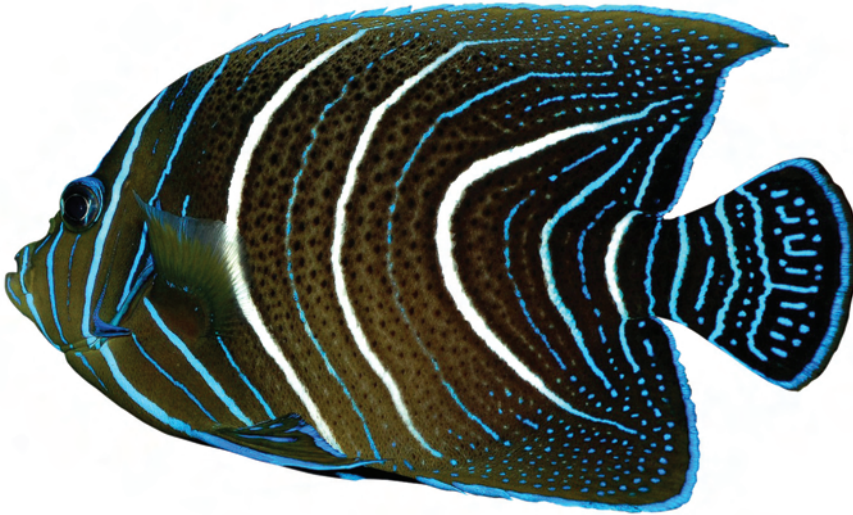


# *Pomacanthus semicirculatus* (Cuvier, 1831)

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## IDENTIFICATION

Order	: Perciformes
Family	: Pomacanthidae
Common/FAO Name (English)	: Semicircle angelfish



**Local names:** Alla fish (Tamil); Lola thiratta (Malayalam)

## MORPHOLOGICAL DESCRIPTION

The body of this fish is deep and compressed. This species has spectacular colouring both as juveniles and as adults. As juveniles of 3 inches or lesser sizes, the fish is dark coloured with brilliant white and blue stripes running vertically on the body. The stripes become semi-circular at the base of the body lending the epithet "Semicircle angel" to this fish. As the fish grows the bands fade out. During this period, dark blue banding near the tail turns to a pattern resembling the Arabic script, which gives rise to the name, Koran Angel. Adults become lighter in colour becoming golden-green in colour and develop blue and black speckles on the body. The fins, except for the pectorals, are rimmed in blue. The dorsal fin has 13 spines and 20-23 soft rays and the anal fin has 3 spines and 18-22 soft rays. Both these fins have filaments that trail behind as the fish swims. The pectoral fins are pale yellow and have 19-21 soft rays.



## PROFILE

### GEOGRAPHICAL DISTRIBUTION

*I*t is widely distributed throughout the Indian Ocean and western Pacific Ocean from Red Sea to east coast of Africa to Japan, Fiji, the east coast of Australia and New Caledonia. In India it has been reported from Lakshadweep Islands, Tamil Nadu coast including Gulf of Mannar and the Andaman and Nicobar Islands.

### HABITAT AND BIOLOGY

*T*he semicircle angelfish is found in protected coral reefs up to depths of 25 m. Juveniles prefer shallow reefs with some sandy substrate. Koran Angelfish is an omnivore. In the wild, it subsists on benthic algae/weeds, sponges, tunicates, ascidians, coral polyps, worms, crustaceans, molluscs, shrimps and other shellfishes. Adult angelfish develop a dependence on sponges. For juveniles, bulk of the diet is made up by algae and tiny animals that live among the algae.

*I*n the wild, adults grow to 40 cm. The Koran Angelfish is an egg-scatterer, broadcasting both eggs and sperm simultaneously at dusk. Courtship includes coming together of the mating pair which then

rises up in the water and broadcasting the eggs and sperm near the top surface of the water. Both males and females may mate with several others in the same evening. On spawning, the female releases 10,455 eggs which range from 570 to 640 µm diameter. Fertilized eggs are planktonic for first few weeks and later adopt a demersal habit on becoming fry.

