

Government of the Pitcairn Islands Territorial Invasive Species Strategy and Action Plan

2024–2031



Foreword

The Pitcairn Islands are gems in the Pacific ocean, boasting pristine waters and their own unique ecosystems. The endemic plants, insects, birds, and marine life are a major part of what makes Pitcairn unique.

This environment is under continual threat from invasive species. You need only to look around Pitcairn Island to see the damage that the Rose-apples, the Blue Morning Glory, and the Lantana have caused to the island's landscape.

Eradicating rats, controlling the spread of invasive weeds and reducing the populations of pests like Fruit Flies will mean better crops, less time and resources spent managing these problems, and a better environment for all.

Keeping Henderson, Ducie and Oeno rat-free is a major vision, and one that our community and visitors will need to play their part to realise.

Preventing the arrival of new invasive species will need effective procedures in New Zealand, Mangareva and other sources, to ensure that the people, goods, and commodities coming to the island do not bring new problems.

We will need to publicise the biosecurity requirements to visitors before they get to the island. And we will need all islanders to work together to ensure that these rules are followed: to protect their crops, their wonderful honey, and those natural elements that make Pitcairn unique.

Simon Young, Mayor of Pitcairn Island, on behalf of the Pitcairn Island Council, Government of the Pitcairn Islands

Michele Christian, Division Manager, Environment, Conservation and Natural Resources

Acknowledgements

We acknowledge the support of all the people and organisations involved in the preparation and endorsement of this document.

This plan was based on the Territorial Invasive Species Strategy and Action Plan (TISSAP) guiding principles developed by the Secretariat of the Pacific Regional Environment Programme (SPREP) Pacific Regional Invasive Species Management Support Service (PRISMSS). Pitcairn's TISSAP was drafted in consultation with Michele Christian, Jay Warren, Charlene Warren (Environmental, Conservation & Natural Resources Division of the Government of the Pitcairn Islands) and the Pitcairn community, by Monica Gruber (Pacific Biosecurity) assisted by the SPREP Invasives Team and PRISMSS partners. Representatives from Animal and Plant Health Agency, the Royal Society for the Protection of Birds, the Invasive Species Specialist Group of the Species Survival Commission of the IUCN, the Great Britain Non-Native Species Secretariat and United Kingdom Marine Management Organisation also provided valued background information.

Consultations with the Pitcairn community were held in October and December 2023, which informed and streamlined the plan. We are grateful for the contributions of all the community members who took part in the meeting or shared comments informally. Thanks also to Pitcairn Administrator Stephen Townsend for his contributions to discussions and drafts of the plan.

The development of the Territorial Invasive Species Strategy Action Plan for Pitcairn is an activity under EDF11 OCT PROTÉGÉ (“Pacific Territories Regional Project for Sustainable Ecosystem Management” or “protect” in French), an initiative designed to promote sustainable and climate-change-resilient economic development in the European Pacific overseas countries and territories by emphasising biodiversity and renewable resources. PROTÉGÉ is a regional cooperation project that supports the public policies of the four Pacific Overseas Countries and Territories (OCTs) – French Polynesia, New Caledonia, Pitcairn, and Wallis & Futuna, implemented and executed by SPREP.

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Key Concepts

Concept	Description
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 Earth, including the variability within and between species and within and between ecosystems.
Biosecurity	Preventing the arrival, establishment and spread of invasive species. See the Protect our Islands with Biosecurity Battler Guide for more information on biosecurity.
Containment	Keeping an invasive or pest species within a defined area.
Control	Reducing the population of an invasive species (numbers and distribution).
Ecosystem	Plants, animals, and other organisms and the physical environment in which they live and interact with each other. Types of ecosystems with distinct characteristics include lagoons, forests, and grasslands.
Ecosystem services	All the benefits to people provided by the natural environment and from healthy ecosystems. Some of the benefits of healthy ecosystem function include natural pollination of crops, clean air and water, nutrient cycling, and food productivity. Ecosystem services are usually referred to within four categories: regulating, provisioning, cultural, and supporting services.
Effective management	Achieving operational success (such as reducing the pest to defined levels) and desired outcomes (such as reduced impact and recovery of impacted values) of invasive species management.
Emergency response	The differences between the terms emergency response, incursion response and EDRR might not be obvious: <ul style="list-style-type: none"> Emergency response is a general term that describes an event that requires some immediate action to decrease the impact of the event. Ideally, that event has been planned for, but it is not exactly predictable, such as where a cyclone might make landfall.
Incursion response	<ul style="list-style-type: none"> Incursion response is an emergency response where the event is the arrival of a harmful pest or invasive species.
Early Detection and Rapid Response (EDRR)	<ul style="list-style-type: none"> Early detection and rapid response plans also target invasive species or pests. EDRR requires similar actions as for emergency or incursion response, but also includes prioritisation, surveillance (for early detection), and being actively prepared. Active preparedness is crucially important to acknowledge in the Pacific islands because remote locations and lack of locally available treatment products slow the ability to respond rapidly.
Emergency response plan	When targeting pests and diseases, usually referred to as an incursion response plan. An incursion response plan is an emergency response plan to deal with a newly detected invasive species, plant or animal disease, or pest.
Endemic species	A native species that naturally occurs confined to a single specific country or area. Indigenous (native) species occur naturally in one or more places. Due to its isolation and relatively minor human impacts, the Pitcairn Islands Group has relatively large numbers of endemic species.
Environmental Impact Assessment	Evaluates the impact of development and other activities on the environment and puts in place actions to mitigate these environmental impacts.
Environmental and social impact assessment	In addition to assessing environmental impact, an ESIA evaluates potential impacts to people and puts in place mitigation actions.
Eradication	The removal of every individual of an invasive species from a specific place. Eradication is only successful if every individual is removed.
Introduced species	Plants, animals, and other organisms taken beyond their natural range by people, deliberately or unintentionally.

Concept	Description
Invasive species	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.
Monitoring	Programmes to detect change, such as change in the distribution of invasive species, the success of management projects, and so on.
Movement control	Placing restrictions on the movement of people, animals, plants, and goods to restrict the spread of an invasive species. See also containment.
Native species	Plants, animals, and other organisms that occur naturally on an island or in a specified area, having either evolved there or arrived without human intervention.
Neonative species	Neonative species are those that have expanded geographically beyond their native range and that now have established populations whose presence is due to human-induced changes of the biophysical environment, but not because of direct movement by human agency, intentional or unintentional, or due to the creation of dispersal corridors such as canals, roads, pipelines, or tunnels.
Non-native species	Non-native species are those species that have been introduced by people. Non-native species include both harmful (that is, invasive) and beneficial species.
Pacific Regional Invasive Species Support Service	The Pacific Regional Invasive Species Support Service (PRISMSS) is a collaboration of leading organisations supporting invasive species management for biodiversity protection in the Pacific. PRISMSS currently provides technical support across five regional programmes for the Pacific region: Natural Enemies–Natural Solutions (NENS), Predator Free Pacific (PFP), Protect our Islands (POI), Resilient Ecosystems, Resilient Communities (RERC), and War on Weeds (WOW).
Pathway	The means by which an invasive species can be transported.
Pest	A pest is an animal or plant that harms the environment directly or harms human interests in an environment (agriculture, people’s health, and so on) – whether it is native or introduced. Any animal that is harmful, unwanted, or annoying.
Precautionary principle	As applied to invasive species, the precautionary principle holds that where there is not enough information to predict whether a species will become invasive or not, it should be assumed that it will have a damaging impact and action should be taken to stop it establishing or spreading. It should also be assumed based on international experience that any species imported with the intention of being kept in ponds, pens, or cages will eventually escape into the wild.
Quarantine	Quarantine is a specific biosecurity tool (keeping something in isolation to make sure it is pest or disease free). Historically Biosecurity was used synonymously with Quarantine. But now that there are diverse biosecurity tools in addition to quarantine, the terms should preferably not be used interchangeably.
Region	When not otherwise qualified, means the Pacific Ocean, with specific reference to the island states and territories members of SPC and SPREP.
Risk assessment	Evaluation of the risk that a new introduced species will become invasive with damaging consequences; this evaluation is conducted prior to its introduction.
Surveillance	Monitoring to detect the arrival of new invasive species.
Threatened species	General term for species ranked by IUCN as Critically Endangered (CR), Endangered (EN), or Vulnerable (VU).

Acronyms

Acronym	Definition
APHA	Animal and Plant Health Agency
CABI	Commonwealth Agricultural Bureaux International
CBD	Convention on Biological Diversity
CCZ	Coastal Conservation Zones
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
Defra	Department for Environment, Food and Rural Affairs
ECNR	Environmental, Conservation & Natural Resources Division (Pitcairn Islands Government)
EDRR	Early Detection and Rapid Response
EEZ	Exclusive Economic Zones
EIA	Environmental Impact Assessment
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
FCDO	Foreign Commonwealth and Development Office
GBIF	Global Biodiversity Information Framework
GEF	The Global Environment Facility
GEF 6 RIP	The Global Environment Facility Regional Invasives Project
GISD	Global Invasive Species Database (maintained by ISSG)
GISIN	Global Invasive Species Information Network
GMO	Genetically Modified Organism
GPI	Government of the Pitcairn Islands
HMG	His Majesty's Government
HPWRA	Hawai'i-Pacific Ecosystems at Risk
IAS	Invasive Alien Species
IBA	Important Bird Area of Birdlife International, recognising key sites for bird conservation
IBPoW	Island Biodiversity Programme of Work
IPM	Integrated Pest Management
IS	Invasive Species
ISSG	Invasive Species Specialist Group of the Species Survival Commission of the IUCN
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
MMO	Marine Management Organisation
MPA	Marine Protected Area
MPI	New Zealand Ministry of Primary Industries
NBSAP	National Biodiversity Strategy and Action Plan
NEA	National Executing Agency of the GEF 6 RIP
NENS	Natural Enemies–Natural Solutions
NISC	National Invasive Species Coordinator
NZBS	New Zealand Biosecurity Services
TISSAP	Territorial Invasive Species Strategy and Action Plan
NNSS	Non-native Species Secretariat (of Great Britain)
NZBA	New Zealand Biosecurity Academy
OCT	(European Pacific) Overseas Counties and Territories

Acronym	Definition
PBIF	Pacific Biodiversity Information Framework
PestList (PLD)	Pacific islands PestList Database
PFP	Predator Free Pacific
PIAT	Pacific Invasive Ant Toolkit
PIER	Pacific Island Ecosystems at Risk – for plant risk assessment information
PIF	Pacific Islands Forum
PILN	Pacific Invasives Learning Network
PIP	Pacific Invasives Partnership
PIRT	Pacific Islands Roundtable for Nature Conservation
Plant Pono	Hawai'i-Pacific Ecosystems at Risk website for plant risk assessment information
PMBT	Pacific Marine Biosecurity Toolkit
POI	Protect our Islands
PoWPA	Programme of Work on Protected Areas
PRISMSS	Pacific Regional Invasive Species Support Service
PROTÉGÉ	Pacific Territories Regional Project for Sustainable Ecosystem Management
RERC	Resilient Ecosystems, Resilient Communities
RSPB	Royal Society for Protection of Birds
SOPs	Standard Operating Procedures
SPC	(Secretariat of the) Pacific Community
SPREP	Secretariat of the Pacific Regional Environmental Programme
SSC	Species Survival Commission of IUCN
UKOT	United Kingdom Overseas Territory
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
WDPA	World Database on Protected Areas
WOW	War on Weeds

