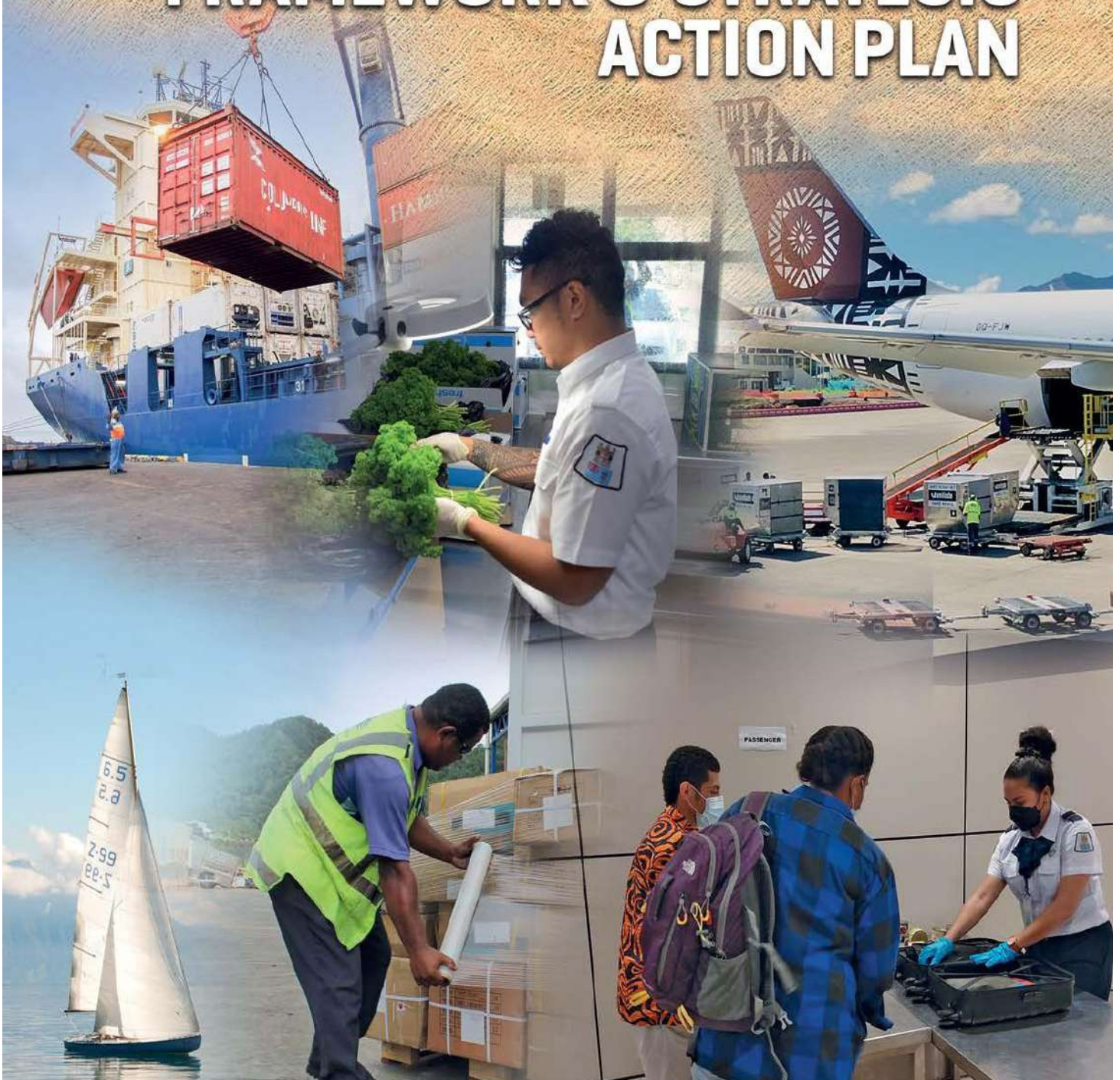




**BIOSECURITY
AUTHORITY
FIJI**

REPUBLIC OF FIJI NATIONAL INVASIVE SPECIES FRAMEWORK & STRATEGIC ACTION PLAN

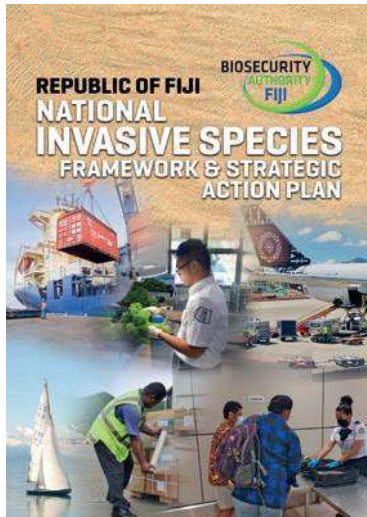


PUBLICATION DATA

This document was produced as part of the Fiji GEF-6 project “Building Capacities to Address Invasive Alien Species to Enhance the Chances of Long-term Survival of Terrestrial Endemic and Threatened Species on Taveuni Island, Surrounding Islets and Throughout Fiji”.

Implementing Partner: Biosecurity Authority of Fiji

GEF Partner Agency: United Nations Development Programme



Cover

The keyword in focusing on invasive alien species is access - the cover highlights some of the more common ways they come into the country.



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Cover photo: Inter-Island roll-on roll-off ferry preparing to dock at Taveuni, Stanford 2019.



MISSION STATEMENT

Protecting and safeguarding Fiji's resources and its people
from the impacts of Invasive Alien Species.

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GLOSSARY

Alien Species:	A species that is not native to a specific area. This term is used interchangeably with non-native species.
Awareness:	concern about and well-informed interest in a particular situation or development
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 includes the variability within and between species and within and between ecosystems.
Biosafety:	Minimizing the risks from both the intentional and accidental introduction and spread of organisms with potential to have adverse economic, environmental, and socio-economic impacts, including genetically modified organisms (GMOs). Biosafety is effectively the same as biosecurity except that it also includes GMOs.
Biosecurity:	Actions taken to reduce the likelihood of the spread of invasive species across international or internal borders or boundaries.
Border:	The boundary between distinct locations. This can be distinguished in international, domestic, or inter-island contexts.
Containment:	Keeping an invasive species within a defined area.
Control:	Reducing the population and/or spread of an invasive species.
Early detection:	The ability to encounter novel organisms shortly after their arrival. Early detection of novel organisms requires skill and regular monitoring.
Endemic species:	Unique to a geographical area such as a watershed, an island, or a group of islands.
Eradication:	Removal of the entire population of an invasive species from a specified area.
Genetically modified organism:	An organism whose genetic composition has been altered by the application of modern biotechnology techniques.
Indigenous species:	Plants, animals, and other organisms that occur naturally on an island or in a specified area have either evolved there or arrived without human intervention. This term is used interchangeably with native species.
Introduced species:	Plants, animals, and other organisms are taken beyond their natural range by people, deliberately or unintentionally.
Invasive species:	An organism causing a negative impact in a particular setting. Generally, refers to a species that has become destructive to the environment or human interests and may be a non-native species or a native species that has increased in number and become destructive, typically due to what is termed biological release.
Invasive Alien Species:	Invasive Alien Species means organisms found outside of their native geographical range that have established, spread, and become harmful and destructive to biodiversity and the environment of value to humans
IUCN Red List:	Global inventory of the conservation status of biological species
Monitoring:	Programs to detect change, e.g., in the distribution of invasive species, the success of management projects, etc.
Native species:	Any species that originated naturally in, or is endemic or common to, the Fiji Islands

Non-native species:	A species that is not native to a specific area. This term is used interchangeably with alien species.
Pathway:	The route by which an invasive species may be moved from one location to another.
Pest:	Means any species, strain, or biotype of a plant, animal, microbe, or pathogenic agent, or any organism, which— (a) causes disease; or (b) is detrimental to or capable of harming or adversely affecting animals or animal products, plants or plant products, human beings, or the environment.
Rapid response:	The ability to respond quickly and appropriately to detections of novel organisms.
Risk assessment:	Evaluation of the risk that a newly introduced species will become invasive with damaging consequences, prior to its introduction.
Surveillance:	Monitoring to detect the arrival of new incursions of invasive species.
Vector:	A 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.
Weeds:	In general, refers to plant species that are unwanted in a particular setting.

ACRONYMS

AFL	Airports Fiji Limited
ATM	Air Traffic Management
BAF	Biosecurity Authority of Fiji
BTS	Brown Tree Snake
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties
CRB	Coconut Rhinoceros Beetle
DOE	Department of Environment
EBA	Endemic Bird Area
EN	Endangered
EDRR	Early Detection and Rapid Response
EFL	Energy Fiji Limited
EPS	Endangered and Protected Species
ERP	Emergency Response Plan
FAO	Food and Agriculture Organization
FIR	Flight Information Region
FIST	Fiji Invasive Species Taskforce
FFH	Fiji Forest Harvesting Code of Practice
FNU	Fiji National University
FRCS	Fiji Revenue & Customs Service
FRA	Fiji Roads Authority
GDP	Gross Domestic Product
GEF	Global Environment Facility
GISMP	Guidelines for Invasive Alien Species Management in the Pacific
GMO	Genetically Modified Organism
GCC	Government Commercial Company
GCSA	Government Commercial Statutory Authorities (GCSA)
IAS	Invasive Alien Species
IBA	Important Bird Area
IF	Implementation Framework
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
IS	Invasive Species
ISSG	Invasive Species Specialist Group
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KM-GBF	Kunming Montreal Global Biodiversity Framework
LC	Least Concern
LFA	Little Fire Ant
LMO	Living Modified Organism

LTA	Land Transport Authority
MIS	Management of Invasive Species
MSAF	Maritime Safety Authority of Fiji
MoA	Ministry of Agriculture
MCTTT	Ministry of Commerce, Trade, Tourism & Transport
MDNS	Ministry of Defence & National Security
MEHA	Ministry of Education, Heritage, and Art
MHMS	Ministry of Health and Medical Services
MIT	Ministry of Infrastructure and Transport
MTA	Ministry of iTaukei Affairs
NBSAP	National Biodiversity Strategy and Action Plan
NDMO	National Disaster Management Office
NEC	National Environmental Council
NFMV	NatureFiji- MareqetiViti
NGO	Non-Government Organization
NISFSAP	National Invasive Species Framework and Strategic Action Plan
NISSAP	National Invasive Species Strategy and Action Plan
OIE	World Organization for Animal Health
PAC	National Protected Area Committee
PIP	Pacific Invasives Partnership
PICTs	Pacific Island Countries and Territories
PNG	Papua New Guinea
PoWPA	Program of Work on Protected Areas
RBP	Regional Biosecurity Plan for Micronesia and Hawaii
RFMF	Republic of Fiji Military Forces
RA	Risk Assessment
SPC	The Pacific Community
SPS	Sanitary and Phyto-Sanitary
SPREP	Secretariat of the Pacific Regional Environmental Programme
TOR	Terms of Reference
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
USA	United States of America
USP	University of the South Pacific
UNEP	United Nations Environmental Programme
VU	Vulnerable
WAF	Water Authority of Fiji
WDPA	World Database on Protected Areas
WTO	World Trade Organization

1.0 INTRODUCTION

This document, the Fiji National Invasive Species Framework and Strategic Action Plan (NISFSAP), has been produced to serve as a framework for coordinating Invasive Alien Species (IAS) threat and impact reductions and as a 5-year action plan for implementation of these and related activities throughout the country, and to assist the synthesis and recognition of priorities and coordinate the implementation across all sectors and agencies involved in IAS management in Fiji.

In the past, IAS management in Fiji has concentrated on plant and animal pests of primarily the agricultural and forestry sectors, but there has been a growing recognition that pests impact all sectors and negatively impact native biodiversity, ecosystem services, the economy, resilience to climate change, safeguarding capacity, health, local communities, and individuals.

This recognition has led to increasing efforts from ministries, departments, regional bodies, and NGOs to implement coordinated approaches to addressing IAS. Production of the Fiji NISFSAP, while essential for Fiji, is also part of a larger regional effort to reduce risk and impacts from IAS within the Pacific, better protecting both individual PICTs and the region. These IAS threat and impact reductions are essential for ensuring the long-term safeguarding of Fiji, its people, its cultures, and biodiversity.

1.1 The Republic of Fiji

The Republic of Fiji is located in the South Pacific, east of Vanuatu, southwest of Tonga, and roughly 1000 miles north of New Zealand. Fiji lies between 12 and 22-degrees south latitude in the tropics and is composed of approximately 332 islands and 522 islets with a total land area of 7055 square miles or 18272 square kilometers (Figure 1).

Within Oceania, the Pacific Islands region is typically divided into three culturally related areas: Melanesia, Polynesia, and Micronesia. Fiji is located at the division between Melanesia and Polynesia, with Micronesia to the north. Fiji is generally considered the eastern extent of Melanesia, but there is considerable Polynesian influence, especially in Rotuma and parts of the Lau Islands, which are the most eastern islands of Fiji.

Approximately 106 of Fiji's islands are inhabited. The four largest Islands Viti Levu, Vanua Levu, Taveuni, and Kadavu, together make up 92% of the overall land area of Fiji (Table 1). In general, the larger islands of Fiji tend to be mountainous and forested with urban centers located on or near the coasts.

Table 1: The four largest islands of Fiji and their respective land areas.

Island	Area (miles ²)	Area (km ²)
Viti Levu	4011	10388
Vanua Levu	2157	5586
Taveuni	168	435
Kadavu	159	412

Viti Levu, Fiji's largest island, is also home to the capital city Suva, the main international airport at Nadi and two of Fiji's main seaports, one at Suva and the other at Lautoka. More than half (69%) of Fiji's population resides on Viti Levu. The three largest urban areas within the country are located on Viti Levu and include the greater Suva area, Nadi town and Lautoka.

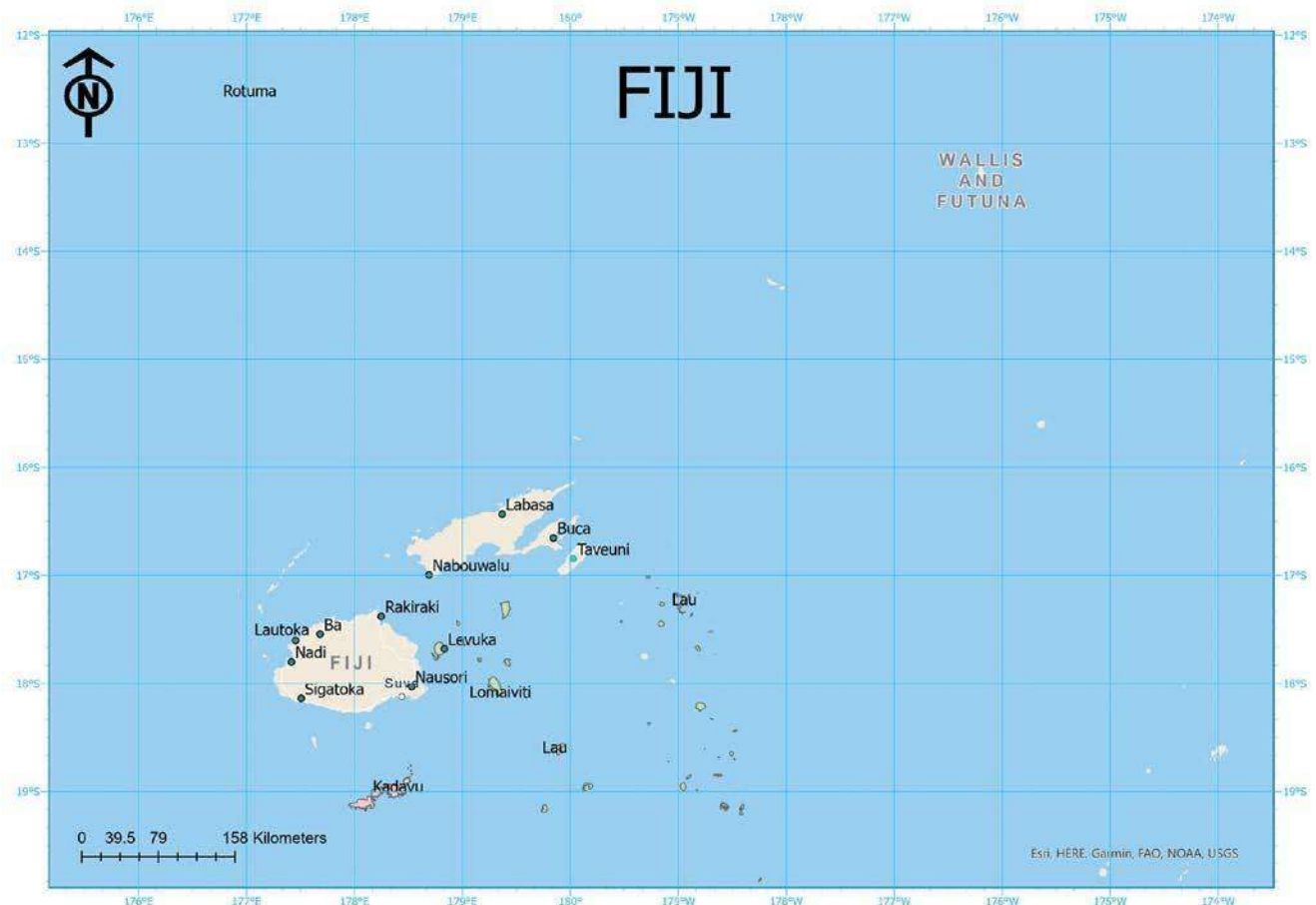


Figure 1: Map of the Republic of Fiji, including Rotuma.

Two islands in Fiji are populated by displaced South Sea Islanders, namely Rabi and Kioa. Kioa is an outlier to Vanua Levu. Situated opposite Buca Bay, it is a freehold island purchased by settlers from Tuvalu, who arrived between 1947 and 1983. On Rabi, the inhabitants are displaced Banabans from Ocean Island in Micronesia (McAdam 2016).

Fiji's population was recorded as 884,887 permanent residents in 2017 (Fiji Bureau of Statistics website) <https://www.statsfiji.gov.fj/>; with slightly less than 500,000 individuals residing in urban areas. Visitation in 2018 was recorded at just over 870,000 individuals, and during the recent month of September 2019, most visitors were from Australia or New Zealand, the closest large land masses, but overall, Fiji receives visitation from all over the world (Fiji Bureau of Statistics website).

Fiji is a parliamentary republic, which is guided by its 2013 constitution and its 3 branches of government: legislative, executive, and judiciary. Administratively, Fiji is divided into four divisions (Eastern, Central, Northern, and Western) plus the self-governing area of Rotuma, which includes a main island and several small satellite islets. Divisions in Fiji are composed of provinces, of which there are 14. Provinces are managed on a day-to-day basis by provincial councils. Provincial councils may make by-laws and impose rates (local taxes), subject to the approval of the Fijian Affairs Board, a government department. Below the provincial level, districts and villages, based on extended family networks, have their own chiefs and councils. Indigenous Fijian administration is based on the koro, or village, headed by a Turaga ni Koro, elected or appointed by the villagers. Several koros combine to form a Tikina, two or more of which comprise a province. In addition, municipal governments have been established for the cities of Suva and Lautoka, and for ten other towns. Local authorities have also been established for rural areas. (Commonwealth Local Government Forum, http://www.clgf.org.uk/default/assets/File/Country_profiles/Fiji.pdf).

1.2 Invasive Alien Species Defined

It is important to understand that for some specific terms, their exact meaning may vary among countries, working groups, individuals, and over time. Those terms commonly used to refer to IAS are a group of terms whose meanings vary depending on where you are, with whom you are talking, or what documents you are reading. Therefore, this report has provided a list of concepts that define specifically how various terms are utilized within this document or should be utilized in context with this document (see Key Concepts on pages 7 and 8). It is hoped that by providing a list of specifically defined key concepts, misunderstandings can be minimized in the use of this document.

The definitions of various terms are not always globally agreed on, and therefore, it is important to understand their use in the context of this document. Among the most important of these are the terms “invasive alien species,” “invasive species,” “pest species,” and “weeds” (Table 2). In the context of this framework and strategic action plan,

Invasive Alien Species means organisms found outside of their native geographical range that have established, spread, and become harmful and destructive to biodiversity and the environment of value to humans.

While the term Pest may refer to any IAS, the term “pest” is more expansive in that it may also include native species that are causing negative impacts. The Guidelines for Invasive Alien Species Management in the Pacific or GISMP (SPREP 2009) describes invasive species (IS) as “*Introduced species that become destructive to the environment or human interests; can also include some native species that proliferate and become destructive following environmental changes caused by human activities*”. Figure 2 illustrates such a species, one that may be native but clearly is demonstrating invasive tendencies.

Table 2: Key terms and definitions as used in this document.

Term	Definition
Weeds	Plant species that are unwanted in a particular setting
Pest or Pest Species	Means any species, strain, or biotype of a plant, animal, microbe, or pathogenic agent, or any organism, which— (a) causes disease; or (b) is detrimental to or capable of harming or adversely affecting animals or animal products, plants or plant products, human beings, or the environment;
Invasive Species (IS)	An organism causing a negative impact in a particular setting
Invasive Alien Species (IAS)	Organisms found outside of their native geographical range have established, spread, and become harmful and destructive to biodiversity and the environment of value to humans

Within this framework and strategic action plan, the term pest or pest species is used interchangeably with the SPREP definition of invasive species. While invasive species or pest species are broadly covered herein, it is the specific subset of invasive species that are non-native or alien that is the central focus of the framework and strategic action plan. It is these non-native pests that are referred to as Invasive Alien Species or IAS.

Therefore, in this document, the term Invasive Alien Species or IAS is used to refer to non-native or alien species that have or may have invasive tendencies. The terms Pests and Invasive Species or IS are used to refer to either native or non-native species that have or may have invasive tendencies.



Figure 2: Hillside and trees covered in *Merremia peltata*, a species which shows invasive tendencies in Fiji, photo J. Stanford

A native or indigenous species occurs naturally in an area, i.e., it has been present or inhabiting an area for many generations, and most often it is a species that was present even before humans arrived. A non-native or alien species does not naturally occur in a specific area and can also be a species that was introduced by people (typically early/first colonizers).

Not all non-native or alien species are or should be considered invasive. Some non-native species cause no negative impacts that we know of, or if they do, their benefits outweigh their impacts or possible impacts. Many non-native species provide significant benefits to humans, including many agricultural species used for human food production, and these organisms, while non-native, are not invasive.

Endemic species are native species that occur naturally nowhere else. Because of the globally restricted ranges of endemics, they may become quickly threatened by stressors such as habitat loss, climate change, and IAS.

1.3 The Significant Threat of Invasive Alien Species to Fiji

IAS is in general widespread and impacts all countries and regions of the world. While the specific species and their impacts may change from location to location, the impacts from IAS affect everyone and are well-documented globally. In the Pacific islands, there are already thousands of IAS established, but not all are found on all islands. A subset of these numerous IAS is well established in many Pacific Island Countries and Territories (PICTs). A smaller subset of IAS is either established in Fiji or threatens Fiji with invasion.

While some non-native species may expand their ranges through flight, swimming, or even walking, the vast majority need assistance to reach new areas. In the Pacific islands, species spread may happen through rafting, being wind-blown, changes in mean water temperatures, and most extensively, through both deliberate and unintentional human introductions.

In general, islands are more vulnerable to invasion by non-native species than continental systems. Island ecosystems also tend to have fewer species present and become less complex ecologically with increasing distance from continents. These fewer complex systems are, in general, less resilient when confronted with newly arriving species, which, if they establish, are likely to impact native biota through a variety of mechanisms such as competition, predation, and disease transmission. Introduced invasive plants, mammalian predators (such as rats, feral cats, mongoose, snakes, and pigs), and herbivores (such as rabbits, deer, goats, and sheep), as well as introduced diseases, have had devastating effects on native and endemic island species and their habitats. Impacts from IAS may be compounded by climate change.

New opportunities for them to become invasive. IS can reduce the resilience of natural habitats, agricultural systems, and urban areas to climate change. Conversely, climate change reduces the resilience of habitats to biological invasions (from IUCN resources, accessed 27 February 2021: <https://www.iucn.org/resources/issues-briefs/invasive-alien-species-and-climate-change>).

Therefore, reducing the potential for non-native species to arrive and establish is critical for protecting native biota, ensuring ecosystem health, and the longevity of the associated services and direct benefits derived from these systems. Managing established pest species to reduce further spread and reduce/mitigate ongoing impacts is essential for ecosystem protection, resilience, and recovery. Conservation programs must emphasize the value of biodiversity in relation to ecosystem services and the importance of intact landscapes for traditional practices and support of many divergent activities, such as tourism and fisheries. Areas free from invasive species where endemic and endangered species are located should be recognized for their high conservation value to stakeholders.

An example of native species impacted by IAS is the palms of Fiji. Fan palms in Fiji were traditionally used as building materials and protection from both the sun and rain. More recently, palms are cultivated and exported for their ornamental value. The palm genus *Pritchardia* includes 28 species of short to tall, moderate, solitary fan palms confined to the Pacific. In Fiji, *P. thurstonii* is restricted to the Lau Group (archipelago) to the east of the main Fijian island, within the southern lagoons of Ogea Driki and especially Fulaga (Fulanga, Vulaga) (Fuller and Jones 1999). These palms frequently grow on mushroom-shaped, coral limestone islets. At one time, these palms were more common, but the introduction of seed-eating rats has severely limited their range.

IAS may include organisms that impact humans directly, such as viruses and disease vectors like mosquitoes and rodents. In this regard, it is essential to work to minimize the potential threat of arrival, spread, and establishment of such non-native organisms.

Stanford (2019) documented 662 organisms in Fiji that are or may be invasive, including two native species, eight species without specified origins, and 652 non-native species. The two natives are both fruit flies that occur naturally in some areas of the country but not in others, and therefore could become invasive if they spread to non-native ranges within the country. Of the 652 known non-native species documented as established in Fiji, 434 are known to have invasive tendencies within Fiji, while the remaining 218 species have not been specified in terms of their invasiveness within the country. Even with so many non-native and invasive species documented for Fiji, it is expected that there are additional non-native and invasive species within the country that were not identified by these efforts and whose presence within the country has yet to be documented anywhere.

As part of the 2019 IAS desktop exercise undertaken by Stanford, a Fiji-IAS spreadsheet was produced. Most of the species in the Fiji-IAS spreadsheet are terrestrial plants. This may be an artifact of the data sources mined as part of this exercise, but it is also likely true that many of the IAS now established in Fiji are terrestrial plants, many of which were purposefully introduced for agricultural and horticultural purposes.

The Fiji island with the most recorded species in the Fiji-IAS spreadsheet is Viti Levu, with 504 non-native species established, of which 376 of these species are known to be invasive on that island (74%). Vanua Levu was the island with the second-highest recorded number of established non-native species, with 318 non-native species, of which 299 are known to be invasive (94%). Taveuni was documented with 109 established non-native species, of which 101 are known to be invasive (93%). Many Fijian islands had fewer non-native species documented, such as Qamea, where only five established non-native species were documented, with all five being invasive (100%). These results tend to demonstrate what was expected, with the main island of Viti Levu having the most established non-native species and the other large islands of Vanua Levu and Taveuni also having elevated numbers of non-native species already present, while smaller and somewhat more remote islands have fewer documented, established non-native species.

Non-native organisms in Fiji can be found in freshwater, marine, and terrestrial biomes. A breakdown of the numbers of non-native and IAS by biomes can be found in Table 3. Of the documented non-native organisms found in Fiji (Stanford 2019), 92% of them are found in terrestrial systems, and of those non-native species confirmed to show invasive tendencies in Fiji, 95% of them are found in terrestrial systems. More details regarding IAS in Fiji can be found in numerous sources and a compilation of species in the Report on the Invasive Alien Species of the Republic of Fiji (Stanford, 2019).

Table 3: Documented non-native and confirmed invasive species in Fiji within various environmental systems or biomes. Last updated in March 2021.

Biome or System	Non-native organisms	Confirmed Invasive in Fiji
Freshwater	26	12
Freshwater/brackish	6	2
Freshwater/marine	5	4
Marine	16	2
Terrestrial	606 (includes 8 where origin was not specified)	413 (includes 2 native organisms)
Terrestrial/freshwater	1	1

A Brief Note on One Invasive Alien Species: An Ongoing Invasion of the Forests in Fiji

A research paper published in 2019 by Dyer et al. provides a concerning argument that the non-native Ivory Cane Palm (*Pinanga coronata*) may well be invasive in Fiji. This alien species has been found in the understories of native Fiji forests, and its coverage negatively correlated with that of native Fiji tree ferns, especially seedlings, suggesting that *P. coronata* (Figure 3) is displacing native species by preventing seedling establishment and maturation. This paper calls for urgent management efforts and legislation to prevent the spread of *P. coronata*, as well as the potential introduction and spread of other ornamentals, to better protect and preserve native biodiversity.

P. coronata is native to Sumatra and Java and is an understory palm that grows well on steep forested slopes and is a known IAS in Hawaii, where it is established on the islands of Oahu and Hawaii. This palm is likely to do very well in Fiji and, if not controlled, could have significant impacts on native systems. Spreading from a 1970's introduction, *P. Forest* (Boehmer et al, 2016).



Figure 3: Ivory Cane Palm (*Pinanga coronata*). Photo by Menjekia from <https://www.palmpedia.net/>

Of these hundreds of IAS already established in one or more locations within the country, there are some that are more impactful than others, and for many of these species, there simply is not a full record of their negative impacts, nor even their established ranges within the country. For example, the Giant Invasive Iguana or GII (*Iguana iguana*) was brought into the country illegally and released on Qamea Island. Within a few years, the GII was documented on the neighboring islands of Matagi, Laucala, and Taveuni. More recently, the GII has been encountered further afield on the islands of Vanua Levu, Koro, and Wakaya (Falcon et al. 2013). GII are considered a threat to village subsistence gardens within local communities, raising concerns regarding damage to vegetable farms with sweet potato (*Ipomoea batatas*) and bele (*Abelmoschus manihot*) reported as preferred food plants. GII may threaten other sectors, as has been the case on various Caribbean islands where this species has established and caused considerable economic and ecological damage. Without significant predation, competition, and diseases which keep their numbers in check in their native range, GII established in the non-native range have shown that their populations can grow to extraordinary densities, where they can devastate vegetation, including crops, and serve as hazards on

roads and runways, and negatively impact infrastructure through burrowing, potentially collapsing seawalls and foundations, as well as possibly impacting hillside stability. Destabilization may, in turn, lead to the collapse of structures, and possible soil and beach erosion contributing to landslides (Shah et al, 2020) and inundation events.

