Federated States of Micronesia National Invasive Species Strategy and Action Plan 2016-2021

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Department of Resources and Development

PUBLICATION DATA

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Cover photo: Kosrae Sunrise by J Stanford

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KEY CONCEPTS

Biocontrol or **biological control:** Controlling an invasive species by introducing a natural enemy, such as an insect or fungus, that specifically attacks the target species and does not attack other native or economically important species.

Biodiversity: The variety of living organisms on the earth, including the variability within and between species and within and between ecosystems.

Biosafety: Minimizing the risks from both the international and accidental introduction and spread of organisms with potential to have adverse economic, environmental and socio-economic impacts, including genetically modified organisms (GMO's). (Biosafety is effectively the same as biosecurity except that it also includes GMO's).

Biosecurity: Preventing the spread of invasive species across international or internal borders.

Control: Reducing the population of an invasive species.

Endemic species: Unique to a geographical area such as an island or group of islands.

Eradication: removal of the entire population of an invasive species.

Genetically modified organism: An organism whose genetic composition has been altered by the application of modern biotechnology techniques.

Introduced species: Plants, animals and other organisms taken beyond their natural range by people, deliberately or unintentionally.

Invasive species: Species that become destructive to the environment or human interests, may include native species that increase in number and become destructive.

Invasive alien species: Introduced species that become destructive to the environment or human interests.

IUCN Red List: Global inventory of the conservation status of biological species

Native species: Plants, animals and other organisms that occur naturally on an island or in a specified area, having either evolved there or arrived without human intervention.

Pathway: The route by which an invasive species may be moved from one location to another.

Pest: A destructive organism. The term pest is often used as an equivalent of the term invasive species.

Risk assessment: Evaluation of the risk that a new introduced species will become invasive with damaging consequences, prior to its introduction.

Surveillance: Monitoring to detect the arrival of new invasive species.

Vector: conveyance that could move an invasive species from one location to another. In biological science, a vector is also the term for an organism that transfers a disease or parasite from one organism to another.

ACRONYMS

AZE	Alliance for Zero Extinction
BTS	Brown Treesnake
CCS	Chuuk Conservation Society
CI	Conservation International
CIST	Chuuk Invasive Species Taskforce
CRB	Coconut Rhinoceros Beetle
EBA	Endemic Bird Area
ERP	Emergency Response Plan
DAF	Division of Agriculture and Forestry
DCA	Division of Civil Aviation
FAO	Food and Agriculture Organization
FSM	Federated States of Micronesia
GAS	Giant African Snail
GISMP	Guidelines for Invasive Species Management in the Pacific
GMO	Genetically Modified Organism
IAS	Invasive Alien Species
IBA	Important Bird Area
IS	Invasive Species
ISSG	Invasive Species Specialist Group
iSTOP	Invasive Species Taskforce of Pohnpei
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KIRMA	Kosrae Island Resource Management Authority
LFA	Little Fire Ant

MCEs Micronesia Chief Executives

MPA Marine Protected Area

NEMS National Environmental Management Strategy

NBSAP National Biodiversity Strategy and Action Plan

NGO Non-government Organization

NISSAP National Invasive Species Strategy and Action Plan

OEA Office of Economic Affairs

PCS Pohnpei Conservation Society

PoWPA Program of Work on Protected Areas

PRC Peoples Republic of China

RBP Regional Biosecurity Plan for Micronesia and Hawaii

RISC Micronesia Regional Invasive Species Council

SBOC Office of Statistics, Budget and Economic Management, Overseas Development Assistance and Compact Management

SPC Secretariat of the Pacific Community

SPREP Secretariat of the Pacific Regional Environmental Programme

SWARS State Wide Assessment and Resource Strategy

TNC The Nature Conservancy

TPA Terrestrial Protected Area

UA United Airlines

UNEP United Nations Environmental Programme

UNESCO United Nations Educational, Scientific and Cultural Organization

US United States

USDA United States Department of Agriculture

USDA-NRCS United States Department of Agriculture Natural Resources Conservation Service

UOG University of Guam

USFS United States Forest Service

WDPA World Database on Protected Areas

YIST Yap Invasive Species Taskforce

1.0 INTRODUCTION

1.1 Introduction to the Federated States of Micronesia

The Federated States of Micronesia (FSM) comprises a vast region of over 600 islands spanning a distance of about 2,700 km (1,678 mi). It is located in the western Pacific within the part of Micronesia known as the Caroline Islands, north of the equator, north-northwest of New Guinea, east of Palau and West of the Marshall Islands (Figure 1) (geographic coordinates: 159-163 degrees east, 2-8 degrees north). The FSM is an independent nation that includes four states: Yap, Chuuk, Pohnpei and Kosrae. The FSM maintains strong ties with the United States (US), with which it has a compact of free association. The most recently available population estimates indicate a population of approximately 103,000 (SBOC 2010). Of the countries population, 50% live on Chuuk, 33% on Pohnpei, 10% in Yap and 7% in Kosrae.

The States have a significant level of autonomy with ownership of land and aquatic areas varying between the States. In Kosrae and Pohnpei, land is both privately and state owned, with aquatic areas being managed by the state as public trusts. In Chuuk, most land and aquatic areas are privately owned and acquired through inheritance, gift, or more recently, by purchase. In Yap almost all land and aquatic areas are owned or managed by individual estates and usage is subject to traditional control. These land and aquatic tenure systems have critical bearing on the strategies and actions required to sustainably manage and protect the natural

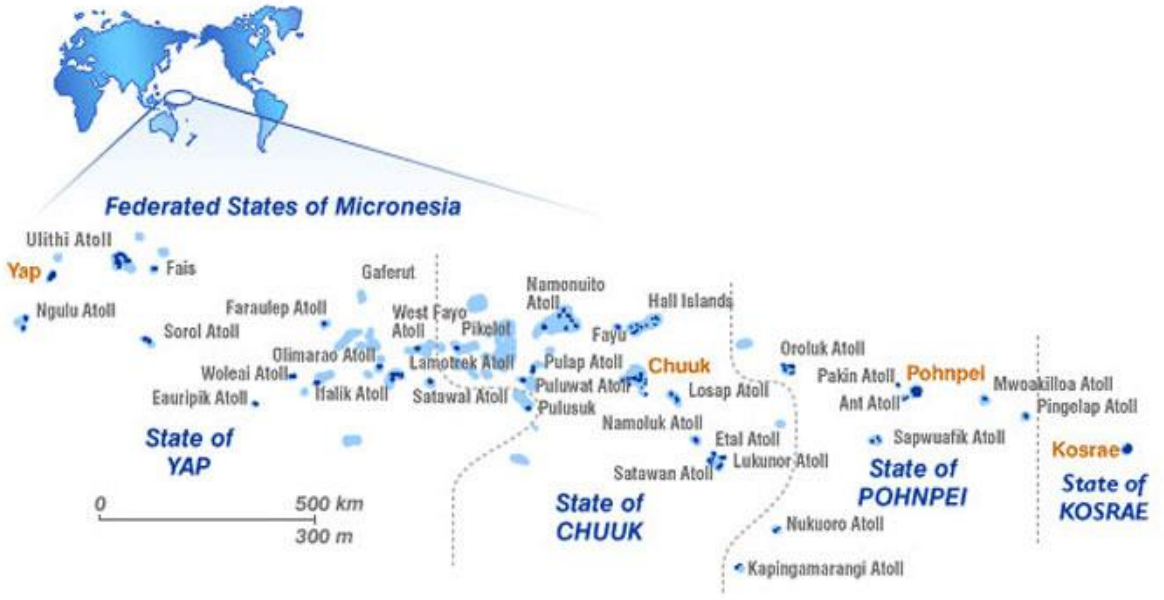


Figure 1: Map of the Federated States of Micronesia

resources of these islands. Responsibility for environmental issues is shared between the national government and the individual state governments. Invasive species (IS) affect all aspects of society, including the protection and use of natural resources, and they are a significant threat to the FSM and its four states. Established Invasive Alien Species (IAS) of concern are numerous and include Mile-a-Minute or Mikania (*Mikania micrantha)*, Cane Toad (*Rhinella marinus)*, various rat species (*Ratus* spp.), feral pigs (*Sus scrofa*) and feral cats *(Felis catus*) (FSM NBSAP 2002).

Yap State is the western most state of the FSM. Yap, Tomil-Gagil, Map, and Rumung, four closely situated islands, make up the main island group of the state. In addition there are 14 outer atolls extending to the east and south for about 800 km. The population of Yap was estimated in 2010 to be approximately 11,000 (SBOC 2010). The forest types within the state include upland, swamp, mangrove and agroforests among others. The main agricultural crops are yams (*Dioscorea spp.*), banana (*Musa spp.*), taro (Araceae), coconut (*Cocos nucifera*), citrus fruit (*Citrus spp.*) and cassava (*Manihot esculenta*) and these crops are generally consumed locally. Airstrips listed by the FSM Division of Civil Aviation (DCA) for Yap include: Yap International Airport, Ulithi Airfield, Fais Airfield and Woleai Airfield (current use suspended). Official seaports include: Tomil Harbor, Ulithi anchorage and Woleai anchorage.

Chuuk State lies east of Yap and is composed of 19 high volcanic islands and approximately 65 smaller islands. Chuuk's islands are divided into five major groups: Chuuk Lagoon, Western, Namonweito, Hall, and Mortlock islands. The population of Chuuk State is approximately 49,000 (SBOC 2010). The main agricultural crops are banana, breadfruit (*Artocarpus spp.*), coconut and taro. The areas of native forest on the high island peaks support endemic species and are a repository of some of the most endangered remnant forest patches and species in Micronesia. There are four airstrips listed by DCA for the state: Chuuk International Airport, Houk Airfield and Ta Airfield. There are two official sea ports of entry: Weno and Satowan.

Pohnpei State lies east of Chuuk and is composed of one high, central island (Pohnpei) and several outer islands (Mwokilloa, Pingelap, Sapwuafik, Nukuoro and Kapingamarangi). The capital of the FSM is located at Palikir on Pohnpei Island. The state population was estimated at under 36,000 in 2010 (SBOC 2010). The Pohnpei BSAP (2004) lists natural resources available for economic purposes as timber, marine products, seabed minerals, and phosphate. Commercial fishing is an important source of revenue through licensing fees and fish exportation. Agricultural production is primarily for local consumption, with a few exceptions such as betel nut (*Areca catechu*) which is utilized locally and exported. Areas of intact native upland forests are of special interest in the state due to their high rate of endemism. The dwarf cloud forests cloaking Pohnpei's peaks are a unique habitat type. Airstrips listed by DCA for the state include: Pohnpei International Airport (Figure 2), Pingelap Airfield, Mwoakilla Airfield and Sapwuahfik Airstrip. Seaports include: Mesenieng Harbor, Dekehtik Harbor, Sokehs anchorage, Temwem Harbor and Kapingamarangi anchorage.

Kosrae State is the eastern most state and lies south east of Pohnpei. Kosrae State is composed of a single high island and has a population estimated at 6616 (SBOC 2010). Most of the island's inhabitants live along the perimeter of the island while the center is composed of forested mountains. The mountainous island center makes up about 70% of the islands land mass, with the remaining 30% divided between a variety of habitats including agroforests, bottomlands and mangroves. The main ports include: Kosrae International Airport and Lelu and Okat harbors.

Figure 2: Pohnpei international airport and main sea port

1.2 The Significant Threat of Invasive Species for the Federated States of Micronesia

A desktop study examining invasive species within the FSM was completed by the ISSG in 2015 (ISSG 2015). This study includes extensive supplemental tables which detail species records, protected areas and IAS management activities for the FSM and individual states. According to the ISSG desktop study, there are approximately 600 alien species recorded for the FSM that are considered invasive or potentially invasive with the majority being terrestrial plant species (ISSG 2015).

Figure 3: *Clidemia hirta* in West Maui

As part of the project "Prevention, Control and Management of Invasive Alien Species in the Pacific Islands" the FSM has identified a variety of invasive species related actions including the collection, testing and release of biocontrol agents for Mikania and Koster's Curse or Clidemia (*Clidemia hirta*) and attending biannual Regional Invasive Species Council (RISC) meetings and Micronesia Chief Executive Summits (UNEP 2011).

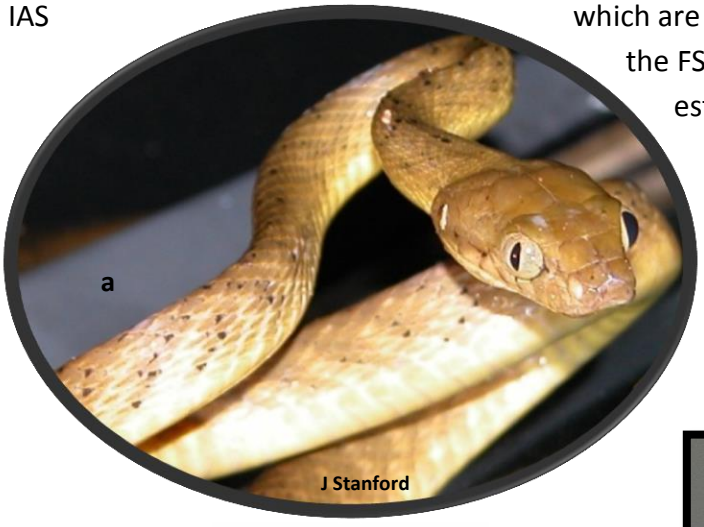
Clidemia (Figure 3) is a shrub with white flowers

and dark fruit (Englberger 2009). Clidemia grows in the forest understory and invades gaps and other areas with soil disturbance, such as can be caused by pigs rooting. Clidemia is highly competitive and where established may reduce overall diversity by outcompeting native species.

Figure 4: *Mikania micrantha* thicket

Mikania has opposite heart or triangular shaped leaves with clusters of small white flowers (Englberger 2009). Mikania is an extremely fast growing vine which has the tendency to smoother other plants, outcompeting them for sunlight and competing with them for other resources (Figure 4).

In addition to the IS already established in the nation, there are numerous other species which threaten or could threaten the FSM if they were to arrive and become established. Examples of IAS which are not currently known to be established in the FSM but which are of significant concern of establishing include Brown Treesnake or BTS (*Boiga irregularis*) (Figure 5a), Little Fire Ant or LFA (*Wasmannia auropunctata*) (Figure 5b) and Coconut Rhinoceros Beetle or CRB (*Oryctes rhinoceros*) (Figure 6a, b). These species (and many others) are already established within the Pacific in at least one or more countries or island groups with trade and other ties to the FSM and therefore have an elevated potential for establishing if appropriate management activities are not engaged and maintained.



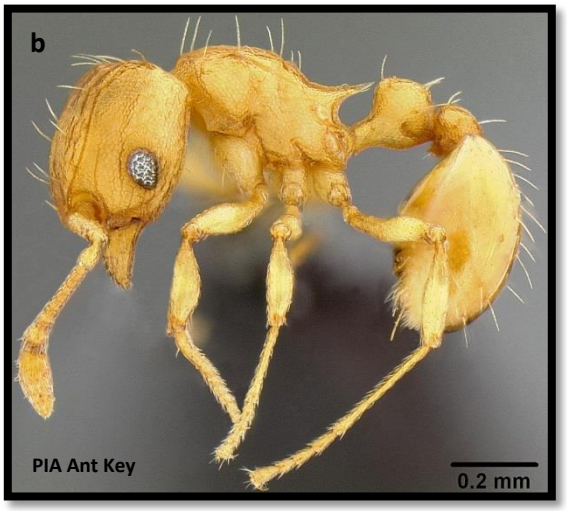


Figure 5: a) Brown Treesnake (*Boiga irregularis*), b) Little Fire Ant (*Wasmannia auropunctata*)

1.3 Invasive Alien Species- Everyone's Responsibility

The movements of people, and their goods and supplies, are the key ways that invasive species reach a country or move from island to island within it. The behavior of individual people, both residents and visitors, is key to IAS management. People need to avoid bringing risky goods into the country or moving such items between states or even between islands within a state (fruit, plant material including seeds, soil (even on footwear), etc.). If anyone sees a plant overseas that they would like to grow in the FSM, they need to identify it, then request and receive an import permit from FSM Quarantine. Quarantine will conduct a 'risk assessment' to decide if the organism is safe to bring to the country. If people are importing a container of goods, or deck cargo such as a vehicle or timber, it needs to be checked very carefully when it reaches its destination and FSM Quarantine needs to be alerted if any live animals/insects, or their eggs, are found. Individuals need to keep an eye out in villages, farms and forest for any unusual animals or plants and for plants with leaves being eaten or dying over large areas. Residents may very well be the first to spot the arrival of a new plant disease or insect pest and these detections should be reported so that quick action can be taken to address such situations. Early detection is a key factor supporting eradication and other management efforts and ultimately could save the FSM millions of dollars.

Figure 6: a) Coconut Rhinoceros Beetle (*Oryctes rhinoceros*), b) Damage to Coconut Tree caused by Coconut Rhinoceros Beetle

A key part of this strategy is to try to prevent invasive species moving between different islands within the country. It is too late to eradicate some IAS already established in the FSM, but with appropriate actions, we can keep some islands within the nation free from them.

Invasive species are clearly also an international issue with an emphasis on preventing them moving from one country to another. There are a number of international and regional

organizations undertaking coordinating and support roles, a number of international regulations in force, and countries that trade with each other typically collaborate on IAS issues.

1.4 The Federated States of Micronesia's Biodiversity at Risk

A query of "FSM" on the IUCN Red List results in an annotated inventory of 1293 species (actually 1294 species if *Homo sapiens* is included) that are known to be native to the country (ISSG 2015). More than 1000 plant species, over 100 bird species and more than 20 reptiles are native to the FSM. The FSM reefs are home to more than 1000 fish species, hundreds of species of corals and many other organisms. 164 of the 1293 native species listed by the IUCN are classed into an IUCN threatened category (6- critically endangered, 19- endangered and 139- vulnerable) (ISSG 2015).

Each of the FSM states has a number of endemic species, species that are found nowhere else in the world. These state endemics along with endemic species found in more than one state make up the national endemics. There are also species that are endemic to the Caroline Islands being present in both Palau and the FSM, or endemic to the region being present in various locations within Micronesia or the broader Pacific.

These endemic species are threatened by a variety of factors including invasive species (Pohnpei Resource Management Committee 2004). Rats, particularly the ship or black rat (*Rattus rattus*) which is a very good climber, are known to prey on the eggs and chicks of many birds and take lizards. Rats and mice (*Mus musculus*) eat the fruits and seeds of trees, alter the composition of the forest and impact food crops. Alien mammal predators (most likely accidentally introduced to the islands by humans) have been implicated in the extinction of the two Kosrae endemics- the Kosrae Starling (*Aplonis corvina*), and the Kosrae Crake (*Porzana monasa*) (ISSG 2015).

The FSM forms part of two ecoregions that are a global priority for conservation (Olsen and Dinerstein 2002), the Yap Tropical Dry Forest and the Carolines Tropical Moist Forest. The FSM also is part of the globally endangered Polynesia/Micronesia terrestrial hotspot (Mittermeier et al. 2000).

Yap's Forests and savannas support a number of endemic plant species, including *Drypetes yapensis*, *Drypetes carolenesis*, *Trichospermum kutai*, *Hedyotis yapensis*, *Timonius albus*, *Myrtella bennigseniana*, *Casearia cauliflora*, and *Dentaphalangium volkensii*. The large tree *Serianthes kanehirae* and the distinctive tree *Garcinia rumiyo* are endemic to Yap and Palau. Yap has several endemic bird and mammal species including the Yap Monarch (*Monarcha godeffroyi*) and the Yap Fruit Bat (*Pteropus yapensis*) considered by some to be a sub-species of the Mariana Fruit bat (*Pteropus mariannus*). Yap also has a recently discovered endemic

herpetile, the Soong Blind Snake (*Ramphotyphlops adocetus*) (Figure 7) (Stanford 2008, Wynn et al. 2012).

The Carolines Tropical Moist Forest Ecoregion contains the islands in Kosrae, Pohnpei, Chuuk and the easternmost islands of Yap State. The dominant vegetation in this ecoregion is broadleaf forest. Lowland vegetation is dominated by mangrove and swamp forests. The highest peaks support unique montane cloud forests, some of the lowest elevational cloud forests in the world. These forests support a diverse array of species including more than 30 species of tree snails, 24 species of birds, several species of fruit bat and numerous endemic plants. This ecoregion overall has high endemism, with over 200 endemic species including one endemic genus and over 24 species of reptiles.

Figure 7: Soong Blind Snake (*Ramphotyphlops adocetus*)

Thirteen birds are endemic to the ecoregion, including the Kosrae White-eye or Tuhram (*Zosterops cinereus*), Chuuk Monarch (*Metabolus rugensis*), the Pohnpei Mountain Starling (*Aplonis pelzeni*) and the Pohnpei Lorry or Serehd (*Trichoglossus rubiginosus*). The endemic Pohnpei Mountain Starling is classified as critically endangered by the IUCN. Hunting, habitat loss and predation by introduced species threaten the remaining populations of the Pohnpei Mountain Starling (ISSG 2015).

The ecoregion supports numerous mollusk species, including three that are classified as critically endangered (IUCN): *Partula emersoni*, *Partula guamensis* (both endemic to the island of Pohnpei) and *Partula martensiana*. The primary threat to these species is predation by introduced mammals such as the Ship Rat, Polynesian Rat (*Rattus exulans*), Norway Rat (*Rattus norvegicus*) and the introduced flatworm (*Platydemus manokwari*) (ISSG 2015).

Pohnpei has a variety of endemic plant species including Madeu (*Cinnamomum sessilifolium*), Kehnpwul (*Garcinia ponapensis var ponapensis*), Pehpe/Kahmed (*Melicope ponapensis*), Tekitek (*Hoya shneei*), Kurumw (*Parkia korom*), Lamwahk (*Pseudovanilla ponapensis*), Duduhnwoal (*Astronidium ponapensis*), Ken (*Timonius ponapensis*), Kalak (*Palaquium karrak*), Kotop (*Clinostigma ponapensis*), Irekinwel (*Discocalyx ponapensis*), and Kedei (*Ponapea hosinoi*).

Numerous endemic species are also known from Chuuk State included the Chuuk Monarch, Chuuk Fruit Bat (*Pteropus insularis*), Mortlocks Fruit Bat (*Pteropus pelagicus*), Paawan Tree (*Semecarpus kraemeri*), Chuuk Giant Milipede or Siichóng *(Acladocricus setigerus*) and Truk Greater White-eye or Nimeséwúnúpwún (*Rukia ruki*). Kosrae also supports a variety of endemics including *Cyrtandra kusaimontana*, *Medinilla diversifolia*, Mweng Finol (*Pandanas kusicolus*), *Phretia kusaiensis*, *Polyscias subcapitata* and the Kosrae White-eye.

The FSM's high islands exhibit a great diversity of marine ecosystems in the form of fringing and barrier reefs around the islands. In Chuuk various marine species are protected by state regulations requiring permits to harvest or sell (sea cucumbers and some clam species), restricting take for local consumption only (Humphead Wrasse (*Cheilinus undulatus*) and sharks), have open and closed seasons (various grouper species and sea turtles) or restricting numbers or weight for shipping (octopus, lobster and Mangrove Crab (*Scylla serrata*)).

Protected species in Yap include the Humphead Wrasse, sea turtles, clams, sea cucumbers, Coconut Crab (*Birgus latro*), Yap Fruit Bat, Trochus (*Trochus nilotricus*) an exotic species, Micronesian Imperial Pigeon, sharks, whales, dolphins and Manta Rays *(Manta spp.*).

Species that have some level of protection in the state of Kosrae include *Tridacna gigas, Tridacna derasa, Hippopus hippopus, Hippopus porcellanus,* Humphead Wrasse, Micronesian Imperial Pigeon (*Ducula oceanica*) (take only permitted in January), *Tridacna maxima,* Triton Trumpet Snail (*Charonia spp.*) and Green Sea Turtle (*Chelonia mydas*).

Apart from direct impacts to endemics and other native and protected species, there are other significant risks associated with invasive species, including economic, health, social, cultural and ability to address climate change concerns. In fact all sectors of society are impacted by invasive species. For example primary crops both for local consumption as well as for export are currently impacted by invasive species and have the potential to receive additional impacted if other pests become established within the nation. An example of an IAS which is currently not known to be established but which could cause significant economic and cultural impacts if established is the Coconut Rhinoceros Beetle. The Coconut Rhinoceros Beetle is of high concern both due to the potential impacts which could be incurred if it were to establish but also as it is established on other islands in the region, including Guam and various islands in Palau. CRB has also been detected in Oahu in the State of Hawaii. Economic, biodiversity, health and other social impacts could be introduced with the establishment of the Brown Treesnake, as highly invasive species that is established on Guam. Agricultural, natural resource and social impacts would likely follow establishment of the Little Fire Ant which is now established both on Guam and Hawaii. Important ecosystems and protected areas or other sites are also be threatened by invasive species.

In an attempt to develop a comprehensive biodiversity conservation blue print, state and national stakeholders and topical experts have identified 130 areas of biodiversity significance (ABS) within the FSM (TNC 2002). In 2005, the FSM committed to conserving at least 30% of its near shore marine resources and 20% of its terrestrial resources by 2020. The desktop study (ISSG 2015) indicates that the World Database on Protected Areas (WDPA) list 24 protected areas for the FSM, including two UNESCO Biosphere Reserves: Utwe and And Atoll. BirdLife International has designated two Endemic Bird Areas (EBA) and 10 Important Bird Areas (IBA) within the FSM. Conservation International (CI) has designated 52 Key Biodiversity Areas (KBA) within the FSM. Two areas have also been designated as Alliance for Zero Extinction Sites (AZE) within the FSM. There is a significant level of overlap amongst many of these areas and designations, as should be expected. Details regarding some of these areas can be found in the desktop study and associated spreadsheets including supplied website links (ISSG 2015). Each state currently has a variety of protected or conservation areas, with additional areas being planned. Some of these areas are listed below as examples.

Chuuk has various protected areas, including:

- Parem marine protected area (MPA)
- Uman Island MPA
- Chunuf terrestrial protected area (TPA), Fefan Island
- Epinup Mangrove Reserve, Weno Island (2004): Community based reserve of 364 acres protecting marine and mangrove systems

Pohnpei State has several protected areas, including:

- Ant Atoll Biosphere Reserve
- Pohnpei Watershed Forest Reserve
- 11 MPAs designated by law
- Nan Madol ruins currently under consideration for listing as a World Heritage site

Kosrae State has a variety of established protected areas, including:

- Yela Ka Forest: This is the last large stand of Terminalia (*Terminalia carolinensis*) remaining and current land ownership is divided among 3 families. One family is working with local and international support to protect the forest. Efforts are supported by The Nature Conservancy, US Forest Service (USFS), and others. A conservation easement has been established. This is the first such easement in the FSM. The family still owns the land and can work there and they receive some revenue for having protected status. At present, there is interest with developing similar arrangements with the other land owners in the Terminalia forest. About 98% of forest is infrequently visited. A fungus, known to effect breadfruit on the island has recently established on several individual Ka trees in the reserve. Reserve management has tried mud

treatment on this fungus with mixed results. They are now considering other options including treatment with fungicides. USFS is considering supporting efforts to address this concern. A management plan (stewardship plan) is in place for the reserve and the plan includes a section on invasive species. The reserve managers need to have biosecurity efforts in place in regards to visitors as part of the established stewardship plan. Access to the reserve is by boat. Feral pigs are present and may be having some impacts on the forest. There are no restrictions on their take anywhere on the island and hunting is typically done with snares, but at least one individual on the island is known to hunt with dogs.

- Utwe Biosphere Reserve: The reserve includes 3 zones; buffer, transition and core. The transition zone includes habitat for the Micronesian Imperial Pigeon. The core zone includes the first MPA in Kosrae. The reserve protects a variety of important species including the Micronesian Imperial Pigeon and fruit bats. The reserve is managed by the local community via an established management plan.
- Trochus Sanctuary: This sanctuary is protected by state law and a management plan is being developed. Stakeholders expect to work with plan developers to insure that biosecurity and IS are addressed in the management plan.
- Lelu Awane Marine Park: This marine park has an established management plan that is administered at the community level. The plan addresses established IS within the park such as oysters and Tangantangan (*Leucaena leucocephala*). A fruit bat sanctuary is located within the marine park.
- James Palsis Marine Park: This marine park is protected by an established management plan.
- Olum watershed: The watershed has an established management plan which addresses IS and is administered by the local community.
- Walung MPA: The management plan for this protected area is under development. State stakeholders will work with the plan developers to insure that it appropriately addresses biosecurity and IS. This is a community based area that protects a mangrove channel and the surrounding buffer zone.
- Malem Protected Area: The community is currently developing the management plan for this area. The area will protect both terrestrial and marine habitats. State stakeholders will work with the plan developers to insure that is appropriately addresses biosecurity and IS.

Yap State areas with preservation planning include:

- Weloy Community Forest
- Ngule Atoll: Ngule Atoll includes 7 islands all of which are less than 10 hectares in size and a lagoon that is about 26 miles across. A rodent eradication plan exists but ground action has yet to be funded.

1.5 Why is a National Invasive Species Strategy and Action Plan Needed?

Invasive species are an ever-present and growing threat and their management involves many different organizations from Government Departments, NGO's, farmers, foresters, fishermen and women, and local communities. This management effort has in the past been fragmented and under-resourced and the NISSAP seeks to address this by bringing all stakeholders together around an agreed plan of priority actions.

Invasive species management has concentrated on plant and animal pests of the productive sector in the past, but there has been a growing recognition of their impacts on native biodiversity and the environment as a whole. This recognition has led to increasing efforts from environmental agencies, taking more of a coordination role addressing all invasive species, and to the development of a regional program. Production of the NISSAP is an activity within that program: the GEF-PAS regional invasive species project '*Prevention, control and management of invasive alien species in the Pacific Islands*' being implemented by UNEP with SPREP as the executing agency.

The NISSAP takes account of the Guidelines for Invasive Species Management in the Pacific (GISMP) produced by SPREP and Secretariat of the Pacific Community (SPC). The goal of GISMP is: 'To assist Pacific Island countries and territories in planning the effective management of invasive species, thereby reducing the negative impacts of invasive species on their rich and fragile native heritage, communities and livelihoods' (SPREP 2009). The Action Plan is organized according to the three thematic areas of the GISMP: Foundations, Problem Definition, Prioritization, and Management Action.

