Marine Invasive Species in the Pacific Islands

a case-study from Samoa

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Presentation overview

Marine Invasive Species in the Pacific Islands

Addressing Invasive Species in Samoa

Samoa Invasive Species Surveys

Results and Discussion

Looking Ahead
Marine invasive species

- Disparity in state of knowledge (cold/temperate vs tropics)
- Marine Invasive Species – lower priority compared to terrestrial invasive species
  - lower priority attributable to lack of taxonomic capacity, low-to-no research infrastructure, and competition with other pressing issues (health, education, climate change)
- Knowledge non-existent in most PICTs – with only a few surveyed (Hawaii, Guam, Am. Samoa & Samoa)
- MIS remains a real threat to food-security in Pacific Island communities
Building Pacific Islands capacity and capability in taxonomy

Pacific Islands

= Sites where Marine Invasive Species have taken place

Samoan archipelago
Samoa addressing invasive species

- Invasive species recognised in the country’s NBSAP (theme 6 – Biosecurity)
- Established a National Invasive Species Committee
- Formulated a National Invasive Species Strategy and Action Plan (NISSAP)
- Invasive Plants survey completed (Space & Flynn 2002)
- Marine Invasive Species survey completed (Skelton et al. 2008)
Samoa’s Marine Invasive Species survey

- Survey objectives were **to assess the presence of invasive species** in Apia Harbour and environs and to provide advice on how to address the marine invasive species problem (including training of staff)
- 11 sites were surveyed
- Survey methods followed those used in previous surveys (e.g. American Samoa under the Bishop Museum) – removal of specimens by scuba, snorkel and wading!
Samoa’s Marine Invasive Species survey

- Specimens were sorted in rough taxonomic groups per site, where necessary relaxed (magnesium chloride) and preserved with 10% formalin/seawater or 90% ethanol

- Further assessments were made at the University of the South Pacific, James Cook University
MARINE INVASIVE SPECIES SURVEY OF APIA HARBOUR
SAMPLING SITES  February 5-17, 2007

Palolo Deep
Marine Reserve
results

- >500 samples analysed
- New records (*Caulerpa microphysa*)
- Biogeographic extension
- Native species – invasive elsewhere
- Species so far only reported from the Harbour (*Anadyomene wrightii*)
- Recently introduced and established species (*Codium arenicola* and *Spatoglossum macrodontum*)
Caribbean Hydroid: Pennaria disticha
Building Pacific Islands capacity and capability in taxonomy results.

Western Atlantic Hydroid: Carijoa riisei
Indo-Pacific Ascidian: Didemnum spongioides
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Australian (Qld): Spatoglossum macrodontum
Southeast Asia: Codium ovale
Thailand: Codium arenicola
Codium arenicola is a native of Thailand. It was first recorded from the mid 1990s at Suva Harbour, Fiji. It was found washed up on the Apia beach in 1999. Survey of the Apia Harbour in 2000 failed to find any population. Our surveys 2007 found viable populations at the Mulinu’u Blue-hole.
Species introduced for aquaculture and reef restocking were collected.

*Trochus niloticus*

*Pinctada margaritifera*
discussion

• Evidence of movement of species from biodiversity rich west Pacific to east
• Taxa of real concern to the tropics are likely to be algae (Phaeophyceae, Chlorophyta)
• Vectors include ships and aquaculture introductions
• In Apia Harbour – receptive sites for introduced species were clearly identified (reef embayment, blue-holes)
Marine Invasive Species Survey of Apia Harbour

Sites of interest

1. Codium arenicola
2. Codium ovale
3. Codium geppiorum
4. Anadyomene wrightii
5. Spatoglossum macrodontum

Palolo Deep Marine Reserve
Looking ahead

• Governments to implement an effective monitoring system to keep tab of current introduced species, and to detect future introductions
• Develop appropriate awareness material for communities to be aware of invasive species and to be part of the solution
• Undertake surveys in other ports and Harbours (especially Suva, Fiji – hub for the Pacific)
• Involve all sectors (fisheries, environment, ports, biosecurity, legal, policy, private sector, communities, etc.) in developing national MIS plan
• Regional approach to managing MIS, as well as inter-regional (Asia-Australia-Pacific)
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