Other examples of some highly impactful IAS established in Fiji include the Asian Subterranean Termite (*Coptotermes gestroi*), American Foulbrood (*Paenibacillus larvae*), Taro Beetle (*Papuana uniondis*), and several fruit fly species. A list of some common IAS detected in Fiji is as follows:

- Cane Toad (*Rhinella marina*): Was recently reported in Rotuma
- African Tulip Tree (*Spathodea campanulata*): Localized, but may still have a limited distribution on Taveuni
- Coconut Rhinoceros Beetle (*Oryctes rhinoceros*): widespread, including Taveuni
- Yellow Crazy Ant (*Anoplolepis gracilipes*): widespread on most larger islands and many smaller ones
- Common Myna Bird (*Acridotheres tristis*): Typically, widespread where they are present but localized across all Fiji Islands. Essentially restricted to larger inhabited islands, including Taveuni
- Jungle Myna Bird (*Acridotheres fuscus*): On some larger islands, including Taveuni
- Polynesian Rat (*R. exulans*): Documented on 18 islands within Fiji, including Viti Levu, Vanua Levu, Taveuni, Kadavu, Rotuma, and others. Widespread
- Various mosquito species such as *Aedes aegypti*, *A. albopictus*, and *Culex quinquefasciatus*, and the various associated diseases such as Dengue and Zika
- Thrip species such as Thrips imaginis, *T. tabaci*, and *T. palmi*
- Spiralling white fly (*Aleurodicus dispersus*)
- Burrowing Nematode (*Radopholus similis*)
- Red Vented Bulbul (*Pycnonotus cafer*): Unclear how widespread it is as it is still not reported on Taveuni, Qamea, Matagi, and/or Laucala
- Cucumber Mosaic Virus (CMV), which causes Kava Die-back, is spread by various vectors, including aphids, some of which are likely IAS: CMV is established on various islands, including Taveuni
- Feral Cat (*Felis catus*): Likely established on most islands with human inhabitants
- Banana Bunchy Top Virus: Localized
- Asian Subterranean Termite (*Coptotermes gestroi*): Viti Levu and Vanua Levu, drier areas around Lautoka and Labasa
- Giant Invasive Iguana (*Iguana iguana*): Known to be established on Qamea, Matagi, and Laucala, may also possibly be established on Taveuni, and several individuals have been reported from Vanua Levu
- Fruit Flies: *Bactrocera kirki* and *B. obsura* are both established in Rotuma, but not the main Fiji Islands
- Taro Beetle (*Papuana uniondis*): Currently established all around Viti Levu, including Ovalau and Gau islands in the Lomaiviti Group and Kadavu, Buca in Cakaudrove, but not yet recorded for various outer islands, including Taveuni, an important taro growing area
- Indian Small Mongoose (*Urva auropunctatus*): Found on Viti Levu and Vanua Levu but not on Taveuni or many of the smaller islands within the country
- Indian Brown Mongoose (*Herpestes fuscus*): Documented on Viti Levu only
- Tropical Red Fire Ant (*Solenopsis geminata*): Aggressive with a painful sting and known to cause ecological and agricultural impacts. Found on Viti Levu in drier areas. Thought to have arrived in Fiji after WWII on United States (US) military equipment. Very similar in appearance to the Red Imported Fire Ant (*Solenopsis invicta*)
- Feral Goat (*Capra hircus*): Feral populations are established on islands throughout Fiji, but are not known on Taveuni, Qamea, Matagi, or Laucala
- American Foulbrood caused by spores of the *Paenibacillus larvae* Bacterium: Has been detected in the Western and the Northern Division (Macuata) on Viti Levu
- Australian Magpie (*Gymnorhina tibicen*) A small population exists on the northern end of Taveuni

While some IAS already established in Fiji are widespread and found on many islands, some IAS species have not spread country-wide at this time, and where possible, these species should be managed to prevent further spread and reduce their range as far as is feasible. For example, the Indian brown mongoose (*Herpestes fuscus*) has been discovered on the island of Viti Levu in Fiji. This species can be traced back to a private zoo in the late 1970s. Activity, diet, and interaction/competition with other mongoose species are unknown. To date, there is no estimate of the population size of *H. fuscus* in Fiji or of its impact on native fauna (Veron et al, 2010). With limited inter-island biosecurity, it is possible this species could spread to other islands within the country (Morley, 2004).

The expansion of global trade and visitation has increased the threat of additional IAS being moved around the world and establishing in new locations. This is of global concern, and one that is even more pressing for tropical islands and for Fiji, as it is a significant threat. This threat, at least in part, is recognized in Fiji and efforts are (and have been) underway to better safeguard the nation through improved sanitation of pathways, strengthened biosecurity activities and tools and country-wide engagement of all sectors, residents and visitors, to reduce the potential for arrival and establishment of new IAS to Fiji and the further spread of already established IAS within the country. Furthermore, while Fiji may have many IAS, not all species are present on every island, including many extremely harmful ones. In this regard, preventing the spread of these is both possible and needs to be a priority if biodiversity and livelihoods are to be protected.

A few examples of invasive alien species not currently known to be established in Fiji, but which are of significant concern if established, include the Brown Tree snake (*Boiga irregularis*) (Figure 4) and Coconut Rhinoceros Beetle bio-type G (*Oryctes rhinoceros* G) (Figure 5a, b). These species (and many others) are already established in one or more PICTs with trade and/or other ties to Fiji, and therefore, these species have an elevated potential for establishing in the country if appropriate management activities are not engaged and maintained.



Figure 4: Brown Tree snake (*Boiga irregularis*)

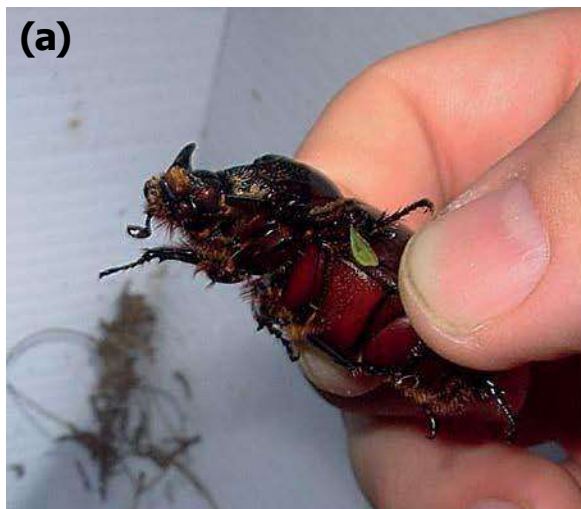


Figure 5: a) Coconut Rhinoceros Beetle or CRB (*Oryctes rhinoceros*), b) Damage to a coconut tree caused by CRB.

A list of some IAS not yet known to be established in Fiji, but which threaten Fiji with invasion are as follows:

- Giant African Snail (*Achatina fulica*): Established in Federated States of Micronesia, Vanuatu, New Caledonia, Papua New Guinea (PNG), Guam, China, Taiwan, India, Hawaii, French Polynesia, etc.
- Coconut Rhinoceros Beetle (*Oryctes rhinoceros*) Biotype-G: Established in Guam, Oahu, Rota, and several other Pacific Islands
- Various species of Bactrocera Fruit Flies
- Red Imported Fire Ant (*Solenopsis invicta*): established in Australia, the US mainland, China, and Taiwan
- Huanglongbing Disease or Citrus Greening: Established in PNG, China, Taiwan, and the US mainland. Recently, the vector Asiancitrus psyllid (*Diaphorina citri*) has been found in Samoa
- Copra Beetle or Red Legged Ham Beetle (*Necrobia rufipes*): Established in Thailand, Singapore, Indonesia
- Non-native snakes such as the Brown Treesnake (*Boiga irregularis*): Established in Guam, native to Australia, PNG, and the Solomon Islands
- Taro Leaf Blight caused by the Fungus *Phytophthora colocasiae*: Established in Samoa, PNG, Hawaii, Solomon Islands, Guam, Federated States of Micronesia, etc.
- Avian malaria caused by several parasites, including *Plasmodium relictum*, and transmitted from bird to bird by mosquitoes: Distribution includes French Polynesia, PNG, the Republic of Korea, etc.
- Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*): Present in Australia, New Zealand, Hawaii, the US mainland, China, the Republic of Korea, etc.
- Formosan Subterranean Termite (*Coptotermes formosanus*): Established in the Marshall Islands, China, Taiwan, and the US mainland
- Rosy Wolf Snail (*Euglandina rosea*): Established in French Polynesia, Guam, Federated States of Micronesia, PNG, and Vanuatu
- Fall Army Worm (*Spodoptera frugiperda*): Recently established in Australia, PNG, Solomon Islands, and New Caledonia.
- Little Fire Ant or LFA (*Wasmannia auropunctata*) *: established on various islands throughout the Pacific, including Hawaii, Guam, Yap, American Samoa, and others

*** Note:** During the preparation of this document *W. auropunctata* was potentially detected in Fiji. Details on the potential existence of this species within the country, its potential range/spread, likely pathway and vector of arrival, as well as any management actions undertaken have not been fully clarified. It is worth noting that *W. auropunctata* is an aggressive invader that, if established, has a high likelihood to continue to expand its range within the country and as populations increase and spread, this species has a high likelihood of causing significant economic, natural resource and human health impacts similar to those seen on other tropical islands where this species has established. Given the high likelihood of accidental spread of this species, along with its likely significant impacts, early detection of its presence followed rapidly by comprehensive and effective eradication is well warranted. If this species has, in fact, arrived and established within the country it should be a high priority to document its current range, ensure appropriate biosecurity is in place and institute effective eradication efforts, which exist for relatively small populations of *W. auropunctata*, but would require a rapid implementation to ensure it does not spread and significant effort and time to complete.

14 Invasive Alien Species-Everyone's Responsibility

Typically, IAS spreads to new locations via the movement of people, goods, and/or materials/supplies. One of the key mechanisms for reducing threats associated with IAS is through changing the behavior of people, both residents and visitors. People need to avoid transporting risky goods both into the country (Figure 6) and also within the country. This may include items such as some fruits and vegetables, livestock and pets, beehive materials and equipment, and planting material, including seeds, soil, etc. It may also include many other items, some of which may at first not seem to be suspect for pest transport, such as coconut handicrafts, timber, cut flowers, food products, coolers (esbies or chilly bins), and even such items as dirty shoes and suitcases.

Figure 6: Example of an invasive alien species pathway and vectors.

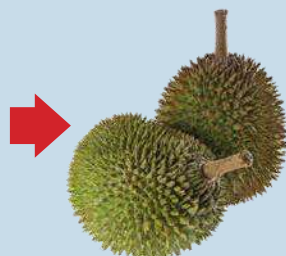
What if a visitor on holiday visiting various countries across the Pacific has enjoyed eating fresh fruits in one country and, on his way to the airport, stops at a market and purchases some fruit?

In the scenario above, the expectation is that there are redundancies built into the biosecurity system, such that biosecurity risks are either prevented from entering the transportation network or are removed while within the network, reducing the potential for arrival, establishment, and subsequent impacts.



Origin

Intentional or accidental intent to move an item which presents a biosecurity risk.



Assess Risk

Are there restrictions on transporting the fruit?
What are the risks?
Are the seeds viable?
Could it be a host for pests or disease?



Pathway

Commercial passenger flight.



Vectors

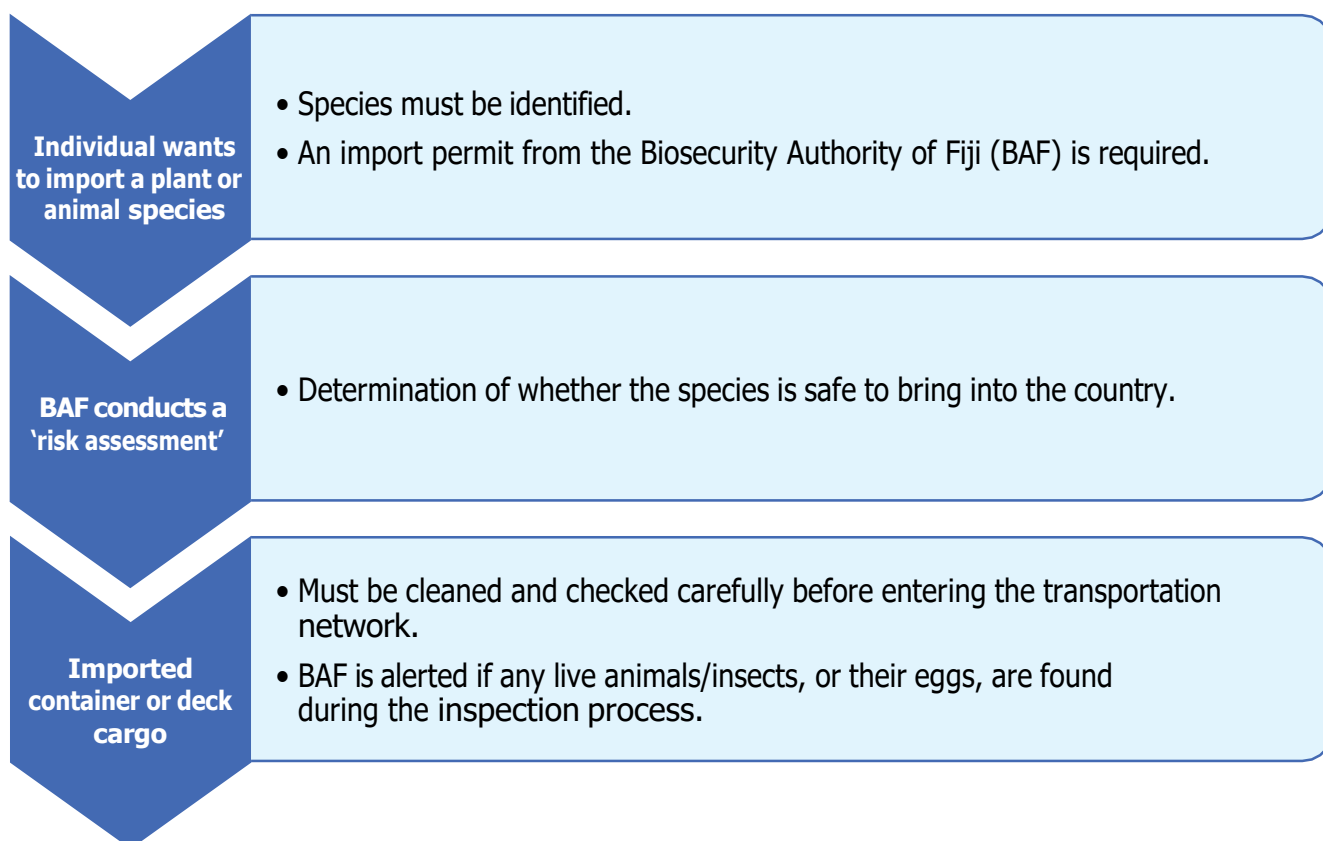
Aircraft Personal Baggage
Suspect fruit.

Biosecurity anticipates that one of the following will take place.

- The traveler has been educated and is aware of the risks of transporting fresh fruits (and therefore will either eat the fruit before departure or leave it for someone who is not flying)
- The traveler sees biosecurity awareness materials at the airport departure lounge and realizes that there are restrictions on transporting fresh fruit (and therefore eats the fruit, gives it to someone, or disposes of it)
- The traveler encounters a biosecurity bin on arrival and realizes the risk and requirements (and therefore puts the fruit into the biosecurity bin)
- Biosecurity officer at the arrival airport inspection station asks the traveler if they are carrying any fruits and inspects all baggage and personal effects (and therefore the fruit is detected and can be properly managed).

If an individual, group, or company intends to import an organism into Fiji, some requirements must be followed and met to ensure no high-risk biosecurity threats enter the country (Figure 7). Similar mechanisms should also be in place for high-risk pathways for inter-island movements within the country. As an example, if anyone sees a plant overseas that they would like to bring to and grow in Fiji, then ideally, they need to identify the plant and request an import permit from the Biosecurity Authority of Fiji (BAF) before attempting to transport it to the country. For all such requests, BAF will conduct a 'risk assessment' to decide if the organism is safe to bring to the country.

Figure 7: Risk assessment for proposed organism movement.



Generally, cross-border movement of goods, containers, deck cargo, and break-bulk items such as vehicles and timber need to be cleaned and checked very carefully, preferably before entering the transportation network, and BAF needs to be alerted if any live animals/insects, or their eggs, are found during the inspection processes.

Within communities, individuals need to keep an eye out for any unusual animals or plants and for things such as trees with leaves being eaten or dying over large areas. Residents may well be the first to spot the arrival of a new plant disease or insect pest, and if so, this information needs to be promptly provided to the authorities so that they can assist in taking action to identify what the situation is and, if needed, reduce threats and impacts. Therefore, the function of inter-island biosecurity measures (within Fiji's national border) is as important as it is at its national border. In broad terms, the principles outlined above need to be recognized and applied where possible or necessary for movements between islands. In this respect, priorities and associated methods will need to be established to complement community surveillance.

Biosecurity services and early detection and rapid response are each key factors supporting IAS risk and impact reduction efforts and could save Fiji millions or even billions of dollars through preventing the establishment of new pests or limiting the spread of existing pests. These efforts also directly support the protection of native biodiversity and, in the case of human disease, reduce impacts to health and may prevent deaths and suffering.

A key part of reducing threats and impacts from IAS is to reduce the potential for these species to move between different islands within the country or even different areas within the same island, such as between watersheds and city/townscapes. It is too late to eradicate some invasive species already established in Fiji, but with appropriate actions and engagement from all sectors and communities, some areas within the country that are still relatively IAS-free may remain so, and new IAS will find it hard to arrive and establish.

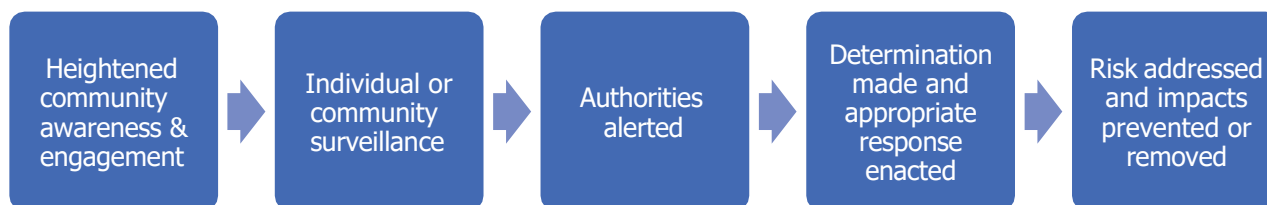
In light of the threats posed by IAS, international, regional, and national responses are focused on preventing them from moving from one country to another. At the national level, for reasons of limited distribution and the likelihood of a significant escalation if this is not managed, there are multiple agencies and groups engaged in managing IAS. These multi-agency efforts therefore need to be effectively coordinated, especially in the establishment of national priorities to safeguard biodiversity and livelihoods by containing IAS distribution, and to manage the risks

associated with any likely IAS escalation. In this regard, countries trading with each other need to coordinate their respective efforts in collaboration with international and regional organizations undertaking supportive roles to bolster their individual and collective national border efforts.

Detection and Reporting of New Species

While it is understandable that to protect Fiji, all residents and visitors should abide by established laws and regulations designed to reduce impacts and spread of IAS, they also need to keep an eye out for any unusual organisms and inform appropriate authorities if they feel a new species may have been detected (Figure 8). This may be a new species to the country or new to an individual island or group of islands. Any new species that has arrived in the country or on a new island should be safely captured and/or contained, as far as is feasible. Any newly arriving species that is imported needs to undergo an import risk assessment to assess and determine the risk posed. 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. The response system also should have established protocols and a chain of command that can be enacted as needed, with resources, trained staff, and funding ready to be engaged at a moment's notice, when an appropriate response situation arises.

Figure 8: Invasive species detection and response to reduce the risk of new pests establishing.



1.5 Fiji's Biodiversity at Risk

While invasive species generally impact most or all sectors, there is specific and elevated concern regarding the extensive impacts from IAS seen on natural systems and resources globally, regionally, and within the country. Fiji has an outstanding natural diversity, including many native and endemic species in both terrestrial and aquatic systems, but many of these unique resources are under stress from various factors, including habitat modification, climate change, and IAS. Protecting and conserving the natural resources and biodiversity of Fiji requires addressing many factors. In the context of this document, the focus is on IAS risk prevention, impact management, and reduction. (Not all invasives are threats to biodiversity. Give examples.)

The main pressures on and drivers of change to biodiversity (direct and indirect) in Fiji, as reported by the Convention on Biological Diversity (CBD) (<https://www.cbd.int/countries/profile/default.shtml?country=fj>) is in draft and described as follows: *"Fiji's biodiversity is constantly under pressure from all sectors. The main driver of threats to Fiji's biodiversity is economic development and is mostly human-induced. Threats include over-fishing and exploitation, pollution through agricultural and industrial wastes, urbanization, agricultural development, and species introduction. Several species of fish, shellfish, and crustaceans have been introduced into Fiji, mostly for aquaculture, as ornamentals, for sports fishing, or biological controls. Finally, unplanned and uncoordinated tourism activities can become a major threat to Fiji's biodiversity. Habitat destruction in the coastal areas for tourism development is a major threat to Fiji's biodiversity in the mangrove, estuaries, reef, and foreshore ecosystems."*

Archaeological work in Fiji (Worthy et al, 1999) revealed many species that have become extinct since human colonization and the resulting complex ecological interactions. The identified extinct species include a crocodylian, tortoise, frog, and iguana, as well as a giant pigeon and a giant megapode, the latter two both flightless.

In the seminal work of Meyers et al. (2000), "Biodiversity hotspots for conservation priorities", 25 biodiversity hotspots were recognized globally that have high levels of endemic species but that were under heavy threat from habitat loss and other stressors. One of these global biodiversity hotspots is termed the Polynesian-Micronesian biodiversity hotspot, and this hotspot is inclusive of Fiji (Critical Ecosystem Partnership Fund 2007). In fact, Fiji is home to the third-largest number of threatened endemic species and the largest remaining intact, unprotected forests in the entire Polynesian-Micronesian biodiversity hotspot (Conservation International website: <https://www.conservation.org/places/Fiji>; accessed 20 November 2019).

Being a remote island archipelago, Fiji has a unique biodiversity with numerous endemic species. Being a large archipelago, spread over a wide area with a mix of small, medium, and large islands, has greatly increased Fiji's diversity and uniqueness. Endemics include taxa of the plant family Degeneriaceae, 26 palm species, four iguana species (Fiji crested iguana (*Brachylophus vitiensis*), Lau banded iguana (*Brachylophus fasciatus*), Fiji banded iguana (*Brachylophus bulabula*), and Gau banded iguana (*Brachylophus gau*)), and a diverse range of other species (Fiji 2014).

According to the CBD website (<https://www.cbd.int/countries/profile/default.shtml?country=fj>):

- In Fiji, 25% of bird species, 11.7% of mammals, 67% of amphibians, and 11% of reptiles and plants are threatened or endangered.
- More than half of Fiji's plants and birds are considered endemic, including all 24 native palm species, 2 amphibians, and 12 reptiles.
- Fiji has just over half of its landmass covered in forest, with total forest cover estimated at 1.8 million ha, and over 80% of Fiji's native forests are communally owned.
- Fiji has approximately 1,600 native plant species.
- Fiji has extensive and highly diversified marine systems, which include estuaries, seagrass, macro-algal assemblages, protected and exposed soft shores, lagoons, coral reefs, and slopes.
- Degradation of terrestrial habitats and invasive species are the key factors threatening Fiji's biota.

Biodiversity is a significant source of both sustainability and revenue for Fiji. Land-based and marine-based natural resources are harvested both for domestic consumption and for export. In particular, the marine species trade industry contributes to the Gross Domestic Product (GDP), to foreign exchange earnings, and is a direct source of income and livelihood for the local communities. Another sector that relies heavily on natural resources is tourism. Fiji's main tourist attraction is its natural environment, most notably its reefs and other near-shore marine environments. Fiji's gross earnings from tourism for the first quarter of 2009 have been estimated at F\$167.6 million, and currently, the main foreign revenue earner for Fiji (CBD website).

Fiji has an Endangered and Protected Species (EPS) Act, which was established in 2002. In 2017, this act was amended as the EPS Amendment Act. The EPS Act regulates the domestic and international trade of endangered species by requiring a permit before any endangered species can be traded within Fiji or internationally. The EPS Act is the Fiji legislation that implements the multilateral Convention on International Trade on Endangered Species of Wild Fauna and Flora, also known as CITES. While CITES protects more than 22,000 species that are listed in either Appendix I, II, or III of CITES (Table 4), the EPS Act notably includes two Schedules that list species that Fiji's lawmakers consider need further protection, that are not listed in CITES and are thought to be native to Fiji. The EPS Amendment Act increased the number of non-CITES species listed in Schedules 1 and 2 of the EPS Act. A list of species included in schedules 1 and 2 from both the original act and the amendment can be found in Appendix A. Fiji also has the Offshore Fisheries Management Decree (2012) and Regulations (2014), which protect any and all seabirds and fish species listed in CITES appendices I and II.

Table 4: The Convention on International Trade in Endangered Species of Wild Fauna and Flora, or CITES appendices.

CITES	
Appendix I	List species that are considered most threatened among CITES-listed species.
Appendix II	List species that may become threatened if trade is not regulated, and look-alike species that may be confused with similar-looking species with conservation status.
Appendix III	List species included at the request of a party to the treaty, which regulates trade in these species and needs the cooperation of other countries to prevent unsustainable or illegal exploitation.

The International Union for the Conservation of Nature (IUCN) assesses species for their conservation status/ extinction risk. The assessment results are contained in what is termed a Red List. The IUCN Red List provides taxonomic, conservation status, and distribution information on organisms that have been globally evaluated using the IUCN Red List categories and criteria. Species that are classified in the Red List as Critically Endangered (CR), Endangered (EN), and Vulnerable (VU) are threatened with the risk of extinction. Other Red List categories include Near Threatened (NT), Lower Risk/conservation dependent (LR/cd), Least Concern (LC), and Data Deficient (DD). Extinct species (EX) are also included in the Red List. The IUCN Red List also provides information on the major threats driving the decline of each assessed species, when such information is available. The IUCN Red List contains 2510 species. These rankings are re-evaluated every 3 to 4 years.

According to information from the IUCN, two species are already extinct in Fiji, the endemic Bar-winged Rail (*Hypotaenidia poeciloptera*) and a small endemic tree species, *Weinmannia spiraeoides*. The Bar-winged Rail's demise is recorded in the Red List as being in part due to predation by invasive species such as the mongoose and feral cat.

A review of IUCN conservation assessed species, as well as several other websites, including Living National Treasures (<http://lntreasures.com/fijimf.html>: accessed 30 November 2019), produced a list of 159 endemic species for Fiji, including 47 plants. In addition to this, the Living National Treasures website points out that there are over 800 endemic plant species known from Fiji. Many of these more than 800 plant species clearly did not appear on the IUCN list of endemics. There are other known and unknown endemic species within the country, and this information should be updated as feasible. Of the endemic species documented as part of the NISFSAP development, they are found in terrestrial, freshwater, and marine biomes and are found in a variety of organism types or groups. While many of the documented endemic species in Fiji are plants, there are also numerous birds, fish, insects, and reptiles (Table 7). The overall number of endemics in the country is substantial and remarkable, given the country's size and relative remoteness from continental areas. An online document titled "Endangered Species of Fiji", prepared by Nature Fiji (<https://naturefiji.org/endangered-species-of-fiji/>), provides similar tallies and additional details on Fiji and its biodiversity and is available for those who wish to pursue a more detailed review of its unique biodiversity.

Table 5: Native species of Fiji that have been conservation assessed using the IUCN Red List criteria and its threat categories (<https://www.iucnredlist.org/>: accessed summer 2019).

IUCN Red List Category	Numbers of Fijian Species
Extinct (EX)	2
Critically Endangered (CR)	53
Endangered (EN)	64
Vulnerable (VU)	193
Lower Risk/conservation dependent (LR/cd)	41
Near Threatened (NT)	166
Least Concern (LC)	1847
Data Deficient (DD)	144

The IUCN has assessed 100 endemic species for Fiji, resulting in 40% of them being listed as threatened.

Nature Fiji has also implemented an endangered species project, which is accessible on their website: <https://naturefiji.org/endangered-species-of-fiji/>. This project aims to provide information on "50 of Fiji's endangered species", suggesting that there are more than 50 endangered species within Fiji, based on the criteria Nature Fiji utilized to determine species status. These criteria can be reviewed on their website. As part of this project, there is an online endangered species compendium that is currently being built, and already some species are detailed within this compendium on their website.

Table 6: Documented endemic species of Fiji by organism type.

Organism Type	Number of Endemic Species
Amphibian	2
Arachnid	2
Bird	35
Crustacean	2
Fish	32
Gastropod	6
Insect	18
Mammal	1
Plant	800+
Reptile	14

Another extensive review of Fiji's biodiversity can be found in the Fiji National Biodiversity Strategy and Action Plan (NBSAP) for 2017-2024 (<https://www.marineecologyfiji.com/wp-content/uploads/2018/01/National-Biodiversity-Strategy-and-Action-Plan-for-Fiji-2017%E2%80%932024-1.pdf>) (Government of Fiji 2017). The Fiji NBSAP 2017-2024 utilized data from 2013 to determine species' threatened status and recorded a total of 1417 species as being assessed for inclusion in the Red List of threatened species. Fiji also has an updated NBSAP submitted to the CBD, which covers the years 2020-2025 (<https://www.cbd.int/doc/world/fj/fj-nbsap-v2-en.pdf>).

Important ecosystems or sites utilized by a range of species can also be threatened by invasive species. Protecting habitat through establishing protected areas is an essential conservation tool and one that is utilized throughout Fiji with various levels of success. Improving the efficacy of invasive alien species management within the boundaries of protected areas and other areas of high biodiversity value is critical in the conservation of both species and natural areas. While protected areas should be covered under general biosecurity activities for the country and within any specialized areas where there may be enhanced biosecurity regulations and/or activities, consideration should also be given to developing and implementing biosecurity activities that can be tailored to each specific area as part of the overall management planning to ensure longevity of conservation efforts within each area. Biosecurity and invasive species control and management should be key components of all protected area management plans and activities.