Implementation of the NISSAP should ensure that The FSM meets Aichi target 9, established under the Convention of Biological Diversity: that *by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled, and measures are in place to manage pathways to prevent their introduction and establishment.*

1.6 Process of National Invasive Species Strategy and Action Plan Development

Site visitations were made in March 2015. During these visitations, meetings were held with various stakeholders/stakeholder groups and work on developing a draft NISSAP was begun.

An initial draft document was distributed on 15 May 2015. Comments, edits and additional input were used to update the initial draft document and a second draft was circulated to

stakeholders on 10 July 2015. Workshops were then held in each of the four states as well as a separate workshop for national input during the month of August 2015 (Appendix 1). Workshops were used to review work to date on the NISSAP and to supply additional details, including development of goal statements and list of priority established (Appendix 2) and non-established (Appendix 3) invasive species. After updating the draft document with input and comments received on the second draft and from the workshops, a third draft was distributed on 22 September 2015. An agreed on fourth draft was then provided to the FSM National Government enabling the government to add final touches to the document and prepare for endorsement on 30 September 2015.

During the month of October efforts were undertaken to ensure provision of a completed NISSAP, which was then submitted for government review and consideration for endorsement on 31 October 2015.

1.7 Linkages of the National Invasive Species Strategy and Action Plan to Other Strategies, Plans, Frameworks and Guidelines

This section reviews other Government strategies and policies that address invasive species and the sectorial plans of the key agencies involved. The actions identified in this NISSAP should be fed into these strategies and plans when they are next revised.

1.7.1 National Strategies, Policies and Plans

The FSM has a strong framework of national strategies and policies in place and all show that environmental issues are mainstreamed across different sectors. The detailed provisions in the NISSAP should be carried forward into the process of revising these different documents.

- Federated States of Micronesia National Biodiversity Strategy and Action Plan (NBSAP) 2002
- A Blue Print for Conserving the Biodiversity of the Federated States of Micronesia 2002
- Federated States of Micronesia Strategic Development Plan 2004-2023
  -Identifies nine strategic goals to improve the environment in the FSM, including:
    - Goal 4 Promote environmental sound and sustainable production, which includes the policy of establishing effective mechanisms for the control of invasive species
    - Goal 7 Establish effective biosecurity (border control, quarantine and eradication) programs to effectively protect the FSM's biodiversity from impacts of alien invasive species

-Identifies a variety of actions towards address invasive species and improving biosecurity

- Federated States of Micronesia Action Plan for the Program of Work on Protected Areas (PoWPA) and Target 11 of the Convention on Biological Diversity (including online updating: http://www.cbd.int/protected/implementation/actionplans/country/?country=fm)
- National Environmental Management Strategy (NEMS)
- Climate Change in the Federated States of Micronesia 2010
- Federated States of Micronesia National Solid Waste Management Strategy 2010-2014
- Federated States of Micronesia State-Wide (Forest) Assessment and Resource Strategy (SWARS) 2010 – 2015 +
- Federated States of Micronesia Trade Policy 2011
- Federated States of Micronesia Agriculture Policy 2012-2016
- Nationwide Integrated Disaster Risk Management and Climate Change Policy 2013
- Emergency Response Plan for Ants (Draft)

1.7.2 Chuuk State Strategies and Plans

- Chuuk State Biodiversity Strategy and Action Plan 2004
- Chuuk Conservation Society Strategic Action Plan
- Chuuk Invasive Species Taskforce Strategic Action Plan 2008-2010 (Draft)
- Emergency Response Plan for Brown Treesnake (Draft)

1.7.3 Kosrae State Strategies and Plans

- Kosrae State Biodiversity Strategy and Action Plan 2004
- Kosrae Invasive Species Action Plan
- Adoption Document for the Kosrae Invasive Species Technical Group
- Emergency Response Plan for Brown Treesnake (Draft)
- Olum Watershed Management Plan
- James Palsis Marine Park Management Plan
- Lelu Awane Marine Park Management Plan
- Utwe Biosphere Reserve Management Plan
- Yela Ka Forest Stewardship Plan

1.7.4 Pohnpei State Strategies and Plans

- Pohnpei State Biodiversity Strategic Action Plan 2004

-Six major threats to Pohnpei's biodiversity are identified, including alien invasive species (other major threats listed include: overharvesting of resources, destructive harvesting methods, habitat destruction, increased pollution and lack of public awareness)
-Goal 4 is to address the invasive species problem in Pohnpei State by strengthening the quarantine program and controlling and/or eradicating at least five selected species
-Establishes 11 critical outcome measures, one of which is to reduce the severity and scope of targeted threats (i.e. over harvesting, invasive species, land conversion, coastal erosion) in priority areas under active conservation management compared to baseline levels and/or unmanaged areas, where possible

- Pohnpei State Strategic Development Plan 2013, Planning for Pohnpei's Sustainable Future as the World Park: 2023 and beyond
  -The plan covers eight sectors: Agriculture, education, environment, fisheries, health, infrastructure, public and tourism
  -The plan is inclusive of invasive species and biosecurity within the agriculture section
  -The plan has limited biosecurity recommendations in its fisheries section
- Invasive Species Taskforce of Pohnpei Strategic Action Plan 2013-2017
- Emergency Response Plan on Coconut Rhinoceros Beetle (Draft)
- Emergency Response Plan for Brown Treesnake (Draft)

1.7.5 Yap State Strategies and Plans

- Yap State Biodiversity Strategy and Action Plan 2004
- Yap Invasive Species Taskforce Strategic Action Plan 2009-2012
- Emergency Response Plan on Coconut Rhinoceros Beetle (Draft)
- Emergency Response Plan for Brown Treesnake (Draft)
- Weloy Community Forest Stewardship Plan
- Ngule Atoll Management Plan

1.7.6 Regional/Sub-regional Plans, Frameworks and Guidelines

Regional Biosecurity Plan for Micronesia and Hawaii (RBP) (endorsed 2014)

The RBP is a tool to assist jurisdictions and the region with improved coordination of current management efforts, identification of remaining problem areas and gaps, and recommending additional actions that are needed to effectively address IAS issues within jurisdictions as well as regionally. The focus of this plan is the identification of feasible, cost-effective management practices to be implemented by appropriate authorities for the environmentally sound prevention and control of IAS in a coordinated fashion. The goal of the RBP is to provide recommendations that, if appropriately implemented, will minimize the harmful ecological,

social, cultural, and economic impacts of IAS through the prevention and management of their introduction, expansion, and dispersal into, within, and from the region and the jurisdictions of the region. Objectives that need to be addressed in order to advance towards the goal include: securing funding, coordination and collaboration, prevention, monitoring, early detection and rapid response, management and eradication as feasible, education and outreach, research, policy development and restoration. The plan is available for download at: https://www.navfac.navy.mil/navfac_worldwide/pacific/about_us/regional-biosecurity-plan-for-micronesia-and-hawaii-.html.

Micronesia Regional Invasive Species Council (RISC) Strategic Action Plan 2012-2016

The RISC SAP identifies the following five goals:

1. Provide updates and recommendations to enable the RISC member Chief Executives to make informed decisions and take effective actions on invasive species policy and management
2. Promote public awareness and education regarding invasive species and biosecurity
3. Foster regional and international communication and cooperation on invasive species and biosecurity
4. Support and recommend the development and implementation of coordinated efforts to enhance regional biosecurity
5. Develop human and financial resources to implement RISC goals

Framework for Nature Conservation and Protected Areas in the Pacific Islands Region 2014-2020

The framework provides guidance for the region on key priorities for biodiversity conservation and ecosystem management with clear linkages to the global Aichi Biodiversity Targets and National Biodiversity Strategies and Action Plans (NBSAPs). It is broad in scope to fit in with local, national, regional and international priorities and to allow for successful implementation of actions at country level, through the provision of adequate and sufficient resources. The framework reinforces the role governments, local communities and traditional knowledge, development partners and all key stakeholders play in improving the status of conservation and ecosystem management which are also critical for livelihood and heritage. It also underscores the key role biodiversity and ecosystem services provide in building resilience to the impacts of climate change and other pressing environmental challenges.

Guidelines for Invasive Species Management in the Pacific (GISMP) (endorsed 2009)

These guidelines were developed to aid in planning invasive species programs, at a local, national and regional levels, to better ensure that key aspects relevant to any given situation or program are included in the design of such programs.

2.0 GUIDING PRINCIPLES

In regards to the arrival of non-native species, the 'precautionary principle' should be applied. Simply put, this principle is that when there is not enough information to predict whether a species will become invasive or not, it should be assumed that it will have a damaging impact and action should be taken to stop it from establishing or spreading. It should also be assumed based on international experience that any species imported under the pretext of being kept in captivity such as in ponds, pens or cages will eventually escape into the wild and therefore must be consider a potential risk to the nation.

Implementing appropriate levels of biosecurity to reduce the arrival of new species is more effective and less expensive than trying to manage populations and mitigate impacts after IAS are established. Therefore, an emphasis should be placed on effective border and pre-border preventative mechanisms. But, it must be clearly understood that while pre-border and border biosecurity efforts are the most effective mechanisms to stopping the incursion of unwanted species, even the best biosecurity will not stop all invasions and therefore detection and eradication mechanisms need to be in place.

Eradication of established IAS is more effective and less expensive than permanent control and should be implemented where feasible. Eradication efforts are also more effective, less costly and have a higher likelihood of success if conducted before newly established species can become wide spread. Therefore, early detection and rapid response elements are an essential part of IAS prevention and management (Stanford and Rodda 2007). Emergency Response Plans or ERPs, and emergency response training should be key elements of the biosecurity system (US Department of the Navy 2015).

Species that cannot feasibly be eradicated should be considered for on-going control, particularly biological control. This control may be aimed at keeping established IAS out of important sites such as protected areas, or keeping them from expanding their range to new islands within the nation.

3.0 GOALS, THEMES AND OUTCOMES

3.1 Goals

3.1.1 National Goal Statement

Establish biosecurity (border control, quarantine, eradication and/or management) programs to effectively protect the FSM's biodiversity, livelihoods, sustainable development and resilience to climate change from the impacts of invasive species.

3.1.2 Chuuk State Goal Statement

Establish biosecurity (border control, quarantine, eradication and/or management) programs to effectively protect the Chuuk's biodiversity, livelihoods, sustainable development and resilience to climate change from the impacts of invasive species.

3.1.3 Kosrae State Goal Statement

Establish biosecurity (border control, quarantine, eradication and/or management) programs to effectively protect the Kosrae's biodiversity, livelihoods, sustainable development and resilience to climate change from the impacts of invasive species.

3.1.4 Pohnpei State Goal Statement

Kitail pwukoahki tetehk ni keneinei pidolongodo, irihre, meninkau/soumwahu (IS) me indere onepek mwahu en kepikipik en palioamoar oh paliesed en Pohnpei.

- Climate change
- Biodiversity
- Sustainability
- Culture Health Environment Economic and Food security (CHEEF) benefits

3.1.5 Yap State Goal Statement

Keep Yap uniquely beautiful and safe by managing invasive species effectively.

3.2 Themes

The strategy follows the GISMP (SPREP 2009) with three themes as follows:

Theme A: Foundations

Managing invasive species is a huge task that will only be effective if based on strong foundations. It requires:

- Support - from Government, village communities, and funders
- Capacity – including strong institutions, individuals with sound management and technical skills, and regional networks
- Legislative framework – appropriate laws, regulations, policies, protocols and procedures.

Theme B: Problem definition, prioritization and decision-making

There are a large number of invasive species present in the FSM and many more outside its borders, and resources to tackle them are always limited. There needs to be systems in place to make decisions on how to allocate resources based on the best possible information on the distribution, numbers and likely impacts of these species.

- Baseline and monitoring
- Prioritization
- Research on priorities

Theme C: Management Action

Management begins with preventing the arrival of new invasive species and early detection and rapid response to new newly arriving species; then tackles the eradication or control of those already present, and finally any restoration work needed on sites where they have been removed.

- Biosecurity
- Management of established invasive species
- Restoration

3.3 Outcomes

Outcomes are derived from GISMP (SPREP 2009).

Theme A: Three outcomes are identified to ensure that the impacts of invasive species are understood and actions to manage them supported; to develop the necessary capacity; and to establish the appropriate legislative and operational framework.

Theme B: Three outcomes are identified to establish baseline information and monitor change, establish systems for risk management and prioritization, and update knowledge and develop new techniques.

Theme C: Three outcomes are identified to prevent the arrival of new invasive species and quickly detect and respond to those that arrive; to eradicate or control existing invasive species; to carry out restoration following invasive species removal.

4.0 PATHWAY IDENTIFICATION

4.1 International

4.1.1 By Air

At present two international airlines provide direct flights into the FSM. United Airlines (UA) flights originating in Hawaii and passing through the Marshall Islands arrive at either Kosrae or Pohnpei. UA flights from Guam arrive at Chuuk and Yap. UA flights from Palau arrive in Yap. The UA flights to Kosrae, Pohnpei and Chuuk stop at other states before departing the FSM (Figure 8). UA flights operate daily. Nauru Airlines started operating flights to the FSM (mainly Kosrae and Pohnpei) as of 12 June 2015. These flights originate in the South Pacific coming through Nauru and Majuro before arriving in the FSM. Currently there is one round trip flight per week. There are no direct flights from the South Pacific to the FSM at this time. Nauru Airlines planes spend 2 nights on the ground in Pohnpei before commencing the return flight operations each week. This extended stopover increases the risk that any stowaway organisms might deplane in Pohnpei, warranting an extensive examination of craft on landing to insure the absence of stowaways.

Figure 8: Plane preparing for take-off Weno, Chuuk

There are apparently on-going considerations regarding the implementation of direct flights from additional locations, including some Asian countries. If additional direct air linkages were implemented, this would represent a significant increase in biosecurity risks from both additional vectors and pathways that would need to be addressed with appropriate biosecurity measures. Charter flights into the FSM occur on an irregular basis. US military aircraft also make irregular stop overs in the FSM.

Additionally there are a variety of cargo and other flights which enter and depart the FSM. For example, Boeing is currently utilizing the airport in Pohnpei as a refueling stop for new planes being shipped from the US mainland to various locations in Asia.

4.1.2 By Sea

Commercial Shipping

Four ports, one for each state, handle container shipping and are serviced by several international shipping companies. Various ports in the FSM are also regularly visited by tankers which supply diesel to the islands.

Fishing Vessels

Various ports in the FSM, including the main port for each state, are regularly visited by foreign flagged fishing vessels. The majority of fishing boats are long-liners and purseiners. Vessels come from various countries including the Peoples Republic of China (PRC) and South Korea. Fishing vessels present potential biosecurity concerns when in port and when near the coast at anchorages, etc., but also at sea, as they carry food and other items which could harbor IAS and these vessels could potentially be exchanging goods when at sea with other craft that may then bring these items into port.

Figure 9: Sailing Canoe Yap State

Visiting Yachts and sailing canoes

The main port for each state is also a port of entry for visiting yachts which also pose biosecurity risks. Discussions with a variety of stakeholders during the development of this document strongly suggest that at least some yachts stop at other ports or anchor off shore within the nation's waters prior to visiting an official port of entry. At present, only the four specified ports of entry have biosecurity clearance procedures in place (Figure 9).

Cruise Ships

Cruise ships also visit the FSM and pose potential biosecurity concerns.

Coast Guard and Military Vessels

US Coast Guard and military vessels also visit the FSM and pose potential biosecurity concerns.

4.1.3 Other External Pathways

Natural disasters

Natural disasters such as typhoons and tsunamis may directly carry new invasive species to the FSM, but their main threat in terms of IAS is indirectly through consequent relief operations. In the advent of a significant natural disaster, large amounts of supplies and relief materials are likely to enter the country over a short time frame from a variety of different countries. Due to the disaster, border control operations and facilities may well be compromised during this time frame. While humanitarian needs are obviously the priority, disaster management planning needs to emphasis biosecurity. TheIre may be a need to bring in overseas biosecurity personal to assist local staff with managing the increased traffic, which potentially would include high risk items such as construction materials and equipment, while at the same time local residents may well be deal with personal/family/village impacts caused by the natural disaster.

'Natural' pathways

New organisms can also arrive unaided by people or disasters; by flying to the FSM, being carried there on the wind, swimming there or 'rafting' there on floating vegetation. All people need to keep an eye out for any unusual species and report any detections to the proper authorities. Newly arriving species should be safely captured and contained when feasible. Newly arrived species should be assessed to determine if they pose any risk.

4.2 Internal

Internal pathways include movements between islands within a particular archipelago, intrastate movement between various island groups, and interstate movements.

4.2.1 By Air

International airlines operate flights between Kosrae, Pohnpei and Chuuk. These flights originate outside of the FSM. For example UA operates several flights a week that originate in Hawaii and stop in several locations with the Marshall Island prior to arrival in the FSM. Similar flights are also undertaken multiple times a week originating on Guam.

While limited, there are also various craft which are stationed within the FSM that transit between islands, including missionary and private aircraft and helicopters. Caroline Island Airlines flies within the country with flights within and between Pohnpei, Chuuk and Yap states. Both scheduled and charter flight options exist with Caroline Island Airlines.

4.2.2 By Sea

In addition to those sea vectors mentioned in the international section, there are also various FSM flagged vessels that move between islands including yachts, fishing vessels, canoes and supply ships (which also ferry individuals and their belongings potentially including fish, fruit, vegetables, livestock and pets) (Figure 10).

Figure 10: Yachts on anchorage Pohnpei

4.2.3 "Natural" Pathways

These pathways are equally involved in the inter-island spread of invasive species. Birds can fly from one island to another, some flying insects or fungal spores can be moved by the wind and other small pests carried on rafts of floating vegetation.

4.3 Detection and Reporting of New Species

Regardless of the pathway, all residents and visitors need to keep an eye out for any unusual organisms and inform appropriate authorities if they feel a new species may have been detected. These detections may be new species to the country or new to an individual island or group of islands. Any new species which has arrived in the country or to a new island should be safely captured and contained when feasible. Newly arriving species need to be assessed to determine what, if any, risk they may pose. An early detection and rapid response capacity which includes a national reporting system, such as a 24/7 hotline, would greatly improve the ability of authorities to react quickly in the case of a new species detection.

Several Quarantine and agricultural staff members have attended 1-week or more detailed 3-week IAS early detection and rapid response training courses on the island of Guam. Staff members from line agencies as well as shipping, fuel and airline companies have participated in IAS early detection seminars held in 2005, 2007, 2009, 2012 and 2013. ERPs for Brown Treesnake incursions were drafted for each State in 2006 and at least one, Pohnpei State Brown Treesnake ERP was updated in 2008. ERPs for Coconut Rhinoceros Beetle (Yap) and Ants (FSM National) have also been drafted. Developing generic ERPs for terrestrial, freshwater and

marine concerns should be considered. All ERPs should be updated and disseminated regularly. Alien snake sighting report interview kits (Figure 11) are available in each state and key staff members have been trained to conduct sighting interview and to record detailed information for all reports of potential novel organism detections.

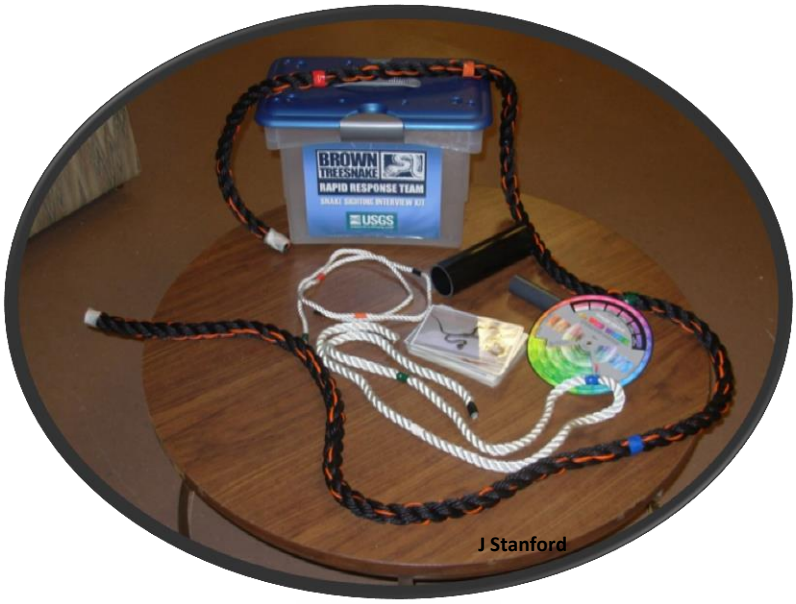


Figure 11: Alien Snake Sighting Interview Kit

5.0 Roles and Responsibilities of Stakeholders in Invasive Species Management

This section identifies the roles of the different agencies and organizations which have specified roles and responsibilities in regards to invasive species management within the FSM. Examples of additional regional and international stakeholders that can provide support with invasive species management are provided in Appendix 4.

5.1 National Roles and Responsibilities

- President's Sustainable Development Council
  The council advises and makes recommendations to the President on matters affecting the environmental management and sustainable development of the FSM, with special reference to overseeing global environmental responsibilities and obligations including the Convention on Biological Diversity, the Convention to Combat Desertification and the Framework Convention on Climate Change
- Department of Education
- Department of Finance and Administration
  -Division of Customs and Tax
- Department of Foreign Affairs
  -Serves as the focal point for international conventions and agreements as well as with partners such as SPC, Food and Agriculture Organization (FAO), etc.
- Department of Health and Social Affairs
- Department of Justice
- Department of Resources and Development
  -Division of Resource Management and Development
    - Fisheries
    - Tourism
    - Agriculture which includes Quarantine and Forestry
- Department of Transportation, Communication and Infrastructure
- National Oceanic Resource Management Authority
- Office of Environment and Emergency Management
- College of Micronesia-FSM
  -Provides extension services, selected courses and supports a variety of lecturers/subject matter experts, etc.

5.2 Chuuk State Roles and Responsibilities

- Elected officials and traditional leaders
- College of Micronesia-FSM cooperative research and extension service Chuuk State
- Chuuk State Department of Agriculture
- Chuuk State Department of Education
- Chuuk State Department of Health: viruses, mosquito vectors, rodents and other human health concerns
- Chuuk State Department of Marine Resources: control and eradication of aquatic pests
- Chuuk State Department of Public Works: mowing, etc.
- Chuuk State Environmental Protection Agency: pesticide training, management and control; focal point for biodiversity and climate change activities
- Chuuk State Sanitation Office
- Chuuk State Food Safety Office
- Chuuk Conservation Society (CCS)
- Chuuk Invasive Species Taskforce (CIST)
- Chuuk Woman's Council: have programs in conservation, education, health and cultural preservation

5.3 Kosrae State Roles and Responsibilities

- College of Micronesia-FSM cooperative research and extension service Kosrae State
- Kosrae Department of Resources and Economic Affairs
  -Agriculture and Land Division
    Plant Protection Section
    Crops Section
    Livestock Section
    Survey and Mapping Section
    Land Management Section
  -Marine Division
  -Economic Planning Division
  -Trade and Investment Division
- Kosrae Island Resource Management Authority (KIRMA): KIRMA has a website which post recent articles, rules and regulations, permit applications, etc. This site could be used to post invasive species information as well as reporting forms, etc. for public use.
  -Environmental Education Division
  -Permitting and GIS Division
  -Forestry and Wildlife, Invasive Species and U&CF Division

-Marine Conservation and Surveillance Division
-Historic Preservation Division

- Kosrae Conservation and Safety Organization: A non-profit conservation NGO
  -Marine Conservation Program
  -Terrestrial Conservation Program
  -Environmental Education Program

5.4 Pohnpei State Roles and Responsibilities

- College of Micronesia-FSM cooperative research and extension services Pohnpei State
- Pohnpei State Department of Education
- Pohnpei State Department of Health and Human Services
  -Disaster Preparedness Program
- Pohnpei State Department of Land and Natural Resources
  -Division of Forestry and Marine Conservation
  -Division of Historic Preservation, Tourism and Parks
- Pohnpei State Department of Public Safety
  -Division of Fish and Wildlife
  -Disaster Coordination Office
- Pohnpei State Office of the Attorney General's
- Pohnpei State Office of Economic Affairs (OEA): OEA is mandated to establish policies and legislations to administer the agriculture sector of the state to ensure that resources are managed to provide food and income, promote good health, sustain a healthy environment and care for Pohnpei's cultural heritage. Pests and diseases pose a significant risk to Pohnpei's agricultural resources and can cause substantial impacts if left unaddressed. OEA worked closely with partner agencies to raise awareness and address production problems regarding pests and diseases. OEA and partners also support project initiatives to combat invasive species.
  -Division of Agriculture
- Pohnpei Marine Resources Division
- Pohnpei State Office of Fisheries and Aquaculture
- Pohnpei State Office of Public Affairs
  - Serves as a major information provider for the Pohnpei State Government
- Pohnpei State Office of Social Affairs including Woman's Group, Youth, Senior Citizens
- Pohnpei State Environmental Protection Agency
  - Pohnpei EPA is responsible for overseeing the wise use, protection and preservation of Pohnpei's resources, balancing the needs of economic and social development with those of environmental quality and respect for traditional ways
- Pohnpei State Port Authority
- Traditional Leadership

-Assist and enforce regulations and cultural mores in communities through traditional title system

- Municipal offices
  - Provide commutation linkage between state government agencies, NGOS, and community members
- FSM Quarantine field offices
- Island Food Community of Pohnpei
- United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS)
- FSCO
- Shipping Agents
  -Receive and service vessels including fishing vessels
- Airlines
  -Receive and service aircraft
- Invasive Species Taskforce of Pohnpei (iSTOP)
- Pohnpei Conservation Society (PCS)
  -Marine Program
  -Terrestrial Program: invasive species eradication
  -Education Program

5.5 Yap State Roles and Responsibilities

- College of Micronesia-FSM cooperative research and extension service Yap State; 4H group “Heart, Hand, Head and Health”
- Yap State Department of Education
- Yap State Department of Resources & Development
  - Division of Agriculture & Forestry (DAF): livestock, agriculture and forest IS responsibilities; also work closely with FSM Quarantine on exports inspections; Lead in the case of a terrestrial IS response
  - Division of Marine Resources Management: management of invasive species in marine systems
- Yap State Environmental Protection Agency
- Yap Invasive Species Taskforce (YIST)
- Council of Chiefs
- Chamber of Commerce
  -Businesses work closely with DAF on outreach to communities

5.6 Regional/Sub-regional Roles and Responsibilities

- Micronesia Regional Invasive Species Council
  -RISC is a council to the Micronesia Chief Executives or MCEs and is to provide leadership with updates and recommendations regarding invasive species, supporting the MCEs' ability to make informed decisions and take effective actions in regards to invasive species.
- SPREP and SPC are the two regional partners that provide technical support for the management of invasive species. Appendix 4 provides further details of their roles and identifies other agencies and initiatives that support invasive species work in the region.
- Micronesian Trade and Economic Community
- South Pacific Tourism Organization

6.0 Past and Current Programs with Biosecurity and/or Invasive Species Components

6.1 National Programs

- Sustainable land management projects with invasive species components
- Vulnerability and Adaptation Assessment included invasive species for outer islands
- National biosecurity bill development and movement towards adoption
- Anticipated introduction of Mikania Rust Fungus (*Puccinia spegazzinii*) as a biocontrol. Currently host testing is underway and once completed introductions should follow. Mikania Rust has been successfully introduced to several Pacific nations to control Mikania (Day et al. 2013). Palau is currently having host testing completed for this biocontrol and it is likely that the rust if appropriate for Palau will also be useful in the FSM. It is possible that the biocontrol for Mikania will be available in the near future for use.
- GEF-PAS Invasive Species Project: developing the NISSAP
- GEF5 has been approved: ridge to reef program with an invasive species component
- Micronesian Challenge has on-going projects involving protected areas and including invasive species concerns
- Forest Inventory Assessment will include invasive species documentation (this is in planning stages, and is anticipated to occur January - March 2016 with support from USFS)
- Tramp ant identification training
- Development of a draft ERP for ants
- Training for early detection and rapid response to invasive species incursions (Figure 12)
- Early detection and rapid response seminars
- Active participation in the RISC

Figure 12: Quarantine staff member J Wichep at early detection and rapid response training on Guam

6.2 Chuuk State Programs

- Establishment of the Chuuk Invasive Species Taskforce
- Developing the CIST Strategic Action Plan 2008-2010
- Weed management project addressing Honolulu Rose (*Clerodendrum chinense*) at 3 sites. Between 2000 and 2002 most of the Honolulu Rose was removed from Weno (CIST 2008).
- Dengue fever awareness: emptying water containers, etc. to reduce prevalence of mosquito vector (2013); Sanitation and health services
- Forest Inventory with support from USFS
- Chunuf, Fefan reforestation project
- Active participation on the RISC
- Early detection and rapid response seminars

6.3 Kosrae State Programs

- Citrus canker island wide survey
- Citrus germplasm conservation
- Citrus canker eradication through infected plant removal (project never completed for a variety of reasons including lack of support with destroying existing citrus trees)
- Chromolaena (*Chromolaena odorata*) biocontrol release. The agent is the gall fly (*Cecidochares connexa*).
- Baiting project for Giant African Snail or GAS (*Achatina fulica*) eradication (infestation was too severe and eradication was not achieved)
- Herbicide treatment of Mikania
- Whitefly (*Aleurothracules trachoides*) biocontrol release
- Giant African Snail: While this species has been reported by some to have been eradicated in Kosrae, it is still present and spreading. Control efforts continue including physical removal.
- Papaya Mealybug (*Paracoccus marginatus*): Most recent surveys completed in May 2015, with no biocontrol detected. Soapy water application for removal of pests and tree removal as needed continues. Community level awareness is high.
- Tangan-tangan: one area near marina seems to

Figure 13: Coconut Termites (Calotermes rainbowi) Kosrae

have been successfully treated. This area continues to be watched and it has been 5 years since new growth was detected. Other infected areas still exist within the state.