## PRODUCTION SYSTEMS

### BREEDING IN CAPTIVE CONDITIONS

Natural spawning in captivity was reported in 2006 in Taiwan. Brooders of size 35-40 cm total length (TL) were maintained in 30 t tanks with recirculation system. Salinity was maintained between 30-33 g/l and temperature between 21.8-31.7 °C. The fish were fed krill, squid, carangids, scombrids and marine algae (*Caulerpa racemosa*) at 3-5 % of body weight per day. Photoperiod was maintained at 12 light h and 12 dark h. During spawning, a male-female pair was observed; both sexes foraged solitarily, with minimal social interactions. Overt territoriality between the two individuals was noticed. Female fish released approximately 10,455 eggs per fish during the spawning event. Fertilized eggs of *P. semicirculatus* were transparent, spherical and pelagic, measuring 570-640 µm in diameter, and having a narrow perivitelline space, a clear and unsculptured chorion, a homogeneous and unsegmented yolk and a single oil globule measuring 160-180 µm in diameter at the vegetal pole. Most eggs hatched out within 18-21 h with incubation at 28.5 °C.

### LARVAL REARING

Newly hatched larvae of the Koran angelfish measured 1.32-1.40 mm total length. Feeding the larvae with *Nannochloropsis* sp. along with *Gonyaulax* sp. and *Brachionus rotundiformis*, led to larval survival up to 17 days. Live feed was given twice a day. Water was kept almost static with very little aeration up to 10 dph. Water exchange at 10 % daily rate was started after 10 dph. During larval rearing temperature ranged from 26-28.2 °C, salinity 33.2-35 g/l, DO 5.62-8.09 mg/l and pH ranged from 7.85-8.25. In another study in Florida, USA it was found that *P. semicirculatus* reaches metamorphosis in 20-25 dph. In this particular study, it was observed that among a mix of live feeds, the most preyed upon one was the nauplii of the calanoid copepod *Parvocalanus crassirostris*, during first feeding. During first feeding larvae were of 3 mm size and grew to 4 mm by 7 dph. Thus the use of marine copepod nauplii or wild plankton containing an abundance of copepod is suggested for improving the initial feeding performance of this species.

### FOOD AND FEEDING

In the wild, it feeds on algae, tunicates and sponges found on coral reefs. In captivity, a varied diet consisting of *Spirulina*, marine algae, and mysis or frozen shrimp is offered at least three times a day.

## GROWTH RATE

Information not available

## DISEASE AND CONTROL MEASURES

Koran Angelfish is not quite as sensitive as other *Pomacanthus*, but still needs a calm environment so as to not stress the fish, which could make them prone to disease.

Disease/causative agent	Control measures
White Spot Disease/ <i>Cryptocaryon irritans</i>	Metronidazole (antibiotic) added to the water or mixed with the feed and fed to the fish 3 times a day for at least a week or until symptoms are gone Coppersafe, Quick-Cure
Velvet Disease/ <i>Oodinium ocellatum</i>	Coppersafe, Quick-Cure

## PRODUCTION, MARKET AND TRADE

### PRODUCTION

Information not available

### MARKET AND TRADE

*Pomacanthus* angel fishes are one among the most highly prized of the coral reef fishes containing 8 genera and 82 species worldwide. The Koran Angelfish *Pomacanthus semicirculatus* is a popular and very impressive species in marine aquariums world over. *Pomacanthidae* contributes 8 % to the global trade and the major importer is European Union.

## CHALLENGES TO MARICULTURE

The major obstacle to successful mariculture of Koran angelfish is poor larval survival. Hence further research is warranted into larval rearing. Since copepod nauplii are a major requirement for initial feeding of this species, a protocol has to be developed for culture of suitable copepods.

## FUTURE PROSPECTS

The Koran angelfish is a popular aquarium fish which can be handled easily by novices also, as compared to other species of angelfishes. Since the fish needs larger tanks for proper growth, it is a good candidate for corporate aquariums.

## SUGGESTED READING

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