

IMPACT OF INFECTION WITH CAPSALID MONOGENEANS IN MARINE FISH CULTURED IN ASIA

Leong Tak Seng ^{1*}, Anxing Li ² and Zilong Tan ³

¹ LTS Consultancy, 3 Cangkat Minden, Lorong 13 11700 Penang, Malaysia

Email: mhpg@streamyx.com

² School of Life Sciences, Sun Yat-sen University, Guangzhou 510275, PR China

³ Intervet Norbio Singapore Pte Ltd, 1 Perahu Road, Singapore 718847

It is a common practice in Asia that several species and generations of marine fish are cage cultured at the same site. Common species include grouper, snapper, yellow croaker and amberjack. Many capsalid monogeneans, mainly *Benedenia epinepheli*, *B. lutjani*, *Neobenedeniagirellae* (*N. melleni* ?), infect marine fish all year round. Among them, *N. girellae* appears to cause the greatest economic losses, at least in the S.E. Asian region.

Capsalid monogeneans are generalists. Some fish species harbour greater numbers of a particular capsalid monogenean species than others. The susceptibility of fish to monogenean infestation depends on the grow-out stage and water conditions, with newly-stocked juveniles most vulnerable. *B. lutjani* mainly cause mortality (up to 70%) in golden snapper. The main symptoms of infected fish are loss of scales around the forehead region, lesions on the body surface and sluggish swimming behaviour close to the water surface.

N. girellae infects most cultured marine fish species. In China, *N. girellae* infection causes mortality, as high as 50% in amberjack. In Malaysia, *N. girellae* was likely introduced along with wild-caught juvenile green grouper in the late 1970's. Highest mortality usually occurs 10 – 14 weeks after stocking in cages. Infected fish show sharp-angled scratch lesions on the body surface. Common grouper are more severely affected than are tiger and red grouper.

N. girellae deposits long filamentous eggs, that are usually entangled on cage net. From egg to maturity takes approximately 2 – 3 weeks at 25-28°C. A large female adult can produce a mean of 35 eggs/hr and a small adult, 12 eggs/hr. The eggs hatched after 5-6 days at a temperature of 27-30°C. With overlapping generations of several fish species in one farm, a large number of eggs can be continuously produced to infect newly-arrived fish. Freshwater, formalin and hydrogen peroxide are used for treatment. However, the process is labour-intensive and stressful to the fish.

Red snapper (*Lutjanus erythropterus*) is a popular species in Malaysia with good growth rate, few disease problems and a high market value. However, since 2000, *N. girellae* infection has become common with the main signs being cessation of feeding, dryness on scales, opaque eye, lesions on body surface, sluggish swimming and 60-80% mortality. Because of this parasite, the culture of red snapper is no longer economically sustainable in Malaysia.

The high density of the monogenean population in the cage culture ecosystem is the direct cause of the parasitic disease outbreaks. Improved farming practices and control measures must be used to tackle the problem. Reduction in stocking density, frequent cleaning of cage nets, application of antifouling paint and use of pelleted feed can decrease the incidence of parasitic infection. Furthermore, safe and effective anti-parasitic products, preferably given by the oral route, are needed for the control of monogenean infections in cage-cultured marine fish.