- Coconut Termite (*Calotermes rainbowi*) detected in 2013 (Figure 13)
- Bronzed-leaf Clerodendrum (*Clerodendrom quadriloculare*) management efforts are underway
- Crown of Thorns Starfish (*Acanthaster planci*) mechanical removal from reefs is underway
- Oyster (a non-native species) mechanical removal efforts are underway
- Citrus Canker (*Xanthomonas axonopodis pv.citri*) awareness is on-going. Primary message is to not transplant citrus.
- A fungus affecting Terminalia which may have come from infected Breadfruit Trees has been detected in the YELA Ka Forest. On-going surveys in YELA and other farms. Salt and mud mixture treatment has been tried with limited results. Support has been requested from the USFS. A fungicide might be helpful?
- Taro Leaf Blight (*Phytophthora colocasiae*) a fungus is established with sanitation efforts on-going
- Early Detection and Rapid Response training seminars
- Active participation in the RISC

6.4 Pohnpei State Programs

- Rodent eradications completed on Nahkapw and Dekehtic islands (Wegmann et al. 2008a; Wegmann et al. 2008b)
- Crown of Thorns Starfish management project, numbers are low at present with removal efforts wrapped up in early 2015 (but will be re-engaged as necessary). Effort involved manual removal and use of some for fertilizer.
- College of Micronesia in the past had control efforts for Chromolaena and Giant Sensitive Plant (*Mimosa diplotricha*), but these have not continued.
- 2012 control of Koster's Curse at national campus, student assisted effort
- Removal of feral pigeons (*Columba livia*), night ops, (2010-2013)
- Mikania community level management, Nan Madap Palikir (2013)
- Tilapia (*Oreochromis mossambicus*) surveys conducted in 2006 to assess status. Tilapia were first recorded for the state in 2005.
- Conservation Society of Pohnpei conducted an ant eradication on Oroluk Atoll in 2008
- Study of Albizia (*Albizia lebbeck*) to determine toxicity, with EPA and University of Hawaii, review of existing literature. Result: no toxicity (nitrogen discharge not happening, tree is actually a nitrogen fixer) (2014)

- Survey to determine fate of Albizia, ultimately local communities want to keep this species on island and not attempt to eradicate
- Biocontrol for Trachoides Whitefly released, including two agents a wasp and a beetle
- Spiraling Whitefly (*Aleurodicus disperses*) bio-agent released 2005
- Weeds of Pohnpei publication (2009)
- Tree Sparrow (*Passer montanus*): surveys, and attempted eradication which was not successful: BB guns given to communities….. (2010-onwards): original sighting of this species was in 2009
- Breadfruit Mealybug (*Icerya aegyptiaca*) eradication on Mwoakilloa Atoll
- Blue eyed Cockatoo (*Cacatua ophthalmica*) removed from private ownership (2013)
- Red-eared Slider (*Trachemys scripta*) found and destroyed
- Banded Krait (*Bungarus fasciatus*) found dead at the dump in 2002 (Buden and Wichep 2003)
- U Restore Project: Replanting of endemic and other native species within the watershed of U (2013)
- iSTOP target species, all have on-going management actions, except for Octopus Tree (*Schefflera actinophylla*) which has been eradicated (Figure 14)
- Merremia DNA testing by LandCare New Zealand and Pohnpei Forestry
- iSTOP and EAO working on finalizing response plans (Coconut Rhinoceros Beetle and Brown Treesnake)
- Various community level management activities in relation to protected areas
- Invasive species awareness via radio spots is on-going
- Department of Health community outreach program
- Conservation Society of Pohnpei on-going invasive species awareness activities with schools

Figure 14: Octopus Tree (*Schefflera actinophylla*) Oahu, Hawaii

- Other awareness activities are on-going including work with Pohnpei Woman's Group
- iSTOP invasive species poster distributed to schools

- iSTOP invasive species awareness programs associated with Earth Day and other public events
- Invasive Species Coordinator at forestry, supported by a USFS grant through 2015
- Send various staff to yearly biosecurity training provided SPC/USDA/UOG on Guam
- Early detection and rapid response seminars
- Active participation in the RISC

6.5 Yap State Programs

- Ant identification workshop (2011)
- Yap continues to work on their key invasive species especially Imperata (*Imperata cylindrical*), chain-of-love and African tulip. Work on Imperata started in the early 70's.
- Coconut Rhinoceros Beetle ERP (Draft)
- Brown Treesnake ERP (Draft)
- Field response undertaken in response to snake encounter reports on Soong Island (Stanford 2008) (Figure 15)
- Giant African snail collection program: GAS arrived via ship, then spread around town, DOA provided candy swap (targeted children) for a GAS, in the 60's or 70's
- Common Myna bird eradicated in the late 90's
- Biocontrol agents introduced by College of Micronesia Land Grant include agents for Giant Sensitive Plant, Chromolaena, Whitefly, Lantana and Breadfruit Mealybug.
  -The agent for Giant Sensitive Plant is effective but still spreading (agents doesn't self-spread, so need to physically move them about)
  -Two agents released for Chromolaena , 1. had natural predators and was no good and 2. a gall fly which is successful in slowing it down and preventing flowering.
  -Moth for whitefly released in the 80's
  -Lantana agent is slowing down spread of this IS
  -Lady beetle for Breadfruit Mealybug on one island (Eauripik Island).
- Forest survey with USFS
- Current Agriculture and Quarantine programs for imports/exports
- Eradications underway for the following:
  -Imperata eradication and associated planting of native plant species
  -Chain of love eradication
- Eradications efforts being developed for:
  -African Tulip Tree
  -Giant Sensitive Plant surveyed and being treated
  Honolulu Rose (2 sites eradicated, 1 site not yet started)

- Targeted surveillance for: Coconut Rhinoceros Beetle survey, Little Fire Ant, fruit flies (oriental fruit fly)
- Bronze-leaved Clerodendrum trial underway and going well
- Undocumented fungus discovered in Yap. Samples were collected and sent out for identification. Maybe the breadfruit fungus (*Phellinus noxius*) but waiting on positive identification before moving forwards with plans to address.
- Merremia DNA samples sent to LandCare New Zealand
- Rat snap traps provided by Health to communities for around houses. Approximately 500 - 10000 traps provided over the past five years. Norway rat noted as most common, but ship rats are also present. Cats are often employed to control rats.
- Mosquito coils provided by DOH after wet season and mosquito nets provided to outer islands to reduce prevalence of dengue and other mosquito bore diseases
- COM Land Grant encourages communities to consume Tilapia and also to utilize for chicken and pig feed. Tilapia are currently widespread.
- Crown of Thorns Starfish in the past they have been controlled following outbreaks.
- Community use of cockroach control chalk which is available from the Chinese store
- Early detection and rapid response seminars
- Active participation in the RISC

Figure 15: Snake encounter response camp site on the remote island of Soong, Ulithi Atoll, Yap

7.0 Legislation, Conventions and Agreements

The following sub-sections include provisions relating to invasive species management or can support biosecurity and invasive species management within the FSM.

7.1 National Legislation, Regulations and Acts

- Plant and Animal Quarantine Regulations (2000)
- National Food Safety regulations (NFSR) (1992); updated regulations with added fisheries section is current in draft. NFSR are based on CODEX international standards.
- Title 23, Conservation of Marine Species (such as sea turtles) providing for seasons and take limits
- Title 22, Agriculture and Livestock (chapter 4 covers quarantine)
- Amended title 25, Environment Protection Act
- National Shark Law (2015)
- Biosecurity Bill (Draft)

7.2 Chuuk State Laws and Regulations

- Department of Marine Resources regulations
- Department of Health regulations
- Environmental Protection Agency regulations
- Chuuk State Shark Law (2014): prohibits take of sharks and possession of sharks and shark fins

7.3 Kosrae State Laws and Regulations

- Kosrae shark protection (2012)
- Kosrae Endangered Species Regulations (1988)
- Kosrae Humphead Wrasse Protection Regulation (2008)
- Kosrae Pesticides Regulation (2013)
- Sanitation regulations
- Invasive Species Regulation (Draft)
- Kosrae Protected Area Regulations (Draft) (2013)
- State code: section 13.622: violating quarantine
- State code: section 13.548: import/export of marine resources
- State code: section 13.527: endangered species protection

7.4 Pohnpei State Laws and Regulations

- Pohnpei shark protection (2013)
- Pohnpei State Rules and Regulations for Marine Protected Areas
- Title 26 Pohnpei code: conservation
- Title 29 Pohnpei code: fisheries
- Agriculture regulations
- EPA: Pesticide regulations
- EPA: Ship inspection regulation
- EPA: rodent control regulation
- EPA: mosquito control regulation
- Hunting and take regulations for birds and fish
- EPA: Pig waste control regulations
- EPA: toilet facilities regulation
- EPA: earth moving regulation
- EPA: food regulations (includes both imported food and local)
- EAO: Quarantine guidelines

7.5 Yap State Laws and Regulations

- Yap State existing environmental laws are listed in Table 1.
- Yap State existing environmental regulations are listed in Table 2.
- Yap State environmental regulations and bills to be proposed in 2015 are listed in Table 3.

7.6 International Conventions and Agreements

Convention on Biological Diversity (CBD)

This is the key convention relating to the conservation of flora, fauna and ecosystems. It requires countries to develop a NBSAP and specifically to 'prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species.' The Convention has established a series of Aichi Targets of which no. 9 reads: '*By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled, and measures are in place to manage pathways to prevent their introduction and establishment*.'

International Plant Protection Convention (IPPC)

The FSM is a contracting party to the IPPC. The IPPC is an international agreement on plant health developed in 1951 and overseen by the Food and Agriculture Organization (FAO). Its objectives include:

- Protecting sustainable agriculture and enhancing global food security through the prevention of pest spread
- Protecting the environment, forests and biodiversity from plant pests
- Facilitating economic and trade development through the promotion of harmonized scientifically based phytosanitary measures
- Developing phytosanitary capacity for members to accomplish the preceding three objectives.

Memorandum of Understanding for the Conservation of Cetaceans and their Habitats in the Pacific Islands Region

The FSM is a signatory to this memorandum which is under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals.

Nagoya Protocol on Access and Benefits-sharing

The objective of the protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components.

Nauru Agreement

The FSM is party to this agreement which covers conservation and management of the world's largest sustainable tuna fishery. Management efforts include high seas closures to fishing, controls on Fish Aggregating Devices (FADs), protection for whale sharks and the 100% coverage of purse seine fishing vessels with observers. No dolphins are caught in PNA waters and the PNA is actively involved in limiting bycatch of other species.

Noumea Convention

The Convention for the Protection of the Natural Resources and Environment of the Pacific Region along with its two protocols entered into force in 1990. In order to protect the environment in the Pacific region, through the Noumea Convention the Parties agree to take all appropriate measures in conformity with international law to prevent, reduce and control pollution in the Convention Area from any source, and to ensure sound environmental management and development of natural resources. The adoption of appropriate measures includes: the establishment of laws and regulations for the effective discharge of the obligations of the Convention, and the co-operation between countries in order to undertake activities that prevent, reduce and control pollution.

Stockholm Convention

The objective of the convention is to protect human health and the environment from persistent organic pollutants.

United Nations Convention on the Law of the Sea (UNCLOS)

UNCLOS includes (Part V) prescription of exclusive economic zones (EEZs) stretching to 200 nautical miles from its coast over which a country has special rights over the exploration and use of marine resources. Part XII contains provisions for protection and preservation of the marine environment including minimizing pollution and preventing the introduction of invasive species.

United Nations Convention to Combat Desertification (UNCCD)

The FSM is party to this convention. Focus for the FSM is preventing and reversing land degradation trends.

United Nations Framework Convention on Climate Change

The FSM is a signatory to this convention. The convention entered into force in 1994. The objective of the convention is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

World Heritage Convention

The FSM has accepted this convention (2002). The Convention sets out the duties of the parties in identifying potential sites and their role in protecting and preserving them. The convention links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two.

World Organization for Animal Health (OIE)

The OIE is the intergovernmental organization responsible for improving animal health worldwide. OIE has six stated objectives which include:

Ensure transparency in the global animal disease situation

- Collect, analyze and disseminate veterinary scientific information
- Encourage international solidarity in the control of animal diseases
- Safeguard world trade by publishing health standards for international for international trade in animals and animal products
- Improve the legal framework and resources of national veterinary services
- To provide a better guarantee of the food of animal origin and to promote animal welfare through a science based approach

8.0 NATIONAL ACTION PLAN

Thematic Area A: Foundations

A1. Generating Support

Outcome 1:1 The impacts of priority invasive species on biodiversity, economies, livelihoods and health, are widely understood and actions to manage and reduce them are supported

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen biosecurity by Improving traveler and visitor invasive species (IS) awareness	Produce short biosecurity video for showing at airport terminal	Video produced and playing in 2016	Video and a report on its use in 2016	SPC, SPREP, Quarantine, Port Authorities, Airlines (UA, Nauru, Carolines)	
	Assistance RISC with development of regional transportation invasive alien species (IAS) awareness video	2017	Video and annual reports on its use	RISC reps, Quarantine, Airlines (UA and Nauru)	
Strengthen community buy-in and support for IS management and biosecurity activities	Work with State stakeholders to support education and awareness activities	on-going			
	Identify priority messages for outreach materials	develop in 2016	draft messages developed for outreach materials		
	Develop poster(s): 'Watch out for these pests' for priority IAS that threaten invasion of the FSM	Produce in 2017	Poster & record of distribution		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen community buy-in and support for IS management and biosecurity activities (continued)	Prepare awareness material on priority species	Awareness material produced and distributed in 2016	Awareness material & record of distribution		SPC
	Develop in conjunction with States material on marine IS, including how to identify and potential pathways and vectors	2017	Materials on marine IS developed		
	Distribute material to all involved in marine activities (tourism operators, Marine Protected Area committees, coastal communities)	2018	Materials on marine IS distributed	SPREP, Marine Resources, Fisheries, Tourism	SPREP
	Include IS in school curriculum	Continue with on-going efforts to develop IS course work, finalize and utilize	IS teaching integrated into school curriculums	DOE, Teachers, COM-FSM, R&D	
	Conduct awareness through radio programs	2-3 programs a year: ex: SPREP LFA radio jingle	Annual record of programs delivered	Quarantine, SPREP	
	Support as appropriate goals of the Regional Biosecurity Plan (RBP), Micronesia Challenge (MC), RISC, National IS Strategy (NISSAP), etc. during outreach events	2016	Appropriate goals incorporated into awareness activities		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Support states in developing potential economic costs of IAS invasion	Present analysis and results to state and national leadership	2017	Annual report on status of priority IAS that threaten the state that includes economic analysis	FSM-RD, SPC, SPREP, IS Coordinators, YIST, KIST, CIST, iSTOP	TBD
Strengthen ability of line agencies to address IS needs	Develop budget planning for line agencies to address priority IS actions	2017	Budget planning conducted and appropriate budgets produced	line agencies, SPREP	
A2. Building Capacity					
Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to management invasive species effectively are developed					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen internal capacity to fill and support biosecurity and IS management programs	Include IS in scholarship priorities	2017	IS scholarship developed	DOE, Teachers, COM-FSM, R&D	
	Capacity building carried out within local institutions such as COM-FSM	2018	Specific course work established that would provide IS training for up and coming work force		
	COM-FSM certificate program with focus on biosecurity and IS management	2019	currently there is a certificate program in agriculture which can lead to a degree, this program could be tailored to specifically address these needs		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Improve planning and programmatic direction	Utilize SPREP dashboard as a feedback mechanism to improve ability to address IS needs	2016	Dashboard is currently under development; use as soon as it is available; annually	SPREP, line agencies	SPREP
Strengthen IS efforts via full time coordination at state, national and regional levels	Fund, hire and establishment of a national IS coordination office or provide similar capacity through an existing office	2017	Program established, funded and staffed	FSM Government	
	Support the establishment of a Micronesia regional IS coordination office	2017	Program established, funded and staffed	IS stakeholders and partners	
	Support long term funding development for state invasive species coordination offices (those that do exist currently dependent in part on soft funds)	2019	Long term, statewide coordination programs established, funded and staffed	IS stakeholders and partners	
	Support broadening existing state IS coordination roles to serve as the state level focal point (in each state) for IS issues and work across departments/sectors as well as with national counterparts	2019	Long term, statewide coordination programs established, funded and staffed	IS stakeholders and partners	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented	Training needs assessment conducted to determine gaps in existing IS knowledge capacity for field staff at line agencies and partners	2016 onwards	annual needs analysis reports; likely areas that need addressed include: species id, sample collection, reporting, control and monitoring techniques, risk assessment, early detection and rapid response	FSM-RD, Customs, Immigration, DOH, PPA (port authorities), other port workers (such as cargo handlers, stevedores, etc.), SPC, SPREP	TBD
	Address gaps in existing IS knowledge capacity	Training provided for new staff and existing staff at appropriate intervals	Record of training provided	FSM-RD and other line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Promote training programs and develop new ones to cover important aspects of invasive species management process, from planning and fundraising to demonstration of advance skills i.e. those identified in the needs analysis	following needs analysis development	Record of training provided	FSM-RD, SPC, SPREP	SPC, SPREP, Others

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Develop and deliver training programs on IS detection, containment, reporting and response to front line staffs at ports including line agencies and private enterprises including port personnel, stevedores, airline staffs and line agency staffs	Program developed and delivered to staff at all ports of entry by 2016 (such a program has been provided in the past via US DOI)	Training materials developed and annual reports detailing the staff who received training	FSM R&D, state partners	GEF
Maintain good ties with state & regional partners	Ensure regular meetings between state and national partners	Schedule quarterly meetings or as needed	Meeting minutes/reports	states and national stakeholders	existing resources
	Provide progress reports on IS to RISC and MCEs	Annually prior to NOV-DEC MCES	annually	RISC reps	
	Participating on regional initiatives such as PILN	on-going	associated reports for activities participated in	PILN teams, SPREP	SPREP (PILN)
	Assist and promote regional and sub-regional cooperative initiatives for invasive species management	on-going			
A3. Legislation, Policy and Protocols					
Outcome 1:3 Appropriate legislation, policy, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
FSM Biosecurity Act	Seek congressional endorsement of existing biosecurity bill	Biosecurity legislation passed by end of 2015	Biosecurity legislation in place	FSM-RD, Justice	existing resources

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Updated Regulations	Update plant and animal quarantine regulations (2000)	2016-17	updated regulations	FSM-RD, DOJ	
Promote policies, regulations, protocols, and laws concerning the management of island resources and IS issues	develop and distribute a regulation booklet based on existing IS related laws and regulations	2017-18	regulations booklet	FSM-RD, DOJ	existing resources
Address IS legislative gaps if and when needed	Review and update legislation pertaining to IS and biosecurity as needed	on-going	updated legislation, amendments, etc. as needed	FSM-RD, DOJ, FAO	TBD
Carry out mid-term review of NISSAP and develop the next strategy	review of the NISSAP in 2018	Review completed in 2018	Review report received and recommendations acted on	R&D and relevant state stakeholders or partners such as SPREP, SPC	TBD
	Develop a revised NISSAP for 2022-2027	Process to develop new NISSAP undertaken in 2021	Updated and endorsed NISSAP	National Gov, SPREP, SPC, relevant state stakeholders	TBD

Thematic Area B: Problem Definition, Prioritization and Decision Making					
B1. Baseline and Monitoring					
Outcome 2.1: Systems are in place to generate baseline information on the status and distribution of invasive species and to detect changes and emerging impacts					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthening baseline determination and monitoring of existing IS activities and action items	supporting states with IS baseline and monitoring activities	on-going			
	Reporting on status and distribution for international conventions	As per convention reporting requirements	Reports for conventions	varies dependent on convention, support from state departments	
	Monitoring of action (or lack there of) with addressing action items in the NISSAP	Annually	Annual report on status of action items	FSM R&D, state partners	
	Monitoring of action (or lack there of) with addressing action items in the RBP	Annually	Annual report on status of action items	FSM R&D, state partners	

B2. Prioritization					
Outcome 2.2: effective systems are established to assess risk and prioritize invasive species for management					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Priority established IS species identified	Develop and keep updated list of priority species established in the FSM	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources
Priority IAS which threaten the FSM identified	Develop and keep updated list of priority species which threaten the FSM with establishment	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources
Priority actions identified	Prioritize IS actions	2016	A prioritized lists actions with well defined parameters	Quarantine, Marine Resources, iSTOP, YIST, CIST, KIST, IS Coordinators (State, National, Regional)	

B3. Research on Priorities					
Outcome 2.3: Improve understand of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
	Continue engagement with relevant external (and internal) stakeholders such as SPREP and SPC to ensure that priority research is conducted as needed				

Thematic Area C: Management Action

C1. Biosecurity					
Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between states and within states					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors	Review of permit applications (import/export) prior to issuance	At all time; already transpiring	monthly reporting; permit issuing involves fees reflected in budget	Quarantine	R&D and state agr offices (for interstate movements) existing
	Create MOU with partners to permit support between agencies including quarantine	working on now and may be completed by 2016	MOUs	Quarantine, Customs, and Immigration	can be done under existing resources
	update existing operations manual for partners to assist Quarantine office	2016		Quarantine	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors (continued)	Cross training of frontline agencies to support border control activities		Training reports including numbers of staff trained, from what line agencies and what topics covered	Quarantine, Customs, Immigration, SPC	SPC, others
	Promote the development and implementation of stronger international export standards regarding IS	in progress to improve ability to meet international standards	Improved standards in place	FSM-RD, DOH, MSC (Micronesian Shipping Commission)	existing resources
	Conduct risk assessments for proposed national and/or internal state movements of species and for the movement of goods that may harbor IS	As warranted by national regulations and is currently in effect	existing reporting (monthly)	Quarantine	existing resources
	Review and modify as needed existing border controls, transport controls and quarantine systems	2016	Report on outcomes	Quarantine, SPC, SPREP	SPC
	Hold, reject, or confiscate items/permit applications without proper certificates or documents	As warranted by national regulations (already in place)	monthly reports	Quarantine	existing resources
Review existing detection and response mechanisms	Complete an overview report with suggestions for improvement	2016	Report with recommendations provided to stakeholders	FSM R&D, state partners, OEEM	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Establish and maintain an effective IAS incursion detection and response system	Support the development of generic emergency response plans for IAS incursions for each state	Draft plan in place by September 2016; Endorsed by leadership by December 2016	Generic ERP(s) developed minimally for terrestrial, freshwater and marine actions	FSM R&D, state partners, OEEM	
	Implement adequate surveillance systems at official points of entry	monthly surveillance review at all official ports of entry; to start in 2015	Will be included in a yearly quarantine overview report (customs, DOH and immigration should also each provide a similar year report on their sections)	Quarantine, Customs, Immigration, DOH	existing resources
	Assist with securing funding to support response actions	2018	Revolving fund secured to support response actions	FSM R&D, state partners, Office of Environment and Emergency Management (OEEM)	
	Support technical workshops to train core response team members in aspects of a response action within each state	Completed by February 2017	Initial training provided and follow-up trainings scheduled	FSM R&D, state partners, OEEM	
	Support workshop(s) for response action community support in each state	annually starting in 2018	Community based ED RR workshops held	FSM R&D, state partners, OEEM	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Establish and maintain an effective IAS incursion detection and response system (continued)	Coordinate with state, regional, and international response support mechanisms	on-going	Reports on activities	FSM R&D, state partners, OEEM	
	Support awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions in each state	Campaign underway by January 2017	various public announcements released (radio, newspaper, websites, posters/flyers/stickers)	FSM R&D, state partners, OEEM	
C2. Management of established invasive species					
Outcome 3.2: the impacts of priority established invasive species are eliminated or reduced					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Improved ability to address established IS	Support states with on-going IS management activities	on-going		IS stakeholders and partners	
C3. Restoration					
Outcome 3.3: Following invasive species management best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen ability of states to restore natural resources impacted by IS	Support states with on-going restoration activities	on-going		IS stakeholders and partners	

9.0 CHUUK STATE ACTION PLAN

Thematic Area A: Foundations

A1. Generating Support

Outcome 1:1 The impacts of priority invasive species on biodiversity, economies, livelihoods and health, are widely understood and actions to manage and reduce them are supported

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Determine level of IAS awareness for all sectors	Conduct preliminary surveys to determine current awareness levels	2016		CCS, SPREP	
	Conduct periodic surveys to gauge IAS awareness profile for all sectors of society	Every 1 to 2 years		CCS, SPREP	
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values	Visit high school to raise awareness of IS and their impacts	Visit high school – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	CIST	
	Visit primary schools to raise awareness of IS and their impacts	Visit primary schools – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	CIST	
	Develop IAS presentations	schools and communities	Minimally 3 IAS presentations tailored for: primary schools, high school and general community groups	CIST	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Start IAS club at high school	Young people	Find and train club facilitator, establish club, records of club meetings, attendance and activities	CIST	
	Training IAS club members to give IAS presentations	Young people	records of student lead presentations to schools and community groups	CIST	
	IAS club field activities	Young people and general community	records of students involved in field activities, types of activities undertaken and results of field effort	CIST	
	Organize media campaign	Campaign in last ¼ each year including 1 talkback radio program, 1 provincial radio program, and newspaper articles	Annual report on campaign activities and copies of information produced.	CIST	
	Conduct workshops for farmers and general public on IPM	Stakeholder IPM workshops		Agriculture	
	Identify priority messages for outreach materials	develop in 2016	draft messages developed for outreach materials	CIST, Agriculture, Marine Resources	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Develop poster on economic impact of IAS in Chuuk – aimed at raising community awareness so individuals prioritize the issue	Produce in 2017	Poster & record of distribution	CIST, Agriculture, Marine Resources	
	Produce Farmer's Pocket Guide on invasive species in Chuuk	2017	Pocket Guide and record of its distribution	CIST, FAO	
	Produce Media Guide	2017	Media Guide and record of its distribution	CIST, FAO	
	Conduct awareness through radio programs	2-3 programs a year	Annual record of programs delivered	CIST	
	Assistance RISC with development of regional transportation IAS awareness video	2016		CIST	
	Produce documentary DVD on biosecurity and IS management	2019	DVD, record of its distribution and play time on local TV	CIST	
	Prepare awareness material on priority species	2017	Awareness material & record of distribution	Marine Resources	SPC
	improving awareness regarding transportation of organisms including plants into or out of the state or between islands within the state	2017		CIST	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Develop and distribute marine IS awareness material to all involved in marine activities (tourism operators, Marine Protected Area committees, coastal communities)	2018	Records of material distribution: what villages, businesses, etc. have been reached	Marine Resources	
	Utilize SPREP developed LFA awareness video	2016	Playing of video on local TV station	Agriculture, CIST	
	Support as appropriate goals of the Regional Biosecurity Plan (RBP), Micronesia Challenge (MC), RISC, National IS Strategy (NISSAP), etc. during outreach events	2016	Appropriate goals incorporated into awareness activities	IS stakeholders and partners	
Demonstrate the potential economic costs of specific IS	Present analysis and results to state and national leadership	2017	Annual report on status of priority IAS that threaten the state	CIST, SPC, SPREP	
Demonstrate the economic cost of already established IS	Present progress report to proper sectors and outside partners & experts	2017	Annual report on status of existing IAS and their associated impacts and management costs	CIST, SPC, SPREP	
Seek strategic funding for priority IS actions	solicit and secure grants from donors (local, regional, international)	2017	Annual secure at least 1 grant to support IAS efforts	CIST, Agriculture, Marine Resources, Quarantine	

A2. Building Capacity					
Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to management invasive species effectively are developed					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Strengthen IS management and biosecurity efforts via full time IS coordination at state, national and regional levels	Secure long term funding for a state invasive species coordination office. IS coordination roles is to serve as the state level focal point for IS issues and work across departments/sectors as well as with national and international counterparts	2019	Long term, statewide coordination programs established, funded and staffed	IS stakeholders and partners	
	Support the establishment of a national IS coordination office	2017	coordinator hired	IS stakeholders and partners	
	Support the establishment of a regional IS coordination office	2017	coordinator hired	IS stakeholders and partners	
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented	Training needs assessment conducted to determine gaps in existing IS knowledge capacity for field staff at line agencies and partners	2016 onwards	annual needs analysis reports; likely areas that need addressed include: species id, sample collection, reporting, control and monitoring techniques, risk assessment, early detection and rapid response	Line agencies and partners, SPC, SPREP	TBD

