THE HUMAN DIMENSION OF REWILDING IN THE MASCARENE ISLANDS: MAKING SPACE FOR GIANT TORTOISES

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Key-words: rewilding; giant Aldabra tortoise; tropical dry forest; Indian Ocean; Réunion Island.

Abstract. The Mascarene Islands, and Réunion Island in particular, are facing major ecological challenges due to habitat degradation and the pervasive impact of invasive species. In response, researchers, conservation practitioners, and community volunteers have been exploring alternative restoration strategies. One such initiative emerged during the 2019 Island Biology Conference in Réunion, where an experimental rewilding protocol involving the introduction of Aldabra giant tortoises into tropical dry forest ecosystems was proposed. Through a thematic analysis of semi-structured interviews and participant observation, this study examines the complex socio-ecological dynamics surrounding this proposal. Using a conservation approach that challenges traditional methods, the paper highlights the contrasting views among stakeholders – ranging from enthusiasm to deep skepticism. While the reintroduction of giant tortoises holds promise for restoring ecological functions such as seed dispersal and herbivory, the project raises ecological, institutional, and cultural concerns, particularly within the densely inhabited and tightly regulated context of Réunion.

1. INTRODUCTION

The concept of rewilding has garnered significant attention in conservation science, emerging as an innovative and ambitious strategy aimed at restoring ecological functions historically maintained by keystone species before their extinction (Jørgensen, 2015; Gammon *et al.*, 2018; Gorghiu *et al.*, 2024). Johns (2019) provides a comprehensive analysis of the historical development and evolution of rewilding, exploring its origins, fundamental principles, and practical applications. At its core, rewilding focuses on the reintroduction of ecologically significant species, such as large herbivores and apex predators, to reinstate essential ecosystem processes disrupted by their disappearance, including herbivory, predation, seed dispersal, and bioturbation (Bliege Bird & Nimmo, 2018; Josh Donlan *et al.*, 2006; Pereira *et al.*, 2012). The origins of rewilding as a conservation strategy can be traced back to the late 20th century when researchers began exploring the potential of restoring ecosystems by reintroducing species lost due to anthropogenic pressures, such as overhunting and habitat destruction (Helmer *et al.*, 2015; Pereira *et al.*, 2012).

A fundamental aspect of rewilding is the reintroduction of species that were historically present in a given area (Alagona *et al.*, 2012; Seddon *et al.*, 2014; Corelett, 2015; Corelett, 2016; Arts *et al.*, 2016). However, this principle does not apply to the present study, as the Aldabra giant tortoise (*Aldabrachelys gigantea*) has never been native to La Réunion Island. The Mascarene Islands, a remote archipelago in the western Indian Ocean, provide an intriguing case study for examining the socio-ecological implications of rewilding. Historically, these islands supported several endemic giant tortoise species, which experienced drastic population declines due to human-driven factors such as habitat destruction, hunting, and the introduction of invasive species (Fernandez *et al.*, 2017; Griffiths *et al.*, 2013).

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The introduction of non-native tortoise species, often referred to as ecological replacements or taxon substitutes, has been proposed as a strategy to restore ecological balance and functionality in the Mascarene ecosystems. However, the success of such rewilding initiatives depends on a comprehensive understanding of the human dimensions of conservation, including potential conflicts and synergies between human activities and reintroduced tortoise populations.

The existing literature highlights the importance of human factors in rewilding, emphasizing that conservation policies must balance ecological restoration with socio-political realities (Fernandez *et al.*, 2017; Lorimer *et al.*, 2015; Pettorelli *et al.*, 2018). On small islands such as those in the Mascarenes, the feasibility of rewilding is further complicated by land-use conflicts, economic interests, and cultural perceptions of nature. The introduction of giant tortoises must therefore be carefully evaluated in relation to agricultural practices, forestry, and tourism, as well as the species' ecological requirements and behavioural adaptability. For instance, a study on the welfare implications of using non-native tortoises as ecological replacements stressed the need for cost-effective and ethically sound conservation strategies (Griffiths *et al.*, 2013). Additionally, the ethical considerations surrounding the relocation of wildlife raise important moral dilemmas, reflecting the complexities of conservation decision-making in balancing ecological integrity with ethical responsibilities (Thulin & Röcklinsberg, 2020).

The success story of Round Island, Mauritius, where rewilding with Aldabra giant tortoises has contributed to ecological restoration, has been widely promoted by conservation scientists as a model for other island ecosystems. Inspired by this example, efforts have been made to establish a similar rewilding agenda on La Réunion Island. In 2019, a dedicated rewilding working group was formed during the third International Conference on Island Biology, bringing together experts to share practical and empirical knowledge on tortoise rewilding in this region.

