Behavioural insights for improved conservation and protected area management

Ana Nuno
Research Fellow, UoE
Twitter: @Ana__Nuno

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CESAB CENTRE FOR THE SYNTHESIS AND ANALYSIS OF BIODIVERSITY

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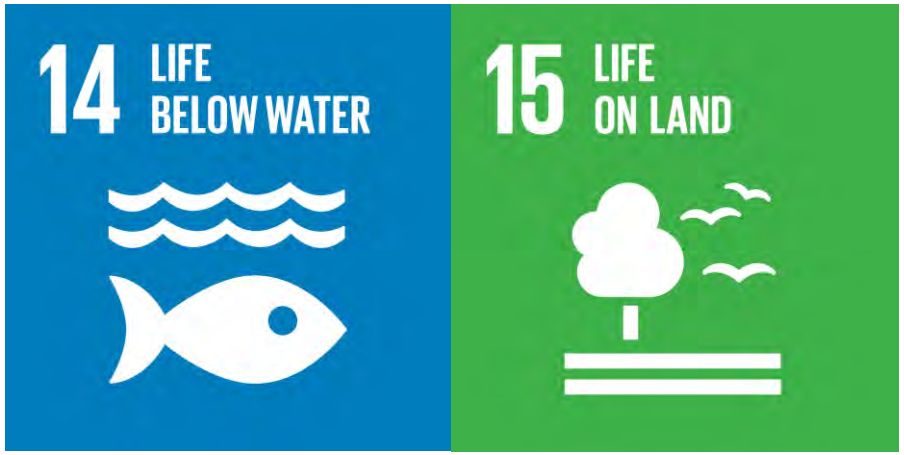
DISCLAIMERS!

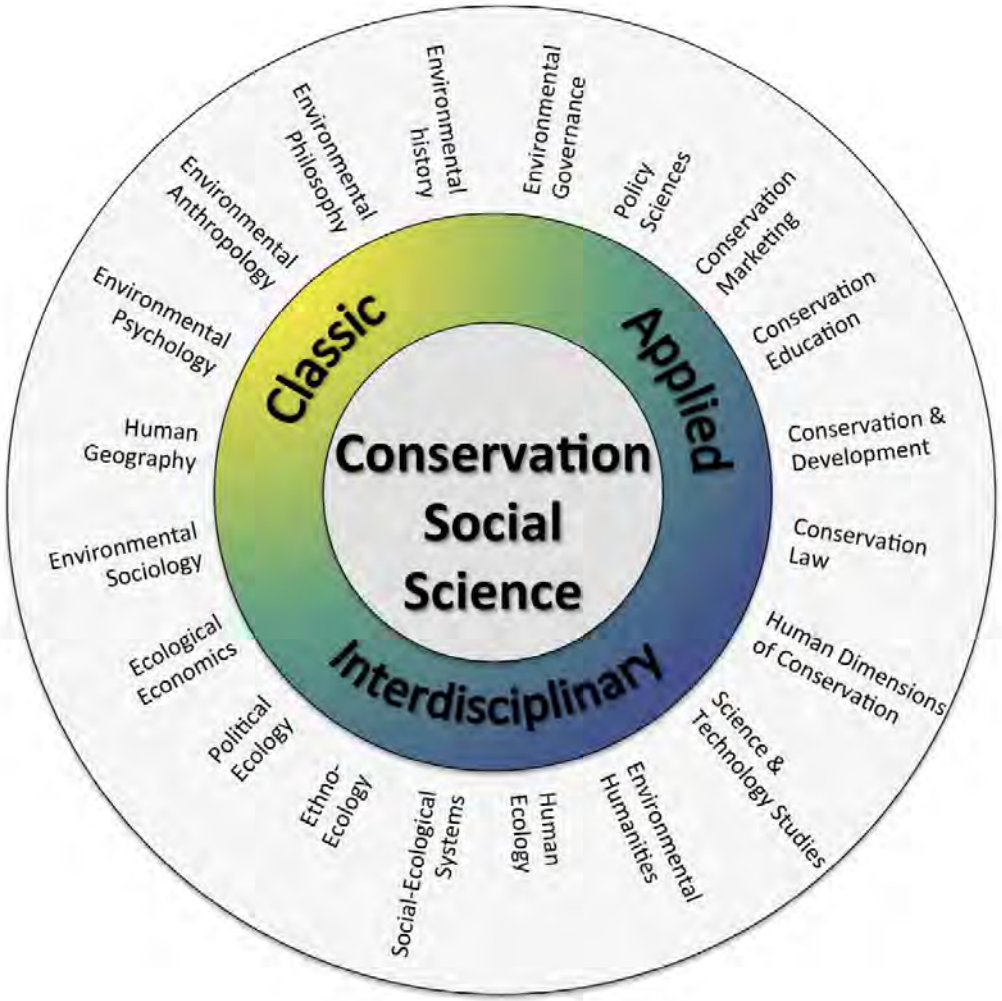
- *Scale*

- *Marine & land*



- *Social focus*

CONSERVATION SOCIAL SCIENCE



Research and Analysis		
Units	**Scales**	**Topics**
Global public, NGOs & ENGOs, international bodies or policies, corporations	Global & Regional	Ideas, philosophies, best practices, narratives, governance, demographics, theory, markets, global agreements
Politicians, legislation, policy-makers, government agencies, resource-based sectors, civil society, scientists, networks	National & Sub-national	Law and policy, politics, planning processes, advocacy processes, civic engagement, negotiation
Local governments, protected areas, management boards, communities, stakeholders, user groups, households, individuals	Local & Individual	Decision-making, management, local development, livelihoods, socio-economics, cultures, behavior, incentives, values, perceptions

