

# Islander perceptions of invasive alien species in small remote islands of French Polynesia (South Pacific): the role of socioeconomy and culture

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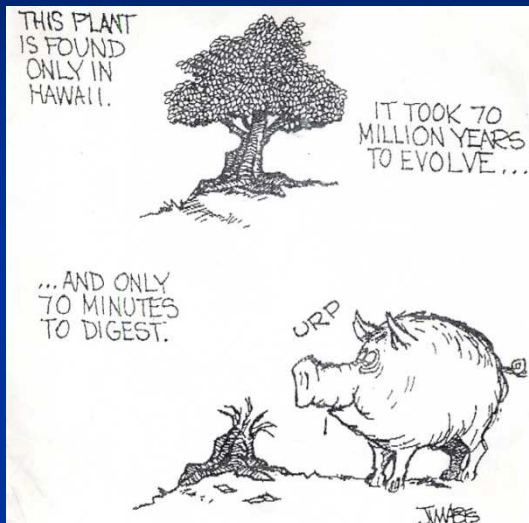
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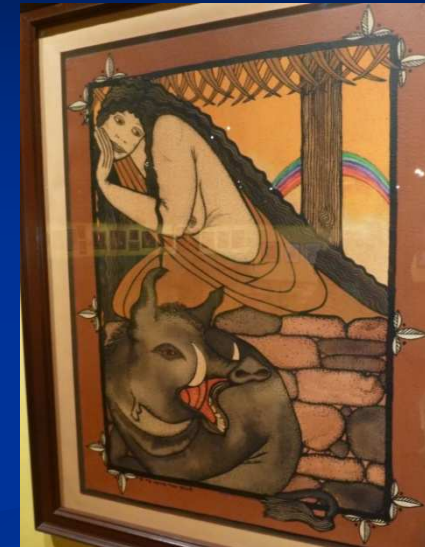


# Polynesians, Pigs & Plants

Feral pig *Sus scrofa*



Vaiana & Pua (Disney©)



(Bobby Holcomb©)

*Miconia calvenscens* (Melastomataceae)  
« Le Cancer Vert » in Tahiti,  
« The Purple Plague » in Hawaii



« Heiva i Tahiti » Traditional danse festival (2014)

# Conflicts of interest

## ➤ Strawberry Guava *Psidium cattleianum* (Myrtaceae)

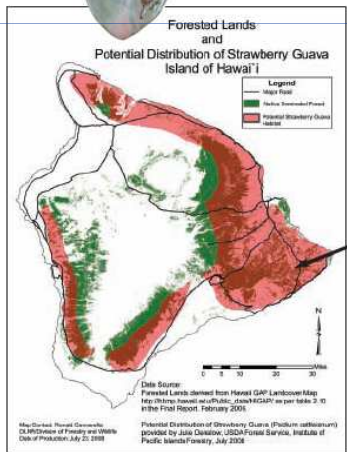


### CALL TO ACTION

Scientists and land managers are preparing to release a Brazilian scale insect, *Tectococcus ovatus*, to help slow the spread of invasive strawberry guava (*Psidium cattleianum*), also known as *waiomat*, in Hawai'i. Since its introduction in 1825 as an ornamental plant, strawberry guava has invaded Kaua'i, O'ahu, Molokai, Maui, Lanai, and Hawai'i, smothering our native forests, reducing the amount of water flowing to our aquifers, and spreading fruit flies to vulnerable crops.

There are no natural controls in Hawai'i for strawberry guava. With conventional management tools alone, proving insufficient to contain it, strawberry guava has become one of the most serious threats to our quality of life in Hawai'i, affecting countless rare and endangered species, essential watersheds, the Native Hawaiian culture, our agricultural industry, as well as public access for subsistence gathering and recreation.

Can we continue to use strawberry guava while limiting the damage it is causing? Yes. Extensive tests conducted over 15 years in both Hawai'i and strawberry guava's native habitat, Brazil, indicate that we can safely and economically slow the vigorous growth of strawberry guava with the help of one of its native parasites, *T. ovatus*, without causing harm to other species, or threatening our valuable food crops.



