

In-person presentation

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Morphological Differentiation in Trophic Traits of Round Goby across Multiple Invasion Events

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Round goby (*Neogobius melanostomus*), a Ponto-Caspian fish species, is one of the most pervasive aquatic invaders in Europe and North America. Through predation, feeding competition, and aggressive behavior it poses a high risk for decline of native biodiversity, including some protected and endangered fish species. The generalist diet of round goby and its tolerance to a broad range of abiotic conditions, such as temperature and salinity, enable this species to survive its initial introduction in widely different aquatic ecosystems, ranging from small ponds to large rivers, and even coastal seas. However, establishment of populations in new locations after initial survival, may involve subsequent specialization to local circumstances, such as the available food sources, which can widely vary in composition and abundance between different ecosystems. Specialization in feeding performance for particular food sources will entail morphological differentiation of feeding-associated functional traits, as feeding capacity is causally linked to morphology. Therefore, it is to be expected that established populations of round goby from diverse aquatic ecosystems will also differ morphologically, and that these morphological differences reflect the gobies' diets. In this study we compared the trophic morphology of round gobies from eight different populations across Europe (The Netherlands, Belgium, Austria, Germany, Czech Republic, Switzerland) and North America (Laurentian great lakes). We used an eco-morphological approach (the Food-Fish Model, FFM), which links the functional traits of the predator to the biomechanical, behavioral, and chemical characteristics of prey types. This resulted in a trophic profile of each individual, describing its capacity for feeding on different prey types. Significant differences between some populations (e.g. between the Belgian Berwijn and the German Danube rivers) were recorded, while others overlapped. The mechanisms and role of rapid morphological adjustment in alien invasions will be discussed.