



Joint ESENIAS and DIAS Scientific Conference and 12th ESENIAS Workshop

Globalisation and invasive alien species
in the Black Sea and Mediterranean regions
– management challenges and regional cooperation

11–14 October 2023
Varna, Bulgaria

Book of Abstracts

Varna, Bulgaria
2023



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Results of selective removal of the black bullhead (*Ameiurus melas*) in two different lentic systems

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In the sake of better understanding of the mechanisms that drive interactions between invasive species and their ecosystems, results of selective removal of the black bullhead (*Ameiurus melas*) in two different lentic systems were compared. Ponjavica Nature Park has characteristic watercourse of the plains with very slow flow and the coastal remains of wetlands. Markovačko reservoir was built for the needs of the irrigation system of the nearby agricultural land. Both systems suffer dominance of the black bullhead, characterized as a species of "globally high risk". Combining results of the mass removal, the effects on the native fish populations have been empirically demonstrated and quantified. Black bullhead selective removal in Ponjavica lasted from August - October 2018, April - September 2019, with 20,145 black bullhead individuals removed. It showed decreased abundance of bleak (*Alburnus alburnus*) 2.3 times, while the abundances of roach (*Rutilus rutilus*) and European perch (*Perca fluviatilis*) remained almost unchanged. A significant increase in abundance was recorded in rudd (*Scardinius erythrophthalmus*) (5.3 times). The abundances of topmouth gudgeon (*Pseudorasbora parva*), pumpkinseed (*Lepomis gibbosus*), and Prussian carp (*Carassius gibelio*) increased 25.5, 4.9, and 4.2 times, respectively. The mass removal of black bullhead on Markovačko Lake lasted from August - October 2020, April - September 2021, and 15,921 black bullhead specimens were removed. When the post removal state from Markovačko lake was determined, two species appeared in the sample for the first time: European perch and chub (*Squalius cephalus*). The abundance of bleak increased 3 times, abundance of Prussian carp reduced 8 and black bullhead 16 times. The abundance of roach decreased 11, rudd 10, pike-perch (*Sander lucioperca*) 4 and freshwater bream (*Abramis brama*) 2 times. The abundances of pumpkinseed increased 10, Monkey goby (*Neogobius fluviatilis*) 3 and topmouth gudgeon 2.5 times. The results showed that the fyke nets can be most effectively and selectively applied to control the abundance of black bullhead, because simplicity and non-harmfulness to other species. It is not possible to completely remove this species from the ecosystem, but reduce the negative impact by suppression (removal programs) and containment of existing state is crucial.

Key words: Invasive species, selective removal, control, fish community.

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Risk assessment of two siganid species in the Greek seas

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Greek waters have experienced the introduction of non-indigenous species (NIS) mainly through natural dispersal after invading and establishing themselves in neighbouring areas. Monitoring of NIS is essential in order to plan management measures towards mitigating their impacts. The European Union's approach to alien species invasions prioritizes risk assessments as the initial step in evaluating the invasive potential of NIS. While the Union List has identified high-priority species, few of them are marine species.

The marbled spinefoot (*Siganus rivulatus*) and the dusky spinefoot (*Siganus luridus*) are Lessepsian migrants and have received less attention compared to other NIS in the Mediterranean, despite their environmental impacts. The intensive grazing of rabbitfishes leads to the creation of barrens, and thus, habitat degradation and loss, affecting biodiversity and ecosystem services. These species are primarily found in the southeastern Mediterranean Sea and, in the case of Greek waters, they have not yet been observed in the north Aegean Sea, likely due to temperature and oceanographic factors. This study conducted a risk assessment of these two siganids in the Greek waters, under the NSRF funded project '4ALIEN', using the Risk Assessment Scheme developed by the GB Non-Native Species Secretariat (GBNNRA). The assessment provided a semi-quantitative summary of risk, considering the likelihood of events and the magnitude of impacts. Confidence levels were assigned to each attributor.

The results of the assessment indicated a high probability of introduction of these two species into Greek seas from neighbouring countries, as well as successful population establishment with high confidence levels. The potential for significant spread was identified, with major impacts on native species and moderate economic costs and public health implications. Consequently, *S. rivulatus* and *S. luridus* were classified as invasive species (IAS). Although local communities could benefit from their presence in terms of commercial fisheries, further research is needed to investigate their reproduction and spawning grounds, as evidence suggests that the structural integrity of seagrass communities will be affected.

Key words: Risk assessment, *Siganus rivulatus*, *Siganus luridus*, alien species, Mediterranean Sea.

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