Strawberry guava (dark green vegetation) taking over Ohia lehua and other native trees at Wao Kele O Puna. Photo by C. Acosta

Strawberry guava is a threat to 90% of remaining forested lands statewide



Tubuai (Austral Is.)



Tahiti (Society Is.)



Mauritius (Mascarene Is.)

16 SOCIÉTÉ

LA PLAINE-DES-PALMISTES DU 4 AU 6 JUIN

### Le goyavier fait la fête

La fête des goyaviers démnage. Elle se déroulera du 4 au 6 juin sur le nouveau site du Bassin Cadet, à La Plaine-des-Palmistes. Plus de place, moins d'embouteillages et davantage d'animations.

Fervent défenseur du goyavier, Jean-Luc Saint-Lambert faisait hier l'éloge de l'emblème de sa commune, lors d'une conférence de presse. D'abord, il présente le nouveau cadre de la manifestation : le site du Bassin Cadet, près de la salle des fêtes, avec vue imprenable sur la cascade Bibron.

Ensuite, il rappelle que l'association Goyavier, cultures et traditions fait des maïns et des pieds pour promouvoir une fièvre en devenir. Il rappelle que des étudiants se sont penchés sur la mise en place d'une unité de production de pulpe et de pré-transformation. « Ce fruit rapporte davantage que la canne. Une tonne de goyaviers rapporte mille euros ! » insiste le maire. Mais il ne voit pas que le volet économique puisse

c'est l'occasion pour son village d'accueillir des visiteurs de toute l'île. Il se vend des tonnes et des tonnes de fruits pendant ces journées festives qui cette année auront lieu du 4 au 6 juin.

Un plateau artistique de choix a été concocté avec la participation de nombreux artistes locaux encore méconnus mais qui selon les organisateurs attirent un public nouveau. Manèges, rencontres sportives, produits du terroir seront à l'honneur pendant les trois journées.

L'édition s'est même pas-entamée que déjà le maire se prend à rêver de celle de l'année prochaine qu'il verrait bien devenir « indianoocéanique » avec une invitation de Maurice et de Madagascar.

La fête des goyaviers : l'occasion pour le maire de promouvoir ce fruit qui représente pour lui une fièvre d'avenir pour son village. (Photos M.L.)

M.L.

La Réunion (Mascarene Is.)



# ➤ Gorse *Ulex europaeus* (Fabaceae)

weeds of national significance

## Weed Management Guide

Gorse - *Ulex europaeus*



● Current ● Potential

### Gorse (*Ulex europaeus*)

**The problem**

Gorse is a *Weed of National Significance*. It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. It is a major agricultural weed in Tasmania and parts of Victoria, and is increasingly becoming a threat as an environmental weed in many national parks and other bushland areas.



Table 1: Some economic biocontrol conflicts of interest in New Zealand

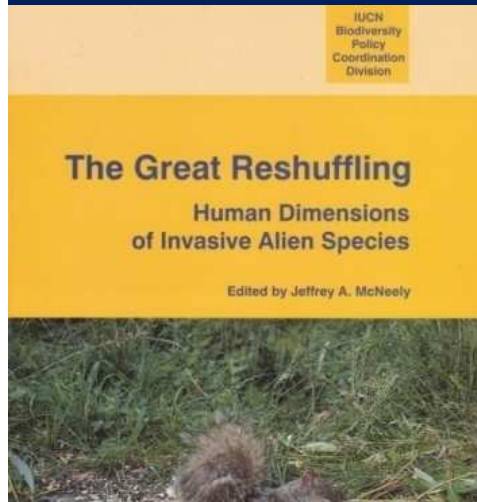
Weed	Possible adverse effects	Outcome
<i>Carduus nutans</i> <b>Nodding thistle</b>	Apianists – valuable nectar source.	Biocontrol briefly delayed then agents released. Nectar production more likely to be reduced by herbicide than biocontrol.
 <p>Nurse or Curse ?)</p>	...tal plant. ...ers – fodder. ...ste ( <i>Cytisus</i> ...me agents.	Two biological control agents released but more detailed investigation of costs and benefits required before release of any further agents in NZ.
	...ne regions.	Investigation abandoned in Hawai'i because of agricultural value. In NZ feasibility of biocontrol in early stages – likely to be opposed if taken further.
	...Pines also ...er belts and	More research into the safety and usefulness of biocontrol is needed for NZ. Programme against <i>P. pinaster</i> is underway in South Africa.
	...amage to ...nectar	Rust fungus blocked for several years in Australia, illegally released in 1984, and arrived here in 1990. Investigations into additional strains of the rust are continuing.
<i>Salix</i> spp. <b>Willow</b>	Stabilisation, erosion and river control, shelter belts. Recreation – promoted as trout habitat. People like the look of them.	Biocontrol being considered, but opposition likely to be great. Several species (including crack willow) are still being planted.
<i>Ulex europaeus</i> <b>Gorse</b>	Apianist – valuable pollen source. Farmers – hedge, shelter plant, forage plant.	Considerable delay in revisiting the project in the 1980s, mostly due to apianists. Six agents have been released since 1989.