The United Nations Environmental Programme-Environment World Conservation Monitoring Centre (UNEP-EWCMC) Protected Planet website (<https://www.protectedplanet.net/>) is the most comprehensive and up-to-date source of information on protected areas globally. The Protected Planet website lists 146 protected areas in Fiji

BirdLife has also identified two Endemic Bird Areas (EBAs) for Fiji (<http://datazone.birdlife.org/eba/results?reg=10&cty=71#>), those being Fiji and Rotuma, i.e., these two areas together encompass the entire country. For the Fiji EBA (all of Fiji except Rotuma), 33 Important Bird Areas (IBAs) and 36 species are listed (<http://datazone.birdlife.org/eba/factsheet/203>). For the Rotuma EBA, one IBA and five species are listed (<http://datazone.birdlife.org/eba/factsheet/426>). The single IBA covers all of Rotuma.

The world database on Key Biodiversity Areas (KBA) supported by the KBA partnership lists 53 sites for Fiji (<http://www.keybiodiversityareas.org/site/results?reg=10&cty=71&snm=>). Of the KBAs listed for Fiji, 37 do not correspond in large part with designated protected areas, and 28 of these also do not correspond directly with IBAs.

Fiji is a party (1990) to the World Heritage Convention with one inscribed site and three tentative sites (Table 8). The Convention on Wetlands of International Importance (Ramsar) entered into force in Fiji in 2006, with two Ramsar sites, Qoliqoli Cokovata Macuata (QCM) and Upper Navua Conservation Area. Fiji has submitted three national reports to Ramsar.

Table 7: Fiji's World Heritage Sites.

World Heritage Site	Status
Levuka Historical Port Town	Inscribed
Sovi Basin	Tentative
Sigatoka Sand Dunes	Tentative
Yaduataba Crested Iguana Sanctuary	Tentative

There is clearly an overlap between some locations listed as protected areas, IBAs, KBAs, World Heritage sites, and Ramsar sites, and there should be. Detailed information regarding many of these specific areas was difficult to obtain or simply lacking. Information on management plans was, as well, not easily determined or readily available for review.

A spreadsheet covering protected or conservation areas was developed as part of the Fiji IAS desktop exercise (Stanford, 2019) and includes available information on site management authorities, type and size of area, status, relative location, and links to additional online resources (Figure 9). A table of protected and conservation areas extracted from the desktop exercise is provided in Appendix B.



Figure 9: Riverine Setting Bouma Lavena Reserve, Taveuni, Fiji, photo: Stanford.

1.6 The Need for a National Framework to Address Invasive Alien Species Prevention, Control, and Management

Invasive species are an ever-present, growing threat, and their management involves multiple stakeholders, including leadership, government departments, non-governmental organizations (NGOs), local, national, and regional working groups, farmers, foresters, fisherfolk, shippers, importers, exporters, local communities, temporary workers, and visitors. IAS management efforts have, in the past, been fragmented, under-resourced, and, for some, non-existent or undetectable. The NISFSAP seeks to address these shortcomings by bringing all stakeholders together around an agreed-on framework to implement prioritized actions. A framework that can and should be endorsed by the government and implemented by all in a harmonized fashion, and overseen by the National IAS coordination body.

In the past, IAS management has concentrated on plant and animal pests of primarily the agricultural and forestry sectors, but there has been a growing recognition that pests impact all sectors and negatively impact native biodiversity, ecosystem services, the economy, resilience to climate change, safeguarding ability, health, local communities, and individuals. This recognition has led to increasing efforts from ministries, departments, regional bodies, and NGOs to implement coordinated approaches to addressing IAS. Production of the Fiji NISFSAP, while essential for Fiji, is also part of a larger regional effort to reduce risk and impacts from IAS within the Pacific, better protecting both individual PICTs and the region. Because the primary avenue for IAS to reach Fiji is through trade and visitation, it is essential that IAS threat and impact reduction is not only strengthened nationwide but also regionally and internationally. Efforts to reduce risks and impacts must be conducted in a coordinated way, both within the country and beyond with trade partners and neighboring states. A pertinent example of how such activities can be expanded into regional efforts is those undertaken by the PICTs of northern Micronesia and the U.S. State of Hawaii. This group of islands is working concertedly to address IAS at both the local and regional levels as they share not only geographic proximity (in the case of the Micronesian islands) but also extensive trade linkages. In 2015, with the support of the U.S. Department of Defense, these PICTs released the Regional Biosecurity Plan for Micronesia and Hawaii, or RBP (United States Department of Navy, 2015). This regional plan provides an overview of the regional IAS efforts and indicates action for each of the included jurisdictions, as well as roles for the U.S.

governmental entities, such as the Department of Defense, through their presence within the region. All cooperating entities for this plan are moving forward with the implementation of this regional effort, which will provide for the better protection of Micronesia and Hawaii.

The Fiji NISFSAP takes note of the GISMP's stated goal "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 Fiji NISFSAP action plan is organized in accordance with the thematic areas presented in the GISMP, and includes Foundations, Problem Definition, Prioritization, and Management Actions.

Implementation of the Fiji NISFSAP should ensure that Fiji meets Target 6 of the Kunming Montreal Global Biodiversity Framework, established under the CBD, "that by 2030, reduce the rate of invasive alien species (IAS) introduction and mitigate impacts by fully implementing the costed National Invasive Species Framework, Strategy and Action Plan (NISFSAP) and maintaining predator-free islands".

1.7 The Development Process of the National Invasive Species Framework and Strategic Action Plan

Fiji developed a multi-year IAS project to strengthen biosecurity and support IAS risk reduction and impact prevention throughout the country with support from the GEF and with the assistance of the UNDP in 2017. As part of this effort and in line with the objectives of the NBSAP, planning was put in place to develop the NISFSAP under this IAS project. In 2019, a timeline was put in place for the development of the NISFSAP, and consultations with stakeholders commenced.

As part of the NISFSAP development process, an IAS desktop exercise was undertaken during 2019 to bring together available information on the status of IAS species, threatened species, biodiversity, and conservation areas within the country (see Stanford, 2019).

Initial structuring for the NISFSAP followed the format set out in the GISMP, as these guidelines have been utilized by a variety of other PICTs to assist in their respective IAS strategy development efforts and have shown to be effective. Various PICTs have developed similar strategies, and many of these were reviewed during the process of developing the Fiji NISFSAP (Appendix C). An initial draft Fiji NISFSAP (hereafter referred to as Draft 1.0) was developed from stakeholder input and extensive review of IAS literature and other materials. The NISFSAP Draft 1.0 was provided to the project management for stakeholder distribution on 5 January 2020. Along with Draft 1.0 were recommendations that stakeholders should review the entire document and focus on specifics for their office's particular roles, requirements, and actions (past, present, and future). Stakeholders were also asked to return comments within four weeks, if feasible, and if not, then return when feasible. Comments, edits, and additional input returned were reviewed and, where appropriate, utilized to update Draft 1.0, with a semi-finalized document (referred to hereafter as Draft 2.0) provided to the project management on 30 March 2020.

A validation workshop to bring stakeholders together for finalization of Draft 2.0 was planned for early April 2020, but due to ongoing restrictions and health concerns associated with Coronavirus-19, this workshop had to be deferred. While regrettable, this deferment with finalizing the NISFSAP did provide a significant additional time period for further review of Draft 2.0. A validation workshop for the NISFSAP was held from 14 to 18 September 2020. Project management facilitated the workshop and, on 26 January 2021, provided the workshop notes to the project Chief Technical Advisor (CTA) for consideration with finalizing Draft 2.0. Thereafter, the workshop notes were utilized to develop a comment matrix to facilitate tracking of comments on Draft 2.0 from the validation workshop. On 21 February 2021, the comment matrix with initial comment responses, including requests for additional input, was shared with the project management for dissemination to stakeholders with a request to return any further needed input, preferably within a week or as feasible. On 7 March 2021, the final NISFSAP was provided to project management. The project's technical working group had met on the 12th of May and 4th August in 2022 to review, validate, and endorse the document. The Environmental Law Association was contracted to collate the final comments and finalize the document.

The document is now in effect finalized, and implementation of the NISFSAP should begin immediately, with offices coordinating efforts throughout the country. Any further input or additions that individual offices may want to contribute can, on review and acceptance by the national IAS coordination body, be added as amendments to the existing document.



1.8 Linkages of the National Invasive Species Framework and Strategic Action Plan to Other Strategies, Plans, Frameworks, and Guidelines

This section reviews other Government strategies, plans, regulations, and policies that address invasive species, and the sectoral plans of the key departments involved. The actions identified in the NISFSAP should be addressed in part through these linkages, and, as feasible, the overarching concepts within the NISFSAP should help inform these documents when each is next revised.

1.8.1 International and Regional Strategies, Plans, Frameworks, and Guidelines

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

The framework (SPREP 2014) guides the region on key priorities for biodiversity conservation and ecosystem management with clear linkages to the Global Biodiversity Targets and NBSAPs. It is broad in scope to fit in with local, national, regional, and international priorities and to allow for the successful implementation of actions at the country level through the provision of adequate and sufficient resources. The framework reinforces the role governments, local communities, 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)

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

1.8.2 National Strategies, Plans, Frameworks, and Guidelines

The important status of Fiji regarding global biodiversity, and specifically in terms of biodiversity within Oceania, is understood nationally, regionally, and globally, with many partners at all levels undertaking efforts to not only conserve Fiji's ecosystems but also to work within the context of an island nation, supporting long-term safeguarding of its peoples, culture, and biodiversity.

National Biodiversity Strategy and Action Plan (NBSAP)

The Fiji National Biodiversity Strategy and Action Plan (NBSAP) is a leading document in safeguarding activities. The initial 2007 Fiji NBSAP has been updated to cover the time frame of 2017-2024. The NBSAP incorporates six focal areas (Table 9).

Table 8: The six focal areas of the Fiji National Biodiversity Strategy and Action Plan (NBSAP).

Fiji NBSAP Focal Areas	
Focus 1	Improving Our Knowledge
Focus 2	Developing Protected Areas
Focus 3	Species Management
Focus 4	Management of Invasive Species
Focus 5	Enabling Environment and Mainstreaming
Focus 6	Sustainable Use and Development

The following excerpts are taken directly from the NBSAP 2017 and reproduced here as they clearly demonstrate the need to address IAS concerns throughout Fiji, as this is essential to fulfilling the goals of the NBSAP, namely protecting Fiji's biodiversity.

“Intentional and unintentional introductions of IAS are a major threat to biodiversity and ecosystem services and their control requires constant vigilance and resolute action. Harmful invasions by alien species are generally regarded to be the second-most serious threat to biodiversity after habitat loss, but for an oceanic island like Fiji, it may be the most harmful. The problems of invasive species are likely to become even more severe in the future, with increasing global trade and international travel, changing global climate, and changing land use patterns.”

“Pathways for the introduction of IAS into a country can be managed through improved border controls and quarantine, including through better coordination with national and regional bodies responsible for plant and animal health. The Biosecurity Authority for Fiji (BAF) is the lead agency for border control and quarantine. However, given the multiple pathways for invasive species introductions and that multiple alien species are already present in many countries, it will be necessary for BAF, the Department of Environment, and NGOs to work closely to prioritize control and eradication efforts on those species and pathways which will have the greatest impact on biodiversity and/or which are the most resource effective to address. Furthermore, there is a need for measures to be introduced to prevent the spread of invasive species within Fiji’s 300-plus islands. Currently, there is only very limited awareness of internal quarantine requirements, and this is confined mainly to species of agricultural or economic significance.”

The Fiji NBSAP Focal Area Four is the Management of Invasive Species (MIS), which includes four strategic areas, each of which has stated objectives and action plans. These strategic areas, objectives, and action plans are included in Appendix D of this document to facilitate understanding of how the NBSAP and the NISFSAP complement and support each other in strengthening and advancing overall goals.

The NBSAP objective MIS2b is listed as developing a National Invasive Species Strategy and Action Plan (NISSAP). This is in line with the efforts presented here in this document, which the Fiji GEF-6 Project Document has indicated should be called the National Invasive Species Framework and Strategic Action Plan, or NISFSAP. These terms, NISSAP and NISFSAP, in the case of Fiji, should be considered interchangeable, and within this document, the terminology of a NISFSAP will be utilized.

The NBSAP Strategic Goal B (Reduce the direct pressures on biodiversity and promote sustainable use), Target 9 follows: *By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.*

NBSAP Target 9 indicators follow:

- Assessment and measurement of the impact of invasive alien species on biodiversity and food security.
- Impact of policy responses, legislation, and management plans to control and prevent the spread of invasive and alien species.

NBSAP Implementation Framework (IF)

The NBSAP Implementation Framework (IF) 2010-2014 (Fiji 2010) identifies seven thematic areas, of which thematic area two is IAS (Table 10).

Table 9: The seven thematic areas of the Fiji National Biodiversity Strategy and Action Plan (NBSAP) Implementation Framework (IF).

Fiji NBSAP IF Thematic Area	
Theme 1	Forest Conversion Management
Theme 2	Invasive Alien Species
Theme 3	Inshore Fisheries
Theme 4	Coastal Development
Theme 5	Species Conservation: Threatened and Endangered Species (Trade and Domestic Consumption)
Theme 6	Protected Areas
Theme 7	Inland Waters

The NBSAP IF indicates that the Species Management Committee, along with other stakeholders in 2009, produced the following list of targets regarding invasive species:

- Targeted research to support improved knowledge on invasive alien species in Fiji,
- Strengthen national legislation, policies, and strategies to support improved control of invasive alien species,
- Strengthen the capacity and resources of key stakeholders to address invasive alien species in Fiji,
- Improve monitoring and surveillance of invasive species in Fiji, and
- Raise awareness with the Fiji public and tourists to reduce invasive alien species introductions.

The NBSAP IF thematic area one: Forest Conversion Management points out that “*the major threats to the forest ecosystems are through habitat loss and degradation, including the widespread spread of invasive alien species.*”

The objectives of the NBSAP IF thematic area two: Invasive Alien Species are:

- Identify and document those invasive species, which constitute major threats to Fiji’s main natural and cultural ecosystems and biodiversity.
- To use this information to develop a draft National Invasive Species plan to prohibit the introduction of new invasive alien species and to eradicate or control existing species identified during the planning of the project.

The NBSAP IF additionally provides a table starting on page 19 of that document, which covers IAS actions. The information in this table, while good, should be updated and integrated with the updated NBSAP and this document, the NISFSAP. The NBSAP IF IAS action items table is provided in Appendix E for completeness and ease of access/review.

Thematic area seven of the NBSAP IF, Inland Waters, includes as its 7th strategy to “prevent and control the spread of invasive species in Fiji’s wetlands”. Actionable items from this strategy specific to invasive species have been added to the NBSAP IF IAS table in Appendix E.

National Climate Change Policy 2018 -2030

On pages 68 and 69 of the NBSAP IF, a table of IAS priorities is presented. This table is provided here in Appendix F for completeness and ease of access/review.

Republic of Fiji National Climate Change Policy 2018-2030: https://www.pacificclimatechange.net/sites/default/files/documents/National-Climate-Change-Policy-2018---2030_0.pdf

Climate considerations are linked to oceanic conditions as discussed in the Ocean-Climate Nexus on page 60 of this document. As described in this section of the policy, current trends of marine systems include various impacts from invasive species and diseases, and there is medium confidence that these trends are increasing impacts and risk to both fisheries and aquaculture (Fiji 2018).

Rural Land Use Policy for Fiji (2006)

This report contains a valuable synthesis of previous national reports and studies concerning sustainable development in Fiji. The report further signifies issues and constraints in development and the resolve to take immediate action upon the burgeoning environmental problems now evident in Fiji. The report gives basic information on planning procedures and processes to facilitate change. There is a wide understanding that sound planning and management are crucial and will be so increasingly in the future, to impress upon the government the urgency of the need to adopt the Policy Paper. The report proposes several national policies regarding rural land use.

The proposed national rural land use policy number four is expressed as follows: Appropriate mechanisms to protect farmlands and forests from fire, pests, and pathogens (Leslie and Ratukalou, 2006). Objectives under this policy include:

- 41 Establishing national co-ordination of research and extension control operations for pests and pathogens affecting crops and forests.
- 42 Reviewing current practices of pest control to ensure that they are effectively implemented.
- 43 Developing and implementing effective biosecurity measures.

- 44 Providing the resources for additional research into pest control through integrated pest management.
- 45 Using integrated techniques that incorporate pest-tolerant species or biological control to reduce the environmental impact of controlling agricultural and forestry pests and diseases.
- 46 Co-ordinating national fire prevention and fire hazard programs.

Ministry of Forestry Strategic Development Plan 2017-2030: <http://www.forestry.gov.fj/images/Media/Publication/StrategicDevelopmentPlans/Strategic%20Development%20Plan%202017-2030.pdf>

The Ministry of Forestry (MOF) in their 2018-2019 Operational Plan under strategic goal 1 (of the MOF Strategic Development Plan 2017-2030) records among its key performance indicators the following, which speak directly to the need to address IAS prevention and control (Ministry of Forestry, 2017):

- Early detection and control of unwanted pests and diseases.
- Incursion response plan development.
- Development of management plans to control invasive species.
- Validation of the invasive nature of *P. coronata* in Fiji.

2.0 GUIDING PRINCIPLES

Regarding the arrival in Fiji of non-native species, the 'precautionary principle' should always 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. 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 considered a potential risk.

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 for reducing the incursion of unwanted organisms, even the best biosecurity will not stop all invasions, and therefore detection and eradication mechanisms also need to be developed and utilized.

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 widespread. Therefore, early detection and rapid response elements are an essential part of IAS prevention and management (Stanford and Rodda, 2007). Response efforts should be well-planned and have secure funding in place before they are needed. In addition, equipment, training, and clear lines of responsibility should all be worked out and documented well before any such response action is needed. Emergency Response Plans or ERPs, and emergency response training should be key elements of the biosecurity system, and the sooner these elements can be developed and put in place, the better the potential for Fiji to be able to act effectively when a response situation arises.

Species that cannot feasibly be eradicated should be considered for ongoing control, particularly biological control. This control may be aimed at keeping established IAS out of important sites such as protected areas and shipping networks and keeping them from expanding their ranges into new locations within the country.

3.0 GOALS, THEMES, AND OUTCOMES

3.1 Goal

To conserve and protect biodiversity, food security, livelihoods, health, local communities, cultural heritage, sustainable development, economics, safeguarding, and resilience to climate change by preventing the introduction of new IAS to the country, limiting further spread of IAS within the country, and managing established IAS to reduce their negative impacts and eradicate them when feasible.

3.2 Themes

The IAS Action Plan development follows recommendations from the GISMP and includes the 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, communities, visitors, specialized groups or organizations, external partners, 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 A is separated into three sections:

- Generating Support.
- Building Capacity.
- Legislation, Policy, and Protocols.

Theme B: Problem Definition, Prioritization, and Decision-making

There are many IAS already present in Fiji and many more outside its borders, with limited resources to address prevention and impact reductions. Therefore, it is essential to have 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.

Theme B is further separated into three sections:

- B1: Baseline and Monitoring.
- B2: Prioritization.
- B3: Research on Priorities.

Theme C: Management Action

Management begins with preventing the arrival of new IAS and early detection and rapid response to incursions; also addressing the eradication or control of IAS already established, and finally restoration work needed at sites where IAS have been effectively removed.

Theme C is further separated into four sections:

- C1: Biosecurity.
- C2: Early Detection and Rapid Response.
- C3: Management of Established Invasive Alien Species.
- C4: Restoration.

3.3 Outcomes

Outcomes are derived in part from the GISMP, with the notable separation of biosecurity and detection/response capacity, which are considered under a single outcome in the GISMP. For the Fiji action plan, it was felt that as both biosecurity and detection and response to new incursions are both critical elements that differ significantly in context for each other, they should each be considered separately under their own outcomes. The thematic outcomes for the Fiji IAS action plan follow:

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

- 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.
- Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks, and exchanges required to manage invasive species effectively are developed.
- Outcome 1:3 Appropriate legislation, policy, protocols, and procedures are in place and operating to underpin the effective management of invasive species.

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.

- 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.
- Outcome 2.2: Effective systems are established to assess risk and prioritize invasive species for management.
- Outcome 2.3: Improve understanding of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa.

Theme C: Four 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; and to restore invasive species removal.

- Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between island/island groups, and within islands.
- Outcome 3.2: Newly arriving invasive alien species are detected and responded to effectively, reducing the likelihood of long-term establishment and spread within the country.
- Outcome 3.3: The impacts of priority established invasive species are eliminated or reduced.
- Outcome 3.4: Following invasive species management, the best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values.

4.0 PATHWAY IDENTIFICATION

The term PATHWAY refers to the route by which something may be moved or transported. Examples of potential pathways include specific air and sea routes and activities such as live plant trade and fruit and vegetable trade. The term VECTOR refers to the specific means of transportation or movement. Examples of potential vectors are aircraft, watercraft, shipping containers, stores, goods, cargo, break bulk, aggregate, ballast water, personal items, and even humans and animals such as livestock, aquatic stock, and pets. Vectors may also refer to things such as floating logs and debris transported by storms or currents. A detailed understanding of pathways and their associated vectors is a critical step in applying biosecurity tools to reduce the risk of invasion by pest organisms. A detailed understanding of pathways and vectors allows managers and policymakers to respond more effectively to the challenge of safeguarding against pest invasion and to target specific high-risk components of a transportation network. Understanding pathways allows for improved targeting of biosecurity measures. (Figure 6).

4.1 International

International pathways would include any pathway, legitimate or otherwise, that starts outside of the country and arrives in the country. This could include known pathways that are utilized at known frequencies by known vectors, such as a specific commercial air flight route. It might also include known pathways that are utilized irregularly by either or both known and novel vectors, such as private yachts. It may also include novel pathways, unanticipated activities, and/or illegal actions.

4.1.1 Air Pathways and Vectors

At present, Fiji has two international airports. Fiji receives international passenger and cargo flights from a variety of countries, both within the region and beyond, including Asia and the United States.

Nadi International Airport is the main international airport in Fiji and is located on the main island of Viti Levu, just outside of Nadi Town. Nadi receives flights and craft from numerous international locations, including Honolulu, Los Angeles, and San Francisco within the United States, Auckland, Christchurch, and Wellington within New Zealand, Melbourne, Brisbane, and Sydney within Australia, and Tonga, Samoa, Solomon Islands, Vanuatu, Hong Kong, PNG, Singapore, and Tarawa. According to Airports Fiji Limited (AFL) website (<http://www.airportsfiji.com/index.php>: accessed 5 January 2020), Nadi International Airport handles 97% of international visitors to Fiji, and 80% of visitors are tourists.

Nausori International Airport, also on Viti Levu and located near Suva, receives flights originating mostly from within Fiji but also some flights from Australia, New Zealand, Samoa, Vanuatu, Tonga, Tuvalu, Nauru, and Kiribati.

Aside from the main international airports, there are other private landing spaces in Fiji that are privately owned and should be identified and listed.

4.1.2 Sea Pathways and Vectors

Fiji Ports Corporation Limited (FPCL) website (<http://www.fijiports.com.fj/>: accessed 4 December 2019) lists the following ports:

- ▶ Port of Suva: Fiji's largest and busiest container and general port. Suva Wharf is for international transit only. Averages 35 cargo vessels per month and 100 fishing vessels per month. This port is located on the southeast side of Viti Levu and includes 5 berths:
 - Kings South
 - Kings Central
 - Kings North
 - Walu Bay
 - Princess
- ▶ Port of Lautoka: Fiji's largest port for handling bulk cargo is located on the northwest side of Viti Levu. Lautoka receives, on average, 30 international ships per month. 90% of arrivals are containerized.
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- ▶ Vuda Port is part of the overall Lautoka port complex and caters to oil and gas tankers.
- ▶ Port of Malau: Serves as a molasses port and is located on the northern side of Vanua Levu near Labasa.
- ▶ Port of Wairiki: Located on the southwestern side of Vanua Levu and is used for wood chipping and logging as well as moving materials and vehicles between Viti Levu and Vanua Levu.
- ▶ Port of Levuka: Primarily a fishing port, and is located on Levuka Island, east of Viti Levu.
- ▶ Port of Rotuma: Located on the north side of Oinafa, Rotuma’s main island and serves as the main sea link for Rotuma and its trade partners, as well as shipping between Rotuma and other islands within Fiji.

Commercial Shipping

Fuel, sugar, and woodchip ships all regularly visit Fiji. Cargo ships from overseas arrive at Suva and Lautoka ports multiple times per week.

International shipping snapshot for Suva

According to the website <https://www.vesselfinder.com> for the dates of 2-11 May 2023 the following shipping is anticipated at the port of Suva:

- May 2, 2023, arrival: Chemical/ oil products tanker
- May 3, 2023, arrival: Container ship
- May 4, 2023, arrival: Chemical/ oil products tanker
- May 6, 2023, arrival: Vehicles carrier
- May 11, 2023, arrival: Bulk carrier

Fishing Vessels

Various ports in Fiji are visited by foreign-flagged fishing vessels. Lautoka Port is perhaps one of the most frequently utilized by foreign vessels. Suva and Ovalau also permit foreign-flagged fishing vessels to dock.



Visiting Yachts

Visiting yachts stop over at various locations throughout the country and pose biosecurity concerns. Under Fiji law, visiting yachts are required to initially check in and be cleared at a customs port of entry. This clearance includes inspection/review by BAF. Customs ports of entry include:

- Denarau Marina
- Lautoka
- Vuda Marina
- Suva
- Savusavu
- Levuka
- Rotuma

The average number of yachts arriving yearly is between 500 and 760 (AMSTEC, 2018). Yachts may arrive any time of the year, but the majority arrive during the period of reduced cyclonic activity: May-November. Yachts arriving in Fiji come from many places, with most originating in Australia, New Zealand, Europe, and the United States. Yachts arrive in Fiji from various departure ports, including Tonga, Vanuatu, French Polynesia, New Caledonia, Samoa, and New Zealand. Arriving yachts typically visit one or more island groups and stay within the country's waters for 137 days (82 days for super yachts) before departing the country (AMSTEC, 2018).

Cruise Ships

Cruise ships visiting Fiji come from a variety of countries, such as New Zealand, Australia, and Singapore, and previous ports of entry include places like Noumea, Nuku'alofa, Apia, Auckland, Brisbane, and Sydney. Cruise ships range in size regarding passenger capacity, and they visit within the country, and when they visit. Cruise lines that visit Fiji include P&O Cruises and Royal Caribbean International. P&O Cruises are out of Australia, may carry several thousand passengers, and stop at locations such as Denarau, Suva, and Dravuni Island. Royal Caribbean International stops in Suva (Kings Wharf) and/or Lautoka.

Coast Guard and Military Vessels

Coast Guard and military vessels also pose biosecurity concerns, and international visits by these types of craft should also be monitored in terms of biosecurity. As much as is feasible, these types of vessels should undergo standard biosecurity inspection measures at the point of arrival into the country.

Illegal entry of vessels also poses a biosecurity concern, and curbing these illegal activities is largely dependent on efficient surveillance and enforcement.

4.1.3 Other External Pathways

Natural Disasters

Natural disasters such as cyclones and tsunamis may directly carry new invasive alien species to Fiji, but their main threat in terms of IAS is indirectly through consequent relief operations. In the event 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. Following a large-scale disaster, border control operations and facilities may be damaged and weakened. While humanitarian needs are obviously the priority, disaster management planning should include appropriate biosecurity elements. Pre-border arrangements must consider high-risk importation and actions taken by aid agencies. DISMAC, in collaboration with relevant state agencies like BAF, can advocate and implement necessary biosecurity measures to reduce incursions. With such a disaster scenario, there may be a need to bring in overseas biosecurity personnel 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, residents may well be dealing with personal/family/village impacts caused by the natural disaster.

The National Disaster Management Office (NDMO) would lead efforts in addressing such disasters and should work with partners such as BAF to ensure that disaster management plans include considerations for reducing the risk of IAS introduction and spread.

'Natural' Pathways

New organisms can also arrive unaided by people or disasters; by air, being carried by the wind, water, or 'rafting' on floating, plastic, or vegetation. While these pathways are feasible for some organisms, the relative remoteness of the Fiji Islands suggests that the occurrence of "naturally" dispersing organisms arriving and establishing in Fiji is limited.

Illegal and/or Unregulated Activities

As with most countries' borders, there is likely some level of illegal or at least unreported activities associated with arrivals to Fiji. Smuggling should be recognized as a potential pathway for IAS arrival, as should incidents of yachts and illegal fishing vessels stopping at outer islands before clearing biosecurity checks at an official port of entry. While these are different activities, they and other unregulated events are of significant concern regarding protection against invasion by new pests, as these activities occur without proper biosecurity clearance.

4.2 Domestic (Inter Island)

Internal pathways include movements between islands within the country or even between specific areas on an individual island.

4.2.1 Air Pathways and Vectors

Air services are utilized to move both people and goods throughout the country and, therefore, are a biosecurity risk for spreading IAS from one island or part of the country to another. Along with the two international airports in Fiji, there are several domestic airports or fields, 13 of which are operated by FA and others that are private. Airport information was compiled in December 2019 from the Airports Fiji Limited website (<http://www.airportsfiji.com/>) and the Logistics Capacity Assessment website (<https://dlca.logcluster.org/display/public/DLCA/LCA+Homepage>). Airports that service domestic and private flights within the country include (it is important to note that some of these airports or fields may no longer be operational):

- Nadi International Airport, operated by AFL
- Nausori International Airport, operated by AFL
- Dama Airport, near Bua, Vanua Levu
- Castaway Island Airport
- Cicia Airport, Lau Group, operated by AFL
- Gau Airport, Lomaiviti Group, operated by FA
- Koro Airport, operated by FA
- Labasa Airport, Vanua Levu, operated by AFL
- Lakeba Airport, Lau Group, operated by AFL
- Laucala Airport
- Bureta Airfield, Levuka, operated by AFL
- Malolo Lailai Airport
- Mana Island Airport
- Matei Airport, Taveuni, operated by AFL
- Moala Airport, Lau Group, operated by AFL
- Ono-i-Lau Airport, operated by AFL
- Pacific Harbour/Deuba Seaplane Base
- Rabi Airport
- Rotuma Airport, operated by AFL
- Savusavu Airport, Vanua Levu, operated by AFL
- Vanuabalavu Airport, Lau Islands, operated by AFL
- Vatukoula Airport
- Vatulele Airport
- Vunisea Airport, Kadavu, operated by Wakaya Airport, Wakaya Island in the Lomaiviti Group
- Yasawa Island Airport

Several domestic and charter companies provide air transport services in Fiji. Private planes and helicopters may also move between different areas within the country.

4.2.2 Sea Pathways and Vectors

There are various domestic ports within the country, and some of these overlap with international ports.

