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# Genetic and taxonomic diversity of Aquitaine coast lakes isoetid communities

Estelle-Marie Blanquart<sup>1,2</sup>

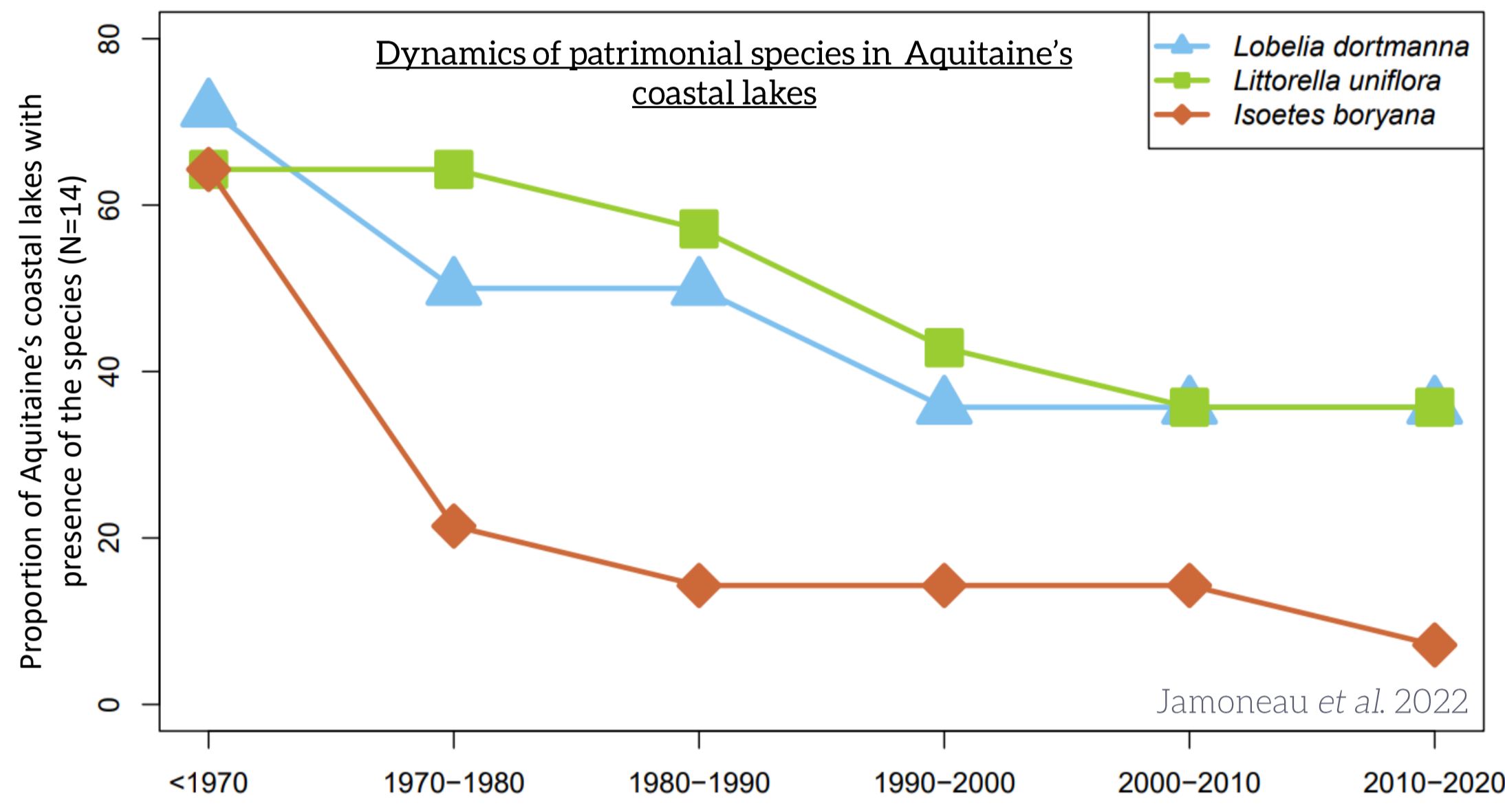
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## CONTEXT



- Aquitaine lakes host original plants **communities**
- These communities are endangered by global changes (i.e. : climatic changes, human activities).

