

UNIVERSITÉ DE FRIBOURG UNIVERSITÄT FREIBURG



Temporal trends



Fonds national suisse Schweizerischer Nationalfonds Fondo nazionale svizzero Swiss National Science Foundation

in alien species impacts



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Like for other environmental stressors, impacts caused by alien species are defined as changes caused by the alien species in environmental variables (e.g. a native population) when compared to the situation without the alien species («baseline state»).

For simplicity, baseline and invaded states of the affected variable are usually assumed to be at equilibrium.

AS a Consequence, impacts are often measured by comparing snapshots of the situation with and without the alien, with no attempt to capture pre/post invasion dynamics.

Main problems

Mis-interpretation of the data:

Temporal variation of impacts is ignored:



A new framework capturing temporal variation of impacts

Temporal variation of impacts is an aspect ignored by impact frameworks in invasion science: even though it is generally admitted that alien species' impacts evolve over time, their temporal trend has rarely been considered when comparing or quantifying them.

We are developing a new framework incorporating temporal variation of impacts: impact trends of alien species can now be compared.



from the time t₂, the impact magnitude stays constant (around 25 %)

 t_1

impact can be given at a time (*rate*), or over a time period (*cumulative impact*)

0 %

 t_3

 τ_2

time

alien causes an extinction of the native population at time t₃: the impact magnitude of the alien reaches 100%

 $+_2$

time

12

 t_1

alien causes an extinction of the native population at time t₂

 t_2

time

 T_2

 t_1

at time t₃, the native population would have gone extinct without the alien: the alien does not cause any impact anymore

0 %

both alien species caused a local extinction of the native populations, but our framework allows to show that the impact of one alien species lasts longer than the impact of the other

0%