

Ecological Sensitivity and Vulnerability of the Landings in Portuguese Fisheries

species prioritization for adaptation plans

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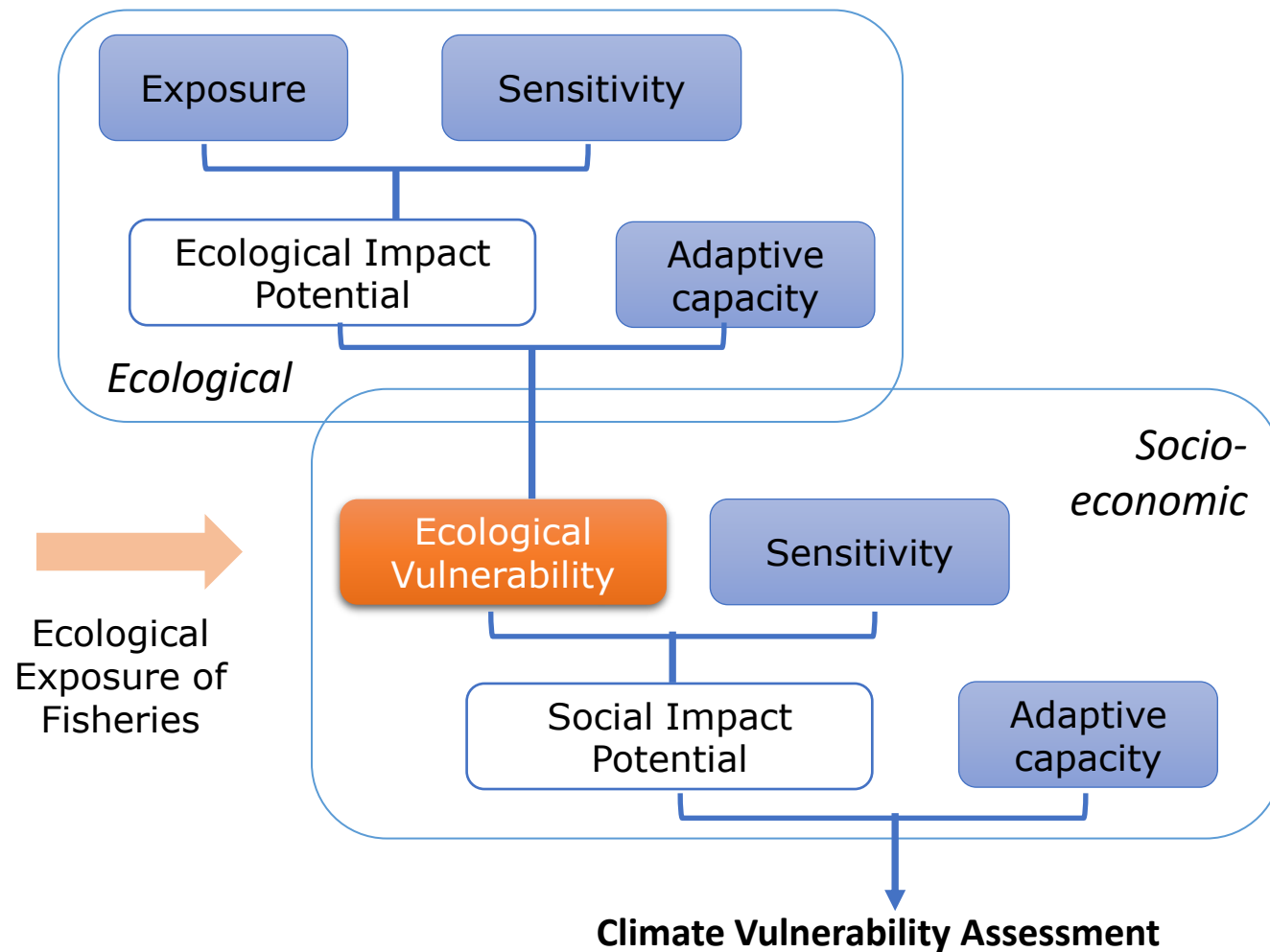
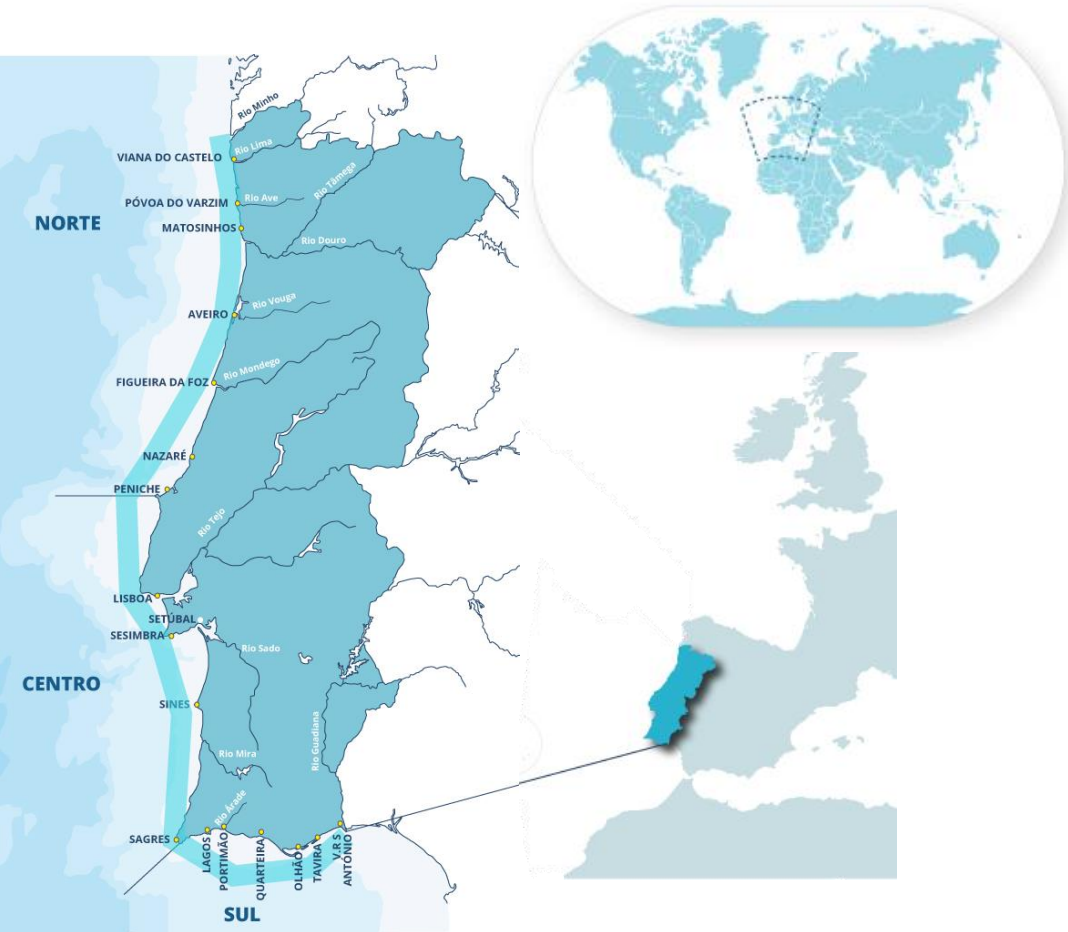
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Project and Study area



