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Ornamental Crustaceans - The Lustrous Living Jewels

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SUMMARY

Ornamental crustaceans like shrimps, crabs, lobsters and stomatopods are the new welcome to million dollar ornamental industry. About 128 marine ornamental decapods crustacean species are heavily traded in the world. Most of them are collected from wild but fetch very high prices signifying a potential for ornaprenuership. Some of the important ornamental crustaceans and their culture requirements are discussed in this article. The major constraints in the development of this industry include the lack of knowledge on reproduction and larval biology, high dependence on live feed and competition with the wild collected ones for their comparatively lower price which need to be addressed.

INTRODUCTION

The main focus of marine aquariums in the world is finfish followed by cnidarians like corals, sponges and anemones. A new and upcoming feature is the inclusion of ornamental crustaceans like shrimps, crabs (anomuran and brachyuran), lobsters, stomatopods as an alternative to finfishes due to their attractiveness and price. Some fishes also possess a symbiotic relationship with a few invertebrates. These crustaceans range from large spiny lobsters to tiny species like porcelain crabs or anemone shrimp. About 128 marine ornamental decapods crustacean species are heavily traded in the world. They include 49 species of caridean shrimp, 32 species of anomuran crabs, 27 species of brachyuran crabs, 7 species of stenopodidean shrimp, 7 species from Astacidea and 6 Palinura lobsters. The marine ornamental crustaceans are mainly collected from Indo-Pacific and the Caribbean region. The main exporting countries are Indonesia, Philippines and Sri lanka. *Lysmata spp. and Stenopus spp*. are the most heavily collected marine ornamental in vertebrates (excluding corals). The highly priced species include cleaner shrimps like *Lysmata* spp., coral shrimps (*Stenops hispidis*), Camel Shrimps (*Rhychocinetes durbanensis*), bumble bee shrimps (*Cnathophyllum americanus*) etc.

Why ornamental crustaceans?

- Known for their dazzling colouration: Many hobbyists are attracted by the intense colourations (bright red, orange or yellow), unusual colour patterns (spots and stripes), iridescent body parts and the conspicuous white antennae in some.
- Their delicate and/or bizarre external morphology: Modified claws, paddle shaped or snapping chelae, slender or robust maxillipeds.
- Their unusual reproductive traits.
- Some of them exhibit symbiotic behaviour with sea anemones and corals.
- Some perform fish cleaning.
- They can control nuisance organisms in the marine aquariums.
- They are 'reef safe'

Important Ornamental Decapods

Important ornamental decapods belonging to different families are given below (Fig. 1).

S. No.	Family	Species	Characteristics	Growth requirements
1.	Stenopodidae (coral banded or barber shop shrimps)	Banded Coral Shrimp *(Stenopus hispidus)*	• Originated from Caribbean, Cebu, Hawaii, Indonesia, Sri Lanka, Sumatra • Have red and white horizontal bands across the body with long pinchers antennae.	Temp. 22-25 ° C, pH 8.1-8.4, Reef compatible

			• Usually maintained solitary or as true mated pair • A scavenger but also accepts frozen and flake feeds	
2.	Hippolytidae (cleaner shrimp)	Scarlet Skunk Cleaner Shrimp *(Lysmata amboinensis)*	• Originated from Africa, Indonesia, Sri Lanka • Has a pair of bright red stripes running parallel to single white stripe • Should not be maintained along with Hawkfish and Lionfish or predatory shrimp or crabs • Feed on freeze dried, frozen and flake feeds	Temp. 22-25 ⁰ C, pH 8.1-8.4, Reef compatible
		Peppermint Shrimp *(Lysmata wurdemanni)*	• Originated from Florida Keys, Gulf of Mexico, Western Atlantic • has a pointed nose and inter-spaced creamy white strips with thin and longitudinal red bands over the body • A scavenger and feeds on decomposing matter • Bio-control agent of glass anemones	Temp. 22-25 ⁰ C, pH 8.1-8.4, Reef compatible
		Sexy Anemone Shrimp *(Thor amboinensis)*	• Originated from Indo-Pacific, Indonesia • Body is reddish brown in colour with brilliant white spots • Known for unusual body movements like swaying the abdomen back and forth while walking • Prefers communal tanks with live rock • Has relatively faster growth rate with monthly moulting • Feed on plankton and flaked, frozen, and meaty foods.	Temp. 22-25 ⁰ C, pH 8.1-8.4, Reef compatible
3.	Palaemonidae	Venus Anemone Shrimp *(Anclyomenes venustus)*	• Originated from Indonesia • Has a very transparent body and are suitable for nano-style aquariums • Should not be cultured with carnivorous fishes	Temp. 22-25 ⁰ C, pH 8.1-8.4, Reef compatible (prefers hard corals like hard corals such as *Heliofungia sp.* and *Euphyllia sp.)*

