



The concept of stakeholders applied to natural resources: human-wildlife coexistence as a case study

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INTRODUCTION

Efforts towards a **sustainable** management of natural resources should integrate society's concerns and expectations by shifting the perspective from mere interest-based participation towards collective feelings of responsibility, care, and legitimacy.

Utilising the attributes of **property** and **action** to decide whose “stake” is relevant enough to be considered a **stakeholder**, as originally intended by Freeman in 1984, facilitates the prioritisation of certain people's interests over others' by disregarding the range of non-consumptive values that can be attributed to public goods.

OBJECTIVES

This study addresses the evolution of the concept of stakeholder and its application in the literature about human-wildlife conflicts in the last **25 years** by analysing the use of the term and the relation between the categories of stakeholders identified in the studies and the biogeographical context.

MATERIALS AND METHODS

A **scoping review** was performed following the framework defined by Hagen-Zanker and Mallet (2013), and the PRISMA-ScR guidelines (Tricco et al., 2018). From the initial screening of 1,753 records through explicit eligibility criteria, the following variables were extracted from the final corpus of **136 peer-reviewed articles**:

- Geographical location
- Wildlife
- Types of conflict
- Mitigation strategies
- Stakeholder categories
- Use of the term *stakeholder*

Descriptive and inferential statistics were performed using IBM SPSS Statistics 29.0.1.0. Through **Simple Correspondence Analysis (SCA)**, we investigated the associations between stakeholder categories and continents, conflict effects, and mitigation strategies.

RESULTS

Use of the term stakeholder

On average, the term was mentioned **21 times per paper** [1-145], predominantly in the main text ($x = 19$). Unlike publication year, significant differences in the frequency were observed between continents (Kruskal-Wallis, $p = .003$), with **Europe showing higher median frequencies** than Asia (Mann-Whitney U , $p < .01$) and Africa ($p < .05$).

Definitions

Only **35.3%** of the articles ($n = 48$) contained a definition of stakeholders, with no significant differences between continents and the period 2000-2025. Articles including a definition of *stakeholder* used the term significantly (Kruskal-Wallis, $p = .04$) more frequently ($x = 27.13$, $SD = 29.27$, 95% CI) than those without ($x = 17.21$, $SD = 20.95$, 95% CI).

Stakeholder categories

Of the **17** categories of stakeholders identified, on average, **3.55** ($SD = 2.03$) were considered in each paper [1-10], increasing significantly in recent studies (Kruskal-Wallis, $p = .04$). **Rural residents** were the most represented (48.5%), followed by **land/wildlife managers** (42.6%), **hunters/fishers** (41.2%), and **activists** (37.5%), while international authorities and animals (0.7%) and policymakers (3.7%) were nearly absent. In terms of sample size, which averaged around **87** ($SD = 96.25$) subjects per paper, **rural residents** prevailed (30.6% of 39,460), followed by **urban residents** (18.2%), **hunters/fishers** (15.9%), and **crop farmers** (9.7%).

Stakeholders' temporal evolution...

From 2000 to 2009, the focus was on rural actors. Following a transition phase (2010-2014), themes of governance conflicts between differing perspectives emerged, involving activists, landowners, and hunters. From 2020, more **managerial and institutional approaches** were considered by involving farmers, urban residents, and land managers ($\chi^2 < .001$, $p < .05$).

