**EXOTIC SPECIES MANAGEMENT AND BIOSECURITY**

Lead Author: James Russell

Principal Contributing Authors: Jean-Yves Meyer? Herve Bossin?

*[Note: The views and recommendations in this section represent a consensus view of the CASUP Committee and do not necessarily reflect the views or recommendations of the Lead Author or any Contributing Author. The Lead Author and Contribution Authors are noted in acknowledgment and appreciation of their effort and work in leading, coordinating and assisting with the preparation of this section*.]

**Background and Current Situation**

Islands are fragile ecosystems and their biodiversity is more vulnerable than usual to perturbation. One of the strongest drivers of disturbance to island ecosystems is the introduction of non-native species. Some species exotic species are introduced intentionally for recreational or aesthetic purposes, whereas others arrive unintentionally hitch-hiking with humans. Introductions of non-native species can lead to some of these species becoming overly abundant and causing negative impacts. These ‘invasive species’ can go on to have dire effects on the biodiversity and economy of islands, in many cases leading to species extinctions.

Although many exotic species add value to Tetiaroa, every presence or future introduction of a non-native species should be considered within a risk framework. Currently, problematic invasive species (the subset of exotic species causing negative impacts) include rats (two species), mosquitos (two species), land birds (two species under management), ants (multiple species) and plants (multiple species). Introduced rats and mosquitoes are currently the highest priority for control or potentially eradication, due to their disproportionate level of negative impact on the island inhabitants, guests and native species. Some research has already been undertaken on these species. Some, but not all, invasive ants of French Polynesia have been recorded on motu of Tetiaroa but their extent of invasion is not fully documented, and future invasions are likely. Invasive plants are primarily restricted to Rimatuu. Myna and red-vented bulbul have been controlled to low densities but are always at risk of reinvasion.

Biosecurity on Tetiaroa for ALL exotic species not currently present requires consideration within a risk management framework (i.e. indicating pathways and vectors of invasions) inclusive of (i) Brando guests and staff associated with hotel operations (ii) Bird Island tourism operations and (iii) Fisherman encampments. French Polynesia maintains a phytosanitaire system headquartered at Papeete but the level of compliance by visitors to Tetiaroa is unknown. Although some biosecurity activities currently exist on Tetiaroa in association with hotel operations they require independent auditing to maintain standards. Control or eradication of introduced rats, landbirds and mosquitos from Tetiaroa would have substantial benefits for tourism and conservation, and is considered a viable end-point. However, any such eradications must be associated with a concomitant increase in biosecurity to prevent reinvasion by these, or similar, species (e.g. mice never recorded on Tetiaroa but travel easily in stores). A biosecurity program consisting of quarantine, regular surveillance for pests, and contingency response to new invasions, is currently absent.

**Threats**

* Ongoing decline in seabird fauna from introduced rats
* Negative economic and tourism consequences from introduced rats and mosquitos
* Negative impacts of introduced land birds including introduced plant dispersal and precluding native land bird reintroductions
* Spread of invasive plants and ants from motu upon which they already occur
* New introductions and a lack of rigorous audited biosecurity processes to prevent them
* Lack of data on distribution and impact of introduced ants on Tetiaroa
* Monoculture of coconut forest
* Biosecurity risks outside the control of The Brando e.g. fisherman encampments and natural dispersals (e.g. land birds)

**Desired Outcomes**

* A robust biosecurity process of quarantine, surveillance and contingency response for all pathways and vectors of pest introduction which is considered an international benchmark for island resort operations and coral atoll conservation.
* Eradication of non-native vertebrates (rats and land birds) from Tetiaroa atoll within a decade, and at priority motu, within five years.
* Monitoring and where appropriate control of invasive ants and plants on Tetiaroa atoll.
* Prevention of the spread of invasive species already on Tetiaroa between motu
* A culture of biodiversity and biosecurity in all visitors to the island which respects the need for preventing unwanted introductions and values the benefits accrued to biodiversity and the overall experience of visitors to Tetiaroa. At the same time the value of non-native species to the island (e.g. Polynesian introductions and Hotel operations associated introductions) are respected but managed in a risk framework.

**Strategies and Actions**

**Strategy 1: Eradicate introduced rats from Tetiaroa**

Activity 1.1: Control rats on Onetahi and Honuea in association with hotel operations

Acitivty 1.2: Obtain a feasibility plan for rodent management and eradication on Tetiaroa.

Activity 1.3: Ground-based eradications of rats from priority motu of Rimatuu and Reiono

Activity 1.4: Implementation of a rodent biosecurity programme to prevent rat and mouse spread to the atoll or motu within the atoll from which they are absent

Activity 1.5: Aerial eradication of rats from Tetiaroa atoll

**Strategy 2: Eradicate introduced land birds from Tetiaroa**

Activity 2.1: Remove myna and red-vented bulbul from Tetiaroa

Activity 2.2: Monitor for land bird reinvasion to respond rapidly with ongoing removal.

**Strategy 3: Establish biosecurity on Tetiaroa**

Activity 3.1: Identify pathways and vectors of introduction of new species to Tetiaroa

Activity 3.2: Establish a biosecurity screening procedure for all staff and guests arriving at The Brando

Activity 3.3: Establish a biosecurity monitoring programme on motu across Tetiaroa for key threat species, with particular focus on sites of regular human visitation (e.g. Bird Island and fisherman encampments)

Activity 3.4: Erect signage educating all visitors to Tetiaroa about the risk of new species introductions and the responsibility of everyone to prevent them.

Activity 3.5: Establish a biosecurity plan for screening, quarantine, surveillance and contingency response

**Strategy 4: Manage invasive plants and ants**

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Activity 4.1: Thoroughly document the distribution of invasive plants and ants on Tetiaroa

Activity 4.2: Where appropriate control or eradicate invasive plants and ants from motu of Tetiaroa