4.	Alpheidae (pistol or snapping shrimps)	Snapping Shrimp *(Alpheus sp.)*	• Originated from Carribean, Indonesia • Has got its name from the sound made from water movement cross the pincher • Symbiotic with gobies (e.g.;*Amblyeleotris* or *Stonogobiops*) and sponges, corals, or anemones (e.g.; *Bartholomea annulata*).	Omnivore, prefers alkaline conditions (pH 8.1-8.4
5.	Gnathophyllidae (Harlequin shrimp)	Bumble Bee Shrimp *(Gnathophyllum americanum)*	• Originated from Indo-pacific • Has a characteristic yellow or white coloration with black stripes resembling a bumblebee • Suitable to be cultured as pairs in nano aquariums with moderate lighting • Feed on tube feet of echinoderms, mysis shrimp, cockle, or small pieces of fish	Temp. 22-25 ⁰ C, pH 8.1-8.4, Reef compatible but difficult to care
6.	Rhyncocenitidae	Camel Shrimp *(Rhynchocinetes durbanensis)*	• Also known as the Hinge-beak Shrimp, Dancing Shrimp, or Candy Shrimp • Has variable red and white stripes on the body with a pointed, upturn, movable rostrum resembling a camel • Live as groups • Feed on brine shrimp, frozen or freeze-dried plankton, and flaked food.	18-25 ⁰ C, pH 8.1-8.4, not much reef compatible
7.	Diogenidae (hermit crabs)	Electric Blue Hermit Crab *(Calcinus elegans)*	• Originated from Indonesia, Marshall Islands • Has blue legs with black banding and bright orange antennae • lives in abandoned snail or triton shells • Feeds on algae and seaweed	22-25 ⁰ C, pH 8.1-8.4, reef compatible
8.	Xanthidae	Pom Pom Crab *(Lybia sp.)*	• Originated from Hawaii, Indonesia • The body is white to tan coloured with dark markings • Anemone in each claw serves as defence • Feeds on mysis shrimp, chopped fish and clams.	22-25 ⁰ C, pH 8.1-8.4, not reef compatible
9.	Palinuridae	Painted Spiny Lobster *(Panulirus versicolor)*	• Originated from Indonesia • The carapace and body is bluish in colour with white markings on	Water Temperature 22-25 ⁰ C, pH

			abdomen and the pereopods are with distict blue stripes. • Suitable for communal tanks • Omnivorous in feeding habit	8.1-8.4, reef compatible
10.	Nephropidae	Debelius' Reef Lobster *(Enoplometopus sp.)*	• Originated from Indo-pacific • The carapace and body is purplish in colour with violet and orange spots. • Exhibit aggressive behavior and need to maintained solitary or as a pair • Scavenger • Provide gravel bed and rocks	Water Temperature 22-25 ° C, pH 8.1-8.4, not very reef compatible

Fig. 1 Most Traded Ornamental Decapods

Banded Coral Shrimp
(Stenopus hispidus)

Scarlet Skunk Cleaner Shrimp
(Lysmata amboinensis)

Peppermint Shrimp
(Lysmata wurdemanni)

Sexy Anemone Shrimp
(Thor amboinensis)

Venus Anemone Shrimp
(Anclyomenes venustus)

Snapping Shrimp
(Alpheus sp.)

Bumble Bee Shrimp
(Gnathophyllum americanum)

Camel Shrimp
(Rhynchocinetes durbanensis)

Electric Blue Hermit Crab
(Calcinus elegans)

Pom Pom Crab
(Lybia sp.)

Painted Spiny Lobster
(Panulirus versicolor)

Debelius' Reef Lobster
(Enoplometopus sp.)

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CONCLUSION

There is a huge scope for the large scale culture of these ornamental crustaceans. One major constraint in the development of culture technology of these species is their longer larval period which may extend more than 300 days in some species and subsequently the poor survival rate. This questions the sufficient supply for commercial culture. Most of these species are collected from the wild posing a serious threat to the ecological balance of the aquatic systems. On the other hand, culture species are too expensive and could not compete with the wild collected ones in the market. This is a serious concern which needs to be addressed. This envisages the need to develop cost effective protocols for culture of ornamental crustaceans. The other bottleneck in the development of this industry is the need for continuous supply of live feed like molluscs and finfishes. The aforesaid are the important thrust areas of research in this unexplored area.

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