The domestic port, including Narayan Jetty in Suva, provides for sea transit between Suva and the northern and eastern divisions. This port deals mostly with commercial goods being shipped from Viti Levu. Most of what comes into the domestic port at Suva is produce. Most inspections are conducted before departure from Suva, as protecting outer islands from IAS already established on Viti Levu is a priority. 60 or more vessels are inspected monthly.

Fiji Roads Authority is responsible for monitoring and maintaining jetties and landings throughout the country. Jetties and landings are a primary pathway for the movement of materials and people between islands within the country and, therefore, represent the greatest risk for the movement of IAS throughout the country. Scheduled ferry services link the main islands, while more remote locations may be serviced by private operators. Beach landings are used in areas where no jetties or established landings are available.

The Fiji Roads Authority website (<http://www.fijiroads.org/what-we-do/assets/>; accessed 4 December 2019) lists 47 jetties within the country (Table 11).

Table 10: Jetties in Fiji by division (from Fiji Roads Authority website: <http://www.fijiroads.org/what-we-do/assets/>; accessed 4 December 2019).

Division	Number of Jetties
Central-Eastern	30
Western	4
Northern	13

A number of these Jetties as well as several landings, were visited, including:

- Denarau is located on Denarau Island in Nadi. The Port. Considered the Centre of yachting in Fiji, the Port boasts 52 fully serviced berths, 16 swing moorings, including 20 berths capable of taking Superyachts up to 85 metres in length. It is one of the main transport hubs for ferries, cruises, boat excursions, seaplanes, and helicopter flights, and connects travelers from Nadi to the Mamanuca and Yasawa islands.
- Natovi Jetty: Located on the eastern side of Viti Levu, facing Levuka, this jetty is one of the main transportation routes for people and materials traveling between Viti Levu and Vanua Levu. linking to Nabouwalu Jetty on Vanua Levu. Produce is the main item arriving at the port, and consumer goods are



Figure 10: Lumber truck departing ferry at Natovi Jetty 2019, photo J. Stanford.

main items going out. Timber and construction materials are also moved through this jetty (Figure 10).

- Ellington Wharf: Located in northern Viti Levu near Rakiraki. This small jetty or wharf had no activity when visited in 2019 and was in a state of disrepair. Previously, this wharf had been utilized to move materials between Viti Levu and Nabouwalu Jetty on Vanua Levu. A news article from this year indicates that at least one shipper is attempting to utilize this wharf again for such services.

- Nabouwalu Jetty.
- Savusavu Wharf.
- Savusavu Marina.
- Natuvu (Bua Bay): On the southeastern end of Vanua Levu. This serves as a linkage for people and materials traveling between Vanua Levu and Taveuni.
- Wairiki Wharf: Located on the western side of Taveuni and is the main transit point for people and materials coming from and going to Savusavu, Vanua Levu, and Suva, Viti Levu.
- Naqara (Korean) Wharf: Located north of Wairiki Wharf on Taveuni and serves as the transit point for people and materials coming from and going to Natuvu, Vanua Levu.
- Laucala Island Jetty: Located on the private resort island of Laucala, this jetty is the main entry point to the island, with private transport arriving from neighboring islands of Taveuni and Qamea, typically carrying visitors, staff, and materials to Laucala.

Cargo Ships, etc.

Cargo ships and fuel ships move between main ports such as Lautoka and Suva on a regular basis.

Ferries

Large and small ferries are a common form of transportation within Fiji. Large roll-on/roll-off ferries link many of the larger islands, such as Viti Levu, Vanua Levu, Taveuni, Kadavu, Levuka, Koro, Rotuma, and islands in the Lau Group. Smaller boats, which may regularly ferry passengers and goods, also run between islands and locations on the same island in some cases.

Barges

Barges, while not common, do exist within the country, both for hire and private vessels. Many of the existing barges are utilized to move goods between Suva and the outer islands. The Fiji Government also has its own fleet of ships and barges for the delivery of government-related services as well as private-public sector collaborative projects.

Cruise Ships

There are various cruise lines that operate vessels within the country. These can range from small private charters to mid-sized ships capable of carrying several dozen passengers on multi-day trips. Many of these vessels depart from Viti Levu, generally Port Denarau, Lautoka, or Suva, and may visit islands in the Mamanucas and/or Yasawa groups or head to Levuka or even some of the northern division islands.

Private vessels, including yachts, local fishing vessels, outboard motor, water taxi, and recreational watercraft

Private Fiji-based and owned vessels are found throughout the country, although there is a limited number of yachts that are Fiji-owned. Coastal communities, however, typically own and travel frequently on open fiberglass boats that can transport all manner of goods. Day trip fishing vessels and recreational watercraft are more common.

4.2.3 Road Transport

Viti Levu has a well-developed road network, and Vanua Levu also has roads linking the main population centers. There are significant levels of ground transit on these islands, which include many lorries moving goods to and from ports and production centers.

While roads in general should be considered as terrestrial pathways that can potentially facilitate the movement of pest organisms, a particularly compelling sub-set of road or tracks are those that enter areas with little previous human disturbance. Some examples include (i) roads established to install and maintain towers on ridges. These types of tracks may well bisect relatively pristine areas and are notorious globally for serving as pathways for introducing all types of invasive organisms, and (ii) the spread of plant seeds along the boundaries of such tracks. Establishing pathways to otherwise intact forest areas can also facilitate the movement of feral cats and other feral domestic livestock like cattle, horses, and goats, which can result in habitat degradation and species extirpation.

4.24 Internal Water Ways

Both Viti Levu and Vanua Levu have medium to large rivers, which may be used as transportation routes linking coastal areas with the interior. These river systems were likely utilized more heavily in the past, but some river transport likely still takes place.

4.25 Other Domestic Pathways

Natural Disasters

Natural disasters such as cyclones and tsunamis may directly move IAS within Fiji, but their main threat to IAS is through relief operations. In the event of a significant natural disaster, supplies, relief materials, peoples and their personal goods may be moved about within the country. Following a large-scale disaster, internal biosecurity operations and facilities may well be compromised. While humanitarian needs are obviously the priority in the face of such a disaster, disaster management planning should also incorporate appropriate biosecurity elements.

The National Disaster Management Office (NDMO) would lead efforts in addressing such disasters and should work with partners such as BAF to ensure that the disaster management plan includes considerations for reducing the risk of IAS spread.

'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 can be carried on rafts of floating vegetation.

Illegal and/or Unregulated Activities

Within Fiji, there is likely some level of illegal or at least unreported activities associated with movements between islands and/or into and out of special biosecurity areas. Activities such as smuggling and unintentionally moving restricted items should both be recognized as potential pathways for IAS range expansion. While these are different activities, they and other unregulated activities are a significant concern regarding protection against range expansion by established IAS, as these activities occur without property biosecurity clearances.

Recent Invasions of Rotuma Highlight Gaps in the Current Biosecurity System

Several non-native species, which are known to cause impacts have within the past year been observed on Rotuma. These species include the Cane Toad and the Common Myna (Figure 11). Both are IAS and if permitted to establish in Rotuma may cause significant impacts to the environment and local villages there. It is unclear how these organisms arrived, how many individuals of each species arrived and if they will be able to persist and start new populations in Rotuma. At present the Myna invasion into Rotuma is the subject of a hunting program and evidence suggests that there are less than 10 birds on the island. Both the Cane Toad and the Common Myna are well established on Viti Levu and Vanua Levu. The cane toads arrived on Rotuma with construction materials sent from Viti Levu. The Myna may simply have hopped a ride on a ferry. It is not established but it does seem likely that the pathway for these arrivals may have been regular ferry traffic between Rotuma and the main Fiji Islands. The vectors may have been construction materials and the ferry ship and are high priority risks that require more stringent biosecurity controls.



Figure 11: Common Myna Bird (*Acridotheres tristis*), Fiji, photo JStanford.

BAF, Birdlife International and others are working with locals to determine the extent of these two invasions and how best to address removal of any remaining Cane Toads and Mynas from Rotuma before their populations have a chance to spread and increase, making the potential for eradication significantly less likely. While initial survey work has been conducted and authorities are working on a solution, time is passing, and action is necessary to ensure the continued protection of Rotuma and its people. The unfolding story of the recent invasions of Rotuma illustrates the urgent need for IAS response mechanisms, capacity, and funding to be developed and maintained for all of Fiji, so that when the next invasion occurs, the country has the capacity in place to react rapidly and prevent new harmful species from gaining a foothold.

5.0 ROLES AND RESPONSIBILITIES

This section identifies the roles of the different ministries, agencies, organizations, and offices that have specified roles and responsibilities in regard to IAS prevention and management within Fiji. Examples of additional regional and international stakeholders that can provide support with IAS management are also covered in section 5.3.

5.1 National

Ministry of Agriculture (MOA):

The overall mandate for the Ministry of Agriculture is to provide food and nutrition security, income, and employment to support broad-based economic sector growth through a modernized and resilient agriculture sector. The Ministry is aligned to relevant outcomes identified in the Government's 5- and 20-year National Development Plan, MOA's 5-year Strategic Development Plan (2019-23), People's Charter for Change, Peace and Progress, Green Growth, National Climate Change Policy, and National Adaptation Plans. Its services are demarcated and driven by the five implementing divisions with service delivery offered via the Crop Extension Division, Crop Research Division, Animal Health & Production Division, Human Resources, Finance and Information Division, and Economic Planning & Statistics Division. For further information, visit <https://agriculture.gov.fj/>

Ministry of Commerce, Trade, Tourism & Transport (MCTTT):

The Ministry is responsible for formulating and implementing policies and strategies that create and facilitate growth in industry, investment, trade, tourism, transport, co-operative businesses, micro and small enterprises, and enhance metrology, standards, and consumer protection. The mission of the Ministry is to create sustainable growth of commerce and industry through innovative and sound policies that lead to improved livelihoods for all Fijians. The Ministry's roles and responsibilities are upheld by its Economic Unit, MSME Fiji, Trade Unit, Tourism Unit, Department of National Trade Measurement and Standards, Department of Co-operative Business, Human Resources Unit, Finance Unit, and Transport Unit. Additionally, the Ministry has five (5) Trade Commissions established in North America, China, Australia and New Zealand, and Papua New Guinea. For further information, visit <https://www.mcttt.gov.fj/>

Ministry of Defence & National Security (MDNS):

The Ministry of Defence and National Security provides strategic leadership, policy guidance, and transforms defense and security platforms to ensure a safe and secure Fiji for all. The Ministry manages the nation's security (a prerequisite to stability and peace) and delivers this through the formulation and implementation of policy initiatives, programs, and projects on matters of national security and public order, man-made national crises and emergencies, defense, aerial surveillance, search and rescue operations, national day, and other celebrations. The Ministry coordinates the intelligence requirements of the government and provides timely advice and assessments accordingly. The Ministry also provides a coordinating role through the Defense and Security Forces on policy matters for the two disciplined services and international counterparts. The Ministry abides by the PSC Policy in its daily service, supporting the reforms of the civil service, gender equality, good governance, good financial management, secretariat support, with professional human resources management and prompt service delivery. The Ministry interfaces with internal and external partners in border control and maritime security. For further information, visit <https://www.defence.gov.fj/>

Fiji Police Force:

The Fiji Police Force ensures the safety and security of the people of Fiji and its visitors. With advice and support from the Ministry of Defense, the Fiji Police Force carries out policing and security activities domestically. For further information, visit <https://www.police.gov.fj/>

Republic of Fiji Military Forces (RFMF):

Under the 2013 constitution of the Republic of Fiji, the RFMF is mandated to be the guardian of Fiji, carrying out the mandate of the people through the National Administration. The Republic of Fiji Military Force always ensures the security, defense, and well-being of Fiji and all Fijians. The Fiji Military Forces has both a Land Force and Maritime Command that assist in the protection and management of marine resources as well as the protection and security of Fiji's maritime boundaries. For further information, visit <https://www.rfmf.mil.fj/>

Ministry of Finance, Biosecurity Authority of Fiji (BAF):

BAF was established by the Biosecurity Act of Fiji, 2008. BAF replaces and expands on the role of Fiji Quarantine. BAF manages quarantine controls at borders to minimize the risk of exotic pests and diseases entering the country (Figure 12). It also provides import and export inspection and certification to help retain Fiji's favorable animal, plant, and human health status and wide access to overseas export markets.

The mission of BAF is to protect Fiji's unique biodiversity and facilitate international trade to and from Fiji, all working together to protect Fiji and its people, environment, plants and animals, livelihoods, and unique way of life for the benefit of families, visitors, and future generations.

This mission is to be accomplished by:

- Being a self-sustaining, customer-focused, commercial entity,
- Using technical and technological expertise to carry out surveillance to prevent the entry of animal and plant pests and diseases;
- Monitoring, controlling, and, where possible, eradicating existing animal and plant pests and diseases;
- Respecting, developing, and motivating our employees to perform their tasks with efficiency, empathy, and pride;
- Working collaboratively with government sectors, industry, community, regional and international bodies;
- Meeting obligations to the World Trade Organization (WTO), Sanitary and Phytosanitary (SPS) agreements, Codex, World Organization for Animal Health (OIE), International Plant Protection Convention (IPPC), and other international standards;
- Establishing and maintaining strong relationships with our trading partners,
- Actively assisting in growing existing and opening new trade markets for Fiji's agricultural exports, whilst ensuring safe imports,
- BAF has 23 stations throughout the country.
- Biosecurity officers receive on-the-job training



Figure 12: Amnesty bin Nadi International Airport, photo J. Stanford.

For further information, visit <http://www.baf.com.fj/>

Ministry of Finance, Fiji Revenue & Customs Service (FRCS):

The Fiji Revenue & Customs Service is the major funder of the National Budget. Apart from its primary mandate, FRCS continues to partner and support other government initiatives as needed. Their strategic plan is aligned with the Government's national plan to ensure sustainable and effective performance. They are a statutory organization established under the FRCS Act 1998 that is governed by a Board and administered by a Chief Executive Officer. For further information, visit <https://www.fracs.org.fj/>

The Ministry of Education, Heritage, and Art (MEHA):

MEHA is responsible for the design, implementation, monitoring, and evaluation of educational legislation, policies, and programs in Fiji. The Ministry provides the structure, human resources, budget, and administrative and management support to ensure that the quality-of-service delivery is maintained at a high level. The Ministry of Education, Heritage and Arts serves to provide educational opportunities and information to all students in pre-primary, primary, secondary schools, special needs, vocational schools & training programs, compulsory schooling (Class 1-Form 6), and those participating in formal studies, as well as teaching personnel, school management committees, and controlling authorities. For further information, visit <http://www.education.gov.fj/>

The National Trust of Fiji (NTF) is a statutory body funded by the Fiji Government, independent donors, and multilateral projects. NTF was established in 1970 to provide for the protection of Fiji's natural, cultural, and national heritage.

- National Trust Act (Cap 265) of 1978 NTF Act Cap 265
- Fiji Government's National Heritage Policy in 1996
- National Trust Amendment Act of 1998 NTF Amendment Act

Ministry of the Environment and Climate Change:

The vision of the Ministry of Environment and Climate Change is a Clean, Healthy Environment and Sustainable Waterways Management for a Sustainable and Resilient Fiji. Its mission is to steward and protect Fiji's environment as a prized treasure for all Fijians and their future generations. Increase resilience to waterways-related hazards through effective and sustainable management of waterways in Fiji.

The Department of Environment is the government agency responsible for the implementation of the Environment Management Act 2005 and regulation, Endangered and Protected Species Act 2002 and regulation, Litter Act 2008 and regulation, Ozone Depleting Substances Act 1998, Constitution of the Republic of Fiji 2013, and other relevant legislation.

National Environmental Council (NEC):

NEC was established under the Environmental Management Act (EMA) of 2005 and is constituted of stakeholders who have a focus on the environment. According to the EMA 2005, the NEC is to coordinate the formulation of environment-related policies and plans.

Fiji Invasive Species Taskforce (FIST):

The Fiji Invasive Species Taskforce (FIST) is the multi-stakeholder coordination mechanism that was established to provide policy and technical advice on Invasive Alien Species and biosecurity to the National Environment Council, Biosecurity Authority of Fiji, Department of Environment, and other relevant bodies.

Action Plans for the FIST from the Fiji NBSAP (2017):

- MIS2.7 Develop a Terms of Reference for the Fiji Invasive Species Taskforce (FIST) and its scope of work to recognize different levels of management.
- MS2.8 Provide needed resources and policy mandate to ensure that the FIST is mandated and appropriately linked to other related advisory bodies with clear reporting arrangements.
- MIS2.9 Develop formal and informal partnership arrangements such as memoranda of understanding or agreements between key stakeholders such as the Department of Environment, Biosecurity Authority of Fiji, and relevant NGOs and agencies.

Ministry of iTaukei Affairs (MTA):

The Ministry of iTaukei Affairs is responsible for developing, implementing, and monitoring government programs focused on the governance and well-being of the iTaukei people. The Ministry provides a direct link between the Government, iTaukei institutions, and its administration across the fourteen provinces. Through its various institutes, it is the custodian of official records relating to iTaukei land, fishing grounds, headship titles, traditional knowledge, and expressions of culture; It is mandated to deal with dispute resolution over land, fishing grounds, chiefly and traditional headship titles; it safeguards and preserves language and culture through advocacy programs. The Ministry also administers the Centre for Appropriate Technology and Development. For more information, visit <http://www.itaukeiaffairs.gov.fj/>

iTaukei Affairs Board:

The iTaukei Affairs Board is established under Section 4 of the iTaukei Affairs Act Cap 120. The function of the Board is to make recommendations or proposals to the Minister deemed beneficial for the good governance and well-being of the iTaukei people. The Board makes recommendations on matters relating to the rights, interests, health, welfare (social and economic), peace, order, and good governance of the iTaukei people. The Board also monitors all developments carried out in the provinces to ensure that such development is in accordance with and reflects the development policies and strategies formulated by the Government. For more information, visit <https://itaukeiaffairsboard.com/>

Ministry of Fisheries:

The mission of the Ministry of Fisheries is to drive sustainable fisheries management, economic growth, and improve livelihoods through SMART fisheries strategies. The Ministry is responsible for the sustainable management of Fiji's marine resources and for preserving the vital role these resources play in promoting the Fijian way of life. The Ministry monitors and protects the health of marine populations in Fijian waters to protect the livelihoods of communities that rely on fishing. The Ministry considers emerging developments in the fisheries sector, issues relating to conservation, and new solutions employed in the fisheries sector to combat illegal, unreported, and unregulated fishing practices. The Ministry also works to meet international best practice in implementing sector trade subsidies, maximizing resource rent, improving food security, import substitution and diversification, climate change adaptation and mitigation, blue carbon trading, marine biodiversity conservation, and disaster management. Daily operations are guided by the Fisheries Act (Cap 158), Marine Spaces Act (Cap 158A), Offshore Fisheries Management Decree (2012), and the Offshore Fisheries Management Regulations (2014). For more information, visit <https://www.fisheries.gov.fj/>

Ministry of Forestry:

The Ministry of Forestry is responsible for the monitoring, surveillance, evaluation, and control of all forest operations in compliance with the standard requirements of the Forest Decree 1992 and the Fiji Forest Harvesting Code of Practice (FFHCOP) 2013. Ministry services include facilitating a sustainable log supply system and associated processing, inspecting, and licensing services. The Ministry also develops, advises, and raises awareness of community-based initiatives for forest-based projects. These programs are accomplished through its Western, Northern, and Central-Eastern Divisions. The Ministry of Forestry has a variety of divisions, including the Division of Forest Resource Assessment and Conservation, whose role includes the management of natural forests. For more information, visit <https://www.forestry.gov.fj/>

Ministry of Health and Medical Services (MHMS):

MHMS has multiple units that support efforts to improve health and provide services to the people of Fiji.

MHMS is a key partner in supporting control, management, and risk reduction regarding IAS as they relate to human health. Examples include reducing impacts from diseases carried by IAS vectors, such as malaria, and working with partners to ensure country-wide protection from viral threats such as the COVID-19 coronavirus. For further information, visit <http://www.health.gov.fj/>

Ministry of Infrastructure and Transport (MIT):

The Ministry of Infrastructure and Transport is directly responsible for policy formulation, planning and design, regulatory implementation and enforcement, coordination and implementation of programs, projects and services relating to public works infrastructure, meteorology, land and maritime transportation, and public utilities, which encompasses electricity and water. The Ministry covers critical infrastructure areas, such as renewable energy systems like hydro power, solar and wind, structural and architectural design, aids to navigation, buildings, joinery, mechanical,

electrical, the plant pool, vehicles, solar systems, roads, and diesel generators. The transport sector covers land and maritime transportation as well as meteorological services. The Ministry is also responsible for overseeing policy, legislative, administrative, and regulatory functions of various Government Commercial Statutory Authorities (GCSA) including the Land Transport Authority (LTA), Water Authority of Fiji (WAF), Maritime Safety Authority of Fiji (MSAF), Fiji Roads Authority (FRA) and Energy Fiji Limited (EFL) as the Government Commercial Company (GCC). For more information, visit <http://www.moit.gov.fj/>

Ministry of Infrastructure & Meteorological Services:

The Ministry of Infrastructure and Meteorological Services is directly responsible for policy formulation, planning, design, regulatory coordination, and implementation of programs and projects for:

- Infrastructural Work (Energy, Works, Water and Sewerage, Building and Government Architects)
- Meteorological and Hydrological Services

The Ministry also provides policy and legislative oversight for:

- Fiji Roads Authority
- Water Authority of Fiji
- Energy Fiji Limited

Maritime Safety Authority of Fiji (MSAF):

The Maritime Safety Authority of Fiji (MSAF) is a commercial statutory entity established by the Maritime and Safety Authority Amendment Act of 2009, and its functions as a regulator responsible for Fiji's maritime safety include the protection of the marine environment, regulation of search and rescue, and hydrographical services.

MSAF functions comprise:

- I. Administering and enforcing the Maritime Transport Authority Act 2013, Shipping Act 2013, and laws relating to the regulation, registration, and safety of shipping,
- II. Performing all functions and duties carried out by the Fiji Maritime Safety Administration.
- III. Advising the State on matters relating to maritime safety and maritime security, which includes liaising with appropriate Ministries and statutory bodies on such matters, and
- IV. Representing the State internationally in respect of matters relating to maritime affairs, subject to protocol clearance.
 - Marine safety authority of Fiji act of 2009
 - Maritime Transport Act of 2013
 - Ship Registration Act of 2013
 - Ballast water management regulation
 - Anti-fouling systems regulation.

For more information, visit <https://msaf.com.fj/>

National Disaster Management Office (NDMO):

The National Disaster Management Office was established as the coordinating center for the Fiji Government in times of natural disasters. The office operates under the National Disaster Management Act and the National Disaster Management Plan. The office coordinates the National Management of Disaster Activities through the Ministry of Rural and Maritime Development and Disaster Management Organization Structures at national, divisional, local, and community levels. Specifically, the office manages disaster activities through disaster preparedness programs, disaster mitigation programs, disaster response programs in times of natural disasters, and disaster rehabilitation programs to restore normalcy after the adverse effects of a disaster hazard. For further information, visit <http://www.ndmo.gov.fj/>

Airports Fiji Limited (AFL):

Airports Fiji Limited is a fully owned Government Commercial Company established under the Public Enterprise Act, 1996. It operates 15 airports in the Fiji Islands, including Nadi and Nausori International airports, and 13 other domestic airports which are located on outer islands. Airports Fiji Limited also provides Air Traffic Management (ATM) services within the Nadi Flight Information Region (FIR), which includes the sovereign air spaces of Tuvalu, New Caledonia,

Kiribati and Vanuatu. Airports Fiji Limited has a dual reporting system where it reports to the Minister for Public Enterprise on its commercial performance and to the Minister for Civil Aviation on matters related to policies that govern the aviation industry. <http://www.airportsfiji.com/>

Fiji Ports Corporation Limited (FPCL):

Fiji Ports Corporation Limited owns and operates the four major ports in Fiji: Port of Suva, Port of Lautoka on Fiji's largest island of Viti Levu; Port of Malau is situated on Fiji's second largest island of Vanua Levu, whilst Port of Levuka is at the old capital of Fiji. 95% of Fiji's imports and exports are traded through Fiji Ports Corporation Limited's ports and handled by Ports Terminal Limited. In 2015, FPCL underwent a privatization initiated by the Government and now has a consortium of shareholders with representatives of the Fiji National Provident Fund and the Sri Lankan company Aitken Spence PLC. FPCL is responsible for the development and maintenance of local wharf property and infrastructure. FPCL also provides marine services (Tugs, Lines boat, pilot boats) and associated warehousing, container yard planning, and berthing services.

- Port Authority of Fiji Act 1975
- Public Enterprise Act 1996
- Seaport Management Act 2005)

For more information, visit <http://www.fijiports.com.fj/>

Others:

There are many additional partners or potential partners that operate at the national level in Fiji, including, but not limited to, the University of Fiji, Fiji National University, and NatureFiji-MareqetiViti.

5.2 Local

Local and district entities and offices should also be included in both planning and activity implementation for the NISFSAP to address concerns regarding biosecurity and IAS control and management. These may include such entities as local or district offices, councils, task forces, protected area management teams, and private groups.

5.3 Regional and International

The Pacific Islands Forum (PIFS)

The Pacific Islands Forum is the region's premier political and economic policy organization. Founded in 1971, it comprises 18 members: Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

The Forum's Pacific Vision is for a region of peace, harmony, security, social inclusion, and prosperity, so that all Pacific people can lead free, healthy, and productive lives.

The Pacific Islands Forum works to achieve this by fostering cooperation between governments, collaborating with international agencies, and representing the interests of its members.

Since 1989, the Forum has organized an annual meeting with key Dialogue Partners at the ministerial level. The Forum currently recognizes 18 dialogue partners: Canada, People's Republic of China, Cuba, European Union, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Malaysia, Philippines, Spain, Thailand, Turkey, United Kingdom, and the United States.

The work of the Forum is guided by the *Framework for Pacific Regionalism*, which was endorsed by Forum Leaders in July 2014.

Link: <https://www.forumsec.org/who-we-arepacific-islands-forum/>

University of the South Pacific (USP):

The USP mission is to influence Pacific Islanders through the pursuit of excellence in knowledge by providing world-class education and research that improves the lives of individuals and communities. USP provides training, research, and technical support throughout the region. Web link: <https://www.usp.ac.fj/>

The Pacific Community (SPC):

The Pacific Community supports sustainable development by applying a people-centered approach to science, research, and technology across all of the Sustainable Development Goals (SDGs). SPC serves its members by interweaving and harnessing the nexus of climate, ocean, land, culture, rights, and good governance; through trusted partnerships; investing in Pacific people; and understanding Pacific contexts. 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. Developed through extensive consultation with members, Secretariat 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. 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. This IAS working group is called the Pacific Invasive Partnership (PIP). PIP is the regional coordinating body for offices and experts working on IAS in more than one PICT. PIP promotes coordinated planning and assistance from regional and international agencies to meet the IAS management needs of the PICTs. 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 regarding invasive species management.

Non-Governmental Organizations and Consultancies

Pacific Invasives Initiative (PII), RARE, BirdLife International, 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.

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/>

IUCN, Species Survival Commission (SSC), Invasive Species Specialist Group (ISSG):

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>

5.4 Invasive Alien Species Databases

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 in the 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, bio status 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 bio status of alien species at the 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 maintains 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/>

Fish Base & Sealife Base:

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

Pest List Database

The Pacific Islands Pest List Database (https://pld.lrd.spc.int/Controller_Pest) keeps track of pests that are now known to harm agriculture, forestry, and the environment in Pacific Island nations and territories (PICTs). A significant portion of the pest information in the country Pest List Databases was derived from national pest surveys, published reports, journal papers, and electronic data found in international literature.

6.0 PAST AND CURRENT INVASIVE ALIEN SPECIES RELATED PROGRAMS IN FIJI

Fiji has a long history of strong agricultural, dairy, forestry, and fisheries sectors and, as such, has been engaged with exotic or non-native species, including IAS, for many years. What is more, Fiji serves as a major transportation hub. In part, due to Fiji's prominent role in the region, it has also been exposed to invasion by numerous pest organisms. In the past, Fiji has also had various species purposefully introduced, some of which are now well entrenched and highly invasive. In response to this history, Fiji has made IAS prevention and control a priority, and numerous projects are underway or have been completed, with relatively strong border biosecurity in place. Only a handful of these efforts are mentioned herein.

The "Savusavu Blue Town model" is an example of a strategic framework that places emphasis on protecting Fiji's diverse genetic tropical reefs and ecosystem resources. The Savusavu Chamber of Commerce created this plan to target developing island and coastal communities in areas of tropical marine biodiversity. Project objectives will reduce carbon emissions, raise awareness of community and environmental climate change impacts, and implement tangible solutions. This project demonstrates a mechanism to bring green technology and funding into developing countries (https://wedocs.unep.org/bitstream/handle/20.500.11822/28869/Blue_Town.pdf?sequence=1&isAllowed=y).

Fiji IAS Project

Fiji has developed and is currently in the process of implementing a 5-year GEF project entitled "Building Capacities to Address Invasive Alien Species to Enhance the Chances of Long-term Survival of Terrestrial Endemic and Threatened Species on Taveuni Island, Surrounding Islets and Throughout Fiji" (United Nations Development Programme 2015). This project is often simply referred to as the Fiji IAS Project.

The project has four main components:

- Strengthened IAS policy, institutions, and coordination at the national level to reduce the risk of IAS entering Fiji, including a comprehensive multi-sectorial coordination mechanism to ensure the best possible use of resources and capacities for prevention, management, eradication, awareness and restoration, and capacity building of biosecurity staff.
- Improved IAS prevention and surveillance operations at the island level on Taveuni, Qamea, Matagi and Laucala to reduce potential for pest species to enter and establish within the four-island group and move between these islands.
- Implementation of a comprehensive eradication plan for the Giant Invasive Iguana (*Iguana iguana*) based on the comprehensive survey and public outreach on Taveuni and an increase in American Iguana removal efforts on the islands of Qamea, Matagi, and Laucala, and
- Strengthened knowledge management and awareness raising that targets the public, tour operations and visitors, to safeguard the nation from IAS.

The large, multi-year Fiji IAS project is expected to address numerous IAS concerns across a variety of areas. In addition, there are numerous additional projects and efforts either completed or underway within Fiji to address a variety of IAS concerns. A few of these efforts are noted below.

6.1 Biosecurity

BAF conducts terrestrial IAS activities regarding sanitation, inspection, quarantine, and treatment activities associated with international and some domestic pathways and vectors. These activities include the following:

- Border control at official international ports of entry
- Pathway control at various points throughout the country
- Risk assessments for proposed new species for importation

Prior to the establishment of BAF, frontline biosecurity activities were conducted by Fiji Quarantine.