La Réunion (Mascarene Is.)

# The Human Factor

2000



2001

Conservation Biology

Review

## Clarifying values, risk perceptions, and attitudes to resolve or avoid social conflicts in invasive species management

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## Social perceptions of the impacts and benefits of invasive alien species: Implications for management

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## Considering the social dimension of invasive species: the case of buffel grass

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RESEARCH ARTICLE

A peer-reviewed open-access journal  
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Advancing research on alien species and biological invasions

## Beasts or beauties? Laypersons' perception of invasive alien plant species in Switzerland and attitudes towards their management

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## Public attitudes to the management of invasive non-native species in Scotland

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# Objectives

## CHALLENGES

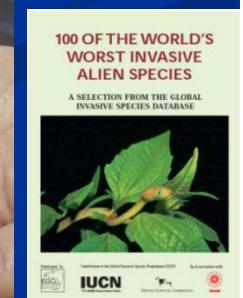
- Prioritization mechanism for early eradication or long-term control of invasive alien species (IAS)
- Support and engagement of local communities in small remote islands with low capacities

## HYPOTHESIS

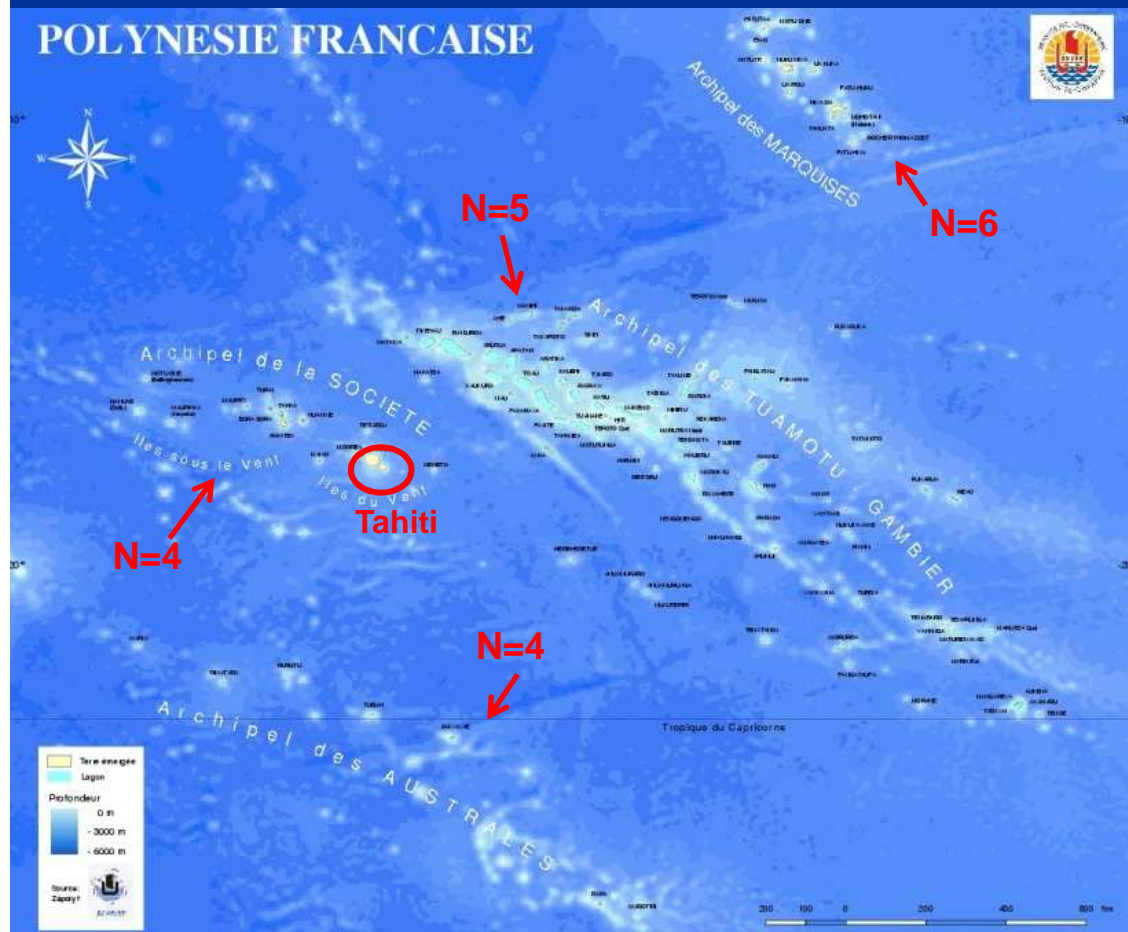
- Less IAS in more remote islands?
- More IAS in more populated and/or developed islands?
- Different perceptions and attitudes towards IAS (« Urban » vs. « Rural »)?
- Role and importance of cultural (traditional) values?