Species referred to in the document

The following species are referred to in the TISSAP, and the list does not cover all species present, which can be found in PBIF. Species are present in Pitcairn unless otherwise indicated. Invasive species presence (on one or more of the Pitcairn Group islands) was initially derived from the draft ISSG assessment (Pagad 2023), [Birdlife](#) searches (text accounts) and reviewed during the TISSAP creation. The invasive species listed as absent are limited to the priorities identified by Malumphy et al. (2019) and Dawson et al. (2023), together with regional priorities.¹ Absence of priority ants was derived from Gruber et al. (2019).²

English name	Common name Pitcairn	Scientific name	Status in Pitcairn Group
MICRO-ORGANISMS			
Bee diseases		American foulbrood disease – caused by the bacterium <i>Paenibacillus larvae</i> Deformed wing disease – caused by the <i>Deformed Wing Virus</i> <i>Nosema apis</i> and <i>Nosema ceranae</i> – microsporidia Chalkbrood disease – caused by the fungus <i>Ascosphaera apis</i> Sacbrood disease – caused by the <i>Sacbrood Virus</i> ³	invasive, absent
PLANTS			
Devil's Horsewhip	Crocus Stuff	<i>Achyranthes aspera</i>	invasive
Candlenut	Dudwi	<i>Aleurites moluccanus</i>	invasive
	Nehe	<i>Angiopteris chauliodonta</i>	endemic
White Bladderflower		<i>Araujia sericifera</i>	invasive, absent
Asparagus Fern		<i>Asparagus densiflorus</i>	invasive, absent
Napoleon's Plume	Our Tree for Johnny	<i>Bauhinia monandra</i>	introduced
	Hattie	<i>Bauhinia purpurea</i> ⁴	introduced
		<i>Bidens henderonensis</i> var. <i>oenoensis</i>	endemic
Yellow Nickerbean	Taatramoe	<i>Caesalpinia major</i>	native?
Indian Shot	Indian Shot	<i>Canna indica</i>	invasive
Balloon Vine		<i>Cardiospermum grandiflorum</i>	invasive, absent
Siny Burr Grass	Grab-a-leg	<i>Cenchrus echinatus</i>	invasive
Butterfly Pea	Sweet Pea	<i>Centrosema pubescens</i>	invasive
	Red Berry	<i>Coprosma benefica</i>	endemic
Kerosene Tree	Tau	<i>Cordia subcordata</i>	native
Purple Pampas Grass		<i>Cortaderia jubata</i>	invasive, absent
Pampas Grass		<i>Cortaderia selloana</i>	invasive, absent
Matira	Jessamy	<i>Cyclophyllum barbatum</i>	native
Merremia		<i>Decalobanthus peltatus</i> ⁵	invasive, absent

¹ From the Pacific Invasive Ant Toolkit and Pacific Marine Biosecurity Toolkit.

² All invasive ants were confirmed as regional priorities at the Pacific Ecological Security Conference in Palau in 2022 (together with Coconut Rhinoceros Beetle and biological control for invasive plants and animals), and so all the priority species from the Pacific Invasive Ant Toolkit are included here. Some of the ants were not included in the Malumphy et al. (2019) FERA list, but were included in Dawson et al. (2023)

³ The diseases listed here are only those present in New Zealand, which is the major source of risk

⁴ Both species are present, but only *Bauhinia purpurea* is referred to as Hattie and used for crafts

⁵ Formerly *Merremia peltata*

English name	Common name Pitcairn	Scientific name	Status in Pitcairn Group
Creeping Beggarweed	Creeping Sticky Seed	<i>Desmodium incanum</i>	invasive
Devil's Ivy/Golden Pothos	Martha Bush	<i>Epipremnum aureum</i>	invasive
Rubber Fig	Rubber Tree	<i>Ficus elastica</i> ⁶	invasive
Yellow Ginger		<i>Hedychium flavescens</i>	invasive, absent
Blue Morning Glory	Morning Glory	<i>Ipomoea indica</i>	invasive
Hyacinth Bean	Wild Beans	<i>Lablab purpureus</i>	invasive
Lantana	Lantana	<i>Lantana camara</i>	invasive
Leadtrees/Leucaena		<i>Leucaena leucocephala</i>	invasive
Molasses Grass		<i>Melinis minutiflora</i>	invasive ⁷
Velvet Tree		<i>Miconia calvescens</i>	invasive, absent
Koster's Curse/Soapbush		<i>Miconia crenata</i> ⁸	invasive, absent
Swiss Cheese Plant	Monstera	<i>Monstera deliciosa</i>	invasive
Mexican Feathergrass		<i>Nasella tenuissima</i>	invasive, absent
Passionflower	Passionfruit	<i>Passiflora</i> spp. (<i>P. edulis</i> , <i>P. laurifolia</i> , <i>P. maliformis</i> , <i>P. quadrangularis</i>)	invasive
Strawberry Guava	Red Gwawa	<i>Psidium cattleianum</i>	invasive
Guava	Gwawa	<i>Psidium guajava</i>	invasive
Sweet Susie	Hard Jessamy	<i>Psydrax odoratum</i>	native
Castor Bean	Casta Vine	<i>Ricinus communis</i>	invasive
Coffee Senna		<i>Senna occidentalis</i>	introduced ⁹
Hooked Bristlegrass	Fox-tail Grass	<i>Setaria 10mericanum</i> ^{10e}	invasive
Arrow-leafed Sida/Teaweed	Big Jack	<i>Sida rhombifolia</i>	invasive
American Black Nightshade		<i>Solanum 10mericanum</i>	invasive
Black Nightshade	Obru	<i>Solanum nigrum</i>	invasive
Sow Thistle	White Stuff	<i>Sonchus oleraceus</i>	invasive
Johnson Grass	Alwyn Grass	<i>Sorghum halepense</i> ¹⁰	invasive
Indian Dropseed	Cat's Tail	<i>Sporobolus indicus</i>	invasive
Arrowhead Vine		<i>Syngonium auritum</i>	invasive
Rose-apple	Rose-apple	<i>Syzygium jambos</i>	invasive
Miro	Miro	<i>Thespesia populnea</i>	native
Inchplant	Wandering Jew	<i>Tradescantia zebrina</i>	invasive
ANTS			
Yellow Crazy Ant		<i>Anoplolepis gracilipes</i>	invasive, absent
African Big-headed Ant		<i>Pheidole megacephala</i>	invasive, absent
Tropical Fire Ant		<i>Solenopsis geminata</i>	invasive, absent
Red Imported Fire Ant		<i>Solenopsis invicta</i>	invasive, absent
Singapore Ant		<i>Trichomyrmex destructor</i> ¹¹	invasive, absent
Little Fire Ant		<i>Wasmannia auropunctata</i>	invasive, absent

⁶ *Ficus prolixa*, locally Banyan, is present at several sites but not considered invasive

⁷ Recorded as absent on the ISSG list, but "Kaikui grass" reported by the community was identified using Google Lens as a *Melinis repens*, which could instead be Molasses Grass (the only *Melinis* sp on the priority list for prevention), but requires identification to be confirmed

⁸ Formerly *Clidemia hirta*

⁹ Presence uncertain

¹⁰ Recorded locally as *S. sudanense*

¹¹ Formerly *Monomorium destructor*

English name	Common name Pitcairn	Scientific name	Status in Pitcairn Group
OTHER INSECTS/INVERTEBRATES			
Lesser/Greater Wax Moth	Wax Moth	<i>Achroia grisella/Galleria mellonella</i>	invasive
Yellow Fever Mosquito		<i>Aedes aegypti</i>	invasive
Tiger Mosquito		<i>Aedes albopictus</i>	invasive, absent
Giant African Snail		<i>Achatina fulica</i>	invasive, absent
Marsh Mosquito		<i>Anopheles spp.</i>	invasive
Oriental Fruit Fly		<i>Bactrocera dorsalis</i>	invasive, absent
Queensland Fruit Fly		<i>Bactrocera tryoni</i>	invasive
Tobacco Whitefly		<i>Bemisia tabaci</i>	invasive, absent
Mediterranean Fruit Fly		<i>Ceratitis capitata</i>	invasive
Mosquito		<i>Culex quinquefasciatus</i>	invasive, absent
Rosy Wolfsnail		<i>Euglandina rosea</i>	invasive, absent
Green Vegetable Bug	Green Back Beetle	<i>Nezara viridis</i>	invasive
Coconut Rhinoceros Beetle		<i>Oryctes rhinoceros</i>	invasive, absent
Diamondback Moth		<i>Plutella xylostella</i>	invasive, absent
Fall Armyworm		<i>Spodoptera frugiperda</i>	invasive, absent
Beet Webworm	White Moth	<i>Spoladea recurvalis</i>	invasive
Varroa Mite		<i>Varroa destructor</i>	invasive, absent
German Wasp		<i>Vespula germanica</i>	invasive, absent
Common Wasp		<i>Vespula vulgaris</i>	invasive, absent
REPTILES/AMPHIBIANS			
Brown Tree Snake		<i>Boiga irregularis</i>	invasive, absent
Green Turtle		<i>Chelonia mydas</i>	native
Leatherback Turtle		<i>Dermochelys coriacea</i>	native
Hawksbill Turtle		<i>Eretmochelys imbricata</i>	native
Asian House Gecko		<i>Hemidactylus frenatus</i>	invasive, absent
Plague Skink/Rainbow Skink		<i>Lampropholis delicata</i>	invasive, absent
Mourning Gecko		<i>Lepidodactylus lugubris</i>	introduced
New Zealand Common Skink		<i>Oligosoma polychroma</i>	absent
Cane Toad		<i>Rhinella marina</i>	invasive, absent
Raukawa Gecko		<i>Woodworthia maculata</i>	absent
MAMMALS			
Feral Dog		<i>Canis lupus familiaris</i>	invasive, absent ¹²
Domestic Goat		<i>Capra hircus</i>	invasive
Feral House Cat		<i>Felis catus</i>	invasive
Indian Grey Mongoose		<i>Herpestes javanicus</i>	invasive, absent
House Mouse		<i>Mus musculus</i>	invasive, absent
Pacific Rat		<i>Rattus exulans</i>	invasive
Brown Rat/Norway Rat		<i>Rattus norvegicus</i>	invasive, absent
Black Rat/Ship Rat		<i>Rattus rattus</i>	invasive, absent
Asian Rat		<i>Rattus tanezumi</i>	invasive, absent
BIRDS			

¹² Only two domestic dogs are present on Pitcairn, both neutered, well cared-for, living with one family, and not roaming