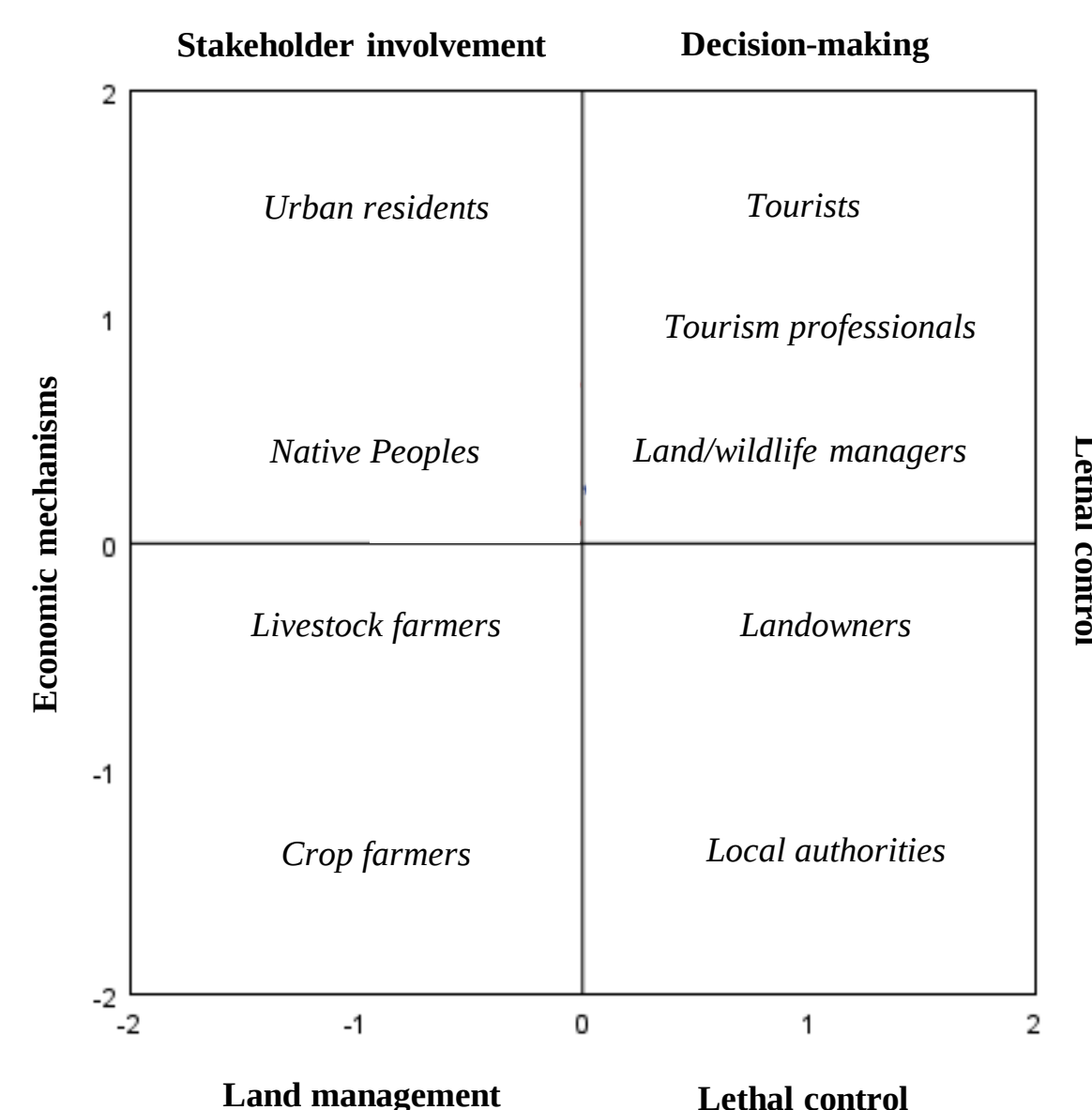
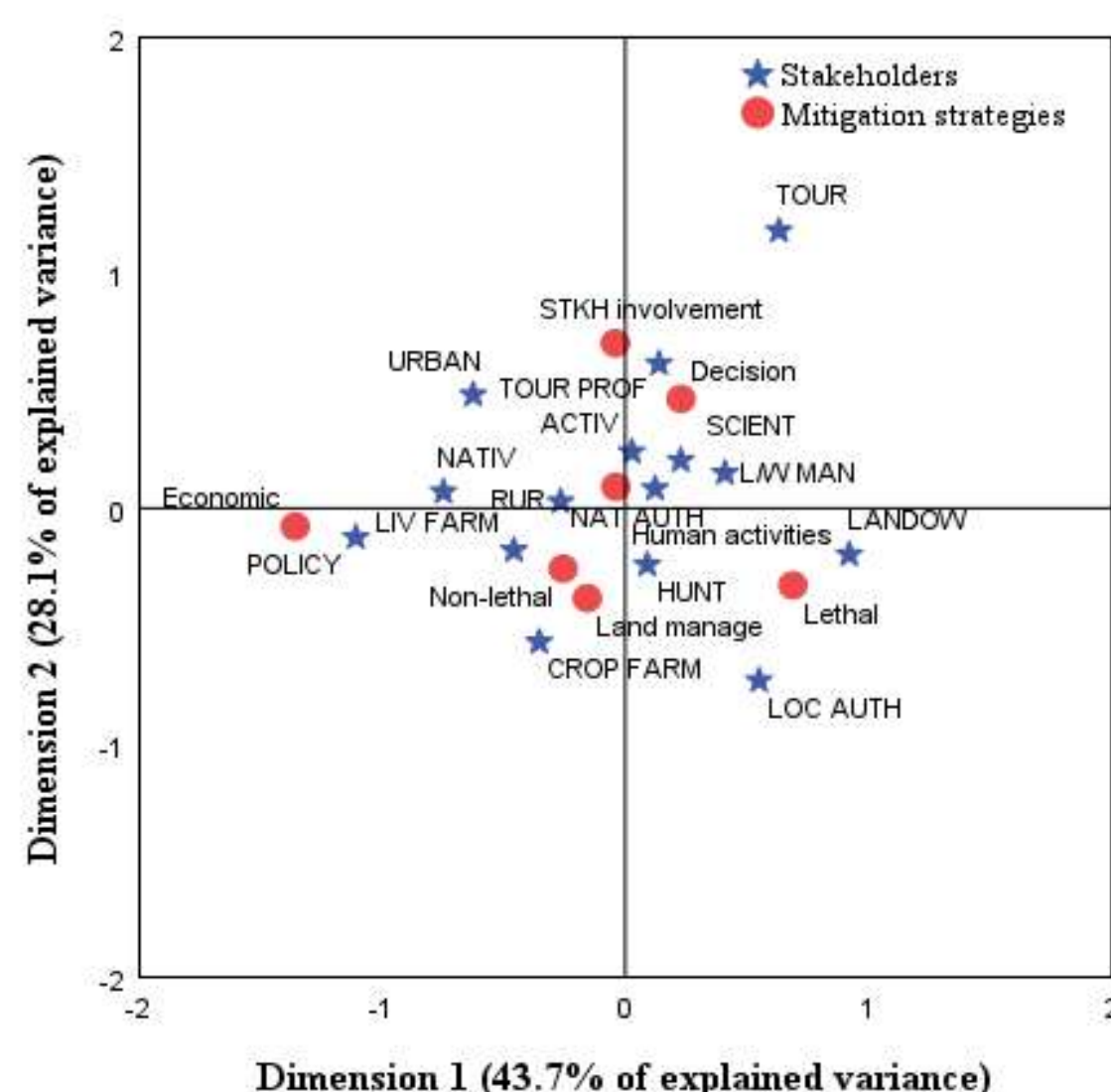
...spatial distribution...