Evaluate the vulnerability of the fisheries
Share and propose adaptive measures




Adapted from Marshall et al., 2010, 2013; Cinner et al., 2013,
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Objectives

- Identify the species that contribute the most to the ecological sensitivity and vulnerability of the landings→ *ECOLOGICAL EXPOSURE*
- Determine the degree of economic dependence of the fleet on vulnerable species

Climate change vulnerability assessment of the main marine commercial fish and invertebrates of Portugal

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VULNERABILIDADE	RCP 4.5	RCP 8.5
NORTE	Moderada	Moderada
CENTRO	Moderada	Alta
SUL	Moderada	Alta



Imagem: fao.org

$$\text{Vulnerability/ Sensitivity of the Landings} = \text{Species score} \times \text{Landings}$$

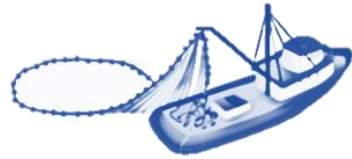
- 1) Long-term changes in Sensitivity of the landings
(*Intrinsic vulnerability in Cheung et al., 2007*)
 - * Based on life-history traits
- 2) Vulnerability of the landings of each fleet
 - * exposure+ sensitivity-adaptive capacity
- 3) Fisheries dependence and prioritization
(*Johnson & Welch, 2016*)