MSAF is tasked with ensuring compliance of seagoing vessels with ballast water and hull sanitation activities, both of which are known pathways for IAS. These efforts should be coordinated with BAF and strengthened as needed through improved inter-agency cooperation, focused screening and enhanced compliance and inspection processes.

6.2 Awareness and Engagement

As part of the Fiji IAS Project, an island group iguana awareness campaign is underway in the Northern Division. These efforts will focus on enhancing awareness of the American Iguana throughout the Northern Division, with a focus on Taveuni and Qamea.

What is more, as part of the Fiji IAS Project, nationwide IAS engagement efforts are set to begin during calendar year 2021. These efforts are to facilitate improving engagement by all sectors, including visitors, throughout the country, regarding safeguarding Fiji from IAS.

BAF also has and continues to undertake various outreach and engagement efforts throughout the country, which include public advertisements regarding key pest species, pest reporting phone lines, a detailed website including relevant information on high-priority pests, and other activities.

NatureFiji-MareqetiViti has been, and is, engaged in IAS awareness activities throughout the country and has a website with extensive details.

Various other government and non-governmental partners conduct various IAS outreach activities.

6.3 Monitoring

Fruit fly monitoring activities are currently underway and led by BAF. BAF also undertakes other monitoring activities, such as for termites and other key pest organisms. Sentinel traps are also to be utilized to monitor CRB within Fiji.

6.4 Early Detection and Response

BAF is tasked with surveillance, monitoring, and response to priority IAS throughout the country, and several ERPs have been developed over the past few years. At least one response training effort was undertaken within the past 10 years, and perhaps a few of those individuals trained are still available to support future response needs.

As part of the Fiji IAS Project, an Early Detection and Rapid Response plan will be developed for Fiji, which will include support for developing nationwide reporting/determination capacity as well as implementation of response actions. These efforts are to be engaged starting in calendar year 2021.

6.5 Eradication

BirdLife International (with the support of its national Partner NFMV and others) has completed eradications of rats, goats, and feral cats from 14 islands and islets in Fiji (ranging from 1-100ha in size). The first of these was made predator-free in 2006, and today all islands remain free of the species eradicated. The purpose of these eradications is to protect native bird species, and other threatened wildlife (like the Fiji Crested Iguana, but also turtle nesting areas), restore the habitat, and provide favorable conditions for Fiji's native plant and animal wildlife. Eradications (supported by others) include goats from Yadua Taba, and anecdotally, feral cats from Monu Island and feral pigeons from Rotuma.

A GII eradication effort is currently underway as part of the Fiji IAS Project. Efforts are focused on removing GII and their eggs (from nest sites) on Qamea and Matagi, with the hope of expanding efforts soon to Laucala. In addition, Taveuni is being monitored for potential GII incursions, and all reports of GII throughout the country are being followed up on to ensure that these pests do not spread beyond their current known breeding range within the country. If containment of the GII in Fiji is successful, then there is the potential that they can be completely eradicated. If containment fails and GII populations establish on Taveuni or beyond, their eradication will be less likely.

6.6 Management and Control

Biocontrol agents have historically been released to control the original known biotype of Coconut Rhinoceros Beetle, which is well established in the country, but presumably controlled. Other biocontrol's for other pest organisms have also been successfully introduced to Fiji.

Clausen (1978) covers the early history of biocontrol releases for arthropod pests and weeds with numerous records of control and management in Fiji. Some ongoing efforts to manage and control IAS in Fiji are covered by BAF on their website (<http://baf.com.fj/>).

Water hyacinth (*Eichhornia crassipes*) is an IAS established in Fiji, where it clogs waterways, impacting flow rates, movement of humans and animals, increasing sedimentation, and likely modifying ecological communities. The weevil *Neochetina eichhorniae* was established in Fiji by 1977 as a biocontrol for water hyacinth and appears to provide a

level of control (SPC, Plant Health Water Hyacinth web page: <https://lrd.spc.int/our-work/water-hyacinth-eichhornia-crassipes>). Water hyacinth is also managed mechanically and is often readily hand-pulled.

Seven species of *Merremia* (*Merremia spp.*) are reported from Fiji, several of which are native (Paynter et al, 2006). One species, *M. peltata*, is a species known to have invasive tendencies, and if provided with sufficient light gaps can readily cover other vegetation, effectively blocking sunlight penetration and ultimately killing the vegetation it has overgrown. Mechanical control, generally in the form of cutting and pulling, is essential to keep this species in check. Efforts are underway regionally to develop biocontrol tools.

The Coconut Rhinoceros Beetle or CRB (*Oryctes rhinoceros*) is a non-native pest or IAS that has been established in Fiji since at least the 1950s. CRB is a known pest of numerous plant species, including oil and coconut palms. In Fiji, the native Fiji Fan Palm (*P. pacifica*) has been documented as a minor host plant for CRB (University of Florida, Featured Creature website: http://entnemdept.ufl.edu/creatures/orn/palms/Oryctes_rhinoceros.htm). An extensive program for biological control of the CRB was conducted during the 1950s and 60s in Fiji. Although numerous natural enemies were imported, only *Scolia ruficornis* F., a parasitoid wasp, became established (Clausen 1978). In areas where it was established *S. ruficornis* F. didn't appear to be highly successful at controlling CRB populations (University of California, Biological Control of Arthropods, Weeds, Mollusca and Insect Identification website, Rhinoceros Beetle web page: <http://www.faculty.ucr.edu/~legneref/biotact/ch-93.htm>). A CRB biocontrol nudivirus was released in Fiji in the 1970s, and 35 years after its release, surveys at the original release sites indicated reduced levels of palm damage that may be due to the continued management of CRB populations at these areas (Bedford, G. 2013). The Fiji Agriculture Ministry conducted surveys for CRB in 2016 and 2017, covering much of the country, and reported a 30 percent population increase that may be related to cyclone damage (<https://fijisun.com.fj/2018/09/29/30-rise-in-rhinoceros-beetle-population/>). Current management efforts for CRB include both the nudivirus and the use of Ethyl-4-methyloctanoate pheromone lure as a control agent and fungal biocontrols, as well as sanitation measures to reduce available habitat.

Dalo is an important crop in Fiji that is threatened by the Taro Beetle, as the adults of this species can burrow into the Dalo corms, promoting rot. Various control methods are utilized, including crop rotation, reducing breeding sites, and chemical control. Fiji also has specific biosecurity measures restricting the movement of dalo planting material from known infected locations to islands where the Taro Beetle has not been confirmed as established.

The African Tulip Tree (*Spathodea campanulata*) was introduced as an ornamental to Fiji in the 1930s, where it has thrived and spread widely (Auld and Nagatalevu-Seniloli, 2003). These trees are now widespread, take over fallow land, and may invade native forests. African Tulip management in Fiji is implemented by many communities and generally involves cutting, burning, and/or herbicide application. Research for expanding management options for a variety of IAS, such as the African Tulip Tree, is currently underway.

BAF is also working to control and prevent the spread of American Foulbrood.

BAF has a major project which focuses on the control and management of Asian Subterranean Termites on Viti Levu and Vanua Levu.

A weed assessment for Yadua Taba Island, location of the Crested Iguana Sanctuary, has been completed (Taylor et al, 2005). Weed removal from some protected areas is being conducted by the National Trust and by localized protected area management teams. Weed management is a major component of village and farm community activities to keep village, town, and agricultural lands open and productive.

6.7 Restoration

There was a biodiversity enhancement project carried out by the Ministry of Forestry. One of the goals of this project was the afforestation and reforestation of degraded areas, e.g., 30 million trees planted in 15 years. These efforts were to have been completed by 2035.

6.8 Planning, Development, and Capacity Building

- Fiji has a re-constituted FIST, albeit it is presently still not fully functional.
- Fiji has a variety of Emergency Response Programs established.
- Fiji has had a preliminary EDRR training for invasive snakes.
- Fiji, through BAF, has several functional pest reporting systems in place.

- Fiji has an active environmental sector, including CSOs, that continue to contribute to IAS planning, eradication programs, informing priorities, and building local and national capacity.
- Fiji has a substantial amount of detail already available on numerous native and endemic species as well as natural habitats.
- Fiji has put an NBSAP in place and completed numerous country reports on its NBSAP efforts.
- Fiji is in the process of developing an NISFSAP.

7.0 LEGISLATIONS, CONVENTIONS AND AGREEMENTS

The current legal framework in Fiji does not make specific reference to the terms “alien” or “invasive alien species,” and legislation does not refer to internationally agreed-upon alien invasive species terms. Despite the lack of legislative reference, “invasive alien species” are referred to in various policy documents in Fiji.

In practice, the Biosecurity Authority of Fiji applies its powers under the Biosecurity Decree/Act by initiating pest control and management measures for invasive alien species if they fall within the definition of a “pest” as defined under the Act.

Fiji’s response to its obligation under Article 8(h) of the Convention on Biological Diversity, i.e.

“To as far as possible and as appropriate, to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species,”

is reflected in Fiji’s National Biodiversity and Strategies Action Plan (NBSAP) 2020-2025 as one of the six priority focus areas.

Under the Fiji NBSAP, Fiji’s target for the management of IAS is to ensure that all pathways, risks, and threats to biodiversity and livelihoods are identified; priority IAS are controlled or eradicated, and by 2023, measures are in place to manage pathways to prevent their introduction and establishment.

One of the targets established under the Fiji NBSAP is to strengthen national legislation, policies, and strategies to support effective prevention and management of invasive alien species through (i) conducting a legislative review and gap analysis for invasive alien species; and (ii) developing the NISFSAP1 (IAS Legal Review Draft, 2022).

At the time the NISFSAP was being developed, a legal review was being conducted by the Fiji Environmental Law Association.

Below is a list of laws, International Agreements, and national legislation that relate to pest control and IAS prevention and management. The Legal Review will undertake a more comprehensive review.

7.1 National Legislation and Regulations

- Public Health Act
- Food and Safety Act 2003
- Quarantine Act (1965)
- Plant Quarantine Act (1982)
- Natural Disaster Management Act (1998)
- Endangered and Protected Species Act (2002)
- Environment Management Act (2005)
- Biosecurity Act (2008)
- Marine Safety Authority of Fiji Act (2009)
- Maritime Transport Act (2013)
- Ship Registration Act (2013)
- Ballast Water Management Regulation
- Anti-fouling Systems Regulation
- Litter Decree

¹ This action plan is linked to the GFF and NAP.

7.2 International Conventions and Agreements

Convention on Biological Diversity (CBD)

Fiji is party to the Convention on Biological Diversity (CBD) as of 1993. This is a key convention relating to the conservation of flora, fauna, and ecosystems. The CBD also specifically requires the prevention of alien species introductions and control or eradication of those alien species that threaten ecosystems, habitats, or native diversity. Fiji's commitments to the CBD are primary drivers for their priorities related to biodiversity and conservation, which include IAS prevention and management. The principal instrument for implementing the CBD requirements in Fiji is the NBSAP.

Protected areas are a cross-cutting issue within the CBD known as the Programme of Work on Protected Areas (PoWPA). The Fiji National Protected Area Committee (PAC) was established in 2008 under section 8(2) of Fiji's Environment Management Act 2005 to advance Fiji's PoWPA commitments. Fiji's PoWPA action plan was developed in 2011 (<https://www.cbd.int/doc/world/fj/fj-nbsap-powpa-en.pdf>). 48 terrestrial protected areas are mentioned in the PoWPA action plan with various levels of status and protection. Invasive species, along with de-reservation, lack of capacity and enforcement, and commercial and unsustainable fishing practices, are key threats to protected areas in Fiji, as mentioned in the PoWPA action plan.

KMGBF Target 6: Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent, by 2030, eradicating or controlling invasive alien species especially in priority sites, such as islands.

Convention on International Trade in Endangered Species (CITES)

CITES entered into Force in Fiji in 1997. CITES aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

Convention on Migratory Species (CMS)

Fiji is a party as of 2013 to the CMS. CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats. CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.

International Plant Protection Convention (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.

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

Fiji ratified UNCLOS in 1982. 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 the protection and preservation of the marine environment, including minimizing pollution and preventing the introduction of invasive species.

Cartagena Protocol on Biosafety (CPB)

Fiji is party to the CPB. This protocol to the Convention on Biological Diversity aims to ensure the safe handling, transport, and use of living modified organisms (LMOs) resulting from modern biotechnology. The Parties undertake to ensure that the development, handling, transport, use, transfer, and release of any LMOs are undertaken in a manner that prevents or reduces the risks to biological diversity, taking also into account risks to human health. While LMOs are different from invasive species, similar processes of risk management, border control, and quarantine apply.

Stockholm Convention

Fiji ratified the Stockholm Convention, and it entered into force in 2004. The objective of the convention is to protect human health and the environment from persistent organic pollutants.

International Treaty on Plant Genetic Resources for Food and Agriculture

Fiji is a member of this treaty, which entered into force in Fiji in 2008. The objectives of this treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.

Noumea Convention

Fiji has ratified the Noumea Convention for the Protection of the Natural Resources and Environment of the Pacific Region, along with its dumping and emergency protocols. 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 to undertake activities that prevent, reduce, and control pollution.

World Heritage Convention

Fiji ratified this convention in 1990. 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.

Convention on Wetlands or Ramsar

Fiji joined the convention in 2006. The Convention's mission is the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world.

United Nations Framework Convention on Climate Change

Fiji is a non-Annex I party to this convention and has ratified the Kyoto Protocol (1998) and the Paris Agreement (2016). 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 Organization for Animal Health (OIE)

Fiji is a member of the OIE. The OIE is the intergovernmental organization responsible for improving animal health worldwide.

8.0 STRATEGIC ACTION PLAN

Biosecurity Overview and Planning

The most effective way of reducing impacts from new IAS is to reduce the likelihood of arrival and establishment of IAS through strengthened pre-border and border preventative measures, and to ensure that appropriate quarantine elements are in place and utilized as needed at points of egress. Prevention and quarantine elements currently exist for Fiji, but these efforts are not comprehensive. Numerous existing biosecurity elements should be enhanced, and additional elements should be implemented to reduce the potential of new IAS arriving, establishing, and spreading further through national borders and within the Fiji Islands.

To better protect Fiji, a suite of preventative and quarantine measures needs to be developed and implemented to reduce IAS incursion and establishment. These measures need to be supported by appropriate laws and regulations and have adequate funding, staffing, and other resources. To facilitate the development of additional preventative and quarantine measures and ensure that the most appropriate suite of measures can be implemented, a clear understanding

of the existing biosecurity capacity is necessary. What is more, there also needs to be a clear understanding of what IAS are present already and where they are established, as well as what non-established organisms pose the highest risk of invasion. Additionally, a pathways analysis is needed to understand how best to address biosecurity threats from existing and potential future transit of persons and goods to and between these islands. Once these elements have been compiled, a gap analysis should be conducted to determine what areas of prevention and quarantine need to be improved in order to ensure comprehensive preventative and quarantine coverage.

Once prevention and quarantine needs are clearly defined, then specific costings and timing elements can be determined, including potential revenue sourcing. Understanding the costs and timing associated with developing a comprehensive prevention and quarantine system will facilitate developing realistic funding avenues. Funding will need to be long-term in many cases and could possibly be supplied, at least in part, through enhanced user fees, but the exact mechanisms need to be determined, and the appropriate laws and/or regulations developed to ensure compliance and sustainability of these efforts. Grants and other shorter-term funding opportunities can also be utilized as appropriate for items such as planning development, training activities, community engagement, and some capital improvements.

The Action Plan

The Strategic Action Plan for this National Invasive Alien Species Framework is laid out in an easily accessible table format. This table can be found in [Appendix G](#).

The Structure of the Strategic Action Plan Table follows in large part the themes, divisions, and outputs laid out in section 3.0 of this document. The Strategic Action Plan Table tracks each proposed action through the following:

- Objectives and Outcomes
- Activities
- Timing
- Means of Verification and Monitoring Frequency
- Responsibility
- Resources/Funding
- Rank

9.0 MONITORING AND EVALUATION

Implementation, monitoring, and evaluation of this framework and action plan are in part the responsibilities of multiple entities within Fiji. Coordination of these efforts should be undertaken as one of the primary activities of a national IAS coordination body, which includes members of each of the key offices. Currently, the Biosecurity Authority of Fiji is spearheading IAS efforts, and the legal review is expected to consider whether BAF would be the most suitable IAS coordinating agency.

It is also proposed that a mid-term and final review of activities in the Action Plan be completed to assist with ensuring it is tracking appropriately and to identify further actions for the subsequent action components. As currently developed, the Action Plan of this NISFSAP covers five years. Therefore, before the end of this period, it is essential that stakeholders engage in efforts to develop an updated action plan for the following five-year period. It is recommended that these efforts begin approximately 12 months prior to the completion of the initial five-year period, to ensure that the next five-year plan is in place. It is further recommended that these efforts be led by the national IAS coordination body through the office of the national IAS coordinator.

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APPENDIX A

The Fiji Endangered and Protected Species (ESP) Act 2002 and The Fiji ESP (Amendment) Act 2017 combined and updated Schedule 1 and Schedule 2 listed species.

ESP Act 2002 Schedule 1 Listed Species, as modified by the ESP (amendment) Act 2017: Indigenous species not listed in CITES Appendix I, but which are believed to be threatened with extinction	
Scientific Name	Common Name(s)
PART 1 - FISHES	
<i>Bryanninops diannoea</i>	Diana's goby/ Vo I daiana
<i>Epinephalus lanceolatus</i>	Giant Grouper, Kavuloa
<i>Ecsenius fijiensis</i>	Fiji clown blenny/ Beleni meketa
<i>Mesopristes kneri</i>	Golden Crested Perch, Reve
<i>Plagiotremus laudandus flavus</i>	Bicolor Fang-blenny/ Beleni volai
<i>Plectranthias fijiensis</i>	Fiji anthia/ Ecia selili
<i>Rotuma lewisi</i>	Rotuma goby/Miqa kei rotuma
<i>Thamnaconus fijiensis</i>	Deepwater filefish/Ravi salili
<i>Bolbometopon muricatum</i>	Bumphead Parrotfish/ Kalia
<i>Brotula flaviviridis</i>	Brotula goby/ Miqa I borotula
<i>Coris aygula</i>	Clown coris/ Koli ni Wai/ Drevulolo
<i>Corythoichthys polynotatus</i>	Yellow-spotted pipefish/ Ika se / Ika volai
<i>Dermatopsis greenfieldi</i>	Greenfield's mudbrotula/ Miqa I dave
<i>Diancistrus fijiensis</i>	Fiji coral brotula/ Miqa vunilase
<i>Diancistrus robustus</i>	Robust coral brotula/ Miqa ni namo
<i>Discotrema zonatum</i>	Clingfish/ Ika saisai
<i>Ecsenius pardus</i>	Combtooth blenny/ Bele ni tuinuku
<i>Epinephelus malabaricus</i>	Malabar Grouper/ Kavuloa
<i>Eviota karaspila</i>	Pigmy goby/ Vo/ Miqa sewa
<i>Gorgasia thamani</i>	Thaman's garden eel/ Duna senilase
<i>Heteroconger tomberua</i>	Tomberua Conger eel/ Tunatuna
<i>Hippichthys albomaculosus</i>	Freshwater pipefish/ Ika saisai
<i>Lairdina hopletopus</i>	Hoofprint goby/ Miqa senuku
<i>Meiacanthus oualensis</i>	Yellow-fanged blenny/ Beleni sedromo
<i>Moringua (Basctanichthys) pusillus</i>	Moray eel/ Dabea seloa
<i>Moringua fijiensis</i>	Fiji moray eel/ Dabea ni Uciwai
<i>Neoconger tuberculatus</i>	Swollen-gut worm eel/ Dunaduna saidra
<i>Paracheilinus rubicaudalis</i>	Red-tailed flasher wrasse/ Labebuisedamu
<i>Parioglossus triquetrus</i>	Dartfish/ Ika sailili
<i>Parmops echinatus</i>	Flashlight fish/ Ika tulase
<i>Petroscirtes pylei</i>	Twilight fang blenny/ Beleni seasea
<i>Plectorhinchus albovittatus</i>	Giant Sweet-lips/ Sevaseva levu / Dreke ni Toga
<i>Plesiops polydactylus</i>	Longfin
<i>Pomacentrus microspilus</i>	Reef damsel/ Sisi sevola

<i>Pseudoanthias flavicauda</i>	Yellow-tailed anthias/ Ecia buidromo
<i>Redigobius lekutu</i>	Lekutu goby/ Vovo/ Miqa ni lekutu
<i>Redigobius leveri</i>	Lever's grundel/ Lekutu red goby/ Vovo se damu/ Miqa se damu
<i>Schismatogobius chrysonotus</i>	Orange-spotted scale-less goby/ Vo - sisi
<i>Schismatogobius vitiensis</i>	Fiji goby/ Vovo drili
<i>Siganus uspi</i>	Bi-colored, USP rabbitfish/ Nuqa mataloa
<i>Solenostomus halimeda</i>	Halimeda ghost pipefish/ Volai I selumi
<i>Synchiropus springeri</i>	Springer's mandarinfish/ Ika tuise
<i>Trimma anthrena</i>	Goby/ Miqa voladra/ Miqa I tirima
<i>Tryssogobius nigrolineatus</i>	Goby/ Miqa saivola
<i>Vanderhorstia bella</i>	Shrimp goby/ Miqa vanuku
<i>Zoramia flebila</i>	Cardinal fish/ Ika ni toa
PART 1A - SHARKS AND SAWFISH	
<i>Carcharhinus albimarginatus</i>	Silver-tip shark/ Qio seavula/ Qio dina
<i>Carcharhinus amblyrhyncos</i>	Gray reef shark/ Qio saqa
<i>Carcharhinus falciformis</i>	Silky shark/ Qio sisi
<i>Carcharhinus leucas</i>	Bull shark/ Qio Qa/ Qio ni uciwai
<i>Carcharhinus melanopterus</i>	Black-tip reef shark/ Qio tokiloa
<i>Carcharhinus plumbeus</i>	Sandbar shark/ Qio Vanuku
<i>Galeocerda cuvier</i>	Tiger shark/ Qio oria
<i>Isurus oxyrinchus</i>	Mako shark (SF)/ Qio mako
<i>Isurus paucus</i>	Mako shark (LF)/ Qio mako
<i>Prionace glauca</i>	Blue shark/ Qio Tuiloa
<i>Pristis microdon</i>	Sawfish/ Qio uluvaro
<i>Triaenodon obesus</i>	White-tip reef shark/ Qio tukivula
PART 2 - BIRDS	
<i>Clytorhynchus nigrogularis</i>	Black-faced shrikebill
<i>Dendrocygna arcuata</i>	Wandering whistling-duck
<i>Erythrura kleinschmidti</i>	Pink-billed parrotfinch
<i>Gallicolumba stairii</i>	Friendly ground-dove
<i>Lamprolia victoria</i>	Silktaill
<i>Mayrornis versicolor</i>	Ogea monarch
<i>Myzomela chermesina</i>	Rotuma myzomela
<i>Nesoclopeus poecilopterus</i>	Barred-wing rail
<i>Poliolimnas cinereus</i>	White-browed crake
<i>Porzana tabuensis</i>	Spotless crake
<i>Trichocichla rufa</i>	Long-legged warbler
PART 3 – SEABIRDS	
<i>Fregata ariel</i>	Lesser frigatebird
<i>Nesofregatta albigularis</i>	Polynesian storm-petrel
<i>Phethon lepturus</i>	White-tailed tropicbird
<i>Procelsterna cernula</i>	Blue noddy

<i>Pseudobulweria macgillivrayi</i>	Fiji petrel
<i>Pseudobulweria rostrata</i>	Tahiti petrel
<i>Puffinus inherminieri</i>	Audubon's shearwater
<i>Sula dactylatra</i>	Masked booby
<i>Sula leucogaster</i>	Brown booby
<i>Sterna anaethetus</i>	Bridled tern
<i>Sterna bergii</i>	Crested tern
<i>Sterna fuscata</i>	Sooty tern
PART 4 - REPTILES – GECKOS	
<i>Hemiphyllodacrylus typus</i>	Indo-Pacific tree gecko
<i>Lepidodactylus gardineri</i>	Rotuman forest gecko
<i>Lepidodactylus manni</i>	Mann's forest gecko/ moko kabi
PART 4A – REPTILES - SNAKES	
<i>Ogmodon vitianus</i>	Fiji burrowing snake/ Bolo
PART 4B – AMPHIBIANS	
<i>Cornufer [Platymantis] vitiensis</i>	Fiji tree frog/ Ula/ Boto ni Viti
<i>Cornufer [Platymantis] vitianua</i>	Fiji ground frog/ Dreli/ Boto ni Viti
PART 5 – REPTILES – SKINKS	
<i>Emoia Campbelli</i>	Montane tree skink
<i>Emoia mokosariniveikau</i>	Fiji forest skink
<i>Emoia nigra</i>	Pacific black skink
<i>Leiopisma alazon</i>	Lauan ground skink
<i>Cryptoblepharus eximius</i>	Pygmy snake eyed skink
<i>Emoia oriva</i>	Rotuman barred tree skink/oriva
PART 6 – MAMMALS	
<i>Emballonura semicaudata</i>	Polynesian sheath tailed bat, bekabeka
<i>Notopteris macdonaldi</i>	Fijian blossom bat, ikua
<i>Mirimiri/Pteralopex acrodonta</i>	Taveuni flying fox
PART 6A—WHALES	
<i>Mesoplodon longirostris</i>	Blainvilles Beaked whale/ Tavuto ni nubu
PART 7 – FLORA	
<i>Annonaceae Polyalthia angustifolia</i>	
<i>Araucariaceae Agathis vitiensis</i>	Nda kua/dakua makadre
<i>Caesalpiniaceae Kingiodendron platycarpum</i>	Moivi
<i>Caesalpiniaceae Storckiella vitiensis</i>	Vesida
<i>Clusiaceae Garcinia pseudoguttifera</i>	Bulu
<i>Clusiaceae Garcinia myrtiflora</i>	laubu
<i>Cornbretaceae Terminalia vitiensis</i>	
<i>Cunoniaceae Geissois ternate var 2</i>	Vuga
<i>Cunoniaceae Vupaniopsis leptobotrys</i>	Malawaci
<i>Cunoniaceae Weinmannia spiraeoides</i>	
<i>Cunoniaceae Weinmannia vitiensis</i>	
<i>Degeneriaceae Debeneria vitiensis</i>	Masiratu

<i>Gonyhsrylaceae Gonystylus punctatus</i>	Mavota
<i>Malvaceae Hibiscus storckii</i>	
<i>Melastomataceae Medinilla kandavuensis</i>	
<i>Melastomataceae Astronidium floribundum</i>	
<i>Melastomataceae Astronidium kasiense</i>	Rusila
<i>Mimosaceae spec.div</i>	Vavai-loa
<i>Mimosaceae spec.div</i>	Vavai-vula
<i>Palmae Veitchia filifera</i>	
<i>Podocarpaceae Acropyle sahniana</i>	Drautabua
<i>Podocarpaceae Decussicarpus vitiensis</i>	Dakua salusalu
<i>Podocarpaceae Podocarpus neriifolius</i>	Kuasi
<i>Podocarpaceae Dacrydium nidulum</i>	Yaka
<i>Proteaceae Turrillia vitiensis</i>	Kauceuti
<i>Rhamnaceae Alphonsea zizyphoides</i>	Doi
<i>Rubiaceae Gardenia vitiensis</i>	Ndrenga, Ndrenga, Meilango
<i>Rubiaceae Mastixiodendron robustum</i>	Duvula
<i>Rubiaceae Gardenia vitiensis</i>	Ndrenga meilago
<i>Sapotaceae Manikara spec.div</i>	Bausagali-damu
<i>Sapotaceae Manikara spec.div.</i>	Bausagali-vula
<i>Sapotaceae Planchonella garberi</i>	Sarosaro
<i>Sapotaceae Planchonella umbonata</i>	Bauloa
<i>Alectryon grandifolius</i>	Masa B
<i>Balaka diffusa</i>	Niuniu
<i>Balaka macrocarpa</i>	Niuniu/ Balaka
<i>Balaka microcarpa</i>	Balaka
<i>Balaka streptostacys</i>	
<i>Balaka bulitavu</i>	Balaka
<i>Barringtonia seaturae</i>	Vutu dina
<i>Cordia subcordata</i>	Nawanawa
<i>Cupaniopsis vitiensis</i>	Vusavusa
<i>Cyclophyllum barbatum</i>	Ola
<i>Cyphosperma tanga</i>	Taqwa
<i>Cyphosperma "naboutini"</i>	
<i>Cyphosperma trichospadix</i>	
<i>Dacrydium nausoriense</i>	Yaka/ Tagitagi
<i>Elaeocarpus storckii</i>	Gaigai
<i>Emmenosperma micropetalum</i>	Tomanu
<i>Equisetum ramosissimum</i>	Ai masi
<i>Exocarpus vitiensis</i>	Tubu ni yasi
<i>Ficus storckii</i>	Ai masi
<i>Freycinetia vitiensis</i>	Wame
<i>Geanthus cevuga</i>	Cevuga
<i>Heterospathe phillipsii</i>	Niuniu

<i>Hydriastele boumae</i>	Niuniu
<i>Hydriastele vitiensis</i>	
<i>Lycopodium magnificum</i>	Blue tassel fern
<i>Lycopodium serratum</i>	
<i>Manilkara dissecta</i>	Bau sagali
<i>Manilkara vitiensis</i>	Boca
<i>Meryta tenuifolia</i>	Lutulutu
<i>Neoveitchia storckii</i>	Vuleito
<i>Ophioglossum reticulatum</i>	
<i>Parkia parrii</i>	Vaivai ni wai
<i>Pandanus joskei</i>	Voivoi
<i>Pandanus levuensis</i>	
<i>Pandanus taveuniensis</i>	
<i>Pandanus thurstonii</i>	Voivoi
<i>Planchonella sessilis</i>	Yawe korobaba
<i>Pritchardia thurstonii</i>	Masei
<i>Psilotum complanatum</i>	
<i>Pterocymbium oceanicum</i>	Ma
<i>Symplocos leptophylla</i>	Ai susu
<i>Tapeinosperma capitatum</i>	Dasia
<i>Tmesipteris truncate</i>	
<i>Veitchia simulans</i>	Niusawa
PART 8—MOLLUSCS	
<i>Cassis cornuta</i>	Giant lamp shell/ Buli cina
<i>Charonia tritonis</i>	Giant triton shell/ Davui/ Davui dina
<i>Conus cakobau</i>	Cakobau's cone shell/ Viro kei bau
<i>Conus fijiensis</i>	Fiji cone shell/ Viro sewa
<i>Conus fijiulcatus</i>	Sacred cone shell/ Viro tabu
<i>Conus gigasulcatus</i>	Great cone shell/ Viro levu
<i>Conus joliveti</i>	Jolivet's cone/ Viro I joliveti
<i>Cypraea auratium</i>	Golden cowry/ Buli kula
<i>Cypraea desforgesi</i>	Des Forges cowry/ Buli I foresi
<i>Cypraea summersi</i>	Summer's cowry/ Buli kata
<i>Cypraeacassis rufa</i>	Bullmouth helmet/ Buli tagane
<i>Lambis truncata</i>	Truncate spider shell/ Ega levu
MARINE BIVALVE	
<i>Tridacna balavuana</i>	Devil giant clam/ Vasua tevoru
PART 9 – CRUSTACEANS	
<i>Arteseomorpha foliacea</i>	Vatulele red prawn/ Ura damu
<i>Birgus latro</i>	Coconut crab/ Ugavule
<i>Panulirus ornatus</i>	Ornate spiny lobster/ Urau tamata
<i>Panulirus versicolor</i>	Painted spiny lobster/ Urau dina

