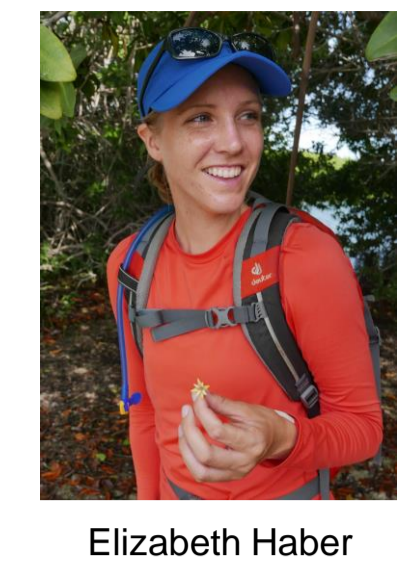




Funding sources:



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# The social and ecological contexts of invasive plant management in the Caribbean

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18 February 2016

## Abstract

The ecological motivation for invasive species management is clear: invasive species are one of the top threats to biodiversity worldwide. However, the social motivation is sometimes diluted because governments and managers are juggling multiple priorities, and public attitudes toward non-native species are often mixed. In the Caribbean, the issue of invasive species management is intensified due to the region's outstanding biological endemism and complex

and layered political assemblage. This project takes an interdisciplinary approach towards this challenge, studying both the ecological and social side of invasive species. Stakeholder involvement is crucial for both informing the research and in order to have an impact on management practices. Ultimately, the integrated research results will serve to facilitate decision making, for example through a yet to be designed decision support system.

