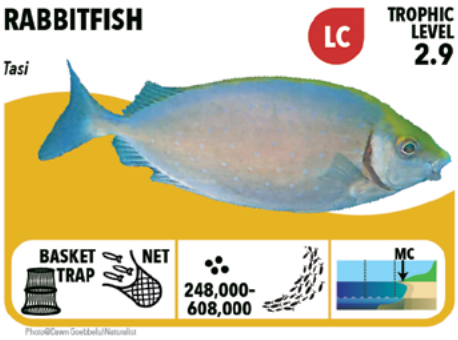
DD

TROPHIC LEVEL 4.5

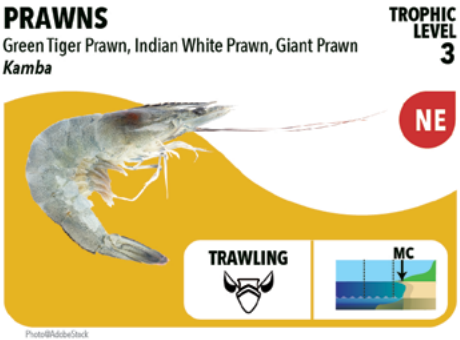


- Uses its bill to slash prey before swallowing it.
- Highly migratory species.
- Catch-and-release sport fishing encouraged.
- Banned in other parts of the world due to potentially high mercury content.

CHOOSE WITH CAUTION



- Feeds on algae.
- Locally popular food fish.
- Grows fast, mass spawning occurs in large numbers.
- Fisheries need to be better managed to avoid population decline due to overexploitation and seagrass meadow degradation.



Green tiger prawn:

- Also called King prawns, Jumbo prawns or Tiger prawns, names often used interchangeably.
- Correct species identification not easy in the field.

Indian white prawn:

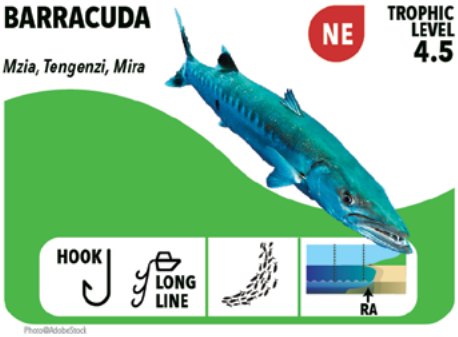
- Short-lived, life cycle ranging from 12 to 18 months.
- In Tanzania prawn fishing is done in brackish water, which is feeding and breeding ground for many fish species.

- Existing gears do not select the type and size of the targeted species.

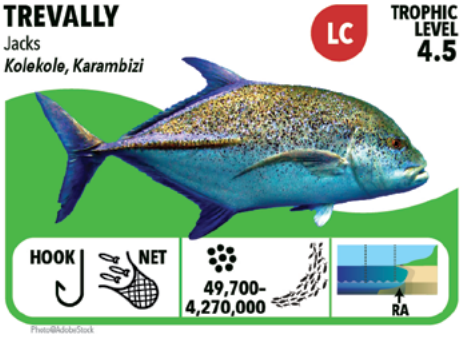
Giant prawn:

- World's most commercially important prawn species.
- Spawns offshore, juveniles move into the estuaries where they grow before migrating offshore again as adults.
- Spawning throughout the year with peaks observed during the rainy season.

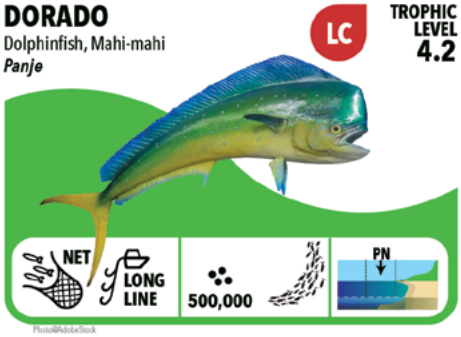
BEST CHOICE



- Usually solitary, form large spawning groups in deeper waters.
- Important role in marine food webs because they remove sick and vulnerable individuals.