PART 10 – HOLOTHURIANS	
<i>Holothuria (Metriatyla) scabra</i>	Sandfish/ Dairo/ Dairo dina
<i>Holothuria scabra</i> var. <i>versicolor</i>	Golden sandfish/ Dairo - kula
<i>Holothuria whitmaei</i> Black teatfish/ Loaloa	Black teatfish/ Loaloa
PART 11 - GASTROPODS	
FRESHWATER SNAIL	
<i>Acochlidium fijiense</i>	Freshwater opisthobranch/ Sici dabe
<i>Fijidoma maculata</i>	Freshwater snail/ Sici drodro/ Sici ni waidranu
<i>Fluviopupa daunivucu</i>	Daunivucu snail/ Sici daunivucu
<i>Fluviopupa derua</i>	Derua snail/ Sici derua
<i>Fluviopupa irinimeke</i>	Irinimeke snail/ Sici irinimeke
<i>Fluviopupa lali</i>	Lali snail/Sici lali
<i>Fluviopupa lalinimeke</i>	Lalinimeke snail/ Sici lalinimeke
<i>Fluviopupa m ekewesi</i>	Mekewesi snail/ Sici mekewesi
<i>Fluviopupa mekeniyaqona</i>	Mekeniyaqona snail/ Sici mekeniyaqona
<i>Fluviopupa pupoidea</i>	Stream rock snail/ Sici vela
<i>Fluviopupa seasea</i>	Seasea snail/ Sici seasea
<i>Fluviopupa vacamalolo</i>	Vakamalolo snail/ Sici vakamalolo
TERRESTRIAL SNAIL	
<i>Partula lanceolata</i>	Mago tree snail/ Sici vanua lanceolata
<i>Partula leefi</i>	Rotuman tree snail/ Aniha hanua leefi
<i>Partula lirata</i>	Lau tree snail/ Sici vanua lirata
<i>Samoana alabastrina</i>	Moala tree snail/ Sici vanua alabastrina
<i>Callistocharis [Placostylus] elobatus</i>	Vanua Levu sici vanua elobatus
<i>Callistocharis [Placostylus] fulguratus</i>	Sici vanua fulguratus
<i>Callistocharis [Placostylus] garretti</i>	Sici vanua garretti
<i>Callistocharis [Placostylus] graeffei</i>	Viti Levu sici vanua
<i>Callistocharis [Placostylus] guanensis</i>	Gau sici vanua guanesis
<i>Callistocharis [Placostylus] hoyti</i>	Vanua Levu sici vanua hotyi
<i>Callistocharis [Placostylus] malleatus</i>	Sici vanua malleatus
<i>Callistocharis [Placostylus] morosus</i>	Sici vanua morosus
<i>Callistocharis [Placostylus] ochrostoma</i>	Sici vanua ochrostoma
<i>Callistocharis [Placostylus] subroseus</i>	Sici vanua subroseus
<i>Euplacostylus [Placostylus] kantavunsis</i>	Kadavu sici vanua kanatavunsis
<i>Euplacostylus [Placostylus] koroensis</i>	Koro sici vanua
<i>Euplacostylus [Placostylus] mbengensis</i>	Beqa sici vanua
<i>Euplacostylus [Placostylus] seemanni</i>	Kadavu sici vanua seemani
<i>Trochomorpha abrochroa</i>	Viti Levu trochomorphid snail
<i>Trochomorpha accurate</i>	Viti Levu trochomorphid snail
<i>Trochomorpha albostrata</i>	Lau trochomorphid snail
<i>Trochomorpha coralline</i>	Lauan trochomorphid snail
<i>Trochomorpha depressostriata</i>	Viti Levu trochomorphid snail

<i>Trochomorpha fessonia</i>	Trochomorphid snail
<i>Trochomorpha kambarae</i>	Kabara trochomorphid snail
<i>Trochomorpha kantavuensis</i>	Kadavu trochomorphid snail
<i>Trochomorpha latimarginata</i>	Ovalau trochomorphid snail
<i>Trochomorpha luedersi</i>	Trochomorphid snail
<i>Trochomorpha merzianoides</i>	Vanua Levu trochomorphid snail
<i>Trochomorpha moalensis</i>	Moala trochomorphid snail
<i>Trochomorpha planoconus</i>	Ono trochomorphid snail
<i>Trochomorpha tavinnensis</i>	Taveuni trochomorphid snail
<i>Trochomorpha transarata</i>	Mago trochomorphid snail
<i>Trochomorpha tumulus</i>	Viti Levu trochomorphid snail
<i>Trochomorpha tuvuthae</i>	Tuvuca trochomorphid snail
PART 12—INSECTS—BEETLES	
<i>Xixuthrus heros</i>	Giant Fijian Long—horned beetle
<i>Xixuthrus ganglbaueri</i>	Giant Fijian Long—horned beetle

<i>Xixuthrus terribilis</i> (syn. <i>heyrovski</i>)	Giant Fijian Long—horned Beetle
ESP Act 2002 Schedule 2 Listed Species, as modified by the ESP (amendment) Act 2017: Indigenous species not listed in CITES Appendices I to III or the ESP Act Schedule 1	
Scientific Name	Common Name(s)
PART 1 - FISHES	
<i>Bathygobius petrophilus</i>	Goby/ Vo
<i>Cheilinus undulates</i>	Humphead wrasse
<i>Hippocampus kuda</i>	Spotted seahorse
<i>Meicanthus bundoon</i>	Goby/ Vo
<i>Redigobius sp</i>	
<i>Acanthurus guttatus</i>	Striped surgeonfish/ Draunivau
<i>Centropyge flavissimus</i>	Lemonpeel angelfish/ Laji - sedromo
<i>Cetascarus bicolor</i>	Bicolored parrotfish/ Ulavi draniqai
<i>Cirrhilabrus majorie</i>	Majories wrasse/ Labe
<i>Chlorurus microrhinos</i>	Steephead parrotfish/ Ulurua
<i>Forcipyger flavissimus</i>	Longnose butterfly fish/ Tivi Ucuna
<i>Forcipyger longirostris</i>	Big longnose butterfly fish/ Tivi ucusai
<i>Naso vlamingi</i>	Bingos Unicorn fish/ Ta - ucubi
<i>Plectorhinchus chaetodonoides</i>	Harlequin sweetlips/ Sevaseva
<i>Plectorhinchus gibbosus</i>	Blubberlip sweetlip/ Tevulu
<i>Scarus altipinnis</i>	Filamentfin parrotfish/ Ulavi buise
<i>Siganus doliatus</i>	Barred rabbitfish/ Nuqa seloa
<i>Siganus punctatissimus</i>	Black spotted rabbitfish/ Nuqa ni cakau
PART 2 - BIRDS (LANDBIRDS)	
<i>Aerodramus spodiopygia</i>	White-rumped swiftlet
<i>Anas superciliosa</i>	Pacific black duck
<i>Aplonis tabuensis</i>	Polynesian starling
<i>Ardea novaehollandiae</i>	White-faced heron

<i>Artamus mentalis</i>	Fiji woodswallow
<i>Butorides striatus</i>	Mangrove heron
<i>Cacomantis pyrrophanus</i>	Fan-tailed cuckoo
<i>Cettia ruficapilla</i>	Fiji bush warbler
<i>Clytorhynchus vitiensis</i>	Lesser shrikebill
<i>Columba vitiensis</i>	White-throated pigeon
<i>Ducala latrans</i>	Barking pigeon
<i>Cucula pacifica</i>	Pacific pigeon
<i>Egretta sacra</i>	Reef heron
<i>Erythrura pealii</i>	Fiji parrotfinch
<i>Foulehaio carunculata</i>	Wattled honeyeater
<i>Gallirallus philippensis</i>	Banded rail
<i>Gymnomyza viridis</i>	Giant forest honeyeater
<i>Halcyon chloris</i>	White-collared kingfisher
<i>Hirundo tahitica</i>	Pacific swallow

<i>Lalage maculosa</i>	Polynesian triller
<i>Mayrornis lessoni</i>	Slaty monarch
<i>Myiagra azureocapilla</i>	Blue crested broadbill
<i>Myiagra vanikorensis</i>	Vanikoro broadbill
<i>Myzomela jugularis</i>	Orange-breasted myzomela
<i>Pachycephala pectoralis</i>	Golden whistler
<i>Petroica multicolor</i>	Scarlet robin
<i>Phigys solitarius</i>	Collared lorry
<i>Ptilinopus layardi</i>	Whistling dove
<i>Ptilinopus luteovirens</i>	Golden dove
<i>Ptilinopus perousii</i>	Many coloured fruit doves
<i>Ptilinopus porphyraceus</i>	Crimson-crowned fruit dove
<i>Ptilinopus victor</i>	Orange dove
<i>Rhipidura personata</i>	Kadavu fantail
<i>Rhipidura spilodera</i>	Streaked fantail
<i>Turdus poliocephalus</i>	Island thrush
<i>Xanthotis provocator</i>	Kadavu honeyeater
<i>Zosterops exploratory</i>	Fiji white eyes
<i>Zosterops lateralis</i>	Silvereye

Part 3 - REPTILES - GECKOS

<i>Gehyra mutilata</i>	Stumped toed gecko
<i>Gehyra oceanica</i>	Oceanic gecko, moko kabi
<i>Gehyra vorax</i>	Giant forest gecko
<i>Hemidactylus frenatus</i>	House gecko
<i>Hemidactylus garnotii</i>	Fox gecko
<i>Lepidodactylus gardineri</i>	Rotuman gecko
<i>Lepidodactylus lugubris</i>	Mourning gecko
<i>Lepidodactylus manni</i>	Mann's forest gecko
<i>Nactus pelagicus</i>	Pacific slender-toed gecko, Skink-toed gecko

PART 4 - REPTILES - SKINKS

<i>Cyrtalepharus eximius</i>	Pacific snake-eyed skink
<i>Emoia caeruleocauda</i>	Blue-tailed skink
<i>Emoia concolor</i>	Fijian green tree skink
<i>Emoia cyanura</i>	Brown tailed cooper striped skink
<i>Emoia impar</i>	Blue tailed copper striped skink
<i>Emoia parkeri</i>	Fijian copper-headed skink
<i>Emoia trossula</i>	Barred tree skink, Dandy skink
<i>Lipinia noctua</i>	Moth skink
PART 5 - REPTILES - TERRESTRIAL SNAKES	
<i>Ramphotyphlops flaviventer</i>	Flowerpot snake
<i>Ramphotyphlops spp.</i>	Taveuni blind snake
PART 6 - AMPHIBIANS	
<i>Platymantis vitiensis</i>	Fiji tree frog

PART 7 - MAMMALS	
<i>Chaerophon bregullae</i>	Fijian mastiff bat

PART 8 - FLORA	
<i>Barringtoniaceae Barringtonia asiatica</i>	Vutu
<i>Blechnaceae Boodia brackenridgei</i>	
<i>Boraginaceae Cordia subcordata</i>	Nawanawa
<i>Burseraceae Canarium harveyi var 1</i>	Kaunicina
<i>Caesalpiniaceae Cynometra insularis</i>	Cibicibi
<i>Caesalpiniaceae Intsia bijuga</i>	Vesi
<i>Casuarinaceae Gymnostoma vitiensis</i>	Velau
<i>Chrysobalanaceae Parinari insularum</i>	Sa
<i>Clusiaceae Calophyllum inophyllum</i>	Dilo
<i>Clusiaceae Calophyllum vitiensis</i>	Damanu dilodilo
<i>Combretaceae Lumnitzera littorea</i>	Sagali
<i>Combretaceae Terminalia capitanea</i>	Tiviloa
<i>Combretaceae Terminalia luteola</i>	Mbausomi tivi
<i>Combretaceae Terminalia psilantha</i>	Mbausomi
<i>Combretaceae Terminalia pterocarpa</i>	Tivi
<i>Combretaceae Terminalia simulans</i>	
<i>Combretaceae Terminalia strigillosa</i>	Tivi losi
<i>Cunoniaceae Acsmithia vitiense</i>	
<i>Cunoniaceae Geissois imthurnii</i>	Vure
<i>Cunoniaceae Geissois stipularis</i>	Vure
<i>Cunoniaceae Geissois superba</i>	Vure
<i>Cunoniaceae Geissois ternate</i>	
<i>Cunoniaceae Geissois ternate</i>	
<i>Cunoniaceae Spiraeanthemum graeffei</i>	Katakata, kutakuta, kutukutu
<i>Cunoniaceae Spiraeanthemum serratum</i>	
<i>Cunoniaceae Weinmannia exigua</i>	
<i>Cyatheaceae Cyathea micropelidota</i>	
<i>Cyatheaceae Cyathea plagiostegia</i>	
<i>Cycataceae Cycas seemannii</i>	

<i>Degeneriaceae Degeneria roseiflora</i>	Karawa yaranggele
<i>Euphorbiaceae Endospermum robbianum</i>	Kauvula
<i>Gramineae Ischaemum byrone</i>	Hilo Ischaemum
<i>Guttiferae Calophyllum amblyphyllum</i>	Ndamanu
<i>Loganiaceae Geniostoma clavigerum</i>	
<i>Loganiaceae Geniostoma stipulare</i>	
<i>Loganiaceae Neuburgia macroloba</i>	Vathea
<i>Melastomataceae Astronidium degeneri</i>	
<i>Melastomataceae Astronidium inflatum</i>	
<i>Melastomataceae Astronidium lepidotum</i>	
<i>Melastomataceae Astronidium palladiflorum</i>	

<i>Melastomataceae Astronidium saulae</i>	
<i>Melastomataceae Astronidium sessile</i>	
<i>Melastomataceae Medinilla deeora</i>	
<i>Melastomataceae Medinilla kambikambi</i>	Kambikambi
<i>Melastomataceae Medinilla spectabilis</i>	
<i>Melastomataceae Medinilla waterhousei</i>	Tangimauthia, tekiteki vuina
<i>Melastomataceae Medinilla waterhousei</i>	Motheawa
<i>Meliaceae Vavaea amiorunt</i>	Cevua
<i>Meliaceae Xylocarpus granatum</i>	Dabi
<i>Mimosaeae Samanea saman</i>	Raintree
<i>Myristicaceae Myristica castaneifolia</i>	Kaudamu
<i>Myrtaccae Cleistocalyx decussatus</i>	Yasimoli
<i>Myrtaccae Cleistocalyx eugenioides</i>	Yasiyasi
<i>Palmae Alsmiltia longipes</i>	
<i>Palmae Balaka longirostris</i>	Niuniu
<i>Palmae Balaka macrocarpa</i>	
<i>Palmae Balaka microcarpa</i>	
<i>Palmae Balaka seemannii</i>	Niuniu
<i>Palmae Calamus vitiensis</i>	Qanuya
<i>Palmae Clincistigma exorrhizum</i>	Niuniu
<i>Palmae Gulubia microcarpa</i>	
<i>Palmae Neuveitchia storckii</i>	
<i>Palmae Physokentia rosea</i>	
<i>Palmae Physeikentia thurstunii</i>	
<i>Palmae Veitchia joannis</i>	
<i>Palmae Veitchia pedionoma</i>	
<i>Palmae Veitchia petiolata</i>	
<i>Palmae Veitchia simulans</i>	
<i>Podocarpaceae Podocarpus affinis</i>	
<i>Rubiaceae Gardenia anapetes</i>	Tirikiloki
<i>Rubiaceae Gardenia candida</i>	
<i>Rubiaceae Gardenia grieviei</i>	Ndelandrega
<i>Sapotaceae Palayuium hornei</i>	Sacau
<i>Sapotaceae Palayuium purphyreum</i>	Bauvudi

<i>Tiliaceae Trichospermum richii</i>	Mako vatu
<i>Acacia richii</i>	Qumu
<i>Aglaia axillaris</i>	Qiliyaqo
<i>Aglaia greenwoodii</i>	Tawatawa
<i>Aglaia vitiensis</i>	Lidiyago
<i>Alpinia vitiensis</i>	
<i>Alstonia montana</i>	Drega A
<i>Astronidium storckii</i>	Tava A
<i>Berrya pacifica</i>	Tovau
<i>Brackenridgea nitida</i>	Belebele

<i>Buchanania vitiensis</i>	Damanu ni yaqaqa
<i>Burckella richii</i>	Bau
<i>Calophyllum cerasiferum</i>	Damanu lailai A
<i>Canarium vanikoroense</i>	Kaunisiga
<i>Claoxylon vitiensis</i>	Male ni via
<i>Cryptocarya fusca</i>	Karaua/ Karava
<i>Cyrtandra anthropophagorum</i>	Wainidra
<i>Cyrtandra coleoides</i>	Bati tabua
<i>Cyrtandra jugalis</i>	Beta
<i>Dacrydium imbricatus</i>	Amunu
<i>Discocalyx fusca</i>	Vutuvutu
<i>Dysoxylum aliquantulum</i>	Sorovulu
<i>Dysoxylum lenticellare</i>	Malamala
<i>Dysoxylum myriandrum</i>	Sasawira
<i>Dysoxylum quercifolium</i>	Mala damu
<i>Dysoxylum seemannii</i>	Danidani loa
<i>Elaeocarpus chelonimorphus</i>	Sivia
<i>Elaeocarpus gillespieanus</i>	
<i>Elaeocarpus kambi</i>	Kabi
<i>Elaeocarpus Lepidus</i>	Kabi lailai
<i>Eleocharis dulcis</i>	Kuta
<i>Endiandra elaeocarpa</i>	Tabadamu A
<i>Endiandra gillespiei</i>	Tabadamu B
<i>Erythrina fusca</i>	Drala
<i>Erythrospermum acuminatissimum</i>	Mavida
<i>Exocarpos vitiensis</i>	Tubu ni Yasi
<i>Excoecaria acuminata</i>	Mana i vanua
<i>Freycinetia grayana</i>	Wame
<i>Freycinetia hombronii</i>	Wame
<i>Garcinia sessilis</i>	Bulu wai
<i>Garcinia vitiensis</i>	Bulu lailai
<i>Gmelina vitiensis</i>	Rosawa
<i>Geniostoma macrophyllum</i>	Boiboida levu
<i>Gyrocarpus americanus</i>	Wiriwiri
<i>Heritiera ornithocephala</i>	Rogi/Rosarosa

<i>Hernandia nymphaeifolia</i>	Evuevu
<i>Homalium laurifolium</i>	Sakisakivuto
<i>Homalium vitiense</i>	Molaca
<i>Ixora pelagica</i>	Sinu ni veikau
<i>Koelreuteria elegans</i>	Manawi
<i>Litsea mellifera</i>	Vurutumoko
<i>Mammea odorata</i>	Vetau
<i>Maniltoa grandiflora</i>	Moivi levu

<i>Maniltoa minor</i>	Moivi lailai
<i>Maniltoa vestita</i>	Cicibi B
<i>Medinilla waterhousei</i>	Tagimoucia
<i>Medusanthera vitiensis</i>	Duvu
<i>Melicope cucullata</i>	Drautolu
<i>Metrosideros collina</i>	Vuga
<i>Metroxylon vitiense</i>	Soga
<i>Micromelium minutum</i>	Sasaqilu
<i>Myristica grandifolia</i>	Kaudamu levu
<i>Myristica macrantha</i>	Male waqa
<i>Neuburgia alata</i>	Bo
<i>Neuburgia corynocarpa</i>	Bulei
<i>Neuburgia macrocarpa</i>	Boloa
<i>Ochrosia vitiensis</i>	Dogodogo
<i>Palaquium fidjiense</i>	Bau sauwalu
<i>Physokentia petiolatus</i>	Taqwa damu
<i>Pisonia umbellifera</i>	Roro
<i>Planchonella membranacea</i>	Sarosaro B
<i>Planchonella pyrulifera</i>	Yawe (Sarosaro)
<i>Planchonella vitiensis</i>	Covi (Sarosaro)
<i>Pleiogynium timoriense</i>	Manui
<i>Plerandra insolita</i>	Sole lailai
<i>Podocarpus decipiens</i>	Asiboloi
<i>Rhaphidophora spuria</i>	Yalu
<i>Rhizophora stylosa</i>	Tiri/ Tiri wai
<i>Rhizophora x selala</i>	Tiri selala
<i>Santalum yasi</i>	Yasi/ Yasi dina
<i>Sapindus vitiensis</i>	Sawailau
<i>Scirpodendron ghaeri</i>	Misimisi
<i>Serianthes melanesica</i>	Vaivai ni veikau A
<i>Sterculia vitiensis</i>	Waciwaci
<i>Syzygium diffusum</i>	Yasiyasi lailai
<i>Syzygium effusum</i>	Yasidravu lailai
<i>Syzygium grayi</i>	Yasileba
<i>Syzygium leucanthum</i>	Yasikavika
<i>Syzygium quadrangulatum</i>	Daka
<i>Syzygium seemannianum</i>	Yasiwai

<i>Tapeinosperma grande</i>	Dasia levu
<i>Terminalia catappa</i>	Tavola
<i>Turrillia vitiensis</i>	Kauceuti
<i>Vavaea degeneri</i>	Bua ni vialau
<i>Viticipremna vitilevuensis</i>	Bosawa
<i>Xylocarpus moluccensis</i>	

<i>Zanthoxylum gillespieanum</i>	Totowiwi
PART 9—MOLLUSCS	
MARINE BIVALVES	
<i>Pteria penguin</i>	Penguin winged oyster/ Civa dranikea
<i>Nautilus pompilius</i>	Perly nautilus/ Natila/ Sulua dausoko
PART 10—INSECTS	
BUTTERFLIES	
<i>Hypolimnas inopinata</i>	
<i>Polyura caphontis</i>	
<i>Papilio schmeltzi</i>	Fijian swallowtail
DAMSELFLIES	
<i>Nesobasis angulicollis</i>	Damselflies/ Dolodolowai
<i>Nesobasis aurantiaca</i>	Damselflies/ Dolodolowai
<i>Nesobasis brachycerca</i>	Damselflies/ Dolodolowai
<i>Nesobasis caerulecaudata</i>	Damselflies/ Dolodolowai
<i>Nesobasis caerulescens</i>	Damselflies/ Dolodolowai
<i>Nesobasis campioni</i>	Damselflies/ Dolodolowai
<i>Nesobasis comosa</i>	Damselflies/ Dolodolowai
<i>Nesobasis heteroneura</i>	Damselflies/ Dolodolowai
<i>Nesobasis ingens</i>	Damselflies/ Dolodolowai
<i>Nesobasis leveri</i>	Damselflies/ Dolodolowai
<i>Nesobasis longistyla</i>	Damselflies/ Dolodolowai
<i>Nesobasis malcolmi</i>	Damselflies/ Dolodolowai
<i>Nesobasis monticola</i>	Damselflies/ Dolodolowai
<i>Nesobasis nigrostigma</i>	Damselflies/ Dolodolowai
<i>Nesobasis pedata</i>	Damselflies/ Dolodolowai
<i>Neosbasis recava</i>	Damselflies/ Dolodolowai
<i>Nesobasis rufostigma</i>	Damselflies/ Dolodolowai
<i>Nesobasis selysi</i>	Damselflies/ Dolodolowai
<i>Neosbasis telegastrum</i>	Damselflies/ Dolodolowai
DRAGONFLY	
<i>Hypothemis hageni</i>	Cecewai
STICK INSECTS	
<i>Cotylosoma dipneusticum</i>	
<i>Nisyryus spinulosus</i>	Mimimata
CICADA	
<i>Raiateana knowlesi</i>	Nanai
<i>Raiateana kuruduadua</i>	

APPENDIX B

Table of protected areas and areas of conservation interest in Fiji.

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Beqa	Vanua Raviravi	Locally managed marine area	6330	Vanua Raviravi
Beqa	Vanua Sawau	Locally managed marine area	2941	Vanua Sawau
Naigani	Vanua Verata	Locally managed marine area	66224	Turaga ni Vanua, Fish Wardens
Uluiloli	Vanua Verata-Uluiloli	Locally managed marine area	1357	Turaga ni Vanua, Fish Wardens
Viti Levu	Colo-i-Suva	Forest Reserve	497	Department of Forestry
Viti Levu	Darunibota and Labiko	Nature Reserve	43	Department of Forestry
Viti Levu	Garrick Memorial	Forest Park	434	National Trust of Fiji
Viti Levu	Koula mai Wai	Locally managed marine area	11575	Tikina Chief
Viti Levu	Namaqumaqua	Locally managed marine area	220	fish wardens
Viti Levu	Savura	Forest Reserve		Department of Forestry
Viti Levu	Sovi Basin Protected Area	Conservation Reserve and tentative World Heritage Site	2000	National Trust of Fiji
Viti Levu	Upper Navua River	RAMSAR Site	859	Rivers Fiji
Viti Levu	Vanua Dawasamu-Dawasamu/Nasinu/Natacileka/Natale-ira/Silana	Locally managed marine area	15010	Qoliqoli committee
Viti Levu	Vanua Naboutini	Locally managed marine area	221	fish wardens
Viti Levu	Vanua Serua	Locally managed marine area	1130	fish wardens
Viti Levu	Vanua Verata-Kumi/Naivuruvuru/Naloto/Navunimono/Sawa/Ucunivanua	Locally managed marine area	8143	Turaga ni Vanua, Fish Wardens
Viti Levu	Yavusa Navakavu	Locally managed marine area	1871	Qoliqoli committee
Viti Levu	Yavusa Navutulevu	Locally managed marine area	218	fish wardens
Vuo Island	Vuo	Nature Reserve	3	Department of Forestry
Yanuca	Vanua Yanuca	Locally managed marine area	6134	Vanua Yanuca
Batiki	Manuku	Locally managed marine area	277	Batiki Qoliqoli Management Team
Batiki	Vanua Batiki-Mua/Naigani/Yavu	Locally managed marine area	826	Batiki Qoliqoli Management Team
Birdland Island	Birdland Island	Locally managed marine area	2053	Bulia Yaubula Management Committee
Dravuni	Yavusa Natusara	Locally managed marine area	2060	Kadavu Yaubula Management Support Team
Fulaga	Fulaga	Marine Protected Area		
Kadavu	Daku	Locally managed marine area	592	Qoliqoli Committee

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Kadavu	Levuka	Locally managed marine area	239	Kadavu Yaubula Management Support Team
Kadavu	Muainuku	Locally managed marine area	239	Kadavu Yaubula Management Support Team
Kadavu	Namanusa	Locally managed marine area	784	Kadavu Yaubula Management Support Team
Kadavu	Nuku	Locally managed marine area	107	Kadavu Yaubula Management Support Team
Kadavu	Vanua Cevai	Locally managed marine area	283	Kadavu Yaubula Management Support Team
Kadavu	Vanua Galoa/ Wailevu	Locally managed marine area	4482	Kadavu Yaubula Management Support Team
Kadavu	Vanua Joma	Locally managed marine area	849	Kadavu Yaubula Management Support Team
Kadavu	Vanua Muani	Locally managed marine area	690	Kadavu Yaubula Management Support Team
Kadavu	Vanua Nabukelevu/ Vanua Kabariki	Locally managed marine area	2190	Qoliqoli Committee
Kadavu	Vanua Nacomoto	Locally managed marine area	766	Kadavu Yaubula Management Support Team
Kadavu	Vanua Naoconivonu	Locally managed marine area	405	Village Chiefs
Kadavu	Vanua Naivibati	Locally managed marine area	209	Kadavu Yaubula Management Support Team
Kadavu	Vanua Nakasaleka	Locally managed marine area	8803	Kadavu Yaubula Management Support Team
Kadavu	Vanua Namalata	Locally managed marine area	318	Kadavu Yaubula Management Committee
Kadavu	Vanua Soso	Locally managed marine area	748	Kadavu Yaubula Management Support Team
Kadavu	Vanua Tabanivonolevu	Locally managed marine area	5235	Kadavu Yaubula Management Support Team
Kadavu	Vanua Tavuki	Locally managed marine area	1859	Village Chiefs, Kadavu Yaubula Management Support Team

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Kadavu	Vanua Yauwe	Locally managed marine area	819	Village Chief, Vanua Yakita, Nalotu Bose Vanua
Kadavu	Yavusa Kadavu	Locally managed marine area	2214	Tikina Chiefs, Kadavu Yaubula Management Support Team
Kadavu	Yavusa Mokoisa	Locally managed marine area	692	Kadavu Yaubula Management Support Team
Kadavu	Yavusa Nabukebuke-Vuna	Locally managed marine area	988	Vanua Vuna
Kadavu	Yavusa Naivakarauniniu	Locally managed marine area	681	Kadavu Yaubula Management Support Team
Kadavu	Yavusa Namalata/Namuana	Locally managed marine area	925	Kadavu Yaubula Management Support Team
Kadavu	Yavusa Nasegai	Locally managed marine area	408	Kadavu Yaubula Management Support Team
Kadavu	Yavusa Nawaimalua	Locally managed marine area	2244	Kadavu Qoliqoli Management Support Team
Kadavu	Yavusa Nawaimalua	Locally managed marine area	473	Kadavu Yaubula Management Support Team
Kadavu	Yavusa Solovola-Burelevu	Locally managed marine area	346	Kadavu Yaubula Management Support Team
Koro	Yavusa Bucabuca	Locally managed marine area	221	Qoliqoli committee
Koro	Yavusa Cawalevu	Locally managed marine area	91	Yavusa Cawalevu
Koro	Yavusa Cibaciba	Locally managed marine area	111	Qoliqoli committee
Koro	Yavusa Kade	Locally managed marine area	372	Qoliqoli committee
Koro	Yavusa Loto	Locally managed marine area	548	Qoliqoli committee
Koro	Yavusa Manukicake	Locally managed marine area	584	Qoliqoli Committee
Koro	Yavusa Matanimudu	Locally managed marine area	1065	Qoliqoli Committee
Koro	Yavusa Nabuna	Locally managed marine area	2077	Village Chiefs
Koro	Yavusa Nakaukilagi	Locally managed marine area	104	Qoliqoli Committee
Koro	Yavusa Nakodu, Qalitu and Wailevu	Locally managed marine area	477	Qoliqoli committee
Koro	Yavusa Nasau	Locally managed marine area	592	Qoliqoli Committee
Koro	Yavusa Ulunivuaka	Locally managed marine area	170	Qoliqoli committee
Koro	Yavusa Werelevu and Nagusu	Locally managed marine area	793	Qoliqoli Committee
Makogai	Makogai Island	Marine Protected Area	840	Community & MAFF co-management