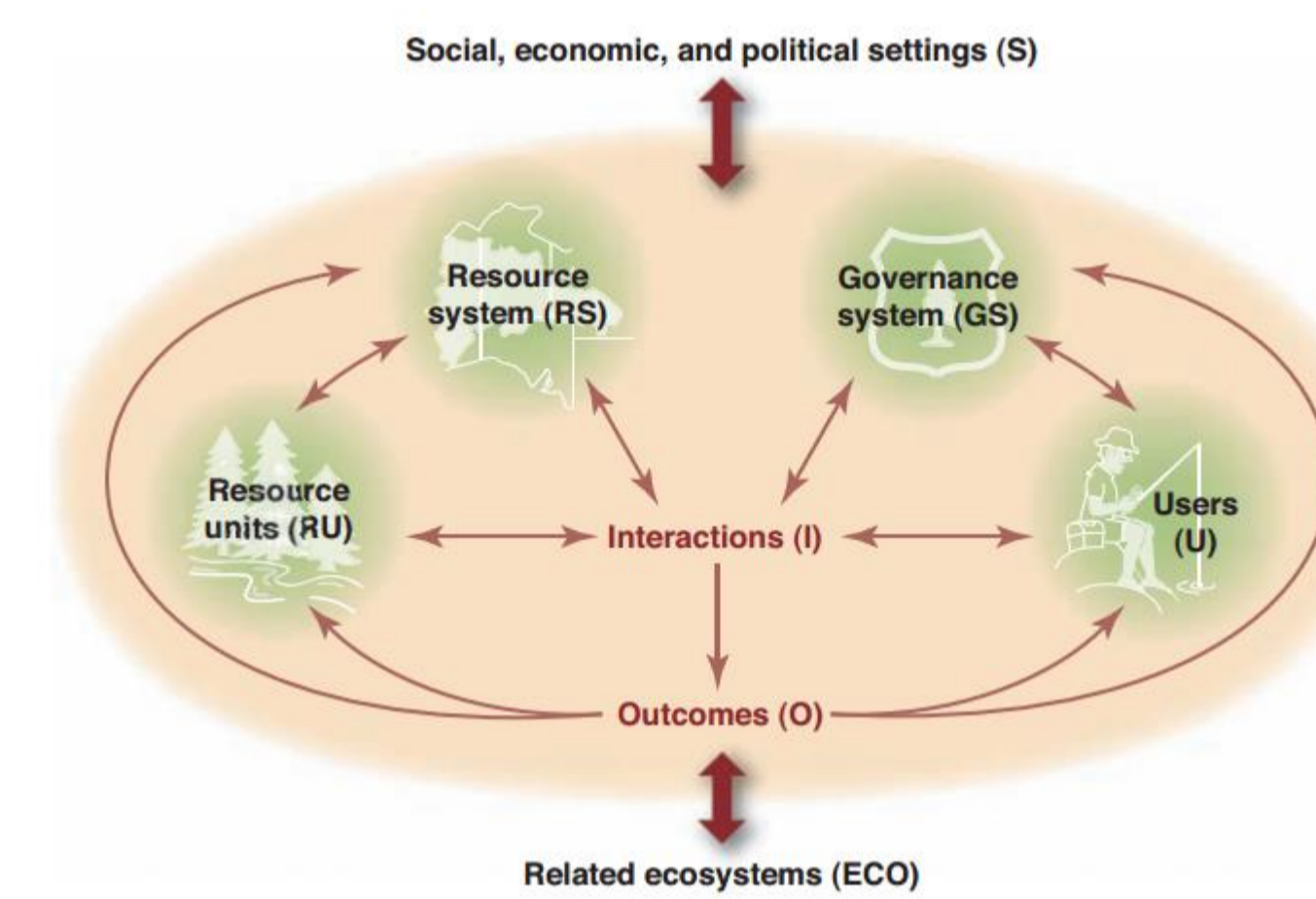


Figure 1. Our interdisciplinary research fits into the Social Ecological Systems framework as described by Ostrom (2009).

Since outreach is very important for this project, we have organized and participated in several activities in the Caribbean and in the Netherlands.

### St. Eustatius

- Become an ecologist for a day at Youth Center
- Stakeholder meeting with local government
- Coralita elimination in Botanical garden
- Science Cafe presentations at research station CNSI

### Bonaire

- Reforestation Klein Bonaire
- Public presentation at research station CIEE

### Utrecht

- Lunch lecture to colleagues

## Research themes of the first year

- Spatial distributions of target invasive plants
- Governance configuration of the BES islands and the Netherlands

## Multi-level governance configurations

How does the relationship between semi-sovereign Caribbean islands and their European counterparts influence the determination of policies regarding invasive plant species?

	Autonomy	Overarching system	Nestedness	Policy determined?
Anguilla	High	Very lean	Low	Hardly
Guadeloupe	Medium	Strong	High	Getting there
BES islands	Medium	Lean	Medium	None

Table 1. Results from semi-structured interviews and desk study

## Outcome and implication for next research step

Higher nestedness appears beneficial, but contention regarding division of responsibilities is a significant confounding factor.

- A clear division of responsibilities among policy actors should be strived for.