Vulnerability vs. Fisheries diversity

1) Trends in sensitivity of fisheries landings



Multi-gear

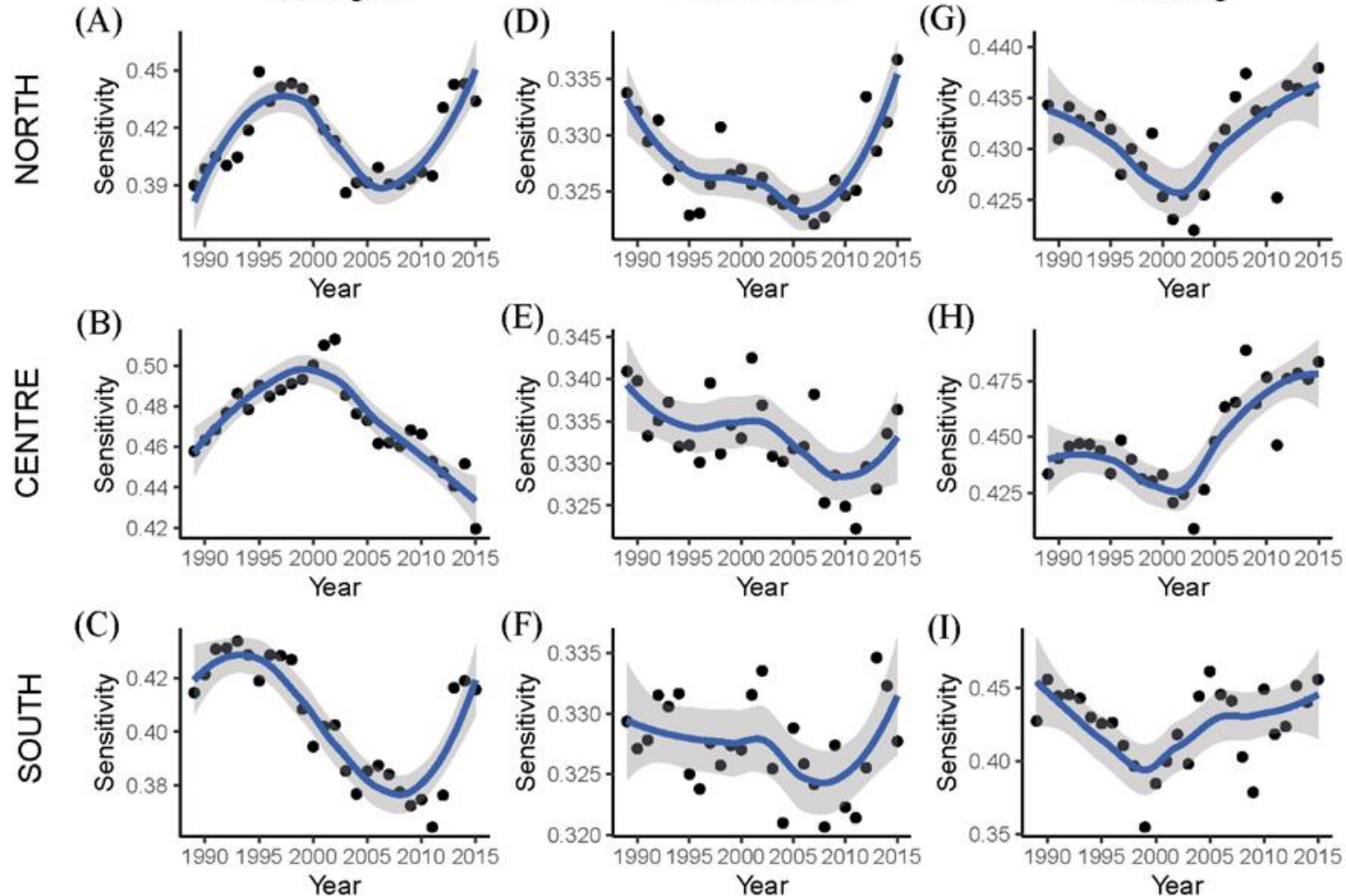