English name	Common name Pitcairn	Scientific name	Status in Pitcairn Group
Jungle Myna		<i>Acridotheres fuscus</i>	invasive, absent
Common Myna		<i>Acridotheres tristis</i>	invasive, absent
Henderson Reed-warbler	Sparrow	<i>Acrocephalus taiti</i>	endemic
Pitcairn Reed-warbler	Sparrow	<i>Acrocephalus vaughani</i>	endemic
Greater Frigatebird	Hawk	<i>Fregata minor</i>	native
White Tern ¹³	White/Fairy Tern	<i>Gygis alba var. leucopes</i>	native
House Finch		<i>Haemorhous mexicanus</i>	invasive, absent
Eurasian Tree Sparrow		<i>Passer montanus</i>	invasive, absent
House Sparrow		<i>Passer domesticus</i>	invasive, absent
Red-tailed Tropicbird	Tropicbird	<i>Phaethon rubricauda</i>	native
Henderson Crake	Chickenbird	<i>Porzana atra</i>	endemic
Phoenix Petrel		<i>Pterodroma alba</i>	native
Bermuda Petrel	Cahow	<i>Pterodroma cahow</i>	native
Herald Petrel		<i>Pterodroma heraldica</i>	native
Kermadec Petrel		<i>Pterodroma neglecta</i>	native
Galápagos Petrel	Dark-rumped Petrel	<i>Pterodroma phaeopygia</i>	native
Murphy's Petrel	Ghostbird/Putuputu	<i>Pterodroma ultima</i>	native
Henderson Fruit-dove		<i>Ptilinopus insularis</i>	endemic
Christmas Shearwater		<i>Puffinus nativitatis</i>	native
Red-vented Bulbul		<i>Pycnonotus cafer</i>	invasive, absent
Masked Booby	Gannet	<i>Sula dactylatra</i>	native
Red-footed Booby	Austen	<i>Sula sula</i>	native
Blue-footed Booby	Austen	<i>Sula nebouxii</i>	native
Henderson Lorikeet	Parakeet	<i>Vini stepheni</i>	endemic
MARINE SPECIES			
Crown-of-thorns Starfish		<i>Acanthaster planci</i>	native, absent
Sei Whale ¹⁴		<i>Balaenoptera borealis</i>	native
Blue Whale		<i>Balaenoptera musculus</i>	native
Fin Whale		<i>Balaenoptera physalus</i>	native
Killer Algae		<i>Caulerpa taxifolia</i>	invasive, absent
Southern Right Whale		<i>Eubalaena australis</i>	native
Humpback Whale		<i>Megaptera novaeangliae</i>	native
Black-striped Mussel		<i>Mytilopsis sallei</i>	invasive, absent
Mediterranean Mussel		<i>Mytilus galloprovincialis</i>	invasive, absent
Asian Green Mussel		<i>Perna viridis</i>	invasive, absent
Lionfish		<i>Pterois spp.</i>	native

¹³ Also referred to as Fairy Tern by [BirdLife](#), a name commonly used for another species, *Sternula nereis*, which is absent from Pitcairn

¹⁴ Blue, Fin, and Sei Whales are rare visitors to Pitcairn Island but are present in the wider EEZ

1 Introduction

Biodiversity is a term that describes the number and diversity of the different plants, animals, and other living things within our environment. Biodiversity is a key factor in natural resilience to the impacts of environmental change. All species contribute to environmental resilience, including those that are naturally common and those that are rare.

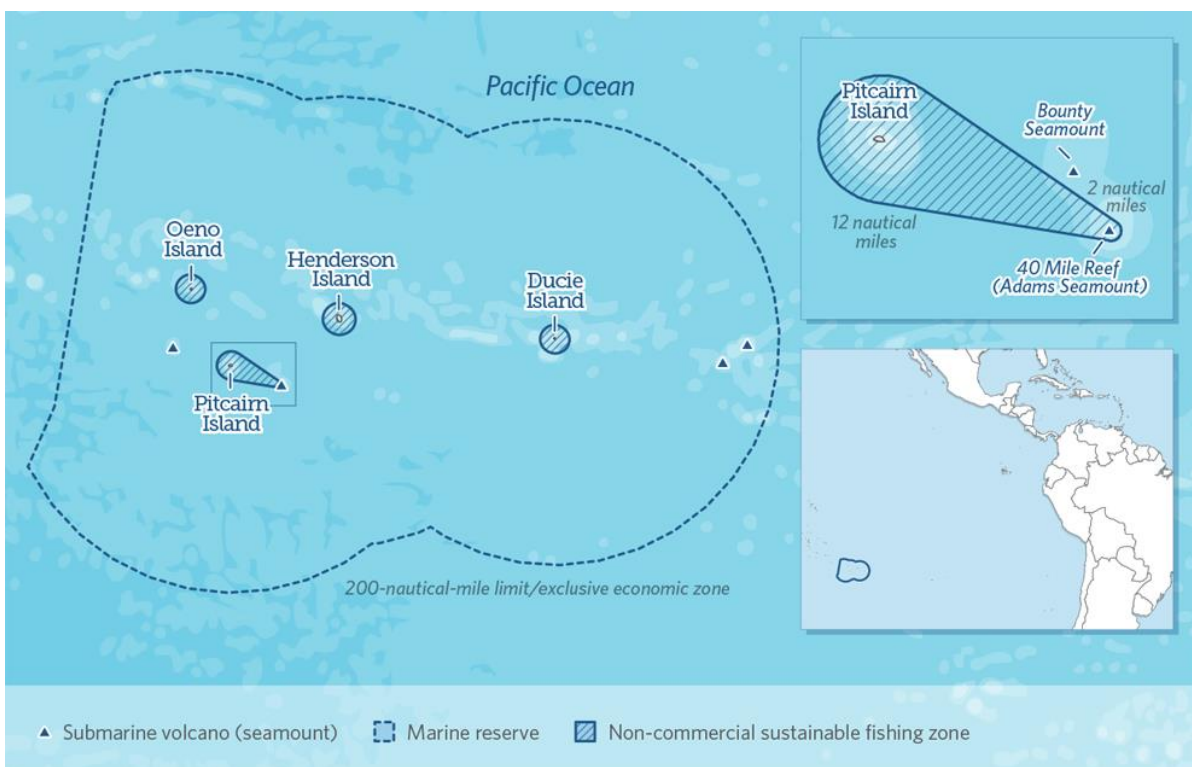
Natural biological communities have evolved over thousands or millions of years and have resulted in adaptations to local conditions that make these species resilient to natural environmental change. This community of native species contributes to ecosystem functioning, and together provides the ecosystem services that we rely on. These services include provisioning (such as food, fuel, raw materials, or medicines), regulating (such as clean water and air, climate regulation and flood protection, waste decomposition, and biological pest and disease control), supporting (such as nutrient cycling), and cultural services (such as spiritual and heritage value, recreation, and science).

When ecosystems are disturbed or disrupted, due to habitat modification, overharvesting, or invasive species, their function is affected, the benefits they offer decline, and resilience to further change is reduced.

In this time of unprecedented global environmental change, protecting biodiversity is more important than ever to ensure we can retain the benefits of the natural world on which all our lives depend.

1.1 Introduction to Pitcairn

One of the most remote inhabited places in the world, Pitcairn is a group of four volcanic islands in the southern Pacific Ocean: Pitcairn, Henderson, Ducie and Oeno. The four islands are scattered across several hundred kilometres and have a combined land area of about 47 km². Henderson Island makes up 86% of the land area, but only Pitcairn Island is inhabited. The nearest islands are Mangareva (French Polynesia) 688 km to the west and Easter Island (Chile) 1,929 km to the east.



Above: The islands of Pitcairn and their location in the Pacific Ocean. Image courtesy of Pitcairn Islands Tourism: <https://www.visitpitcairn.pn/the-islands>



Map of Pitcairn Island including locations mentioned in the TISSAP. Image courtesy of Pitcairn Islands Tourism: Image courtesy of [mapsland.com](https://www.mapsland.com)

1.1.1 History and population

The earliest known settlers were Polynesians who lived on Pitcairn and Henderson, as well as Mangareva, for several hundred years from as early as the 11th century. The three island communities traded and maintained social connections, which helped the small populations survive despite limited resources. Eventually, conflict caused the small populations on Henderson and Pitcairn to become isolated and eventually die out some time in the 15th century.

A few European sailing expeditions sighted or visited the Pitcairn islands over the subsequent centuries, but the islands remained uninhabited until the late 18th century. The current Pitcairn Islanders (Pitkerners) are a unique ethnic group who are mainly descendants of nine British sailors from the HMS Bounty and 18 Tahitian men, women, and an infant, who settled on Pitcairn Island in 1790. The Bounty story has been the subject of many books and films, often romanticising what was undoubtedly a challenging environment to establish a community in.

Pitcairn Island became a British colony in 1838 and was one of the first territories where women had voting rights. Subsequent rapid growth resulted in the entire population (~194 people) moving to Norfolk Island in 1856. Within five years Pitcairn was resettled from Norfolk. Current Norfolk Islanders trace their origins to these settlers from Pitcairn. Pitcairn and Norfolk developed their own related English-Tahitian creole language.

Henderson, Oeno and Ducie were annexed by Britain in 1902 and in 1938 they, along with Pitcairn, were incorporated as the Pitcairn Group of Islands. The population peaked at 233 in 1937, and has since decreased to 47, primarily due to emigration to Australia and New Zealand. Pitcairn has an aging population, and working islanders have multiple jobs. The resources available, and the capacity to undertake additional work, is extremely limited. Any new projects will need to be externally supported (both financially, and with labour, expertise, and project management).

1.1.2 Environment

The Pitcairn Islands form the southeasternmost end of the of the Tuamotu archipelago (French Polynesia). Pitcairn Island is a high, rocky volcanic remnant, Henderson is a large, raised coral island and Oeno and Ducie are atolls, each with several islets.

The islands experience year-round warm weather. Average daily mean temperature is 21°C, with highs of 33°C, and lows of 10°C. Average annual rainfall is 1542mm. Pitcairn Island has no permanent water source, although it has three seasonal springs. Henderson also has little fresh water.

A dynamic geological history, isolation and lack of habitation have contributed to the Pitcairn Island group's distinctive, fragile, and diverse terrestrial ecosystems.

The Pitcairn Islands Group lies at the edge of the South Pacific subtropical gyre. The action of the gyre contributes to the South Pacific garbage patch, an area of ocean where marine debris and plastic particle pollution is entrained (Leal Filho et al. 2021). As a result, Henderson is burdened with a deluge of rubbish, which poses a significant threat to marine animals.

Pitcairn Island is an Important Bird Area (IBA), home to the globally vulnerable Pitcairn Reed-warbler, as well as a range of native and endemic plants. There are a range of threats to the environment and biodiversity, including invasive plants, rats, and cats.

Henderson Island is one of the world's most intact elevated coral atoll ecosystem. Because of its relative remoteness, it has suffered less human disturbance than many other raised coral atolls. Consequently few invasive species are found on Henderson Island. The island's birdlife is important, with four endemic land birds, as well as other endemic plants and animals. Henderson also has significant numbers of three species of gadfly petrels, White/Fairy Terns, and small populations of other, cosmopolitan tropical seabirds.

In 1988, Henderson Island was designated a UNESCO World Heritage site, due to its pristine marine and terrestrial environment and large number of endemic terrestrial species.

Like Henderson, Ducie and Oeno are home to important gadfly petrel populations, as well as several other seabird and migrant bird species that are threatened or vulnerable. 80% of the global population of Murphy's Petrel nest on the islands. As with most atolls, the plant diversity is relatively low, with most species found throughout the Pacific.

Marine life throughout the Pitcairn Group is diverse, with a variety of whales seasonally visiting. In 2016 the entire Exclusive Economic Zone (EEZ) of Pitcairn was declared a Marine Protected Area, one of the largest in the world.

The Pitcairn Islands Dark Sky Sanctuary *Mata ki te Rangi – Eyes To The Sky*, which encompasses all islands in the Pitcairn Islands Group, was established in 2018.

1.1.3 Economy

The Pitcairn Islands are a British Overseas Territory with a degree of local government via the Pitcairn Island Council. The 2010 Pitcairn constitution gives authority for the islands to operate as a representative democracy – the smallest population of any democracy in the world. Almost the entire population works for the Government of the Pitcairn Islands Public Service.

Despite, or perhaps because of, the challenging environment and small population Pitcairn's economy is relatively diverse. Pitcairn Island volcanic soils are highly productive and support a wide range of tropical and temperate crops.

Fish and seafood are plentiful in the seas around Pitcairn and are mostly taken for domestic consumption close off-shore. Commercial fishing is banned in the MPA, and there is satellite monitoring to watch for any illegal activity.