- Schooling, predatory fish.
- High fecundity.
- Distributed throughout the world´s tropical and subtropical marine environments.



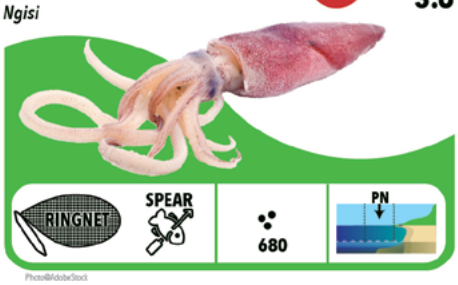
- Fast-growing, widely distributed and short lifespan makes it resilient to fishing pressure.
- Population globally stable.

BEST CHOICE

SQUID
Calamari
Ngisi

DD

TROPHIC LEVEL 3.6

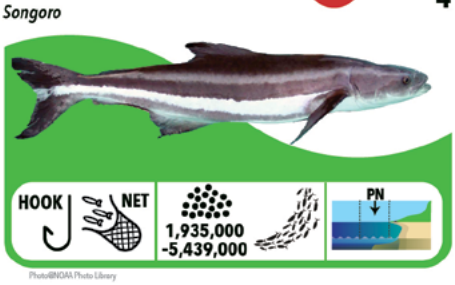


- Important species in fisheries.
- Flexible life history traits and a large distribution range in the Indo-Pacific support a high level of genetic diversity and ensure population abundance.

COBIA
Songoro

LC

TROPHIC LEVEL 4

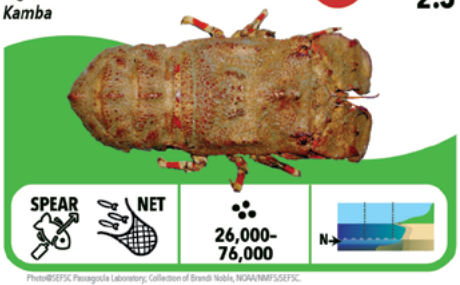


- Solitary.
- Closely resembles its cousin, the Remora.
- Not targeted by commercial fishing, life traits suggest it can withstand fishing pressure.