Nevertheless, rewilding remains a highly debated practice. Its reconsideration stems from concerns over minimal human intervention, the exclusion of human influence from ecosystems, and the extensive spatial requirements needed for implementation (Von Essen and Allen, 2016; Glentworth *et al.*, 2024). In La Réunion, the ongoing re-evaluation of rewilding follows a recent controversy regarding the biological control of the invasive giant bramble (*Rubus alceifolius*) through the introduction of the sawfly (*Cibdela janthina*) (Cybèle *et al.,* 2021). The giant bramble, an allogenous (non-native) invasive species, poses significant ecological challenges, prompting interventions to curb its spread (Mathieu *et al.*, 2014; Florens *et al.*, 2017). However, a critical concern among stakeholders is the need to consider the socio-ecological consequences of species introductions. Moreover, research on the integration of rewilding in small island societies remains limited and fragmented, further complicating the debate (Banos *et al.*, 2023).

This study seeks to examine how different stakeholders (including academic researchers, local communities, conservation organizations, and government officials) perceive rewilding in the Mascarenes. Additionally, it aims to explore why taxon substitution with Aldabra giant tortoises is regarded as an unconventional and contentious approach to ecological restoration on Réunion Island.

2. METHODOLOGY

2.1. Case study – Réunion island: an overview of conservation policies

The French overseas territory of La Réunion (Fig. 1) faces considerable challenges in biodiversity conservation due to its unique ecological characteristics and the pressures of a growing human population. Effective conservation on the island requires a coordinated, multi-level approach involving various stakeholders to address its complex environmental issues (Lagabrielle *et al.*, 2011). La Réunion's exceptional biodiversity, marked by a high degree of endemism and diverse ecosystems, is increasingly threatened by anthropogenic pressures, including habitat destruction, invasive species, and climate change (Baret *et al.*, 2006; Bigot *et al.*, 2019; Fenouillas, 2021; Lalljee *et al.*, 2018; Strasberg *et al.*, 2005).

At the national level, France has implemented key policies to support biodiversity conservation across its overseas territories. These include the designation of protected areas, the regulation of resource extraction, and measures to mitigate climate change impacts. The Ministry of Ecological Transition oversees these policies, establishing strategic guidelines and regulatory frameworks for biodiversity protection. Notably, the National Biodiversity Strategy defines long-term conservation objectives, while the National Ecological Networking Plan promotes habitat connectivity. Additionally, the French Office for Biodiversity (OFB), a public institution, plays a crucial role in managing terrestrial and marine biodiversity, as well as enforcing environmental regulations. By integrating the functions of the former French Agency for Biodiversity, the OFB has strengthened its capacity to preserve, manage, and restore biodiversity in both mainland France and its overseas territories.

