

Status of two North-American *Ameiurus* species (Ictaluridae) in Flanders (Belgium)

with preliminary genetic screening of
specimens from Belgium, France and the
Netherlands.

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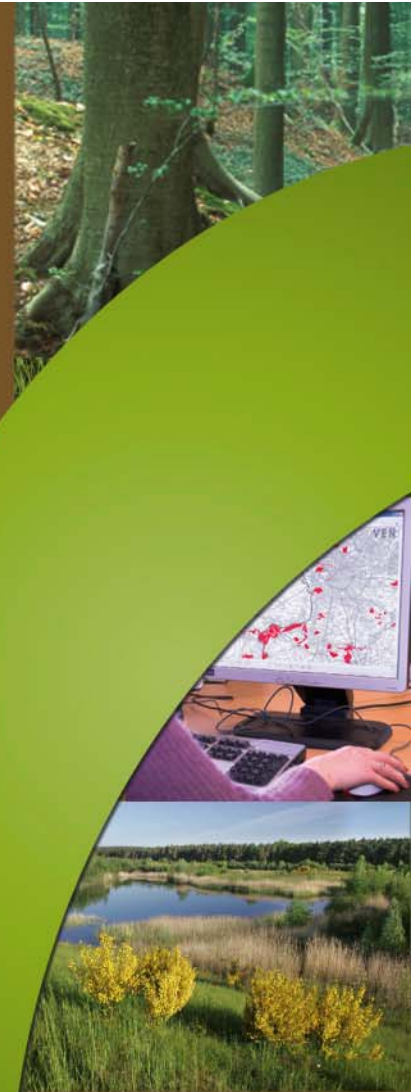


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Genus *Ameiurus*

- Family of Ictaluridae contains 7 genera and 51 species.
- Genus *Ameiurus* contains 7 species
 - *A. nebulosus* (Lesueur, 1819): brown bullhead
 - *A. melas* (Rafinesque, 1820): black bullhead
 - *A. natalis* (Lesueur, 1819): yellow bullhead
 - *A. catus* (Linnaeus, 1758): white catfish
 - ...
- Native distribution: North America
- Introduced: Europe, S. America, Asia, Oceania

Ameiurus in Europe

	Black	Brown
UK	X	X
Turkey		X
Switzerland	X	X
Spain		X
Slovakia		X
Serbia	X	X
Romania		X
Portugal	X	
Poland	X	X
Norway	X	X
Netherlands	X	X
Italy	X	X
Ireland	X	X
Hungary	X	X
Germany	X	X
France	X	X
Finland		X
Estonia		X
Denmark		X
Czech rep.		X
Bulgaria		X
Belgium	X	X
Belarus		X
Austria		X
Albania	X	X

Source: Fishbase (July 2010)

Introduction history

- Wheeler (1978)
 - In 1871 'catfish' were liberated in France
 - List of shipments to Europe
- Rousseau et al. (1915):
 - In Belgium first attempts to acclimatize *A. nebulosus* in Europe
 - In 1882 200 sp. of 'bullhead' arrived in the harbour of Antwerp => to Botanic Garden in Ghent
 - In 1892 new transport of 'bullhead' (and 'channel cats') to ponds of Groenendaal
 - In 1901, pisciculturist in Limburg (NE Flanders) has natural reproduction in his pond and starts to distribute 'large amounts of larvae everywhere'

Introduction history

A fact of the same kind presents itself in my district. Since the enactment of the new fishery law the founding at Gand of a piscicultural association has been vaguely contemplated. Well, would you think it? The United States of America, who have agents everywhere, it is true, learning of this, have offered, through the great Commission of Fisheries of that country, to send us a fish that we have not and which is distinguished by peculiar merits. This fish has been selected for us* by the learned men of America, with special solicitude, because it is particularly suitable to the muddy waters of the Escaut. It would be of no

Extract from a speech by Hon. E. Willequet before the Belgian Chamber of Representatives in
The Bulletin of the United States Fish Commission

Introduction history

BULLETIN OF THE UNITED STATES FISH COMMISSION. 439

REPLY BY PROFESSOR BAIRD.

I will take pleasure in carrying out the original intention of supplying American food-fishes to the waters of the Netherlands. The species that I have considered most suitable is the *seltsame* catfish, of which your letter makes mention, belonging to the genus *Pimalodus*.

The catfish which we propose to send are thoroughly hardy fish, and require no care. It is only necessary to place them in the water, the muddier and more sluggish the better. They will live in ponds or in running streams; and are equally at home in warm water and cold.

WASHINGTON, D. C., *March* 13, 1883.

NOTE.—For other items upon this subject compare Bulletin 1882, p. 153, and Bulletin 1883, p. 218.—C. W. S.