Pitcairn has one of the world's few disease-free honeybee populations and the honey produced is very high quality. Honey is an important export and income source.

Tourism is a focus for building the economy, with passengers arriving either on the MV Silver Supporter supply ship, or charter vessels, including yachts and small and large cruise ships. Goods such as crops, handicrafts and honey are sold to tourists on cruise ships, and sometimes traded for commodities. Providing accommodation is a growing income source.

Other sources of income include sales of coins and postage stamps to collectors. Historically this was an important income source, which has diminished as collecting has become less popular. Local crafts and curios, including carvings, tapa cloth and painted Hattie leaves, as well as the '.pn' domain name also contribute to the economy.

Oeno and Henderson have traditional cultural significance for camping and harvest of Miro and Tau, trees used for crafts and other wooden products. Although these visits are now rare, the handicrafts produced from Miro and Tau are an important source of income.

Despite the variety of economic activity in 2004 the territory suffered bankruptcy, and the British government now meets a large proportion of its annual budget. Pitkerners desire to maintain their autonomy as much as possible.

In the past the possibility of seabed mineral exploitation has been raised, but these activities are prohibited under the Pitcairn Islands Marine Protected Area Ordinance.

1.2 The significant threat of invasive species for Pitcairn

Invasive species cause harm across a wide range of human activities in Pitcairn and other Pacific island environments including:

- Food security
 - reduced crop yields (both quantity and quality);
 - food loss or damage in storage;
 - suppression or removal of natural resources such as land crabs and seabirds;
 - impacts to reef health and productivity; and
 - suppression of natural plant growth and regeneration.
- Health
 - increased incidence of specific diseases;
 - contamination of water supplies;
 - greater dependence on imported processed food – Increased risk of non-communicable diseases; and
 - injuries and deaths through bites, stings, and allergic reactions.
- Biodiversity
 - impacts to ecosystem processes, such as pollination, seed dispersal, forest regeneration, nutrient cycles and so on; and
 - suppression and removal of native species.
- Culture
 - lost resources leading to lost cultural practices; and
 - changing societal roles.

- Geomorphological
 - soil erosion; and
 - suppressed reef building and land accretion.
- Infrastructure
 - burrowing animals and roots of plants undermine roads and buildings; and
 - animals nesting in electrical systems causing outages and fires.

Invasive species are a major global threat to biodiversity and Pacific islands like Pitcairn are particularly vulnerable due to their isolation and relatively recent human occupation. Native species often cannot cope with predation or competition from new arrivals. Pitcairn already suffers from the impact of invasive species that have arrived in the country. However, there are many more devastating species that are not present in Pitcairn but found in other countries of the region, and every effort needs to be made to prevent their arrival.

In 2004, the IUCN published a selection of [100 of the World's Worst Invasive Species](#) (Lowe et al. 2004). Pitcairn fortunately only has five of the species on this list, but there are many more that could arrive if Pitcairn does not maintain strong border control.

1.2.1 Threats already within Pitcairn

A desktop survey (Pagad 2023; and Christian et al. 2023) documented 149 species introduced to the Pitcairn Group. Although not all these species will cause harm (in other words, be invasive), some carry a high risk.

The number of invasive species recorded for the territory varies by island. Almost all the invasive species recorded in the Territory are found on Pitcairn Island (146/149), while Henderson has only 14, five are found on Oeno, and none on Ducie.

Plants

Many areas of Pitcairn Island are dominated by introduced plants, notably Lantana, Rose-apple and invasive vines, all of which can threaten native plants. In 2005 Rose-apple and Lantana covered 40% of the island, and these two species were considered the worst invasive plant threats on the island (Kingston and Waldren 2005). In 2023, this remained true (Paynter 2023). Blue Morning Glory is also widespread, as are other vines and creepers. Priority localised weeds are Arrowhead Vine, Devil's Ivy, and Butterfly Pea, which is spreading. Strawberry Guava is present in limited areas, with the largest patch in the Outer Valley.

Henderson has 14 species of introduced plants, of which four are considered invasive (Devil's Horsewhip, Candlenut, Hooked Bristlegrass, and American Black Nightshade; Pagad 2023).

No invasive plants are recorded from Ducie, but several are recorded from Oeno, including Devil's Horsewhip, Rubber Fig, and Lantana (Pagad 2023).

Mammals

Pitcairn Island has populations of cats and Pacific Rats, and a few escaped domestic goats, while Henderson has only Pacific Rats.

Although rats were eradicated from Ducie and Oeno in the 1990s there is a potential threat of reintroduction from Pitcairn Island. However this risk is likely to be low as these islands are rarely visited, and biosecurity protocols are in place.

Eradication of rats on Henderson Island was attempted in 2011 (the largest tropical or sub-tropical island ever to be subject to a rat eradication operation), but unforeseen weather changes prevented

completion of the eradication. The eradication of Pacific Rat from Henderson and Pitcairn is currently under discussion, and likely to take place in 2026/27.

Insects and invertebrates

Several crop pests are present, including the Mediterranean and Queensland Fruit Fly, the Green Back Beetle/Green Vegetable Bug, White Moth/Beet Webworm, and an unidentified pest of root crops.

Wax Moth, which is a pest of beehives, is managed by Pitcairn's beekeepers through effective hive hygiene.

Although Pitcairn has several tramp ant species that are considered invasive, the five worst that have the most reported impacts are not reported to be present, and none were observed in 2023.

Marine species

Crown-of-thorns Starfish has been recorded (Irving and Dawson 2012), but not in large numbers. Although Crown-of-thorns can cause harm to the environment, this is through outbreaks that are driven by environmental change, and it is a native species. As the Pitcairn Group is so pristine, the marine environment may be relatively safe from Crown-of-thorns outbreaks. In other countries, management involves physical removal when outbreaks occur.

No other potential marine invasives have been recorded from the Pitcairn Group.

1.2.2 Impacts of invasive species in Pitcairn

Section 7 outlines current and past management programmes and Annex 1 describes the priority invasive species within Pitcairn and their management.

Pitcairn

The Pitcairn Reed-warbler persists despite the presence of Pacific rats and domestic cats. However, the Rose-apple appears to provide suitable habitat for the Reed-warbler.

The reduction or removal of seabird populations by rats and cats has widespread effects on terrestrial and marine ecosystems throughout the region because these species supply much needed nutrients to forests and nearshore reefs (Graham et al. 2018).

Some areas of Pitcairn Island are dominated by introduced vegetation, notably Lantana and Rose-apple, both of which threaten native plants. Rose-apple, Lantana, and other invasive plants pose a threat to endemic plant species, some of which have a limited range and low numbers. These invasive plants could all contribute to erosion, but Rose-apple is of particular concern.

As noted by Birdlife International "While the Rose-apple has not yet invaded the southern flank of Pitcairn, this will probably happen in due time if not prevented. Ideally, the best pockets of native vegetation should be weeded periodically, for example in Faute Valley and Tautama. Funding for the labour involved is required... Since little grows underneath Rose-apple, wholesale clearance would undoubtedly be accompanied by loss of topsoil and erosion."

Pitkerners value Rose-apple as a source of nectar for bees and habitat for the Reed-warbler, and Lantana as a soil-enhancer in gardens. However, Pitkerners also acknowledge the harm that widespread distribution of these plants can cause.

The Mediterranean Fruit Fly is a pest of Citrus and managed by pheromone trapping to reduce the number of breeding male flies. The Queensland Fruit Fly damages a wide variety of fruits and is a concern for Pitkerners. The Green Back Beetle/Green Vegetable Bug damages tomatoes and other

fruiting plants. The White Moth/Beet Webworm damages cabbages and an unidentified soil insect damages potatoes and sweet potatoes.

Henderson

Although the impacts of rats on Henderson are not quantified, the recovery of seabird populations on Ducie and Oeno (as well as the same pattern seen in all other rat eradications) indicate they are likely to be having significant impacts on seabirds. Seabirds are an important part of island ecosystems, and reduction in their numbers has flow-on effects on inshore fisheries and reef-building. Strong seabird populations can enhance resilience to climate change.

In recent years, coconut has spread further in Henderson, threatening the native Miro and Tau trees, which are valued for crafts. Reports have suggested that coconut be reduced or restricted from Henderson to reduce this impact (Warren 2023). An additional benefit of coconut management is that, depending on timing, it could assist with eradication of rats by reducing an alternative food resource. However, as there is no water on Henderson, the coconuts also provide a source of liquid for visitors.

Ducie and Oeno

No invasive species impacts recorded. Seabird populations have recovered since rat eradications, and the islands are now regionally important nesting sites.

1.2.3 Potential threats to Pitcairn

From a biosecurity perspective, Pitcairn is fortunate that it has relatively few external pathways – the key transport linkage being with New Zealand (see Pathways section 5 for details). Currently, the transport vessel the Silver Supporter only berths in Tauranga, limiting risk. Cargo is only imported from New Zealand, and the traffic from Mangareva is passengers and their personal baggage.

The low biosecurity risk is further mitigated by the lack of landing opportunities on the Pitcairn Islands, with goods transported from ships by longboat.

Recent horizon scanning consensus work identified more than 30 species that are priority threats to Pitcairn (Malumphy et al. 2019; Key 2019 and Dawson et al. 2023).

Argentine Ants and Varroa Mite are found in New Zealand, and both cause harm to honeybee hives. Argentine Ants are found in many places in New Zealand and could arrive in Pitcairn without effective biosecurity.

Several other species of invasive ants including Yellow Crazy Ants and African Big-headed Ants are present in the Gambier Islands (Gruber et al. 2019). Yellow Crazy Ant is well known for its population explosions and impact on Christmas Island (Australia), where it has changed the entire forest community (O’Dowd et al. 2003). Both species have been implicated in extinctions of native species (Gruber et al. 2022).

Little Fire Ants are fortunately not found in the Gambier islands. However, there is a persistent risk as they are found in other parts of French Polynesia, and could, along with Red Imported Fire Ants be transported by yachts travelling across the Pacific from the Caribbean and United States.

Other species in French Polynesia include the predatory Rosy Wolfsnail, which is a threat to native and endemic snails, and the Oriental Fruit Fly, a threat to many fruit crops.

Other serious invasive species are much less likely to arrive. These are not present in the New Zealand-Pitcairn transport route, which limits the risk. But if they do arrive, they could be devastating.

Examples of threats from more distant Pacific island countries include Brown Tree Snake which is thought to have caused the extinction of 10 of the 12 native landbird species in Guam (Rodda and

Savidge 2007). Many other snakes occur around the Pacific rim and are found in the sea container pathway.

The Indian Grey Mongoose is of particular concern to the Pacific region, with four recent incursions documented. Mongoose have been found several times in shipping containers across the region.

Asian fishing vessels often carry snakes and rats, such as the Asian rat, which devastated wildlife in the McKean Island in the Phoenix Group of Kiribati before it was eradicated (Pierce 2013). The rat arrived through a fishing trawler shipwreck. While of low risk because of the total ban on fishing in the MPA/EEZ, such a wreck at Ducie or Oeno could be disastrous for local wildlife, as the impacts of Asian rats are much greater than Pacific rats.

Marine invasives are much less well known, but there is a low level of marine traffic in the Pitcairn EEZ. The UK's Marine Management Organisation, as part of the Blue Belt Programme, monitors by satellite for potential illegal fishing activity, and therefore the risk of new marine species arriving is likely to be relatively low.

The threat profiles of these species change, and so need to be revised from time to time. For example, if Red Imported Fire Ants are found in Tauranga, this will increase their threat to Pitcairn.