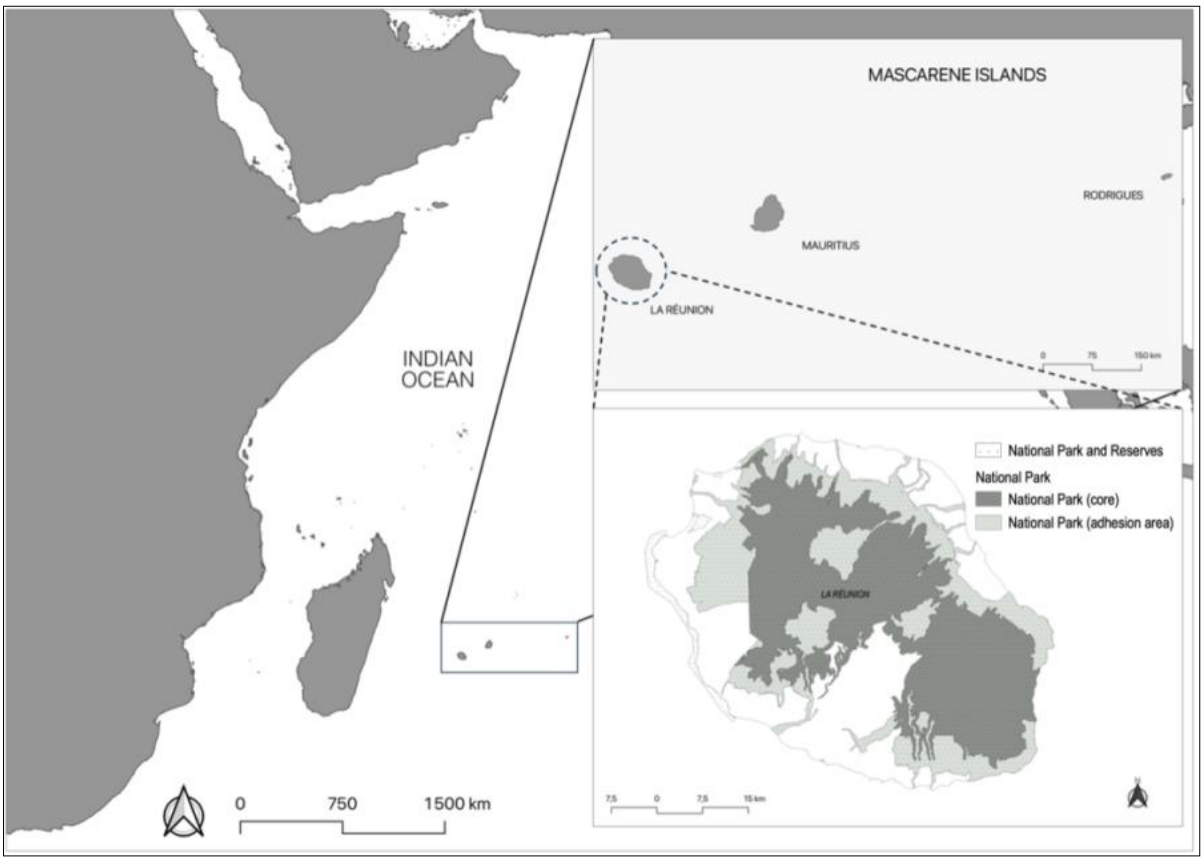

Fig. 1 – Map of the Mascarene Islands with a detailed focus on La Réunion Island.

At the regional level, the Prefecture of La Réunion, in collaboration with the OFB, represents the French State and coordinates ministerial actions to ensure effective biodiversity management. The Regional Council of La Réunion, working in partnership with the Prefecture, is responsible for developing and implementing the Regional Biodiversity Strategy, which aligns with national and European conservation frameworks. This strategy promotes sustainable development, addresses climate change impacts, and protects natural habitats and endemic species. Key regional initiatives, such as the Regional Nature Reserve Network and the Regional Ecological Connectivity Plan, contribute to the protection and restoration of La Réunion's ecosystems. The Regional Biodiversity Agency of La Réunion plays a critical role in harmonizing conservation efforts by coordinating local authorities and conservation stakeholders, ensuring that local initiatives align with broader regional and national objectives. Additionally,

La Réunion National Park, covering 42% of the island's surface, is a major conservation institution tasked with managing and protecting extensive natural areas. The park serves as a stronghold for La Réunion's biodiversity, safeguarding its ecosystems and endemic species.

At the local level, municipalities across La Réunion play a pivotal role in implementing biodiversity and environmental policies (Thomassin *et al.*, 2010; Payet *et al.*, 2010). These initiatives are aligned with regional and national frameworks, with municipalities receiving technical and legal support from the Prefecture to facilitate effective policy execution. Many municipalities have also developed Local Biodiversity Plans, which outline specific conservation priorities such as sustainable land management, habitat restoration, and community engagement. Furthermore, inter-municipal cooperation enhances environmental management by fostering collaborative conservation projects that address ecological challenges beyond municipal boundaries.

Several local conservation organizations further contribute to biodiversity protection. For instance, the La Réunion Ornithological Studies Society (SEOR) specializes in bird conservation and habitat protection, while the Initiative for Ecological Restoration in Island Environments (IRI) focuses on studying, conserving, and restoring terrestrial and marine biodiversity across tropical island ecosystems, particularly in the Indian Ocean. These organizations provide essential scientific expertise and community engagement in conservation initiatives. Additionally, the Shark Safety Centre (CSR) balances marine biodiversity conservation with public safety by managing risks related to shark-human interactions, illustrating the intersection of conservation and human interests.

Our field study was conducted in the tropical dry forest of northwestern La Réunion, one of the most endangered tropical ecosystems. Research indicates that only about 1% of the original extent of tropical dry forests remains, primarily due to extensive deforestation and land degradation, making them a high priority for conservation efforts (Bastin *et al.*, 2017). Recognizing the urgency of this ecological crisis, a large-scale restoration initiative was launched in 2009 at *La Grande Chaloupe* to rehabilitate a degraded lowland seasonally dry tropical forest (Fig. 2).

