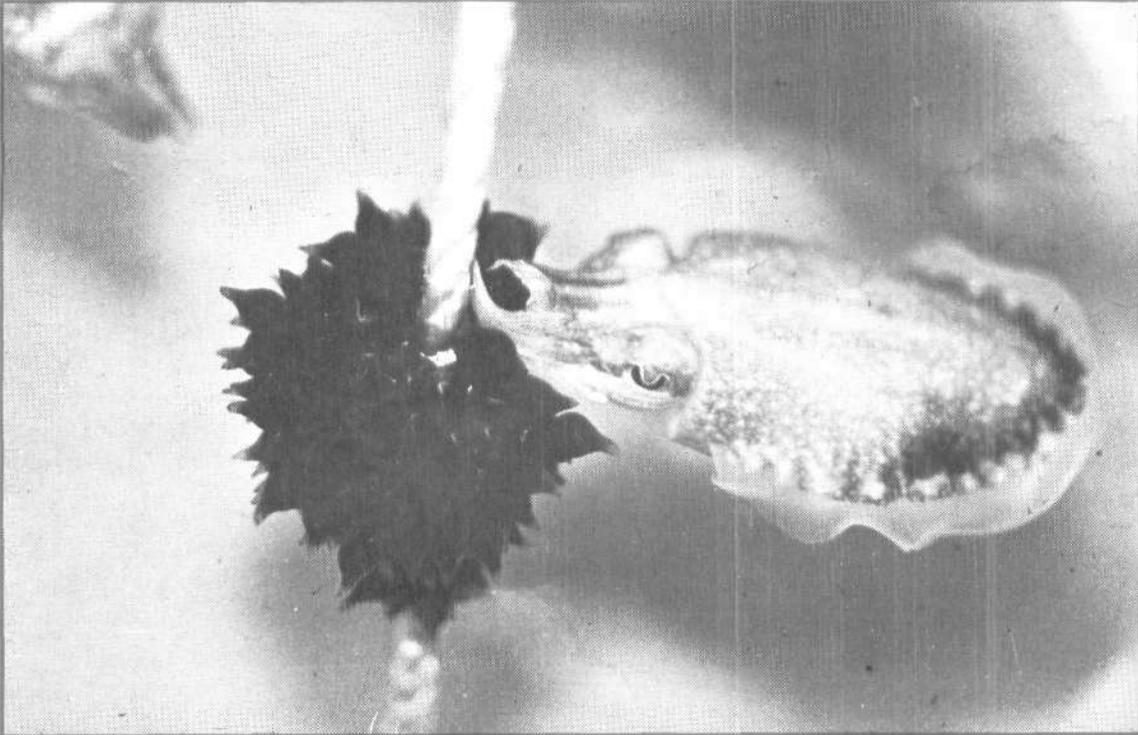




# समुद्री मात्स्यकी सूचना सेवा MARINE FISHERIES INFORMATION SERVICE

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केन्द्रीय समुद्री मात्स्यकी CENTRAL MARINE FISHERIES  
अनुसंधान संस्थान RESEARCH INSTITUTE  
कोचिन, भारत COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद्  
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

## 902 Abnormal asteroids from the seas around India

Echinoderms as a rule are pentamerous and therefore most of the asteroids have only five arms. However, some of the asteroids like *Luidia maculata*, *Acanthaster planci* and others always have more than five arms. In some of the asteroids like *Pentaceraster regulus* and *Protoreaster lincki*, the number of arms may be less than five or more than five due to freak formation at the time of development. In members belonging to the families Ophiasteridae, Echinasteridae and some others, the arms are long and slender and are brittle. They break either due to injury or by autotomy, especially when they are disturbed. Such specimens regenerate the arms. During regeneration more number of arms are formed. Sometimes a single arm develops into a complete starfish. This is a mode of asexual reproduction. Although Echinoderms are highly evolved among invertebrates, they show primitive characters like autotomy, regeneration, radial symmetry and asexual reproduction.