Annex 2 describes the priority invasive species to prevent from establishing in Pitcairn.

1.2.4 Changes in impacts due to climate change

Climate change has been described as an existential problem for some Pacific island countries and territories (Connell 2016, Pasisi 2019). The direct environmental impacts of climate change include warmer average temperatures (including freshwater, ocean, and lagoon habitats), changes in weather (notable for the Pacific is an increase in frequency of high-intensity cyclones and a reduction in low-intensity cyclones), shifts in seasonal rainfall, rising sea levels, and salination. All these primary impacts have far-reaching secondary consequences that are difficult to predict. Currently Pitcairn experiences few cyclones or extreme weather events, but changing climate patterns might change that in future.

While we are still learning about the impacts of climate change, we do know some of the effects that may occur on invasive species already present, including:

- disturbance to natural and human infrastructure provides opportunities for invasive species to spread;
- increased intensity and frequency of extreme weather events may affect society's ability to respond to invasive species threats; and
- native species are typically ill equipped to adapt to a changing climate. Invasive species may benefit from change.

The impacts of invasive species may become more severe if new climate conditions are more favourable for invasive species, the risks of others could lessen, but even currently harmless introduced or native species distributions and their interactions in the environment may change.

A recent study considered that Pitcairn will be particularly at risk from climate change due to strengthening of the South Pacific Gyre and other changes that will impact species, ecosystems, food webs and dependent communities among the four islands (Johnson et al. 2021).

1.3 Invasive species – everyone's responsibility

The movements of people, and their goods and supplies, are the key pathways by which invasive species reach a country. The behaviour of all people is the key to the prevention and management of invasive species. People need to avoid bringing 'risk' goods into the country, such as plant material including

seeds, soil (even on footwear), and so on. If someone sees a plant overseas that they would like to grow in Pitcairn, they must follow the territory's biosecurity requirements.

Even if biosecurity inspections have occurred, if people receive a container of goods, or deck cargo such as a vehicle or timber, they should check it very carefully when they get it home and alert the Environmental, Conservation & Natural Resources Department (ECNR) if any live animals/insects, or their eggs, are found. Ideally, people will be watchful in and around homes, gardens, and forests for any unusual animals or plants or for trees with leaves being eaten or dying over large areas. Residents are often the first to notice the arrival of a new plant disease or insect pest. Detecting such arrivals early is the key to eradicating a new invasive species and potentially saving Pitcairn millions of dollars or, worse, the loss of biodiversity.

[iNaturalist](#) is a social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe. It enables residents and visitors to actively take part in biodiversity monitoring. iNaturalist can be used as an 'early warning system' for new invasive species observed within Pitcairn, freely by anyone with access to a smartphone or computer.

Invasive species are an international issue with an emphasis on preventing them moving from one country to another. Several international and regional organisations undertake coordinating roles, there are international regulations, and countries that trade with each other work in close cooperation.

1.4 Biodiversity at risk in Pitcairn

The Pitcairn Group's diverse geological, ecological, and human history have contributed to very different footprints of biodiversity on the four islands.

Gadfly petrels have important sanctuaries on Ducie, Henderson and Oeno. Most of the world population of Henderson Petrels and over 90% of the world population of Murphy's nest in the Pitcairn Group.

More than 350 fish species have been recorded around Pitcairn, with several endemic inshore fish. The ocean around Pitcairn has around 400 seamounts which are important habitat for many deep-sea fish and invertebrates. Twenty-two species of whales, dolphins and porpoises are found in the area, including Blue, Sei, Fin, and Humpback Whales.

Pitcairn

Although Pitcairn Island is heavily modified, it retains important endemic species and other environmental values. The island is the only breeding site of the globally vulnerable Pitcairn Reed-Warbler. Although the Pitcairn Reed-Warbler does not seem to be affected by the rats and feral cats on Pitcairn, there is risk to seabirds. Most seabirds breed only on inaccessible cliffs in small numbers.

Pitcairn Island is also important for plant diversity, with 80 native species, 10 of which are endemic, and 51 of which are threatened. The species of most concern are the endemic Red Berry Tree, and the endemic Nehe fern, which are restricted to small, fragmented populations. Other native species such as Matira and Sweet Susie are rare. More than half of the native plant species on Pitcairn are either threatened or likely to be so.

Eight of Pitcairn Island's 26 species of land snails are endemic, and three survive only in small remnants of native vegetation (Birdlife International 2023). They are under threat from non-native plants invading their habitat, which could lead to their extinction.

Henderson

Henderson Island is a World Heritage Site, and its birdlife is considered globally important. All four land birds there (Henderson Crake, Henderson Fruit-Dove, Henderson Lorikeet, and Henderson Reed-warbler) are endemic, and their populations appear to be stable.

As well as the gadfly petrels, Henderson has a large population of White/Fairy Terns and small populations of cosmopolitan tropical seabirds. Heavy predation of seabird chicks by Pacific rats is a major threat. The relatively high numbers of seabirds indicate that either the populations are in long-term slow decline or are being sustained by immigration.

Like Pitcairn Island, Henderson has a relatively high number of endemic species, but relatively low diversity overall. Seven of 16 land snail species and nine of 63 plant species are endemic to Henderson and are widespread across the island. In contrast to Pitcairn, less than 20% of the plant diversity of Henderson is threatened. Approximately 180 insect species are known, but this is likely an underestimate (Birdlife International 2023).

Seasonal visitors include Green, Leatherback and Hawksbill Turtles that nest on the islands and overwintering Bristle-thighed Curlews.

Ducie and Oeno

Ducie is the world's main breeding site for Murphy's Petrel, and many other seabirds are found in variable numbers on the atolls, including the Herald, Kermadec and Phoenix Petrels, Red-tailed Tropicbird, Masked Booby, Red-footed Booby, Greater Frigatebird and White Tern. Ducie is also home to around 5% of the world's Christmas Shearwaters.

Oeno and Ducie have relatively low plant diversity with only two plant species recorded from Ducie. Oeno has an endemic variety of the daisy-like *Bidens henderonensis*, and like Henderson is an important wintering site for the Bristle-thighed Curlew. Oeno has many marine snail species (around 240), with some known only from the Pitcairn group, and one endemic to the atoll.

1.5 Why is a TISSAP needed?

There are many reasons to develop a TISSAP, but the key five reasons are outlined below.

Invasive species are a consistent threat to resources.

Invasive species continue to be a costly issue for all countries and particularly to island nations, and with increasing trade and movement of people between countries, the threat of new species arriving is increasing. A TISSAP can highlight the issue and bring it to the attention of national and international decision makers.

A TISSAP prioritises invasive species issues

Every country or territory is faced by a wide range of invasive species causing various degrees of damage, many more than the territory has the capacity to address. Management has focused on plant and animal pests of the productive sector in the past and on direct threats to human health, but there has been growing recognition of impacts on native biodiversity and the environment.

A TISSAP can bring people in the different sectors and the wider community together to agree on the priorities.

Creating a TISSAP is a cross-sectoral and inclusive exercise

The management of invasive species involves many different organisations from government departments to non-governmental organisations (NGOs), farmers, fishermen and women, and island communities. This management effort has in the past been fragmented and uncoordinated.

The TISSAP seeks to address this problem by bringing all interested parties together around an agreed plan of priority actions, with clearly identified responsibilities and timeframes.

A TISSAP supports a coordinated approach

Managing invasive species involves many activities, including border control, awareness raising, research, monitoring, eradication, control, and risk assessment. A TISSAP allows appropriate prioritisation of the different elements and spread of resources across them.

A TISSAP identifies resources

There is always more work to be done than any Pacific island country can afford with its own resources, and Pitcairn is an extreme example with its very small, aging population. An endorsed TISSAP identifies that a country has been through a prioritisation process involving a full range of interested parties and that the government has endorsed its findings.

A TISSAP thus gives a funder a priority list of tasks that require funding and assurance that the country will commit the 'in-kind' support required to achieve successful outcomes.

1.5.1 PRISMSS supports the TISSAP implementation

The Pacific Regional Invasive Species Management Support Service ([PRISMSS](#)) is a coordinating mechanism to facilitate the scaling up of operational management of invasive species in the Pacific. PRISMSS brings together experts to provide support within the Pacific region with a focus on protection of indigenous biodiversity and ecosystem function. The goal is to reduce the ecological and socio-economic impact of invasive species on ecosystems through the management or eradication of prioritised species and the protection of valued sites.

PRISMSS supports the implementation of TISSAPs by:

- providing advice to foster on-the-ground-management actions including the development of new projects;
- helping lead the adoption and the development of best practice and innovation in the region;
- sharing technical information as far as practical for publication or training materials;
- providing training, coaching, and project planning support for project execution; and
- providing donors with customised and successful options.

PRISMSS currently provides technical support across five regional programmes for the Pacific region:

1. Protect our islands – “Prevent the arrival, establishment and spread of invasive species”

After an invasive species arrives in a new place, it needs to survive and reproduce, establish a population, and spread, before impacts are noticed. By the time impacts are obvious, the control or eradication of invasive species can be difficult and expensive or sometimes impossible. The purpose of this programme is to prevent or detect the arrival of invasive species and stop their establishment, spread and impacts.

The *clean boats, clean ports* framework guides the programme. The framework defines actions needed to detect the arrival and prevent the establishment and spread of invasive species within Pacific island countries and territories.

2. Predator free Pacific – “Removing Introduced Mammalian Predators from Islands”

Pacific islands connect land and sea. Invasive species such as rats alter ecosystems as they consume the seeds, plants, invertebrates, and seabirds that provide nutrients to forest systems and coastal waters. The prevention, control, and eradication of invasive predators are important strategies for supporting ecosystem-based adaptation to the effects of climate change. To date, more than sixty (60) Pacific islands have had predators removed.

3. War on weeds – “Management of High Priority Weeds”

Some invasive plants can transform (damage or destroy) ecosystem function. Weeds outcompete more desirable plant species and disrupt processes such as water flow, fire regimes, soil quality, nutrient cycling, and regeneration. Weeds can also be harmful to human and animal health. Weeds thrive on disturbance and so their harmful impacts are exacerbated by tropical cyclones, strong winds, drought, and fires, all of which are increasing in severity due to the changing climate. Although there are several existing weed management programmes across the Pacific, capacity overall is very limited. This programme is focused on the management of high risk, low distribution weed species, where the objective is eradication or containment.

4. Natural enemies – natural solutions – “Biological Control of Widespread Weeds”

Conventional control techniques can be useful when weeds are not yet common and to protect high-value sites. However, once weeds become widespread, the only safe, cost-effective, and sustainable way of tackling them is using natural enemies, which is known as biological control. This regional programme aims to lower the impact of widespread invasive plants by reducing their vigour by introducing safe natural enemies from the area where they, and their host plant, originate. This technique has been used safely and successfully worldwide, including the Pacific, to manage weeds for more than 100 years. Natural enemies have been established on more than 30 weed species in 17 countries in the Pacific, and there are many opportunities both for spreading existing agents available in the Pacific to new countries, from introducing agents available outside the Pacific, and through developing new options for the Pacific.

5. Resilient ecosystems – resilient communities – “Priority Area Ecological Restoration”

Pacific threatened species and ecosystems often exist within high-value areas on larger islands where invasive animals and invasive plants will continue to be a threat. A site-led approach to manage multiple invasive species and re-introduce lost native species and ecosystem structure over a longer period is the last remaining option to restore and maintain these ecosystems. Communities directly benefit from resilient ecosystems and are an essential part of ecological restoration. Many priority area ecosystems have been restored over the past 3 decades, mostly in New Zealand. The Pacific has had several pilot sites which have had very successful outcomes with increases in threatened endemic birds.