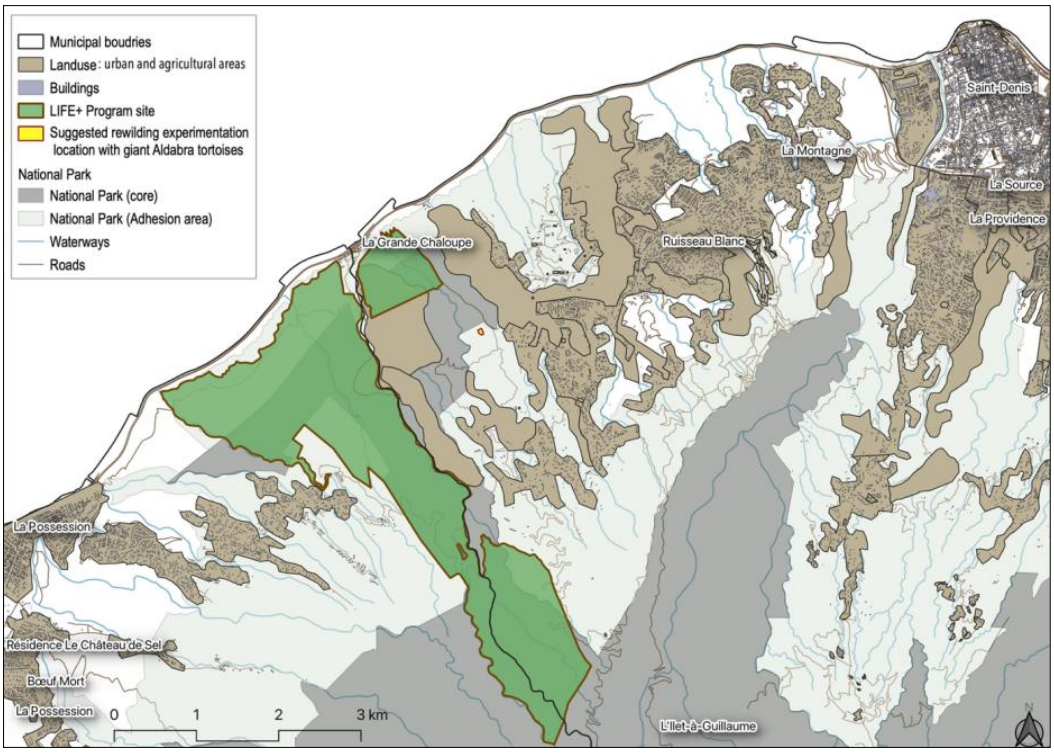

Fig. 2 – Map of the study site location in the northwest of La Réunion Island, highlighting the LIFE+ Forêt Sèche Project site.

A key component of this effort is the LIFE+ Forêt Sèche project, which exemplifies the European Union's commitment to supporting biodiversity conservation in its overseas territories. Co-financed by the EU through the LIFE+ financial instrument, the initiative provides up to 50% of the funding, while the remaining contributions come from five local partners: La Réunion National Park, the Regional and Departmental Authorities of La Réunion, the Coastal Conservatory (*Conservatoire du Littoral*), and the Regional Directorate for the Environment, Planning, and Housing (DEAL). These institutions are responsible for implementing restoration activities, including habitat rehabilitation, invasive species control, and the promotion of native vegetation.

The primary stakeholders in this ecological restoration project include the European Union, local conservation institutions, and local communities whose livelihoods and ecosystems are directly impacted by habitat degradation. While the EU provides financial and logistical support through the LIFE+ program, local conservation partners are responsible for the on-the-ground implementation and management of restoration activities. Our field study was conducted within this framework, focusing on evaluating the effectiveness of restoration interventions and their impact on ecosystem recovery.

The proposal to integrate rewilding with megafauna as part of the restoration process has generated significant debate. Several attempts were made to introduce Aldabra giant tortoises (*Aldabrachelys gigantea*) into the restoration program at *La Grande Chaloupe* to restore lost ecological functions such as seed dispersal and vegetation control. However, these efforts faced substantial challenges, including difficulties in adaptation to local environmental conditions and concerns over potential ecological impacts on existing flora and fauna. Specifically, uncertainties arose regarding the tortoises' interactions with native plant species, potential competition with endemic herbivores, and the long-term consequences of their introduction for ecosystem dynamics.

To date, no peer-reviewed studies have been published on the specific outcomes of these rewilding attempts in La Réunion. However, preliminary observations and internal reports from conservation stakeholders indicate that the tortoises exhibited limited ecological integration, leading to the initiative's discontinuation. If no formal literature is available, further details should be provided in supplementary material to document the rationale, methodology, and challenges associated with these rewilding efforts.

The debate surrounding the introduction of Aldabra giant tortoises reflects broader tensions in conservation science regarding the role of taxon substitution in ecological restoration. While rewilding has proven successful in certain contexts, particularly on Round Island, Mauritius, its application in La Réunion remains contentious. This case highlights the need for rigorous ecological assessments, stakeholder engagement, and adaptive management strategies to ensure that rewilding interventions align with conservation goals while mitigating unintended consequences.

2.2. Case Study Species

In "Ancient Tales of Naturalists on Bourbon Island", Probst and Brial reported, (2002) historical accounts by naturalists of the La Réunion giant tortoise, *Cylindraspis indica*, also known locally as "*Poulet*". This species was endemic to La Réunion Island and was once abundant until the late 17th century. Due to its large size and slow movement, it was extensively hunted for its meat and oil, leading to a drastic population decline despite hunting regulations aimed at its protection. The colonial administration established a tortoise reserve in an effort to conserve the remaining individuals, but these measures ultimately failed, and the species became extinct by the early 19th century (Stoddart *et al.*, 1979).

Cylindraspis indica belonged to the genus *Cylindraspis*, which comprised five now-extinct species endemic to the Mascarene Islands. These tortoises played a crucial role in shaping the island ecosystems before their disappearance. Recent molecular studies suggest that the *Cylindraspis* genus does not share a close evolutionary relationship with the Aldabra giant tortoise (*Aldabrachelys gigantea*), as previously

assumed. Instead, phylogenetic analyses indicate that *Cylindraspis* species were more distantly related and diverged earlier in the evolutionary history of Southwest Indian Ocean giant tortoises (Kehlmaier *et al.*, 2019).