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Matanuku	Yavusa Matanuku	Locally managed marine area	463	Kadavu Yaubula Management Support Team
Moturiki	Vanua Moturiki-Daku/Niubasaga/Uluibau	Locally managed marine area	8270	Qoliqoli Management Team, Turaga ni Vanua
Nairai	Vanua Nairai-Lawaki/Natoloa/Tovu lailai/Vutuna/Waitoga	Locally managed marine area	13620	Qoliqoli Management Team
Namena	Namenalala Island Resort	Nature Reserve	43	
Namena	Namenalala Resort Marine Reserve	Marine Protected Area	43	
Ngau	Vanua Navukailagi	Locally managed marine area	1440	Qoliqoli committee
Ngau	Vanua Sawaieke-Vadravadra/Somosomo/Sawaieke/Nukuloa	Locally managed marine area	14972	Qoliqoli Committee, Tikina Sawaieke
Ngau	Vanua Vanuaso-Lamiti-Malawai/Lekani/Nacavanadi/Naovuka/Vanuaso	Locally managed marine area	1501	Qoliqoli Committee
Nukutolu Islets	Nukutolu Islets	Faunal Reserve		
Ogea Levu	Ogea Levu	Faunal Reserve		
Oneata Island Barrier Reef	Bukatatanoa Barrier Reef	Marine Protected Area	3500	
Ono	Great Astrolobe Lagoon	Marine Protected Area		
Ono	Vanua Ono	Locally managed marine area	27296	Kadavu Yaubula Management Support Team/Committee
Ovalau	Yavusa Nabukebuke-Arovudi/Levuka Vakaviti/Naqaliduna/Nauouo/Nukutocia/Rukuruku/Taviya/Vagadaci/Vatukalo/Waitovu	Locally managed marine area	9880	Vanua Arovudi/Levuka Vakaviti/Naqaliduna/Nauouo/Nukutocia/Rukuruku/Taviya/Vagadaci/ Vatukalo/ Waitovu
Ovalau	Yavusa Qalivakabau and Lovoniwai-Nabobo/Levuka/Natokalau/Naikorokoro/Nasinu/Tokou/Visoto/Drabia	Locally managed marine area	2138	Vanua Levuka/Natokalau/Naikorokoro/Nasinu/Tokou/ Lovoni/Draiba, Qoliqoli Committee
Susui	Susui		650	

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Vanua Balavu	Boitaci	Locally managed marine area	2161	Mata ni Tikina, Village Chiefs
Vanua Balavu	Dakuilomaloma	Locally managed marine area	11502	Village Chiefs, Mata ni Tikina
Vanua Balavu	Daliconi	Locally managed marine area	6415	Village Chiefs, Mata ni Tikina
Vanua Balavu	Muamua	Locally managed marine area	1743	Mata ni Tikina, Village Chiefs
Vanua Balavu	Namuana	Locally managed marine area	261	Village Chiefs
Vuata Ono submerged reef	Vuata Ono	Marine Protected Area	790	
Wakaya	Wakaya Island	Recreational Reserve	800	Island Management
Nanuku	Nanuku Islet	Faunal Reserve		
Taveuni	Bouma Lavena	Recreational Reserve	3769	Community in Bouma
Taveuni	Lavena Coastal Walk	Recreational Reserve		Local Community
Taveuni	Ravilevu	Nature Reserve	4020	
Taveuni	Taveuni Forest Reserve	Forest Reserve	11089	
Taveuni	Vanua Wainikeli	Locally managed marine area	14818	Tikina Chiefs
Taveuni	Vuna (Waitabu)	Locally managed marine area	1555	Qoliqoli Committee
Vanua Levu	Biaugunu/Lakeba/Natuvu/Vuniwai	Locally managed marine area	6544	Cakaudrove Management Support Team
Vanua Levu	Qoliqoli Cokovata	RAMSAR Site	134900	Qoliqoli Cokovata Management Committee
Vanua Levu	Saqani	Locally managed marine area	3360	Cakaudrove Management Support Team
Vanua Levu	Vanua Dawato-Malake/Navetau/Yasawa	Locally managed marine area	3441	Cakaudrove Management Support Team
Vanua Levu	Vanua Kubulau	Locally managed marine area	25961	Vanua Kubulau
Vanua Levu	Vanua Namuka/Dogotuki-Visoqo, Ravuka, Cawadevo/Rauriko/Quelewara, Naur/Naduru/Nabubu, Lakeba, Nasovivi/Kedra, Lagi/Gevo Island/Druadrua Island	Locally managed marine area	14256	Qoliqoli Committee
Vanua Levu	Vanua Nasavusavu-Nagigi/Waivunia/Vivili/Nukubalavu/Yaroi	Locally managed marine area	5660	Cakaudrove Management Support Team
Vanua Levu	Vanua Navatu-Leya	Locally managed marine area	8678	Cakaudrove Management Support Team
Vanua Levu	Vanua Navatu-Navakaka	Locally managed marine area	3909	Cakaudrove Management Support Team

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Vanua Levu	Vanua Naweni-Dromoninuku/ Naweni-Naweni/ Naweni-Tacilevu	Locally managed marine area	1656	Cakaudrove Management Support Team
Vanua Levu	Vanua of Macuata/ Dreketi/ Sasa/ Mali and Nabekavu	Locally managed marine area	134430	Macuata Management Support Team
Vanua Levu	Vanua Tawake	Locally managed marine area	5777	Cakaudrove Management Support Team
Vanua Levu	Vanua Vanuavou	Locally managed marine area	1713	
Vanua Levu	Vanua Vaturova	Locally managed marine area	8183	Cakaudrove Management Support Team, Qoligoli Committee
Vanua Levu	Vunimoli	Nature Reserve	20	Department of Forestry
Vanua Levu	Waisali Forest	Forest Reserve		National Trust of Fiji
Vanua Levu	Yavusa Nautosolo/ Vunivatu	Locally managed marine area	6719	Cakaudrove Management Support Team
Yadua	Yadua Taba	Iguana Sanctuary and tentative World Heritage Site	71	National Trust of Fiji
Yadua	Yadua Taba	Locally managed marine area	197505	
Mamanuca Group	Vanua Malolo/Vanua Malolo-Yaro	Locally managed marine area	6800	fish wardens
Manava	Manava	Marine Protected Area		Resource Owners
Naviti	Vanua Naviti-Gunu	Locally managed marine area	17330	Tikina Chief, Village Chief
Snake Island	Snake Island (Labuco)			
Tavarua	Tavarua Island	Marine Protected Area		Resource Owners
Viti Levu	Cuvu Tikina	Marine Project	170	Cuvu District Environment Committee, with the assistance of Partnerships in Community Development Fiji (previously FSP-Fiji)
Viti Levu	Koroyanitu Heritage Park	Heritage Park	3500	Community in Ba
Viti Levu	Monasavu Dam	Water Dam	706	Energy Fiji Limited/WAF
Viti Levu	Nadarivatu	Forest Reserve	67	Department of Forestry
Viti Levu	Naqarabuluti	Nature Reserve	241	
Viti Levu	Qaranibuluti Nature Reserve	Forest Reserve		Department of Forestry
Viti Levu	Saweni Beach Amenity Reserve	Recreational Reserve	1	
Viti Levu	Sigatoka Sand Dunes	National Park and tentative World Heritage Site	177	National Trust of Fiji
Viti Levu	Tikina Cuvu	Locally managed marine area	972	Traditional Fisherman/ Tikina Chief

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Viti Levu	Tikina Voua	Locally managed marine area	219	Village Chief
Viti Levu	Tomaniivi	Nature Reserve	1,104	Department of Forestry
Viti Levu	Vanua Cokovata Nakorotubu	Locally managed marine area	53950	Tikina Qoliqoli Committee
Viti Levu	Vanua Conua	Locally managed marine area	705	Village Chiefs, Qoliqoli committee
Viti Levu	Vanua Komave	Locally managed marine area	392	Qoliqoli committee
Viti Levu	Vanua Navolau	Locally managed marine area	1200	Tikina Chief
Viti Levu	Vanua Rakiraki, Ra	Locally managed marine area	58400	Tikina Chief
Viti Levu	Vanua Tavua	Locally managed marine area	69077	Tavua Qoliqoli Committee/Tavua Navy Seals
Viti Levu	Vanua Votua	Locally managed marine area	152693	Votua Koro
Viti Levu	Vanua Wai	Locally managed marine area	1100	Qoliqoli Committee, Turaga ni Vanua
Viti Levu	Vaturu Catchment	Water Dam	218	Water Authority/FEA
Viti Levu	Wabu Forest Reserve	Forest Reserve	1062	Department of Forestry
Viti Levu	Yavusa Davutukia	Locally managed marine area	900	Qoliqoli committee
Ovalau	Levuka Historical Port Town	World Heritage Site		
	Nambukulevu	Important Bird Area		
Viti Levu	Naraiyawa, Namosi	Important Bird Area/Key Biodiversity Area		
Viti Levu	Nasoata Island	Important Bird Area		
Viti Levu	Viti Levu	Important Bird Area		
Viti Levu	Voma	Important Bird Area		
Vanua Levu	Wailevu/Dreketi Highlands	Important Bird Area		
Vanua Levu	Natewa/Tunuloa Peninsula	Important Bird Area/Key Biodiversity Area		
Viti Levu	Rairaimatuku	Important Bird Area/Key Biodiversity Area		
Viti Levu	Viti Levu Southern Highlands	Important Bird Area/Key Biodiversity Area		
Gau	Gau Highlands	Important Bird Area; Key Biodiversity Area		
Kadavu	Nabukelevu	Important Bird Area; Key Biodiversity Area		
Kadavu	Eastern Kadavu	Important Bird Area; Key Biodiversity Area		
Rotuma	Rotuma	Important Bird Area; Key Biodiversity Area		
Kadavu	East Kadavu Passage	Key Biodiversity Area		
Hatana Island	Hatana Island	Key Biodiversity Area		

Atoll/Island	Site Name	Designation/Area of Interest	Area (ha)	Management Authority
Lau Group	Kabara - Fulaga Coastal Vesi Forest	Key Biodiversity Area		
Kibobo	Kibobo Islet	Key Biodiversity Area		
Viti Levu	Koroyanitu/Vaturu	Important Bird Area/Key Biodiversity Area		
Monuriki	Monuriki Island	Key Biodiversity Area		
Vanua Levu	Mount Kasi	Key Biodiversity Area		
Vanua Levu	Mount Navotuvotu	Key Biodiversity Area		
Vanua Levu	Mount Nubuiloa	Key Biodiversity Area		
Vanua Levu	Mount Sorolevu	Key Biodiversity Area		
	Naicobocobo Dry Forests	Key Biodiversity Area		
Viti Levu	Nakauvadra Range	Key Biodiversity Area		
Viti Levu	Nakorotubu Forest	Key Biodiversity Area		
Vanua Levu	Nasigasiga	Key Biodiversity Area		
Viti Levu	Nausori Highlands	Key Biodiversity Area		
Lau Group	Northern Lau Marine	Key Biodiversity Area		
Ovalau	Ovalau Highlands	Key Biodiversity Area		
Ringgold Islands	Ringgold Islands	Key Biodiversity Area		
Taveuni	Taveuni Marine	Key Biodiversity Area		
Vanua Levu	Udu Point	Key Biodiversity Area		
Vanua Masi	Vanua Masi Islet	Key Biodiversity Area		
Vanua Masi	Vanua Masi Marine	Key Biodiversity Area		
Vatu-i-Ra	Vatu-i-Ra	Key Biodiversity Area		
Vatu-i-Ra	Vatu-i-Ra Marine	Key Biodiversity Area		
Vatuvara	Vatuvara	Key Biodiversity Area		
Vuaqava	Vuaqava Island	Key Biodiversity Area		
Vanua Levu	Vunivia Catchment	Key Biodiversity Area		
Viti Levu	Wailotu / Nabukelevu Bat Caves	Key Biodiversity Area		
Kadavu	West Kadavu Marine	Key Biodiversity Area		

APPENDIX C

Pacific Island Countries and Territories with Invasive Species Strategies.

Cook Islands National Invasive Species Strategy and Action Plan 2015-2020 (DRAFT)

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

Guam Interim 2017-2019 Invasive Species Management Plan: <https://www.sprep.org/attachments/VirLib/Guam/nissap-2017-2019.pdf>

Hawaii Interagency Biosecurity Plan 2017-2027: <https://dlnr.hawaii.gov/hisc/files/2017/02/Hawaii-Interagency-Biosecurity-Plan.pdf>

Kaho'olawe Island Reserve Biosecurity Implementation Plan 2018: http://www.kahoolawe.hawaii.gov/plans/KIRC_Biosecurity_Plan_V11.pdf

Kingdom of Tonga National Invasive Species Strategy and Action Plan 2013-2020: https://www.sprep.org/attachments/GEF-pas/IASS/FINAL_NISSAP_Tonga_endorsed.pdf

Kiribati National Invasive Species Strategy and Action Plan 2015-2020: <http://www.environment.gov.ki/wp-content/uploads/2016/09/National-Invasive-Species-Strategy-and-Action-Plan.pdf>

Niue's National Invasive Species Strategy and Action Plan: https://niue-data.sprep.org/system/files/niue_national_invasive_species_strategy-and-action-plan-2013-2020_38p.pdf

Palau National Invasive Species Committee Strategic Action Plan 2013-2017: <https://www.sprep.org/attachments/VirLib/Palau/national-invasive-species-strategic-action-plan-palau.pdf>

Regional Biosecurity Plan for Micronesia and Hawaii volume 1: https://www.doi.gov/sites/doi.gov/files/uploads/pac_regional_biosecurity_plan_for_micronesia_and_hawaii_volume_i.pdf

Regional Biosecurity Plan for Micronesia and Hawaii volume 2: https://www.doi.gov/sites/doi.gov/files/uploads/pac_regional_biosecurity_plan_for_micronesia_and_hawaii_volume_ii.pdf

Regional Biosecurity Plan for Micronesia and Hawaii volume 3: https://www.doi.gov/sites/doi.gov/files/uploads/pac_regional_biosecurity_plan_for_micronesia_and_hawaii_volume_iii.pdf

Regional Biosecurity Plan for Micronesia and Hawaii volume 4: https://www.doi.gov/sites/doi.gov/files/uploads/pac_regional_biosecurity_plan_for_micronesia_and_hawaii_volume_iv.pdf

Republic of the Marshall Islands National Invasive Species Strategy and Action Plan 2016-2021: https://www.sprep.org/attachments/VirLib/Marshall_Islands/national-invasive-species-strategy-action-plan-2016-2021.pdf

Samoa National Invasive Species Strategy and Action Plan 2019-2024: <https://www.sprep.org/attachments/VirLib/Regional/nissap-samoa-2019-2024.pdf>

Vanuatu National Invasive Species Strategy and Action Plan 2014-2020: <https://www.sprep.org/attachments/VirLib/Vanuatu/nissap-2014-2020.pdf>

APPENDIX D

The Fiji National Biodiversity Strategy and Action Plan (NBSAP) Focal Area Four Management of Invasive Species (MIS) strategic areas, objective, and action plans.

Strategic Areas	Objectives	Action Plans
MIS1: Target research to support improved knowledge on invasive alien species in Fiji		MIS1a: To identify pathways for invasive alien species introduction
		MIS1.1: Identify invasive alien species pathways as potential threats (to biodiversity) within Fiji and outside national borders
		MIS1.2: Prioritize invasive alien species threats and pathways for intervention
		MIS1.3: Complete risk assessments and develop response procedures for invasive alien species threats and pathways (at national and inter-island borders)
		MIS1.4: Identify and prioritize knowledge gaps for priority invasive alien species /pathways and support research needs
		MIS1.5: Conduct research on the integration of impacts of invasive alien species on biodiversity, cultural and commercial values
		MIS1b: To establish and maintain a national invasive alien species database
		MIS1.6: Conduct national invasive alien species stock take survey in consultation with all stakeholders with invasive alien species data and knowledge
		MIS1.7: Develop a framework for data sharing in support of centralizing access to invasive alien species information (particularly biodiversity threats) in Fiji
		MIS1.8: Put in place an invasive alien species information review process to continually assess gaps
MIS2: Strengthen national legislation, policies, and strategies to support effective prevention and management of invasive alien species		MIS2a: To conduct a legislative review and gap analysis for invasive alien species
		MIS2.1: To conduct a legislative review and gap analysis, including review of Fiji's compliance with the International Maritime Organization Ballast Water Management Convention
		MIS2.2: Update national policy and legislation on invasive alien species, if identified by the gap analysis
		MIS2b: To develop a National Invasive Alien Species Strategy and Action Plan (NISSAP)
		MIS2.3: Assess the severity and distribution of invasive alien species threats to Fiji's biodiversity and prioritize species for management

Strategic Areas	Objectives	Action Plans
		MIS2.4: Identify and recognize potential for commercial and other utilization interests of invasive alien species and develop appropriate safeguards
		MIS2.5: prioritize invasive alien species threats and sites for management action in Fiji (e.g., biosecurity, eradication, containment, and control)
		MIS2.6: Adopt relevant biosecurity regulations, standards, and tools to ensure biodiversity considerations in the decision-making processes involved in importation and local movement of invasive alien species
		MIS2c: To strengthen the role and function of the Fiji Invasive Species Taskforce (FIST) as the multi-stakeholder coordination mechanism to provide policy and technical advice on Invasive Alien Species and biosecurity to the National Environment Council, Biosecurity Authority of Fiji, Department of Environment, and other relevant bodies
		MIS2.7: Develop a Terms of Reference for the Fiji Invasive Species Taskforce (FIST) and its scope of work to recognize different levels of management
		MIS2.8: Provide needed resources and policy mandate to ensure that the FIST is mandated and appropriately linked to other related advisory bodies with clear reporting arrangements
		MIS2.9: Develop formal and informal partnership arrangements such as memorandum of understanding or agreements between key stakeholders such as the Department of Environment, Biosecurity Authority of Fiji and relevant NGOs and agencies
		MIS2d: To actively participate in international and regional fora such as the Convention on Biological Diversity, Pacific Invasives Partnership (PIP) and regional discussions in areas such as Genetically Modified Organisms, genetics, risk of pet's debates, and lessons learning for improved practice and policy lessons in invasive alien species and biosecurity
		MIS2.10: Appoint focal points within the Fiji Invasive Species Taskforce to coordinate and provide advice to government on biosafety issues and ensure Fiji's participation in the current regional and international biosafety lessons learning, sharing best practices, and planning
		MIS2e: To ensure effective implementation and monitoring of national Invasive Alien Species policies, strategies, programmes, and initiatives
		MIS2.11: Establish administrative responsibilities for national invasive alien species management and biosecurity within Department of Environment and Biosecurity Authority of Fiji
		MIS2.12: Include in MOU with Fiji Invasive Species Taskforce provision for the establishment, as needed, of technical working groups that are responsible to the National Environment Council
		MIS2.13: Secure resources and increase capacity within Department of Environment and Biosecurity Authority of Fiji through government resources and external funding for invasive alien species and biosecurity programmes
		MIS2.14: Integrate invasive alien species and biosecurity management at provincial, district, and community management levels to improve local management and participation

Strategic Areas	Objectives	Action Plans
MIS3: Improve monitoring and surveillance of invasive alien species in Fiji		MIS3a: To maintain international standards of national quarantine and biosecurity surveillance programme
		MIS3.1: Implement the national quarantine monitoring and surveillance programme with citizen participation
		MIS3.2: Improve regional collaboration between quarantine services and relevant regional institutions/organizations to develop regional action plans and strategies for the prevention of introduction and spread of invasive alien species
		MIS3.3: Develop an invasive alien species alert system for Fiji
		MIS3.4: Secure sustainable funding mechanisms for surveillance, monitoring and enforcement
		MIS3b: To review and strengthen control and response programmes for priority invasive alien species, e.g., Biosecurity Authority of Fiji -National Framework to termite response
		MIS3.5: Assess and review existing national response framework
		MIS3.6: Develop control programmes for priority invasive alien species
		MIS3.7: Secure adequate financial and technical resources for management of invasive alien species
		MIS3.8: Develop protocols which require an Environmental Impact Assessment by an independent body before the introduction of exotic species, in line with the Environment Management Act
MIS4: Raise awareness in Fiji, including with visitors, to reduce the introduction of invasive alien species		MIS4: To put in place an invasive alien species public awareness programme, including at all ports of entry into Fiji, as well as at major inter-island transport locations
		MIS4.1: Develop an invasive species communications strategy for Fiji that also targets visitors and highlights the risks and penalties associated with import of IAS to Fiji
		MIS4.2: Develop awareness materials for visitors and local communities on invasive alien species and strategies to prevent their introduction and spread
		MIS4.3: Develop public, especially community, awareness on the threat posed by inter-island traffic in the spread of invasive alien species, giving priority to Taveuni and islands in Lau, Lomaiviti and Kadavu provinces
		MIS4.4: Conduct awareness and education on priority species to gain public support and vigilance to reduce the spread of IAS

APPENDIX E

Fiji National Biodiversity Strategic Action Plan Implementation Framework Invasive Alien Species Action Items.

Strategies	Objectives	No.	Actions	Lead
Strategy 1: Target research to support improved knowledge on invasive alien species in Fiji.	Objective 1.1: By 2011, identification of potential pathways of accidental introductions.	1.1a	Research into pathways of accidental introduction of invasive alien species into Fiji.	MAFF
	Objective 1.2: By 2014, a national invasive alien species database is established.	1.2a	Relevant government agencies agree to participate in national invasive alien species stock-take survey.	MAFF
		1.2b	Develop a work plan for a National Invasive stock-take survey.	
		1.2c	Undertake a comprehensive terrestrial, freshwater and marine invasive alien species survey of Fiji and Rotuma.	MAFF
		1.2d	Develop a comprehensive national invasive alien species database.	MAFF
Objective 1.3: By 2012, research conducted on the integration of impacts of invasive alien species on biodiversity and commercial values.	1.3	Conduct research on the integration of impacts of invasive alien species on biodiversity and commercial values.	DOE	
Strategy 2: Strengthen national legislation, policies, and strategies to support improved control of invasive alien species.	Objective 2.1: By 2011, complete a legislative gap analysis for invasive alien species.	2.1	To conduct a legislative gap analysis.	MAFF, DOE
	Objective 2.2: By 2014, develop a draft overarching national invasive alien species management strategy.	2.2a	Review inter-island distributional differences of concerned invasive alien species and prioritize species for management.	MAFF
		2.2b	Review the biological effects of known invasive alien species and prioritize species for control.	MAFF
		2.2c	Make contingency plans for the containment and eradication of invasive alien species not yet present in Fiji that poses significant threats.	MAFF
		2.2d	Study the possibility for the utilization of invasive alien species.	MAFF

Strategies	Objectives	No.	Actions	Lead
Strategy 2: (continued)	Objective 2.2: (continued)	2.2e	Ensure that adequate scientific knowledge is entered into strategies and plans.	MAFF, DOE
		2.2f	Identify and develop acceptable means of control of invasive alien species for short, medium, and long-term biological control.	MAFF
	Objective 2.3: By 2014, four national control programs for priority species are in place.	2.3a	Develop control programs for four priority invasive alien species.	MAFF
		2.3b	Locate adequate financial and technical resources for management of invasive alien species.	MAFF, DoE
	Objective 2.4: By 2012, Quarantine committee strengthened to include broader stakeholder input into the decision-making processes.	2.4a	Adopt relevant quarantine regulations standards and tools developed to ensure biodiversity considerations in the decision-making processes involved in the importation of exotic species.	MAFF
		2.4b	Develop protocols which require an EIA by an independent body before the introduction of exotic species, in line with the EMA.	MAFF
	Objective 2.5: By 2010, the Bio-security Bill implementation is initiated.	2.5a	Develop procedures or legislation to minimize the establishment of invasive alien species through ballast water exchange.	FIMSA
		2.5b	Ensure, through legislation, that biodiversity values and considerations are strongly integrated into current biological control decision making and practices.	MAFF
	Objective 2.6: By 2010, Fiji is actively involved in regional and international bio-safety debates.	2.6a	Appointed focal point coordinates advice to government on bio-safety issues and ensures Fiji's participation in the current regional and international bio-safety debates.	DoE
	Objective 2.7: By 2010, increased coordination between key Government departments.	2.7a	MoU developed between DoE and MAFF through a consultative process.	DoE

Strategies	Objectives	No.	Actions	Lead
Strategy 3: Strengthen the capacity and resources of key stakeholders to address invasive alien species in Fiji	Objective 3.1: By 2014, the effective implementation of national invasive alien species policies, strategies, programs, and initiatives	3.1a	Establish administrative responsibilities for national invasive alien species management.	DoE
		3.1b	Establish a formal committee for invasive alien species under the NEC.	DoE
		3.1c	Increase funding for Invasive Programs.	DoE
		3.1d	Enable communities to take the lead role in local management of invasive alien species.	DoE
Strategy 4: Improve monitoring and surveillance of invasive alien species in Fiji.	Objective 4.1: By 2014, the existing national quarantine surveillance program will be implemented to international standards.	4.1a	Implement the national quarantine surveillance program.	MAFF
		4.1b	Improve regional collaboration between quarantine services and relevant regional institutions/organizations to develop regional action plans and strategies for the prevention of the introduction and spread of invasive alien species.	MAFF
		4.1c	Develop an invasive alien species alert system for Fiji.	MAFF
Strategy 5: Raise awareness with Fiji public and tourists to reduce invasive alien species introductions.	Objective 5.1: By 2015, invasive alien species awareness programs are in place at all ports of entry into Fiji, as well as at major inter-island transport locations.	5.1a	Strengthen educational awareness programs in relation to invasive alien species.	MAFF
		5.1b	Develop awareness materials for local communities on invasive alien species.	MAFF
		5.1c	Increased public awareness on the risks and importance of invasive alien species on native ecosystems and its biodiversity.	MAFF
		5.1d	Provide public, especially community, awareness on the threat posed by inter-island traffic in the spread of invasive alien species, giving priority to the islands of Taveuni, Lau, Lomaiviti and Kadavu.	MAFF

Strategies	Objectives	No.	Actions	Lead
Strategy 7: Prevent and control the spread of invasive species in Fiji's wetlands.	Objective 7.1: By 2014, there are no new intentional or unintentional releases of non-native species into wetland sites of national significance.	7.1a	Produce and disseminate educational and awareness material on wetland invasive species in collaboration with organizations that may be responsible for intentional or unintentional introductions.	WCS
		7.1b	Strengthening in-country biosecurity measures for wetland invasives.	DoE
		7.1c	Prioritize wetland invasive species for control and/or eradication.	WSC, Academic Institutions, MAFF

APPENDIX F

Invasive Alien Species Priorities from the Fiji National Biodiversity Strategic Action Plan Implementation Framework.

2010 Implementation Priorities for Invasive Alien Species						
Quarter	Establish a coordinating committee and a focal point for Invasive Species (IS)	Identify at least 6 priority IS (3 terrestrial, 3 – marine) of which 2 should relate to prevention. Take account the economic, social, environmental, trade effects and threats	Develop and implement management programs for the above 6 IS. The programs should include policy framework, coordinated action plans, capacity, and skills	Develop and implement public awareness program for the 6 Invasive species	Develop regional, national, and inter-island initial response guidelines/system for accidental introduction of invasive species quarantine- Staff on IS and biodiversity concerns. Implement related capacity building program, for border control.	Sensitize and involve biosecurity/ quarantine- Staff on IS and biodiversity concerns. Implement related capacity building program, for border control.
1		TOR for technical committee DOE/PIP (Feb)				
		Establish technical committee DOE/PIP (March)				
2	Engage with quarantine staff / Explore opportunities for Quarantine staff to work with relevant NGO's DOE/ Dept. Of Agriculture (DOA) (May)	Identify the 6 Priority IS (3 terrestrial 3 marine) Technical committee (June)				Initiate discussions with Quarantine DOE (June)
	MOU to form committee between DOE and Quarantine focused on NBSAP support DOE/ DOA (June)					
	Establish committee and focal point via NEC DOE/ DOA (June)					

Quarter	Establish a coordinating committee and a focal point for Invasive Species (IS)	Identify at least 6 priority IS (3 terrestrial, 3 – marine) of which 2 should relate to prevention. Take into account the economic, social, environmental, trade effects, and threats	Develop and implement management programs for the above 6 IS. The programs should include a policy framework, coordinated action plans, capacity, and skills	Develop and implement a public awareness program for the 6 Invasive species	Develop regional, national, and inter-island initial response guidelines/system for accidental introduction of invasive species quarantine- Staff on IS and biodiversity concerns. Implement a related capacity-building program for border control.	Sensitize and involve biosecurity/quarantine-Staff on IS and biodiversity concerns. Implement a related capacity-building program for border control.
2	Formulate the committee's work programme DOE/DOA (June)					
3	Implement work programme. New focal point? (September)	Develop a broad plan to address the 6 Priority IS Technical committee (August)	Develop a broad framework for the management programme technical committee (September)	Develop an awareness program technical committee (September)	Determine what the existing response guidelines are for I.S. Quarantine (September)	Ensure biodiversity guidelines are included Doe (September)
4			Develop implementation plans for the 2011 Technical Committee (October)	Prepare implementation plans for the 2011 Technical Committee (October)	Develop a management plan for ballast water Quarantine (December)	Develop awareness and capacity building for the Quarantine staff technical committee (November)
			Govt/sectoral/management awareness of the main decisions of the formal committee to generate support for DOE (October)			

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						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Determine the level of Invasive Alien Species (IAS) awareness for all sectors country-wide	Conduct preliminary surveys to determine current IAS awareness levels	Surveys conducted nationwide in 2021	Survey results	BAF, MEHA, FNU, USP, MTA	GEF-6	1
	Conduct periodic surveys to gauge the IAS awareness profile for all sectors of society	Every 1 to 2 years	Survey results	BAF, MEHA, FNU, USP, MTA	GEF-6 initially	
Raise IAS awareness and engagement across all sectors, including visitors	Develop and implement an overall IAS communication strategy for the country	2021	Strategy completed and in use	NFMV?	GEF-6	
	Visit secondary schools to raise awareness of IAS and their impacts	Yearly school visits implemented in 2022	Annual records of school visits, including classes visited and the number of students in attendance	FIST, MEHA		
	Visit primary schools to raise awareness of IAS and their impacts	Yearly school visits implemented in 2022	Annual records of school visits, including classes visited and the number of students in attendance	FIST, MEHA		
	Develop an IAS curriculum for schools	2021	The school IAS curriculum was developed and distributed country-wide	FIST, MEHA		
Raise awareness and research the impacts of IAS on biodiversity, economy, health and cultural values	Initially in 2021, then on-going as needed	Minimally 3 IAS presentations tailored for: primary schools, secondary schools, and general community groups	IAS National Committee			

The National Invasive Species Action Plan Table of Actions.

