

Morphological variability among populations of the exotic fish *Pseudorasbora parva* in Flanders with some remarks on its taxonomy

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Executive summary

During the last decade, the non-indigenous topmouth gudgeon, *Pseudorasbora parva*, has become the most abundant fish species into the Demer basin since its discovery in 1992. It has also been found in other stream basins in Flanders. This small cyprinid fish, originating from East Asia, was accidentally introduced together with grass and silver carps from China in fish ponds in some East European countries near the Danube river.

Nowadays, this alien fish is present in almost all European countries as a result of translocations of common carps. NICHOLS (1943) recognised 6 subspecies in China and one in Japan. According to BANARESCU & NALBANT (1965) these subspecies are only variants or morphs of the polymorphic species *Pseudorasbora parva*.

Today, we still don't know which subspecies or variants are present in Flanders. The aim of this study was to investigate whether the populations of this exotic fish are taxon homogenous or heterogenous. A detailed morphological study based on 35 morphometrical features was performed on 350 specimens from the Demer, the Schelde, the Dijle and the Nete basin. They were compared with the type specimens of the Japanese subspecies *P. p. parva* and the six Chinese subspecies *P. p. parvula*, *P. p. altipinna*, *P. p. fowleri*, *P. p. tenuis*, *P. p. monstrosa* and *P. p. depressirostris*.

Our results indicate that the topmouth gudgeons inhabiting the Flemish waterbodies display a high degree of phenotypic plasticity due to an eco-phenotypical acclimatisation to the different local biotic environments. These morphological differences could also be explained by a genetic differentiation as a result of local adaptation. Based on our results, it is clear that several introductions have taken place in Flanders both in time and in space and that all the Flemish populations are descendants of several small founder populations coming from unknown source populations. Furthermore, our analysis showed that the nominal subspecies *Pseudorasbora parva parva* from Japan and one of the six Chinese subspecies, *Pseudorasbora parva fowleri*, are different from both the investigated Flemish specimens and the other type specimens. According to our results, *P. p. parva* and *P. p. fowleri* are separate species and *P. p. parvula*, *P. p. altipinna*, *P. p. tenuis*, *P. p. monstrosa* and *P. p. depressirostris* are synonymes or morphs who form together

with the Flemish populations a certain polytypical species of the genus *Pseudorasbora*. This means that the European topmouth gudgeon populations can not be *Pseudorasbora parva* since this species only occurs naturally in Japan and that a new scientific name must be given to the topmouth gudgeon in Europe.

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