Purse-seine



Trawling

Fisheries landings between 1989 - 2015

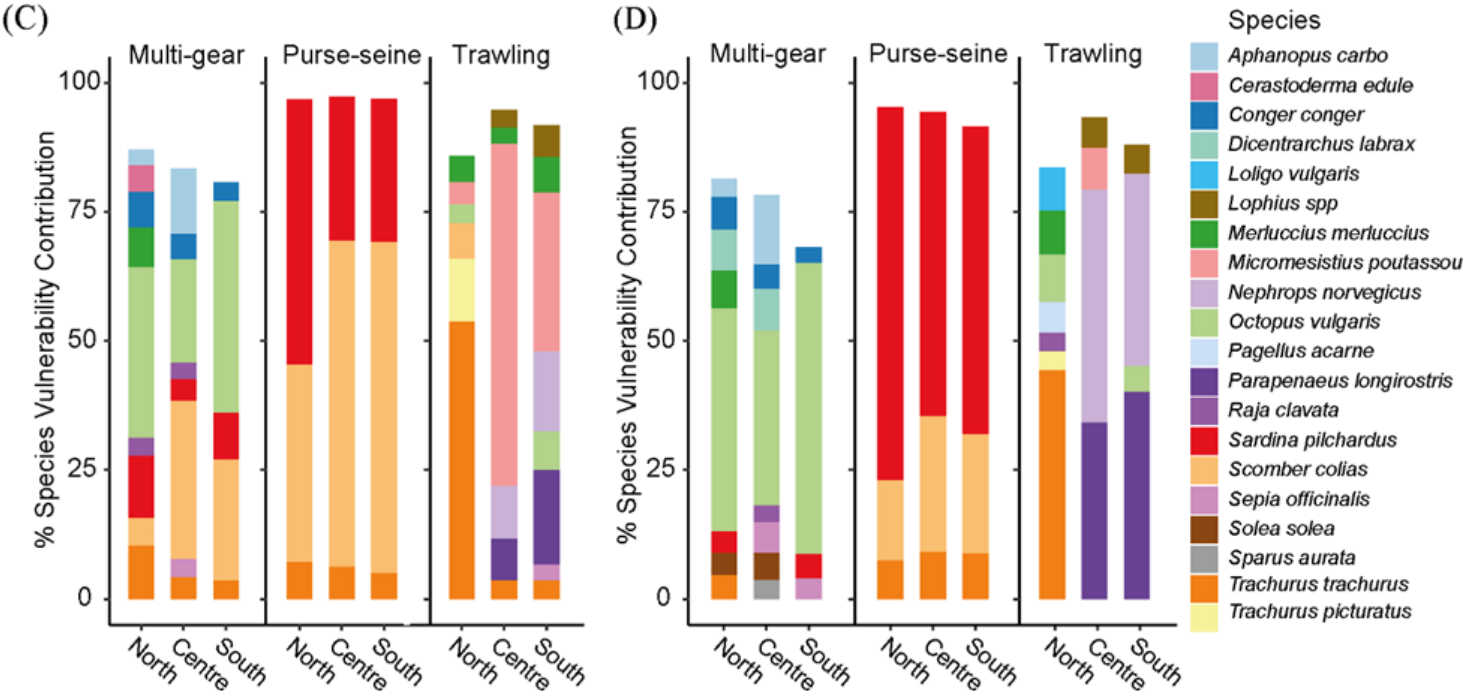
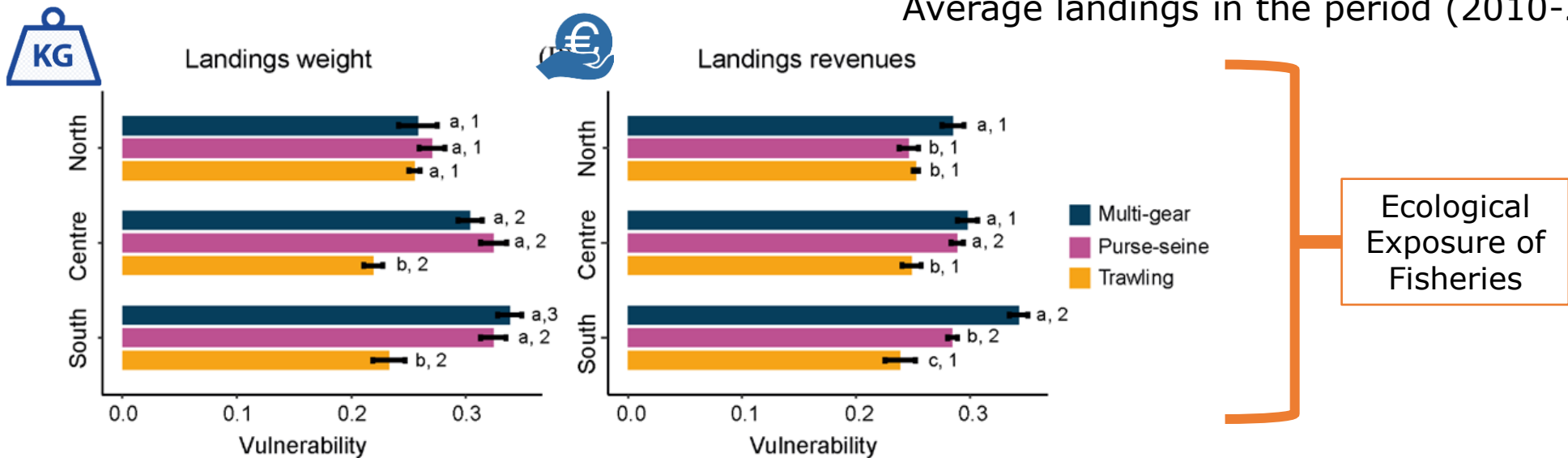


