Invasive species of aquatic habitats and wetlands in Hungary

Invasive species, i.e. species that invade areas beyond their natural range due to anthropogenic factors, often disrupt native wildlife communities there and thus threaten their biodiversity, take over different habitats to varying degrees.

Aquatic habitats and wetlands are among the most threatened habitat types worldwide. More than 90% of Hungary's surface waters originate from beyond its borders, which is of fundamental importance in the spread of waterborne invasive species. That is why water has been chosen as one of the central topics for Hungary's EU Presidency in 2011.

A selection of wetland species, representing different taxonomic groups, are presented here. Some of the invasive species that occur in wetlands have already colonised large areas in the country, while others are still distributed only sporadically but can be expected to spread further in the future and cause significant nature conservation problems. Measures against these species are difficult to apply because only few methods are known that are sufficiently selective without adversely affecting water quality.

Pacifastacus leniusculus – SIGNAL CRAYFISH

A North American species that reached Hungary via Western Europe. It grows and reproduces faster (lays more eggs) and it is more mobile compared to the native noble crayfish *(Astacus astacus)*. It is a crayfish plague carrier. By spreading this fungal disease its presence highly threatens native European species.

Trachemys scripta elegans – RED-EARED SLIDER

Red-eared sliders arrived to Hungary from North America via the pet trade industry. They quickly grow beyond aquarium size and get dismissed into natural waters by inconsiderate owners, where they pose a serious threat to native European pond terrapin *(Emys orbicularis)* populations by competition for food and basking places.

Perccottus glehni – CHINESE SLEEPER

Brought to Europe from the Far East as an aquarium fish, this species eats and eradicates nearly all the smaller fish in natural waters. In Hungary, it threatens primarily populations of the endemic European mudminnow *(Umbra krameri)*.

Ameiurus melas – BLACK BULLHEAD

Native to North America, this species has been present in Western Europe for over a century, and was introduced to Hungary for economic purposes three decades ago. The black bullhead failed to fulfil financial expectations but its high abundance and wide food spectrum threatens the survival of numerous native animals.

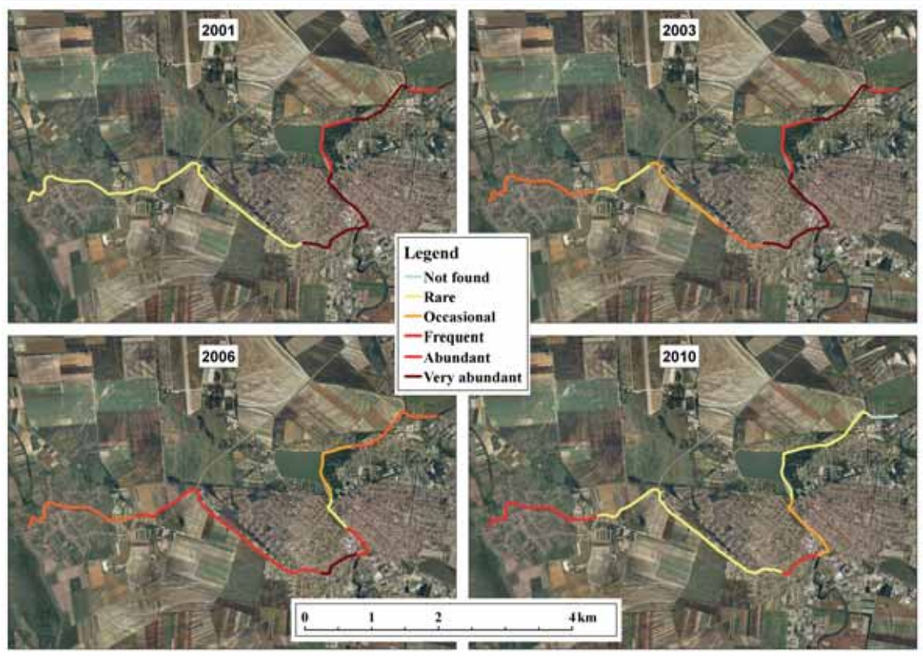
Dreissena bugensis – QUAGGA MUSSEL

Confirmed from the Danube and Lake Balaton, this Ponto-Caspian species can also invade soft substrates in contrast to the longer present and more abundant zebra mussel *(D. polymorpha)*. In addition, its finer filters provide a feeding advantage and these two traits make the species a dangerous, invasive pest.