Bennett *et al.* 2016 ***Biological Conservation***

TODAY'S GOALS

1. Illustrate how to use different tools/approaches for assessing human activities on protected areas and improving PA management

2. Identify challenges and opportunities for large-scale conservation

CASE STUDIES - I

”Establishing a network of marine protected areas in São Tomé and Príncipe through a co-management approach”

CASE STUDY

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

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)

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DARWIN INITIATIVE

1. Catch **decline**

2. Ineffective **top-down** approaches

3. Lack of **resources**

- Community **participation**
- Marine spatial **planning**
- **Co-management**

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(Marine) Conservation
Buzzword

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

Empowering small-scale fishing communities (men and women)

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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**

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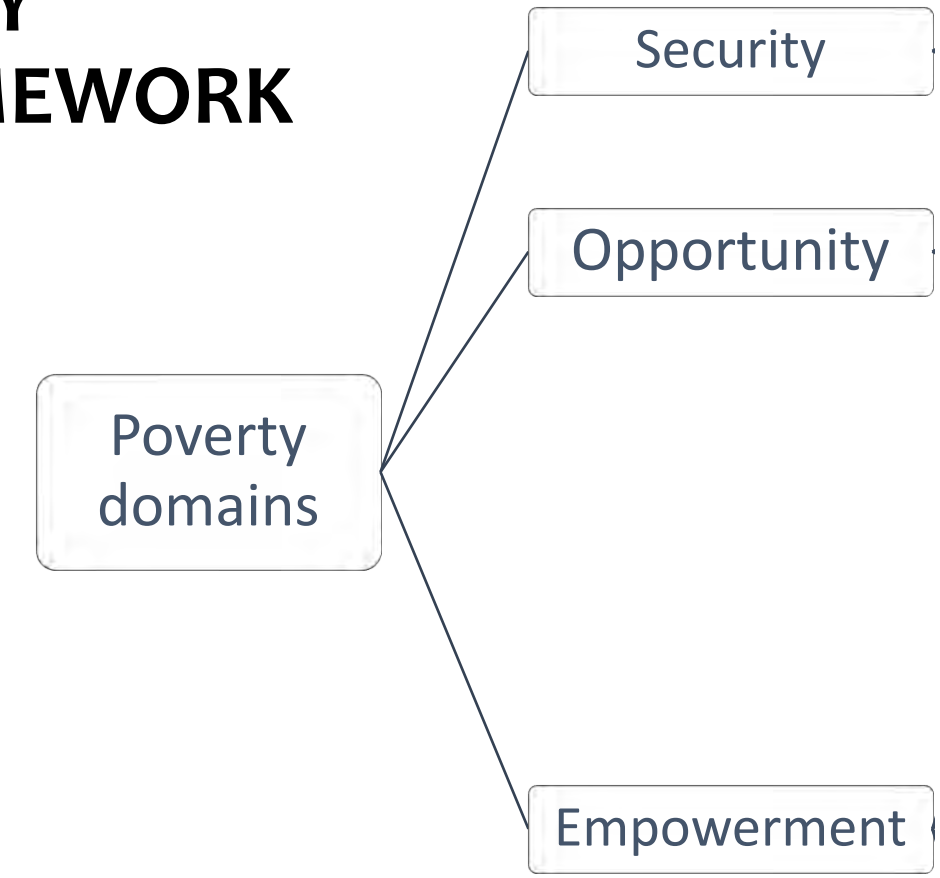
STUDY FRAMEWORK



14 focus group discussions
Gurney *et al* 2014
World Bank 2001

SURVEY TOOL

Belief in personal ability to influence marine protection

Disagreement with statement **"There's nothing I can do to protect the sea in Principe"** based on a 5-point Likert-type item