SLIPPER LOBSTER
Cigale
Kamba

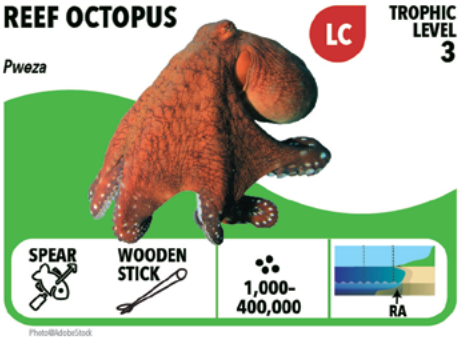
LC

TROPHIC LEVEL 2.5

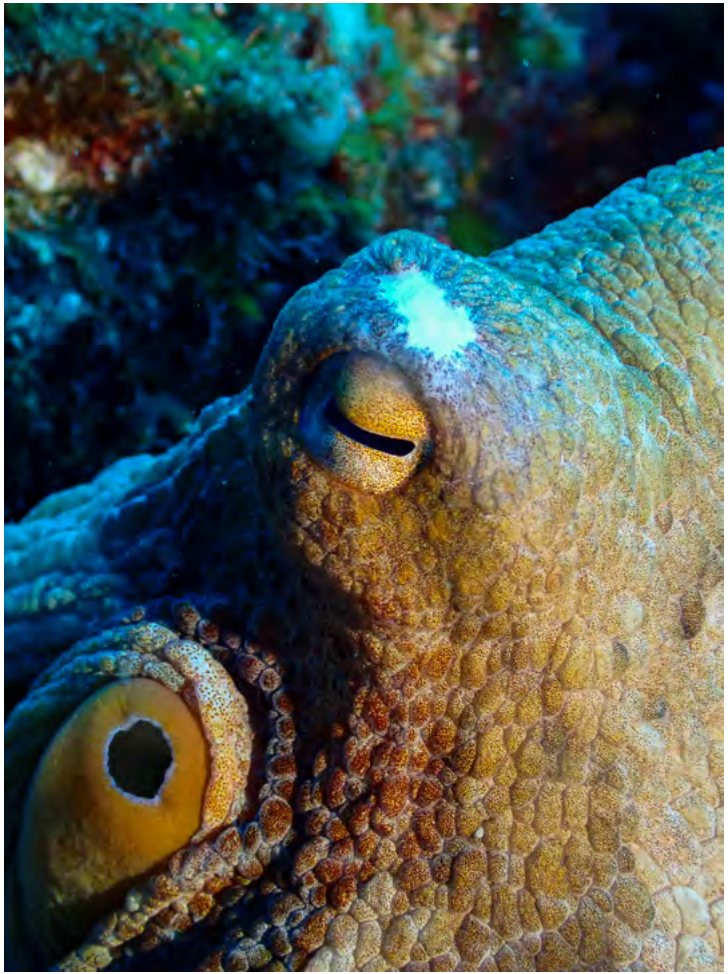


- Commonly mistaken for its close cousins, the lobsters, but it belongs to another family.
- Prefers to live in soft substrate (sand or mud) at 10–50m depth.
- Wide geographic distribution, high fecundity and well-connected populations via long-lived larvae.

BEST CHOICE



- Marine world's James Dean: they live fast and die young.
- A 100g octopus can triple in weight in only 15 days.
- If managed correctly, octopus fisheries can be highly sustainable.
- Support octopus sourced from temporary fishing ground closures.
- 500g minimum size limit by law.



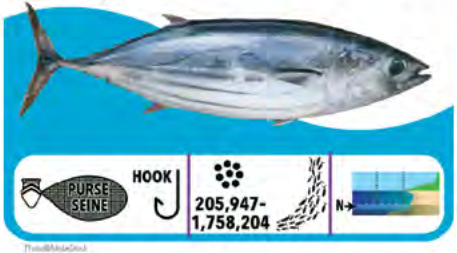
ALTERNATIVES

SKIPJACK TUNA

LC

TROPHIC LEVEL 4.4

Sehewa, Kiranga



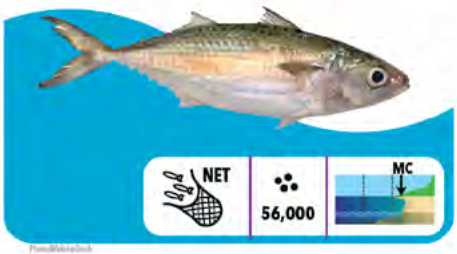
- Widely distributed fish.
- High fecundity, early maturing.
- Fished at moderate to sustainable levels in the Indian Ocean.

INDIAN MACKEREL

DD

TROPHIC LEVEL 3.2

Vibua



- Prefers shallow and coastal waters.
- Significant in local community diet.

ANCHOVIES

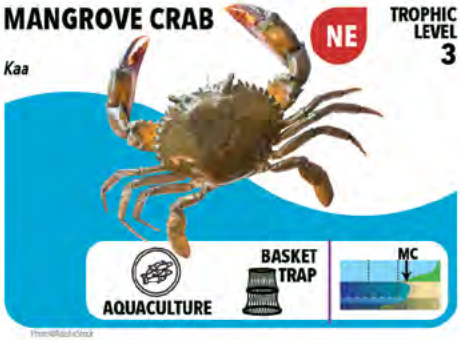
LC

TROPHIC LEVEL 3

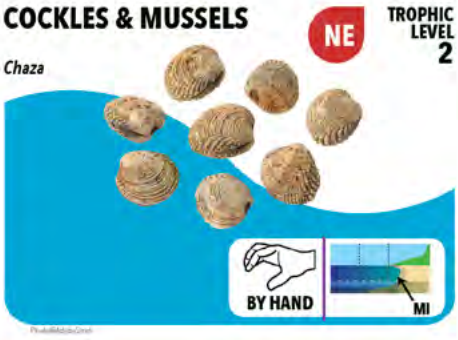
Dagaa

- Known as 'dagaa' in Zanzibar, refers to small pelagic fish (sardines and anchovies) along the Swahili coast.
- Harvested at night with artifical lights.
- Critical for local food security and income, sold and consumed locally, as well as exported, e.g. into Kongo.

