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Ecological Restoration of the Tropical Semi Dry Forest in Reunion Island: Exploring Dimensions of Environmental Public Attitude

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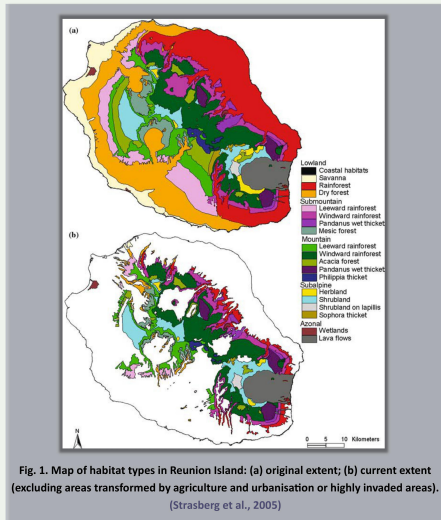
OIES (Océan Indien Espace et Société) (1) — Parc national de La Réunion - LIFE+ Forêt sèche (2)

Context

There has been an institutional evolution of human interventions in ecosystems. In the early 1960s, conservation was the first intervention device in France, followed by the need to study environmental impact with the nature protection law in 1976, it was not until the 1980s (although it is difficult to date precisely) that ecological restoration was considered as a fully-fledged tool in public policies.

In Reunion Island, first ecological restoration operations were established in the 1980s, these actions were multiplied in the 1990s, framing a major tool of forest management in the 2000s (Triolo, 2005). The gesture of scientific knowledge in terrestrial ecosystems threats in Reunion Island was the baseline of the widening restoration projects.

In this study, we focused on ecological restoration of the tropical semi dry forest in Reunion Island. This forest, which represents -nowadays- about 1% of its original area (Strasberg et al., 2005) Fig. 1, has raised a collaborative endeavor (LIFE+ COREX-ERUN and LIFE+ Forêt sèche) to restore deteriorated habitats and relicts of *La Grande Chaloupe* forest. The current issue is to ensure sustainability of restoration actions after the project closure in 2020, stakeholders intend to entrust the project to practitioners, politicians and local population.



The aim of this study is to grasp perception of the local population by exploring dimensions of ecological public awareness in order to extend the analysis of socio-ecological system (SES) framework (Ostrom, 2009) Fig. 2. In this poster, we are particularly interested in Environmental Attitude (EA), this indicator is increasingly applied in supporting wildlife (Knight, 2008; Sharp et al., 2011; Vincenot et al., 2015) and forest conservation (Vaske et al., 1999; Baranzini et al., 2010; Garekæ et al., 2016).

Based on the ABC model of attitudes: Affective component, Behavioral component and Cognitive component (Eagly & Chaiken, 1998) Fig. 3., we are exploring factors influencing environmental public awareness in addition to the willingness to preserve the tropical semi dry forest of *La Grande Chaloupe*.

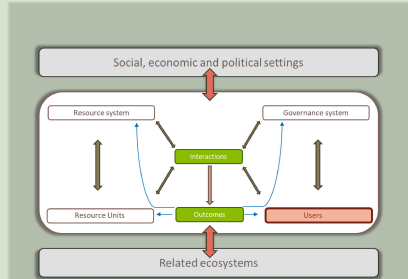


Fig. 2. The core subsystems in a framework for analyzing socio-ecological systems (SES) (Ostrom, 2009)

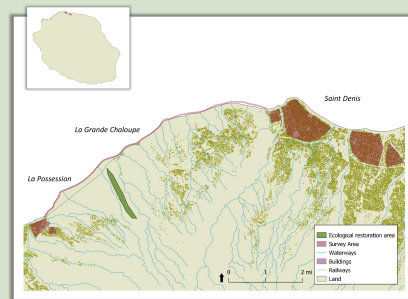


Fig. 3. Survey area map (2017 and 2019)

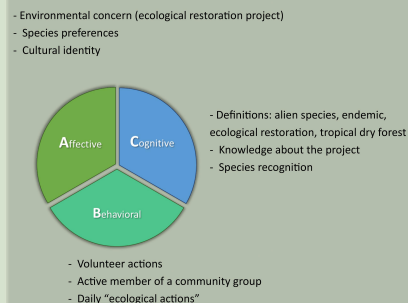


Fig. 3. A framework of environmental attitude based on the ABC model of attitudes

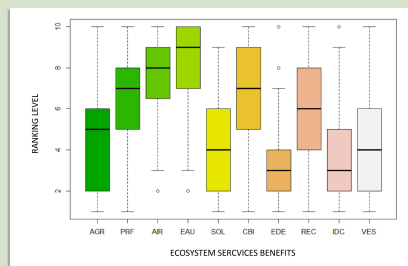


Fig. 3. Boxplots of ecosystem services benefits of tropical semi dry forest of *La Grande Chaloupe* favored by local population of Saint Denis (n=150)
 AGR= agriculture; PFR= wood, medicinal plant; AIR= air quality; EAU= water quality; SOL= soil quality; CBI= habitat; EDE= environmental education; REC= recreative; IDC= cultural identity; VES= esthetics

Methodology

Two phases of survey (through questionnaire) were established alongside the ecological restoration location (*Saint Denis* and *La Possession*) Fig. 3.

1st survey campaign (2017): (exploratory survey)

Random sampling

2nd survey campaign (2019): (in progress)

Sampling by quota method : our target population consisted of all adult residents, with a representative population of each town (age, gender and profession). The questionnaire was constructed into five sections with information on demographic profile. We are measuring attitude by items denoting the willingness to pay/protect and forest's ecosystem services perception. These questions will allow us to compare among stakeholder groups (e.g., scientific experts, those committed in environmental organizations, practitioners, etc.).

Survey data was stacked in a database using a form codification of answers for a Contingent Valuation (CVM) calculation, this will be completed with a qualitative analysis of speech corpus of stakeholder groups in order to follow the knowledge gesture from one group to another.

Results

First results (obtained in 2017) enabled us to pinpoint the three environmental attitude components through:

1. Definitions: Results showed that 18% of the respondents were able to give a complete definition of invasive alien species. Moreover, 67.9% described tropical semi dry forest as "Savanna".

2. Visual recognition of invasive alien species: Results demonstrated that among fauna, few were identified. e.g. according to several respondents, *Phelsuma grandis* (identified as invasive alien species) was often considered as "endemic", "native" or "friendly" due to several observations, except for *Rattus rattus* which is considered as "scary" and/or "harmful". As for flora, species were only identified by name, the interaction impact was difficult to recognize considering it as "being part of cultural identity" or "economically useful".

3. Environmental concern: respondents were mostly worried about "pollution" (58%), while 8% were concerned about "biodiversity loss". There behavior was associated mostly with there daily activities (e.g. waste sorting).

4. Awareness about ecological restoration at *La Grande Chaloupe* forest.

As for the second campaign (2019), we obtained specific results of the previous four sections, e.g. we requested to rank ecosystems services benefits of *La Grande Chaloupe* tropical semi dry forest. This ranking was based on a PECS analysis (Programme on Ecosystem Change and Society) (Quintas-Soriano et al., 2018), this analysis highlight how ecosystem services are generalized by the locals as well as the identification of important factors that are specific to this socio-ecological system. We also considered the willingness to pay and/or participate to restoration actions.

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