The Mascarene Islands, of volcanic origin, are among the youngest island systems in the Indian Ocean. Réunion Island itself emerged approximately three million years ago as a result of hotspot volcanic activity. The island remained uninhabited until its discovery by European sailors in the early 16th century, followed by French colonization in the 17th century. The introduction of human settlers, along with invasive species such as rats, pigs, and goats, led to the rapid decline and extinction of many native and allogenous vertebrates, including the giant tortoises and the famous Réunion solitaire (*Pezophaps solitaria*), a large, flightless bird closely related to the dodo (Cheke & Hume, 2008). These extinctions had profound ecological consequences, particularly on seed dispersal, herbivory, and nutrient cycling, which were once maintained by large herbivores like the *Cylindraspis* tortoises (Albert *et al.*, 2021).

The extant allochthonous Aldabra giant tortoise (*Aldabrachelys gigantea*), native to the Aldabra Atoll in the Seychelles, has been proposed as a biological replacement to compensate for the lost ecological functions of the extinct Mascarene tortoises (Griffiths *et al.*, 2010). Previous taxon substitution experiments using Aldabra tortoises on Round Island, Mauritius, demonstrated no negative impacts on native vegetation (Hambler, 1994). On the contrary, these introduced tortoises have been observed to facilitate seed dispersal, maintain open grassland habitats, and control invasive plant species, restoring essential ecosystem processes (Griffiths *et al.*, 2010; Hansen *et al.*, 2010).

However, the social representation and acceptance of such introductions remain poorly understood, especially in small island societies like La Réunion, where conservation efforts often intersect with economic and cultural interests.

2.3. Data Collection Methods

This study employed a qualitative case study approach, drawing on multiple sources of evidence to develop a comprehensive understanding of the social representations associated with rewilding in the context of La Réunion Island. The methodology combined semi-structured interviews and participant observation to capture diverse perspectives and examine the social and ecological implications of rewilding initiatives.

2.3.1. Semi-Structured Interviews

Semi-structured interviews formed the core of the data collection process. These were conducted in July 2019 during the Third International Conference on Island Biology, held in Saint-Denis, La Réunion. The conference provided a strategic platform for identifying and engaging with key stakeholders from across the Mascarene region who were directly involved in biodiversity conservation, rewilding initiatives, and ecological restoration. Interviews were conducted in either English or French, according to participant preference, and typically lasted between 30 and 60 minutes. With participants' prior informed consent, all interviews were audio recorded and subsequently transcribed verbatim for analysis (Paillé et Mucchielli, 2016).

A total of 20 participants were interviewed, selected through purposive sampling to capture a broad spectrum of perspectives across institutional affiliations, geographic origins, and professional roles within the regional conservation landscape. The sample included academic researchers, governmental officials, representatives of conservation NGOs, and members of local communities. This diverse representation was intentionally sought to explore how interpretations of rewilding varied according to participants' positionalities, institutional mandates, and experiential backgrounds.

The interview guide was developed based on a review of the relevant academic literature and policy documents pertaining to rewilding, taxon substitution, and biodiversity governance in small island contexts. It comprised open-ended questions organized around five thematic domains: (1) participants' conceptualizations and definitions of rewilding; (2) perceived benefits, risks, and trade-offs associated with species introductions; (3) challenges specific to implementing rewilding on Réunion Island; (4) the symbolic and ecological status of the Aldabra giant tortoise; and (5) expected social, ecological, and political impacts of rewilding on local communities and conservation agendas.

To ensure terminological clarity and reduce semantic ambiguity, all participants received a glossary of key terms (such as "rewilding," "ecological replacement," and "invasive species") prior to their interview. This measure was designed to establish a common conceptual foundation while still allowing room for critical engagement, personal interpretation, and discursive nuance during the interviews.

2.3.2. Participant Observation

To complement the interview data and provide contextual depth (Kawulich, 2005; Cook, 2005), participant observation was conducted throughout the conference period. The researcher attended plenary lectures, panel discussions, informal receptions, poster sessions, and workshops related to rewilding and ecological restoration. In addition, a field visit was made to La Grande Chaloupe, the primary restoration site under the LIFE+ Forêt Sèche project, where early rewilding experiments with Aldabra tortoises had been proposed.

During these events, detailed observational field notes were taken to document the dynamics of stakeholder interaction, the framing of conservation narratives, and the subtle social cues that often shape public debate (e.g., moments of hesitation, informal power dynamics). This ethnographic component allowed us to capture unspoken tensions, moments of consensus or resistance, and the influence of institutional settings on discourse production.

The participant observation strategy was not limited to passive observation. When appropriate, the researcher engaged in informal conversations with attendees to clarify their positions, ask follow-up questions, or explore topics that emerged organically during discussions. These interactions were not treated as formal interviews but were recorded in the field journal and later integrated into the analytical process (Table 1).