## Method

- « *Island protection against invasive species* » information, education & prevention campaign in French Polynesia (2014-2015)
- 46 IAS legally declared « *a threat to biodiversity in French Polynesia* »: 35 plants + 11 animals



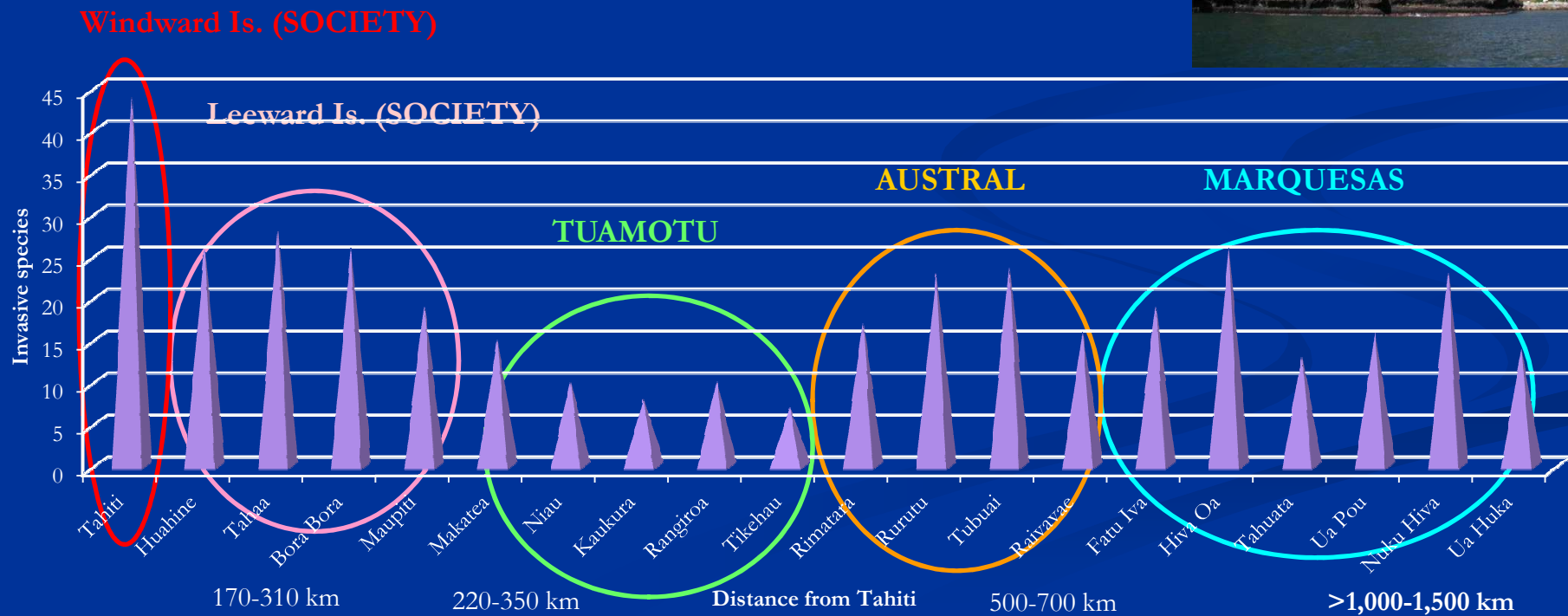
- 19 small islands in 4 archipelagoes (excluding Tahiti & Moorea)
  - Public meetings in city halls or community houses in 41 villages
  - 2,045 participants (1,781 adults)
  - Open questions & discussion (oral tradition)
- ➔ « positive/neutral/negative comments » on IAS present in islands