The most common and conspicuous asteriod in the Gulf of Mannar and Palk Bay at Mandapam is *Pentaceraster regulus*. Hundreds of specimens belonging to this species are caught in the crab nets during certain seasons and thrown on the beach. Specimens with three arms, four arms (Fig. 1.),

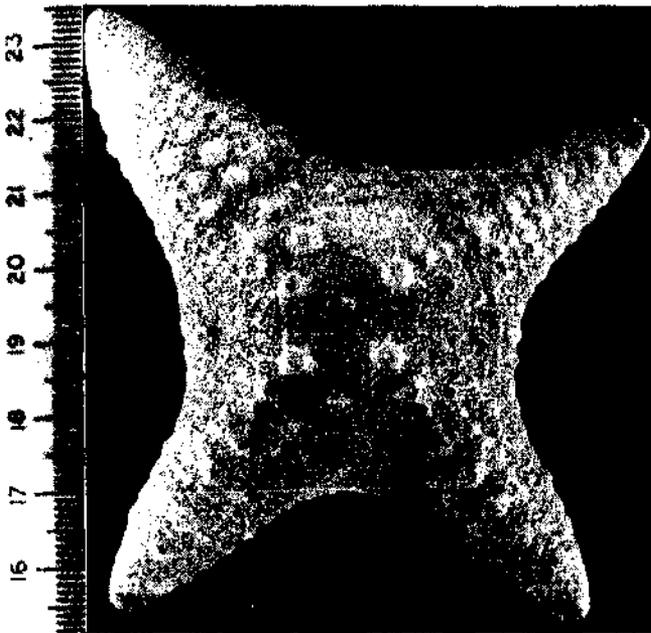


Fig. 1. *Pentaceraster regulus* with four arms.

six arms (Fig. 2) and even with seven arms were collected. The small starfish *Linckia multifora* which live under coral stones in the intertidal region are more vulnerable for breaking. Usually the arms are of unequal length due to regeneration. This species is most common in the Lakshadweep. Six-armed forms are common (Fig. 3) with two madreporites which are potential forms for fissiparity. As stated above, sometimes the whole starfish is regenerated from a single arm. First four arms start developing like buds at the point of breakage. Such forms are known as

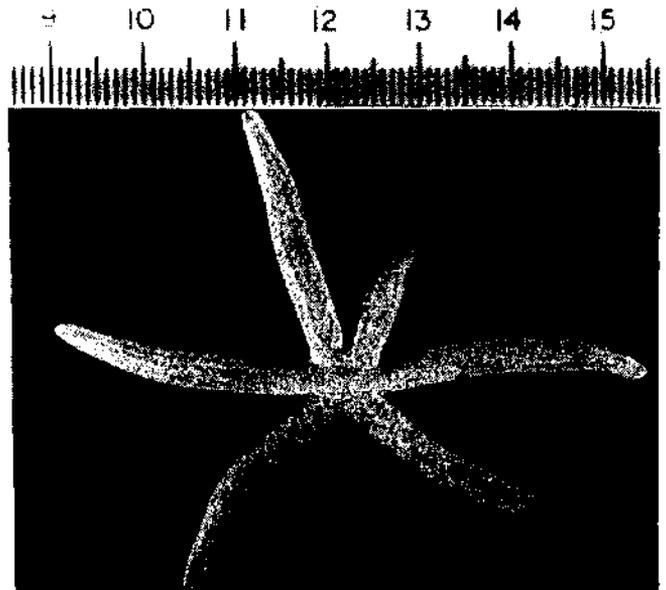


Fig. 2. *Pentaceraster regulus* with six arms.



Fig. 3. *Linckia multifora* with six arms, one arm in the process of regeneration.