## Mapping the current extent of target invasive plant species

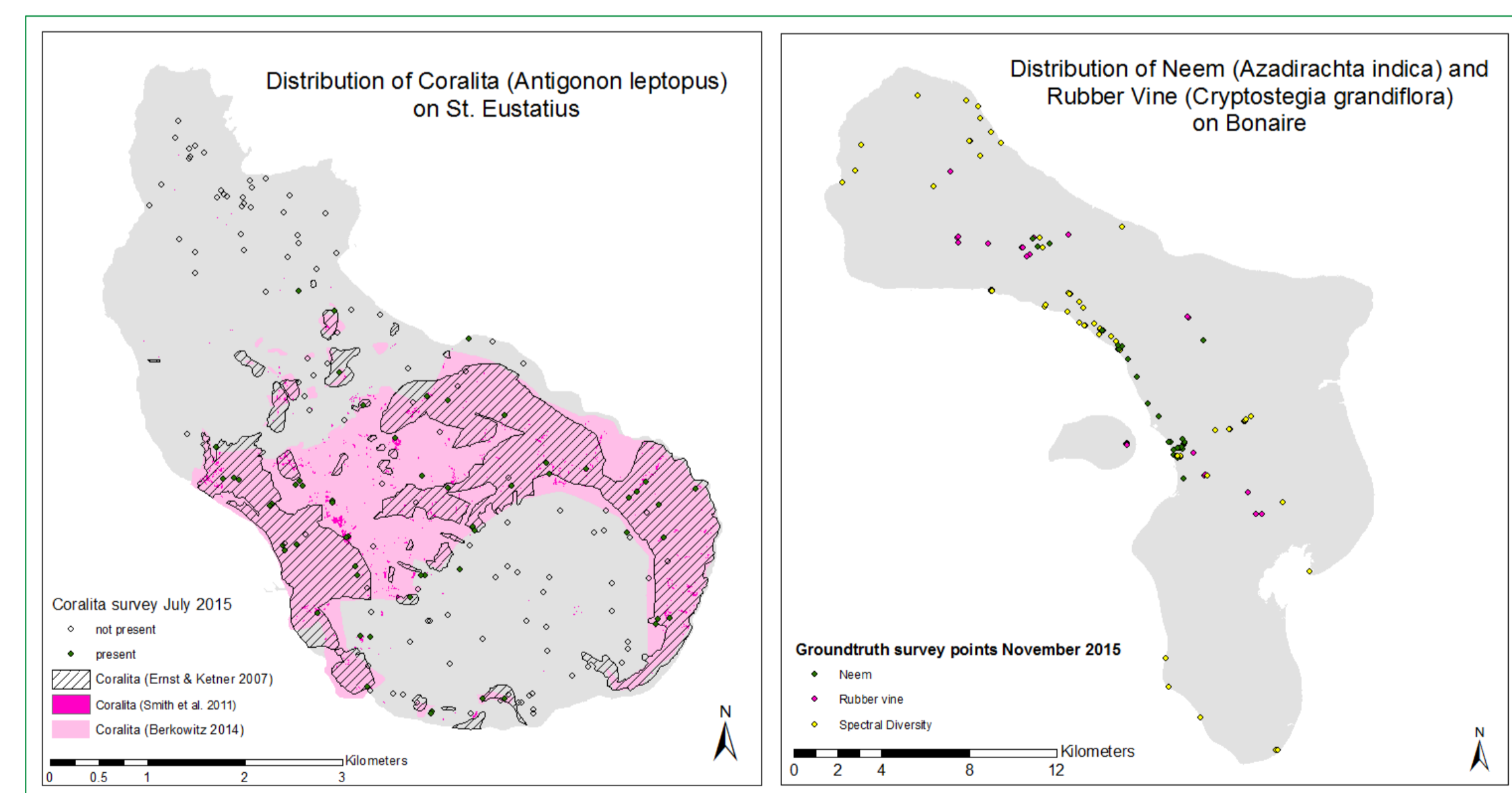


Figure 2. Groundtruthing points from St. Eustatius (July 2015) and Bonaire (November 2015). The St. Eustatius map shows the presence of Coralita (Antigonon leptopus) as compared to previous distribution maps. The Bonaire map shows the points where Neem (Azadirachta indica) and Rubber Vine (Cryptostegia grandiflora) were found.

## Outcome and implication for next research step

Each island has unique invasive species threats. Whereas Coralita on St. Eustatius is pervasive, it is just starting to spread rapidly on Saba. On Bonaire, Rubber vine is becoming aggressive while Neem remains mostly in populated areas.

- Groundtruthing points will be used to inform a remote sensing-based vegetation classification model for the target invasive species.

## Project Aim: Facilitate Decision Making

### Social Science

#### Perceptions and impact

- Map stakeholders' perceptions of invasive species
- Conduct social cost-benefit analysis of invasive species
- Assess feasibility of management options

#### Designing decision making context

- Which actors should be involved?
- Which processes should be fit into?
- Which barriers need to be overcome?

### Ecology

#### Species on the move

- Which factors affect the ability of these species to establish?
- What is their potential distribution?
- How quickly do these species spread?
- How do different management actions impact the rate of spread?

#### Ecological interactions

- How do these invasive species impact the ecological community?