Belief in collective ability to influence marine protection

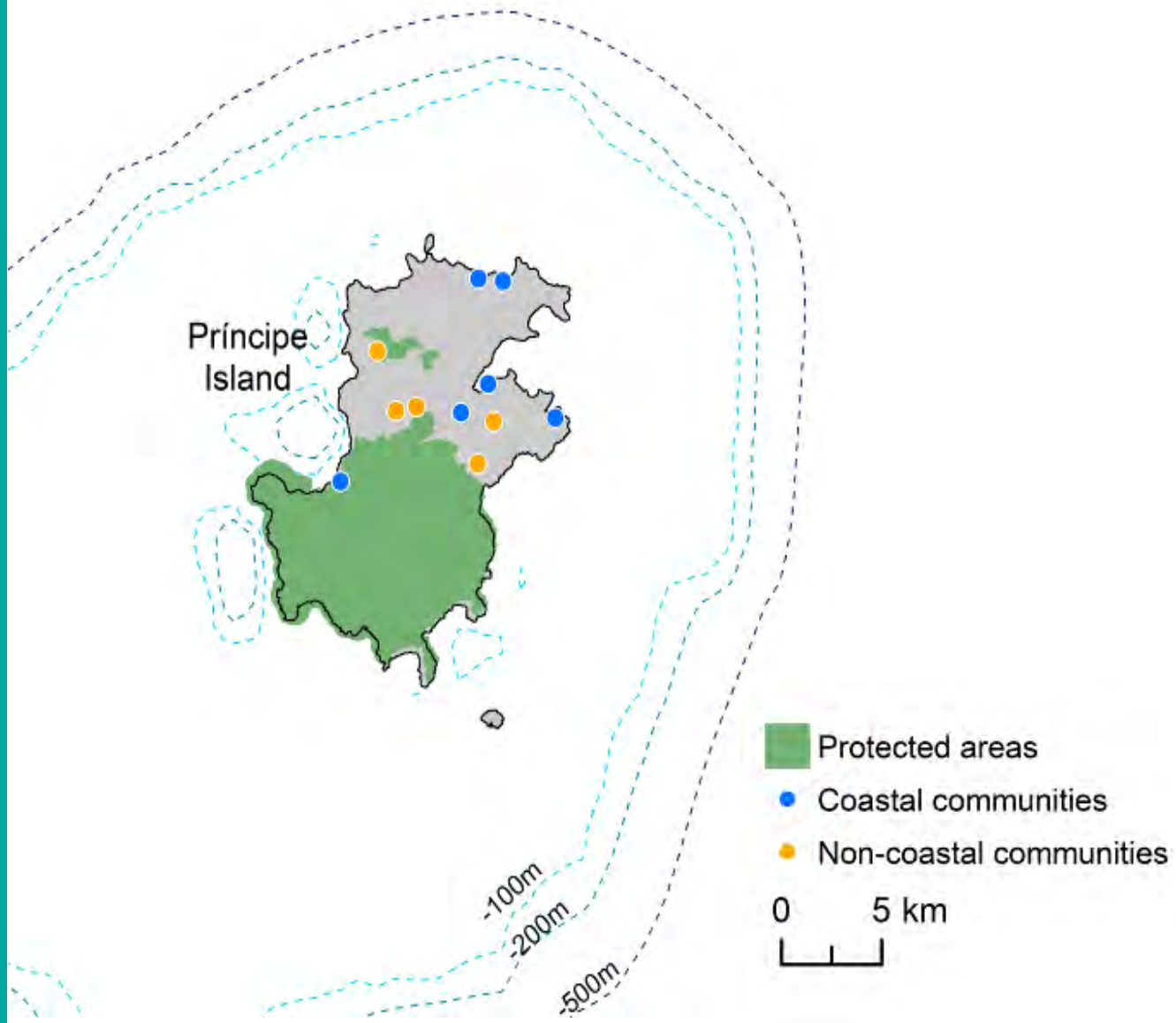
Agreement with statement **"If people in my community work together, we can protect our sea"** based on a 5-point Likert-type item

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)

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RESULTS: POTENTIAL DRIVERS

Perceived individual influence:

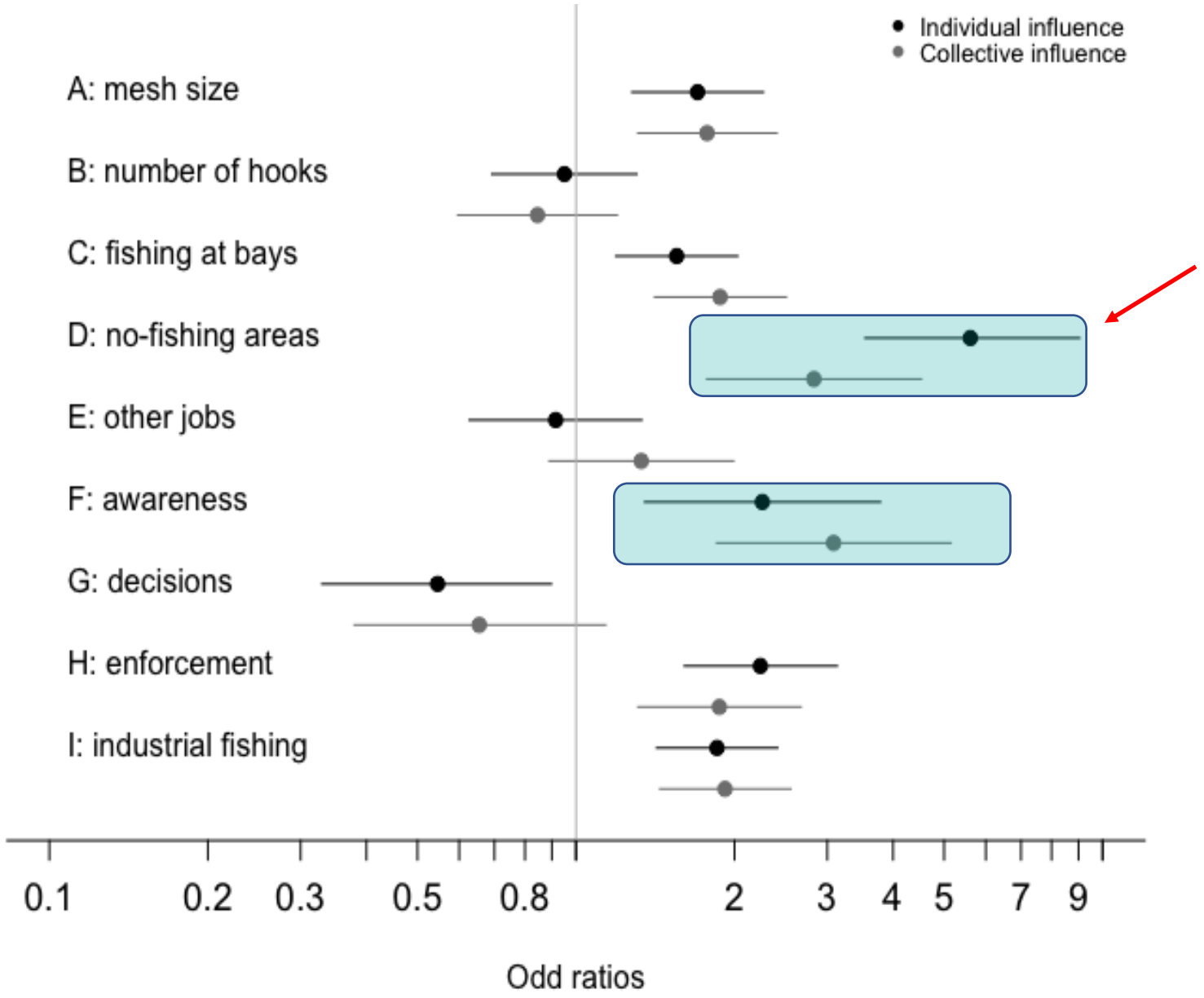
State enforcement, collective influence, freedom of choice and action, perceived condition of local marine environment and living in a coastal community were the **most important variables**

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

CASE STUDIES - II

"Drivers for distant-water, shark fishing in Indian and Sri Lanka fisher communities and implications for MPA management"

Ongoing PhD research by:

Claire Collins

Co-supervised by:

Dr Tom Letessier

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Oceanswell

SIFFS South Indian Federation of Fishermen Societies

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Fieldwork

Socio-economic value chain study

- Quantitative data from sales (500+)
- Qualitative data from interviews (25)
- Field notes

Value chain structure: Stakeholders

Exporters: 5-7 fin/skin exporters
~$10,660 per month

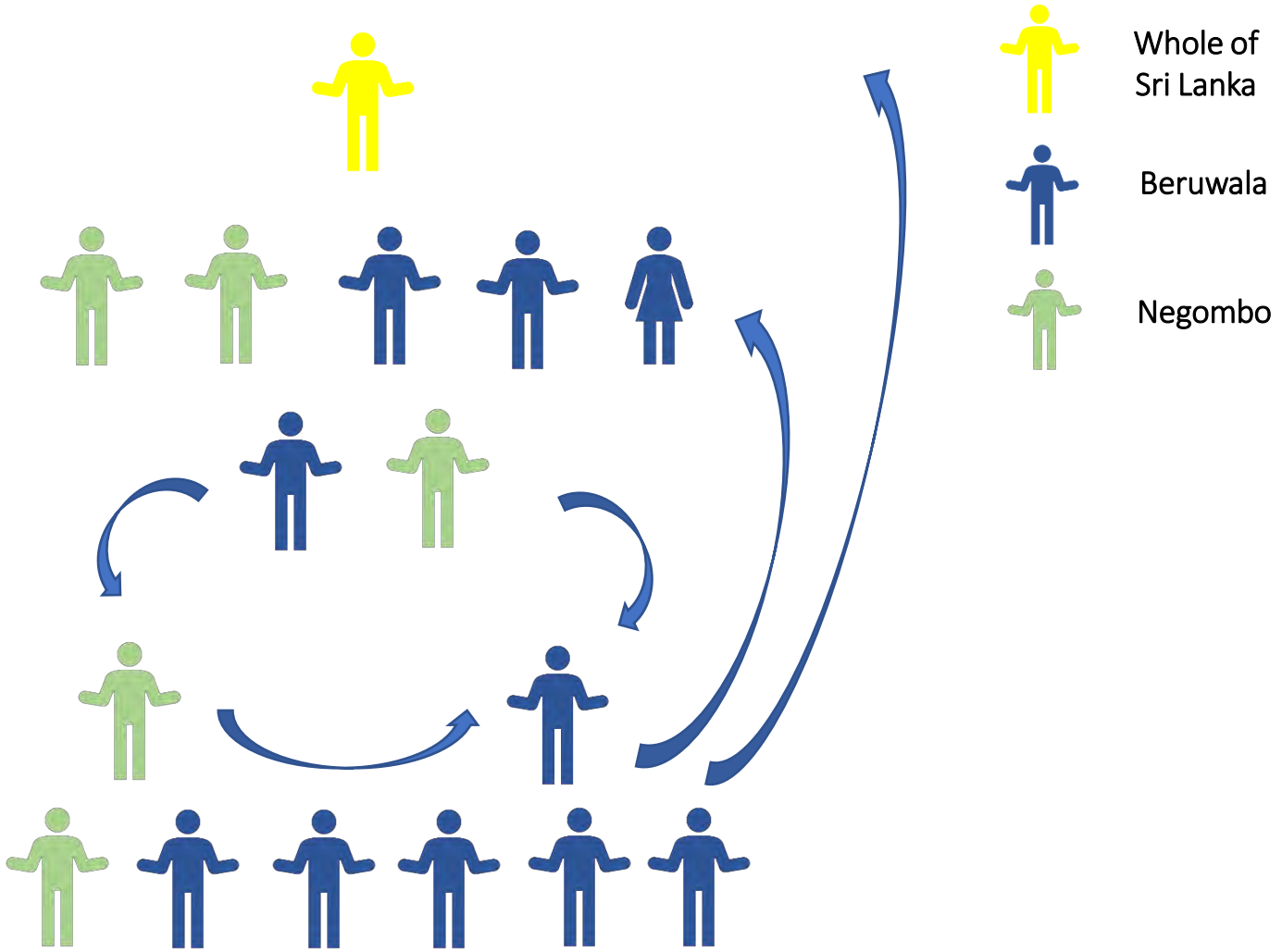
Retail /wholesale sellers: ~20 in each location