'Comet' forms (Fig. 4), due to their similarity to a comet. The comet forms finally develop into a normal five-armed specimen. Some specimens have only three arms regenerating looking like a 'Cross' (Fig. 5). A four-armed *Nardoa galathea* (Fig. 6) was collected from Car Nicobar, the type locality for this species. A normal five-armed specimen belonging to the same species was purchased from a shell shop at Cape Comorin

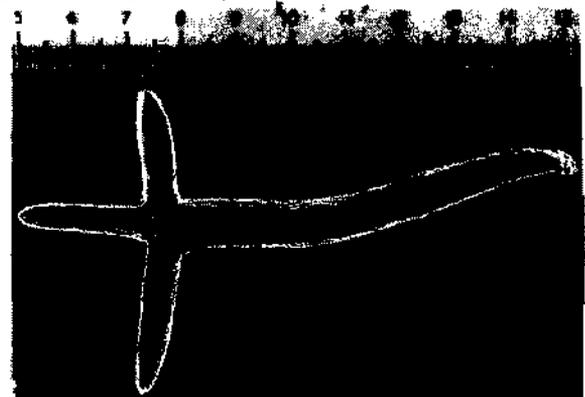


Fig. 4. *Linckia multifora* with five arms "Comet" form.

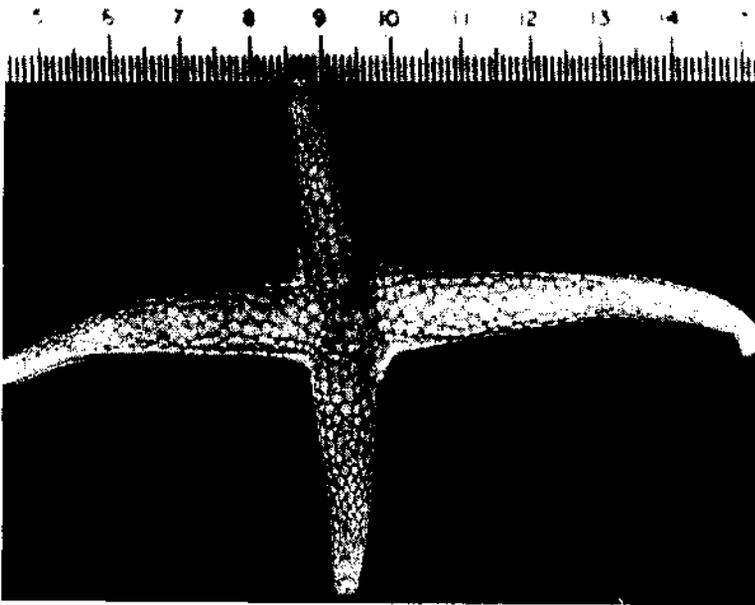


Fig. 5 *Linckia multiflora* with four arms looking like a 'Cross'.

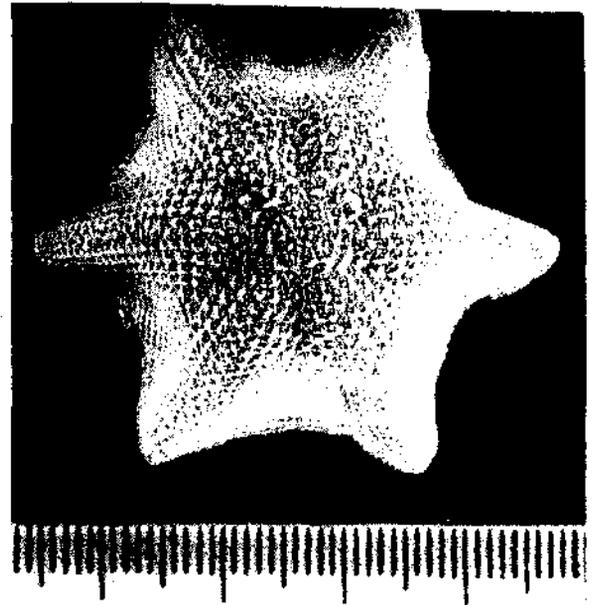


Fig. 7. *Protoreaster lincki* with six arms, ventral view.