1.6 Process of Pitcairn’s TISSAP development

A TISSAP is informed by the regional guidelines produced by SPREP and SPC, whose goal is “to assist Pacific island countries and territories in planning the effective management of invasive species, thereby reducing the negative impacts of invasives on their rich and fragile native heritage, communities and livelihoods” (SPREP 2009). Together with background information to provide context, the focus of the TISSAP is on the Action Plan, which is organised according to the three thematic areas of the guidelines: Foundations, Problem Definition, Prioritisation, and Management Action.

This is Pitcairn’s first TISSAP and its development is supported within the EDF11 PROTÉGÉ (“Pacific Territories Regional Project for Sustainable Ecosystem Management” or “protect” in French), an initiative designed to promote sustainable and climate-change-resilient economic development in the European Pacific overseas countries and territories by emphasising biodiversity and renewable resources. SPREP is the implementing and executing agency.

The development of the TISSAP began with a review of existing information from earlier and ongoing projects. A draft TISSAP was developed for consultation and review by the Pitcairn government and community and UKOT stakeholders in September/October and December 2023 (see Annex 4).

2 Linkages of the TISSAP to other strategies

This section reviews other Government strategies and policies that address invasive species and the sectoral plans of the key agencies involved. The actions identified in this TISSAP should be considered when strategies and plans next revised.

2.1 Territorial strategies

Invasive species can have impacts on agricultural, forestry and fisheries sectors, may spread or have increased impacts because of climate change, and are at higher risk of entering the country during the response to a natural disaster (such as a cyclone). It is hoped that the TISSAP will be referred to during the development of strategies and plans within these sectors.

Pitcairn Islands Strategic Development Plan

The Pitcairn Islands Strategic Development Plan (2014-2018) four key objectives are:

1. developing fisheries for local demand (creating a sustainable fisheries management plan);
2. improving environmental management;
3. protecting the island's biodiversity; and
4. climate change.

The plan recognises that protecting the environment for future generations is increasingly important.

Environmental Planning

Currently an overarching plan for the Environment sector is being discussed by the Government of the Pitcairn Islands, which would encompass plans such as the TISSAP, Marine Management Plans and other future developments.

2.2 Regional strategies and United Kingdom Overseas Territory strategies

Framework for Nature Conservation and Protected Areas in the Pacific Islands Region 2021-2025

The [Framework](#) provides guidance for the region on key priorities for biodiversity conservation and ecosystem management with linkages to the global Aichi Biodiversity Targets and National Biodiversity Strategies and Action Plans (NBSAPs).

Guidelines for Invasive Species Management in the Pacific (endorsed 2009) and revised as The Guiding Framework for Invasive Species Management in the Pacific 2023)

The goal of the Guidelines is to assist Pacific island countries and territories in planning the effective management of invasive species, thereby reducing the negative impacts of invasives on their rich and fragile natural heritage, communities, and livelihoods. The guidelines were [revised and endorsed](#) by SPREP member governments in October 2023. Due to timing, this TISSAP follows the 2009 guidelines.

UK Government 25 Year Environment Plan

The 25 Year Environment Plan's goals for improving the environment within a generation and leaving it in a better state than we found it. It details how we in government will work with communities and businesses to do this. The plan has specific goals and targets for ten environmental benefits and pressures :

1. Clean air
2. Clean and plentiful water
3. Thriving plants and wildlife

4. Reducing the risks of harm from environmental hazards
5. Using resources from nature more sustainably and efficiently
6. Enhancing beauty, heritage and engagement with the natural environment
7. Mitigating and adapting to climate change
8. Minimising waste
9. Managing exposure to chemicals
10. Enhancing biosecurity

The UK Overseas Territories Biodiversity Strategy (2009)

The strategy is intended to enable the UK and Overseas Territory Governments to meet international obligations for the conservation and sustainable use of biodiversity in the Overseas Territories. The strategy is currently under review, which is due for completion in 2024.

The five current strategic priorities are:

- obtaining data on the location and status of biodiversity interests and the human activities affecting biodiversity to inform the preparation of policies and management plans (including baseline survey and subsequent monitoring);
- preventing the establishment of invasive alien species, and eradicating or controlling species that have already become established;
- developing cross-sectoral approaches to climate change adaptation that are consistent with the principles of sustainable development;
- developing tools to value ecosystem services to inform sustainable development policies and practices; and
- developing ecosystem-based initiatives for the conservation and sustainable use of the marine environment.

3 Guiding principles of the TISSAP

The CBD identified a full list of 15 principles as an Annex to the report of the sixth Conference of the Parties (COP 6 2002a). Some key practical principles apply to the TISSAP.

- The ‘precautionary principle’ should be applied – where there is not enough information to predict whether a species will become invasive or not, it should be assumed that it will have a damaging impact and action should be taken to stop it establishing or spreading.
- Preventing the arrival of introduced species is more effective and cheaper than trying to manage them after they arrive. Emphasis should be placed on effective border control.
- Eradication is more effective and cheaper in the long term than ongoing control, so eradication should be attempted in situations in which it is likely to succeed.
- Eradication is most effective if a new arrival is detected early while in small numbers, so surveillance and early warning systems are important, as is rapid response. Emergency Response Plans, such as those in place for the possible arrival of major livestock diseases, and Emergency Response Exercises are key elements of such systems.
- Invasive species that cannot be eradicated should be considered for ongoing control, particularly biological control. This control may be aimed at reducing their impact everywhere to acceptable levels or only in important sites for native species (such as protected areas) or for agriculture.
- Invasive species must be addressed in order of priority. A rigorous system is needed to decide on priorities and stick to them.

- Any species imported into a country to only be kept in ponds, pens, or cages will eventually escape into the wild, and plans should be made accordingly.

4 Goals, themes, and outcomes

4.1.1 Goal

To facilitate and guide the protection of the biodiversity and livelihoods of Pitcairn from the impacts of invasive species through strong collaboration.

Within the goal, emphasis is to be placed on:

- maintaining and enhancing the status of native biodiversity;
- maintaining strong border control;
- developing an inter-island biosecurity programme;
- eradicating invasive species where this is feasible; and
- controlling those species that cannot be eradicated.

4.1.2 Themes

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

Theme A: Foundations

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

- support – from Government, community, regional agencies, partners, and funders;
- capacity – including strong institutions, individuals with sound management and technical skills, and regional networks; and
- legislative framework – appropriate laws, regulations, policies, protocols, and procedures.

Theme B: Problem definition, prioritisation, and decision-making

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

Theme C: Management Action

Management begins with preventing the arrival of new invasive species; then tackles the eradication or control of those already present, and finally any necessary restoration work is undertaken on sites where invasive species have been removed.

4.1.3 Outcomes

Outcomes are derived from the SPREP Guidelines.

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

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

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

5 Pathway identification

This section reviews the major pathways through which invasive species can enter the country or move between islands within it.

Pitcairn and partners have done a significant and thorough assessment of the pathways into the territory and the relative risk of introductions. The project work conducted to date has identified the pathways, and mitigations, including biosecurity legislation, manuals, and checklists.

5.1 International pathways

5.1.1 By sea

Commercial shipping

The MV Silver Supporter makes a quarterly major supply journey from Tauranga.¹⁵ In between voyages from New Zealand, the vessel travels between Pitcairn and Mangareva only to ferry passengers.

The most common ports of origin for other foreign vessels are Mangareva in the Gambier Islands and Papeete in Tahiti, French Polynesia, and Auckland, New Zealand. None of these land on Pitcairn

A workshop in Pitcairn facilitated by the NNSS and RSPB identified four priority commodity pathways (Key 2019):

1. Timber, which can carry hitchhiker species such as fire ants, snails, and spiders, especially when densely packed.
2. Sand, gravel & aggregate, which can be contaminated by hitchhiker species such as ants and snails and weed seeds.
3. Live plants. These present several potential risks:
 - The plant itself may be new to Pitcairn and become a weed.
 - The plant may harbour new pests which could attack crops and native species.
 - Associated material (soil, potting medium, pots) may harbour new pests.
4. The vessel, which could carry hitchhiker species such as fire ants and snails, inadvertently brought on-board by passengers, and in supplies and cargo.

Small (6 ft) containers are offloaded onto the longboat and then lifted onto the wharf. As with all containers, there is a potential risk of transferring weed seeds, snails and their eggs, and ants and other insects. The containers are packed and stored at Shuttle Express Services premises in Auckland before transport to the Silver Supporter at Tauranga wharf. Although the wharf is monitored regularly as part of New Zealand domestic biosecurity surveillance, snails and spiders are regularly intercepted on containers in Pitcairn.

Building materials, machinery, vehicles, water tanks, and so on are not shipped in containers, and are delivered as break-bulk to the Silver Supporter for loading at Tauranga wharf. Fresh, chilled and frozen goods are supplied by Sea Services, and delivered to the Silver Supporter.

¹⁵ Tauranga is the departure port from New Zealand, but preparations are managed out of Auckland (Hartley 2022).

Discharge of a polluting substance from a vessel including ballast water is prohibited in the Coastal Conservation Areas (that is, the entire EEZ). Given the low volume of shipping in the EEZ, the risk is likely to be relatively low.

One of the pathways that is difficult to control is residents bringing in live plants (from Mangareva or Tahiti) and not declaring them for quarantine or potential destruction.

Yachts

Yacht traffic in the Pacific region is relatively uncontrolled, so the sources of risk species could be diverse. However, yachts do not land, minimising the risk. Rats could swim to shore, but this is unlikely (there is no evidence from elsewhere of rat introductions via this pathway).

Expedition cruise ships

Depending on the weather, smaller cruise ships (expedition ships of less than 300 passengers) will land their passengers on Pitcairn. In addition there might be a landing once or twice a year on Henderson, either on the North or the West Beach. As the visiting vessels are highly compliant with the Pitcairn Government guidelines, the risk of new invasive species being introduced is relatively low.

Large cruise ships

Ships with over 300 passengers will not land, and Pitkerners will instead go on board to sell handicrafts and honey and supply fresh fruit such as bananas to the passengers. Only commodities (rice, flour, sugar, oil and so on) are traded, and these are pristine, so the risk is negligible.

Fishing vessels

In the past Pitkerners had reported frequent incidents of illegal fishing. However, the Blue Belt programme remote surveillance should help to deter illegal activity, and trials have shown that compliance is high. Because of the limited activity a shipwreck is unlikely.

5.1.2 Other external pathways

Disaster relief

Humanitarian emergencies in general and damage caused by extreme weather events may directly carry new invasive species to Pitcairn, but their major threat is an indirect one through consequent relief operations. Fortunately, major storms in Pitcairn are rare, and a landslide is the more likely impact.

Large shipments of supplies and relief materials may enter the country over a short period from a variety of different countries, at a time when border control may be limited or of lower priority. While humanitarian needs are the priority, disaster management planning needs to incorporate biosecurity to avoid the potential longer-term impacts of new invasive species on the economy and environment.

'Natural' pathways

New species can also arrive as they have always done unaided by people; by flying to Pitcairn, being carried here on the wind, swimming, or 'rafting' on floating vegetation and other matter.

All Pitkerners need to watch for any unusual plants or animals (or signs of them – like disease symptoms) and report them to ECNR to assess their risk.

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

Marine invasives can also be transported by floating debris. If the Southern Pacific Gyre strengthens as predicted (Johnson et al. 2021), and/or develops larger accumulations of floating debris, as found in the North Pacific Gyre, there is a risk of marine and rafting species being transported into and around the Pitcairn EEZ, including species that are shed from hulls of passing ships or from ejected ballast water that is entrained in the gyre.