Fin collectors: 4

Processors: meat, fin, skin and liver processors

Middlemen: 4-6 traders per location
~$1110 per month

Vessels: ~120 shark targeting boats (seasonal and occasional)
~$700 per trip (2 months)



What causes illegal fishing in BIOT?

- Socio-economic reliance on shark products
- Factors that influence spatial movements
- Perception of, and compliance with, regulations
- Fisher perceptions of change in shark fisheries

Mixed-methods approach

"I don't know anything about land, but I know about the waters… if you consider shark fins, shark populations are depleting at rapid rates in the Sri Lankan waters now, not even 1 % there compared to past. As a result, now, fishers have to go to other countries waters to catch sharks" **(Trader/NEG/Jun19)**

Complex sentiments from fishers as recognition of reduction of populations but dislike wastage and discarding…

Perceived compliance

24%

…of skippers in Beruwala have fished in prohibited areas within the **last 12 months**

Skippers estimated that those who do fish illegally do so for **41% of their trips**

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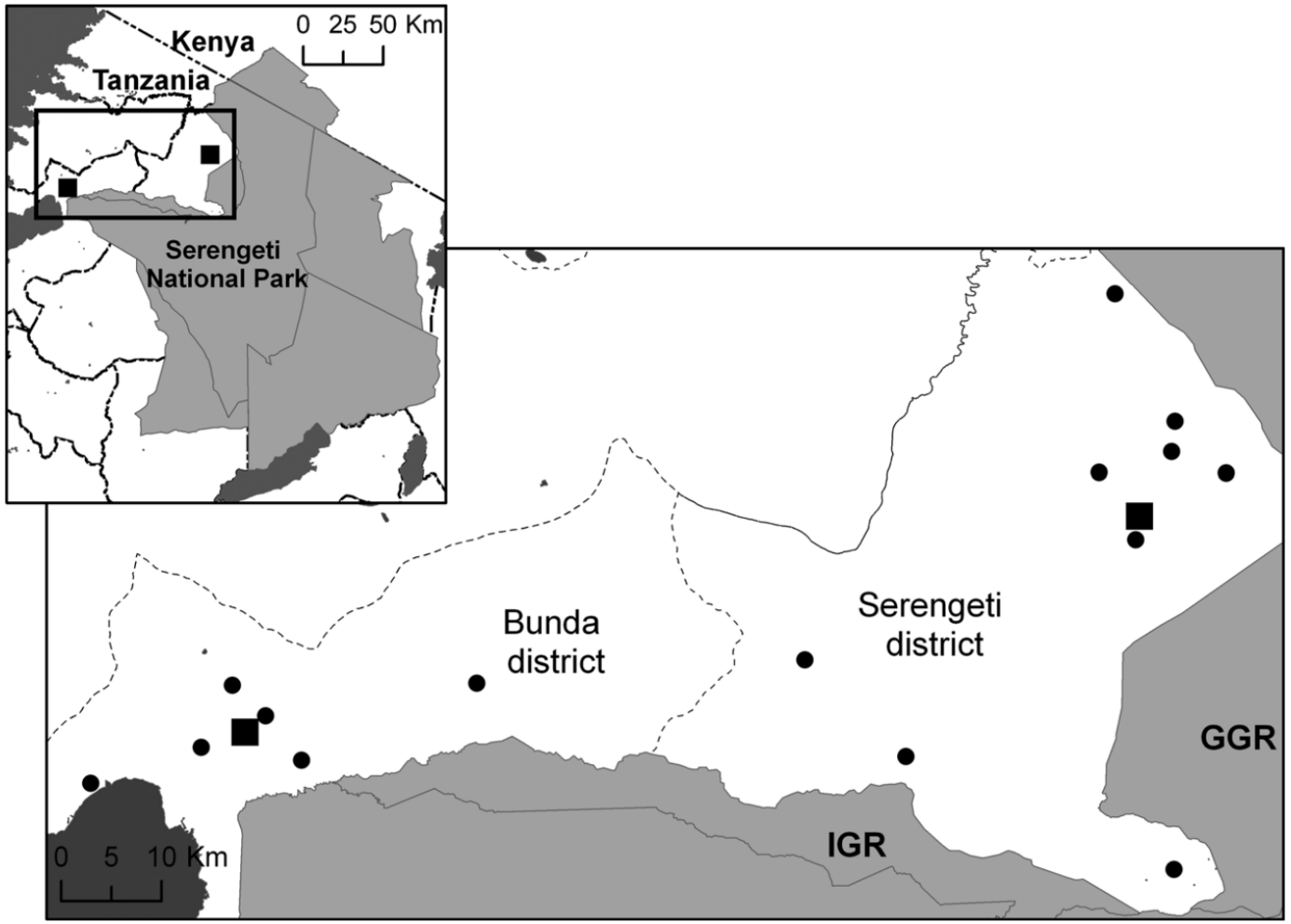
CASE STUDIES - III