Classification of patrimonial species in red lists. Lorient, 2022

Taxa	Red list France	Red list Aquitaine	Regional rarity index	Scalable trend	Territorial responsibility	Asset valuation
<i>Isoetes boryana</i>	EN	EN Endangered	Exceptional (E)	↘	Major	***** Outstanding patrimonial interest
<i>Lobelia dortmanna</i>	NT	EN	Exceptional (E)	↘	Major	*** Strong patrimonial interest
<i>Littorella uniflora</i>	-	NT Near-threatened	Quite rare	→?	Important	*** Quite strong patrimonial interest

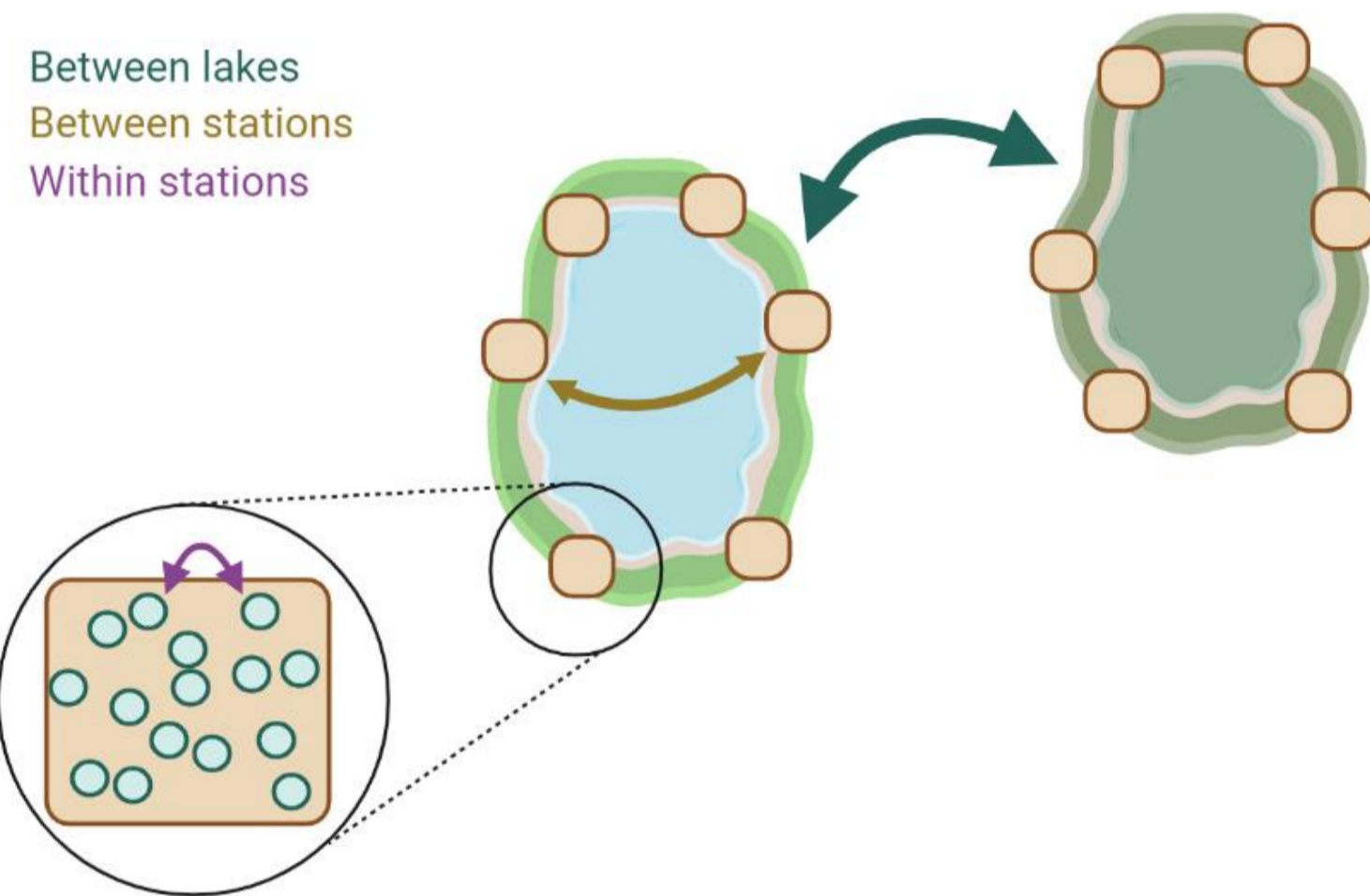
PLAN NATIONAL D'ACTION | 27 novembre 2020 (v3.0)  
En faveur des végétations de bords d'étangs arrière-littoraux des Landes et de Gironde

Influence factors observed
Water activities (kite-surfing, water skiing, etc.)
Leisure activities (hunting, fishing, horseback riding)
Invasive Alien Species (Flora)
Grazing on riparian plots
Oil extraction
Anchorage outside ports
Erosion
Sediment pollution