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Address gaps in existing IS knowledge capacity	Training provided for new staff and existing staff at appropriate intervals	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Promote training programs and develop new ones to cover important aspects of invasive species management process, from planning and fundraising to demonstration of advance skills i.e. those identified in the needs analysis	following needs analysis development	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Develop and deliver training programs on IS detection, containment, reporting and response to front line staffs at ports including line agencies and private enterprises including port personnel, stevedores, airline staffs and line agency staffs	Program developed and delivered to staff at all ports of entry by 2016 (such a program has been provided in the past via US DOI)	Training materials developed and annual reports detailing the staff who received training	Line agencies and partners, SPC, SPREP	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Maintain good ties with local & regional partners	Ensure regular meetings between local partners	Hold 2 meetings annual where local partners participate	Records of meeting minutes	CIST	
	Provide progress reports on IAS to RISC	Annually prior to NOV-DEC MCES	Annual IAS progress report	State RISC Reps	
	Assist and promote regional and sub-regional cooperative initiatives for invasive species management			CIST, Agriculture, Marine Resources	
Strengthen State's IS management capacity and technical support	Establish a PILN team for the state	2016	PILN team established	CIST, SPREP	SPREP
	Improve inter-agency coordination and data sharing	2016	Improved inter-agency linkages	CIST, line agencies	
	Capacity building provided including project management and monitoring and evaluation training	2017	Trainings conducted, other elements to improve capacity developed	Line agencies and partners, SPC, SPREP	
	Ensure that CIST is meeting regularly	Quarterly meetings are scheduled, stakeholders are notified, and meetings are held; meeting minutes are recorded	summary reports for all meetings are produced and shared with stakeholders	CIST	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
trengthen State's IS management capacity and technical support (continued)	Update the CIST SAP which was originally developed for 2008-2010	Hold development meeting with critical stakeholders in 2016 and draft updated SAP	Updated 5 years CIST SAP	CIST	
	Updated CIST SAP endorsed by State Leadership	2016	Updated CIST SAP has been reviewed and endorsed by leadership	CIST	
	Update CCS SAP, ensure that it is inclusive of biosecurity and IS management concerns	2016	Updated CCS SAP	CCS, CIST	
	Develop supportive roles for various groups in regards to IS within the State including traditional leadership, elected leadership, woman's group, churches and educational system	2016	Community and other groups linked with and supportive of IS efforts	CIST, State ISC	
	Involve partners in training events and meetings	2015	Records of training participants	CIST	
Develop Chuuk State IS db to record management activities and other data	Develop state IS db	db should be functional by 2018	database completed	Line agencies and partners, SPC, SPREP	
	Ensure IS data is input into state IS db	start 2018; on-going from that point	data is input into db	Line agencies and partners, SPC, SPREP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Develop Chuuk State IS db to record management activities and other data (continued)	disseminate report on db progress and IS issues to stakeholders possibly via an appropriate website (such as a RISC website, if and when it is established)	September annually	Annual report	CIST, RISC	
	Establish who will update the db and ensure that it is updated regularly	2017	Develop data sharing and entry protocols; determine who will maintain db (likely the state IS coordinator)	Line agencies and partners, SPC, SPREP	
	Provide stakeholder access to db once established	2018	db available and data input started		
A3. Legislation, Policy and Protocols					
Outcome 1:3 Appropriate legislation, policy, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Support the establishment of the FSM Biosecurity Act	Seek congressional endorsement of existing biosecurity bill	Biosecurity legislation passed by end of 2015	Biosecurity legislation in place	IS stakeholders and partners	
Promote existing policies, regulations, protocols, and laws concerning the management of island resources and IAS issues	develop and distribute a regulation booklet based on existing IAS related laws and regulations	2017		CIST, SPREP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Carry out mid-term review of NISSAP and develop the next strategy	review of the NISSAP in 2018	Review completed in 2018	Review report received and recommendations acted on		
	Develop a revised NISSAP for 2022-2027	Process to develop new NISSAP undertaken in 2021			
Strengthen protected areas biosecurity and IS management	For existing protected areas with established management plans, review plans and ensure that they address biosecurity and IS and if not, add these sections to them	2016	Existing PA plans reviewed and updated as needed	CIST, PA managers	
	For existing protected areas without established management plans, ensure that biosecurity and IS are included in plan development process and addressed in plans when established	2016 and on-going	Biosecurity and IS management sections are drafted for existing PAs without established management plans	CIST, PA managers	
	For an new protected areas, make sure that biosecurity and IS are appropriately addressed when management plans are developed	on-going	Biosecurity and management sections are draft for any new Pas during the development of their management plans	CIST, PA managers	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Strengthen protected areas biosecurity and IS management (continued)	Develop a protected area that includes Mount Winipot and biodiversity of this area	2017	PA established with appropriate management plan that addresses biosecurity and IS management	CIST, local communities, TNC	
Support the development of the Chuuk State Infrastructure Development Plan	ensure that biosecurity and IS are appropriate addressed in the Chuuk State Infrastructure Development Plan which is currently being developed	on-going	Final plan should be inclusive of biosecurity and IS management concerns in regards to infrastructural development	IS stakeholders and partners	
Review existing State regulations in regards to biosecurity and IS	Marine resources, state level, has a mandate to board and inspect vessels but they don't. Need to review and determine if this activity should be implemented.	2016	Determination made on this topic	State leadership, Marine Resources, CIST	

Thematic Area B: Problem Definition, Prioritization and Decision Making

B1. Baseline and Monitoring

Outcome 2.1: Systems are in place to generate baseline information on the status and distribution of invasive species and to detect changes and emerging impacts

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Strengthening baseline determination and monitoring of existing IS activities and action items	Develop/improve IS baseline and monitoring activities	on-going			
	Monitoring of action (or lack there of) with addressing action items in the NISSAP	Annually	Annual report on status of action items	FSM R&D, state partners	
	Monitoring of action (or lack there of) with addressing action items in the RBP	Annually	Annual report on status of action items	FSM R&D, state partners	

B2. Prioritization

Outcome 2.2: Effect systems are established to assess risk and prioritize invasive species for management

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Priority established IS species identified	Develop and keep updated list of priority species established in Chuuk	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Priority IAS which threaten Chuuk identified	Develop and keep updated list of priority species which threaten Chuuk with establishment	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources
Priority actions identified	Prioritize IS actions	2016	A prioritized lists actions with well defined parameters	CIST and other stakeholders	
B3. Research on Priorities					
Outcome 2.3: Improve understand of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Improve ability to address Merremia within the state	*Merremia peltata* DNA analysis	on-going	analysis completed and results shared	Agriculture and LandCare NZ	
Design and adopt decision making tools for invasive management planning	Introduce IPM concept to local managers and support its use across sectors	Annual workshop to support IPM use and coordination		Agriculture	
Improve techniques for monitoring the spread of invasive species within the state	Conduct quarterly monitoring of and collect field data on priority IAS species	Quarterly			
	Update IAS range maps	Annually			
	Provide annual report on priority species to partners and leaders	Annually in October			

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state)	Develop IAS research strategy	Completed 3-5 year strategy by December 2016	Completed strategy	CIST, College of Micronesia, external partners such as universities	
	Contact and request support from existing and potential external partners such as universities	2016		State IAS Coordinator, CIST	
	Conduct informal interviews regarding IAS in each community	annually	Reports on interviews taken	CIST	
	Conduct field research on priority IAS species	annual report per project	Project reports	Research leads for each project initiated	
	Update research strategy	every 3-5 years as determined by strategy	Regularly updated strategy	CIST	

Thematic Area C: Management Action

C1. Biosecurity

Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between states and within states

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors	Review permits (import/export) when necessary	At all time		Quarantine	
	create inspection manual for CIST members (and other line agencies) to assist Quarantine office	2017		Quarantine	
	Promote the development and implementation of stronger international export standards regarding IAS			RISC, State ISC	
	Conduct risk assessments for proposed national and/or internal state movements of species and for the movement of goods that may harbor IAS	As warranted by national regulations		Quarantine	
	Review and modify as needed existing border controls, transport controls and quarantine systems	2016		Quarantine, CIST	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors (continued)	Hold, reject, or confiscate items/permit applications without proper certificates or documents	As warranted by national regulations		Quarantine	
Strengthen biosecurity efforts	Address visitation of vessels entering the state and stopping at outer islands first. All vessels should be required to stop at main port of Weno for quarantine inspections prior stopping elsewhere (or additional quarantine facilities need to be established)	2016	Make determination on where quarantine/biosecurity inspections will occur and require all visiting vessels to clear quarantine prior to stopping elsewhere within the state	State leadership, Marine resources, Quarantine, CIST	
	Ensure that mail coming into the state is inspected for pest species	2015	Mail inspections reinstated	Quarantine, CIST	
	Improve training for quarantine officers	2016		Quarantine, State IS stakeholders	
	increase personnel at quarantine office	2018		Quarantine, State IS stakeholders	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Strengthen biosecurity efforts (continued)	Develop ability to conduct quarantine operations at ports other than the main air and seaports within the state	2016	Outer island biosecurity needs assessment completed and determination made on how to address this biosecurity gap	FSM Quarantine and State IS partners, local communities	
	Develop para-professional quarantine staff in local communities on outer islands. These trained individuals could support inspection and clearance of arriving vessels and craft as needed; would need training, communication linkages, and official status: training would minimally involved priority pest identification as well as vector inspection, record keeping, etc. Existing local policing forces may be able to assist.	Start development in 2017, start implementation in 2019, system in place to address outer island biosecurity by 2020	Protocols and supporting guidelines developed, including what happens if follow-up actions are required such as quarantining, cleaning, material destruction, fines levied or response to an incursion. Individuals selected and training provided. Funding mechanism secured. Materials purchased and communications linkages in place.	Agriculture, Marine Resources, Police, Quarantine, CIST	
Review existing detection and response mechanisms	Complete an overview report with suggestions for improvement	2016		CIST, State ISC	
Establish and maintain an effective IAS incursion detection and response system	Implement adequate surveillance systems at island entry points	monthly surveillance review at all official ports of entry		Quarantine	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Complete an overview report with suggestions for improvement (continued)	Secure funding to support response actions	2018	Revolving fund to support response actions established	CIST	
	Develop generic emergency response plan for IAS incursions	Draft plan in place by September 2016; Endorsed by leadership by December 2016	Generic ERPs minimally for freshwater, marine and terrestrial ecosystems in place	CIST	
	Technical workshop to train core response team members in aspects of a response action	Completed by February 2017	Workshop completed, follow-up training scheduled	CIST	
	Workshop(s) for response action community support	annually	workshop completed	CIST	
	Awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions	Campaign underway by January 2017	Campaign developed and underway	CIST	
	Coordinate with national, regional, and international response support mechanisms	on-going		State IAS Coordinator	

C2. Management of established invasive species					
Outcome 3.2: the impacts of priority established invasive species are eliminated or reduced					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Design and apply best practice standards based on latest information	Apply IPM concept to control priority established IAS			Agriculture, CIST	
	assist farmers with IPM techniques to control other invasive species found in their respective farm sites			Agriculture	
Improve management of existing potential IS concerns	Work with KRI to determine what fish species were in cages that broke open	2016	Species in question determined and information shared	Marine Resources	
	Conduct surveys to determine if these species have established	2016	Surveys completed and results shared	Marine Resources	
	If they have established, determine next steps (management/eradication efforts)	2016	Work planned (if needed)	Marine Resources	
	Collect samples of newly established ant species reported at workshop and send out for identification	2016	Specimens collected and sent to appropriate experts for identification. Results shared.	Agriculture	UOH, UOG, SPC

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Strengthen ability to respond to established IS	Spider on Polowat has been identified as coming from Australia and is thought to have arrived on a private yacht; eradication is needed	2016	Conduct feasibility study and if warranted develop and conduct IAS spider eradication on Polowat	CIST, local communities, SPREP	
Strengthen ability to prevent the further spread of established IS	Ensure that appropriate biosecurity is in place on Polowat to prevent the spread of this IAS	2016	Biosecurity plan developed and implemented	CIST, local communities, SPREP	
C3. Restoration					
Outcome 3.3: Following invasive species management best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/Funding
Ensure that all invasive species management projects are accompanied and followed by long term monitoring and evaluation of outcomes	Develop and carry out (3) restoration projects within local communities			CIST, Agriculture	

10.0 KOSRAE ACTION PLAN

Thematic Area A: Foundations

A1. Generating Support

Outcome 1:1 The impacts of priority invasive species on biodiversity, economies, livelihoods and health, are widely understood and actions to manage and reduce them are supported

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Determine level of IAS awareness for all sectors	Conduct preliminary surveys to determine current awareness levels	2017	Completed surveys	DREA, KCSO, KIST	
	Conduct periodic surveys to gauge IAS awareness profile for all sectors of society	Every 1 to 2 years	Completed surveys	DREA, KCSO, KIST	
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values	Visit high school to raise awareness of IS and their impacts	Visit high school – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	DREA, KIRMA, KCSO	
	Visit primary schools to raise awareness of IS and their impacts	Visit primary schools – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	DREA, KIRMA, KCSO	
	Develop IAS presentations	schools and communities	Minimally 3 IAS presentations tailored for: primary schools, high school and general community groups	DREA, KIRMA, KCSO	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Start IAS club at high school	Young people	Find and train club facilitator, establish club, records of club meetings, attendance and activities	DREA, KIRMA, KCSO	
	Training IAS club members to give IAS presentations	Young people	records of student lead presentations to schools and community groups	DREA, KIRMA, KCSO	
	IAS club field activities	Young people and general community	records of students involved in field activities, types of activities undertaken and results of field effort	DREA, KIRMA, KCSO	
	Organize media campaign	Campaign in last ¼ each year including 1 talkback radio program, 1 provincial radio program, and newspaper articles	Annual report on campaign activities and copies of information produced.	DREA, KIRMA, KCSO	
	Continue with awareness programs for biocontrols	on-going	Continued awareness education on biocontrols at schools, farm site and communities		
	Conduct workshops for farmers and general public on IPM	Stakeholder IPM workshops	Workshops completed	DREA	
	Produce Farmer's Pocket Guide on invasive species in Kosrae	Production in 2nd half of 2016	Pocket Guide and record of its distribution	FAO	FAO
	Produce Media Guide	Production in 2nd half of 2016	Media Guide and record of its distribution		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Conduct awareness through radio programs	2-3 programs a year	Annual record of programs delivered		
	Assistance RISC with development of regional transportation IAS awareness video	2018		DREA, KIRMA, RISC	
	Produce documentary DVD	2019	DVD, record of its distribution and play time on local TV		
	Identify priority messages for outreach materials	2017	draft messages developed for outreach materials		
	Develop poster on economic impact of IS in Kosrae – aimed at raising community awareness so individuals prioritize the issue	Produce in 2017	Poster & record of distribution		
	Prepare awareness material on priority species	2018	Awareness material & record of distribution		SPC
	Distribute material to all involved in marine activities (tourism operators, Marine Protected Area committees, coastal communities)				
	utilization of LFA TV spot on local station	2016	Program played on local TV	DREA, Telcom, SPREP	DREA

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness by providing outreach on the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Support as appropriate goals of the Regional Biosecurity Plan (RBP), Micronesia Challeng+A11e, RISC, National IS Stragegy (NISSAP), etc. during outreach events				
	Develop awareness campaign for paddle grass	2017	Awareness material & record of distribution	KIRMA	
Demonstrate the potential economic costs of specific IAS	Present analysis and results to state and national leadership	2017	Annual report on status of priority IAS that threaten the state	DREA, KIRMA	
Demonstrate the economic cost of already established IAS	Present progress report to proper sectors and outside partners & experts	2017	Annual report on status of existing IAS and their associated impacts and management costs		
Seek strategic funding for priority actions	solicit and secure grants from donors (local, regional, international)	2017	Annual secure at least 1 grant to support IAS efforts	DREA, KCSO	

A2. Building Capacity					
Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to management invasive species effectively are developed					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen IS management and biosecurity efforts via full time IS coordination at state, national and regional levels	Secure long term funding for a state invasive species coordination office. IS coordination roles is to serve as the state level focal point for IS issues and work across departments/sectors as well as with national and international counterparts	2019	Long term, statewide coordination programs established, funded and staffed	IS stakeholders and partners	
	Support the establishment of a national IS coordination office	2017	coordinator hired	IS stakeholders and partners	
Strengthen IS management and biosecurity efforts via full time IS coordination at state, national and regional levels (continued)	Support the establishment of a regional IS coordination office	2017	coordinator hired	IS stakeholders and partners	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented	Training needs assessment conducted to determine gaps in existing IS knowledge capacity for field staff at line agencies and partners	2016 onwards	annual needs analysis reports; likely areas that need addressed include: species id, sample collection, reporting, control and monitoring techniques, risk assessment, early detection and rapid response	Line agencies and partners, SPC, SPREP	TBD
	Address gaps in existing IS knowledge capacity	Training provided for new staff and existing staff at appropriate intervals	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Promote training programs and develop new ones to cover important aspects of invasive species management process, from planning and fundraising to demonstration of advance skills i.e. those identified in the needs analysis	following needs analysis development	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Develop and deliver training programs on IS detection, containment, reporting and response to front line staffs at ports including line agencies and private enterprises including port personnel, stevedores, airline staffs and line agency staffs	Program developed and delivered to staff at all ports of entry by 2016 (such a program has been provided in the past via US DOI)	Training materials developed and annual reports detailing the staff who received training	Line agencies and partners, SPC, SPREP	GEF
Maintain good ties with local & regional partners	Ensure regular meetings between local partners	Schedule and hold at least 2 meetings annually		DREA	
	Provide progress reports on IAS to RISC	Annually prior to winter MCES	Annual reports	DREA	
	Assist and promote regional and sub-regional cooperative initiatives for invasive species management				
Maintain a system of technical advice and support	Ensure that KIST is meeting regularly	Quarterly meetings are scheduled, stakeholders are notified, and meetings are held; meeting minutes are recorded	summary reports for all meetings are produced and shared with stakeholders	DREA, KIST	
	Involve partners in training events and meetings			DREA	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop Kosrae State IS db to record management activities and other data	Develop state IS db	db should be functional by 2018	database completed	Line agencies and partners, SPC, SPREP	
	Ensure IS data is input into state IS db	start 2018; on-going from that point	data is input into db	Line agencies and partners, SPC, SPREP	
	disseminate report on db progress and IS issues to stakeholders possibly via an appropriate website (such as a RISC website, if and when it is established)	September annually	Annual report	KIST, RISC	
	Establish who will update the db and ensure that it is updated regularly	2017	Develop data sharing and entry protocols; determine who will maintain db (likely the state IS coordinator)	Line agencies and partners, SPC, SPREP	
	Provide stakeholder access to db once established	2018	db available and data input started		
Develop capacity to rear biocontrols	Determine biocontrols of interest	2016	List of current biocontrols of interest developed (others can be added as needed)		
	Develop protocols for rearing biocontrols of interest	2016	Protocol established for each biocontrol to be reared		
	Staff are training in biocontrol rearing	2016	Initial training of staff completed		
	Established an adequate and functional biocontrol rearing laboratory	2017	Biocontrol rearing facility established and equipped		

A3. Legislation, Policy and Protocols					
Outcome 1:3 Appropriate legislation, policy, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Support the establishment of the FSM Biosecurity Act	Seek congressional endorsement of existing biosecurity bill	Biosecurity legislation passed by end of 2015	Biosecurity legislation in place		
Promote existing policies, regulations, protocols, and laws concerning the management of island resources and IAS issues	develop and distribute a regulation booklet based on existing IAS related laws and regulations	2016		DREA, KIRMA, KCSO	
Carry out mid-term review of NISSAP and develop the next strategy	review of the NISSAP in 2018	Review completed in 2018	Review report received and recommendations acted on		
	Develop a revised NISSAP for 2022-2027	Process to develop new NISSAP undertaken in 2021			
Strengthen protected areas biosecurity and IS management	For existing protected areas with established management plans, review plans and ensure that they address biosecurity and IS and if not, add these sections to them	2016	Existing PA plans reviewed and updated as needed	KIST, PA managers	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen protected areas biosecurity and IS management (continued)	For existing protected areas without established management plans, ensure that biosecurity and IS are included in plan development process and addressed in plans when established	2016 and on-going	Biosecurity and IS management sections are drafted for existing PAs without established management plans	KIST, PA managers	
	For an new protected areas, make sure that biosecurity and IS are appropriately addressed when management plans are developed	on-going	Biosecurity and management sections are draft for any new Pas during the development of their management plans	KIST, PA managers	

Thematic Area B: Problem Definition, Prioritization and Decision Making

B1. Baseline and Monitoring

Outcome 2.1: Systems are in place to generate baseline information on the status and distribution of invasive species and to detect changes and emerging impacts

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Improve techniques for monitoring the spread of invasive species within the state	Conduct quarterly monitoring of and collect field data on priority IAS species (Mikania, Citrus canker, Giant African snail, others as needed)	Quarterly	Monitoring reports and field data	DREA mapping units	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Improve techniques for monitoring the spread of invasive species within the state (continued)	Update IAS range maps	Annually	Updated maps produced	DREA mapping units	
	Provide annual report on priority species to working partners and local leaders	Annually in October	Annual report produced	DREA	
Ensure priority IS actions are being addressed	Monitoring of action (or lack there of) with addressing action items in the NISSAP	Annually	Annual report on status of action items	FSM R&D, state partners	
	Monitoring of action (or lack there of) with addressing action items in the RBP	Annually	Annual report on status of action items	FSM R&D, state partners	
B2. Prioritization					
Outcome 2.2: Effect systems are established to assess risk and prioritize invasive species for management					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Priority established IS species identified	Develop and keep updated list of priority species established in Kosrae	existing and should be updated as needed	existing list of priority species	KIST, State IS Coordinator, FSM Quarantine	existing resources
Priority IAS which threaten Kosrae identified	Develop and keep updated list of priority species which threaten Kosrae with establishment	existing and should be updated as needed	existing list of priority species	KIST, State IS Coordinator, FSM Quarantine	existing resources
Priority actions identified	Prioritize IS actions	2016	A prioritized lists actions with well defined parameters	KIST, State IS Coordinator, Quarantine	

B3. Research on Priorities					
Outcome 2.3: Improve understand of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Design and adopt decision making tools for invasive management planning	Introduce IPM concept to local managers and support its use across sectors	Annual workshop to support IPM understanding, use and coordination		DREA, KIRMA, Local Partners	
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state)	Develop strategy	Completed 3-5 year strategy by December 2017		KIST, College of Micronesia, external partners such as universities	
	Conduct informal interviews regarding IAS in each community	annually		DREA, KIST, NGOs	
	Contact and request support from existing and potential external partners such as universities	2016		State IAS Coordinator	
	Conduct field research on priority IAS species	annual report per project		DREA, research leads for each project initiated	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state) (continued)	Update research strategy	every 3-5 years as determined by strategy		KIST, partners	
Improve ability to address existing IS	*Merremia peltata* determination of origin and prep for biocontrol	2017	Research results published and shared	LandCare NZ, KIRMA	NZAID MFAT

Thematic Area C: Management Action

C1. Biosecurity

Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between states and within states

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors	Review permits (import/export) when necessary	At all time		DREA, Quarantine	
	create inspection manual for KIST members to assist Quarantine-Kosrae office	2016		KIST, Quarantine, DREA	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors (continued)	Promote the development and implementation of stronger international export standards regarding IAS				
	Conduct risk assessments for proposed national and/or internal state movements of species and for the movement of goods that may harbor IAS	As warranted by national regulations		DREA, Quarantine	
	Review and modify as needed existing border controls, transport controls and quarantine systems	2016		DREA, Quarantine	
	Hold, reject, or confiscate items/permit applications without proper certificates or documents	As warranted by national regulations		DREA, KIST, Quarantine	
Review existing detection and response mechanisms	Complete an overview report with suggestions for improvement	2017		KIST	
Establish and maintain an effective IAS incursion detection and response system	Implement adequate surveillance systems at island entry points	monthly surveillance review at all official ports of entry		DREA, KIST, Quarantine	
	Secure funding to support response actions			KIST	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Establish and maintain an effective IAS incursion detection and response system (continued)	Develop generic emergency response plan for IAS incursions	Draft plan in place by September 2016; Endorsed by leadership by December 2016		KIST	
	Technical workshop to train core response team members in aspects of a response action	Completed by February 2017		KIST	
	Workshop(s) for response action community support	annually		KIST	
	Awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions	Campaign underway by January 2017		KIST	
	Coordinate with national, regional, and international response support mechanisms	on-going		State IAS Coordinator	
Reduce spread of established IS within the state	Develop hygiene standards for field equipment and insure its use		Hygiene standards protocol document		

C2. Management of established invasive species					
Outcome 3.2: the impacts of priority established invasive species are eliminated or reduced					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Design and apply best practice standards based on latest information	Apply IPM concept to control priority listed species (e.g. paddle grass)			DREA, KIST, Partners	
	assist farmers with IPM techniques to control invasive species found in their respective farm sites			DREA, KIST, Partnerships	
Address existing IS concerns	Management and control efforts implemented in Pas for IS	update provided in annual reports from Pas	Reduction in number and coverage of IS as shown through operational control indices	KIRMA, KCSO, individual PA leadership; SPREP	
	Leucaena, Honolulu Rose and Bronze-leaf Clerodendrum targeted for eradication	dependent on specific species seedbank viability	eradication completed	KIST	
	Mikania Rust release and follow-up monitoring	release no later than 2017	Report on release and monitoring results	DREA, KIST	
	Develop hygiene protocol for field equipment and utilize protocol	2016	Established protocol disseminated to line agencies and other offices and communities (such as farmers, grass cutters, etc.)	KIST	DREA, SPC

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Address existing IS concerns (continued)	Survey of paddle grass incursion	2016	Completed GIS mapping of distribution within the State	KIRMA, DREA	
	Wedelia incursion survey	2016	Completed GIS mapping of distribution within the State	KIRMA, DREA	
	Wedelia removal from roadways and other key sites	2018	Developed protocol, records of field actions, decrease in presence of Wedelia		
	Develop biocontrol program to address Papaya Mealybug	2016	Program developed		
	Rear Papaya Mealybug Biocontrol	2018	Rearing of biocontrol		
	Release biocontrol for Papaya Mealybug and monitor situation, following-up as needed	2018	Reports on releases and follow-up monitoring, reduction in presence of Papaya Mealybug		
	White Fly biocontrol fungus culture rearing	Oct-17	Documented release of additional fungus	DREA	DREA, JICA

C3. Restoration					
Outcome 3.3: Following invasive species management best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Ensure that all invasive species management projects are accompanied and followed by long term monitoring and evaluation of outcomes	Develop and carry out (3) restoration projects within local communities			DREA, KIRMA, NGOs, other partners	

11.0 POHNPEI ACTION PLAN

Thematic Area A: Foundations

A1. Generating Support

Outcome 1:1 The impacts of priority invasive species on biodiversity, economies, livelihoods and health, are widely understood and actions to manage and reduce them are supported

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Determine level of IAS awareness for all sectors	Conduct preliminary surveys to determine current awareness levels	2017	Surveys completed	iSTOP	
	Conduct periodic surveys to gauge IAS awareness profile for all sectors of society	Every 1 to 2 years	Surveys completed	iSTOP	
Raise awareness of IS, their impacts and management efforts	Ensure that IS and biosecurity become part of the school curriculum	2018	IS and biosecurity are taught in schools as part of the standard curriculum	iSTOP, DOE	
	Visit high school to raise awareness of IS and their impacts	Visit high school – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	iSTOP, DOE	
	Visit primary schools to raise awareness of IS and their impacts	Visit primary schools – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	iSTOP, DOE	
	Identify priority messages for IS outreach materials	starting in 2016	draft messages developed for outreach materials; update annually	iSTOP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Develop IAS presentations	schools and communities	Minimally 3 IAS presentations tailored for: primary schools, high school and general community groups	iSTOP	
	Start IAS club at high school	Young people	Find and train club facilitator, establish club, records of club meetings, attendance and activities	iSTOP	
	Training IAS club members to give IAS presentations	Young people	records of student lead presentations to schools and community groups	iSTOP, DOE	
	IAS club field activities	Young people and general community	records of students involved in field activities, types of activities undertaken and results of field effort	iSTOP, DOE	
	Develop IS awareness video and associated materials	2017	Video and associated materials provided and used at schools and airport	CSP, NRCS, DOE, EPA, Island Cable TV, FSM-RD, MG, PWC, PFA, CSP, DNLR-F, CRE	SPC, COM-FSM/CRE, USFS
	Produce IS documentary DVD	Produce in 2017	DVD, record of its distribution and play time on local TV	iSTOP, SPREP	
	Assistance RISC with development of regional transportation IAS awareness video	2017	Video produced and shown on air flights (UA and Nauru) and/or in airport lounges	iSTOP, State RISC Reps	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Produce radio IS announcement spots	annual	4 radio spots produced annually, records of their play time	CSP, Embassies, Radio stations	USFS, MCT, SPC, CSP, In Kind
	Newspaper and/or e-news articles on IS topics	annually	Minimum of 2 articles published per year	CSP	USFS, MCT, SPC, CSP, In Kind
	IS newsletters updating on-going and upcoming IS activities	Annually	Minimally 2 newsletters annually	CSP	USFS, MCT, SPC, CSP, In Kind
	Produce IS topical posters and distribute to schools, businesses, ports and local communities	2017	Posters: 1- Invasive Species Risk, Do not transport, Report sightings; 2- Specific species to be aware of (BTS, CRB or LFA); 3- Prevent the spread of IS between islands; 4- Marine IS, hull fouling and dirty equipment, how to clean equipment and boats; 5- Economic impacts of IS. Poster produced and records of their distribution.	CSP, CCO, MG, CRE, SPC, FSM-RD, PWC, PFA, NRCS, EPA	CSP, NRCS-in kind, JICA-In Kind, DLNR-In Kind, USFS, Embassies, SPC, CRE
	Invasive species exhibits at public events e.g. World Food Day	annually	Minimally 2 event annually. Records of exhibits.	iSTOP	In Kind
	Conduct workshops for farmers and general public on IPM	Stakeholder IPM workshops		Agriculture	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Update invasive species booklet by 2016	2018	Updated IAS booklet	CSP, CCO, MG, CRE, SPC, FSM-RD, PWC, PFA, NRCS, EPA	CSP, NRCS-in kind, JICA-In Kind, DLNR-In Kind, USFS, Embassies, SPC, CRE
	Improve community awareness regarding roles of line agencies via inclusion of information in outreach activities	On-going	Ensure that information on roles of line agencies is part of outreach messages	Line agencies and partners, SPC, SPREP	
	Community IS meetings	Annually	3 meetings in each of the 5 communities	CRE, CSP, CRE, OEA-Ag, OFA, TNC, PWC, SPC, DNLR-F, EPA, PFA, MG, OFA	CSP, In Kind
	Guest IS lectures at COM-FSM Pohnpei campuses	Annually	Minimally 1 guest lecture per year	iSTOP, CRE, Other partners and visiting specialists	In Kind
	iSTOP assist quarantine in dissemination of IAS materials	On-going	Awareness materials disseminated	FSM-RD, SPC, CRE, CSP, OEA-Ag, PFA, OFA, PWC, Libraries	SPC, FSM-RD, SPREP
	Produce Farmer's Pocket Guide on invasive species	Production in 2nd half of 2016	Pocket Guide and record of its distribution	Agriculture, FAO	FAO