"Assessing the Prevalence and Drivers of Illegal Bushmeat Hunting in the Serengeti"



ILLEGAL BUSHMEAT HUNTING

How many?
8 to 57% hhs

Who poaches?
Ethnic group
Household size
Household migration
Household employment
Season
Hunting as source of cash
District
Distance from village to protected areas
Access to alternative sources of protein and/or income

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TAWIRI Tanzania Wildlife Research Institute

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CHALLENGES IN COLLECTING SENSITIVE INFORMATION

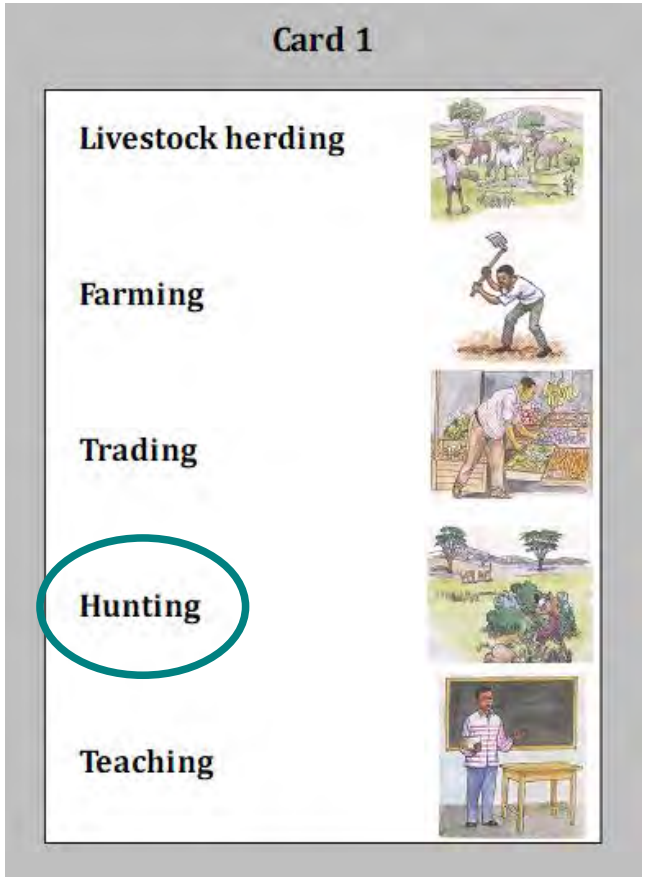
"715 individuals were asked if they were involved in hunting. Many [84%] chose not to answer" (Campbell et al. 2001)

"deep reluctance among the respondents to talk about bushmeat hunting" (Nyahongo et al. 2009)

