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**Aquaculture Department**

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# Diseases and parasites of siganid

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## Diseases and parasites of siganids

(From the lecture notes for Fish Hatchery Training Course by Dr. T. Bagarinao)

Captive siganids sometimes develop exophthalmia, cataracts, abnormal coloration, bloated abdomens, body lesions and fin rot that lead to mortality. *S. argenteus* juveniles developed exophthalmia in supersaturated (11%) water with 6.7 ppm oxygen at 33 °C. Cataracts can be due to Vit. B deficiency. Pathogenic bacteria are responsible for some cases of mortality among siganids. Mass mortality of cage-cultured *S. canaliculatus* occurred in northeast Singapore due to a Gram-positive bacterium similar to *Streptococcus faecium*. The fish changed body color, moved sluggishly, and later became blind. They exhibited violent movements, convulsion and seizure just before death. Another bacterium *Pseudomonas putrefaciens* also caused a disease outbreak among the *S. rivulatus* stock in the Saudi Arabian mariculture facility in the Red Sea. Chief clinical signs of the disease were discoloration, exophthalmia, hemorrhagic necrosis on the body and mouth, and frayed fins.

There are 35 reported species of parasites in *S. argenteus*, *S. luridus*, and *S. rivulatus* in the Red Sea. Of these, the myxosporean *Ceratomyxa* and *Zschokkella* produced acute desquamation of gallbladder epithelium and chronic congestion and distention of the hepatic biliary canaliculi, while the larval nematode *Hysterothylacium* caused massive necrosis and fibrosis of the liver. The acanthocephalan worm *Scherocollum* also parasitizes these three siganid species, specially during extensive grazing prior to spawning of the fish. Sporozoans also cause nodular enlargement of the liver in *S. rivulatus*.

Parasitic monogenean trematodes found in siganids have caused tissue ischemia in *S. canaliculatus* and heavy mucus secretion in gills followed by suffocation among *S. spinus*. Infestation of the gills by a microsporidian also leads to death in *S. canaliculatus*. At SEAFDEC/AQD, *S. guttatus* broodstock are sometimes infested with nematodes that cause the fish to feed poorly, as well as with the ectoparasitic copepod *Caligus epidemicus*.

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three months, the same amount of food should be given to the fish in each of the two sea cages.

### Cleaning the sea cage

In order to promote growth and feeding efficiency, the sea cage must be cleaned at least three times a week. Fouling organisms growing on the cage nets may be removed by using a nylon brush or an inexpensive broom. Excess food and fecal matter may be removed by scooping them out through the cage opening. The cleaner should inspect for holes around the cage walls to prevent the fish from escaping.

### Harvesting

The siganids may be harvested selectively. After 5-6 months, the big fish may be harvested, leaving the small ones to grow

further. Marketable sizes of siganid range from 200 to 300 g in weight. Subsequently, selective harvesting may be done every two-months.

### Economics of siganid mariculture

Studies showed that fry weighing 4.55 g grow to an average weight of 52.06 g after four months. The total fish yield will be 46.85 kg if the stocking rate in the two sea cages is 1000, assuming a mortality rate of 10%. The fishfarmer will have a minimal profit after four months but if he allows the fish to grow to a bigger size and harvest selectively, more profit may be expected after ten months. The sea cages can be used for 4-5 ten-month rearing periods, if the bamboo floats and nylon cords are replaced every two years. The fishermen can therefore realize more profits after the first rearing period.