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Support as appropriate goals of the Regional Biosecurity Plan (RBP), Micronesia Challenge, RISC, National IS Strategy (NISSAP), etc. during outreach events	On-going		IS stakeholders and partners	
Demonstrate the economic cost of the local existing invasive species problems	Present progress report to proper sectors and outside partners & experts	Annual report on status of existing IAS and their associated impacts and management costs			
Demonstrate the potential economic costs of specific potentially invasive species	Present analysis and results to state and national leadership	Annual report on status of priority IAS that threaten the state		iSTOP	
Seek strategic funding for IS priority actions	solicit and secure grants from donors (local, regional, international)	Annual secure at least 1 grant to support IAS efforts	at least one IAS funding proposal developed and submitted annually	CSP, NRCS, OEA-Ag, DNLR-F	MCT, TNC, CRE, SPC, USFS, FSM-DR, DNLFF, Embassies
A2. Building Capacity					
Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to management invasive species effectively are developed					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen IS efforts via full time coordination at state, national and regional levels	Support the establishment of a regional IAS coordination office	2017	coordinator hired	IS stakeholders and partners	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen IS efforts via full time coordination at state, national and regional levels (continued)	Secure long term funding for a state invasive species coordination office. IS coordination roles is to serve as the state level focal point for IS issues and work across departments/sectors as well as with national and international counterparts	2016	Funding secured	OEA-Ag, CSP, FSMRD, CRE, DLNR-F, NRCS, SPC	TBD, USFS, State Gov, SPC
	Recruitment and hiring of full time iSTOP coordinator	2016-2017	Coordination position filled	OEA-Ag, AG, CSP, FSM-RD, CRE, SPC, DLNR-F	TBD, USFS, State Gov, SPC
	Support the establishment of a national IAS coordination office	2017	coordinator hired	IS stakeholders and partners	
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented	Training needs assessment conducted to determine gaps in existing IS knowledge capacity for field staff at line agencies and partners	2016 onwards	annual needs analysis reports; likely areas that need addressed include: species id, sample collection, reporting, control and monitoring techniques, risk assessment, early detection and rapid response	Line agencies and partners, SPC, SPREP	TBD
	Address gaps in existing IS knowledge capacity	Training provided for new staff and existing staff at appropriate intervals	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Promote training programs and develop new ones to cover important aspects of invasive species management process, from planning and fundraising to demonstration of advance skills i.e. those identified in the needs analysis	following needs analysis development	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Develop and deliver training programs on IS detection, containment, reporting and response to front line staffs at ports including line agencies and private enterprises including port personnel, stevedores, airline staffs and line agency staffs	Program developed and delivered to staff at all ports of entry by 2016 (such a program has been provided in the past via US DOI)	Training materials developed and annual reports detailing the staff who received training	Line agencies and partners, SPC, SPREP	GEF
	Training of Community Conservation Officers (CCOs) on invasive species identification and basic control	annual CCO training	Training reports	CSP, CCO, MG, CRE, NRCS, OEA-Ag, OFA, DNLR-F, PFA, EPA	CSP, State Govt.
	Develop and provide IS training for school teachers	2017	Teachers supplied with IS training and materials to support their teaching on the topic in schools	iSTOP, DOE, CSP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Provide training on safe use and handling of herbicides and pesticides to end users	Training courses provided as needed	Training reports	EPA, CRE, NRCS, CSP, PWC, OEA-Ag, PFA, COM	USFS, In Kind, FAO
Maintain good ties with local & regional partners	Ensure regular meetings between local partners	Schedule and hold at least 2 meetings annually		iSTOP	
	Provide progress reports on IAS to RISC	Annually prior to winter MCES	annually	iSTOP	
	Assist and promote regional and sub-regional cooperative initiatives for invasive species management	On-going		IS stakeholders and partners	
Maintain a system of technical advice and support	iSTOP members participate in regional trainings, conferences and meetings	At least one iSTOP member attends regional or national meeting or training	annual (more frequently if feasible)	iSTOP Chairman	SPREP, SPC, FSM-RD, USFS, PILN, Other Sources TBD
	Ensure that iSTOP is meeting regularly	Quarterly meetings are scheduled, stakeholders are notified, and meetings are held; meeting minutes are recorded	summary reports for all meetings are produced and shared with stakeholders	iSTOP	In Kind
Develop Pohnpei State IS db to record management activities and other data	Develop state IS db	db should be functional by 2018	database completed	Line agencies and partners, SPC, SPREP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop Pohnpei State IS db to record management activities and other data (continued)	Ensure IS data is input into state IS db	start 2018; on-going from that point	data is input into db	Line agencies and partners, SPC, SPREP	
	disseminate report on db progress and IS issues to stakeholders possibly via an appropriate website (such as a RISC website, if and when it is established)	September annually	Annual report	iSTOP, RISC	
	Establish who will update the db and ensure that it is updated regularly	2017	Develop data sharing and entry protocols; determine who will maintain db (likely the state IS coordinator)	Line agencies and partners, SPC, SPREP	
	Provide stakeholder access to db once established	2018	db available and data input started		
A3. Legislation, Policy and Protocols					
Outcome 1:3 Appropriate legislation, policy, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Support the establishment of the FSM Biosecurity Act	Seek congressional endorsement of existing biosecurity bill	Biosecurity legislation passed by end of 2015	Biosecurity legislation in place		
Continue with current IS coordination efforts supported by USFS	Seek follow-up funding to continue with state IS forestry coordinator position	2015	submit granting request	Agriculture	USFS

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Promote existing policies, regulations, protocols, and laws concerning the management of island resources and IAS issues	develop and distribute a regulation booklet based on existing IAS related laws and regulations	2016		Quarantine, Agriculture	
Carry out mid-term review of NISSAP and develop the next strategy	review of the NISSAP in 2018	Review completed in 2018	Review report received and recommendations acted on		
	Develop a revised NISSAP for 2022-2027	Process to develop new NISSAP undertaken in 2021			
Improve leadership support for IS prevention and management	Conduct yearly IAS awareness seminar for policy makers and partners	Annual Fall seminar	Increased ability of policy makers to make informed decisions regarding IAS	iSTOP	In Kind
	Encourage and promote IAS prevention and management inclusion in state budget planning	on-going	increased resources allocated to IAS prevention and management	iSTOP	In Kind
	Review and update SAP	annual	Annually updated planning document	iSTOP	In Kind
	Increased awareness of the iSTOP SAP, NISSAP, RISC and RBP at all levels of State and National Gov and with traditional and community leaders, etc.	annual	Updated SAP distributed to all levels of State and National Gov as well as other stakeholders	iSTOP	CEPF-CSP, USFS

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Improve leadership support for IS prevention and management (continued)	Support the enactment of IS related legislation and/or executive orders	on-going	Enacted regulations supporting IAS prevention and management	iSTOP, OEA-Ag, OFA, DLNR-F, PWC, EPA, PWC, AG office, CSP, FSM-RD	
	Coordinate with law enforcement in regards to compliance with IS regulations	on-going	Improved ability to conduct and coordinate IAS prevention and management activities on both public and private lands	iSTOP Members, AG, TNC, PWC, PSFW, CSP, MG	
Strengthen ability to address IS concerns	Develop guidelines and regulations for line agencies so that it is clear what their roles are (what they can and can not do)	2017	Guidelines produced for each line agency and disseminated accordingly		
	review existing control plan with leadership to see if it is adequate and if not, update appropriate to support roles of line agencies	2016	Report on review, move forward with updating if needed		
	Develop state law specifically addressing IS, their prevention and management	2018	Bill drafted 2017, reviewed in 2018, adopted by end of 2018		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen ability to address IS concerns (continued)	Establish regulations protecting Mountain Starling	2018	Draft regulations developed in 2017; Regulation considered for adoption in 2018; Regulation in place by end of 2018		
	Establish regulations protecting endemic snails	2018	Draft regulations developed in 2017; Regulation considered for adoption in 2018; Regulation in place by end of 2018		
	Endorse BTS response plan	2016	Endorse plan and update regularly		
	Endorse CRB response plan	2016	Endorse plan and update regularly		
	Develop ERP for marine systems	2016	Develop and endorse plan and update regularly		
	Develop ERP for freshwater systems	2016	Develop and endorse plan and update regularly		
	review existing PA management plans and incorporate biosecurity and IS management elements if lacking	2016	Biosecurity and IS covered in existing PA management plans		
	Review existing watershed stewardship plans and incorporate biosecurity and IS management elements if lacking	2016	Biosecurity and IS covered in existing watershed stewardship plans		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen ability to address IS concerns (continued)	Ensure that any new (either currently in development or in the future) PA plans include biosecurity and IS elements	On-going	Biosecurity and IS covered in any new PA plans		
	Ensure that any new (either currently in development or in the future) watershed stewardship plans include biosecurity and IS elements	On-going	Biosecurity and IS covered in any new watershed stewardship plans		
	State needs a clear avenue for requesting and receiving funding from the national government in regards to IS management	2020	Develop mechanism for receipt of national government funding support to address IS issues	IS stakeholders, State leadership, National Gov	
Ensure legal authority for prevention and management of IAS	iSTOP maintains an invasive species control plan which authorizes activities	on-going	Control plan updated and endorsed as needed	iSTOP Members, AG, OEA-Ag, TNC, EPA, OFA, FW, CSP, FSM-RD	State Gov.

Thematic Area B: Problem Definition, Prioritization and Decision Making

B1. Baseline and Monitoring

Outcome 2.1: Systems are in place to generate baseline information on the status and distribution of invasive species and to detect changes and emerging impacts

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthening baseline determination and monitoring of existing IS activities and action items	Develop/improve IS baseline and monitoring activities	on-going			
	Monitoring of action (or lack there of) with addressing action items in the NISSAP	Annually	Annual report on status of action items	FSM R&D, state partners	
	Monitoring of action (or lack there of) with addressing action items in the RBP	Annually	Annual report on status of action items	FSM R&D, state partners	

B2. Prioritization

Outcome 2.2: Effect systems are established to assess risk and prioritize invasive species for management

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Priority actions identified	Prioritize IS actions	2016	A prioritized lists actions with well defined parameters	iSTOP, State IS Coordinator, Quarantine	
Priority established IS species identified	Develop and keep updated list of priority species established in Pohnpei	existing and should be updated as needed	existing list of priority species	iSTOP, State IS Coordinator, FSM Quarantine	existing resources

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Priority IAS which threaten Pohnpei identified	Develop and keep updated list of priority species which threaten Pohnpei with establishment	existing and should be updated as needed	existing list of priority species	iSTOP, State IS Coordinator, FSM Quarantine	existing resources
B3. Research on Priorities					
Outcome 2.3: Improve understand of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Design and adopt decision making tools for invasive management planning	Introduce IPM concept to local managers and support its use across sectors	Annual workshop to support IPM understanding, use and coordination	Workshops held	Agriculture	
Improve techniques for monitoring the spread of invasive species within the state	Conduct quarterly monitoring of and collect field data on priority IAS species	Quarterly	Reports on monitoring and data collected	CSP	
	Update IAS range maps	Annually	Updated maps	CSP	
	Provide annual report on priority species to working partners and local leaders	Annually in October	Annual update reports produced and disseminated	CSP	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state)	Develop strategy	Completed 3-5 year strategy by December 2016	Strategy developed	iSTOP, College of Micronesia, external partners such as universities	
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state) (continued)	Contact and request support from existing and potential external partners such as universities	2016		State IAS Coordinator	
	Conduct informal interviews regarding IAS in each community	annually		iSTOP, College of Micronesia	
	Conduct field research on priority IAS species	annual report per project		Agriculture, CSP	
	Update research strategy	every 3-5 years as determined by strategy		iSTOP, College of Micronesia	

Thematic Area C: Management Action

C1. Biosecurity

Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between states and within states

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors	Review permits (import/export) when necessary	At all time		Quarantine	
	create inspection manual for iSTOP members (and other line agencies) to assist Quarantine office	2016		Quarantine	
	Promote the development and implementation of stronger international export standards regarding IAS			RISC, State ISC	
	Conduct risk assessments for proposed national and/or internal state movements of species and for the movement of goods that may harbor IAS	As warranted by national regulations		Quarantine	
	Review and modify as needed existing border controls, transport controls and quarantine systems	2016		Quarantine	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors (continued)	Hold, reject, or confiscate items/permit applications without proper certificates or documents	As warranted by national regulations		Quarantine	
	Clearly visible amnesty bins at both arrival and departure airport lounges	2016	amnesty bins in place	iSTOP, Quarantine	
	Awareness materials posted with amnesty bins explaining their purpose and the need to prevent transport of potentially harmful organisms	2016	Amnesty awareness materials produced and placed with bins	iSTOP, Quarantine	
	Amnesty bins sanitized immediately after each flight and contents destroyed	2016	Develop standard protocol for cleaning bins and destroying content (content should be destroyed immediate and at the port to reduce potential for escapes)	iSTOP, Quarantine	
Review existing detection and response mechanisms	Complete an overview report with suggestions for improvement	2016		iSTOP	
Establish and maintain an effective IAS incursion detection and response system	Implement adequate surveillance systems at island entry points	monthly surveillance review at all official ports of entry		Quarantine	
	Secure funding to support response actions				

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Establish and maintain an effective IAS incursion detection and response system (continued)	Develop generic emergency response plan for IAS incursions	Draft plan in place by September 2016; Endorsed by leadership by December 2016		iSTOP	
	Technical workshop to train core response team members in aspects of a response action	Completed by February 2017		iSTOP	
	Workshop(s) for response action community support	annually		iSTOP	
	Awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions	Campaign underway by January 2017		iSTOP	
	Coordinate with national, regional, and international response support mechanisms	on-going		State IAS Coordinator	
Provide response in the event of a newly found species	Identify and determine level of invasiveness of the species in question	Species identified and invasiveness determined	on-going	OEA-Ag, FSM RD, AG, CSP, CRE, UOG, OFA, SPC, DNLR-F, PII, PILN, NRCS, RISC	In Kind

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Provide response in the event of a newly found species (continued)	Develop and implement response plan (tweaking existing ERP as needed to best suite species in question and available resources)	Potential eradication of new incursion or minimally control spread (if feasible)	Immediate		
		Determine appropriate role(s) for community members	on-going	CSP, CCO, CRE, NRCS, OFA, OEA-Ag, PWC, FSM-RD, AG	USFS
		Develop awareness messages and mechanisms	on-going	CSP, CCO, CRE, NRCS, OFA, OEA-Ag, PWC, FSM-RD, AG	USFS
	Determine the distribution of species in question	Survey conducted and sites identified	on-going	OEA-Ag, OFA, CSP, PFA, FSM-RD, CRE, DNLR-F, NRCS	USFS
	Develop longer term management plan (if required)	Control method determined and implemented; outreach materials distributed; public support incorporated	on-going	OEA-Ag, OFA, AG, PII, CSP, FSM-RD, CRE, PFA, NRCS, DNLR-F, EPA	USFS
	Follow-up visits to sites and apply control mechanisms as needed	Follow-up visits conducted and controls applied as needed	on-going	CSP, CCO, DNLR-F, PFA, CRE, NRCS, EPA, OFA, OEA-Ag, AG	USFS

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Provide response in the event of a newly found species (continued)	Develop database and distribution maps	database kept current	on-going	CSP, OEA-Ag, DLNR, NRCS, CRE	USFS
C2. Management of established invasive species					
Outcome 3.2: the impacts of priority established invasive species are eliminated or reduced					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Design and apply best practice standards based on latest information	Apply IPM concept to control priority IAS			Agriculture	
	assist farmers with IPM techniques to control other invasive species found in their respective farm sites			Agriculture	
Eradicate targeted priority species	Initial control applied	on-going	Reports on initial field action for each species targeted	CSP, OEA-Ag, CCO, DNLR-F, PFA, CRE, NRCS	CSP, DLNR-In Kind, USFS-cash, GEF, SPC
	Follow-up visits to known sites and re-apply control where necessary	on-going	Reports on follow-up visits and control actions	CSP, OEA-Ag, CCO, DLNR-F, PFA, CRE, NRCS	CSP, USFS, SPC
Ensure management of targeted priority species	Develop protocol for each species to be targeted for management	On-going	Protocol developed for each species	CSP, OFA, OEA-Ag, UH, UOG, NRCS, USFS, CRE, FSM-RD	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Ensure management of targeted priority species (continued)	Develop management plan for each targeted species	On-going	Management plan for each species	OFA, OEA-Ag, CSP, CCO's, PFA,MG, iSTOP, CRE, communities	CSP, NRCS-In Kind, DLNR-F, JICA-In Kind, USFS, GEF
	Implement control measures for each targeted species	On-going	Reports on implementation of control measures for each species	CSP, OFA, OEA-Ag, PFA, CCO's, DNLR-F, CRE, NRCS, communities	CSP, NRCS-In Kind, DLNR-F, JICA-In Kind, USFS, GEF
	Monitor progress, evaluate, and make adjustments as needed	On-going	Annual reports produced on activities related to each species; reduction in spread and numbers of each species	CSP, OFA, OEA-Ag, CRE, DNLR-F, NRCS	CSP, NRCS-In Kind, DLNR-F, JICA-In Kind, USFS, GEF
Address established invasive tree sparrow	Develop control plan for the Tree Sparrow	2018	Control methods identified and plan completed	CSP, OEA-Ag, CRE, FSM-RD, CCO, FW, DNLR-F, MG	SPC, GEF, SPREP, In Kind
	Implement control measures	2018	control measures implemented	CSP, OEA-Ag, CRE, FSM-RD, CCO, FW, DNLR-F, MG	SPC, GEF, SPREP, In Kind
	Monitoring, evaluation, and updated of plan as needed to improve control efforts	annual	Update reports on management/eradication efforts	CSP, OEA-Ag, CRE, FSM-RD, CCO, FW, DNLR-F, MG	SPC, GEF, SPREP, In Kind
Address non-native flatworm	Develop management strategy to address non-native flatworm	2017	Strategy developed		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Address non-native flatworm (continued)	Implement fieldwork to address non-native flatwork	2018	field efforts underway		
	Monitoring, evaluation, adjustment as needed to field methods and reporting	On-going from start of field efforts	Annual report on activities		
C3. Restoration					
Outcome 3.3: Following invasive species management best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Ensure that all invasive species management projects are accompanied and followed by long term monitoring and evaluation of outcomes	Develop and carry out (3) restoration projects within local communities			iSTOP, CSP	

12.0 YAP ACTION PLAN

Thematic Area A: Foundations

A1. Generating Support

Outcome 1:1 The impacts of priority invasive species on biodiversity, economies, livelihoods and health, are widely understood and actions to manage and reduce them are supported

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Determine level of IAS awareness for all sectors	Conduct preliminary surveys to determine current awareness levels	2017		YIST	GEF
	Conduct periodic surveys to gauge IAS awareness profile for all sectors of society	Every 1 to 2 years		DAF, COM-FSM	GEF
Raise awareness of IS, their impacts and management efforts	Identify priority messages for outreach materials	develop in 2016	draft messages developed for outreach materials	YIST, COM-FSM	TBD
	Prepare awareness material on priority species	Awareness material produced and distributed in 2016	Awareness material & record of distribution	YIST, COM-FSM	SPC
	Produce Farmer's Pocket Guide on invasive species	Production in 2nd half of 2016	Pocket Guide and record of its distribution	Agriculture, FAO	FAO
	Conduct awareness through radio programs	2-3 programs a year	Annual record of programs delivered	YIST	GEF
	Assistance RISC with development of regional transportation IAS awareness video	2017		YIST, State ISC	GEF
	Produce documentary DVD	Produce in 2017	DVD, record of its distribution and play time on local TV	YIST	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Visit high school to raise awareness of IS and their impacts	Visit high school – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	YIST, COM-FSM	GEF
	Visit primary schools to raise awareness of IS and their impacts	Visit primary schools – 2nd quarter 2015, 1st ¼ 2016 & 2017 – and by request	Annual records of school visits, including classes visited and number of students in attendance	YIST, COM-FSM	GEF
	Develop IAS presentations	schools and communities	Minimally 3 IAS presentations tailored for: primary schools, high school and general community groups	YIST, COM-FSM	GEF
	Start IAS club at high school	Young people	Find and train club facilitator, establish club, records of club meetings, attendance and activities	YIST, COM-FSM	GEF
	Training IAS club members to give IAS presentations	Young people	records of student lead presentations to schools and community groups	YIST, COM-FSM	GEF
	IAS club field activities	Young people and general community	records of students involved in field activities, types of activities undertaken and results of field effort	YIST, COM-FSM	GEF
	Organize media campaign	Campaign in last ¼ each year including 1 talkback radio program, 1 provincial radio program, and newspaper articles	Annual report on campaign activities and copies of information produced.	YIST, COM-FSM	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Raise awareness of IS, their impacts and management efforts (continued)	Develop poster on economic impact of IAS – aimed at raising community awareness so individuals prioritize the issue	Produce in 2017	Poster & record of distribution	YIST, COM-FSM	Fund required
	Distribute marine IS material to all involved in marine activities (tourism operators, Marine Protected Area committees, coastal communities)	2017	Production of materials and distribution	Marine Resources, YIST	
	Assist and promote regional and sub-regional cooperative initiatives for invasive species management	On-going		IS stakeholders and partners	
Improve IAS awareness and support of YIST activities	Create and provide public educational/ awareness materials on the context of invasive species (i.e. Publications, Radio, CB Radio, clubs, theme competitions, community and school visits)	on-going	Maintain records of awareness materials developed and outreach activities conducted including groups/communities addressed and numbers of individuals participating in activities	YIST/ SPC PILN (SPREP) USFS YINS YapCAP DOE R&D HPO COM-FSM Public Safety	
Demonstrate the potential economic costs of specific invasive species	Present (1) analysis and results to state and national leadership	2017	Annual report on status of priority IAS that threaten the state	YIST	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Demonstrate the economic cost of already established invasive species	Present (1) progress report to proper sectors and outside partners & experts	2017	Annual report on status of existing IAS and their associated impacts and management costs	YIST	GEF
Secure funding for IAS prevention and management activities	Develop specific project proposals	annually	submission of project proposals for funding considerations	YIST USFS SPC PILN DAF R&D MRMD	
	Submit budget proposal	annually in January	Complete budget proposal write-up and submission and meet with budget review committee	YIST USFS SPC PILN DAF R&D MRMD	
Improve stakeholder buy-in at the local/community level	Seek input from resource owners during project planning phases and advise them of YIST activities	on-going	Improved support and collaborate from resource owners with YIST and YIST activities	Public Health Yap EPA COT COP Queens University	
	All (100%) of traditional leaders and communities within the state will be provided with a list of target invasive species	2016	Development of appropriate IAS lists and associated awareness materials	Public Health Yap EPA COT COP Queens University	
		2017	Awareness materials distributed to traditional leadership and all communities, including outer islands of the state	Public Health Yap EPA COT COP Queens University	

A2. Building Capacity					
Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to management invasive species effectively are developed					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen IS management and biosecurity efforts via full time IS coordination at state, national and regional levels	Secure long term funding for a state invasive species coordination office. IS coordination roles is to serve as the state level focal point for IS issues and work across departments/sectors as well as with national and international counterparts	2019	Long term, statewide coordination programs established, funded and staffed	IS stakeholders and partners	
	Support the establishment of a national IS coordination office	2017	coordinator hired	IS stakeholders and partners	
	Support the establishment of a regional IS coordination office	2017	coordinator hired	IS stakeholders and partners	
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented	Training needs assessment conducted to determine gaps in existing IS knowledge capacity for field staff at line agencies and partners	2016 onwards	annual needs analysis reports; likely areas that need addressed include: species id, sample collection, reporting, control and monitoring techniques, risk assessment, early detection and rapid response	Line agencies and partners, SPC, SPREP	TBD

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Training/capacity needs are identified and training programs for key IS management issues are developed and implemented (continued)	Address gaps in existing IS knowledge capacity	Training provided for new staff and existing staff at appropriate intervals	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
	Promote training programs and develop new ones to cover important aspects of invasive species management process, from planning and fundraising to demonstration of advance skills i.e. those identified in the needs analysis	following needs analysis development	Record of training provided	Line agencies and partners, SPC, SPREP	SPC, SPREP, Others
Design and implement community workshops to counter invasive threats	Conduct workshops for farmers and general public on IPM	Stakeholder IPM workshops	Workshops provided	Agriculture, COM-FSM	GEF
Maintain good ties with local & regional partners	Ensure regular meetings between local partners	Schedule and hold at least 2 meetings annually		YIST	GEF
	Provide progress reports on IAS to RISC	Annually prior to winter MCES	annually	YIST	GEF
Maintain a system of technical advice and support	Ensure that YIST is meeting regularly	Quarterly meetings are scheduled, stakeholders are notified, and meetings are held; meeting minutes are recorded	summary reports for all meetings are produced and shared with stakeholders	YIST	Fund required
	Involve partners in training events and meetings			YIST	Fund required

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Maintain a system of technical advice and support (continued)	Support as appropriate goals of the Regional Biosecurity Plan (RBP), Micronesia Challenge, RISC, National IS Strategy (NISSAP) etc. during outreach events			YIST, Agriculture, Marine Resources, Quarantine	Fund required
Develop Yap State IS db to record management activities and other data	Develop state IS db	db should be functional by 2018	database completed	Line agencies and partners, SPC, SPREP	
	Ensure IS data is input into state IS db	start 2018; on-going from that point	data is input into db	Line agencies and partners, SPC, SPREP	
	disseminate report on db progress and IS issues to stakeholders possibly via an appropriate website (such as a RISC website, if and when it is established)	September annually	Annual report	YIST, RISC	
	Establish who will update the db and ensure that it is updated regularly	2017	Develop data sharing and entry protocols; determine who will maintain db (likely the state IS coordinator)	Line agencies and partners, SPC, SPREP	
	Provide stakeholder access to db once established	2018	db available and data input started		
Identify needs and build capacity for effective prevention, control, and eradication of invasive species	Determine staffing needs	2016	Needs assessment report for personnel	YIST/ SPC PILN Health Yap EPA COT COP Queens University	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
identify needs and build capacity for effective prevention, control, and eradication of invasive species (continued)	Determine funding needs to support staff	2016	Report on funding needs	YIST/ SPC PILN Health Yap EPA COT COP Queens University	
	Secure funding to support staff	2017	Develop proposals, submit and secure funds	YIST/ SPC PILN Health Yap EPA COT COP Queens University	
	Hire needed staff	2018	Needed positions advertised and positions filled	YIST/ SPC PILN Health Yap EPA COT COP Queens University	GEF
	Train and develop capacity of existing and new staff	2016	Training needs determined (and updated as needed)	YIST/ SPC PILN Health Yap EPA COT COP Queens University	GEF
	Develop training schedule	2016	Multi-year training matrix with time table and activities for staff in place	YIST/ SPC PILN Health Yap EPA COT COP Queens University	GEF
	Attend trainings	on-going, minimally 2 trainings attended per year by at least some staff	certification of participants	YIST/ SPC PILN Health Yap EPA COT COP Queens University	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Increase coordination between implementing agencies as well as other partners	Ensure all partners are identified and received regular updates	on-going	Establish list of POCs for all pertinent partner groups and ensure that list is kept update; Ensure that YIST secretary has and utilized updated POC list	YIST/ SPC PILN (SPREP) USFS YINS YapCAP DOE R&D HPO COM-FSM Public Safety Public Health Yap EPA COT COP	GEF
	Develop MOU's between implementing agencies and/or update existing ones	2017	endorsed MOU's	YIST/ SPC PILN (SPREP) USFS YINS YapCAP DOE R&D HPO COM-FSM Public Safety Public Health Yap EPA COT COP	GEF
	Identify roles of implementing agencies	2017	1 pager developed and shared (update as needed)	YIST/ SPC PILN (SPREP) USFS YINS YapCAP DOE R&D HPO COM-FSM Public Safety Public Health Yap EPA COT COP	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Increase coordination between implementing agencies as well as other partners (continued)	Identify roles (or potential roles) of partners	2017	1 pager developed and shared (update as needed)	YIST/ SPC PILN (SPREP) USFS YINS YapCAP DOE R&D HPO COM-FSM Public Safety Public Health Yap EPA COT COP	GEF
A3. Legislation, Policy and Protocols					
Outcome 1:3 Appropriate legislation, policy, protocols and procedures are in place and operating, to underpin the effective management of invasive species					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Support the establishment of the FSM Biosecurity Act	Seek congressional endorsement of existing biosecurity bill	Biosecurity legislation passed by end of 2015	Biosecurity legislation in place		
Promote existing policies, regulations, protocols, and laws concerning the management of island resources and IAS issues	develop and distribute a regulation booklet based on existing IAS related laws and regulations	2016		Quarantine	
Carry out mid-term review of NISSAP and develop the next strategy	review of the NISSAP in 2018	Review completed in 2018	Review report received and recommendations acted on		
	Develop a revised NISSAP for 2022-2027	Process to develop new NISSAP undertaken in 2021			

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthen biosecurity and IS management	Update and resubmit ERPs (CRB and BTS) for leadership approval	2016	Draft ERPs submitted	Agriculture	
	Incorporate IS management and biosecurity in the Forest Stewardship Plan for Weloy Community	2016	Biosecurity and IS sections incorporated into plan	YIST, Weloy community	
	Ensure that biosecurity and IS management are part of resource protection plans as they are developed	On-going	Biosecurity and IS sections incorporated into plans	YIST, communities	

Thematic Area B: Problem Definition, Prioritization and Decision Making

B1. Baseline and Monitoring

Outcome 2.1: Systems are in place to generate baseline information on the status and distribution of invasive species and to detect changes and emerging impacts

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthening baseline determination and monitoring of existing IS activities and action items	Develop/improve IS baseline and monitoring activities	on-going			
	Monitoring of action (or lack there of) with addressing action items in the NISSAP	Annually	Annual report on status of action items	FSM R&D, state partners	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Strengthening baseline determination and monitoring of existing IS activities and action items (continued)	Monitoring of action (or lack there of) with addressing action items in the RBP	Annually	Annual report on status of action items	FSM R&D, state partners	
B2. Prioritization					
Outcome 2.2: Effect systems are established to assess risk and prioritize invasive species for management					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Priority established IS species identified	Develop and keep updated list of priority species established in Yap	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources
Priority IAS which threaten Yap identified	Develop and keep updated list of priority species which threaten Yap with establishment	existing and should be updated as needed	existing list of priority species	quarantine, state agr offices, relevant NGOs	existing resources
Priority actions identified	Prioritize IS actions	2016	A prioritized lists actions with well defined parameters	YIST and other stakeholders	
Prioritize areas for invasive species management	Develop a matrix for prioritization	2016	Matrix developed		
	Create priority list	2016	Priority list developed		

B3. Research on Priorities					
Outcome 2.3: Improve understand of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Design and adopt decision making tools for invasive management planning	Introduce IPM concept to local managers and support its use across sectors	Annual workshop to support IPM understanding, use and coordination		Agriculture	GEF
Improve techniques for monitoring the spread of invasive species within the state	Conduct quarterly monitoring of and collect field data on priority IAS species (Mikania, Citrus canker, Giant African snail, others as needed)	Quarterly		Agriculture	GEF
	Update IAS range maps	Annually		Agriculture	
	Provide annual report on priority species to working partners and local leaders	Annually in October		YIST	GEF
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state)	Develop strategy	2017		YIST, College of Micronesia, external partners such as universities	
	Contact and request support from existing and potential external partners such as universities	2016		State IAS Coordinator	
	Conduct informal interviews regarding IAS in each community	annually		YIST	GEF

