

**Southeast Asian Fisheries Development Center**

**Aquaculture Department**

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# Streptococcosis - a new disease in aquaculture

Aquaculture Department, Southeast Asian Fisheries Development Center

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Unfortunately, malachite green is often the only effective treatment against some diseases. But work is currently being undertaken in the United States to find an alternative to malachite green.

Source: *Austasia Aquaculture*, October 1990.

## STREPTOCOCCOSIS - A NEW DISEASE IN AQUACULTURE

A number of countries have reported on a more regular basis large losses of farmed fish due to streptococcosis. In Japan and South Africa, streptococcosis is now considered to be one of the major diseases affecting key farmed species of fish and accounts for a significant proportion of fish lost to bacterial disease.

The disease is not restricted to a specific geographic region but appears to be widely distributed and has been reported also in Australia, Singapore, Israel, the United States, the United Kingdom, and Hungary.

In Australia, most of the research on this disease have been undertaken by the Fish Health Unit of the Department of Primary Industry, Tasmania, but significant contributions have been made by the Australian Fish Health Reference Laboratory and the National Key Centre for Teaching and Research in Aquaculture.

**The pathogen.** A characteristic feature of streptococcosis is the absence of a single clearly defined pathogen (disease-causing organism). The bacteria associated with the disease belong to the family Streptococcaceae which contains a diverse range of organisms in a number of different genera including *Streptococcus*, *Enterococcus*, and *Lactococcus*. Many of the species exist in close association with mammalian hosts including some potent pathogens capable of producing severe, and often fatal, septicaemias (overwhelming generalized infections).

The main groups of streptococci pathogenic to fish fall either into the enterococci group or the pyogenic group, of the Lancefield Group B and C streptococci. The most frequently isolated are the enterococci, which are frequently associated with the gastro-intestinal contents of many animals, and reported to occur in Australia, Japan, South Africa, and the United Kingdom. Bacteria within this group do not appear to be one single species but consist of several different, but loosely related types. A consistent feature of this group is their marked tolerance to heat, dessication and disinfectants, factors which greatly increase the difficulty of controlling the disease and achieving hygiene on an affected farm.

**The disease in fish.** Infection of fish with streptococci produces a typical septicaemia which could be seen as an overwhelming infection of the bloodstream. In acute cases, fish become dark, swim sluggishly and cease feeding: mortality levels in such situations may be high. Chronic infection may also occur and a prominent feature of this condition is the pronounced bilateral exophthalmia which frequently leads to complete degeneration of the eye. The pathogens appear to have a marked neurotropism and may be readily isolated from the brain; surviving fish may develop a scoliosis of the spine.

**The range of fish affected.** The known host range is not extensive but does include a number of commercially important species such as rainbow trout (*Oncorhynchus mykiss*), tilapia (*Tilapia nilotica*), yellowtail (*Seriola quinqueradiata*), eels (*Anguilla anguilla*), common carp (*Cyprinus carpio*), golden shiner (*Notemigonus crysoleucas*) and ayu (*Plecoglossus altivelis*).

In South Africa and Australia, rainbow trout is the commercial species most affected while in Japan, major losses are reported in commercial farms of ayu and yellowtail.

**Treatment and control.** Chemotherapy of streptococcal infections in fish has not been very successful. More research is required to properly determine all sources of infection but it is believed that infected fish and contaminated sediment are the greatest danger. Obviously, contaminated nets, grading tables, transporters and the like, pose a danger.

There is circumstantial evidence that pens and raceways do not provide a refuge for *Streptococcus* species biovar 1 and hence it should be possible to control, if not eliminate, the infection by raising fish in impervious impoundments. This is potentially possible because the bacterium does not appear to be transmitted with the egg. Such a strategy presupposes a source of uninfected water and no recirculation of water, especially from settling ponds.

There have been a number of attempts to produce a vaccine against streptococcosis, but to date, a practical, effective product has not been forthcoming.

Source: Jeremy Carson & Barry Munday, "Streptococcosis - an emerging disease in aquaculture," *Austasia Aquaculture*, October 1990.

## ASEAN STRESSES PROTECTION OF COASTAL RESOURCES

Policymakers of the six Association of Southeast Asian Nations (ASEAN) member states, representatives of media, and international donor agencies stressed the urgent need to protect and manage the region's deteriorating coastal resources. In a resolution agreed upon during the first "Policy Conference on Managing ASEAN's Coastal Resources for Sustainable Development" held recently in Baguio City, Philippines, the forum collectively stated the importance of focusing worldwide concern on the plight of Southeast Asia's coastal resources and expressed its commitment to the integrated management and protection of these resources. International donor agencies, in turn, recognized the need to support coastal management programs, while media representatives agreed to promote community awareness of issues.

Philippine Science and Technology Secretary Ceferino Follocco said that 70% of ASEAN's population live in coastal areas which are vital to the economies of developing countries. "The success of industries such as aquaculture, fisheries, tourism, shipping, and oil and natural gas production is inextricably linked to the skillful management of coastal resources," Secretary Follocco said.

Studies, however, show that these vital coastal resources are being depleted. Poverty, increased commercial activity, and population pressures have led to overexploitation. Fish catches are declining due to heavy fishing and the use of indiscriminate and destructive fishing methods. Such methods, along with mining, logging and pollution have damaged coral reefs and degraded the marine ecosystem, endangering marine animals. Mangrove forests, which are important nursery grounds for aquatic animals, are being cleared for human settlement and aquaculture, especially shrimp farming.

The conference came up with a ten-point resolution, now known as the Baguio Resolution on Coastal Resources Management, by:

- endorsing policies that promote sustainable development;
- encouraging integrated and comprehensive coastal resource management plans;
- strengthening the capabilities of government and nongovernment organizations responsible for the management of coastal resources;