ALTERNATIVES



- Alternative to spiny rock lobster.
- Small cages built by local communities can protect juvenile mud-crabs from predators, allows them to grow quickly to marketable size.

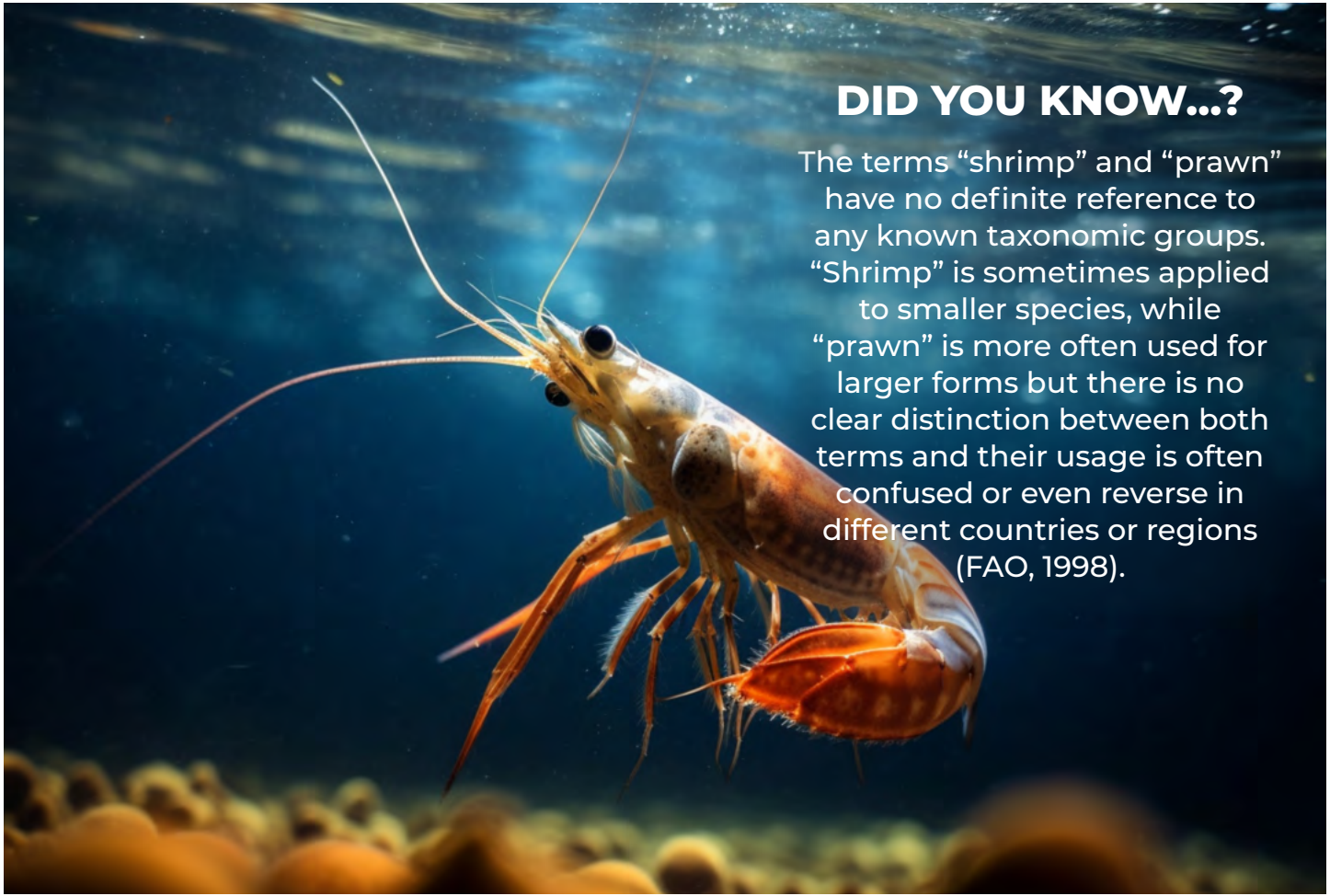


- About 90% of global bivalve production is farmed, but in Zanzibar many women and children hand-pick cockles from seagrass meadows and sell on local markets.