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement state IAS research strategy (to support the investigation of biology and impacts of IAS established within the state) (continued)	Conduct field research on priority IAS species	annual report per project		Research leads for each project initiated	
	Update research strategy	every 3-5 years as determined by strategy		YIST, College of Micronesia	
Support biocontrol research	Contribute and participate in biological control research for agents for Merremia, lantana, bronze leaved clerodendrum	On-going	Increased ability to utilize biocontrols for specific IS	IS stakeholders and partners	
Address concerns with Singapore daisy and Bokso	Conduct a feasibility study for Singapore daisy and Bokso (*Pennisetum* purpureum)	2017	feasibility study for both species completed and additional actions identified		
Identify methods available for rodent management and/or eradication efforts	Review the use of rodenticides, their availability and safety	2016	Status report on rodenticide use, availability and safety	FSM-COM, EPA	

Thematic Area C: Management Action

C1. Biosecurity

Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between states and within states

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Review existing detection and response mechanisms	Complete an overview report with suggestions for improvement	2016	Overview report produced including Gap analysis and needs assessment	YIST, Quarantine	GEF
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors	Review permits (import/export) when necessary	At all time		Quarantine	
	create inspection manual for YIST members to assist Quarantine	2016		Quarantine	
	Promote the development and implementation of stronger international export standards regarding IAS			RISC, State ISC	
	Conduct risk assessments for proposed national and/or internal state movements of species and for the movement of goods that may harbor IAS	As warranted by national regulations		Quarantine	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Develop and implement improved inspection, treatment, packing and transportation procedures and methods, for goods and transport vectors (continued)	Review and modify as needed existing border controls, transport controls and quarantine systems	2016		Quarantine	
	Hold, reject, or confiscate items/permit applications without proper certificates or documents	As warranted by national regulations		Quarantine	
Address need for outer island biosecurity	Conduct needs assessment for outer island biosecurity: what is being moved, to where, how frequently and by what are the pathways and vectors	2017	Needs assessment report completed	communities, YIST, Quarantine	
	Hold workshops to determine potential options for outer island biosecurity and select pathway forward	2018	Workshop held, input provided, solutions determined	communities, YIST, Quarantine	
	Develop biosecurity elements for outer islands ports and anchorages	2019	Biosecurity for outer islands planned and protocols established	communities, YIST, Quarantine	
	Implement biosecurity for outer islands	2020	Outer island biosecurity in place	communities, YIST, Quarantine	
Establish and maintain an effective IAS incursion detection and response system	Implement adequate surveillance systems at island entry points	monthly surveillance review at all official ports of entry		Quarantine	

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Establish and maintain an effective IAS incursion detection and response system (continued)	Secure funding to support response actions				
	Develop generic emergency response plan for IAS incursions	Draft plan in place by September 2016; Endorsed by leadership by December 2016		YIST	GEF
	Technical workshop to train core response team members in aspects of a response action	Completed by February 2017		YIST	GEF
	Workshop(s) for response action community support	annually		YIST	GEF
	Awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions	Campaign underway by January 2017		YIST	GEF
	Coordinate with national, regional, and international response support mechanisms	on-going		State IAS Coordinator	

C2. Management of established invasive species					
Outcome 3.2: the impacts of priority established invasive species are eliminated or reduced					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Eradication of Imperata grass, chain of love, African tulip, Honolulu rose and Singapore daisy if feasible	Continue on with current program and add Singapore daisy to program if feasibility study suggests this is realistic	On-going	Annual reports, feasibility studies, reduced presence of these species	YIST	GEF
Manage Mikania, Merremia, lantana, bronze leaved clerodendrum in priority areas	Develop management strategies for each species	2016	Species specific management strategies developed	YIST	GEF
	Implement management strategies	2017	Strategies implement and annual reports produced	YIST	GEF
Utilize biocontrol for Mikania, lantana, giant sensitive plant	Continue on with current programs on these weeds	On-going	Annual reports on management actions taken and eventual reduction in presence of these species	YIST	GEF
Priority areas are managed for invasive species.	Community land owners implement invasive species management included in forest stewardship plans in priority areas	2016 and there after	annual reports on management actions provided by forest stewards	YIST	GEF
Address Tilapia concerns	Assess the impacts of established Tilapia	2017	Impact assessment		
	Develop a Tilapia management strategy (including awareness program)	2018	Management strategy		

Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Address Tilapia concerns (continued)	Implement Tilapia management strategy	2019	Annual reports on actions		
Design and apply best practice standards based on latest information	Apply IPM concept to control of priority IAS			Agriculture	GEF
	Continue with mango fruit fly control operations state wide including outer islands			YIST, Quarantine	GEF
	assist farmers with IPM techniques to control other invasive species found in their respective farm sites			Agriculture	GEF
C3. Restoration					
Outcome 3.3: Following invasive species management best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values					
Outcomes and Actions	Activities	Target	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding
Ensure that all invasive species management projects are accompanied and followed by long term monitoring and evaluation of outcomes	Develop and carry out (3) restoration projects within local communities			YIST	

13.0 Monitoring and Evaluation

The FSM Department of Resources and Development has the role of coordinating the monitoring and evaluation of the NISSAP. The actual monitoring and evaluation will likely be shared in part by line agencies at both national and state levels with support from state invasive species coordinators, a potential national invasive species coordinator and ideally a regional invasive species coordination office. At this time, neither national nor regional coordination offices exist but they could as there is significant need and interest in developing these roles. Stakeholders supported development of these offices under the RBP and these needs are again put forth in the NISSAP, specifically a regional office which could support invasive species actions within and between various countries such as the FSM, Marshall Islands and Nauru.

The FSM National Government is responsible for the implementation of this strategy with support from the States specifically in regards to state action components. State and National stakeholders have proposed to conduct a mid-term review of activities in the respective NISSAP action plans with support from SPREP and SPC. Similarly a final review and updating of the NISSAP has been proposed for 2020 or 2021 to coincide with the 5 year cyclic nature of the NISSAP (the current NISSAP has been developed as a 5 year strategy covering 2016 -2021). Specific actions that are part of donor-funded projects will also involve monitoring as part of those projects' reporting requirements. These details will be worked as specific projects are developed, funded and implemented.

Table 1 - Yap State Environmental Laws

	Section	Title	Offense	Enforced By	Penalty	Summary
1.	§212	18	Prohibited acts – Fisheries Zone	Police, YFA. EPA is also authorized to enforce §212(c) (regarding holding tanks).	Civil penalties up to $75,000 (note that half of this goes to the municipality in whose boundary the violation occurred. Criminal Penalties of up to $250,000, depending on which offense.	It is an offense to: • use any fishing vessel to engage in fishing after revocation, or during the period of suspension, of an applicable permit issued pursuant the fisheries chapter; • violate any provision of a foreign fishing agreement • refuse entry of an officer authorized to enforce the fisheries chapter; • knowingly ship, transport, offer for sale, sell, purchase, import, to have custody, control or possession of any fish taken or retained in violation of the fisheries chapter. • for any foreign fishing vessel to engage in fishing in the State Fishery Zone or internal waters unless such fishing is authorized by a permit. • for any vessel with living quarters which are also used while the vessel is in port to enter the State Fishery Zone or internal waters with-out a waste holding tank of at least two weeks capacity.
2.	§401	18	Petroleum disposal; acts unlawful.	Public Safety	Imprisoned for not more than sixty days or be fined not more than $25,000, or both (11 YSC 805, 806)	This offense prohibits the release of petroleum into the ocean or lagoon.

	Section	Title	Offense	Enforced By	Penalty	Summary
3.	§402	18	Damage to reefs; acts unlawful.	Public Safety	Imprisoned for not more than 60 days or fined not more than $250,000, or both (11 YSC 815)	This offense makes it illegal for a person to cause damage to a reef. The fine in this offense does not limit the owners of a damaged reef from seeking compensation in a civil action.
4.	§1001	18	Hunting season: wild pigeon.	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	It is illegal for a person to hunt wild pigeon, unless it is during the wild pigeon season from October 1 to December 31 each year.
5.	§1002	18	Sale of wild pigeon.	Public Safety	Fined not more than $500.00, or imprisoned for not more than 60 days, or both	The sale of wild pigeon is prohibited at all times.
6.	§1004	18	Protection of coconut crab.	Public Safety	Fined not more than $100.00, or imprisoned for not more than 30 days, or both	No coconut crabs whose shell is less than three inches in diameter measured at the base, can be taken or killed within the State. No coconut crabs, regardless of their size, can be taken or killed during their breeding season each year and from June 1st to September 30th. No person may sell any coconut crab commercially in a store.
7.	§ 1005	18	Protection of turtles.	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	It is an offense to sell turtle meat and turtle eggs commercially in a store.

	Section	Title	Offense	Enforced By	Penalty	Summary
8.	§1006.	18	Protection of clams	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	The Governor is authorized to declare a harvesting season and to set a size limit for the taking or harvesting of clams. Clam meat cannot be sold commercially in any store.
9.	§ 1008.	18	Prohibited fishing methods.	Public Safety	Fine of not less than $100 or more than $2,000, or imprisonment for not less than six months or more than two years, or both.	It is an offense for a person to knowingly catch any fish or other marine life by means of explosives, poisons, chemicals or other substances which kill fish or marine life. It is also an offense for any person to knowingly possess or sell any fish or other marine life caught by these prohibited means. This restriction does not apply if the Governor has given advance written permission to use the means prohibited, when determined to be in the public interest.
10.	§ 1009.	18	Protection of trochus	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	No person may harvest of interfere with the growth of trochus unless: (a) It is done during an open season as declared by the Governor; (b) It is done in strict accordance with all limits and conditions imposed by the Governor.
11.	§ 1010.	18	Protection of sharks, whales and dolphins		Fined no less than $50,000 and no more than $275,000 and/or imprisoned for no more than 10 years	Unlawful to take, possess, transport, trade, sell or consume any shark, whale or dolphin or part thereof. Hammerhead, Oceanic White Tip, Tiger and Whale sharks are declared endangered and other species may be added.

	Section	Title	Offense	Enforced By	Penalty	Summary
12.	§ 1011 (previous to 2013 was section 1010)	18	Protection of seeded or planted species.	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	No person can take any plant species which has been seeded or planted by or for the Government, unless the Governor has given express written permission authorizing the taking.
13.	§1012 (previous to 2013 was section 1011)	18	Temporary moratorium for protection of species.	Public Safety	Fined not more than $500, or imprisoned for not more than 60 days, or both	The Governor may declare a moratorium prohibiting the taking or harvesting of a marine species. No person can violate the terms of the moratorium.
14.	§1013 (previous to 2013 was section 1012)	18	Conservation and protection of sea cucumbers		Fined not more than $5000 and/or imprisoned for not more than 6 months	Establishing that there shall be no take or trade in sea cucumbers unless an open season is declared. Captive rearing and stockpiling of sea cucumbers are regulated activities.
15.	§ 1101.	18	Protection of fruit bats.	Public Safety	Fined not less than $50 and not more than $200 or imprisoned for not less than one month and not more than six months, or both.	No person may take, hunt, export, purchase, sell, or intentionally interfere with the population growth of, fruit bats, unless a person takes or hunts fruit bats during, and in strict accordance with the conditions of, an open season. No person may export, purchase or sell fruit bats at any time.

	Section	Title	Offense	Enforced By	Penalty	Summary
16.	§ 1509.	18	Environmental impact studies.	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation.	Persons must provide an EIS in their development proposals in accordance with this section, and with the EPA's EIA Regulations.
17.	§ 1512	18	Violations and enforcement.	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation.	A breach of any Title 18, Chapter 15 requirements, or of any EPA Regulations, is an offense. Specific offenses listed in this section include: (a) Any discharge of waste into the environment (b) Any discharge of pollutants into the environment.
18.	1609	18	Failing to pay a Recycling Deposit Fee	Public Safety	Ten dollars ($10.00), one (1) day imprisonment, or both, for each day	It is an offense to willfully refuse, neglect, or fail to pay a Recycling Deposit Fee.
19.	§301	21	Animals at Large in Villages	Public Safety	Unclear	No pigs, goats, sheep, horses, cattle, carabao or domestic animals other than dogs, fowl, and cats can be allowed to run loose or be at large in any public place. Dogs must have an identification tag.

	Section	Title	Offense	Enforced By	Penalty	Summary
20.	§305	21	Animals prohibited near residence	Public Safety	Unclear	No owner or occupant can keep any pigs, goats, sheep, horses, cattle, carabao or domestic animals other than dogs, fowl, and cats, within 50 feet of any building used for human habitation without written authorization from the State Sanitarian.
21.	§1206	18	Harming or killing a manta ray	Public Safety	5 months – 6 years imprisonment and / or $1,000 to $10,000 fine.	Chapter 12 establishes a Manta Ray Sanctuary, and states that R&D will promulgate regulations for the management of the Sanctuary. These regulations are currently being drafted.
22.	§1701	18	Plastic Bag	Public Safety		It is an offense for any retailer to distribute plastic grocery bags after the date of prohibition (exact date TBC – likely June 2014). Note that there is currently an amendment bill before Legislature for this chapter that will likely move the law to Title 18, §1701.
23.	§330	11	Littering	Public Safety	$15 - $500	No person may discard any biodegradable or non-biodegradable litter on any property (unless it is on their own property).
24.	§813	11	Junk Vehicles	Public Safety	$25 per day	Once a person has received a warning regarding a junk vehicle, a person will be guilty of littering if they leave a junk vehicle on any property (public or private) for more than 30 days after receiving that notice. This section provides a detailed description of what constitutes a 'junk car'.

Table 2 - Yap State Environmental Regulations

	Regulation Name	Enforced By	Penalty	Summary
1.	Yap State Recycling Program Regulations	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation.	These Regulations regulate the Yap State Recycling Program and places requirements on the Recycling Agent and importers. All importers are required to pay the Recycling Deposit for each item covered by the Regulations. The Recycling Agent has several responsibilities under these Regulations. These Regulations are currently being amended.
2.	Yap State Earth Moving Activities Regulations	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation.	These Regulations require individuals undertaking any earthmoving activities that involve the use of heavy machinery, or the movement of more than 10 cubic yards of soil/coral etc, or will result in the filling of wetlands or coastal waters, to obtain a permit from the EPA prior to commencing work. The person must comply with the terms and conditions of that permit. These Regulations are currently being amended.

	Regulation Name	Enforced By	Penalty	Summary
3.	Yap State Environmental Impact assessment Regulations	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation.	Any person undertaking any project, except for work on existing structures, basic research that does not disturb an environmental resource, interior alterations to an existing structure, or construction using exclusively traditional materials and techniques, is required to prepare a Preliminary Environmental Impact Statement and submit it to the EPA prior to commencing any work. If the EPA Board determines from the Preliminary Environmental Impact Statement that the project may have a significant environmental impact, then they will notify the proponent and require the proponent to prepare a draft EIS, and then a final EIS before undertaking any work. Non compliance with any conditions of an approval, failing to obtain a PEIS or, where required, a final EIS before commencing work, or undertaking any work outside the scope of an approved PEIS or Final EIS, is illegal. The EPA will issue a Cease and Desist Order in any such scenario, and the proponent may be prosecuted, or have their approval revoked. These Regulations are currently being amended.
4.	Yap State Pesticide Regulations	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation	These Regulations create the following requirements which, when breached, constitute an offense: - Prohibition on experimental pesticides - Registration and certification of any person who applies pesticides - Labeling requirements of all pesticides - Storage requirements of pesticides - Record keeping and disposal requirements These Regulations are currently being amended.

	Regulation Name	Enforced By	Penalty	Summary
5.	Yap State Oil Spill Regulations	Public Safety and EPA	Civil penalty in an amount not less than $100.00 and not more than $10,000.00 for each day of the violation	These Regulations create reporting requirements for any person who spills, or is responsible for the spill, of any oil products into the environment. These Regulations are currently being amended.
6.	Yap State Plastic Bag Regulations	Public Safety and EPA	Civil penalty of $100 per day of each violation, for retailers.	From 4 March – 4 July 2014 retailers were required to: - display the provided signage at their shop front and cashier; and - charge customers a 25c surcharge for all plastic bags provided. From 4 July, no retailer may distribute any plastic grocery bags in Yap State. The provided signage must continue to be displayed until 4 March 2015.
7.	Sea Cucumber Regulations	Public Safety	Differs between offenses.	These Regulations create strict requirements for any person or business who wishes to farm, harvest or export sea cucumbers. Farming may only be done with a license, and only farmed sea cucumbers can be harvested and exported. Sea cucumbers can only be harvested in accordance with a permit. Non-compliance with any of these requirements constitutes an offense.

Table 3 – Yap State Environmental Regulations and Bills to be Proposed/Considered

	Title	Status	Summary
1.	Enforcement Bill	Currently with Governor's office.	The EPA currently has the authority to enforce all offenses contained within Agency regulations and Chapter 15 of Title 18 of the Yap State Code. Currently, there are several environmental offenses that sit outside of the Agency's regulations and Chapter 15 of Title 18, and consequently, the Agency has does not have any authority to enforce these. Examples of these offenses include littering, junk cars, and wildlife protection. The proposed bill seeks to amend 18 YSC 1507(b) to allow the Agency to assist Public Safety and OAG to enforce all of Yap State environmental laws.
2.	Burning Regulations	Currently being filed with the Governor.	The Burning Regulations establish three types of fire periods, depending on the prevailing weather conditions at the time. The Fire Permit Period on any given day will be notified to the public through Government media channels. During a Safe Burning Period, people may safely burn without a permit. During a Fire Permit Period, people must have a fire permit before undertaking any burning. During an Unsafe Burning Period, no one may burn, even with a permit. There is an exception for cooking fires. The requirement to obtain permits is only for the Yap Main Islands, and Fais. It is an offense under these regulations to: - burn during a Fire Permit Period without a Permit; - burn during an Unsafe Burning Period; - burn any inorganic materials; and - burn without first taking adequate safety precautions to ensure that a fire does not become uncontrolled. This includes clearing flammable materials from around the proposed burn site, staying with the fire at all times, and having materials on site to put out a fire when necessary.

	Title	Status	Summary
3.	Proposed Styrofoam Ban Bill	Bill drafted, will be submitted to the Governor and if he approves, we will then submit to the Legislature for their consideration.	This bill, if passed, would operate in a similar way to the plastic grocery bag ban, by banning the distribution of any plate, bowl, cup, take-out, or other food container that is made from polystyrene (also known as *Styrofoam*) or plastic that is designed for a single use of transporting or containing food or beverage, prior to disposal.
4.	Regulations for the Environmental Clearance of Marine Vessels	Currently being filed with the Governor.	These Regulations will give EPA Officers the authority to inspect all vessels coming to Yap from outside Yap State to ensure compliance with the following offenses: - No person or cargo is to disembark until environmental clearance has been obtained. - No vessel can release bilge or ballast water within 3 nautical miles of any of Yap's islands. - No person can undertake any non-essential repairs on a vessel, unless authorized by the EPA. - No person may clean any vessels. - No release of sewerage within 3 nautical miles of any of Yap's islands. - No disposal of any inorganic waste or fishing equipment within Yap's waters. - No person may dispose of any garbage in Yap.
5.	Researcher Permit Bill	Currently with the Governor	This bill, if adopted, would amend the existing requirement for researchers undertaking research within Yap State to obtain a research permit. Currently only anthropological research requires a permit. The bill seeks to amend the fees, the penalties, the potential royalties collected, and make it a requirement that all researchers, whether undertaking sociological or environmental research, are required to obtain a permit and share all data and a copy of any final published works.
6.	Conservation enforcement bill	Currently with the YSL	This bill, if adopted, would amend Chapter 15 of Title 18 to allow for the deputization of EPA officials to issue citations to violators of environmental laws. The bill also seeks to clarify the roles and responsibilities of the EPA.

	Title	Status	Summary
7.	Resources Advisory Council Bill	Currently with the YSL	This bill, if adopted, would establish a new Chapter 20 to Title 18 to establish a Resources Advisory Council that would be comprised of government and traditional leaders. This Council would, among other things, provide guidance to the EPA when undertaking environmental impact assessments.
8.	Development Review Process Bill	Currently with the YSL	This bill, if adopted, would establish a new Chapter 19 to Title 18 to establish a coordinated process for the review of project proposals. The review process would involve relevant government agencies and departments, including the Resources Advisory Council. The bill seeks to establish a permit system for significant development projects.
9.	Network of Protected Areas Bill	EPA currently drafting	This bill, if adopted, would establish a Network of Protected Areas within Yap State, a sustainable financing mechanism for support of locally managed protected areas (both marine and terrestrial), a Network of Protected Areas Officer, a Network of Protected Areas committee, offenses against protected areas, visitor permits and access fees, and State enforcement support for locally managed protected areas.
10.	Network of Protected Areas Regulations	EPA currently drafting	These Regulations will, if adopted, compliment the NPA Bill (above), to establish a process for government support of communities establishing, managing and enforcing protected areas.
11.	Persistent Organic Pollutants Regulations	Currently being filed with the Governor.	These Regulations aim to facilitate the environmentally responsible disposal of all persistent organic pollutants (21 specifically listed substances) from Yap State in accordance with National and International law. The Regulations make it an offense for any person to dispose of POPs without an approved Disposal Plan from the Agency. It creates a ban date, 6 months after the promulgation of the Regulations, after which it is an offense to possess any POPs.

	Title	Status	Summary
12.	Protected Species and Government Events Bill	Currently with the YSL.	This bill, if passed, would make it an offense for any Government agency or Department to provide any species protected by state law (eg turtles, wild pigeon, fruit bats etc) at any Government organized event.
13.	Prohibition on Exportation of Reef Resources Bill	Currently with the YSL	This bill, if adopted, will make it an offense for any person to export any resources (living or otherwise) taken from any of Yap's reefs.
14.	Fruit Bat Sanctuary Bill	Currently with the Governor.	This bill, if adopted, will amend the existing Fruit Bat protection laws by creating a habitat sanctuary that protects important areas including known roosting sites, forests and mangroves. Any interference with these habitats may only be done in accordance with a management plan, that is prepared by the affected community and approved by R&D.
15.	Manta Ray Sanctuary Regulations	EPA currently drafting with R&D.	These Regulations will likely create requirements for dive operators, MRMD and divers/snorkelers.
16.	Waste Water and Sewerage Regulations	EPA currently drafting	These Regulations will create requirements for septic tank owners, water authorities, waste water management facilities, the EPA, and the general public.
17.	Drinking Water Regulations	Currently being filed with the Governor.	These Regulations will create requirements for Water Authorities, drinking water retailers, the Agency, and the general public. These regulations will regulate the provision of safe drinking water through public water systems.
18.	Sea Turtle Regulations	Currently being filed with the Governor.	These Regulations will create catch limits, size restrictions, hunting seasons and other requirements for the harvesting of sea turtles.

	Title	Status	Summary
19.	Environmental Requirements for Transport Vessels	Currently being filed with the Governor.	These Regulations apply to all transport vessels (maritime and aviation) operating within Yap State, and creates the following requirements of operators: (a) Separate and deliver all material that is recyclable under the Yap State Recycling Program to the Yap State Waste Management Facility; (b) Prohibits disposal of any inorganic waste at sea; (c) Prohibits the transportation of any species protected by Yap State Law on a vessel.
20.	Hazardous Waste Regulations	Currently being drafted by the EPA	These regulations will establish storage, transport, and disposal requirements for hazardous waste.
21.	Air Standards Regulations	Currently being drafted by the EPA	These regulations will establish minimum air standards and monitoring requirements.
22.	Asbestos, Lead, and PCB Regulations	Currently being drafted by the EPA	These regulations will establish storage, transport, and disposal requirements for asbestos, lead, and PCBs.

Appendices

Appendix 1: Attendees at National Invasive Species Strategy and Action Plan Development Workshops

A1.1: List of Participants at the Chuuk State National Invasive Species Strategy and Action Plan Development Workshop

Dates: 21 August 2015
Location: Level 5 conference room, Weno, Chuuk
Facilitators: James Stanford and David Moverley

Name	Organization
Wisney Nakayama	Chuuk State Legislature
Immaculata Rochor	Chuuk State Legislature
Kantito Kanas	Chuuk State Department of Agriculture
Esme Eis	Chuuk State Department of Agriculture
Stephin Maras	Chuuk State Department of Agriculture
Heris Farek	Chuuk State Department of Agriculture
Renita Meingin Sufa	FSM Quarantine
Mondale Tim	Chuuk State Department of Agriculture
Gisco Hiruta	Chuuk State Department of Agriculture
Werfina Sonis	Chuuk Cooperative Research and Extension
Paudine Andrew Penno	Chuuk Conservation Society/UFOWA
Lolita N. Ragus	College of Micronesia-FSM Chuuk Campus/Cooperative Research and Extension
Ismael H. Mikel	Chuuk State Environmental Protection Agency
Sabrino Robert	FSM Quarantine

A1.2: List of Participants at the Kosrae State National Invasive Species Strategy and Action Plan Development Workshop

Dates: 12 and 13 August 2015
Location: Kosrae State Department of Resources and Economic Affairs conference room, Kosrae
Facilitators: James Stanford and David Moverley

Name	Organization
Mason Timothy	Kosrae State Department of Health/farmer
Isaac Isaac S	Kosrae State Department of Health
Jeffrey Nena	Kosrae Conservation and Safety Organization
Bond Segal	Kosrae Conservation and Safety Organization
Julie Sigrah	Kosrae State Department of Resources and Economic Affairs
Murtanel Tolema	Kosrae State Department of Resources and Economic Affairs
Roland Isisaki	FSM Quarantine
James James	FSM Quarantine
Isaac Nathan	Office of the Attorney General
Edusici Mike	Kosrae State Department of Resources and Economic Affairs
Kusin Telfa	Kosrae State Department of Resources and Economic Affairs
Alokea Ljou	Kosrae State Department of Resources and Economic Affairs
Robby Nena	Kosrae State Department of Resources and Economic Affairs (invasives)
Rolphy Mongkeya	Kosrae State Department of Resources and Economic Affairs (livestock sec)
Leonard A Sigrah	Kosrae Island Resource Management Authority, IS coordinator
Remos Livaie	Kosrae State Department of Resources and Economic Affairs (agriculture)
Betty K Phillip	Private farmer/LTA Sec
Jason Jack	Kosrae State Department of Resources and Economic Affairs (plant protection)
Hermis Taje	Kosrae State Department of Resources and Economic Affairs (Export)
shrue Wolan	Kosrae Women Association/Kosrae Women in Farming
Robert Joseph	farmer/ LFA
Erick E Wakuk	Kosrae Island Resource Management Authority
Robert Jackson	Kosrae Island Resource Management Authority

A1.3: List of Participants at the Pohnpei State National Invasive Species Strategy and Action Plan Development Workshop

Location: Kolonia, Pohnpei
Facilitators: James Stanford and David Moverley

Name	Organization
Kadalino Lorens	Office of Economic Affairs, Pohnpei State
Nary Reyes	United Airlines
Marcellino Martin	COM-Cooperative Extension Services
Whynrick Solomon	Federated Shipping Company
Engly Ioanis	COM-Cooperative Extension Services
Cooper Etse	Pohnpei Port Authority
Michael Iehsi	COM-Cooperative Extension Services
Alpenster Henry	COM-Cooperative Extension Services
Pius Hadley	Pohnpei Department of Land and Natural Resources
Bejay Obispo	Conservation Society of Pohnpei
Eugene Joseph	Conservation Society of Pohnpei
Kim Alex	Federated Shipping Company
Scotty Malakai	Pohnpei Office of Fisheries and Aquaculture
Renwick Weilbacher	FSM Quarantine Services-Pohnpei Field Office
Adelino Lorens	Pohnpei Agriculture, Office of Economic Affairs
Joe Saimon	Pohnpei Office of Fisheries and Aquaculture
Augustine Primo	College of Micronesia Cooperative Extension Services
Petring Albert	FSM Quarantine Services-Pohnpei Field Office
Kazuo Zanaku	College of Micronesia Cooperative Extension Services
Francisco Celestine	Pohnpei Environmental Protection Agency
Gibson Santos	USDA NRCS
Donna Scheuring	Pohnpei Environmental Protection Agency
Hinden Alexander	Pohnpei Health Services
Lululeen Santos	Pohnpei Office of Social Affairs/Pohnpei Women Council
Romeo Walter	Pohnpei Office of Economic Affairs
Roseo Marquez	Micronesia Conservation Trust
Charles Lohn	Pohnpei Environmental Protection Agency
Klasthin Diopulos	Pohnpei Forestry, Department of Land and Natural Resources
Valentine Santiago	Pohnpei Forestry, Department of Land and Natural Resources
John Wichep	Quarantine Services, FSM Department of Resources & Development

A1.4: List of Participants at the Yap State National Invasive Species Strategy and Action Plan Development Workshop

Dates: 26 August 2015
Location: Yap State Agriculture Offices, Colonia, Yap
Facilitator: David Moverley

Name	Organization
Valernino Orhaifit	Yap Department of Agriculture and Forestry
Francis Liyeg	Yap Department of Agriculture and Forestry
Andrew Fagouir	FSM Quarantine
Martin Ruwniyol	College of Micronesia Land Grant
Mark Drorak	Yap Department of Agriculture and Forestry
Jesse Halelfeg	Yap Department of Health Services
Tamdad Sulog	Yap Department of Agriculture and Forestry
Gerwin Thapngag	Yap Department of Agriculture and Forestry
John Pekalpal	Yap Department of Agriculture and Forestry

A1.5: List of Participants at the Federated States of Micronesia National Invasive Species Strategy and Action Plan Development Workshop

Dates: 17 and 18 August 2015
Location: Kolonia, Pohnpei
Facilitators: James Stanford and David Moverley

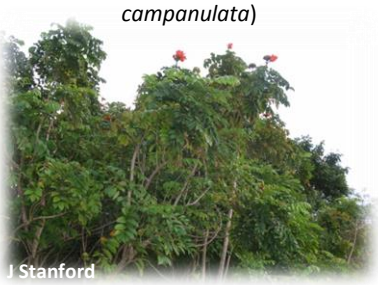
Name	Organization
John Wichep	Quarantine Services, FSM Department of Resources & Development
Kiyoshi Phillip	College of Micronesia-FSM – Agriculture
Adelman Joseph	Trade & Investment, FSM Department of Resources & Development
Perry Perman	FSM Department of Finance & Administration
John Curley	FSM Department of Education
Wiriel Dewey	FSM Department of Health
Dave Mathias	FSM Department of Resources & Development
Cindy Ehmes	Office of Environment and Emergency Management
John Tiegmai	FSM Department Transportation, Communication and Infrastructure
Josephine Joseph	FSM Department of Justice
Roseo Marquez	Micronesia Conservation Trust (MCT)

Appendix 2: Priority established invasive species in the Federated States of Micronesia

A2.1 Chuuk State Priority Established Invasive Species

Plants

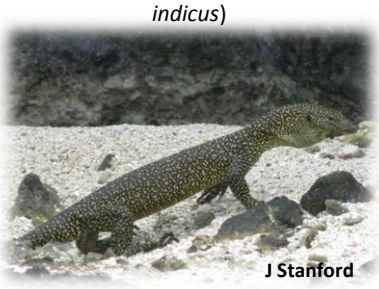
Taxa	Comments
Honolulu Rose (*Clerodendrum chinense*) 	Honolulu Rose is found in the forest understory and used as an ornamental. If left unmanaged, it can form dense thickets. Honolulu Rose out competes native vegetation and can reduce biodiversity. Honolulu Rose has large ovate leaves and whitish pink flowers. Spread by root suckers. Management plan and some field actions taken to address this species but not fully controlled and resources are currently inadequate to continue with management efforts.
Bronze-leaved Clerodendrum (*Clerodendrum quadriloculare*) 	Bronze-leaved Clerodendrum is an invasive shrub that can be found in the forest understory. Outcompetes native plants reducing biodiversity. Paired oval leaves that are dark green on top and purple underneath. Showy white flowers with pink tubes. Spread by seeds, roots and cuttings. Found on multiple islands in the state including Fefan.
Pagoda Flower (*Clerodendrum paniculatum*) 	This shrub is found in disturbed areas and is used as an ornamental. Its flowers are showy and red.
Merremia (*Merremia peltata*) 	Merremia is an aggressive, invasive vine that invades forest edges and disturbed areas. If permitted will over grow and smother other vegetation, reducing biodiversity. Its leaves are large, simply and ovate. It has funnel shaped yellow whitish flowers.

