Impacts of aquatic invasive alien amphibians and characterization of their habitat in western France

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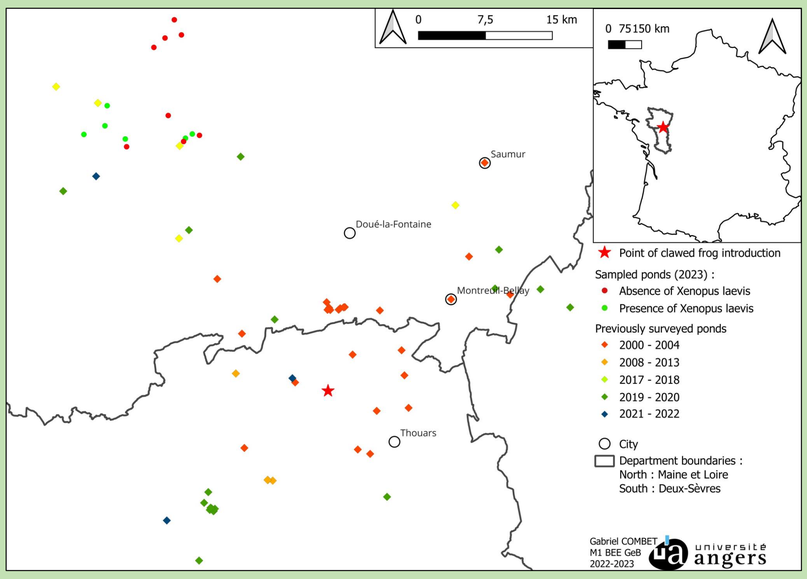
BACKGROUND

Alien species are announced as one of the major causes of biodiversity erosion[1]. Since fourty years, xenopus (*Xenopus laevis*) from Southern Africa, were introduced and now invasive in France, and particularly in Maine-et-Loire wetlands[2,3]. Adult stages are known to threaten the local biodiversity by competition with native amphibians or spread of diseases[2]. However, these threats are not completely studied yet.

Our research group is interested in highlighting the invasion process of xenopus and their impacts on native amphibians.

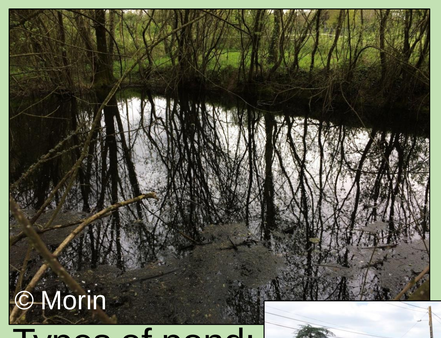
Invasion dynamics



Cartography of distribution area

New location prospections with trap cages

Habitat occupation



. Size pond
. Depth
. Aquatic vegetation
. Afforestation rate

Types of pond:
. Grassland
. Wasteland
. Woodland
. Settling pond
. Wetland

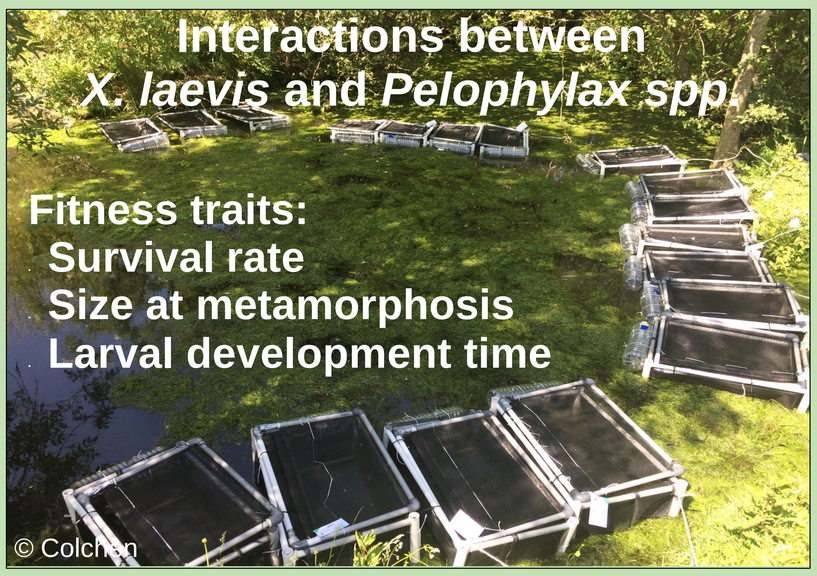
Typology of habitat

Hypothesis: Competitive exclusion

. Chlorophyll rate
. pH
. Ionic parameters: NO_2^-, NO_3^+, SO_2^-, ...

Evaluation of water quality

Interactions with native amphibians



Experimentation *in situ*

Impacts of predator on tadpoles:

. **Escape behaviour**
. **Freezing behaviour**
. **Interindividuals distances**

Experimentation *ex situ*

FUTURE PROSPECTS

Attempt at identifying the corridors and barriers by exploring variables of the landscape (by GIS).

Exploring the ability to cope with polluted waters (pesticides, heavy metals, …).

Measuring diversity in amphibian community (by eDNA sampling) with and without presence of xenopus to quantify the specific degrees of competitive exclusion.

Testing directs and indirects effects of invasive xenopus on other native amphibians.

References: [1]: Bellard et al. 2016. *Biol. Lett.* 12, 2015623 ; [2]: Measey et al., 2012. *Biol. Invasions* 14, 2255-2270; [3]: Pagano et al. *In prep*