Table 1

Respondent information classified by country and stakeholder category
(La Réunion; Madagascar; Mauritius and Rodrigues; Seychelles; United States of America)

	RUN*	MAD*	MAU/ROD*	SEY*	SWZ*	USA*
Local community members	3	-	-	-	-	-
Conservation organizations	1	2	2	-	-	-
Government officials	3	-	1	-	-	-
Academic researchers	3	1	-	2	1	1

2.4. Data Analysis

The data collected through semi-structured interviews and participant observation were analysed using a qualitative thematic analysis approach, which allowed for a systematic exploration of patterns, meanings, and contradictions within the narratives of diverse stakeholders (Méténier *et al.*, 2020). The analysis aimed not only to categorize content but also to interpret how individuals and institutions construct, justify, or challenge conservation interventions such as rewilding with non-native megafauna.

To manage and code the qualitative data, NVivo 12 (QSR International) was employed. All transcripts and observation notes were imported into the platform and analysed following the six-phase

framework outlined by Braun and Clarke (2006): familiarization, coding, theme generation, theme review, theme definition, and final interpretation. This method was chosen for its flexibility and capacity to highlight both explicit content and latent meaning.

Initially, transcripts were read multiple times to gain a comprehensive sense of the data. Analytical memos were written to capture early insights and document emerging patterns. A set of descriptive codes was then developed inductively and applied line-by-line across the dataset. These codes were grouped into broader thematic clusters, including but not limited to: "conceptual ambiguity", "institutional barriers", "species symbolism", and "comparative island experiences". Themes were refined through iterative review, ensuring internal coherence and analytical distinctiveness. Special attention was paid to variations across stakeholder categories, such as differences in how government actors versus community members conceptualized ecological risk or legitimacy. Comparisons with other regional rewilding experiences (e.g., Mauritius, Rodrigues) also emerged as a key analytical axis, highlighting how precedent shapes interpretation.

2.5. Ethical Considerations

Research involving human participants necessitates strict adherence to ethical principles to protect individuals' rights and well-being. A key component of this process was obtaining informed consent, ensuring that participants fully understood the study's objectives, procedures, and any potential risks or benefits before taking part. Participants were explicitly informed of their right to request the exclusion of any specific information at any stage during the interview, safeguarding their autonomy and confidentiality.

3. RESULTS AND DISCUSSION

The study employed the thematic analysis of semi-structured interviews and participant observation to examine the social representations of Mascarene stakeholders regarding the rewilding initiative. As an initial outcome, the research team developed a general thematic tree (Table 2) that synthesizes the key themes emerging from the interviews and observations. This framework provides a comprehensive overview of the diverse perspectives and concerns expressed by stakeholders about the rewilding project on Réunion Island.

The thematic analysis identified four main themes:

1. "Conceptualizing Rewilding and Ecological Replacement" – This theme explores how stakeholders define and conceptualize rewilding, highlighting variations in understanding and interpretation.
2. "Comparative Perspectives from the Mascarene Islands" – This examines how stakeholders contextualize rewilding efforts on Réunion Island in relation to conservation initiatives in other parts of the Mascarene Islands.
3. "Administrative, Legal, and Financial Constraints" – This addresses concerns regarding the introduction and long-term management of the Aldabra tortoise, including regulatory challenges and resource allocation for the project.
4. "Social Representations and Community Engagement" – This theme considers the potential effects of rewilding on local communities, including its implications for livelihoods, public perception, and stakeholder engagement.

Together, these themes provide a structured analysis of the key debates surrounding rewilding in the Mascarenes, offering insight into both the opportunities and challenges associated with such conservation interventions.

Table 2

Thematic tree of interview findings on rewilding with the giant Aldabra tortoise in La Réunion Island (n=20)

Rewilding with the giant Aldabra tortoise on Reunion Island.	**Conceptualizing rewilding and ecological replacement**	Ecological replacement	
		Refaunation	
		No reintroduction	
		No translocation	
	Comparative Perspectives from the Mascarene Islands	Rewilding with giant Aldabra tortoises in Mauritius	
		Rewilding with giant Aldabra tortoises in Rodrigues	
	Administrative, Legal, and Financial Constraint	Species manipulation	Administrative disposal
			Legal difficulties
		Financial facilities	European fundings
			ONGs Fundings
	Social Representations and Community Engagement	Beliefs	
		Communication fears	Tortoise theft

3.1. Conceptualizing Rewilding and Ecological Replacement

Interviews revealed a wide range of perspectives on the definition and interpretation of rewilding. Some participants emphasized rewilding as a large-scale ecological restoration approach focused on reinstating natural processes, distinguishing it from translocation and reintroduction, which they perceived as narrower in scope. Others viewed rewilding as encompassing species relocation and reintroduction, blurring the boundaries between these related concepts.

