

Perceived influence over marine conservation: determinants and implications of empowerment (Príncipe island, São Tomé and Príncipe)

Ana Nuno, Litoney Matos, Kristian Metcalfe,
Brendan Godley & Annette Broderick

Research Fellow, UoE

Twitter: @Ana__Nuno



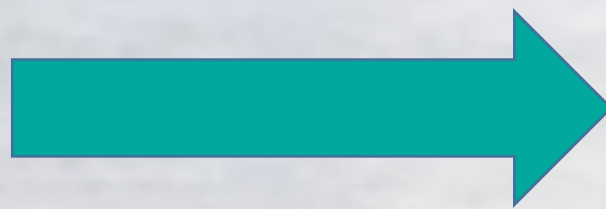
1. Catch decline

2. Ineffective top-down approaches

3. Lack of resources

- Community participation
- Marine spatial planning
- Co-management

(Marine) Conservation
Buzzword



Analytical enabling process
that can be **facilitated** and
has specific **implications**

Empowering small-scale
fishing communities
(men and women)

STUDY AIMS

Focusing on marine conservation and small-scale fisheries in the island of Príncipe:

- assessed **resource use** and **perceived state of fisheries** and the **marine environment**
- characterized **determinants** of empowerment towards marine conservation
- explored potential **management implications**

CASE STUDY



- Around 8,000 ppl
- Area of 136 km²
- Declared a Biosphere Reserve in 2012

Income: artisanal fishing is the main source of income for a large part of population

25% of the working population
(Belhabib, Sumaila, & Pauly, 2015)