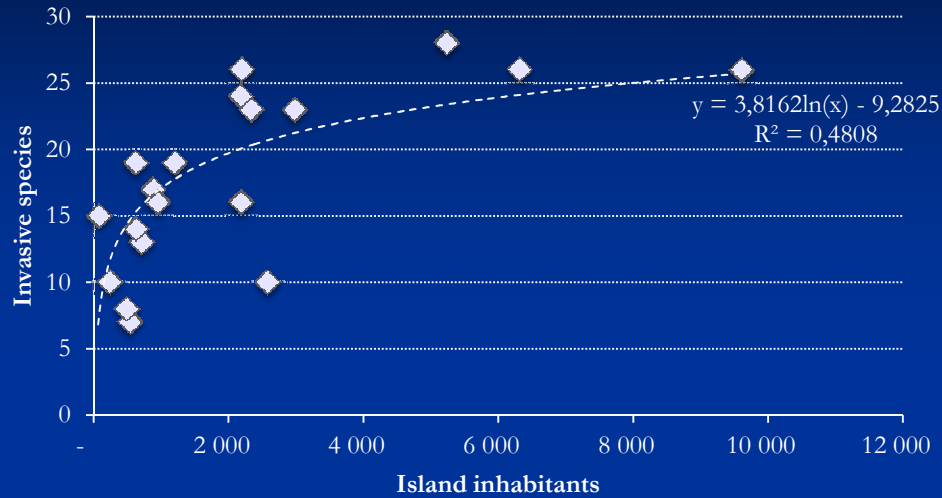


## Results

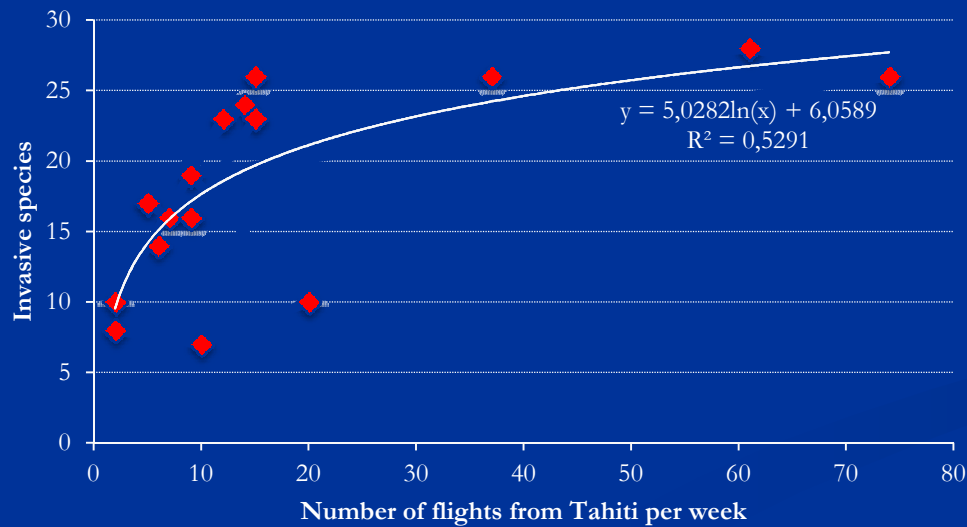
- No relation between the number of IAS and island remoteness (i.e. distance from Tahiti)