Giant Sensitive Plant (*Mimosa diplotricha*)  Dana Lee Ling	Giant Sensitive Plant is a fast growing shrub that will smother lower vegetation as it climbs over it with its thorny stems. Invasive in open and disturbed areas where it forms spiny thickets. Pink flowers with rounded heads. Seeds are spread by animals and water.
Wild Sugar Cane - Wowo - (*Saccharum spontaneum*)  F & K Starr	Wild Sugar Cane is considered by some to be native. Regardless, this species exhibits invasive tendencies moving into gaps and agricultural areas.
African Tulip Tree (*Spathodea campanulata*)  I Stanford	African Tulip Tree is an invader of disturbed areas, agricultural fields and native forests. It forms thickets and outcompetes native plants reducing biodiversity. Trees can become very large. Flowers are large and orange-red in color. Wind dispersed seeds. Restricted many to Nantaku area of Weno Island.
Guinea Grass (*Urochloa maxima*)  F & K Starr	Guinea Grass can form dense stands in open areas. Guinea Grass is established on Namoluk Island.

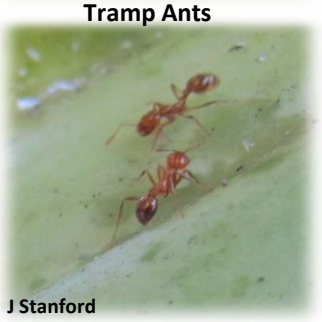
Mammals

Taxa	Comments
Pacific Rat (*Rattus exulans*)  	Known crop pest, potential disease vector and may have direct impacts to biodiversity via seed and egg consumption.
Ship Rat (*Rattus rattus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.

Herpetiles

Taxa	Comments
Mangrove Monitor (*Varanus indicus*)  	An opportunistic scavenger, Mangrove Monitors will consume a wide variety of items. They are known predators of eggs including turtle eggs and will likely take small mammals and birds when available. Established populations may impact native biodiversity.

Invertebrates

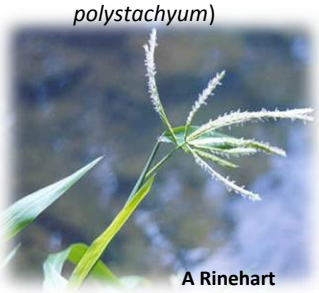
Taxa	Comments
Giant African Snail (*Achatina fulica*)  J Stanford	Giant African Snails are crop pest and potential disease vectors.
Mango Fruit Fly (*Bactrocera frauenfeldi*) 	Mango Fruit Fly is know to infect Mangos, Soursop, Terminalia, Avocado, Bread Fruit, Guava and numerous other plants. Females lay eggs under the skin of fruits. Larvae feed on fruit before emerging, leaving fruits damaged or completely inedible.
Tramp Ants  J Stanford	Established Tramp Ants are a concern. There numbers and possibly numbers of species appear to be increasing and spreading within the state. Identification of established species and awareness are two key elements that need to be addressed. Management strategies for particular species may also be considered.
Termites  J Stanford	Termite species in general are a concern. Coconut Termites, not currently known to exist in Chuuk, were recently found to be infecting Coconut Trees in Kosrae. These termites are also known to infect pandanus and banana plants.

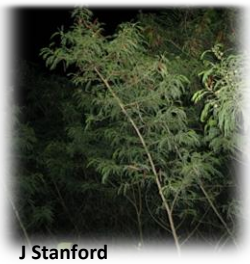
Aquatic Organisms

Taxa	Comments
Crown of Thorns Starfish (*Acanthaster planci*) 	Crown of Thorns Starfish is a coral predator native to the Pacific. These starfish can some times be found in large numbers and can cause significant impacts to coral reefs. It is unclear if outbreaks of this starfish is a natural part of the marine ecosystem or if they are a more recently novel phenomena.

A2.2 Kosrae State Priority Established Invasive Species

Plants

Taxa	Comments
Chromolaena (*Chromolaena odorata*)  	current distribution: wide spread already, no active management; long term solution may be a biocontrol but this work still needs to be done; can develop hygiene protocol for field equipment for this and other plants species to reduce spread within the state
Honolulu Rose (*Clerodendrum chinense*) 	Honolulu Rose is found in the forest understory and can form dense thickets. Honolulu Rose outcompetes native vegetation and can reduce biodiversity. Honolulu Rose has large ovate leaves and whitish pink flowers. Spread by root suckers. Relatively small infestations (<10 areas all with relatively small size, <50m^2) of this species. May be possible to eradicate. This species has be proposed for eradication in Olum watershed. Physical and chemical removal on-going.
Bronze-leaved Clerodendrum (*Clerodendrum quadriloculare*)  	Bronze-leaved Clerodendrum is an invasive shrub that can be found in the forest understory. Outcompetes native plants reducing biodiversity. Paired oval leaves that are dark green on top and purple underneath. Showy white flowers with pink tubes. Spread by seeds, roots and cuttings. On-going management of this species includes both physical and chemical treatment. There are only a few known infested sites within the state (30-40 sites), with the biggest site being about 50m^2. All sites are visited and treated every 2 months.
Paddle Grass (*Ischaemum polystachyum*)  	Paddle Grass is wide spread in Kosrae. There are currently no efforts to manage this species. It is found in disturbed areas and clearings. Paddle Grass forms dense stands, excluding other species.

Tangantangan (*Leucaena leucocephala*)  J Stanford	Likely arrived from the Marianas Islands where it is widely distributed. On Kosrae, distribution is localized and relatively small sites. Eradication efforts are on-going and include physical removal of plants followed by chemical treatment of sites to prevent new growth. Monitoring of treated sites and follow-up treatment every 2 months has been in place since 2007.
Merremia (*Merremia peltata*)  J Stanford	Merremia is an aggressive, invasive vine that invades forest edges and disturbed areas. If permitted it will over grow and smother other vegetation, reducing biodiversity. Its leaves are large, simply and ovate. It has funnel shaped yellow whitish flowers. Kosrae would like to address this species. Merremia is a known host plant for white flies. Samples have been sent to LandCare New Zealand, which is currently conducting DNA analysis to determine native zone for this species. There are thought to be 3 species of Merremia in Kosrae, 2 native and 1, *M. peltata* non-native.
Mile a Minute (*Mikania micranthra*)  K Englberger	Found in all communities and well established where it occurs, but not widespread within communities yet. Prior to 2013, there was on-going chemical treatment of some sites infested with this species but since 2013 there have been no resources to continue with this program. Even when management was on-going the species continued to spread within the state.
Wedelia (*Wedelia trilobata*)  F & K Starr	Wedelia invades disturbed areas, roadsides and pastures. Wedelia roots at leaf nodes producing a mat of ground cover, excluding other types of vegetation. It has ovate, 3 lobed leaves and yellow flowers.

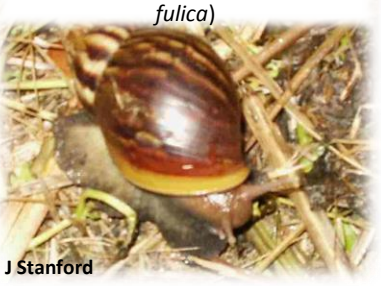
Mammals

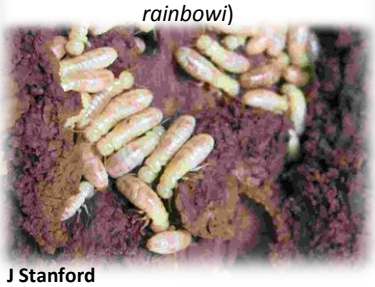
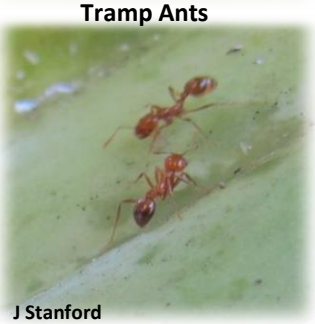
Taxa	Comments
Pacific Rat (*Rattus exulans*)  	Known crop pest, potential disease vector and may have direct impacts to biodiversity via seed and egg consumption.
Ship Rat (*Rattus rattus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.

Herpetiles

Taxa	Comments
Mangrove Monitor (*Varanus indicus*)  	An opportunistic scavenger, Mangrove Monitors will consume a wide variety of items. They are known predators of eggs including turtle eggs and will likely take small mammals and birds when available. Established populations may impact native biodiversity.
Cane Toad (*Rhinella marina*)  	An opportunistic feeder, they will consume a wide variety of small animals, mainly arthropods. Cane Toads have the potential to impact and reduce population numbers in prey species and also as well of potential predators, as they secret a toxin on their skin when provoked. The toxic is powerful enough to make sick and potentially kill animals such as monitor lizards, dogs and cats. Due to their toxicity, predation pressure on Cane Toads is low.

Invertebrates

Taxa	Comments
Trachoides Whitefly (*Aleurotrachelus trachoides*) 	Kosrae experienced a massive outbreak of Trachoides Whitefly in recent years. Population levels of the whitefly are still high but appear to be in decline. A management plan is in place and biocontrols have been released.
Papaya Mealybug (*Paracoccus marginatus*)  **J Stanford**	Papaya Mealybug feeds on a variety of plants and their fruits including Papaya, Hibiscus and Plumeria. The most recent surveys which were completed in May 2015 detected no biocontrols. Biocontrols should be acquired and released.
Mosquitoes  **VectorBase.org**	Various species of mosquitoes, including known vectors for Dengue and other human diseases are present in Kosrae (Shinichi 2014). Management and control strategies should be reviewed and updated or developed as needed. General knowledge and awareness should be surveyed both within departments working on health and invasive species issues as well as within local communities. Awareness efforts should be adjusted as per results of survey work ultimately improving overall knowledge and ability to manage these pests.
Giant African Snail (*Achatina fulica*)  **J Stanford**	Giant African Snails or GAS were detected in 1996. GAS are crop pest and potential disease vectors.

Coconut Termite (*Neotermes rainbowi*)  J Stanford	Coconut Termites were recently found to be established in Coconut Trees. These termites are also known to infect pandanus and banana plants in other countries. Other termite species are also present within the state.
Tramp Ants  J Stanford	Established Tramp Ants are a concern. Improved knowledge and awareness regarding tramp ants is important. Management strategies for particular species may also be considered.

Aquatic Organisms

Taxa	Comments
Crown of Thorns Starfish (*Acanthaster planci*) 	Crown of Thorns Starfish is a coral predator native to the Pacific. These starfish can some times be found in large numbers and can cause significant impacts to coral reefs. It is unclear if outbreaks of this starfish is a natural part of the marine ecosystem or if they are a more recently novel phenomena.

Bacteria

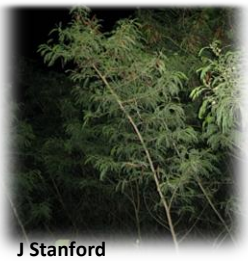
Taxa	Comments
Citrus Canker Bacterium (*Xanthomonas axonopodis pv.citri*)  **J Lotz**	Citrus Canker is a disease affecting Citrus species and cause by a bacterium. Bacterium infection causes lesions on the stems, leaves and fruit. Humans are not affected by the bacterium and infected fruit is safe to eat, but difficult to market. Infection not only affects fruit quality it also reduces plant vitality.

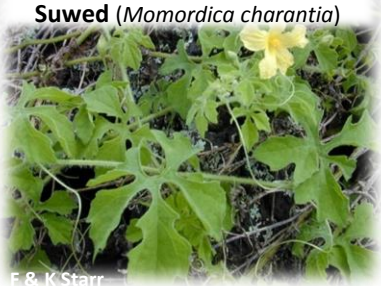
A2.3 Pohnpei State Priority Established Invasive Species

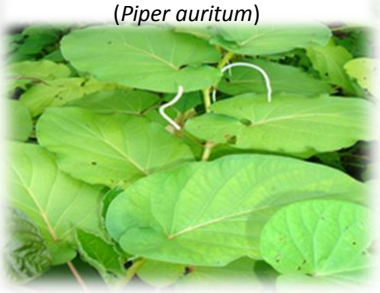
Plants

Taxa	Comments
Chain of Love - Rohsenpoak Suwed (*Antigonon leptopus*) 	Chain of Love is an aggressive vine that can smother native plants and trees. There is an on-going eradication campaign underway. Chain of Love has heart shaped leaves and pink flowers. Spread by seeds, cuttings and off-shoots from tubers.
Beggar's Tick - Diphwketipwehl Suwed (*Bidens alba*) 	Beggar's Tick is a perennial herb common in disturbed areas and along roads. Flower petals are white with yellow flower heads. Its seeds are spread by animals, humans, soil and machinery.
Chromolaena - Wilsomat en Rehnwel (*Chromolaena odorata*) 	Fast growing and prolific seeding herb. Found in forest clearings, disturbed areas and along roads. Toxic to animals if consumed. Seeds spread by wind, animals, humans, soil and machinery.
Honolulu Rose - Rohsen Onoluhlu(*Clerodendrum chinense*) 	Honolulu Rose is found in the forest understory and can form dense thickets. Honolulu Rose outcompetes native vegetation and can reduce biodiversity. This species has an on-going eradication campaign. Honolulu Rose has large ovate leaves and whitish pink flowers. Spread by root suckers.

Pagoda Flower - Tehkehn Sousou (*Clerodendrum paniculatum*)  	Pagoda Flower in Pohnpei is found on the main island as well as various outer islands. This shrub is found in disturbed areas and has extensive coverage of the island of Pringelap. Its flowers are showy and red.
Bronze-leaved Clerodendrum - Tuhkehn Palau (*Clerodendrum quadriloculare*)  	Bronze-leaved Clerodendrum is an invasive shrub that can be found in the forest understory. Outcompetes native plants reducing biodiversity. Paired oval leaves that are dark green on top and purple underneath. Showy white flowers with pink tubes. Spread by seeds, roots and cuttings.
Koster's Curse - Riahpen Rot (*Clidemia hirta*) 	Koster's Curse is an invasive shrub found in the forest. It has hairy leaves, white flowers and dark blue/black fruits. Its seeds are spread by animals but may also be moved by humans and machinery.
Ivy Gourd - Aipikohrd (*Coccinia grandis*) 	Ivy Gourd is an aggressive vine that smothers other plants. Ivy Gourd has lobed leaves, white flowers, and gourds which range in color from green to yellow to red. Seeds are spread by birds and mammals that eat the flesh of the gourds. There is an on-going eradication campaign for Ivy Gourd.
Crape Ginger - Sinser Weitahta (*Costus speciosus*)  	Crape Ginger is an invasive herb found in both disturbed areas and the forest understory. It has dark green leaves arranged in a spiral on a central stalk. Red cone shaped bracts with white flowers.

Golden Pothos - Selkasohlap (*Epipremnum pinnatum*)  F & K Starr	Golden Pothos is a vine which climbs the trunks of trees. Large leaves. Commonly planted as an ornamental and spread by plant cuttings. Golden Pothos competes with native vegetation for resources and can smother plants as it spreads to the canopy.
Lantana - Randana (*Lantana camara*)  J Stanford	Latana forms thickets in disturbed areas and along roads. Its stems are square and it has prickles. Flowers can be red, orange, pink and yellow. Foliage is toxic if consumed by animals.
Tangantangan - Dangandangan (*Leucaena leucocephala*)  J Stanford	Tangantangan is a quick growing invasive tree that can form dense thickets, reducing biodiversity. It has compound leaves and white flowers. Seeds are spread by animals and machinery.
Sponge Gourd - Rapkord (*Luffa aegyptiaca*)  K Englberger	Sponge Gourd is an aggressive smothering vine. It has lobed leaves and large, bright yellow flowers. The leaves and fruit are edible. Spread by animals and humans.
Merremia - Lol (*Merremia peltata*)  J Stanford	Merremia is an aggressive, invasive vine that invades forest edges and disturbed areas. If permitted will over grow and smother other vegetation, reducing biodiversity. Its leaves are large, simply and ovate. It has funnel shaped yellow whitish flowers.

Mile a Minute - Selmwadang (*Mikania micranthra*)  	Mile a Minute is an aggressive vine that can smother other vegetation including trees. It has triangular leaves with greenish white flowers. There is an on-going eradication campaign for Mile a Minute. Seeds are dispersed by wind as well as by animals, humans, soil and machinery.
Giant Sensitive Plant - Limemeirlap (*Mimosa diplotricha*)  	Giant Sensitive Plant is a fast growing shrub that will smother lower vegetation as it climbs over it with its thorny stems. Invasive in open and disturbed areas where it forms spiny thickets. Pink flowers with rounded heads. Seeds are spread by animals and water.
Sensitive Plant - Limemeirpwong (*Mimosa pudica*)  	Sensitive Plant is a major weed of pastures and other open areas such as road sides. It has compound leaves and pale pink or purple flowers. Adult plants spread at ground level. Seeds stick to animals and humans for dispersal.
Bitter Gourd - Selwahkatik Suwed (*Momordica charantia*)  	Bitter Gourd is a vine that can overgrow other vegetation, competing with native plants for resources. Its gourds are green to yellow-orange in color. Leaves are deeply lobed. Seeds spread by animals and humans.
Wild Passionfruit - Pwompwomw (*Passiflora foetida*)  	Wild Passionfruit is an aggressive vine that competes with other vegetation. It has hairy foliage, 3-lobed leaves, white and lavender flowers and reddish orange fruits.

False Sakau - Sakau Likamw (*Piper auritum*) 	False Sakau is a shrub that can be found in the forest understory as well as clearings. There is an on-going eradication campaign for False Sakau. Shrubs are typically up to 6 ft. tall but may reach up to 18 ft. Plant parts are aromatic and leaves are ovate with longest dimension from the axil to the tip.
Lolo Pepper - Peper Lolo (*Piper lolot*)  K Englberger	Lolo Pepper is a shade tolerant small shrub which goes in the forest understory. Spread by rhizomes and plant cuttings. There is an on-going eradication campaign for this species.
African Tulip Tree - Dulip en Aprika (*Spathodea campanulata*)  I Stanford	African Tulip Tree is an invader of disturbed areas, agricultural fields and native forests. It forms thickets and outcompetes native plants reducing biodiversity. Trees can become very large. Flowers are large and orange-red in color. Wind dispersed seeds. There is an on-going eradication campaign for this species.
Arrowhead Vine - Selkesingketieu (*Syngonium podophyllum*)  F & K Starr	Arrowhead is a large leafed vine that grown up the trunks and branches of trees, competing with them for resources. Spread by seeds and plant cuttings. There is an on-going eradication campaign for this species.
Bengal Trumpet Vine - Lolen Pengkal (*Thunbergia grandiflora*) 	Bengal Trumpet is an aggressive smothering vine. Its whitish flowers are trumpet shaped. Spread by seeds, roots and plant cuttings. There is an on-going eradication campaign for this species.

Wedelia - Diphwoangoahng Suwed (*Wedelia trilobata*)  	Wedelia invades disturbed areas, roadsides and pastures. Wedelia roots at leaf nodes producing a mat of ground cover, excluding other types of vegetation. It has ovate, 3 lobed leaves and yellow flowers.

Mammals

Taxa	Comments
Pacific Rat (*Rattus exulans*)  	Known crop pest, potential disease vector and may have direct impacts to biodiversity via seed and egg consumption.
Ship Rat (*Rattus rattus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.
Brown Rat (*Rattus norvegicus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.

Feral Dog (*Canis familiaris*) 	Dogs are predators and scavengers and will impact biodiversity if they are permitted to establish feral populations. Feral populations also have the potential to impact humans directly due to sanitation issues and aggressive behavior. Both un-owned dogs and dogs that are licensed but still permitted to roam freely are an increasing problem in Kolonia and else where within the state.
Feral Cat (*Felis catus*) 	Cats are predators and will impact biodiversity if they are permitted to establish feral populations. Feral cat populations in Pohnpei appear to be growing. More cats have also been noticed at the main sea and airport complex.

Birds

Taxa	Comments
Feral Pigeon (*Columba livia*) 	Feral Pigeons are a non-native species that may cause sanitation and health concerns. They may also complete with native species for resources and potentially could spread disease and parasites to native bird species.
Tree Sparrow (*Passer montanus*) 	Tree Sparrows are aggressive and may out complete native species.

Invertebrates

Taxa	Comments
Coffee Bean Borer (*Hypothenemus hampei*) 	The Coffee Bean Borer is a small beetle and one of the most devastating pest to coffee crops worldwide. The beetle was recently found to be established in Pohnpei. Adults lay their eggs in the coffee berry and the larvae when they hatch feed on the coffee bean reducing yield and quality. On the Big Island of Hawaii, where this beetle was detected in 2010, farms with successful beetle management using organic pesticides and strict sanitation have crop infestation rates of about 20%. Farms that don't use appropriate management practices experience higher rates of infestation.
Mango Fruit Fly (*Bactrocera frauenfeldi*) 	Mango Fruit Fly is know to infect Mangos, Soursop, Terminalia, Avocado, Bread Fruit, Guava and numerous other plants. Females lay eggs under the skin of fruits. Larvae feed on fruit before emerging, leaving fruits damaged or completely inedible.
Papaya Mealybug (*Paracoccus marginatus*)  **J Stanford**	Papaya Mealybug feeds on a variety of plants and their fruits including Papaya, Hibiscus and Plumeria. There is currently an established biocontrol for Papaya Mealybug which is reported to be controlling levels of infestation.

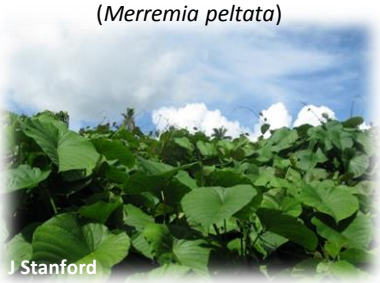
Aquatic Organisms

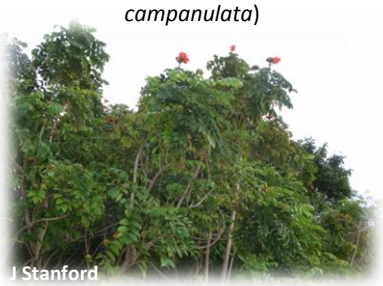
Taxa	Comments
Eel Catfish (*Plotosus lineatus*) 	The Eel Catfish also known as the Venomous Striped Eel Catfish is a small catfish growing up to about a foot in size. The Eel Catfish is brown with longitudinal white stripes. Pectoral fins have venomous spines and these catfish require caution when handling. This is a saltwater species but it will also enter estuaries and even freshwater rivers and streams.
Milk Fish (*Chanos chanos*) 	Milk Fish are known from throughout the Pacific and are farmed as a food item.
Mozambique Tilapia (*Oreochromis mossambicus*) 	Mozambique Tilapia threaten native species via competition for resources and predation, ultimately reducing biodiversity and potentially impacting natural food webs. Mozambique Tilapia is a hardy species that appears to do well if permitted to establish.
Crown of Thorns Starfish (*Acanthaster planci*) 	Crown of Thorns Starfish is a coral predator native to the Pacific. These starfish can some times be found in large numbers and can cause significant impacts to coral reefs. It is unclear if outbreaks of this starfish is a natural part of the marine ecosystem or if they are a more recently novel phenomena.

A2.4 Yap State Priority Established Invasive Species

Plants

Taxa	Comments
Chain of Love - Sagraraw (*Antigonon leptopus*) 	Chain of Love is an aggressive vine that can smother native plants and trees. Chain of Love has heart shaped leaves and pink flowers. Spread by seeds, cuttings and off-shoots from tubers.
Chromoleana (*Chromoleana odorata*) 	Fast growing and prolific seeding herb. Found in forest clearings, disturbed areas and along roads. Toxic to animals if consumed. Seeds spread by wind, animals, humans, soil and machinery.
Bronze-leaved Clerodendrum - Februwari (*Clerodendrum quadriloculare*) 	Bronze-leaved Clerodendrum is an invasive shrub that can be found in the forest understory. Outcompetes native plants reducing biodiversity. Paired oval leaves that are dark green on top and purple underneath. Showy white flowers with pink tubes. Spread by seeds, roots and cuttings.
Conga Grass - Pan nu Machbab (*Imperata cylindrica*)  **J Space USFS**	Conga Grass produce dense root masses that exude allopathic substances that prevent other species from establishing. Where permitted to establish, this grass will reduce overall biodiversity.

Merremia - Wachathngal (*Merremia peltata*)  J Stanford	Merremia is an aggressive, invasive vine that invades forest edges and disturbed areas. If permitted will over grow and smother other vegetation, reducing biodiversity. Its leaves are large, simply and ovate. It has funnel shaped yellow whitish flowers.
Mile a Minute - Makenya (*Mikania micranthra*)  K Englberger	Mile a Minute is an aggressive vine that can smother other vegetation including trees. It has triangular leaves with greenish white flowers. Seeds are dispersed by wind as well as by animals, humans, soil and machinery.
Giant Sensitive Plant - Rachloy' ni Biech (*Mimosa diplotricha*)  Dana Lee Ling	Giant Sensitive Plant is a fast growing shrub that will smother lower vegetation as it climbs over it with its thorny stems. Invasive in open and disturbed areas where it forms spiny thickets. Pink flowers with rounded heads. Seeds are spread by animals and water.
Paper Rose (*Operculina ventricosa*)  J Space USFS	Paper Rose is found in disturbed areas where it forms thickets.
Mission Grass (*Cenchrus polystachios*)  F & K Starr	Mission Grass invades open areas and out completes native plants.

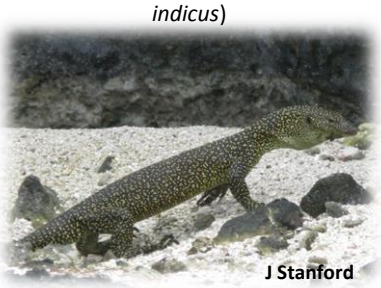
Guava (*Psidium guajava*)  A Rinehart	Guava is a small tree that will invade disturbed and undisturbed areas forming thicketts.
African Tulip Tree (*Spathodea campanulata*)  J Stanford	African Tulip Tree is an invader of disturbed areas, agricultural fields and native forests. It forms thickets and outcompetes native plants reducing biodiversity. Trees can become very large. Flowers are large and orange-red in color. Wind dispersed seeds.
Wedelia - Susuwan' (*Wedelia trilobata*)  F & K Starr	Wedelia invades disturbed areas, roadsides and pastures. Wedelia roots at leaf nodes producing a mat of ground cover, excluding other types of vegetation. It has ovate, 3 lobed leaves and yellow flowers.

Mammals

Taxa	Comments
Pacific Rat (*Rattus exulans*)  J Stanford	Known crop pest, potential disease vector and may have direct impacts to biodiversity via seed and egg consumption.

Ship Rat (*Rattus rattus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.
Brown Rat (*Rattus norvegicus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.
Feral Cat (*Felis catus*)  	Cats are predators and will impact biodiversity if they are permitted to establish feral populations.
Feral Dog (*Canis familiaris*) 	Dogs are predators and scavengers and will impact biodiversity if they are permitted to establish feral populations. Feral populations also have the potential to impact humans directly due to sanitation issues and aggressive behavior.

Herpetiles

Taxa	Comments
Mangrove Monitor (*Varanus indicus*)  	An opportunistic scavenger, Mangrove Monitors will consume a wide variety of items. They are known predators of eggs including turtle eggs and will likely take small mammals and birds when available. Established populations may impact native biodiversity.

Invertebrates

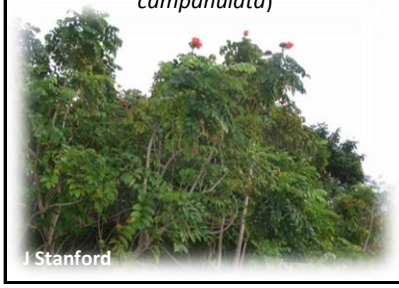
Taxa	Comments
Mango Fruit Fly (*Bactrocera frauenfeldi*) 	Mango Fruit Fly is know to infect Mangos, Soursop, Terminalia, Avocado, Bread Fruit, Guava and numerous other plants. Females lay eggs under the skin of fruits. Larvae feed on fruit before emerging, leaving fruits damaged or completely inedible.

Aquatic Organisms

Taxa	Comments
Mozambique Tilapia (*Oreochromis mossambicus*) 	Mozambique Tilapia are thought have been introduced to Yap in the 70's. They threaten native species via competition for resources and predation, ultimately reducing biodiversity and potentially impacting natural food webs. Mozambique Tilapia is a hardy species that appears to do well if permitted to establish.

