



22ND INTERNATIONAL CONFERENCE ON AQUATIC INVASIVE SPECIES

April 18-22, 2022

Thermae Palace Hotel, Oostende, Belgium

*Global Climate Change
Amplifies Aquatic Invasive
Species Impacts*

PROGRAM AND ABSTRACTS



Netherlands Food and Consumer
Product Safety Authority
Ministry of Agriculture,
Nature and Food Quality



RESEARCH INSTITUTE
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Invasive
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The conference is co-hosted by the Netherlands Office for Risk Assessment & Research (NVWA-BuRO) and Belgium's Research Institute for Nature and Forest (INBO), with the support of Canada's Invasive Species Centre, the ICAIS Secretariat.

Conference Secretariat



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The Professional Edge

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Management of invasive pumpkinseed sunfish (*Lepomis gibbosus*) populations

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The invasive pumpkinseed sunfish (*Lepomis gibbosus*), a freshwater fish native to North America, is rapidly increasing in number throughout Europe. Here the species is mainly abundant in moorland pools, fishing ponds and urban waters where it has negative effects on other fish species, macroinvertebrates and amphibians. There is little experience with sunfish control, and most methods focus on (temporally) draining the pools and ponds to eliminate the invasive species. However, this method is not always applicable and can cause collateral damage to other freshwater species present. Another method which is often applied is intense fishing. Unfortunately, the invasive species recovers rapidly after fishing is stopped.

Stichting Bargerveen is currently investigating a new method in multiple freshwater pools in the Netherlands as part of the LIFE RESILIAS project. This method is based on reinforcing an ecosystem to be less vulnerable to invasive species by stimulating native species. First, the sunfish population is reduced by intense fishing, then native predators are introduced to ensure that the invasive species cannot recover in large numbers. In small numbers, the invasive sunfish are believed to have little effect on their ecosystem. We are testing this method using the Northern pike (*Esox lucius*), a native species to the Netherlands, as a predator.

Initial results indicate that the pike are reproducing and that the sunfish populations are stabilizing at a lower level. Further monitoring of the pools in the coming years will determine whether the population level will remain low and whether the populations of amphibians, macroinvertebrates and gastropods will recover. More information regarding the first monitoring results will be available when the ICAIS conference starts in April.

Ecosystem-based control of invasive crayfish populations

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In the last decade, the number of alien crayfish in the Rhine-Meuse river district has been strongly increased. To derive effective approaches for population control of invasive crayfish species in isolated water bodies, we tested three measures *in situ*: 1) crayfish trapping only, 2) crayfish trapping and draining of the water system, and 3) crayfish trapping and releasing crayfish-preying European eel (*Anguilla anguilla*). The crayfish, eel stock, amphibian populations, aquatic vegetation and water quality were studied (bi)-annually in order to assess the effects of these control measures. In addition, an experimental set-up was used to determine whether crayfish overland dispersal towards isolated water bodies could be reduced by changing the steepness (i.e. 0°, 10°, 20° and 30°) and substrate type of banks (i.e. bare sandy soil, short and species-poor grassland and tall herbaceous-rich grassland). Finally, a field survey was performed to assess whether the number of crayfish burrows are related to a particular bank type. The preliminary results demonstrate that crayfish trapping without accompanying measures is the least effective. Desiccation by draining of the water system seems to be an effective treatment on the short-term, especially for non-burrowing species. Eel stocking seems a promising method for control of crayfish on the long run. The risk of a new infestations remains if no measures will be taken to prevent spread of crayfish from neighboring areas. The dispersal experiment demonstrated that most crayfish moved in a downward direction at inclinations of 20° and 30° on bare sandy soil and short and species-poor grassland substrates. This implies that manipulation of the movement direction by smart design of embankments can be a tool to diminish overland dispersal. The number of burrows was significantly lower in natural banks than in non-natural and semi-natural banks, suggesting that habitat modifications is an effective alternative step for controlling burrowing invasive crayfish species.