No general decline across areas or fishing fleets

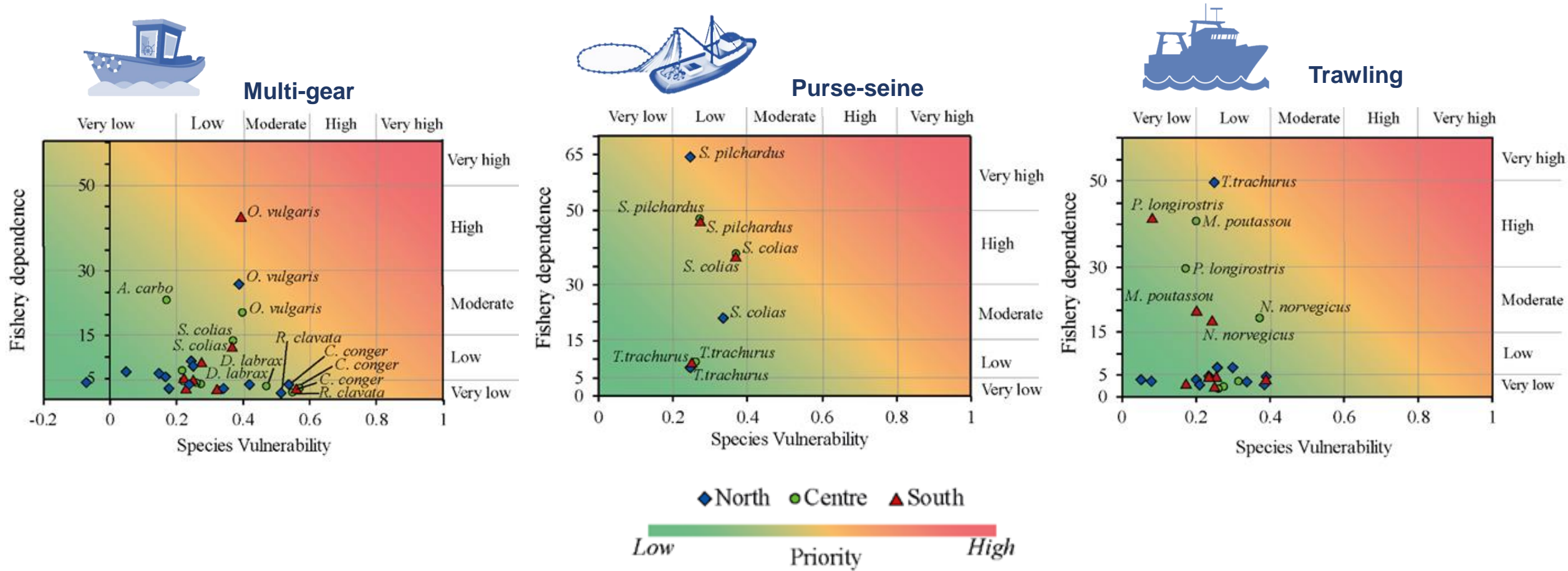
- Multi-gear: declined in the center and south
- Purse-seine: small variability
- Trawling: increased since the 2000s

2) Vulnerability of fisheries landings

Average landings in the period (2010-2015)



3) Fisheries dependence & Prioritization of species



- The higher vulnerability of multi-gear landings is compensated by diversification (low fishery dependence) of species caught
- Species of purse-seine are had low vulnerability but the fishery rely on few species

Summary

- ❑ Important to account for regional differences
- ❑ The sensitivity of the landings showed variable patterns depending on the region and gear analyzed
- ❑ Vulnerability of species is not a static value and needs a periodical update
- ❑ Adaptation plans should account for both, ecological vulnerability of landings and diversification of resources



Use the vulnerability of the landings to develop a full socio-economic vulnerability assessment and co-propose adaptation measures



Obrigada ~ Gracias ~ Thank you

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