A2.5 FSM National

Plants

Taxa	Comments
Bronze-leaved Clerodendrum (*Clerodendrum quadriloculare*) 	Bronze-leaved Clerodendrum is an invasive shrub that can be found in the forest understory. Out completes native plants reducing biodiversity. Paired oval leaves that are dark green on top and purple underneath. Showy white flowers with pink tubes. Spread by seeds, roots and cuttings.
Koster's Curse (*Clidemia hirta*) 	Koster's Curse is an invasive shrub found in the forest. It has hairy leaves, white flowers and dark blue/black fruits. Its seeds are spread by animals but may also be moved by humans and machinery.
Merremia (*Merremia peltata*) 	Merremia is an aggressive, invasive vine that invades forest edges and disturbed areas. If permitted will over grow and smother other vegetation, reducing biodiversity. Its leaves are large, simply and ovate. It has funnel shaped yellow whitish flowers.
African Tulip Tree (*Spathodea campanulata*) 	African Tulip Tree is an invader of disturbed areas, agricultural fields and native forests. It forms thickets and outcompetes native plants reducing biodiversity. Trees can become very large. Flowers are large and orange-red in color. Wind dispersed seeds.

Mammals

Taxa	Comments
Pacific Rat (*Rattus exulans*)  	Known crop pest, potential disease vector and may have direct impacts to biodiversity via seed and egg consumption.
Ship Rat (*Rattus rattus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.
Brown Rat (*Rattus norvegicus*)  	Known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.

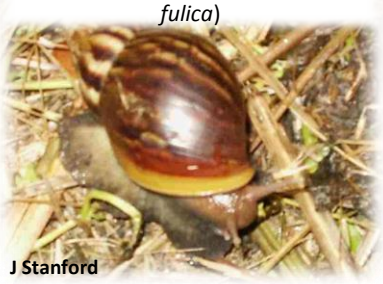
Herpetiles

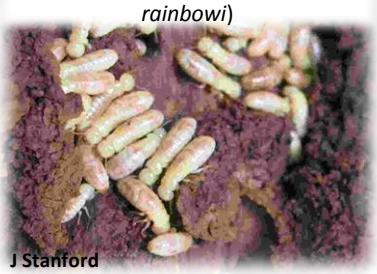
Taxa	Comments
Mangrove Monitor (*Varanus indicus*)  	An opportunistic scavenger, Mangrove Monitors will consume a wide variety of items. They are known predators of eggs including turtle eggs and will likely take small mammals and birds when available. Established populations may impact native biodiversity.

Birds

Taxa	Comments
Tree Sparrow (*Passer montanus*) 	Tree Sparrows are aggressive and may out complete native species. Established in Pohnpei and Yap.

Invertebrates

Taxa	Comments
Giant African Snail (*Achatina fulica*)  J Stanford	Giant African Snails are crop pest and potential disease vectors. Established in Kosrae and Pohnpei.
Coffee Bean Borer (*Hypothenemus hampei*) 	The Coffee Bean Borer is a small beetle and one of the most devastating pest to coffee crops worldwide. The beetle was recently found to be established in Pohnpei. Adults lay their eggs in the coffee berry and the larvae when they hatch feed on the coffee bean reducing yield and quality. On the Big Island of Hawaii, where this beetle was detected in 2010, farms with successful beetle management using organic pesticides and strict sanitation have crop infestation rates of about 20%. Farms that don't use appropriate management practices experience higher rates of infestation.

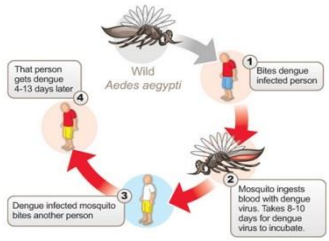
Coconut Termite (*Neotermes rainbowi*)  J Stanford	Termite species in general are a concern to the FSM with multiple species already established. Coconut Termites were recently found to be established in Coconut Trees in Kosrae. These termites are also known to infect pandanus and banana plants.
Trachoides Whitefly (*Aleurotrachelus trachoides*) 	Trachoides Whitefly is known to be established in both Kosrae and Pohnpei. Kosrae is still experience elevated population levels, although they seems reduced from a few years ago. A management plan is in place and biocontrols have been released.
Mosquitoes  VectorBase.org	Various species of mosquitoes, including known vectors for Dengue and other human diseases are present in the FSM (Shinichi 2014). Management and control strategies should be reviewed and updated or developed as needed. General knowledge and awareness should be surveyed both within departments working on health and invasive species issues as well as within local communities. Awareness efforts should be adjusted as per results of survey work ultimately improving overall knowledge and ability to manage these pests.

Aquatic Organisms

Taxa	Comments
Eel Catfish (*Plotosus lineatus*) 	The Eel Catfish also known as the Venomous Striped Eel Catfish is a small catfish growing up to about a foot in size. The Eel Catfish is brown with longitudinal white stripes. Pectoral fins have venomous spines and these catfish require caution when handling. This is a saltwater species but it will also enter estuaries and even freshwater rivers and streams.

Milk Fish (*Chanos chanos*) 	Milk Fish are known from throughout the Pacific and are farmed as a food item.
Mozambique Tilapia (*Oreochromis mossambicus*) 	Mozambique Tilapia are established in both Pohnpei and Yap. They threaten native species via competition for resources and predation, ultimately reducing biodiversity and potentially impacting natural food webs. Mozambique Tilapia is a hardy species that appears to do well if permitted to establish.
Crown of Thorns Starfish (*Acanthaster planci*) 	Crown of Thorns Starfish is a coral predator native to the Pacific. These starfish can some times be found in large numbers and can cause significant impacts to coral reefs. It is unclear if outbreaks of this starfish is a natural part of the marine ecosystem or if they are a more recently novel phenomena.

Viruses

Taxa	Comments
Dengue Virus  **http://www.eliminatedengue.com/**	Dengue or Dengue Fever is a disease caused a 4 closely related virus. Dengue is transmitted to humans by mosquitos in the genus *Aedes* . Aedes mosquitoes are established in the FSM. Dengue cases have been recorded from the states of Kosrae and Yap.

Appendix 3: Priority Non-Established Invasive Alien Species that Threaten the Federated States of Micronesia

A3.1 Chuuk State Priority Non-Established Invasive Alien Species

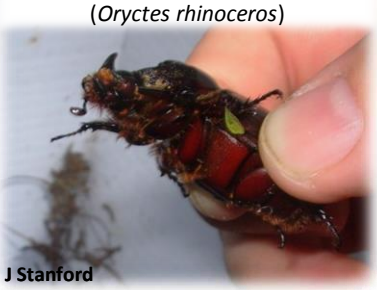
Mammals

Taxa	Comments
Brown Rat (*Rattus norvegicus*)  	Brown Rats are established else where in the FSM as well as the wider Pacific. This species is a known crop pest, disease vector and direct impacts to biodiversity via seed and egg consumption.

Herpetiles

Taxa	Comments
Brown Treesnake (*Boiga irregularis*)  **J Stanford**	Established on Guam where it has caused extensive damage, impacting biodiversity, economics and human health. An individual BTS was found dead on a cargo ship arriving in Weno from Guam in 2008 (S. Roberts, pers. comm.).
Coqui Frog (*Eleutherodactylus coqui*)  **USDA**	Established in the State of Hawaii. Males call loudly, resulting in unacceptable levels of noise at night in areas where this species has become plentiful. Multiple individuals have arrived to Guam and have been intercepted or captured during responses actions. No known populations of Coqui have established on Guam, but several other non-native anurans are established there, and therefore are also a concern for the FSM and its states.

Invertebrates

Taxa	Comments
Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)  **J Stanford**	Coconut Rhinoceros Beetles or CRB are established on Guam, Fiji, Palau and else where in the Pacific. Adults feed on palm trees and may kill them. Adults are also known to feed on other types of vegetation including pandanus and banana.
Little Fire Ant (*Wasmannia auropunctata*)  **PIA Ant Key**	Tramp ants in general are a concern. Species, such as Little Fire Ant or LFA could cause significant impacts if they become established. LFA are established on Guam and Hawaii as well as else where in the Pacific. This ant has the potential to reduce biodiversity, impact agricultural activities and have direct impacts to humans and domesticated animals. LFA are small about 1/16th inch long and pale orange in color. LFA can produce painful stings. They can build up very large colonies on the ground, in trees and other vegetation, and buildings and homes and completely overrun areas they occupy.
Fruit Flies  **S Wilson- Melon Fly (*Bactrocera cucurbitae*)**	Fruit flies in general are a concern due to their potential for impacts to agriculture. The Melon Fly, pictured here, is established in Nauru, Hawaii, Guam, Northern Marianas, Solomon Islands and other locations. There are various fruit fly species that could arrive and establish in the FSM. Currently one species , the Mango Fly is known to be established in the FSM.

Aquatic Organisms

Taxa	Comments
Mozambique Tilapia (*Oreochromis mossambicus*) 	Mozambique Tilapia are established in both Pohnpei and Yap. They threaten native species via competition for resources and predation, ultimately reducing biodiversity and potentially impacting natural food webs. A hardy species that appears to do well if permitted to establish.

A3.2 Kosrae State Priority Non-Established Invasive Alien Species

Plants

Taxa	Comments
African Tulip Tree (*Spathodea campanulata*)  J Stanford	Invasive plant species established in Pohnpei are a concern for Kosrae. One such species is the African Tulip Tree.

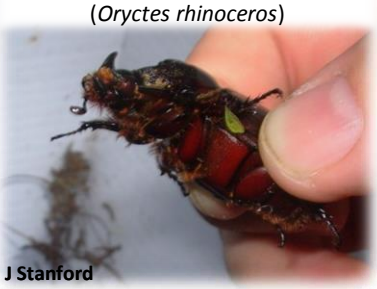
Herpetiles

Taxa	Comments
Brown Treesnake (*Boiga irregularis*)  J Stanford	Brown Treesnakes or BTS are established on Guam where they have caused extensive damage, impacting biodiversity, economics and human health. Individual BTS have arrived to both Chuuk and Pohnpei, both of these snakes were dead when encountered. Other non-native snakes arrivals have been reported from Yap (unconfirmed, species unknown) (Stanford 2008a, 2008b) and Pohnpei (*Dendrelaphis spp.* , *Lycodon aulicus* and *Bungarus fasciatus*) (Buden et al. 2001, Buden and Wichep 2003).
Coqui Frog (*Eleutherodactylus coqui*)  USDA	Established in the State of Hawaii. Males call loudly, resulting in unacceptable levels of noise at night in areas where this species has become plentiful. Multiple individuals have arrived to Guam and have been intercepted or captured during responses actions. No known populations of Coqui have established on Guam, but several other non-native anurans are established there, and therefore are also a concern for the FSM and its states.

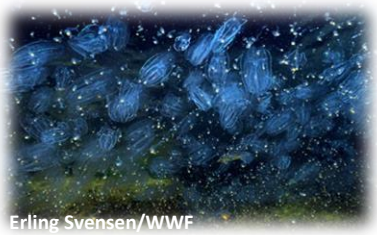
Birds

Taxa	Comments
Red-vented Bulbul (*Pycnonotus cafer*)  J Stanford	Red-vented Bulbul are established in Majuro, Fiji, Hawaii and other locations throughout the Pacific. Known to destroy soft crops such as papaya and may compete with native species for resources.

Invertebrates

Taxa	Comments
Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)  J Stanford	Coconut Rhinoceros Beetles or CRB are established on Guam, Fiji, Palau and else where in the Pacific. Adults feed on palm trees and may kill them. Adults are also known to feed on other types of vegetation including pandanus and banana.
Little Fire Ant (*Wasmannia auropunctata*)  PIA Ant Key	Tramp ants in general are a concern. Species, such as Little Fire Ant or LFA could cause significant impacts if they become established. LFA are established on Guam and Hawaii as well as else where in the Pacific. This ant has the potential to reduce biodiversity, impact agricultural activities and have direct impacts to humans and domesticated animals. LFA are small about 1/16th inch long and pale orange in color. LFA can produce painful stings. They can build up very large colonies on the ground, in trees and other vegetation, and buildings and homes and completely overrun areas they occupy.

Aquatic Organisms

Taxa	Comments
Mozambique Tilapia (*Oreochromis mossambicus*) 	Mozambique Tilapia are established in both Pohnpei and Yap. They threaten native species via competition for resources and predation, ultimately reducing biodiversity and potentially impacting natural food webs. A hardy species that appears to do well if permitted to establish.
Ballast Water Transported Organisms 	Some ships utilize a system of water exchange to ensure appropriate buoyancy and trim, this is termed ballast water. Unless treated, ocean water is likely to support living organisms. Ballast water is some times released to improve buoyancy and/or trim. If this water is untreated and released into a new environment that is suitable for the associated organisms within the water, they may establish and have the potential to cause harm. Untreated ballast water should only be release far from land and sea mounds, reducing the potential for any organisms also released to establish.

A3.3 Pohnpei State Priority Non-Established Invasive Alien Species

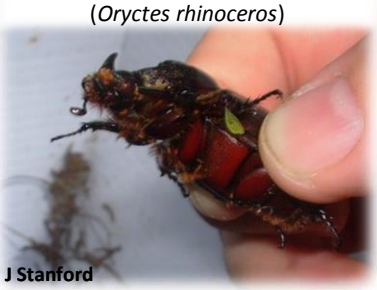
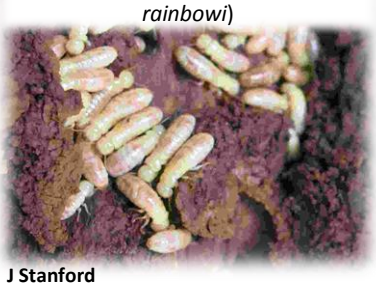
Herpetiles

Taxa	Comments
Brown Treesnake (*Boiga irregularis*)  J Stanford	Established on Guam where it has caused extensive damage, impacting biodiversity, economics and human health. An individual was reported to have been found dead on Pohnpei in 1994. The snake was associated with a cargo container arriving on a cargo ship that originated in Guam (Buden et al. 2001). Other snake species have also been encountered in Pohnpei including *Dendrelaphis spp.* , *Lycodon aulicus* and *Bungarus fasciatus* (Buden et al. 2001, Buden and Wichep 2003).

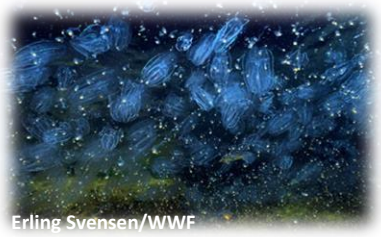
Birds

Taxa	Comments
Red-vented Bulbul (*Pycnonotus cafer*)  J Stanford	Red-vented Bulbul are established in Majuro, Fiji, Hawaii and other locations throughout the Pacific. Known to destroy soft crops such as papaya and may compete with native species for resources.
Mina Birds (Family Sturnidae)  J Stanford - Common Myna	There are several species of Myna Birds established on various islands throughout the Pacific, including in Hawaii Common Myna (*Acridotheres tristis*) and Hill Myna (*Gracula religiosa*) and in Fiji Common Myna and Jungle Myna (*Acridotheres fuscus*). Pose threats to human health, agriculture and biodiversity.

Invertebrates

Taxa	Comments
Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)  **J Stanford**	Coconut Rhinoceros Beetles or CRB are established on Guam, Fiji, Palau and else where in the Pacific. Adults feed on palm trees and may kill them. Adults are also known to feed on other types of vegetation including pandanus and banana.
Little Fire Ant (*Wasmannia auropunctata*)  **PIA Ant Key**	Tramp ants in general are a concern. Species, such as Little Fire Ant or LFA could cause significant impacts if they become established. LFA are established on Guam and Hawaii as well as else where in the Pacific. This ant has the potential to reduce biodiversity, impact agricultural activities and have direct impacts to humans and domesticated animals. LFA are small about 1/16th inch long and pale orange in color. LFA can produce painful stings. They can build up very large colonies on the ground, in trees and other vegetation, and buildings and homes and completely overrun areas they occupy.
Fruit Flies  **S Wilson- Melon Fly (*Bactrocera cucurbitae*)**	Fruit flies in general are a concern due to their potential for impacts to agriculture. The Melon Fly, pictured here, is established in Nauru, Hawaii, Guam, Northern Marianas, Solomon Islands and other locations. There are various fruit fly species that could arrive and establish in the FSM. Currently one species , the Mango Fly is known to be established in the FSM.
Coconut Termite (*Neotermes rainbowi*)  **J Stanford**	Coconut Termites were recently determined to be established in Kosrae, where they were first detected in 2013. They are currently not known from else where within the FSM. This species appears to prefer to feed on Coconut Trees but will also attack Pandanus and Citrus Trees.

Aquatic Organisms

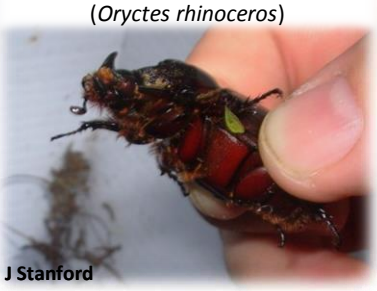
Taxa	Comments
Hull Biofouling Organisms  www.ahoward.co.uk	Vessel hulls and other equipment that spends time in the water, can become fouled or encrusted with living organisms, which in turn, if not removed, can be transported to new areas where the can detach and/or spawn and establish new populations. Some of these organisms can be potential harmful if permitted to establish. Vessel hull and equipment hygiene is essential to protection marine and freshwater resources.
Ballast Water Transported Organisms  Erling Svensen/WWF	Some ships utilize a system of water exchange to ensure appropriate buoyancy and trim, this is termed ballast water. Unless treated, ocean water is likely to support living organisms. Ballast water is some times released to improve buoyancy and/or trim. If this water is untreated and released into a new environment that is suitable for the associated organisms within the water, they may establish and have the potential to cause harm. Untreated ballast water should only be release far from land and sea mounds, reducing the potential for any organisms also released to establish.

A3.4 Yap State Priority Non-Established Invasive Alien Species

Herpetiles

Taxa	Comments
Brown Treesnake (*Boiga irregularis*)  J Stanford	Brown Treesnakes or BTS are established on Guam where they have caused extensive damage, impacting biodiversity, economics and human health. Individual BTS have arrived to both Chuuk and Pohnpei, both of these snakes were dead when encountered. Other non-native snakes arrivals have been reported from Yap (unconfirmed, species unknown) (Stanford 2008a, 2008b) and Pohnpei (*Dendrelaphis spp.* , *Lycodon aulicus* and *Bungarus fasciatus*) (Buden et al. 2001, Buden and Wichep 2003).

Invertebrates

Taxa	Comments
Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)  J Stanford	Coconut Rhinoceros Beetles or CRB are established on Guam, Fiji, Palau and else where in the Pacific. Adults feed on palm trees and may kill them. Adults are also known to feed on other types of vegetation including pandanus and banana.
Little Fire Ant (*Wasmannia auropunctata*)  PIA Ant Key	Tramp ants in general are a concern. Species, such as Little Fire Ant or LFA could cause significant impacts if they become established. LFA are established on Guam and Hawaii as well as else where in the Pacific. This ant has the potential to reduce biodiversity, impact agricultural activities and have direct impacts to humans and domesticated animals. LFA are small about 1/16th inch long and pale orange in color. LFA can produce painful stings. They can build up very large colonies on the ground, in trees and other vegetation, and buildings and homes and completely overrun areas they occupy.

A3.5 FSM National Priority Non-Established Invasive Alien Species

Herpetiles

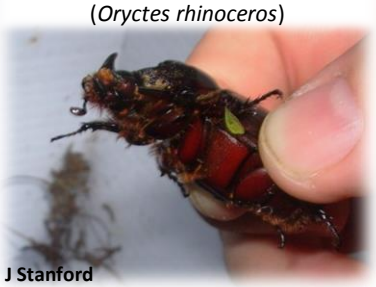
Taxa	Comments
Brown Treesnake (*Boiga irregularis*)  J Stanford	Brown Treesnakes or BTS are established on Guam where they have caused extensive damage, impacting biodiversity, economics and human health. Individual BTS have arrived to both Chuuk and Pohnpei, both of these snakes were dead when encountered. Other non-native snakes arrivals have been reported from Yap (unconfirmed, species unknown) (Stanford 2008a, 2008b) and Pohnpei (*Dendrelaphis spp.* , *Lycodon aulicus* and *Bungarus fasciatus*) (Buden et al. 2001, Buden and Wichep 2003).
Coqui Frog (*Eleutherodactylus coqui*)  USDA	Established in the State of Hawaii. Males call loudly, resulting in unacceptable levels of noise at night in areas where this species has become plentiful. Multiple individuals have arrived to Guam and have been intercepted or captured during responses actions. No known populations of Coqui have established on Guam, but several other non-native anurans are established there, and therefore are also a concern for the FSM and its states.

Birds

Taxa	Comments
Red-vented Bulbul (*Pycnonotus cafer*)  J Stanford	Red-vented Bulbul are established in Majuro, Fiji, Hawaii and other locations throughout the Pacific. Known to destroy soft crops such as papaya and may compete with native species for resources.

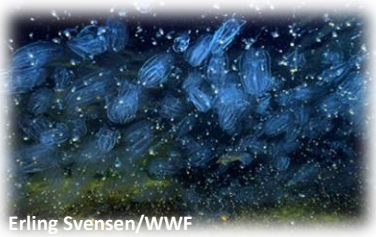
Myna Birds (Family Sturnidae)  J Stanford - Common Myna	There are several species of Myna Birds established on various islands throughout the Pacific, including in Hawaii Common Myna (*Acridotheres tristis*) and Hill Myna (*Gracula religiosa*) and in Fiji Common Myna and Jungle Myna (*Acridotheres fuscus*). Pose threats to human health, agriculture and biodiversity.

Invertebrates

Taxa	Comments
Coconut Rhinoceros Beetle (*Oryctes rhinoceros*)  J Stanford	Coconut Rhinoceros Beetles or CRB are established on Guam, Fiji, Palau and else where in the Pacific. Adults feed on palm trees and may kill them. Adults are also known to feed on other types of vegetation including pandanus and banana.
Little Fire Ant (*Wasmannia auropunctata*)  PIA Ant Key	Tramp ants in general are a concern. Species, such as Little Fire Ant or LFA could cause significant impacts if they become established. LFA are established on Guam and Hawaii as well as else where in the Pacific. This ant has the potential to reduce biodiversity, impact agricultural activities and have direct impacts to humans and domesticated animals. LFA are small about 1/16th inch long and pale orange in color. LFA can produce painful stings. They can build up very large colonies on the ground, in trees and other vegetation, and buildings and homes and completely overrun areas they occupy.
Red Imported Fire Ant (*Solenopsis invicta*)  A Wild	Red imported Fire Ants or RIfA are established in Australia, the US Mainland and as well as other areas. Known to reduce biodiversity, directly impact humans with painful stings and reduce agricultural production.

Fruit Flies  **S Wilson- Melon Fly (*Bactrocera cucurbitae*)**	Fruit flies in general are a concern due to their potential for impacts to agriculture. The Melon Fly, pictu+A1red here, is established in Nauru, Hawaii, Guam, Northern Marianas, Solomon Islands and other locations. There are various fruit fly species that could arrive and establish in the FSM. Currently one species , the Mango Fly is known to be established in the FSM.

Aquatic Organisms

Taxa	Comments
Hull Biofouling Organisms  **www.ahoward.co.uk**	Vessel hulls and other equipment that spends time in the water, can become fouled or encrusted with living organisms, which in turn, if not removed, can be transported to new areas where the can detach and/or spawn and establish new populations. Some of these organisms can be potential harmful if permitted to establish. Vessel hull and equipment hygiene is essential to protection marine and freshwater resources.
Ballast Water Transported Organisms  **Erling Svensen/WWF**	Some ships utilize a system of water exchange to ensure appropriate buoyancy and trim, this is termed ballast water. Unless treated, ocean water is likely to support living organisms. Ballast water is some times released to improve buoyancy and/or trim. If this water is untreated and released into a new environment that is suitable for the associated organisms within the water, they may establish and have the potential to cause harm. Untreated ballast water should only be release far from land and sea mounds, reducing the potential for any organisms also released to establish.

Appendix 4: Organizations and Databases Related to Invasive Species Management

Secretariat of the Pacific Commission (SPC)
SPC helps Pacific Island people respond effectively to the challenges they face and make informed decisions about their future and the future they wish to leave for the generations that follow. Go to the website for a description of the core business of each of SPC's Divisions and more detailed information about how they can help. Web link: http://www.spc.int/

Secretariat of the Pacific Regional Environment Programme (SPREP)
SPREP has been charged by the governments and administrations of the Pacific region with the protection and sustainable development of the region's environment. SPREP's vision is the Pacific environment, sustaining our livelihoods and natural heritage in harmony with our cultures. SPREP's activities are guided by its Strategic Action Plan 2011-2015. Develop through extensive consultation with Members, Secretariat program staff and partner organizations; the Plan establishes four strategic priorities: climate change, biodiversity and ecosystem management, waste management and pollution control, and environmental monitoring and governance. Web link: https://www.sprep.org/

Pacific Islands Roundtable for Nature Conservation (PIRNC)
Formed in 1997 at the request of Pacific Island Countries and Territories, PIRNC serves as a forum whereby organizations working on nature conservation in the Pacific can improve their collaboration and coordination to increase effective conservation action. In particular it is the coordination mechanism for the implementation of the Action Strategy for Nature Conservation in the Pacific Island Region 2008-2012. The Action Strategy was endorsed by SPREP members, and highlights the priority concerns for conservation in the Pacific region as well as outlining a roadmap for achieving the key goals. It is to be reviewed in December, 2013. Web link:
http://www.iucn.org/about/union/secretariat/offices/oceania/roundtable/

PIRNC has a number of Working Groups, one of which addresses invasive species; the **Pacific Invasives Partnership (PIP).** PIP is the umbrella regional coordinating body for agencies working on invasive species in more than one country of the Pacific and promotes coordinated planning and assistance from regional and international agencies to meet the invasive species management needs of the countries and territories of the Pacific. Web link:
http://sprep.org/Pacific-Invasives-Partnership/invasive-partnerships

Pacific Invasives Learning Network (PILN)
PILN is a professional network for invasive species workers in the Pacific and organizes skills and learning exchanges, workshops and meetings, and facilitates multi-sector invasive species teams in countries. Web link: http://www.sprep.org/piln

United Nations (UN)
Various offices of the UN support invasive species efforts, including the Food and Agriculture Organization (FAO), UN Environmental Program (UNEP), UN Development Program (UNDP) and International Maritime Organization (IMO)

World Health Organization (WHO)
WHO can provide expertise in human disease and support efforts to address vector control in regards to invasive species management. As an example, WHO dengue guidelines were utilized during a recent dengue outbreak in Kosrae State.

US Government
A number of US Government agencies operate programs or render assistance to the FSM. These include the Federal Aviation Administration, the US Postal Service, the Small Business Administration, the US Agency for International Development, the Department of Energy, the Department of Agriculture, the Department of Health and Human Services, the Department of Education, the Department of State, and the Department of Interior. Some of these agencies are directly linked to invasive species efforts in the FSM or elsewhere, while others are not typically involved in these efforts but all potential could be as invasive species could impact each of these offices' focal areas.

International Union for the Conservation of Nature (IUCN) - Oceania Regional Office
IUCN Oceania is working with like-minded organizations to contribute to the conservation of species and ecosystems in the Oceania region. Increasing awareness about the importance of species and the threats they are facing is crucial. The concept of "Investing in Nature" is central to this approach: too often, humans take other species and their day-to-day uses for granted. It is vital that investments in natural resources promote sustainable long-term use, management and conservation of the species we utilize in our everyday lives. Web link: http://www.iucn.org/about/union/secretariat/offices/oceania/priorities/

Non-Governmental Organizations and Consultancies
Pacific Invasives Initiative (PII), RARE, The Natural Conservancy (TNC), BirdLife, Island Conservation, Conservation International and a host of other NGOs and contractors can provide support for building invasive species management capacity by providing technical support, training, assistance with proposal and project design, and links to expertise.

Hawaii Pacific Weed Risk Assessment
Hawai`i-Pacific Weed Risk Assessment (HPWRA) provides a free service. Professional botanists use published information to predict whether plants have a low-risk or high-risk of becoming invasive in Hawai`i or similar Pacific islands. Web link: https://sites.google.com/site/weedriskassessment/home

International Union for the Conservation of Nature (IUCN), Species Survival Commission (SSC), Invasive Species Specialist Group (ISSG)

The Invasive Species Specialist Group (ISSG) aims to reduce threats to natural ecosystems and the native species they contain by increasing awareness of invasive alien species, and of ways to prevent, control or eradicate them. ISSG is a major source of information on invasive species either through the Global Invasive Species Database (GISD) or by direct contact. Web link: http://www.issg.org/about.htm

Global Invasive Species Database (GISD)

The GISD focuses on alien species known to have negative impacts on native biodiversity and ecosystems. It features over 850 species profiles of some of the most harmful species. While there are taxon and geographical biases on selection of species (due to funding sources and priority themes) that are featured on the GISD, the Oceania region is well represented with a large number of harmful species listed. Other information extracted from the GISD included information on taxonomy, species organism type, common names, habitat type, biome, biostatus information and information on pathways of introduction and spread of these species. Web link: http://www.issg.org/database/welcome/

Pacific Island Ecosystems at Risk (PIER)

The PIER database is focused on plant species that are known to have been introduced to the Pacific region including the Pacific Rim. Information extracted from PIER included biostatus of alien species at island level, common names in Pacific languages, habitat information and most importantly links to risk assessments conducted for the Pacific region. Web link: http://www.hear.org/pier/

CABI Invasive Species Compendium (ISC)

CABI ISC is an encyclopedic type of database on invasive alien species that impact biodiversity and livelihoods. CABI maintain compendia on Crop Protection, Forestry, Aquaculture and Animal Health and Production. The CABI ISC lists invasive species that impact biodiversity as well as pests of crops and pathogens. The focus for this project was on species that are known to impact biodiversity and ecosystems. Web link: http://www.cabi.org/isc/

FishBase & SeaLifeBase

FishBase and SeaLifeBase are databases focused on all fish species known to science. Data and information included in FishBase (http://www.fishbase.org/)includes ecological information, information on traits and distribution at country and ecosystem level including in the introduced range of fish species in the aquatic system (both marine and freshwater). SeaLifeBase (http://www.sealifebase.org/)consists of similar information on marine species.

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