APPENDIX G

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Raise awareness and research the impacts of IAS on biodiversity, economy, health and cultural values (continued)	Develop IAS presentations and resource materials	Initially in 2021, then on-going as needed	Minimally 3 IAS presentations tailored for: primary schools, secondary schools, and general community groups	IAS National Committee		
	Start IAS student group(s) at one or more universities	2021	Train club facilitator(s), establish club(s), records of club meetings, attendance, and activities	USP, FNU, others		
	Training university group members to support IAS activities, such as providing presentations, etc.	2022	Records of student-led presentations to schools and community groups	IAS National Committee and relevant partners such as USP, FNU, etc.		
	IAS university group(s) field activities	2022	Records of students involved in field activities, types of activities undertaken, and results of the field effort	IAS National Committee and relevant partners such as USP, FNU, etc.		
	Organize media campaign	Initial in 2021 and continue as feasible, at least initially for the life of the GEF-6 project	Annual report on campaign activities and copies of information produced.	BAF and partners	GEF-6	
	Produce short biosecurity video for showing at terminals to customers as they wait both for transport and for baggage/stores (multi-language as needed)	Video produced and playing in 2023	Video and a report on its use in 2023	Video and a report on its use in 2023 BAF, Fiji Ports, FA	GEF-6	
Design and implement community workshops to counter IAS threats	Include IAS awareness as part of community meetings	2022	Documentation of community meetings where IAS were discussed	FIST, BAF, MTA		
	Conduct workshops for farmers, foresters, fisherfolk, and the public on Integrated Pest Management (IPM)	2022	Stakeholder IPM workshops	BAF, MOA, Forestry, Fisheries, and local groups		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Development of community-focused education and awareness resources	Produce Farmer's/Forester's/ Fisherfolk's Pocket Guide on IAS (multi-language as needed)	Production in the 2nd half of 2023	Pocket Guide and record of its distribution	BAF, MOA, Forestry, Fisheries, and local groups		
	Produce Media Guide	2022	Media Guide and record of its distribution	BAF, IAS National Committee		
	Conduct awareness through mass media: radio, TV, SMS, etc. (multi-language as appropriate)	2-3 programs a year	Annual record of programs delivered	BAF, DOE, IAS National Committee, local groups		
	produce a documentary program regarding IAS and Fiji (multi- language as appropriate)	Produce in 2023	DVD, record of its distribution and play time on local TV	IAS National Committee		
Development of education materials	Identify priority messages for outreach materials	Develop in 2021	Draft messages developed for outreach materials	BAF, IAS National Committee, local groups		
Development of awareness materials for the wider public	Develop posters and/or billboards on the economic/health impacts of IAS – aimed at raising community awareness so individuals prioritize the issue. Should be inclusive of pest hotline numbers.	Produce in 2021	Poster & record of distribution	BAF, IAS National Committee, local groups		
	Develop poster and/or other media: 'Watch out for these pests' to cover priority invasive alien species (IAS) threatening Fiji. For example, this could be a page for each high-threat IAS to the BAF website (what to look out for)	Produce in 2021	Poster & record of distribution	BAF, IAS National Committee		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Demonstrate the economic cost of existing invasive species	Present progress report to the proper sectors and outside partners & experts	2023	Annual report on the status of existing IAS and their associated impacts and management costs	IAS National Committee, USP, FNU, BAF, DOE, others		
Demonstrate the potential economic costs of specific non-established IAS	Present analysis and results to state and national leadership	2023	Annual report on the status of priority IAS that threaten the country	IAS National Committee, USP, FNU, BAF, DOE, others		
Seek strategic funding for priority IAS actions	Solicit and secure grants from donors (local, regional, international)	2021	Annually, secure at least 1 grant to support IAS efforts	IAS National Committee		
Develop material on marine IAS (how they might arrive and how to identify them)	Prepare awareness material on priority species	awareness material produced and distributed in 2022	Awareness material produced	BAF, MSAF, IAS National Committee		
	Distribute material to all involved in marine activities (tourism operators, Marine Protected Area committees, coastal communities)	2023	Records of awareness material distribution	BAF, MSAF, IAS National Committee		

A2. Building Capacity

Outcome 1:2 The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to manage invasive species effectively are developed						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Functional national level, multi-agency, multi-sector coordinating body for IAS activities, including biosecurity and management codified in the national legislation	Clearly define the need and role of an IAS coordination body that can coordinate IAS prevention and management activities across sectors and review key members, i.e., Terms of Reference (TOR)	2021	TORs	BAF, DOE, MSAF, Fiji Ports, FA, Health, Disaster Management Office, Others		
	Develop national legislation or other appropriate mandate to define the roles and responsibilities of this coordination body	2021	Mandate	BAF, DOE, MSAF, Fiji Ports, FA, Health, Disaster Management Office, Others		
	Coordination group established and functional; Members and partners engaged in activities	Begin implementation in 2021	By-laws established, meeting minutes, and annual reports of activities	BAF, DOE, MSAF, Fiji Ports, FA, Health, Disaster Management Office, Others		
	Determine if an existing group or council can fulfill this role or not, and proceed accordingly	2021	Record of decision on how to proceed with establishment of a national IAS coordination body	BAF, DOE, MSAF, Fiji Ports, FA, Health, Disaster Management Office, Others		
	Determine if the national IAS coordination body will need a specialist group to provide expert input, or if the coordination body will be made up directly of such experts	2021	Record of decision, and if a supportive group of experts is needed, make appropriate recommendations	BAF, DOE, MSAF, Fiji Ports, FA, Health, Disaster Management Office, Others		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Training/capacity needs are identified, and training programs for priority IAS management issues are developed and implemented (continued)	Agencies conduct training needs assessments regarding IAS. Training needs will likely include species identification, control and monitoring techniques, and risk assessment.	2021	Training needs identified	Government of Fiji and its various ministries/ departments, supporting organizations, including those of higher education, etc.		
	Promote training programs and develop new ones to cover important aspects of invasive species management processes, from planning and fundraising to demonstration of advanced skills	2021 onward	Appropriate training programs have been identified to support addressing gaps identified in the training needs assessments	Government of Fiji and its various ministries/ departments, supporting organizations, including those of higher education, etc.		
	Conduct targeted IAS training events	Training provided for new staff and existing staff at appropriate intervals	Records of training provided	Government of Fiji and its various ministries/ departments, supporting organizations, including those of higher education, etc.		
Improved biosecurity training	Improved introductory training; institute yearly update/advanced training for all frontline officers	Programmatic training plan (part of BAF strategic plan); Training records	Start in 2020 and build over time	BAF	GEF-6 initially	
	Cross-training of line agency staff to support biosecurity services	Training records	Start in 2020 and build over time	Customs, Health, Immigration, others	GEF-6 initially	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Provide training for Harbormasters, airline staffs and other Ports and Harbor staff on identifying invasive species issues associated with incoming air and water vectors	Develop a brief training program with the assistance of experts	2021	Training program developed	BAF, Fiji Ports, FA, others		
	Provide training to the appropriate staffs	2022	Reports on training provided, including details on staff who received training	BAF, Fiji Ports, FA, others		
Develop a national database for compiling IAS information, activities, and outcomes/status that can be used broadly to strengthen prevention and management throughout the country	Engage an appropriate partner (potentially USP, ICT Centre) on the development of the database	2021		BAF		
	Disseminate the report on database progress and IAS issues to stakeholders via an appropriate website	2021 and every year thereafter	Reports made available to stakeholders	BAF, USP, FNU		
	Establish who will update the database and ensure that it is updated regularly	2021	Database management strategy established	BAF, USP ICT		
	Provide stakeholder access to the database once established (likely limited parts as some will be restricted to specific users or departments)	2021	Stakeholder access to the database is provided	BAF, USP, FNU		
Development of a national online clearinghouse for information on IAS and associated APP, as appropriate	Determine who will host and maintain the website	2021	Clearing house development plan in place	BAF, USP, FNU	GEF project support	
	Determine if an associate APP is appropriate, and if so, how this will be designed and maintained	2021	THE IAS APP plan is in place, with documentation as to why the concept was not moved forward	BAF, USP, FNU	Internal funding from partners, minimal needed; time commitment	
	Design, populate, launch, and maintain website and APP	2022	Records of visitation/use rates of both the clearing house and the APP	BAF, USP, FNU		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Improve regional/national engagement and information sharing regarding IAS	Ensure regular meetings between local partners	Schedule and hold annual meetings with the district and/or other local councils/ working	Meeting minutes	National IAS Committee		
	Work with regional partners such as PIP, Melanesia Invasive Species Council, and others	Consider the annual progress report shared with regional partners	Progress reports	National IAS Committee		
	Lead efforts to re-engage and maintain the Melanesia Invasive Species Regional Council	Starting in 2021	Meeting minutes or progress reports, etc.	National IAS Committee		
	Ensure that Fiji is represented on at least one regional IAS advisory board or council	2021	Government-endorsed member attends and participates in regional IAS activities/council	National IAS Committee		
	Improve communication between Fiji and regional partners on IAS topics	2021	Debriefing of FIST by country member(s) sitting on regional IAS boards/ councils	National IAS Committee		
	Improve communication between Fiji and regional partners on IAS topics (continued)	2021	FIST to coordinate with regional council members before regional meetings to ensure that input from all sectors in Fiji is appropriately represented at regional meetings	National IAS Committee		

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						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthen existing regulations, protocols, and laws regarding IAS prevention and management as needed	Coordinate and conduct review and needs assessment of existing laws, etc. that govern IAS and protect against at national and local levels (may include formation/use of taskforce at district, provincial, divisional levels to conduct local review aspects)	2022	Report on gaps and needs assessment	BAF, MSAF, others		
	Amend existing and/ or develop additional laws, regulations, and protocols as needed	2024	Additional laws, regulations, and/or protocols in place	BAF, MSAF, others		
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	2022	Booklet developed and distributed	BAF, MSAF, others		
Carry out mid-term review of NISFSAP and develop the next 5-year plan	Review of the NISFSAP in 2023	2023	Review report received, and recommendations acted on	National IAS Committee	GEF-6	
	Final evaluation of NISFSAP	2025	Report on IAS objectives and outcomes	National IAS Committee		
	Develop a revised NISFSAP for 2025-2030	Process to develop new NISFSAP undertaken in 2025	Updated and endorsed NISFSAP for the next 5-year cycle	National IAS Committee		

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						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Improve techniques for monitoring the spread of invasive species within the country	Develop/establish criteria for ranking priority invasive species for the country	2021	Established list of criteria	FIST		
	Identify at least 5 priority species that will be monitored country-wide	2021	List of priority species to be monitored and how this will be accomplished	National IAS Committee		
	Conduct monitoring of and collect field data on priority IAS species	Annually starting in 2021	Document monitoring with reports	BAF, MSAF, DOE, others		
	Develop IAS range maps	2022	Range maps were produced and made available	BAF, DOE, USP, FNU		
	Update IAS range maps	Annually	Updated range maps	BAF, DOE, USP, FNU		
	Provide an annual report on priority species to working partners and leadership at the national and local levels	Annually	Annual reports	National IAS Committee		

B2. Prioritization

Outcome 2.2: Effective systems are established to assess risk and prioritize invasive species for management						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Determination of priority species for the country to address	Develop/establish criteria for ranking priority invasive species for the country	2021	Established list of criteria	FIST		
	Identify priority established invasive species	2021	Established list of priority species with justification	National IAS Committee		
	Identify priority non-established invasive alien species	2021	Established list of priority species with justification	National IAS Committee, BAF		
Determine priority IAS actions	Identify priority actions to address regarding IAS	2021	Prioritization of IAS activities	National IAS Committee, BAF		
Risk assessments (RAs) in place for each species proposed for import or which is determined to be established	Utilize existing information where possible; conduct RA as needed	Completed risk assessment for any new species for import or those that are identified within the country	Growing documentation of risk assessments	BAF		

B3. Research on Priorities

Outcome 2.3: Improve understanding of priority Invasive species taxa, including species biology and associated impacts, and develop effective management techniques for these priority taxa						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Design, as needed, and adopt a decision making tools for invasive management planning, such as integrated pest management or IPM	Introduce the IPM concept to local managers and support its use across sectors	Annual workshop to support IPM understand, use, and coordinate	Workshop report	National IAS Committee, BAF, MOA, MOF, and other relevant authorities		
	Include IAS activities in ministerial policies	2022	Inclusion in ministerial policies, IAS activities that are covered by each ministry	National IAS Committee, BAF, MOA, MOF, and other relevant authorities		
Develop and implement a national IAS research strategy (to support the investigation of biology and impacts of IAS)	Build consensus within the country on how to develop a national research strategy	2022	Consensus-building workshop(s) report, agreement on process, development of pathway forward documentation	National IAS Committee, USP, FNU, others		
	Develop a strategy with clear objectives, building on past and ongoing research	2024	Strategy completed and in use	National IAS Committee, USP, FNU, others		
	Request support/contract with existing and potential external partners	2024	Engagement of specialist support, funding, etc. with external partners	National IAS Committee		
	Conduct informal interviews regarding IAS in each community	Annually	Annual compilation of community-based IAS concerns, etc.	National IAS Committee, BAF		
	categorize and prioritize research activities	Annually	Annual update on research priorities and objects for the country	Provided by key research entities		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Develop and implement national IAS research strategy (to support the investigation of biology and impacts of IAS) (continued)	Determine research leads for needs, including collaborative efforts amongst organizations/offices	As needed	Documentation of leads for each research priority and documentation of collaborative efforts	BAF, FNU, USP, NF, others; research institutes/ research office of respective stakeholders (ministries/BAF/ NGO/Tertiary institution (FNU/ SPC)		
	Conduct field research on priority IAS species	Annually	Field research reports	BAF, FNU, USP, NF, others; research institutes/ research office of respective stakeholders (ministries/BAF/ NGO/Tertiary institution (FNU/ SPC)		
	Update research strategy	Every 5 years or as otherwise determined as appropriate by stakeholders	Updated research strategy in place and used	National IAS Committee, USP, FNU, others		
Improve knowledge regarding the status of non-native aquatic species within Fiji	Coordinate with groups conducting (or that have completed) aquatic system surveys within Fiji	2021	Report of known non-native freshwater, brackish, and marine species established in Fiji, including existing ranges within the country	MSAF, Fisheries, BAF, others		

Thematic Area C: Management Action

C1. Biosecurity

Outcome 3.1: Mechanisms are established to prevent the spread of invasive species across international borders, between island/island groups, and within islands						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention	Multi-year BAF strategic plan	2021	Plan developed and in use	BAF	General BAF funds; GEF support	
	Development of domestic air service biosecurity inspection services	Initiate domestic inspection services by 2022; develop similar services in other areas over the next few years; all domestic air services should have inspection services by 2028	Inspection stations established and in use; records of activities	BAF, FA	Programmatic support from BAF general funds; Facilities support from AFL	
	Increase in the percentage of vectors, goods, and passengers inspected over the current baseline	Minimal 15% increase in percentage of total volume inspected over four years (2021-2025); Total The percentage of volume inspected should continue to improve after 2024, with new goals set	BAF inspection, disposition, and procurement records	BAF	Funding to support increased inspection rates should come primarily from user-based fees, and generally, specific aspects of overall improvements can be funded by grants from various entities supporting such items as training, resource acquisition, etc.	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Established a comprehensive BAF database (this may be part of the national IAS database, but we need to keep in mind access issues; if a single database can be developed that protects information that needs to be maintained as private, then consider; otherwise, can have a separate database where shareable information is provided to the country-level database)	Begin development in 2021 and complete by 2022	BAF database of a) interceptions, b) sightings from the public, c) EDRR responses, and e) outreach activities.	BAF	GEF project support	
	Official blacklist of organisms not permitted entry into Fiji established a law that would prohibit the intentional importation of listed species	Initial list completed in 2021; updated as needed	Blacklist (organisms not permitted entry into the country) developed, added to the BAF website, provided to biosecurity officers, and updated as needed; share the list with other agencies working at borders	BAF and partners	BAF general funds	
	Official whitelist of organisms permitted (with proper documentation, etc.) entry into Fiji established	Initial list completed in 2021; updated as needed	Whitelist (organisms permitted into the country) developed, added to the BAF website, provided to biosecurity officers, and updated as needed; share the list with other agencies working at borders	BAF and partners	BAF general funds	
	Determination made on whether to pursue a detector dog program for IAS inspection services	2021	Record of decision and forward progress if such a program is to be established	BAF and partners	Minimal internal funding required	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Inspection services and translation services are available	On-call translation services available for biosecurity operations by early 2021	Hire/train foreign language speakers to support biosecurity operations as needed	BAF	BAF general funds	
	Biosecurity officers can fully utilize appropriate X-ray equipment for biosecurity inspection services, including analyzing and interpreting RAPI-scan images	2021	X-ray machine training provided	BAF, FA, Fiji Ports	Contractual services with equipment suppliers	
	The cargo inspection area at Nadi International Airport has functional and appropriate X-ray machines	2021 fix existing machine: 2022 large capacity X-ray machine provided	Cargo inspection X-ray machines are installed and functional	BAF, FA	BAF, AFL	
	The inspection area at Nausori Airport has functional and appropriate X-ray equipment	2022	Sufficient level of x-ray equipment installed, functional, used, and maintained	BAF, FA	BAF, AFL	
	Cargo targeting systems are developed and used at all major ports	2024		BAF		
	The inspection lab at Nadi International Airport is adequate to support inspection services	2021	Inspection lab upgrade documentation; existence of resources such as scopes, work benches, and freezers	BAF	BAF general funds	
	Nausori Airport Inspection Lab (mini PEQ lab)	2024		BAF		
	Secure passage from the cargo and passenger inspection services areas to the inspection lab	2022	An enclosed passage to move from the cargo and passenger areas to the inspection lab has been established	BAF, FA	BAF, AFL	
	2 full-time BAF inspection officers at Denarau port	2021	Hiring and training records	BAF	BAF general funds	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Random biosecurity inspections are implemented for cargo and passengers at international seaports	2021	Inspection records	BAF	BAF general funds	
	Amnesty bins established and maintained at seaports	2021	Amnesty bins established; cleaning records	BAF, Port Authorities	BAF general funds	
	Development, training, and use of handling protocol for amnesty bin content from bin inspection to content removal to final disposition	2021	Protocols established; training provided	BAF		
	Amnesty bins are checked by trained biosecurity staff after each arrival, and contents are secured with final disposal conducted, ensuring no release of potential pest organisms	2021	Depositing records of bin contents (and, as feasible, records of what specifically is being deposited in amnesty bins by location), as well as records of any pest organisms encountered from the amnesty bin contents (all contents must be handled only with biosecure measures)	BAF		
	Each port of entry has basic materials and equipment in place to deal with both amnesty bin content and Biosecure disposal of foreign garbage	2022	Inventory of material and equipment for each port of entry	BAF		
	Biosecure storage of all foreign garbage, reduced overall storage time, biosecure transport to onsite disposal, and effective incineration of foreign garbage promptly at the port where it arrived (rather than transporting off-site)	2022	Clear protocols have been established to support appropriate foreign garbage disposal, and detailed records of all actions taken	BAF		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Enclosed quarantine areas established at all major ports of entry, inclusive of areas where cargo is moved from the discharge point to the biosecurity clearance area	2023	Quarantine areas established and utilized	BAF, Port Authorities	BAF, Port Authorities	
	Treatment areas at major ports exist and are maintained appropriately	2021	Port treatment areas are established and well-maintained	BAF, Port Authority	BAF, Port Authority	
	Wash down areas at major ports exist, have solid substrate bases, and drain into a filter system where materials are collected and appropriately treated	2022	Appropriate wash-down areas established and utilized	BAF, Port Authorities	BAF, Port Authorities	
	100% risk assessments for all organisms proposed for import	Process established and implemented by the end of 2021; 100% by 2024	100% of all species proposed for importation that are not already on the black- or whitelist undergo a full risk assessment	BAF	User fees	
	Improved inspection processes	By the end of 2024, 100% All inspection stations should have the necessary resources	Ensure that all inspection stations have appropriate resources for day-to-day operations such as vehicles, workstations, computers, fuel, and communication devices	BAF	BAF general funds and one-time grants, etc.	
	Improved inspection processes (continued)	By the end of 2024, 100% of major inspection services The areas have all the essential facilities	Ensure that all major inspection service areas have essential facilities, such as inspection areas, quarantine zones, and treatment zones, and that these facilities are appropriate and maintained	BAF	BAF general funds and one-time grants, etc	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Minimally one patrol boat (and associated resources) at each main seaport	2024	Purchase records	BAF	BAF general funds	
	Determine how biosecurity regarding vessels will be handled and how information will be shared between BAF and MSAF	2021	Documentation of how biosecurity activities and services will be shared between BAF and MSAF is provided and agreed on	MSAF, BAF, others		
	Develop cross training program for line agencies regarding port biosecurity activities	2021	Development of a training program	BAF, MSAF, Customs, Health, Immigration, others	GEF-6	
	Provide cross-training to line agencies to support the BAF mission	Begin implementing in 2021	Records of training provided	BAF, MSAF, Customs, Health, Immigration, others		
	create inspection manual for line agencies to assist BAF and MSAF as needed	2021	Inspection manual produced and distributed	BAF, MSAF, others		
	Promote the development and implementation of stronger International import standards regarding IAS	On-going	Strengthening of existing International import standards	BAF		
	Review and modify as needed existing border controls, transport controls, and inspection systems	Initiated in 2021; ongoing activity	Strengthening of existing biosecurity systems	BAF		
	Conduct risk assessments for proposed national and/or internal movements of species and for The movement of goods that may harbor IAS	Conducted for both international import and internal movement of high-risk goods	Risk assessments completed (as needed) and documented (information regarding completed assessments should be available in the National IAS database)	BAF		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Strengthened IAS prevention (continued)	Hold, reject, or confiscate items/ permit applications without proper certificates or documents, or otherwise found to violate standards	Ongoing as warranted by national regulations	Line agency activity reports with critical IAS information input into the National IAS database, including interceptions, treatment, and final dispositions, etc.	BAF		
	Address ballast water concerns	2021	Ensure that ballast water is being monitored and that information is being shared between key departments such as MSAF and BAF; ensure that a clear protocol is in place for these items and what happens if there is a violation of ballast water regulations	BAF, MSAF, Min. of Fisheries, research institutions (IAS/IMR) & local universities (FNU/USP) others		
	Address hull fouling concerns	2021	Develop guidelines to address hull fouling IAS concerns and implement, inclusive of vessels going to dry dock as needs dictate	MSAF, BAF, others		
	Identify certified dive operations and resources throughout the nation that might be available to inspect in the water and clean hulls (if such services are required)	2022	Operations and resources are identified and updated annually	MSAF, BAF, others		
	Ensure that Protected Areas planning documents are inclusive of IAS management, prevention, and response	2023	Protected areas document the appropriate address of IAS concerns	National IAS Committee, BAF, DOE, others		
	Ensure that climate change initiatives are inclusive of IAS prevention and management activities	2021 and thereafter	Climate change planning documents consider IAS	National IAS Committee		

C2. Early Detection and Rapid Response

Outcome 3.2: Newly arriving invasive alien species are detected and responded to effectively, reducing the likelihood of long-term establishment and spread within the country						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Review existing early detection and rapid response mechanisms for IAS incursions	Complete an EDRR capacity report with suggestions for improvement, and which List out all potential offices that could be included in a response action	2021	Report on existing early detection and rapid response capacity	BAF, Disaster Management Office, MSAF, others		
Establish and maintain an effective IAS intrusion detection and response system	Implement adequate surveillance systems at island entry points	Conduct monthly surveillance review at all official ports of entry	Monthly surveillance reports	BAF		
	Secure funding to support response actions and ensure that funding is built up over time, including replenishment when funds are utilized	2022	Funding available for response actions (revolving fund)	BAF, Disaster Management Office, others		
	Ensure funds are available and can be released as needed promptly to support rapid action to confront any pest incursions	2022	Funding use mechanism developed and approved at all necessary levels, and clear protocols established for how to fund a response action	BAF, Disaster Management Office, others		
	Develop a generic emergency response plan for IAS incursions	Draft plan in place by 2022; Endorsed by leadership by December 2023	ERPs developed and disseminated	BAF, MSAF, Disaster Management Office		
	Develop a rapid response training workshop	2021	Workshop developed	BAF, others		

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Establish and maintain an effective IAS intrusion detection and response system (continued)	Technical workshop to train core response team members in aspects of a response action	Initial course in 2021, then hold updated courses every 3 years. Course to be provided to all parties that would be involved in a response action. The course should include mock response exercises.	Report on workshops provided	BAF, others		
	Workshop(s) for response action community support	Annually starting in 2021	Workshops developed and provided	BAF, others		
	Awareness campaign to develop public support for early detection and rapid and appropriate reporting of potential IAS incursions	2021 underway	Yearly review of campaign (and adjustments as needed)	BAF, others	GEF-6	
	Coordinate with national, regional, and international response support mechanisms	2023	Annual report on activities shared with stakeholders	National IAS Committee, BAF		
	Coordinate with partners to establish a marine systems ERP and/or aquatic ERP that identifies available resources within Fiji and the region, which could be utilized during a response situation	2021	Marine systems ERP is in place and updated regularly	BAF, MSAF, others		
	Established EDRR capacity on Viti Levu as an initial trial before taking efforts nationwide	2021	EDRR plan for Viti Levu	BAF, Disaster Management Office	GEF project support	

Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Establish and maintain an effective IAS intrusion detection and response system (continued)	Established EDRR capacity on Viti Levu as an initial trial before taking efforts nationwide (continued)	2021	Response team training records	BAF	GEF project support	
		2021	National reporting hotline records	BAF, Disaster Management Office	Internal funding from partners	
	Resources to support EDRR on Viti Levu are in place	2021	Existence of an emergency response fund and a mechanism for fund release and use	National IAS coordination body National IAS coordination body	Government funded	
	Develop appropriate biosecurity and response capacity for each non-established priority or high-risk IAS species	2023	Documentation of biosecurity elements for each species, including ERPs	BAF, others		

C3. Management of established invasive alien species

Outcome 3.3: The impacts of priority established invasive alien species are eliminated or reduced						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
Create management plans for priority established invasive species	Develop appropriate management actions for each established priority species, inclusive of regulatory enforcement, emergency declarations, and movement control	2023	Management plans established	National IAS Committee		
Design and apply best practice standards based on the latest information	Apply the IPM concept to control priority species	2023	Improved control and management of priority species	All		
	Assist farmers with IPM techniques to control other invasive species found in their respective farm sites	2023	Activity reports	Agriculture, BAF		

C4. Restoration

Outcome 3.4: Following invasive species management, the best methods are implemented to facilitate effective restoration of native biodiversity or recovery of other values						
Objectives and Outcomes	Activities	Timing	Means of Verification and Monitoring Frequency	Responsibility	Resources/ Funding	Rank
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 that are inclusive of monitoring and engagement	Development planning underway in 2021; On the ground action by 2022	Project planning documents: Update reports once ground actions begin	National IAS Committee		

APPENDIX H

List of Marine Species to be validated through the Marine Bio-invasion Alert Network Project 2021-2023.

An extended list of marine species identified from literature review and exhaustive consultations under the UNESCO/IOC-funded Pacific Islands Marine Bio invasion Alert Network project (2021-2023) underway at USP provides a further target watch list of 12 taxa, which may also pose a potential threat to Fiji. Will be validated through project activities and evidence, 2022-2024:

- Chinese mitten crab (*Eriocheir sinensis*): Native to China's and South Korea's coastal rivers and estuaries, and the primary vehicle for spread is through ship ballast water in Europe and California, USA. Has wide temperature tolerances (reproductive temperature range is 9 to 30°C).
- Harris' mud crab (*Rhithropanopeus harrisi*): Native to the Atlantic coast of the Americas from New Brunswick to northeast Brazil. It is a highly successful invader, having established itself in 20 countries across 45 degrees of latitude.
- Asian shore crab (*Hemigrapsus sanguineus*): Native to cobble/boulder coastlines in the western Pacific Ocean, from Hong Kong Island to Sakhalin Island in China, Japan, Korea, and now in Australia.
- Asian paddle crab (*Charybdis japonica*): Native to marine environments of Central and Southeast Asia but now in tropical Queensland.
- Black-striped false mussel (*Mytilopsis sallei*): Native to Caribbean islands, Bay of Mexico, with a wide tolerance for temperature (10–35°C) and salinity (0–35).
- Brown mussel or Caribbean false mussel (*Perna perna*): Native to tropical and subtropical waters of Africa. Successfully eradicated in Darwin, Australia.
- Asian green mussel (*Perna viridis*): Native to the Asia-Pacific region, where it is widely distributed.
- Asian bag mussel (*Arcuatula senhousia*): Tolerates a wide variety of temperatures and salinities. Native to the waters of tropical and temperate Asia.
- Charru mussel (*Mytella charruana*): Brackish water mussel known to be problematic in India and Singapore. Easily mistaken by a non-specialist for the Fiji native species *Xenostrobus securis*.
- White colonial sea squirt (*Didemnum perlucidum*): Fast-growing and can occupy disturbed habitats. Can overgrow native species. Subtropical to tropical. Can be very difficult to identify from the local species of *Didemnum*.
- Spaghetti bryozoan (*Amathia verticillata*): Native to tropical and subtropical western Atlantic and the Caribbean Sea.
- Pickleweed (*Batis maritima*): Native to the Americas, invasive in Hawaii with mangroves, where they can destroy habitats of local species.

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