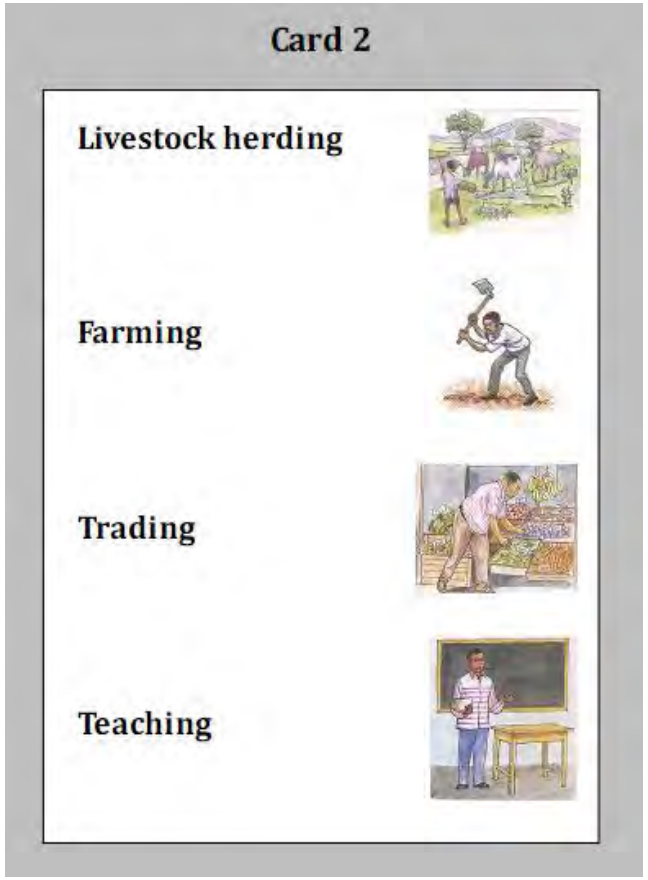
"collected data needs to be treated cautiously, because we may have been lacking important information due to fear from respondents" (Mfunda & Røskaft 2010)

UNMATCHED COUNT TECHNIQUE

Treatment



Control



15 villages, Western Serengeti
1192 household interviews

A. Individual characteristics
B. Household characteristics
C. Household participation in hunting
D. Opinion about survey technique

Dalton *et al*. (1994) ***Person. Psychol.***

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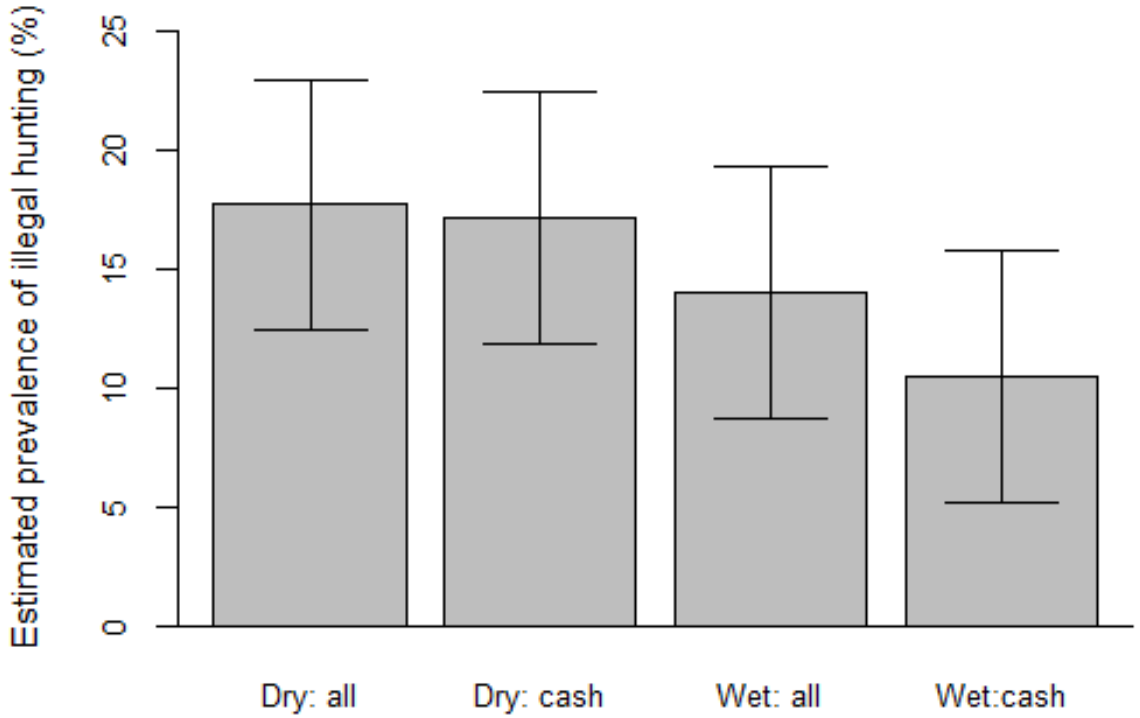
RESULTS

Non-response rate: <3%

Estimated hunting households (%):