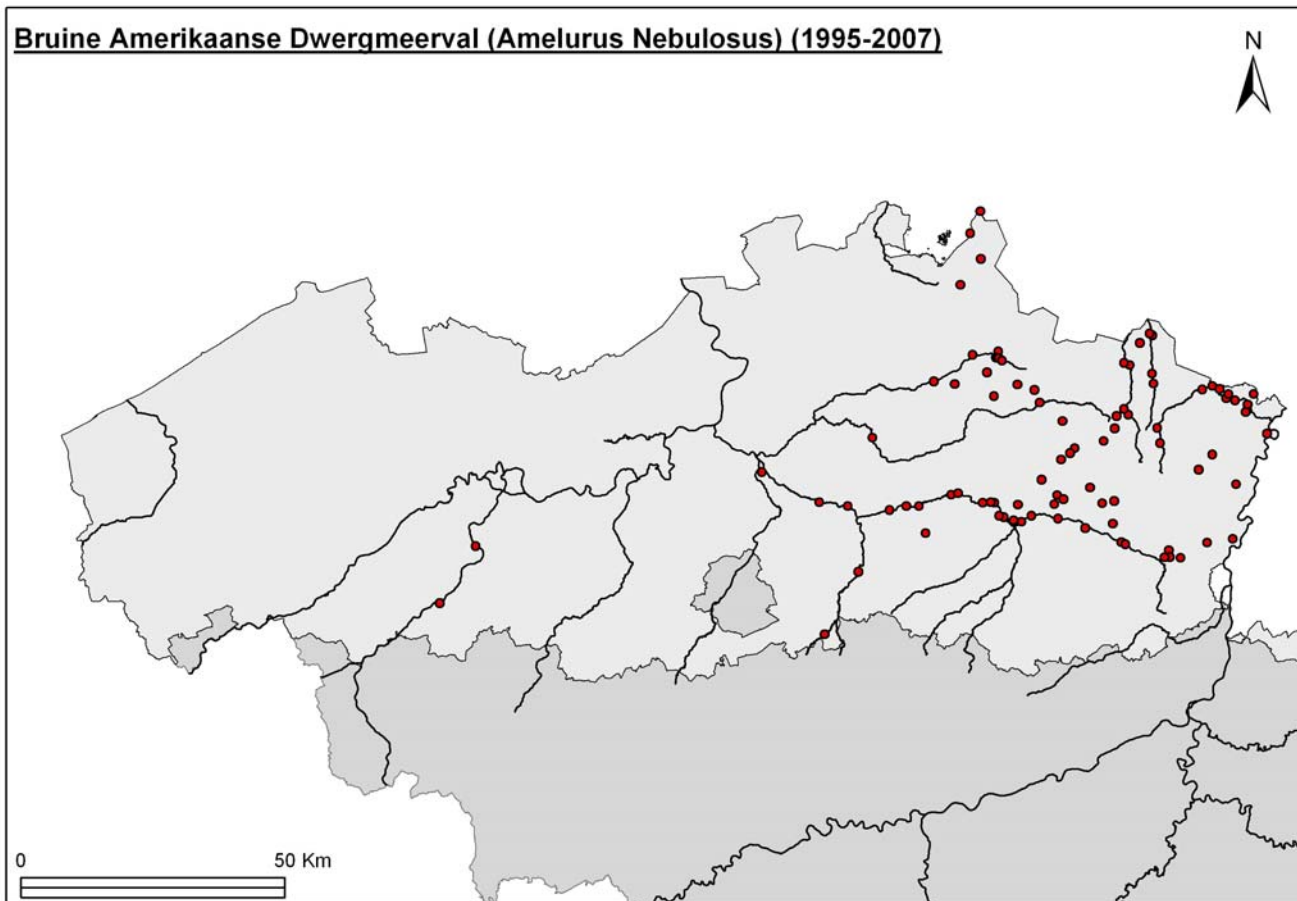
Ameiurus in Europe

- *A. melas* & *A. nebulosus* established in Europe
- Invasiveness: both high risk species
- Identification of *Ameiurus* species is difficult & identification criteria often unreliable
- No European distribution maps

Status in Flanders

- Present in about 5 % of sample sites in rivers, canals and lakes
- Mainly confined to NE Flanders
- Can be abundant in lakes, few specimens in rivers and canals
- Number of sites is decreasing
- Observed TL 4.0 – 29.3 cm

