ATTI CONVEGNO

EXPANDING GEOGRAPHIC RANGE OF THE PROLIFERATIVE KIDNEY DISEASE WITH NEW DATA FROM PIEDMONT, ITALY

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Proliferative Kidney Disease (PKD) is caused by the endoparasite *Tetracapsuloides bryosalmonae*, a myxozoan belonging to the class Malacosporea. The life cycle of this parasite involves two hosts: salmonids (primarily *Salmo trutta* and *Oncorhynchus mykiss*, the rainbow trout) as intermediate hosts, and bryozoans (mainly species of the genera *Fredericella* and *Plumatella*) as definitive hosts.
When *T. bryosalmonae* spores are released into the water and encounter a fish host, they infect the gills and skin, then migrate via the vascular system to the kidneys, where sporogenesis takes place. At the end of this intermediate cycle, the newly formed spores are excreted into the water through the urine as malacospores, thereby continuing the transmission cycle.
Due to climate change, the geographic range of PKD has expanded. Water temperatures exceeding 15 °C for more than one month per year favor the proliferation of *T. bryosalmonae*, leading to severe economic losses in freshwater aquaculture. Mortality rates of rainbow trout in affected systems can reach 95-100% of the total stock. Over the past 25 years, PKD has been reported across several European countries, including Switzerland, Austria, the United Kingdom, Norway, Germany, and, more recently, northern Iceland.
In Italy, the first confirmed cases of PKD in rainbow trout were recorded between 2002 and 2004 in aquaculture facilities located along 14 hydrographic basins in the northern Po River, within the regions of Piedmont, Lombardy, and Veneto (Gustinelli et al., 2005).
For the present study, rainbow trout were sampled between July and December 2024 at a trout farm located in the province of Cuneo (southern section of the Po River basin, Piedmont region), yielding a total of 781 specimens. Necropsies were performed in the laboratory to collect kidney and spleen samples, which were homogenized and subjected to PCR analysis to determine PKD positivity. Overall, 34.43% of specimens tested positive for PKD, while 7.88% showed low-level positivity. Only 4.45% of fish could not be assessed due to advanced post-mortem decomposition.
In conclusion, these findings represent the first report of PKD occurrence in this area of the Piedmont region, confirming the south-westward spread of the disease into zones previously considered free from this parasitosis. This study underscores the importance of systematic health monitoring to enable early detection and the implementation of preventive measures in the Italian trout farming sector, which is increasingly vulnerable to PKD outbreaks.

References

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Research funded by Italian Ministry of Agriculture, Food and Forestry, RESILTROUT-6CFP Supply Chain Program, Project Code 23E03.