The Health of Farmed Wrasse

There is little information at present on health problems encountered throughout the production cycle of captive bred wrasse populations. However, there have been extensive studies of health of wild caught wrasse and these suggest that initial concerns that wrasse could spread pathogenic organisms to other fish species (mainly Salmon) are unlikely: see **Review by Treasurer (2012) J. Fish Dis. 35, p555-562.** This technical report covers the health management of wrasse during production.

PROJECT SUMMARY

EcoFish is a three-year transnational project financed by the European Regional Development Fund/Northern Periphery Program and national private and governmental grants. The project focuses on developing methods for culture and use of Ballan wrasse as cleaner fish.

EcoFish has produced this series of summary technical leaflets on all the relevant practices covering the entire life cycle for the rearing and the production of Ballan wrasse. Readers can access and download more detailed, full-text, pdf versions of these technical leaflets at www.eco-fish.org

Diseases of Wrasse

Classic *Aeromonas salmonicida* was reported from Ireland (Collins et al., 1991), Scotland (Treasurer and Cox, 1991) and Norway (Hjeltnes et al.,1995). Wrasse have also been diagnosed with atypical strains of furunculosis in Ireland (Collins et al., 1991) and Scotland (Laidler et al., 1999). The atypical strains caused mortalities in Goldsinny wrasse in experimental challenges (Gravningen et al., 1996) but furunculosis could not be transmitted to salmon (Gravningen et al., 1996; Kvenseth, 1998) and were not pathogenic to salmon (Costello et al., 1996). Wrasse may also be affected by Vibrio disease (Bergh and Samuelsen, 2007). Antibiotics have prevented atypical infection in wrasse following stress (Samuelsen et al.,2002). Wrasse may respond to vaccination (Treasurer and Laidler, 1994; Bricknell et al., 1996).

Wrasse can be susceptible to IPN under challenge but were not refractive (Gibson and Sommerville, 1996). Gibson and Sommerville (1996) infected wrasse with the pancreas disease (PD) virus and there were no mortalities and no effect of the virus on wrasse. There was also no evidence of transfer of the PD virus to salmon from homogenate of tissue taken from experimentally challenged wrasse. Wrasse have been experimentally injected with ISA from infected salmon and, although there was high mortality in injected naïve salmon, there were no mortalities in wrasse nor in wrasse cohabited with infected salmon (Kvenseth, 1998).

Trichodinid species are common on the gills of all wrasse species, Nematodes and digenean trematodes were usually present, but monogenean trematodes were infrequent and no isopods were recorded (Costello et al., 1996). Most of the recorded parasites are likely to be specific to wrasse or to require wrasse either to be eaten by another fish or animal or to pass to an invertebrate host to complete their lifecycle.

A similar survey was carried out on Goldsinny wrasse in Norway and 17 parasite species were found (Karlsbakk et al., 1996). The parasites were either wrasse specialists with a one-host life cycle or larval forms of generalist parasites. The copepods and trichodinids detected were specific to labrids. A total of 22 parasite species of wrasse were identified in Scotland (Treasurer, 1997). These were mainly host specific and did not appear to be a threat to salmon.

Vaccination of Wrasse

The main vaccines for wrasse are likely to be for *Vibrio anguillarum* and furunculosis *Aeromonas salmonicida.* There are several serotypes of *V. anguillarum* and the types mainly found on marine finfish are different from those in salmon, being alpha 1 Omega and alpha 2 Beta. Use is made of Autologous vaccines and these are manufactured from pathogenic bacteria found on specific farms and manufactured especially for use solely on those farms and are used in specified hatcheries that supply that farm. Other vaccines used are those for typical and atypical furunculosis *Aeromonas salmonicida.*

Broodstock Quarantine

Wrasse broodstocks are captured by fishermen from inshore coastal areas. This may bring risk of transfer of pathogens from the wild. Wild sourced wrasse should therefore be held in quarantine tanks with separate water supply, and preferably at a more remote location on the farm. Separate equipment and personal clothing should be used and a footbath for disinfection at that area should be provided. It would be expensive and impractical to cull fish for disease testing. Any mortality from wild caught wrasse should be autopsied and health samples such as bacteriological swabs, viral samples and histopathological samples sent for disease testing and pathology.

Medicines

Ectoparasites such as the protozoans Trichodina, Costia and monogeneans are most commonly treated with formalin. This should be used at a concentration of 200 ppm and applied for 30 minutes. Alternative treatments may be Pyceze (Novartis, Bronopol) and this is normally used at a concentration of 50ppm active bronopol. Pyceze has also been used in the disinfection of live feeds.