5.2 Internal Pathways

The only internal pathways in the Pitcairn Group are by sea, and Henderson, Ducie and Oeno are seldom visited.

Henderson is more regularly visited than Ducie and Oeno. Pitkerners use woods, Tau and Miro, collected from Henderson for carving. Oeno can be visited for harvesting seabirds and their eggs.

Given that rats were eradicated from Ducie and Oeno over 20 years ago, and the few surveys to date have not found reintroductions, the realised risk seems to be relatively low. While it would be ideal to conduct regular surveys, the remoteness and scarcity of visits probably helps to keep these islands rat-free.

Natural sea pathways are less likely to transport species around Pitcairn.

6 Roles and responsibilities in invasive species management

This section identifies the different government agencies and NGOs that have roles in invasive species management.

6.1 Local community

The mandate for environmental management and invasive species management in Pitcairn lies with the Environmental, Conservation & Natural Resources Division. The Pitcairn Island Council are also stakeholders in environmental management, together with the Attorney-General's Office and the Governor's Office. The Governor is represented on the island by the Administrator, based in Adamstown.

6.2 United Kingdom

Support for invasive species management in Pitcairn is delivered collaboratively by several UK government and non-government organisations. Supporting UK Government agencies include the Foreign Commonwealth and Development Office (FCDO), Department for Environment, Food and Rural Affairs (Defra), and its statutory advisor the Joint Nature Conservation Committee (JNCC). The Non-Native Species Secretariat (NNSS) and the Royal Society for the Protection of Birds (RSPB) are heavily involved in biosecurity capability-building and facilitating eradications. The Marine Management Organisation (MMO), the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and Pew Charitable Trust are among the organisations that provide support for marine conservation and environmental management. His Majesty's Government's Blue Belt programme brings together FCDO, DEFRA, MMO and Cefas to manage environmental matters. In the past Kew Botanic Gardens provided training in horticultural techniques for restoration.

6.3 Pacific regional

SPREP and SPC are the two key agencies providing Pacific regional coordination and support for the management of invasive species with impacts on native biodiversity, and on the agricultural and fisheries sectors, respectively. SPC also supports border control programmes. Annex 5 provides further details of their roles and identifies other agencies and initiatives that support invasive species work in the region.

The PRISMSS partners represent the regional support mechanisms for invasive species management:

PRISMSS programme	Scope	Leading technical partner(s)
Protect our islands	Prevent the arrival, establishment and spread of invasive species	Pacific Biosecurity and SPC
Predator free Pacific	Removing Introduced Mammalian Predators from Islands	Island Conservation and Birdlife International
War on weeds	Management of High Priority Weeds	SPREP
Natural enemies – natural solutions	Biological Control of Widespread Weeds	Manaaki Whenua – Landcare Research
Resilient ecosystems – resilient communities	Priority Area Ecological Restoration	SPREP

7 Past and current programmes

The Blue Belt Programme 2016-2020 (extended to 2025)

The programme seeks to enhance long-term sustainable marine protection strategies for the UKOTs and delivered by the MMO and Cefas. The programme has assisted the Pitcairn Islands Government in drafting of new Marine Conservation Regulations, together with the development of an MPA management plan, and training on MPA management.

Prior to the Blue Belt programme, a satellite “watchroom”, *Project Eyes on the Seas* was established by the Satellite Applications Catapult and Pew Charitable Trusts at the Harwell Science and Innovation Campus to monitor vessel activity and to gather the information needed to prosecute unauthorised fishing. This monitoring is now done by the Blue Belt programme.

Pacific Territories Regional Project for Sustainable Ecosystem Management (EDF11 PROTÉGÉ)

The EDF11 PROTÉGÉ (‘protect’ in French) is designed to promote sustainable and climate-change-resilient economic development in the European Pacific OCTs by emphasising biodiversity and renewable resources. PROTÉGÉ is a regional cooperation project that supports the public policies of French Polynesia, New Caledonia, Pitcairn, and Wallis & Futuna, and is implemented and executed by SPREP.

Darwin Plus DPUS178 Inhabited Territory restoration: completing preparations for a rodent-free Pitcairn Islands

The project, led by the Royal Society for the Protection of Birds, addresses key questions around the feasibility of eradicating rodents from Pitcairn and final technical input into their eradication from Henderson. Community consultation, pre-operational mapping and non-target mitigation are intended to empower fully informed local decision-making to proceed with the eradication delivery, enabling the first rodent-free inhabited Overseas Territory.

Darwin Plus DPLUS095 Strengthening biosecurity for remote Territory communities and their World Heritage

Led by the Royal Society for the Protection of Birds, the project supports the Pitcairn government to collaboratively strengthen their biosecurity capacity and thereby enhance the protection of their natural resource-dependent economy and world heritage site from invasive species. Recognising capacity

constraints, the project focusses on strengthening pre-border biosecurity at gateways to Pitcairn, primarily at Mangareva, but also aboard yachts and other vessels.

The Overseas Territory Biosecurity Project: Tackling invasive non-native species in the UK Overseas Territories

The 2016-2020 project was led by the GB Non-native Species Secretariat (NNSS) and funded by the Conflict, Stability and Security Fund (CSSF). At the end of the project the territories had substantially strengthened their protection against the threat of invasive non-native species because of project activities. Activities included provision of equipment, development of draft biosecurity legislation, horizon scanning, and pathway action planning.

INTEGRE (2013-2018)

Funded by the European Union, the INTEGRE project took a broad approach to deliver integrated coastal management initiatives in the four European Pacific overseas countries and territories (OCTs) and promote integrated coastal management in the Pacific. The objectives of the project for Pitcairn, developed in close collaboration with Pitkerners, were to:

- improve waste management,
- limit erosion (goats were the major issue, and a nursery was set up for replanting),
- better manage fisheries resources,
- control invasive species (rats and goats), and
- promote commercial development.

The project highlighted several major constraints that are applicable to all projects in Pitcairn, which impact cost and feasibility, including the limited availability of labour, and the high costs of transport and logistics constraints due to the island's remote location. One of the approaches was to hire three French Polynesian labourers were hired on renewable three-month contracts, with some significant costs, including costs borne by the community.

A community nursery that was developed on the island for this project is not in an ideal position. Propagation of plants for replanting is not currently being undertaken.

The project included restoration activities in areas such as Saint Paul that are still evident today. The island needs external support and tailored approaches to further progress these activities.

Darwin Initiative 4-148: Cultivation and conservation of threatened plant species for UK Overseas Territories

The project ran from 1995-1999. At the Royal Botanic Gardens, Kew, participants were trained in practical propagation and maintenance of plants, conservation planning. The project also produced a manual for horticultural techniques.

The nursery built for this project is in a good location but would need investment to be reinstated.

A more complete range of past and current projects can be found on [UKOT conservation forum website](#).

8 Legislation and international conventions

Pitcairn has its own constitution and laws (ordinances, policies, and regulations). Through the United Kingdom, it also has access to international conventions, although it is typically not a ratifier or signatory. However, actions taken in the territory (for example environmental protections) contribute to the United Kingdom's international obligations.

The following legislation and conventions include provisions relating to invasive species prevention and management in Pitcairn.

8.1 Territory legislation

Pitcairn has a range of [legislative instruments](#) that are relevant to environmental protection and invasive species management.

The Pitcairn Constitution

The constitution includes protection of the environment, providing that everyone has the right to an environment that is generally not harmful to his or her health or well-being and to have the environment protected, for the benefit of present and future generations.

Ordinance

A new Biosecurity Ordinance is on track to be passed in early 2024. The Ordinance has comprehensive provisions, including specific sections preventing movement of non-native species among the islands of Pitcairn, which is very progressive compared to many jurisdictions.

Bees are specifically protected by the Apiaries Ordinance, including biosecurity provisions banning the unregulated import of bees or beekeeping equipment.

The Endangered Species Protection Ordinance 2004 provides for the protection of endangered, endemic, and indigenous animals and plants and to regulate the trade in endangered species and operationalises CITES obligations in Pitcairn. This Ordinance revoked the Plant and Animal Quarantine provisions in the Local Government Regulations.

The Pitcairn Islands Marine Protected Area Ordinance 2016 prohibits the dumping of waste or other matter (including from vessels or structures) within the Marine Protected Area (MPA). It does not include any provision for managing marine invasive species.

The Marine Conservation Regulations 2022 allows for the establishment of a permitting regime for scientific expeditions and researchers.

Policies

The [guide for visiting vessels](#) requires that visitors to the outer islands must remove all rubbish, must not disturb, damage, destroy or remove any flora or fauna, must not introduce any flora or fauna and that after departure, no evidence of the visit must remain. Visitors to Henderson Island are only allowed to land on North Beach and other beaches are off-limits to visitors. A new [marine biosecurity leaflet for visiting yachts](#) has been developed.

A comprehensive biosecurity manual is being drafted to align with the new Biosecurity Ordinance

Local Government Regulations

Local Government Regulations (Part IV) covers animals and wildlife and is concerned primarily with species protection. An amendment in 1982 extends protection to migratory species as a means of implementing the Bonn Convention. The regulations also have provision for the control of domestic animals, including fencing for goats, poultry and all other domestic animals except for dogs and cats.

Some provisions enable limited harvesting of the eggs of Hawk (Greater Frigatebird) and Noddy at certain times, and the harvesting of Petrels, Noddies, Boobies, Bosun Bird (Red-tailed Tropicbird) on Oeno. Cahow (Bermuda Petrel), albatross, Dark-rumped (Galápagos) Petrel, whale, and turtle harvest are all prohibited.

The Marine Conservation Regulations 2022 make it an offence to discharge pollution, including ballast water, in any Coastal Conservation Area.

8.2 United Kingdom legislation

In 2001 Pitcairn signed an Environment Charter with the UK Government, which included using natural resources wisely (guiding principle 2), and safeguarding and restoring native species, habitats, and landscape features (guiding principle 7).

8.3 International conventions and agreements

As a territory, Pitcairn cannot directly enter into international agreements. However, actions within Pitcairn contribute the UK government obligations under those agreements.

An international agreement only extends to an Overseas Territory once an Overseas Territory chooses to have it extended to them. This is indicated for Pitcairn in the sections below. The very small teams in Pitcairn do not have the resources to fulfil the extensive reporting obligations of the many international conventions.

Convention on Biological Diversity (CBD)

The CBD, ratified in 1993, is the key convention relating to the conservation of flora, fauna, and ecosystems. It requires countries to develop a NBSAP and specifically to “prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species.”

The Kunming-Montreal Global Biodiversity Framework (GBF) has established new targets for invasive species that focus strongly on biosecurity (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.

The CBD has not been extended to [Pitcairn](#). This means that Pitcairn is also not party to the subsidiary [Nagoya](#) or [Cartagena](#) Protocols.

United Nations Convention to Combat Desertification (UNCCD)

Established in 1994, the [UNCCD](#) is the sole legally binding international agreement linking environment and development to sustainable land management. The Convention addresses specifically the arid, semi-arid, and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found.

The UNCCD has not been extended to [Pitcairn](#).

Convention on International Trade in Endangered Species (CITES)

[CITES](#) controls the trade in specimens of endangered species by requiring import and export permits for those on an international list. In carrying out the inspections and permitting requirements under CITES to prevent trade in endangered species, countries may also detect the movement of invasive species and be able to prevent their entry.

Pitcairn’s Endangered Species Protection Ordinance operationalises CITES in the territory.