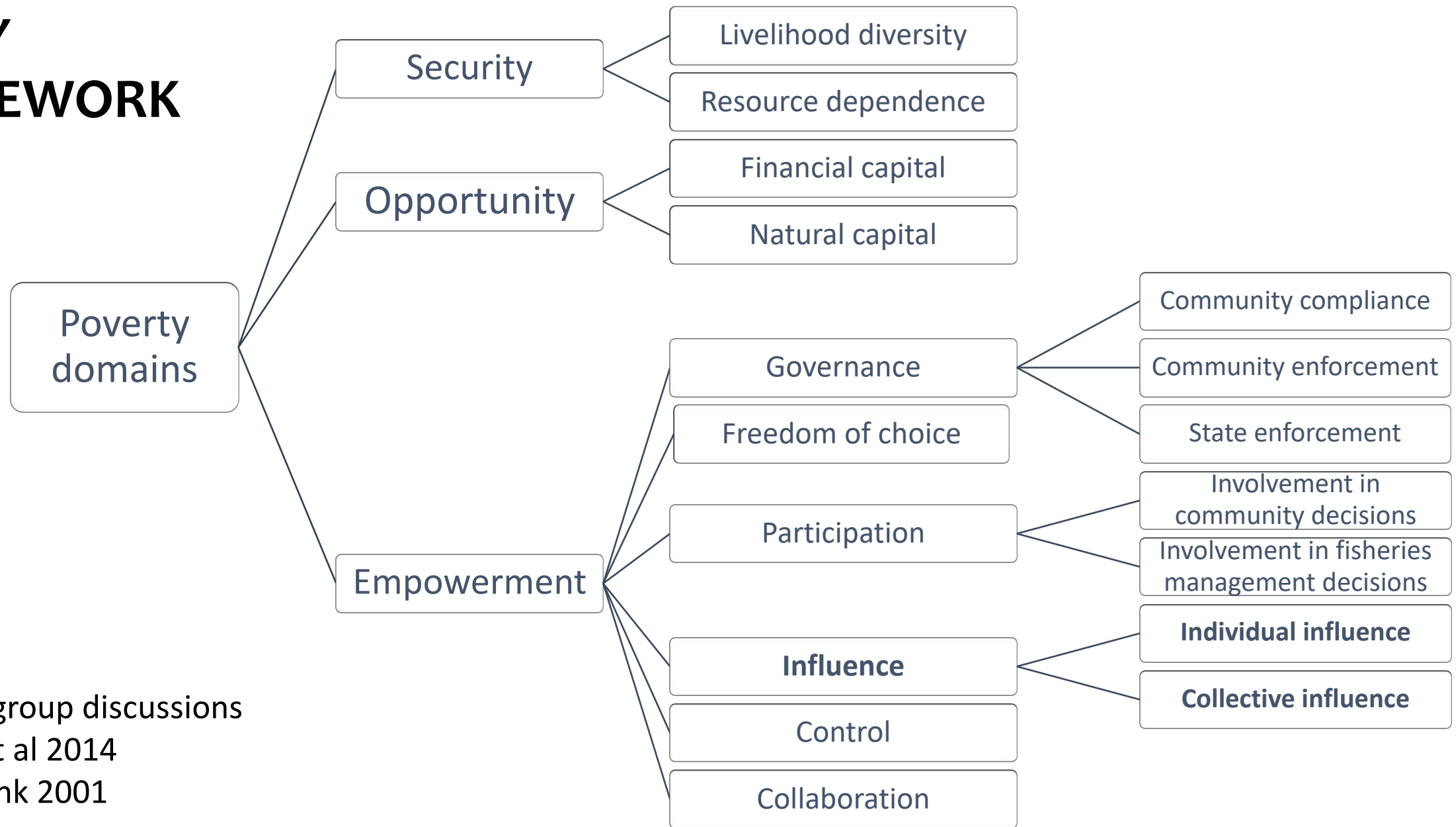
Food: main source of protein

fish consumption among highest in the world
(57.8 kg capita⁻¹ year⁻¹; Belhabib, Sumaila, & Pauly, 2015)

>60% of animal protein consumed by population
(Béné & Heck, 2005)

66% of population below the poverty line (World Bank)

STUDY FRAMEWORK



14 focus group discussions
Gurney et al 2014
World Bank 2001

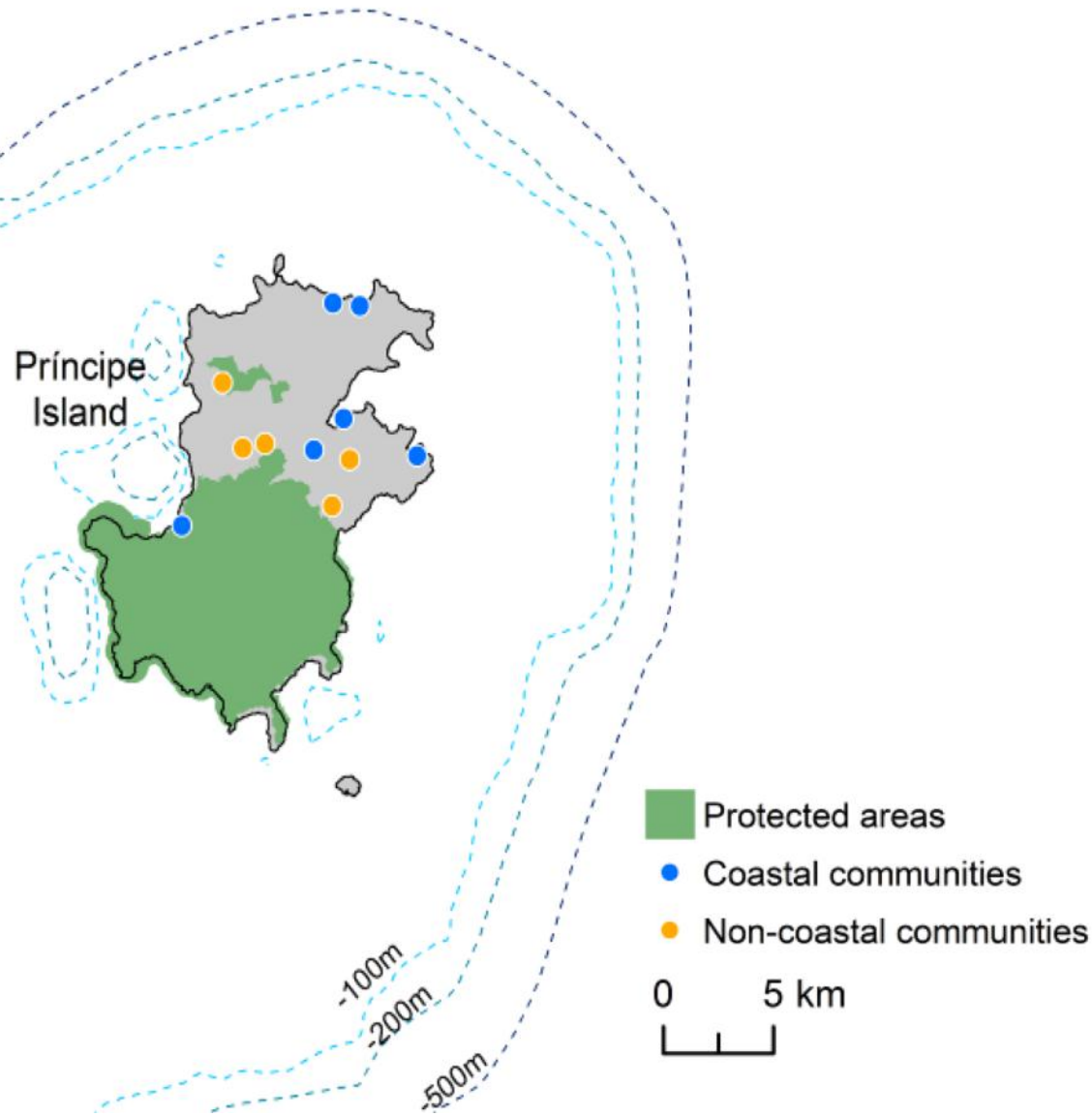
SURVEY TOOL

Questionnaire sections:

- individual and household **sociodemographic** characteristics
- use of natural resources of conservation interest (both **marine and terrestrial**)
- perceptions about **threats, changes and opportunities** for fishing livelihoods
- opinions about **marine resource management and decision-making** as well as rule-breaking and individual freedom of choice and action



SAMPLING



Surveyed communities included:

- six permanent coastal
- five randomly selected non-coastal

Participation criteria:

- all households
(female and male representatives)
- residents (at least 6 months per year)
- aged 18 or older.

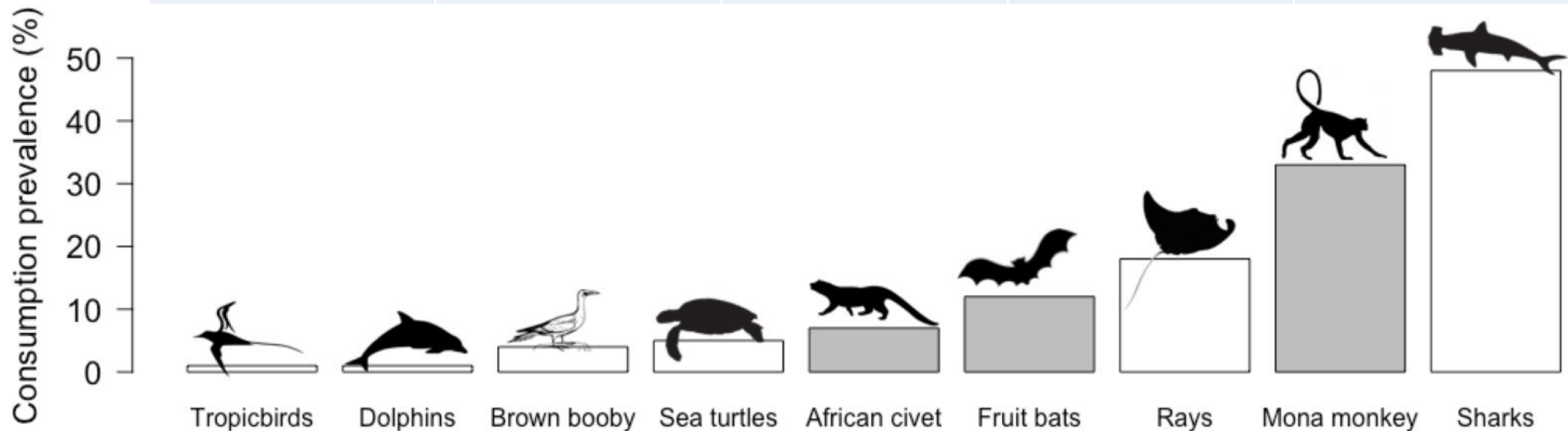
Sample size: 869 respondents
(202 fishers + 153 fish traders)

RESULTS: RESOURCE USE & STATE OF FISHERIES

Sharks
($p < 0.001$),
rays ($p < 0.03$),
brown boobies
($p < 0.02$) and
sea turtles
($p < 0.05$)
more
frequently
consumed in
coastal areas

Perceived conditions (N=355 fishers and fish traders)

	Better	Worse	Same	Don't know
Fish catch	10% (36)	67% (239)	11% (39)	12% (41)
Condition of local marine environment	8% (29)	48% (172)	14% (51)	29% (103)



RESULTS: POTENTIAL DRIVERS

Perceived individual influence:

State enforcement, collective influence, freedom of choice and action, perceived condition of local marine environment and living in a coastal community were the **most important variables**

Effect estimation:

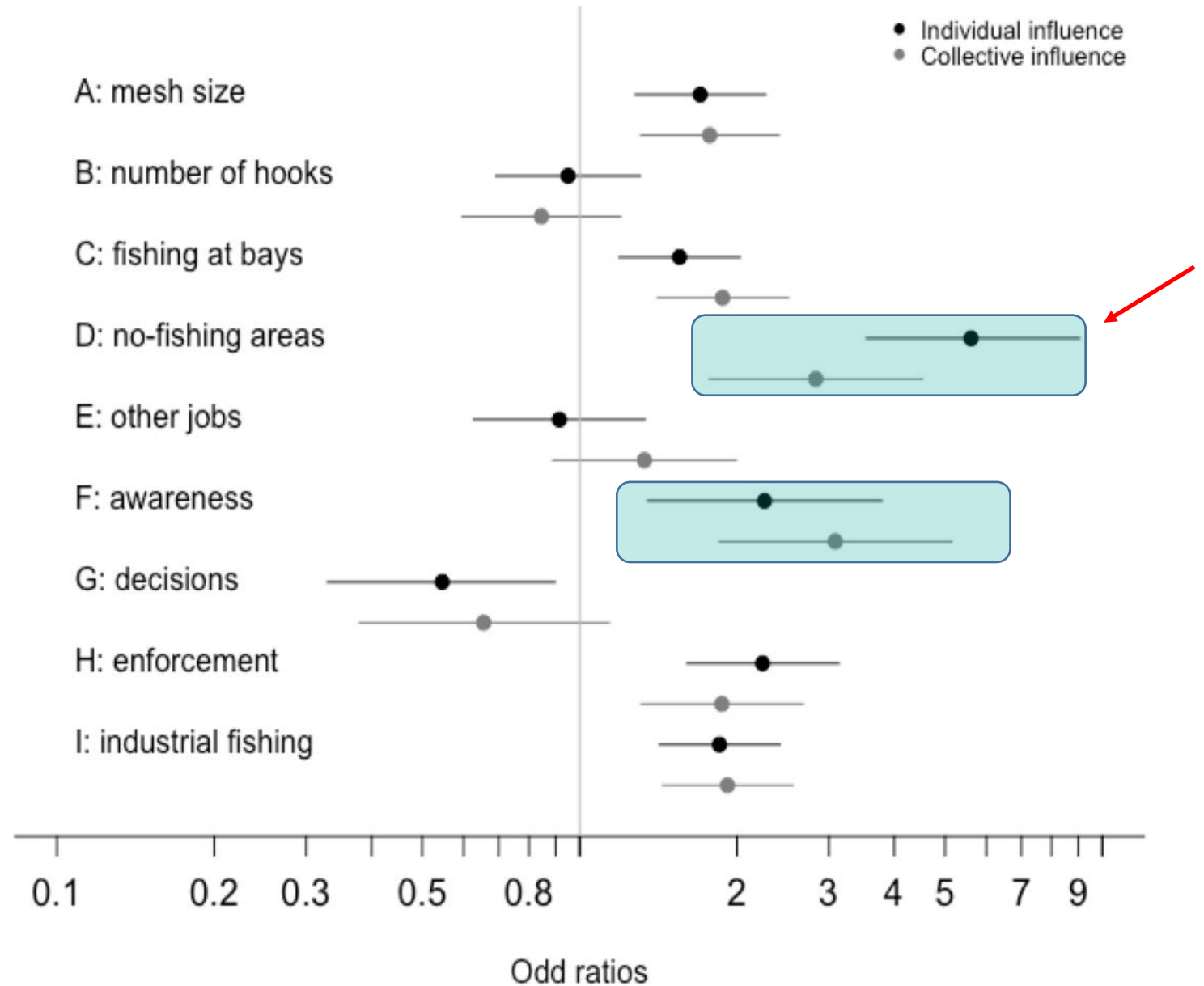
Ordinal logistic regression + model selection (AIC) and averaging

Parameter	Key factor?
Gender	?
Age	?
Education level	?
Birth place	?
Coastal community	✓
Livelihood diversity	?
Fisheries dependence	?
Membership of association	?
Wealth	?
Fish catch	✗
Condition of local marine environment	✓
Perceived compliance	?
Community enforcement	?
State enforcement	✓
Freedom of choice and action	✓
Involvement in community decisions	?
Involvement in fisheries decisions	?
Individual/collective influence	✓
Control about fish abundance at sea	?

RESULTS: MANAGEMENT ACTIONS

Creating no-fishing areas and raising awareness about sustainable fishing practices were the two **recommended actions** with the highest increase according to empowerment levels

Effect estimation:
GLM (family= quasibinomial)



RECOMMENDATIONS

- assessments of empowerment for **monitoring and evaluation** of marine conservation initiatives
- expand understanding of empowerment in small-scale fisheries (e.g. **multiple dimensions** by Zimmerman and Rappaport 1988)
- **wider-scale and cross-cultural** assessments

RECOMMENDATIONS

assess and facilitate
empowerment

promote stakeholder involvement
working towards common visions

promote co-development of
conservation strategies

long-term sustainability

#CONSERVATIONOPTIMISM
#OCEANOPTIMISM



Contacts:

Dr Ana Nuno, University of Exeter, UK

a.m.g.nuno@exeter.ac.uk

Twitter: @Ana__Nuno

Personal website:

<https://www.ananuno.net/>

Project website:

<https://omaliprincipeen.weebly.com/>