Wild caught fish may be infected with sea lice such as *Caligus elongatus* and *Caligus centrodonti.* If treatments are necessary, then medicines used for sea lice in salmon can be used under the "cascade principle" if approved by a veterinarian. This would include the in-feed treatment emamectin benzoate (SLICE, Schering Plough) offered over seven days, or bath treatments with either deltamethrin (Alphamax, Intervet) and cypermethrin (Excis, Novartis).

Treatment of V. Anguillarum:

Treat with Antibiotics, once the antibiotic sensitivity has been assessed. Protection can be provided by vaccination, both by immersion twice in the size range 2–5g and later by intraperitoneal vaccination when the fish are large enough to be handled, c. 30g.

Treatment of Atypical furunculosis:

Treat with antibiotics after first carrying out an antibiotic sensitivity test. The fish may also be protected by vaccination, although the vaccines available may only be for strains found in salmon. They may, nevertheless, give protection.

Infectious Pancreatic Necrosis

Infectious pancreatic necrosis (IPNV) is a major issue of salmon broodstock and wrasse can also be susceptible to IPN and can carry the disease. A "carrier" is a fish that is not affected clinically by the disease and appears to have a healthy outward appearance.

Diagnostic signs

Wrasse may be thin and dark, and may show inappetance and lethargic behaviour.

Diagnosis

Detection and diagnosis is made through cell culture techniques where fish cells show cellular breakdown when exposed to the virus. This is done by taking samples of the kidney aseptically, processing and exposing fish cells in the lab to the sample. This process can take up to three weeks before a positive or negative status can be confirmed. Alternatively, samples can be taken from ovarian fluid or from a sample of eggs stripped manually from a female.

Treatment

No treatment can be given. Action is by screening broodstock for carrier status. Broodstock are frequently obtained from the wild and these fish should be quarantined and any mortalities or unhealthy fish sampled and tested for IPN.

Sea Lice

Wrasse do not host the sea louse *Lepeophtheirus salmonis*, found on salmon, although they have been found incidentally. The main species of lice found on wrasse are *Caligus centrodontii* and *Caligus elongatus* (Bron and Treasurer, 1992), the latter being found on up to 80 species of marine finfish in northern Europe. Sea lice infestation has not been reported as a large problem in wrasse but it is possible that epizootics may develop as the industry expands. Fish should be checked regularly and lice counted. If lice numbers are sufficiently high and causing epidermal damage then treatment can be carried out by bath treatment.

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Implications of Cohabitation of Wrasse with Salmon

When wrasse were challenged with *Aeromonas salmonicida* subsp *salmonicida* there were very low mortalities although salmon showed signs of symptoms (Hjeltnes., 1995). It was concluded that *A. salmonicida* subsp *salmonicida* could be transmitted to wrasse from salmon but it was likely that this would be a rare event. Bricknell et al. (1996) infected Goldsinny wrasse with *Aeromonas salmonicida* and found that the fish showed chronic symptoms although they were more resistant to *A. salmonicida* than salmon. They suggested that Goldsinny wrasse may act as a reservoir for subsequent infections of *A. salmonicida* but considered that the wrasse responded well to vaccination. It was concluded that vaccinated wrasse do not transmit *A. salmonicida* to salmon. A healthy carrier may well contaminate the fish that are not resistant. However, Kvenseth (1998) found that wrasse were often stressed by vaccination after capture and also at high temperature and suffered high losses. Vaccination in the winter during storage was therefore recommended. Antibiotic injection of Goldsinny wrasse prior to challenge with *A. salmonicida* gave high levels of protection (Samuelsen et al., 2002).

There are no data for Ballan wrasse but Goldsinny wrasse were experimentally infected with the PD virus and were unaffected by it and the virus was not refractive (Gibson and Sommerville, 1996). They concluded from experimental work where salmon were cohabited with wrasse injected with the PD virus that the infective agent was deactivated in wrasse and that pancreas disease is not transmitted to salmon. Wrasse have not, in practice, been shown to be a vector of disease in salmon, and attention should be placed on maintaining best practice in use with salmon, and assessing the disease risks associated with carrying forward wrasse from one production cycle to the next.

For a full review of disease conditions in wrasse and bibliography refer to Treasurer, J. W. (2012) Diseases of north European wrasse (Labridae) and possible interactions with cohabited farmed salmon, Salmo salar L. Journal of Fish Diseases 2012, 35, 555-562. doi:10.1111/j.1365-2761.2012.01389.x.

A full bibliography is available in the online version of this leaflet, please see www.eco-fish.org

The objectives of the EcoFish partnership project are:-

- To establish wrasse hatcheries with captive broodstocks in Ireland, Scotland and Norway
- To develop techniques for rearing wrasse at all life stages
- To produce eggs and larval wrasse
- To develop methods for culture and use of Ballan wrasse as cleaner fish

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