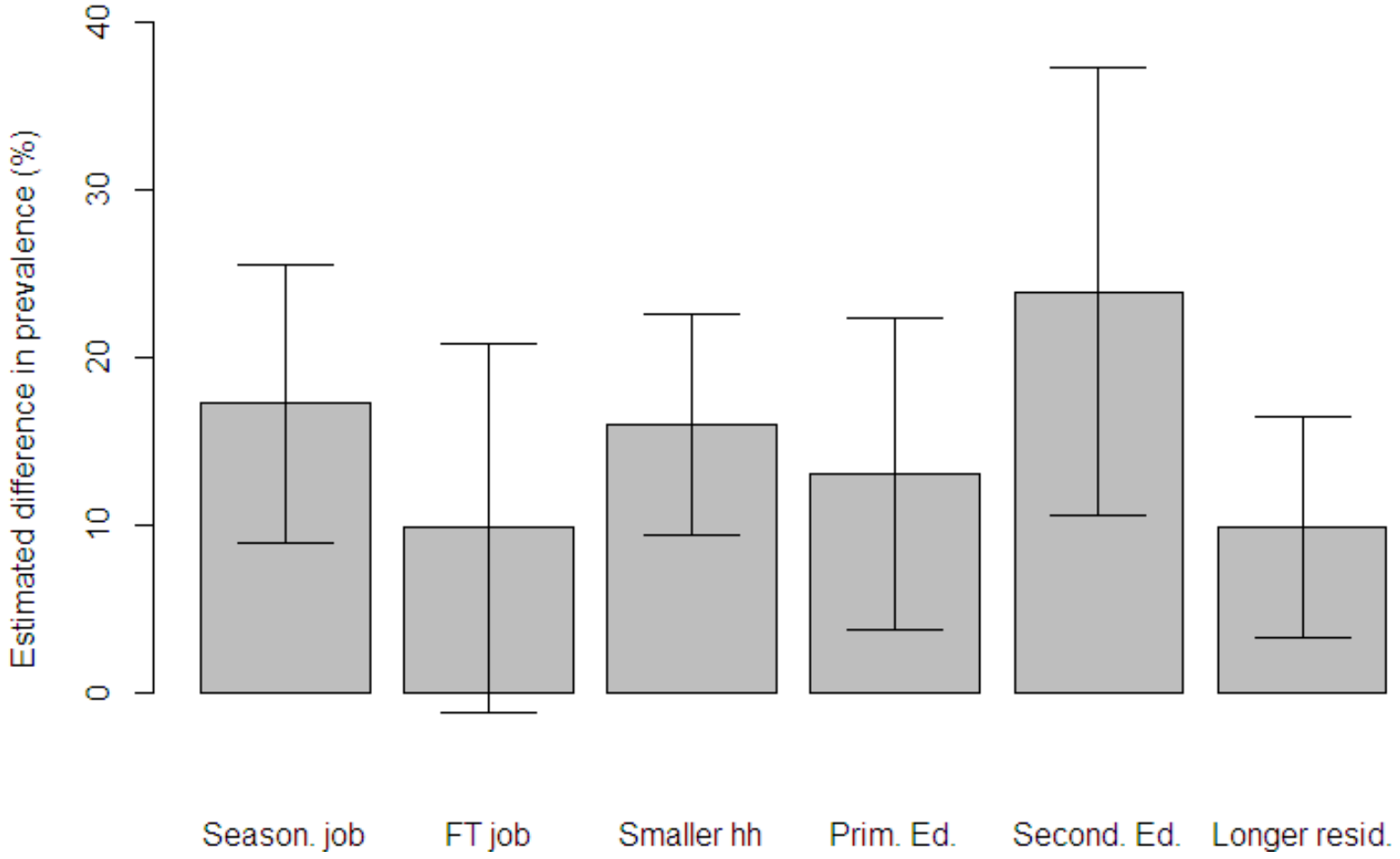


- poaching remains widespread
- households hunt both for food and cash all year round

Nuno *et al.* (2013) ***Conservation Biology***

RESULTS

Model coefficients (± S.E.):



- current alternative sources of income may not be sufficiently attractive to compete with the opportunities provided by hunting

Nuno *et al.* (2013) ***Conservation Biology***

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OTHER SPECIALIZED QUESTIONING TECHNIQUES

- nominative technique
- randomized response technique
- crosswise, triangular, diagonal and hidden sensitivity models
- bean method
- grouped answer method
- surveys with negative questions

Nuno & St John (2015) ***Biological Conservation***

CHALLENGES

- reliability of (social) information
- diverse range of stakeholders and interests
- complex trade-offs (e.g. SDGs)
- multiple values of nature to consider (e.g. social dimensions in IPBES)
- management and policy decisions under great uncertainty
- scaling up

OPPORTUNITIES

- contribute to effective policy by informing PA decisions. E.g.:
  - planning stakeholder engagement
  - PA design (e.g. boundaries, objectives, enforcement)
  - define metrics by which to evaluate outcomes
- new tools and lessons across fields
- technology & citizen science, outreach, new data

RECOMMENDATIONS

take advantage of available tools
(but use them critically!)

promote stakeholder involvement
working towards common visions

long-term sustainability

#CONSERVATIONOPTIMISM
#OCEANOPTIMISM

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Contacts:
Dr Ana Nuno, University of Exeter, UK
a.m.g.nuno@exeter.ac.uk
Twitter: @Ana__Nuno
https://www.ananuno.net/

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