- At the base of food web.
- Nutrient rich.
- Grows fast and absords carbon dioxide.
- Cultivated on ropes by local women in Zanzibar.

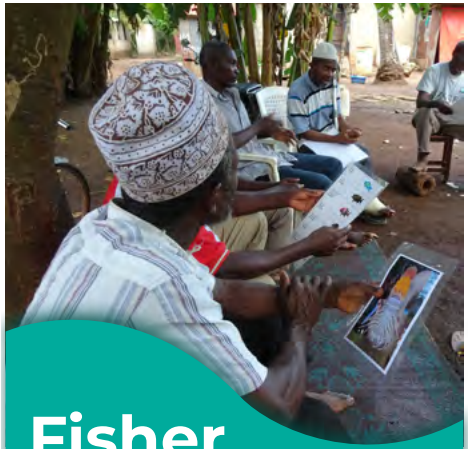
ALTERNATIVES

- Freshwater fish from land-based aquaculture.
- Support small-scall farmers from Tanzania: avoid sourcing from Asia because the industry's habitat and disease impacts are major concerns.



DID YOU KNOW...?

The terms “shrimp” and “prawn” have no definite reference to any known taxonomic groups. “Shrimp” is sometimes applied to smaller species, while “prawn” is more often used for larger forms but there is no clear distinction between both terms and their usage is often confused or even reverse in different countries or regions (FAO, 1998).



Fisher testimonials

"We used to catch so much kingfish that we could not even sell all of them on the market. Those that were not sold, we cut into small pieces, salted and dried them and sold them for a cheap price directly to the community. Nowadays, dried kingfish is no longer available because the few fish that are caught are directly sold to restaurants and hotels."

"We have been fishing octopus for many years and we have seen the ocean changing a lot. In many reefs, octopus are not easily available anymore because fishers are fishing every day, during the morning, the afternoon and at night. This never happened in the past, because we used to stop fishing octopus during a certain time of the year to give the octopus time to grow. We try to encourage other fishers to establish temporary octopus closing seasons again to ensure our grand-children will have octopus to eat, too."

"When kids were young and refused to go to school or misbehaved in our village, their parents used a Giant Grouper, opened its mouth and told them the fish would eat them if they did not respect their parents, so the children did as they were told. Sadly, children are not listening to their parents anymore because Giant Groupers have become so rare to catch!"

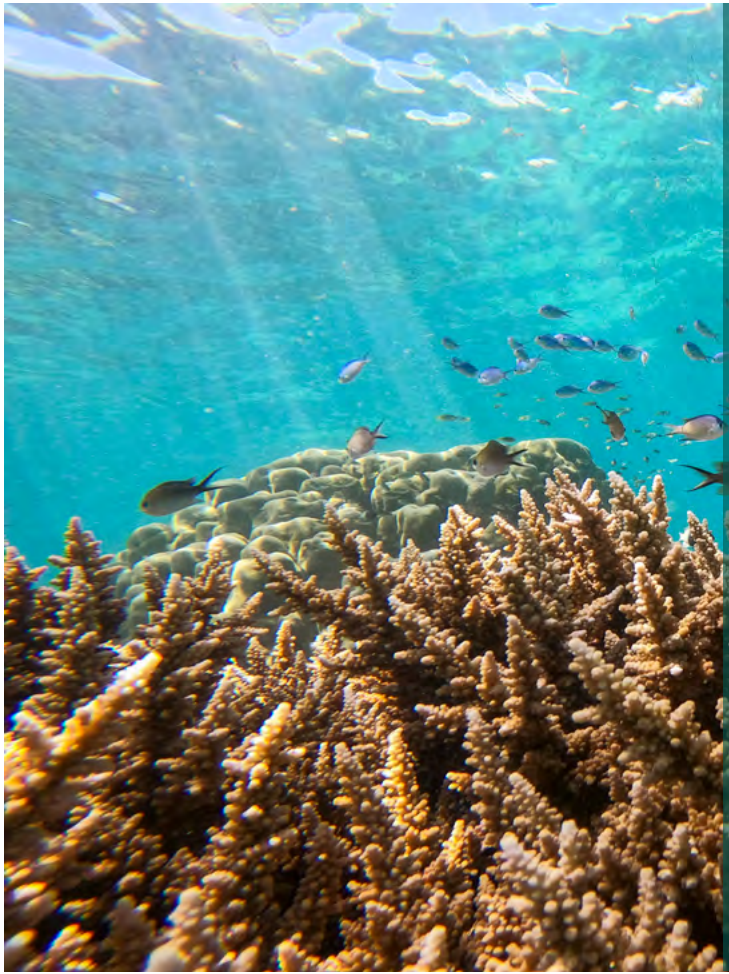
CAN YOU MAKE A DIFFERENCE?