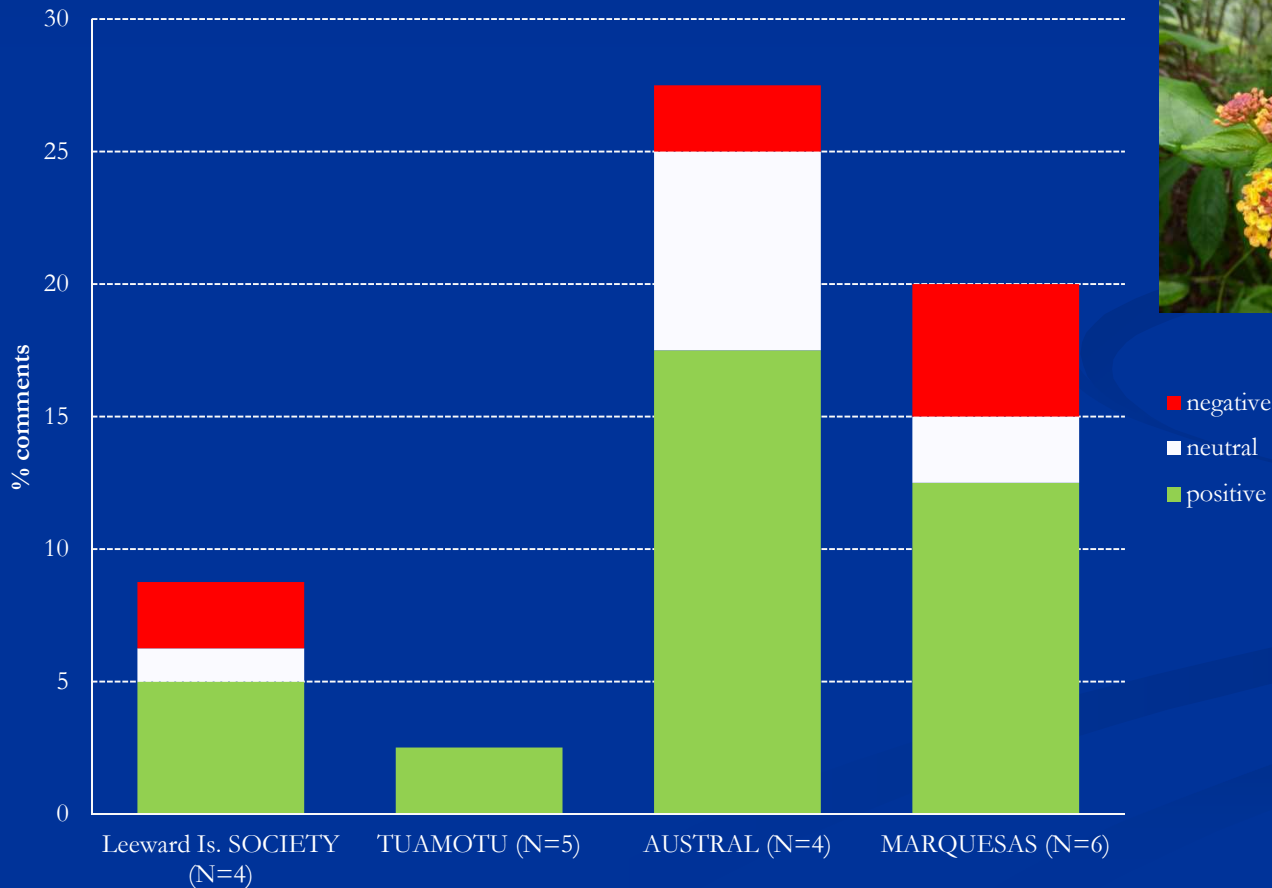
## ■ The most populated islands are the most invaded



## ■ The most « connected » islands are the most invaded



- More comments in remote archipelagoes
- Only positive comments in atolls!
- Old introduced IAS are mostly considered as « useful »



*Lantana camara* (1853)



*Leucaena leucocephala* (1835)