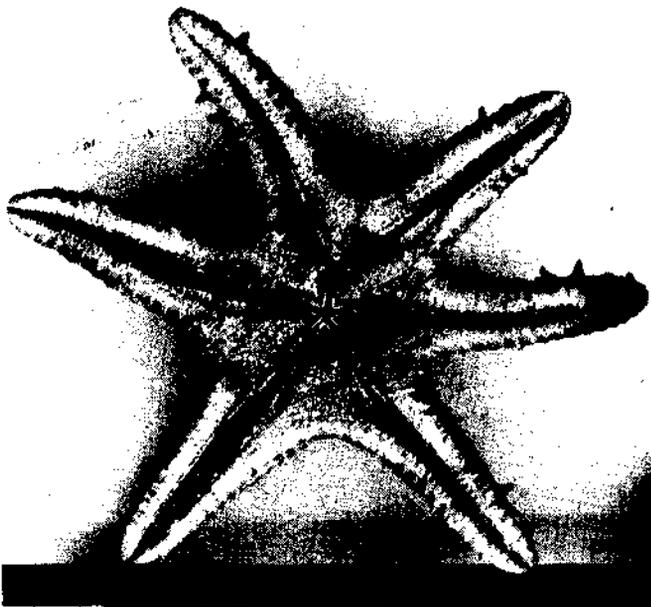


Fig. 6. *Nardoa galathea* with four arms.

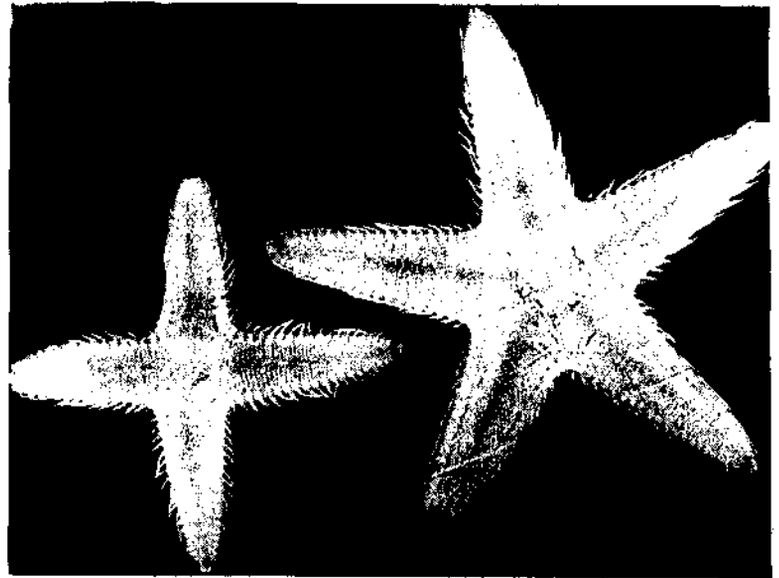


Fig. 8 *Astropecten indicus* normal specimen with five arms along with a four-armed specimen.



Fig. 9. *Astropecten indicus* with six arms.

in 1988. The beautiful starfish *Protoreaster lincki* normally has only five arms. Out of the hundreds of specimens collected and dried to be sold as curios, only one specimen with six arms (Fig.7) was seen. A six-armed *Asterina lorioli* was collected from the intertidal region under coral stones at Mandapam. *Astropecten indicus* usually has five arms, but those with four arms (Fig. 8) and six arms (Fig.9) were also collected from Mandapam. The starfish *Linckia laevigata* occurs in blue and brown forms. This starfish is also dried and sold as curios due to its large size and colour. Hundreds of both colour them in were examined at Port Blair (Andamans) in 1976. There were a few six-armed specimens among the brown forms. In *Echinaster purpureus* the arms are unequal due to regeneration. One of the specimens of *E. purpureus* which was collected from Nancowry (Nicobar) had six arms.

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