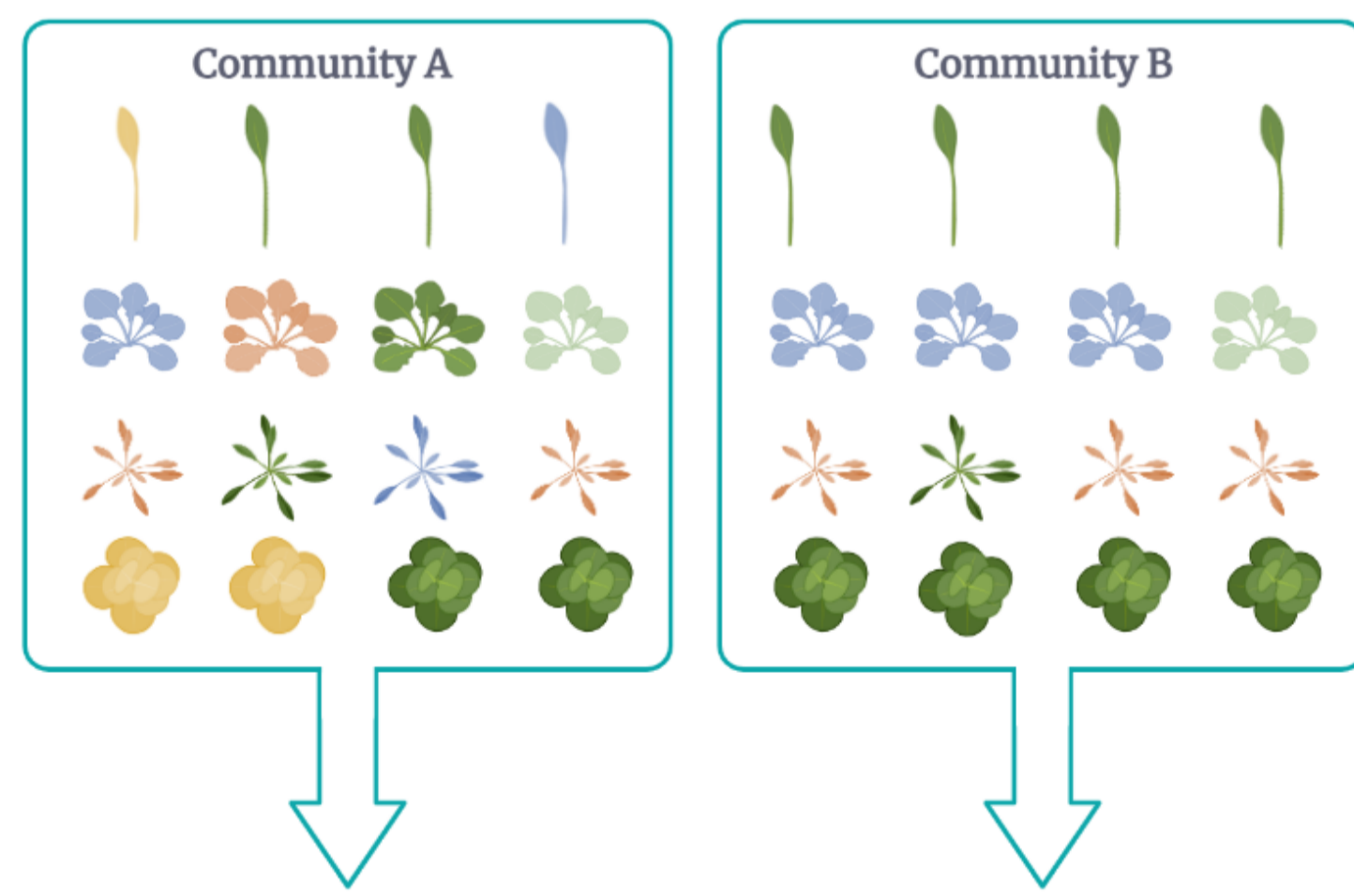
Observed influence factors in Aquitaine Lakes  
Deveaud, 2022