■ Different perceptions of IAS in different islands



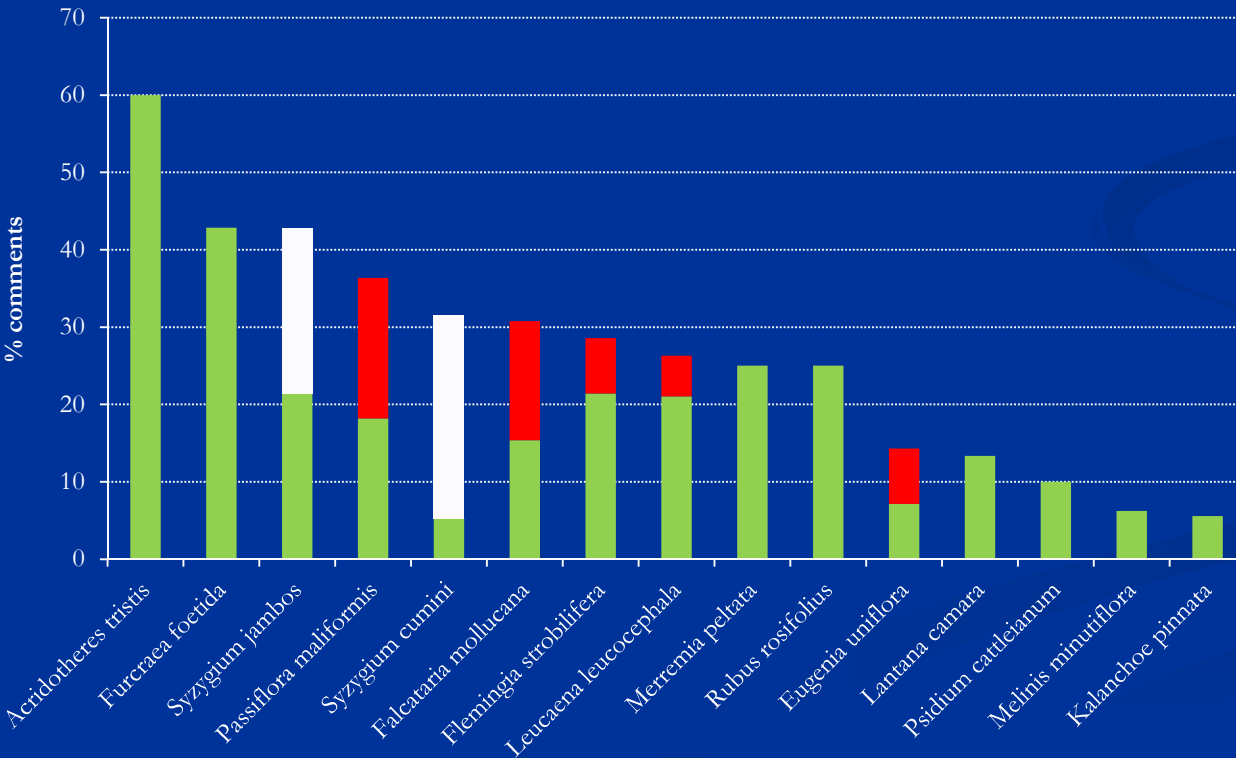
*Acridotheres tristis* Common myna



*Flemingia strobilifera*



*Eugenia uniflora*  
Surinam cherry



■ neutral  
■ negative  
■ positive

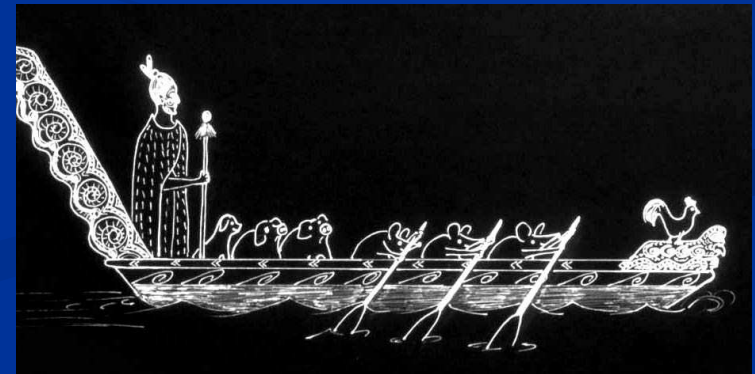


*Syzygium jambos*  
Rose apple

## Conclusions

- Islanders perceptions and attitudes vary between archipelagoes and among islands according to socio-economic development
- Strong and long-lasting cultural values in South Pacific islands (utilitarian, aesthetic...)
- « Indigenization » (or « **heritagization** ») of old introduced and naturalized species (by Polynesians 1,000 yrs ago, and Europeans 200 yrs ago), part of their natural and cultural heritage