In **Europe**, **institutional**, **academic**, and **civil** stakeholders such as activists, local authorities, researchers, and urban residents prevailed. **Africa** was dominated by **primary-sector** and **environmental actors**, including farmers, land/wildlife managers, and tourism professionals. **America** combined **resource management** and **community perspectives**, with higher representation of landowners, hunters, tourists, and native peoples. **Asia** reflected collaboration between **institutions** and the **agricultural sector**, mainly involving crop farmers and authorities. **Oceania** leaned toward traditional and urban perspectives, with more **hunters** and **urban residents** ($\chi^2 < .001$, $p < .05$).

...and associations with conflicts

Rural actors were strongly associated with conflicts like **crop** and **livestock depredation**, while **professional** or **urban stakeholders** were involved in instances of **human safety**. Property and ecological damages occupied intermediate positions, bridging local and institutional perspectives. Only human safety and livestock depredation acted as central connectors between diverse stakeholder groups ($\chi^2 < .001$, $p < .05$).

Correspondence map between stakeholder categories and mitigation strategies



Take-home message

Tourists, tourism professionals, and land managers were more associated with **decision-oriented strategies**, emphasizing collaboration and governance approaches, and, similar to landowners and local authorities, were more prone to measures with a direct effect on wildlife, specifically **lethal control**.

Livestock farmers and crop farmers were linked to more **land management** practices, as well as **economic mechanisms** (e.g., incentives and certification systems).

Urban residents and Native Peoples were more commonly associated with **stakeholder involvement** strategies such as communication and education initiatives.

CONCLUSIONS

Our results highlight two main issues: the need for a change in governance and the urgency to create a new framework for the management of natural resources. Although groups like activists and hunters could potentially champion for wildlife by projecting their own benefit, the near absence of animals among the categories considered in the literature demonstrates that the stakeholder theory, as originally applied to business management, fails to put wildlife (not as individual rights-holders, but with the general aim of conservation) at the centre, at the same time almost excluding policymakers, the main actors in decision-making processes. We reinforce the call for a change of perspective from human-wildlife to human-human conflicts, integrated by the establishment of scientific proxies to represent wildlife's interest in being conserved, achievable only with a relocation of resources towards research on wildlife's values and needs, and how other actors can orbit around it.