Corbicula spp. (C. fluminea and C. fluminalis) ASIAN CLAMS

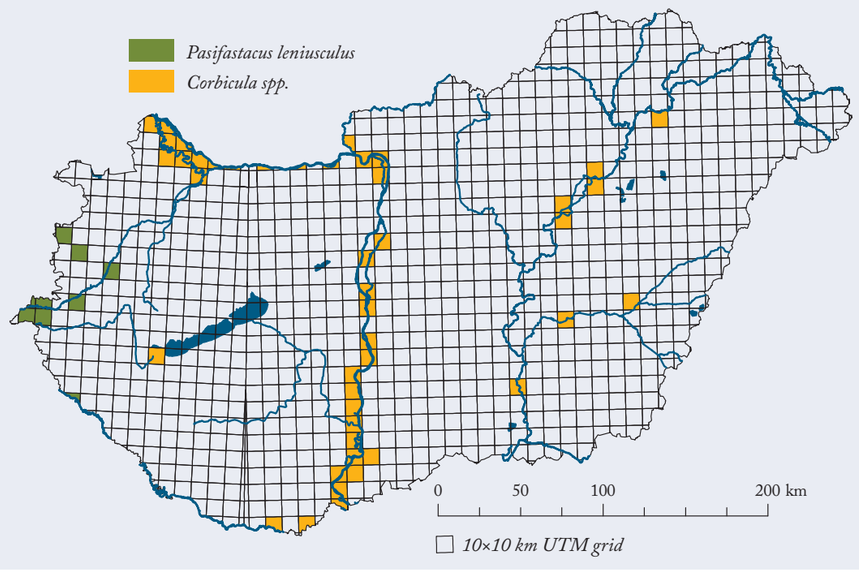
Their original range is Southeast Asia, but probably arrived to Hungary from the Rhine river system. They live both in standing and running waters. From the two species *C. fluminea* (see photo) is commoner in Hungary, but both colonise any suitable substrates rapidly and become numerous within a short time.

Changes in abundance of Cabomba caroliana in a canal



Source: surveys of Hungarian Biodiversity Monitoring System

Distribution of Pasifastacus leniusculus and Corbicula spp.



Source: surveys of Hungarian Biodiversity Monitoring System, database of BioAqua Pro Kft., data of P. Illés, P. Kiszely, M. Herényi and J. Szekeres

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Amorpha fruticosa – FALSE INDIGO

Native to North America, this rapidly spreading species was originally introduced for honey production. It is most abundant in flood plains, and capable of supplanting native herbs and shrubs and forming impenetrable thickets where there is no significant shading (willow-poplar gallery woods, hybrid poplar plantations) or long-lasting floods.

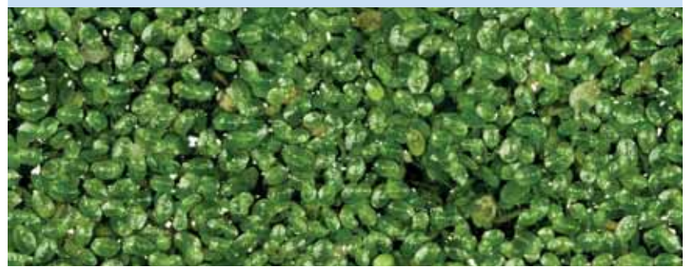
Impatiens glandulifera – HIMALAYAN BALSAM

Brought from the Western Himalayas to Europe as an ornamental and honey plant, its effective seed dispersal (seed pods explode at touch) lead to rapid invasions. It spreads primarily along large rivers, but occasionally also along middle or high altitude streams.

Cabomba caroliniana – CAROLINA FANWORT

Native to the New World, this species arrived to Hungary as an aquarium ornamental plant. Originally, it was known as a thermophilous aquatic plant, but it is already spreading in Hungary's colder waters, replacing native floating vegetation.

Lemna minuta – LEAST DUCKWEED



This New World species sometimes forms carpets on the surface of shallow, nutrient-rich, running waters that warm up quickly. Its effective nutrient use and shading adversely affect other aquatic plants, fish and aquatic invertebrates.

Elodea nutallii – WESTERN WATERWEED

With a preference to nutrient-rich waters, the vegetative spread of this North American species is extraordinarily fast. It is capable of supplanting not only some native aquatic plants, but also the invasive Canadian waterweed *(Elodea canadensis)*. In Hungary, it occurs mostly along the Danube.

Pistia stratiotes – WATER LETTUCE

Used in aquariums and garden ponds, this South American species accidentally escaped into natural waters. Although it can only overwinter in thermal waters, it occasionally becomes abundant by vegetative reproduction in other waters, too.