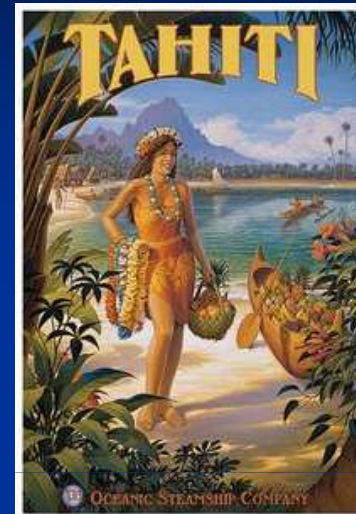
→ the importance of social & cultural acceptability in IAS management



« Transported landscape » (Kirch,1984)

# Insularity, Island Syndrome & Islandness

- Strong isolation, small land areas
- High endemism, small plant and animal populations
- High vulnerability to human disturbances and IAS
- **Low capacity (infrastructures, funds, knowledge, trained people...)**
- **Slow local community change (« attitude resilience ») but fast adaptation to novelties?**



We think of islandness as a metaphysical sensation that derives from the heightened experiences that accompany the physical isolation of island life. Islandness is a sense that is absorbed into the bones of islanders through the obstinate and tenacious hold that island communities exert on their native-born as well as on their converts, who experience it as an instantaneous recognition. Islandness thus is an important metacultural phenomenon that helps maintain island communities in spite of daunting economic pressures to abandon them.

ON ISLANDERS AND ISLANDNESS

PHILIP CONKLING

✪ MR. CONKLING is the founder and president of the Island Institute, Rockland, Maine 04841.

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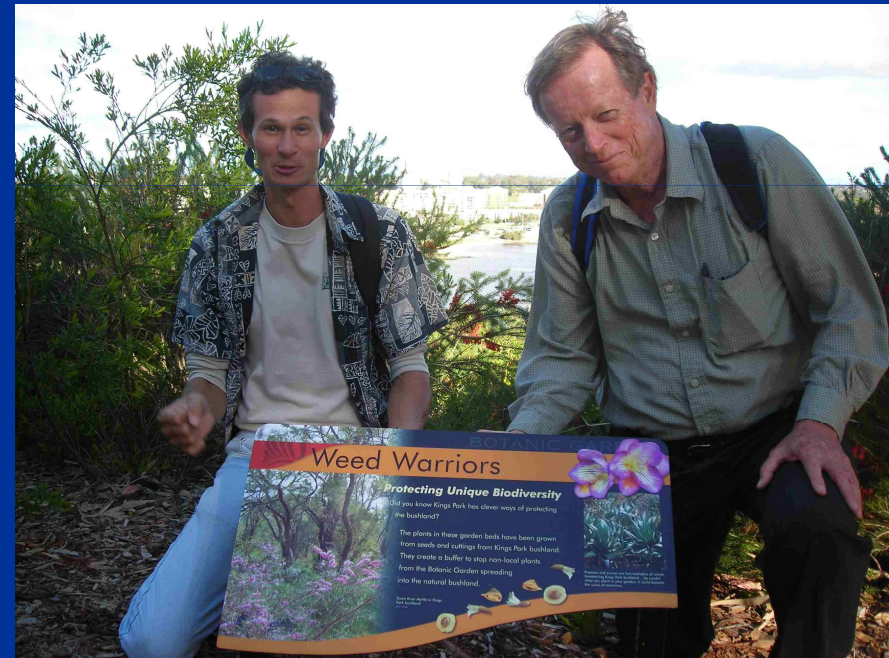
# Mauruuru roa, Tapadh leibh, Merci beaucoup, Many thanks for your attention



Marie



## IN MEMORIAM



Lloyd L. LOOPE, USGS, Maui, HAWAII (USA)  
(Born 04 February 1943- Deceased 03 July 2017)