Strategy to control the invasive alien tree *Miconia calvescens* in Pacific islands: eradication or containment?

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Introduction

- Prevention
- Eradication
- Containment
- Control

- Site accessibility
- Species detectability
- Life history characteristics
- Control efficacy
- Adequate funding support

(see e.g. Parkes & Panetta in Clout & Williams, eds. 2009)
Weed eradication programs

The case of miconia the Pacific islands

Miconia calvescens (Melastomataceae)

- Cairns 1963
- Nouméa 1970's
- Tahiti 1937
- Honolulu 1961

Island Invasives: Eradication and Management, The University of Auckland, NZ, 8-12 Feb. 2010
Miconia life cycle in Tahiti


« Seedling carpet »
## Miconia degrees of invasion & control strategies

<table>
<thead>
<tr>
<th>Island group</th>
<th>Number of invaded sites</th>
<th>Elevation range (m)</th>
<th>Invaded « net » area (ha)</th>
<th>Degree of invasion</th>
<th>Control strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRENCH POL.</td>
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</tr>
<tr>
<td>Tahiti</td>
<td>&gt; 100</td>
<td>10-1400</td>
<td>&gt; 80 000</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Moorea</td>
<td>&gt; 20</td>
<td>10-1100</td>
<td>&gt; 3 500</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Raiatea</td>
<td>&gt; 10</td>
<td>10-1000</td>
<td>&gt; 470</td>
<td>Medium</td>
<td>Eradication?</td>
</tr>
<tr>
<td>Taha  a</td>
<td>1</td>
<td>20-200</td>
<td>&lt; 10</td>
<td>Low</td>
<td>Eradication?</td>
</tr>
<tr>
<td>Nuku Hiva</td>
<td>3</td>
<td>500-600</td>
<td>&lt; 5</td>
<td>Low</td>
<td>Eradication?</td>
</tr>
<tr>
<td>Fatu Hiva</td>
<td>3</td>
<td>400-1100</td>
<td>&gt; 1</td>
<td>Low</td>
<td>Eradication?</td>
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<tr>
<td>HAWAII</td>
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</tr>
<tr>
<td>Hawaii</td>
<td>&gt; 100</td>
<td>10-820</td>
<td>&gt; 10 000</td>
<td>High</td>
<td>Containment</td>
</tr>
<tr>
<td>Maui</td>
<td>&gt; 20</td>
<td>20-870</td>
<td>&gt; 1000</td>
<td>Medium/High</td>
<td>Containment</td>
</tr>
<tr>
<td>Oahu</td>
<td>&gt; 6</td>
<td>10-550</td>
<td>&gt; 700</td>
<td>Medium</td>
<td>Eradication?</td>
</tr>
<tr>
<td>Kauai</td>
<td>&gt; 2</td>
<td>40-310</td>
<td>&gt; 220</td>
<td>Low</td>
<td>Eradication?</td>
</tr>
<tr>
<td>NEW CAL.</td>
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<tr>
<td>Province Sud</td>
<td>1</td>
<td>250-550</td>
<td>&gt; 120</td>
<td>Low</td>
<td>Eradication?</td>
</tr>
</tbody>
</table>
Miconia control efforts: Raiatea (1992-2008)
(Source: Service du Développement Rural, Raiatea)

- 2.2 millions plants destroyed, including 4500+ mature trees
- surveyed area: 3-5% of the island

![Graph showing Miconia control efforts over time](image)
Miconia control efforts: Oahu (1993-2009)
(Source: Oahu Invasive Species Committee)

- 16,000+ plants destroyed, including 115 mature trees
- "net area" > 700 ha, surveyed area > 12,000 ha

![Graph showing Miconia control efforts from 1993 to 2009]

- OISC staff
- Juvenile
- Reproductive tree

![Image of Miconia plants]
Miconia control efforts: Kauai (1993-2009)
(Source: Kauai Invasive Species Committee)

- 8,000+ plants destroyed, including 23 mature trees
- « net area » > 220 ha, surveyed area > 1400 ha
Is miconia eradication a realistic goal?

- High volcanic island rugged topography
- Persistent soil seed bank, «the bane of the weed eradicator» (Panetta 2002)
- Large surveyed areas
- Limited resources!

![Image of island with topography and plants]

![Graph showing soil seed bank dynamics (Raiatea)]

15 yrs after control
Finding the best control strategy


« Juvenilization strategy »
Conclusions

- **Adapted + integrated management strategy** (including biological control)
- **Long-term funding & political support & institutional commitment** (>15-20 yrs)
- **Importance of prevention and public awareness!**

Colletotrichum gloeosporioides f.sp. miconiae

16th Australian Weed Conf., Cairns 2008
Thanks for your attention, *kia ora*!

- *Mauruuru roa* to the « Service du Développement Rural », French Polynesia

- *Mahalo nui loa* to the « Invasive Species Committees » (KISC, OISC), Hawaiian Islands

- *Merci beaucoup* au Service des milieux terrestres, Direction de l’Environnement, Province Sud, New Caledonia

« Miconiator »

Second International Miconia Conf., Maui, Hawaii 2009