

Fish stocking and health risk: a neglected threat for aquatic biodiversity?

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The introduction or translocation of species from one place to another is a problem of major concern which affect a large number of taxa from all continents, with serious consequences for ecosystems. In particular, the introduction of fish species could represent a serious threat for aquatic biodiversity. Therefore, the biological and ecological threats that these kinds of operations could cause are already well known. Instead, the health risk that may occur are much less considered and investigated to date.

The introduction of fish into aquatic ecosystems is a consolidated practice in management plans of public waters performed by local administrations or fisheries associations. Currently the European legislation (Directive 2006/88/CE) imposes strict controls on farms that breed fish for stoking purpose only for notifiable viral diseases (Viral Haemorrhagic Septicaemia, Infectious Haematopoietic Necrosis and Koi Herpesvirus), providing a clear certification procedure. Instead, other (bacterial or parasitic) diseases are not proper regulated, since the law only specifies that fish have to be clinically healthy before stocking and have to come from a hatchery where unexplained mortality rates are not occurred. For this reason, the real health status of the introduced fish batches is never checked and certified.

Frequently, some etiological agents in latent form are difficult to detect in fish which appear to be healthy. In these circumstances, accidental pathogens could be introduced in the aquatic ecosystem. An unusual mortality occurred after a brown trout (*Salmo trutta*) stoking in 3 pools of Carpasina stream located in Liguria Region, Northwest Italy. In particular, 17 specimens were found dead and sampled to determining the cause of dead. Analysis were performed at the Fish Diseases Laboratory of the Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta (Italy). Fish did not show clinical signs or alterations. Collection of samples for bacteriological exam was taken from kidney and brain using first isolation media (Columbia Blood Agar). The colonies grown after 24-72 hours of incubation at 22±2°C were selected, cloned in selective media and identified by biochemical tests using API galleries (API 20E and 20 NE, bioMérieux) and serological test (rapid agglutination test, Bionor). *Aeromonas salmonicida* sbsp. *salmonicida*, the etiological agent of forunculosis, were found in all samples.

No mortality events occurred in the wild population before the fish stocking activity or in the trout farm where specimens came from. It is impossible to exclude the presence of the pathogen in the environment, but the mortality event cannot be considered a natural episode. The most likely scenario is that the *A. salmonicida* was already present in a latent form in the stocked fish and that the disease has occurred as a consequence of the stress caused by fish manipulation and transport.

This case defines how diseases control and regular monitoring are essential to ensure wild and farmed fish health. Moreover, fish intended for stocking should be control for the presence of eventual diseases and accompanied by a health certificate.

Therefore, risk assessment and biosecurity practices must become the two fundamental pillars to guarantee a correct approach to avoid the onset of diseases.

European and national politics cannot avoid facing these problems, which will increasingly in terms of costs.

Keywords: biodiveristy, Fish disease diagnosis, *Aeromonas salmonicida* sbsp. *salmonicida*, *Salmo trutta* (L.), Fish stock assessment and management

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