Alongside rewilding, participants also referenced terms such as “refaunation”, “translocation”, and “reintroduction”. However, in the context of the La Réunion Island case study, “functional replacement” emerged as the dominant concept used by stakeholders. This perspective prioritizes restoring ecological functions over the simple introduction of species. The Aldabra giant tortoise was highlighted as one of the last remaining giant tortoise species and recognized for its ecological role in herbivory and seed dispersal. Stakeholders viewed it as a potential tool to enhance ecological restoration efforts on La Réunion Island by facilitating the regeneration of native vegetation. However, despite its perceived ecological benefits, concerns were raised regarding the implications of introducing a non-native species.

The regional strategy for invasive species management on La Réunion Island has been in place since 2010 (Baret *et al.*, 2010), implementing action plans to mitigate the impact of non-native species on native ecosystems. Participants noted that the terminology surrounding “ecological replacement” in the context of rewilding closely aligned with the broader debate on species introductions. The framing of the Aldabra giant tortoise as an “introduced species” contributed to controversy among stakeholders, particularly regarding its ecological and social implications (Cybèle, 2019). Some viewed the tortoise as a promising ecological tool (Griffiths *et al.*, 2010), while others expressed scepticism over whether its introduction aligned with La Réunion Island's broader conservation goals.

3.2. Comparative Perspectives from the Mascarene Islands

Participants frequently referred to case studies from Mauritius and Rodrigues as benchmarks for evaluating the potential success of rewilding initiatives in La Réunion. In Mauritius, particularly on Round Island and Île aux Aigrettes, rewilding projects involving Aldabra giant tortoises have been successfully implemented. These small, uninhabited islets underwent invasive species eradication,

followed by the introduction of tortoises to restore critical ecological processes, such as plant-tortoise interactions. Research on these sites has documented the positive impact of tortoises on habitat regeneration, reinforcing the argument for their potential role in ecosystem restoration (Griffiths *et al.*, 2013; Derham *et al.*, 2018).

In Rodrigues, the François Leguat Reserve demonstrated another dimension of rewilding by actively integrating local communities into conservation efforts. The 20-hectare park was designed to replicate the island's pre-human landscape, allowing visitors to engage with its restored ecosystems. Participants highlighted that this approach fostered social acceptance of rewilding by reinforcing local ownership of conservation initiatives. The participatory model was considered essential for the long-term sustainability of rewilding projects, as it encouraged stewardship and community involvement in conservation activities.

Despite these successful cases (Griffiths *et al.*, 2013; Derham *et al.*, 2018), participants emphasized that the context of La Réunion presents distinct challenges (Morel, 2015; Banos *et al.*, 2023). Unlike Mauritius and Rodrigues, which have small, uninhabited islets suitable for controlled rewilding experiments, La Réunion lacks satellite islets where similar rewilding trials could take place. Additionally, participants noted that existing conservation policies on invasive species management might conflict with rewilding efforts, particularly regarding the introduction of non-native fauna (Morel, 2016). Given these complexities, stakeholders stressed the importance of conducting comprehensive ecological, social, and economic impact assessments before considering the introduction of Aldabra giant tortoises on La Réunion Island.

3.3. Administrative, Legal, and Financial Constraints

The complexity of implementing ecological replacement in La Réunion Island was further underscored by administrative and legal challenges. Participants noted that introducing Aldabra giant tortoises would require extensive bureaucratic procedures, including securing permits for handling, sampling, or transporting individuals under a protected status. As a species classified Vulnerable on the IUCN Red List, the Aldabra giant tortoise is subject to strict conservation regulations, further complicating any potential introduction. Despite its recognized ecological benefits, the proposal faced heightened regulatory scrutiny due to concerns over the introduction of a non-native species into a fragile ecosystem.

Beyond legal constraints, financial considerations emerged as a major challenge. Participants highlighted that rewilding projects involving Aldabra tortoises in the Seychelles had, in some instances, raised concerns about commercialization and the potential commodification of the species. Some stakeholders worried that foreign conservation initiatives could financially benefit from such projects, leading to ethical concerns regarding the equitable distribution of conservation funding and outcomes.

Funding availability was another critical issue. The LIFE+ Forêt Sèche project sought additional financial support to introduce Aldabra tortoises to La Réunion's tropical dry forest. However, a regional funding application was rejected due to concerns about the project's alignment with sustainability goals. Participants reported that the proposal received a low evaluation score due to its lack of explicit provisions for the sustainable use of natural resources and ecosystem services. The rejection underscored the need for a stronger alignment with regional, national, and local conservation strategies, as well as the necessity of developing clearer risk mitigation measures. Stakeholders suggested that securing dedicated European funding would be essential to cover infrastructure, fencing, and long-term management to ensure the viability of any rewilding efforts involving tortoises.

Given La Réunion's large size, denser population, and more complex socio-ecological dynamics, participants emphasized the need for extensive planning, robust stakeholder engagement, and clearly defined conservation objectives. Unlike smaller, more isolated islands where rewilding has been successfully implemented, the context of La Réunion Island necessitates a cautious and adaptive approach to species introduction, ensuring that both ecological and socio-political factors are carefully considered.