Distribution



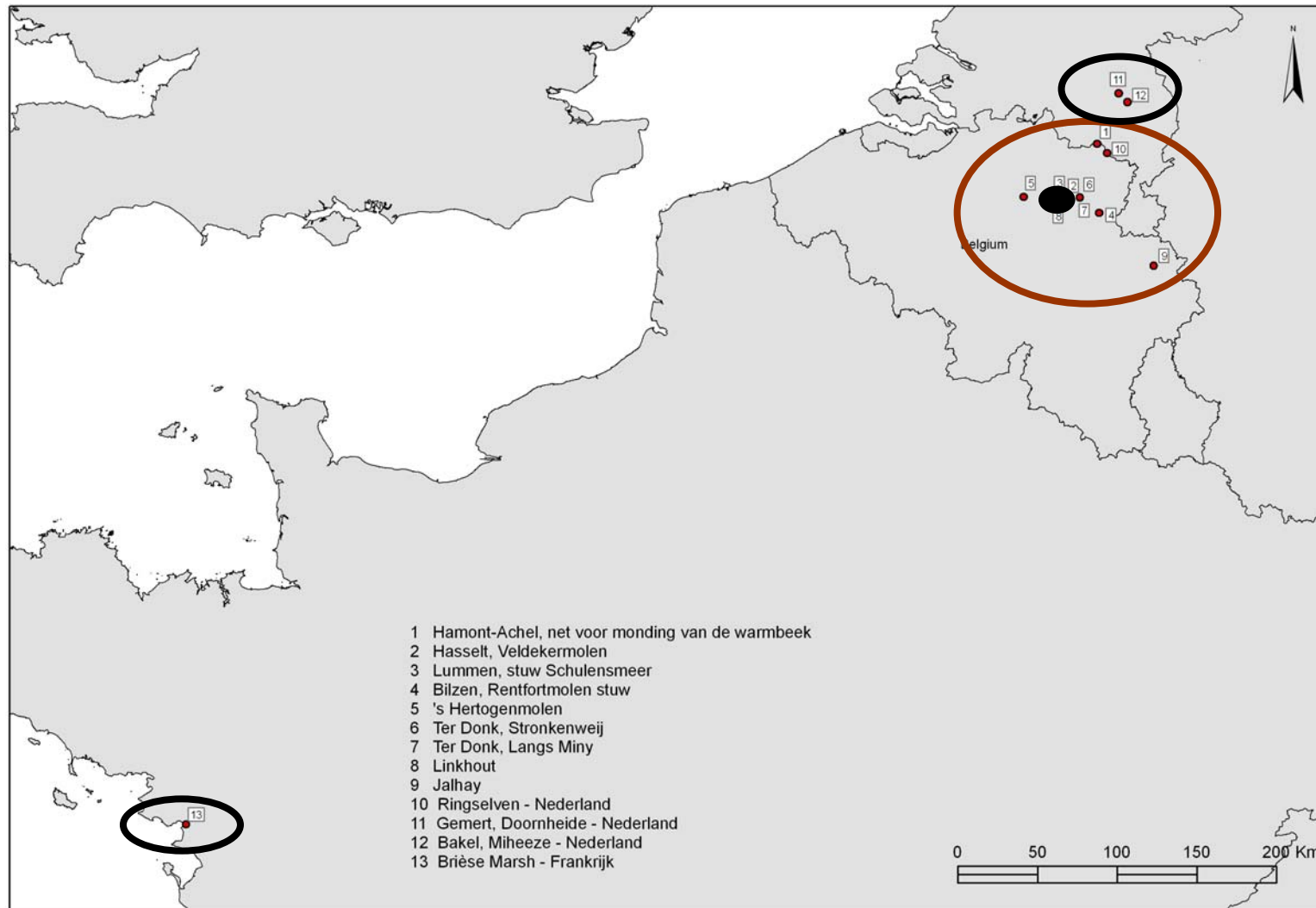
Belgium & neighbouring regions

- Many river and canal systems in common e.g. Meuse basin
 - Wallonia: only black bullhead
(Philippart, 2004)
 - Flanders: only brown bullhead
(Verreycken et al., 2007)
 - The Netherlands: both species, black rare
 - France: only black bullhead

Preliminary genetic screening

- *Ameiurus* specimens sampled with electrofishing gear and fykes
- Fin clips from 11 sites in Flanders, and for comparison 3 in The Netherlands and 1 in France
- A 650 basepair fragment of the 5' end of the mitochondrial Cytochrome Oxidase I (COI) gene (bar-coding region) was analysed using universal COI primer cocktails with M13 tails
- Sequences compared to published sequences in Genbank & BLAST

Results



Conclusion of genetic screening

- Superficial identification in the field mainly correctly identified species
- However:
 - 1 black bullhead in Flanders
 - brown bullhead in Wallonia

Future research

- Morphological research of all sampled specimens => can we find better, reliable characteristics?
- 10 specimens of 10 different sites were examined on 5 characteristics by 3 experienced technicians
 - Body coloration
 - 7/8 marmored (brown) & 2/2 egal (black)
 - Anal fin membrane pigmentation
 - 7/8 plain (brown) & 2/2 darker than rays (black)
 - Anal fin rays (total)
 - Brown => 19 (4 sp) – 20 (3 sp) – 21 (1 sp)
 - Black => 18 (1 sp) – 20 (1 sp)
 - Serration of spine pectoral fin
 - Weak 2/2 (black) – strong 7/8 (brown)
 - Length longest barbels
 - 9/10 past pectoral fin base – 1 to fin base (brown)

Conclusion

- This study aimed to contribute to a better understanding of the status of the highly invasive *Ameiurus* species in a part of Europe
- And hoped to elucidate the confusion about the presence of both bullheads in Flanders and Wallonia (Belgium).



Thank you!