Individual decisions DO make a big difference. The marketplace for sustainable seafood has grown significantly in the past 20 years simply because it has evolved to match the demands of individual consumers. The best thing you can do is ask questions!

Ask fishers, suppliers, restaurants and hotels:

- **Where is this seafood from?**
- **How was it caught?**
- **Do you follow any sustainability criteria when catching, purchasing or serving seafood?**

Even if they do not have an immediate answer, the simple act of asking shows them that you care, which will help drive demand for sustainable seafood in Zanzibar.



#GreenerZanzibar

ZANZIBAR DECLARATION ON SUSTAINABLE TOURISM

With the Zanzibar Sustainable Seafood Guide we aim to directly support the Zanzibar Declaration on Sustainable Tourism, which was launched in 2023 and includes “Sustainable Food from Land and Sea” as one of five commitment areas for signatories to make Zanzibar a more sustainable tourism destination.

Your local, seasonal and fresh seafood choices directly contribute to the Zanzibar Declaration and support local Zanzibar culture, knowledge and expertise, as well as its precious environment.

Join the Greener Zanzibar movement.

More information:
www.zanzibartourism.go.tz

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Online links

https://wwfsassi.co.za/

https://www.seafoodwatch.org/

https://www.fishchoice.eu/

https://www.iucnredlist.org/

https://www.zipa.go.tz/sectors/blue-economy/

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CHICOP would like to thank all those who helped to make this Sustainable Seafood guide for Zanzibar come to fruition.

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Lastly, thank you to the reader, as you are actively engaging with this guide and leading Zanzibar towards a more sustainable future.

Photo credits: Amalie Boge, Kozanow Productions, Markus Meissl, Ulli Kloiber, Chumbe Island Coral Park archive.

Layout and graphic design: Laura Kola, SSIC.

Glossary

Data deficient	A species with insufficient information for a proper assessment of conservation status to be made. Indicates that little or no information is available on the abundance and distribution of the species.
Endangered	Species at high risk of extinction in the wild.
Fecundity	The ability to produce an abundance of offspring or new growth.
Intertidal	The area of a seashore which is covered at high tide and uncovered at low tide.
Marine Conservation Areas (MCA)	A defined region designated and managed for the long-term conservation of marine resources, ecosystems services, or cultural heritage.
Marine ecosystem	Aquatic environments with high levels of dissolved salt. These include the open ocean, the deep-sea ocean, and coastal marine ecosystems.
Overexploited	A renewable resource harvested or exploited to the point of diminishing returns. Continued overexploitation can lead to the destruction or extinction of the resource, as it will be unable to replenish.
Pelagic	Relating to, or living or occurring in the open sea
Primary producers	Organisms that acquire their energy from sunlight and materials from nonliving sources.
Sustainable	Able to be maintained at a certain rate or level.
Trophic level	The trophic level of an organism is the position it occupies in a food web. A food chain is a succession of organisms that eat other organisms and may, in turn, be eaten themselves.
Vulnerable	Species likely to become endangered unless the circumstances threatening its survival and reproduction improve. At risk of extinction in the wild.


CHUMBE ISLAND
CORAL PARK