3.4. Social Representations and Community Engagement

While participants held varying opinions on how to communicate the proposed rewilding experiment, the need for an inclusive stakeholder engagement strategy was widely recognized. Some participants raised security concerns and opposed widespread public outreach, fearing that extensive communication might lead to misinformation or resistance from certain groups. Others, however, advocated for proactive community engagement, emphasizing that local populations should be informed and involved to encourage cooperation and public support for the initiative.

As part of the LIFE+ Forêt Sèche project, five Aldabra tortoises were temporarily acquired from an external source (*Jardin des tortues*), although details regarding their origin and the conditions of their return remained unclear. Stakeholders questioned whether the tortoises were on loan and if they would eventually need to be returned, along with any potential offspring. This raised logistical and ethical considerations about the long-term management of the tortoises and whether their presence could be sustained beyond the initial experimental phase. Despite these uncertainties, ensuring their safety remained a priority for the project. However, participants emphasized that actively engaging the local community was equally crucial to fostering trust and legitimacy around the rewilding initiative, particularly given the sensitivity of introducing a non-native species.

Social representations of the giant tortoise varied considerably among participants, often reflecting cultural and geographical backgrounds (Pérez *et al.*, 2011). Some participants from Madagascar viewed the tortoise as a sacred animal believed to offer protection (Lingard *et al.*, 2003; Ploos Van Amstel *et al.*, 2022) from illness and negative energies. In the Mascarene Islands, tortoises were historically seen as symbolic animals, commonly given to newborns as a sign of prosperity and good health. Among older generations, tortoises were also associated with their historical use as a food source. These diverse cultural representations underscored the importance of understanding local attitudes towards rewilding, particularly when developing conservation messaging and outreach strategies.

Despite these differences, participants universally described the Aldabra giant tortoise as an impressive and charismatic species. This shared fascination suggested that conservation initiatives could leverage the species' appeal to generate broader public interest and support. While there was no strong opposition to the rewilding proposal, the discussions highlighted the importance of clear and transparent communication to address concerns, provide accurate information, and ensure that local stakeholders felt informed and included in the decision-making process (Butler *et al.*, 2021).

4. CONCLUSION

This study highlights the potential and challenges of rewilding efforts in insular ecosystems, particularly regarding the introduction of Aldabra giant tortoises in La Réunion. While such an initiative could restore lost ecological functions like seed dispersal and herbivory, it also raises significant ecological, social, and administrative concerns. The findings emphasize that successful rewilding requires a balance between scientific evidence, stakeholder engagement, and policy alignment. Evidence from other island ecosystems, such as Mauritius and Rodrigues, demonstrates that taxon substitution with giant tortoises can aid ecological restoration. However, each island presents unique environmental and socio-political contexts. Unlike these smaller, uninhabited islets where rewilding has been trialed, La Réunion lacks similar controlled environments, making large-scale introductions more complex. Additionally, strict conservation policies and concerns over introducing non-native species require rigorous risk assessments and governance frameworks prior to implementation. Beyond ecological considerations, the success of rewilding efforts depends on public perception and community involvement. Cultural attitudes towards tortoises vary across regions, influencing local acceptance regarding conservation initiatives. Lessons from Rodrigues highlight the importance of integrating education and ecotourism into rewilding projects to foster long-term community support.

Moving forward, rewilding initiatives in La Réunion and similar island ecosystems ought to undertake adaptive management strategies, ensuring that species introductions are based on continuous ecological monitoring and stakeholder collaboration. Small-scale pilot projects, informed by experiences from other islands, could serve as a cautious approach to evaluating the feasibility of tortoise rewilding. Additionally, securing dedicated funding and aligning conservation strategies with regional policies will be critical for long-term sustainability. Ultimately, rewilding in La Réunion represents both an opportunity and a challenge–offering a path towards ecological restoration while requiring careful planning and societal support.

While this study provides valuable insights into the social representations and institutional dynamics surrounding rewilding in Réunion and the wider Mascarene region, several limitations should be acknowledged. The sample, although diverse in terms of stakeholder categories, was composed primarily of individuals attending an international scientific conference. As such, the perspectives captured are largely shaped by professional, academic, or policy-oriented experiences. This focus, while strategic for exploring expert discourses, limits the inclusion of local knowledge systems that may be deeply rooted in place-based relationships with species and landscapes. To fully assess the acceptability, feasibility, and cultural resonance of rewilding initiatives (particularly those involving species introductions) it is essential to expand the scope of inquiry beyond institutional stakeholders.

Future research should incorporate a broader and more inclusive sampling strategy, involving members of adjacent or affected communities, local land users, and representatives of traditional knowledge systems. Comparative analysis between scientific and vernacular ecological understandings would be particularly valuable for identifying potential synergies or tensions between conservation science and local worldviews.

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