

## GROWTH AND STOCK STATUS

Male and female grows 16.2cm & 20.9cm; 18.3cm & 24.2 cm in first and second year respectively. Maximum life span calculated is 2.63 years, with a maximum expected size of 27 cm.

### Present Yield:

- Total: 7745.6 t (Males: 1,556.6 t, Females: 6,188.99 t).
- **Maximum Sustainable Yield (MSY):** 8031.6 t (Males: 1,594.1 t, Females: 6,437.5 t).
- **Potential Yield:** 13,763 t (Males: 2,557 t, Females: 11,206 t).

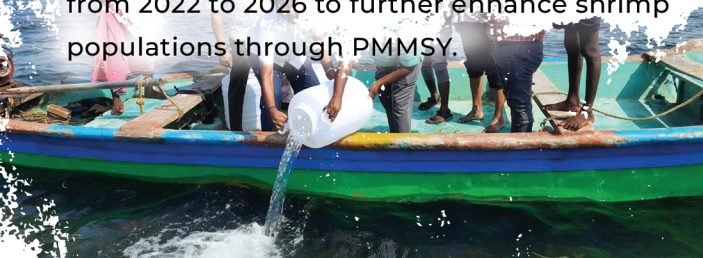
**Stock Status:** Healthy and sustainable, with a Spawning Potential Ratio (SPR) of 24.83% for males and 32.08% for females.

## TRADE AND PROCESSING

- **Landing centre Prices Varies from** ₹180 to ₹900 per kg, depending on size and market.
- **Export Markets:** Major destinations include Japan, the USA, and European countries.
- **Annual Exports:** Average of  $3532 \pm 746$  t, valued at  $30.9 \pm 9.3$  million US dollars.

## FISHERY ENHANCEMENT PROGRAMME BY ICAR-CMFRI

- The green tiger shrimp fishery is healthy and sustainable. As a proactive measure, ICAR CMFRI is implementing a sea ranching program by releasing 200 million shrimp seeds in the Gulf of Mannar and Palk Bay from 2022 to 2026 to further enhance shrimp populations through PMMSY.



## RECOMMENDATION

To ensure the long-term sustainability of the green tiger shrimp fishery, a seasonal ban on shrimp fishing should be imposed during the peak breeding season, regardless of the gear used. This ban will help protect shrimp during their critical reproductive period. Shallow, muddy areas with seagrass beds and bays are vital for the survival and growth of green tiger shrimp. These habitats provide essential shelter, abundant food, protection from predators, and optimal growth conditions, forming the foundation of the shrimp's life cycle from juvenile to adult. The preservation of these environment is crucial for maintaining healthy shrimp populations. Without them, the survival and productivity of the shrimp fishery could be jeopardised. Additionally, artificial propagation of seagrass in protected waters could serve as a viable alternative for enhancing shrimp stocks and supporting fishery sustainability.

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# GREEN TIGER SHRIMP FISHERY OF PALK BAY

## FACT SHEET



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## INTRODUCTION

Palk Bay, located on the southeast coast of India, spans a coastline of approximately 296 km from Point Calimere to Dhanushkodi in Tamil Nadu (9° 55'to 10° 45' N and 78° 58' to 79° 55' E). The shallow depths and organic-rich sediment of (0.038g C cm<sup>-2</sup>) Palk Bay provide an ideal environment for diverse ecosystems, particularly supporting the green tiger shrimp fishery. The species *Penaeus semisulcatus* (De Haan, 1844), also known as the green tiger shrimp and by the trade name "Mandapam flower" is one of the most significant commercial penaeid shrimps. This shrimp accounts for more than three fourths of the shrimp landings in Palk Bay, supporting the livelihoods of local fishers.

## DISTRIBUTION

**Global Presence:** Extensively found in the Indo West Pacific region, including the Red Sea, Africa, Japan, Korea, the Malay Archipelago, and northern Australia.

**Indian Coasts:** Present along both the east and west coasts of India, with significant fisheries in Palk Bay and the Gulf of Mannar. Its abundance increases from north to south along India's east coast, and it forms a short-term fishery in the Gulf of Kutch, Gujarat on the west coast.

## HABITAT AND ECOLOGY

### Nursery Grounds and distribution

- **Seagrass Beds:** These underwater meadows in shallow coastal areas are vital for the juvenile green tiger shrimp. Seagrasses provide shelter, protect shrimp from predators, and act as a nursery ground where shrimp can grow safely. Seagrass beds are also critical for ecosystem health because they maintain water quality and offer food sources such as detritus and small invertebrates.

- **Muddy Substrates:** These areas, with their soft, muddy bottoms, offer a stable substrate for the shrimp to anchor themselves and hide from predators. Muddy environments also contain an abundance of organic matter, which serves as both food and shelter for the juvenile shrimp
- **Shallow Waters:** The juvenile green tiger shrimp primarily inhabit shallow waters because these areas provide the ideal environment for early life stages. The shallows are typically nutrient-rich, which supports the food availability and other essential resources
- *P. semisulcatus* adult shrimps prefer sandy areas available up to 130 m depth.

## Food and Feeding

The green tiger shrimp is carnivorous, primarily feeding on:

- Smaller molluscs, crustaceans, and polychaetes.
- Trace amounts of fish scale remains of echinoderms, cirripeds, algae, diatoms, seagrass, mysids, and other microorganisms are usually found in the gut contents.

## Reproductive biology

- **Maturity:** Males mature earlier than females, and length at maturity for females 114.3 mm TL and for males 99.6 mm TL.
- **Female-to-male ratio:** Females consistently outnumber males in the wild Population.
- **Spawning Seasons:** Post-monsoon (Jan - Mar) and monsoon (Oct - Dec).
- **Fecundity:** Ranges from 59,100 to 583,000 ova per female



## FISHERY

### Craft and Gear:

- Mechanized trawlers (13–25 m) with shrimp trawl nets.
  - Outboard motorized crafts (11–14 m) using mini trawls and trammel nets.
  - Fishing days: Monday, Wednesday, and Saturday.
- Depths: Mechanized trawlers fish at 5–13 m, while mini trawls and trammel nets fish at 3–5 m and 5–7 m, respectively.



### Species Composition:

- Out of 22 shrimp species landed in Palk Bay, Most abundant shrimp species, *P. semisulcatus* forming about 57.6%, followed by *P. indicus* (8.9%) and *P. monodon* (8.3%) in the landings.

### Catch and Effort:

Average annual landings during 2007-2022: 6286 ± 1108 t.

### Average Annual Landings (t):

Trawl	5043
Mini trawl	894
Trammel net	283

### Annual Catch Rates (kg/unit):

Trawl	30.7 ± 6.6
Mini trawl	8.4 ± 1.09
Trammel net	0.57 ± 0.49

