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support policy-makers and stakeholders in the implementation of effective measures of management and control of the negative effects of bioinvaders in recipient environments.

Behavior of the invasive mosquitofish increases top-predator fry mortality: preliminary results

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The non-native mosquitofish (Gambusia holbrooki), introduced in Italy in the early 20th century, is considered one of the 10 most invasive species worldwide. Its aggressive behavior has been reported as one trait favoring its invasiveness and causing the reduction of the abundance and/or richness of invertebrates, amphibians and fish species in freshwater habitats. However, some direct effects of their behavior have received less attention. In this study, we analyzed the interactions between mosquitofish and pike fry, a top predator that, in lakes, shows high aggressivity and similar habitat requirements to those of mosquitofish. We conducted a 5-day experiment investigating intra and interspecific interactions (activity, aggressive behavior and feeding competition) by video recording. Our results show that mosquitofish increase ~30% the mortality of pike. Its aggressive behavior occurs mainly by direct attacks on fins, as well as by increasing swimming activity. Surprisingly, mosquitofish voracity does not have an evident direct consequence on pike mortality. Our study highlights the importance of species behavior as a mechanism enhancing interspecific competition, in addition to trophic strategy.

The initial spread of quagga mussel, *Dreissena bugensis* Andrusov, 1897, in Italy: molecular and morphological evidence in Lake Garda

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The mollusc *Dreissena bugensis* Andrusov, also known with the common name of quagga mussel, is native of the northern Black Sea coast and is one of the most aggressive invaders in freshwater ecosystems. In this contribution, we report the first record of individuals of quagga mussel in Italy. Living organisms of this non-indigenous (NIS) species were collected in February and March 2022 in two stations located in the shallow (Bardolino) and deeper basins (Castelletto di Brenzone) of the lake. The maximum length of the individuals of quagga mussel was 12.9 (Bardolino) and 16.6 mm (Castelletto di Brenzone) (n = 66). Individuals were identified using both shell morphological characterization and genetic analyses based on mitochondrial COI gene sequencing. With this new discovery, Lake Garda confirmed its pivotal role as a southern Alpine corridor for the introduction of non-indigenous species previously established at the northern border of the Alps. Considering its high colonization rate and compared with other invasion patterns observed in Europe and North America, it can be assumed that *D. bugensis* will soon establish itself with dominant populations throughout Lake Garda. At the same time, it can also be assumed that it will soon spread to other Italian water bodies.