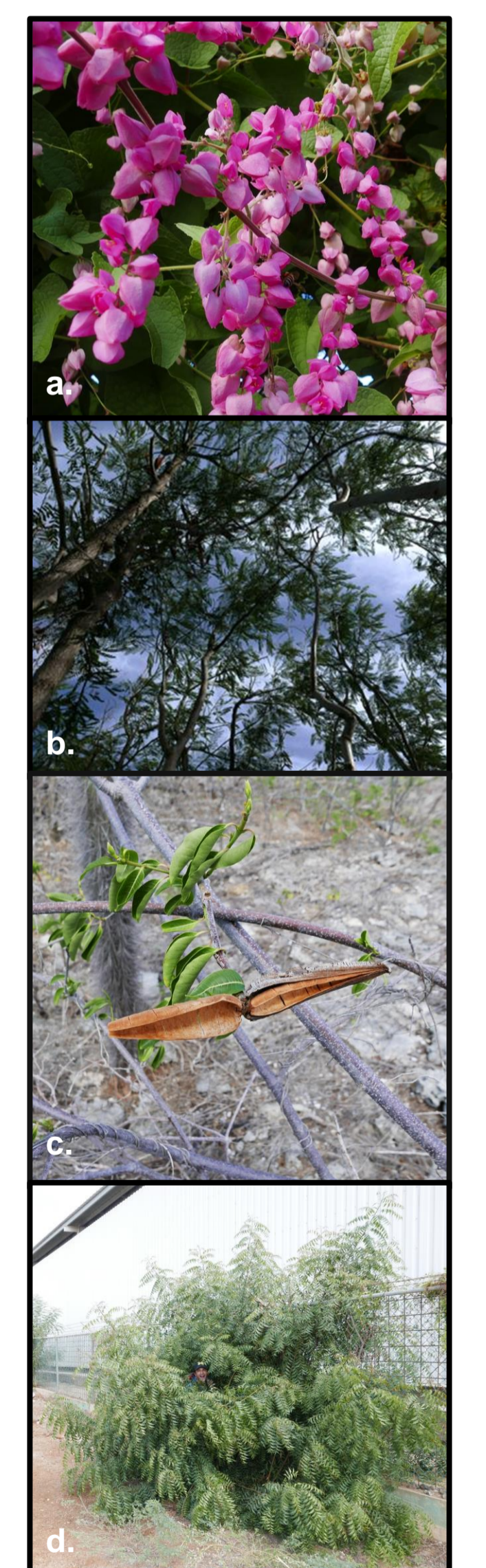
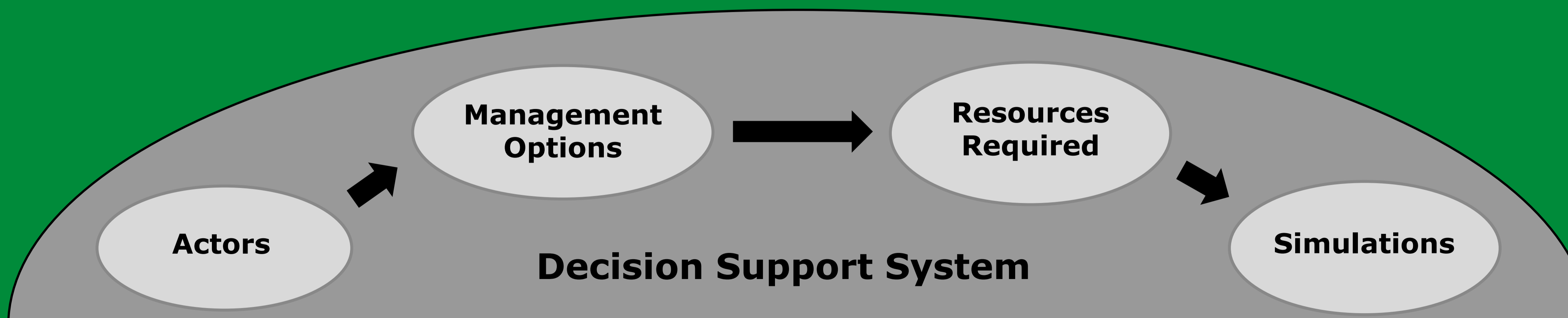


Figure 3. Target invasive plant species. a. Coralita (Antigonon leptopus) b. Tan-tan (Leucaena leucocephala) c. Rubber vine (Cryptostegia grandiflora) d. Neem (Azadirachta indica).

## Check out our recent publication!

Haber and Vaas (2015) Invasive species in the Dutch Caribbean: foreign foes or alien allies? *BioNews*, 20, p.6.

Reference  
Ostrom, E. (2009) A general framework for analyzing sustainability of social-ecological systems. *Science*, 325 (5939), p. 420

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