## AIMS

i - Investigate gene flows and environmental influence on genetic diversity

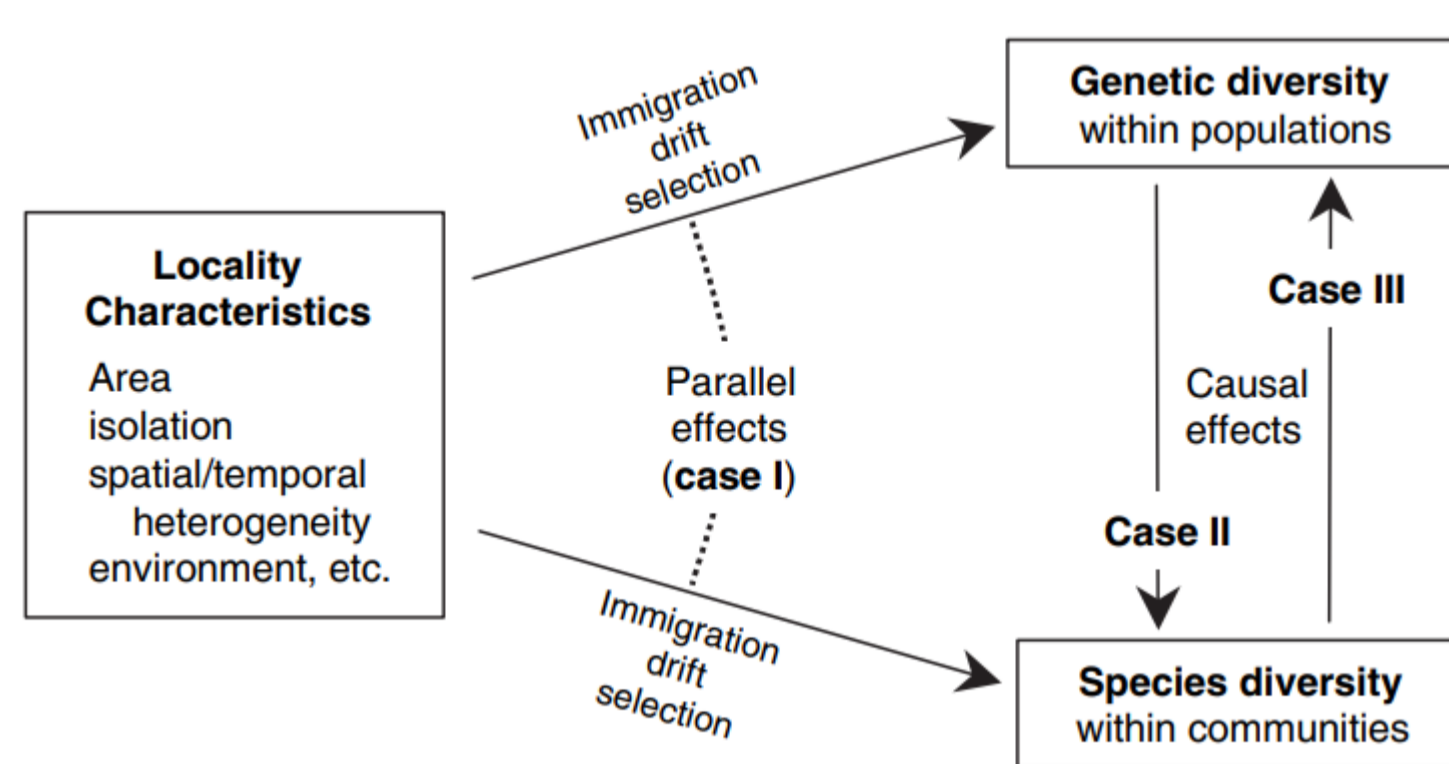


ii - Estimate genetic diversity and adaptation capacity



Population and community genetic diversity

iii - Test the correlation between genetic and taxonomic diversity (SGDC)



Potential connections between species diversity and genetic diversity  
From M. Vellend and M. A. Geber, 2005

→ Gather useful information to improve the conservation plan for these communities

## MATERIAL AND METHODS

Species and sites

- 9 **macrophytes** species from 5 Aquitaine lakes (South West of France)
- 6 **stations/lake** & 15 **individuals/species**
- A data base of **4000 individuals**.



Plants with different ecological functionality and traits commonly found in isoetid communities



## DNA analyses

- Develop **microsatellites markers** for the project
- Quantify **genetic diversity** among sites and genetic differentiation between populations
- Estimate **gene flows** between populations (reproduction...)
- Study **demographic history**: migration path and variation of the populations effective sizes

→ Populations **connected or isolated** ?

## Species-genetic diversity correlation (SGDC)

Species-genetic diversity correlation : underline the important role of genetic diversity in species assemblage.

Positive correlation:

- Identical **ecological processes** influence diversity at the genetic and taxonomic scale
- Use taxonomic diversity as a proxy for genetic diversity: **interest for conservation**

## REFERENCES :

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- Vellend, M. and Geber, M.A. (2005). Connections between species diversity and genetic diversity. Ecology Letters, 8: 767-781. <https://doi.org/10.1111/j.1461-0248.2005.00775.x> Lorient S., 2022 - Plan national d'actions en faveur des végétations de bords d'étangs arrière-littoraux des Landes et de Gironde. Bilan 2021 - 2022 (année 1) - Conservatoire Botanique National Sud-Atlantique. 29 pages + Annexes.
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METAPROGRAMME BIOSEFAIR