United Nations Framework Convention on Climate Change (UNFCCC)

The ultimate objective of the [UNFCCC](#) is to stabilise greenhouse gas concentrations “at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.” It states that “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.” The UNFCCC entered into force on 21 March 1994. Today, it has near-universal membership.

The UNFCCC has not been extended to [Pitcairn](#).

Sustainable Development Goals (SDGs)

The [2030 Agenda for Sustainable Development](#), adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are a call for action by all countries—developed and developing—in a global partnership. They recognise that ending poverty and other deprivations must go together with strategies that improve health and education, reduce inequality, and spur economic growth, all while tackling climate change and working to protect the environment.

Framework for Resilient Development in the Pacific (FRDP)

The [FRDP \(2016\)](#) is the Pacific islands Forum regional policy that guides action to ensure that future development is more resilient to the adverse effects of climate change and disasters. The Pacific Resilience Partnership (PRP) is the umbrella implementation mechanism for the FRDP.

Pitcairn is not a member of the Pacific Islands Forum, but the United Kingdom is a dialogue partner.

International Plant Protection Convention (IPPC)

The [IPPC](#) is an international agreement on plant health developed in 1951 and overseen by the United Nations Food and Agriculture Organisation (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; and
- developing phytosanitary capacity for members to accomplish the preceding three objectives.

Although the IPPC has not been extended to Pitcairn, Defra is the implementing agency and a key support organisation for Pitcairn.

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

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

UNCLOS has been extended to [Pitcairn](#).

International Convention for the Control and Management of Ships’ Ballast Water and Sediments (BWM)

In 2004, the [IMO](#) adopted this Convention, which entered into force 12 months after it was ratified by 30 states representing 35 percent of the world’s merchant shipping tonnage. It ensures the safe

management of ballast water through requiring ships to have ballast management plans and detailed record keeping.

The BWM convention has not been extended to Pitcairn but is being considered.

International Convention for the Prevention of Pollution from Ships (MARPOL)

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Convention includes regulations aimed at preventing and minimising pollution from ships—both accidental pollution and that from routine operations—and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes.

The MARPOL convention has not been extended to Pitcairn but is being considered.

World Heritage Convention

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.

Henderson Island is a World Heritage site.

Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar)

The Convention on Wetlands is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources. The Convention was adopted in 1971 and came into force in 1975. Since then, almost 90% of UN member states have become contracting Parties.

The Ramsar convention has not been extended to Pitcairn, although the islands are proposed for designation under the convention.

9 Action plan

The Action Plan is based around the nine outcomes outlined in the regional guidelines. Once endorsed, the Action Plan serves as a mechanism for seeking funding support. Responsibility and leadership for invasive species activities reside primarily with the GPI and ECNR specifically.

However, the small and aging population on Pitcairn Island are unable to autonomously implement many of the Actions outlined here, as everyone has several jobs already. Pitcairn is wholly reliant on outside funding and labour for major project work.

Support from partners is therefore essential, and this requires a coherent collaboration strategy that requires sharing of information among Pitcairn’s supporters, for the benefit of the territory.

9.1 THEME A – FOUNDATIONS

9.1.1 A1 – Generating support

Outcome A1: The impacts of priority invasive species on biodiversity, economies, livelihoods, and health, are widely understood and actions to manage and reduce them are supported

A1: Actions	#	Activities	Responsibility/Support	Financing
A1.1 Increased awareness and understanding of potential new invasive species risks among the community	1	Share information on the impacts of high-risk species with the community so they know why it is important not to bring in risk goods, what to be aware of, and what to do (See Annex 2)	ECNR/GPI Support from APHA, NNSS, RSPB, Blue Belt (Cefas and MMO), PRISMSS and other partners for assistance with messaging and resources	ECNR Operational budget and partner support
A1.2 Increased awareness and understanding of potential new invasive species risks among visitors, and potential visitors	1	Promote the Guide for Visiting Vessels, and ensure all visitors are aware of its provisions. Ensure the Guide includes up-to-date biosecurity guidelines that are consistent with the Biosecurity Ordinance	ECNR/GPI Support from APHA, NNSS, PRISMSS and other partners for assistance with messaging and resources, if needed	ECNR Operational budget and partner support
	2	Work with cruise and expedition ships to ensure that passengers are briefed on all aspects of biosecurity before landing on any of the islands, including marine and terrestrial biosecurity	ECNR and Tourism Department Support from APHA, NNSS, RSPB, Blue Belt (Cefas and MMO), PRISMSS and other partners for assistance with messaging and resources, if needed	ECNR Operational budget and partner support
	3	Provide all visitors arriving on Silver Supporter with biosecurity expectations (both marine and terrestrial)	ECNR Support from APHA, NNSS, RSPB, Blue Belt (Cefas and MMO), PRISMSS and other partners for assistance	ECNR Operational budget and partner support

A1: Actions	#	Activities	Responsibility/Support	Financing
			with messaging and resources	
A1.3 Establish a mechanism to ensure partners are aware of each other's work, to avoid duplication and maximise effectiveness Could require agreements among partners or bilaterally between partners and GPI/ECNR to identify scope of each partner's assistance	1	Discuss what is required from partners to ensure effective collaboration and advise partners At a minimum this is likely to require partners consulting with others during any project development stage	ECNR/GPI APHA, NNSS, PRISMSS and other partners	ECNR Operational budget
	2	Seek support for surveillance programmes for priority invasives species not currently present on Pitcairn	ECNR APHA, NNSS, PRISMSS and other partners for support	To be determined
	3	Seek support to maintain long-term management control programmes for priority species that are present	ECNR APHA, NNSS, PRISMSS and other partners for support	To be determined
	4	Seek support in the event of an incursion of a new invasive species, so that it can be rapidly identified and eradicated or controlled Although identification is necessary, support is primarily needed to solve the problem identified	ECNR/GPI/Governor's Office Fera can provide identifications APHA, NNSS, SPC, PRISMSS and other partners for support to respond to problems	To be determined
A1.4 Support for biosecurity from the Silver Supporter	1	Implementation of the Vessel Risk Management Plan (VRMP) for the enhanced management of biosecurity risks developed by NZBS (see Hartley 2022) When the shipping contract is up for renewal, incorporate biosecurity support in the contract terms	ECNR/GPIHMG Silver Supporter	To be determined
A1.5 Support for biosecurity from Shuttle Express Services in New Zealand	2	When the freight contract is up for renewal, incorporate biosecurity support in the contract terms. Improve	ECNR/GPI HMG	To be determined

A1: Actions	#	Activities	Responsibility/Support	Financing
		biosecurity controls at Shuttle Express Services (Auckland and Tauranga), such as concrete areas to store containers and residual insecticide treatment	Shuttle Express Services	
A1.6 Support for biosecurity from Sea Services in New Zealand	2	Now, or when the contract is up for renewal, incorporate biosecurity support in the contract terms. Fresh and chilled produce need to be treated as controlled items according to the Biosecurity Ordinance, and will need to meet import standards defined in the Biosecurity Manual (such as phytosanitary certificates)	ECNR/GPI HMG Sea Services	To be determined

9.1.2 A2 – Building Capacity

OUTCOME A2: The institutions, skills, infrastructure, technical support, information management, networks and exchanges required to manage invasive species effectively are developed

A2: Actions	#	Activities	Responsibility/Support	Financing
A2.1 Enhance connections with regional and international agencies to identify invasive species, such as crop pests	1	<p>Link up with SPC Land Resources Division for advice as needed. Ensure the NPPO and NISC (with SPREP) is the Head of Biosecurity to enable easy and quick access to support</p> <p>Learn how to take images suitable for identifying specimens, using a digital microscope and/or smart phone camera</p> <p>Use Google Lens, post on iNaturalist, post on Aliens-L (contact Shyama Pagad to join), and use the contacts identified under support</p>	<p>ECNR</p> <p>Support from APHA, NNSS, SPC, PRISMSS and other partners</p> <p>Fera offer a free identification service to the Overseas Territories</p>	ECNR Operational budget
A2.2 Participate in knowledge-sharing through PILN meetings and communications	1	Join PILN (contact SPREP to register – this should be the NISC/Head of Biosecurity). Attend meetings if possible.	ECNR SPREP support	PROTÉGÉ to fund meeting attendance in 2024

A2: Actions	#	Activities	Responsibility/Support	Financing
		The next meeting is scheduled for 2024		SPREP seeking other funding
A2.3 Funding is available to carry out the TISSAP activities	1	Seek support from partners to assist with accessing funding mechanisms to implement unfunded Actions using the guidance from GEF 6 RIP Sustainable Funding activity	ECNR Support from APHA, NNSS, SPREP, SPC, PRISMSS and other partners	GEF 6 RIP (Sustainable Funding guidelines) Other donors
A2.4 Biosecurity officers have the tools and technical support to carry out their work	1	Biosecurity officers need to have tools that are appropriate for their work, so they know what to look out for and what to do if something high risk is noticed Requests for advice can be lodged on the PRISMSS Navigator system or emailed to PRISMSS support	ECNR Support from APHA, NNSS, SPC, PRISMSS and other partners to assist with risk assessments and general advice	To be determined
A2.5 Increase capacity for invasive species management in Pitcairn	1	Create at least one new position to manage invasive species, to split the current Head of Biosecurity role (which covers pest management and forestry as well as biosecurity) to be able to manage invasives more effectively	ECNR/GPI HMG	HMG

9.1.3 A3 – Legislation, policy, and protocols

Outcome A3: Appropriate legislation, policies, protocols, and procedures are in place and operating, to underpin the effective management of invasive species

A3: Actions	#	Activities	Responsibility/Support	Financing
A3.1 Develop a TISSAP for Pitcairn	1	TISSAP Action Plan used as a wishlist for Pitcairn, and to help partners seek funding for priority actions	ECNR SPREP, PRISMSS and other partners support	PROTÉGÉ
A3.2 Enact the Biosecurity Ordinance	1	See actions under C1.2	ECNR Island Council and Governor	APHA, NNSS support

9.2 THEME B – PROBLEM DEFINITION, PRIORITIZATION AND DECISION-MAKING

9.2.1 B1 – Baseline & Monitoring

Outcome B1: Systems are in place to generate baseline information on the status and distribution of invasive species, detect changes, including range changes and emerging impacts

B1: Actions	#	Activities	Responsibility	Financing
B1.1 Collection and sharing of biodiversity information	1	<p>Promote PBIF¹⁶ as a tool for use by the community to improve collection of occurrence information and identification of invasive species through access to experts (citizen science)</p> <p>Marine biodiversity data for Pitcairn is also found on GBIF (although on a different node to the invasive species data.</p> <p>Alternatively or additionally, consider developing a local data repository, which would include Pitkern, English and scientific names for species</p>	<p>ECNR</p> <p>SPREP for support with adding data to PBIF/copying data from GBIF to PBIF and assisting Pitcairn in use, extraction, and update of data</p> <p>Blue Belt (MMO, Cefas, DEFRA, FCDO). MMO and Cefas are the main contacts</p> <p>Community can add and update information as needed</p>	To be determined if funding is needed to support updating of data
	2	Make biodiversity information publicly available via PBIF	<p>ECNR</p> <p>SPREP for support with PBIF</p> <p>Blue Belt (MMO, Cefas, DEFRA, FCDO). MMO and Cefas are the main contacts</p>	ECNR Operational budget?
	3	Ensure publicly held information (such as GBIF/PBIF) is maintained as needed	ECNR	N/A

9.2.2 B2 – Prioritization

Outcome B2: Effective systems are established and implemented to assess risk and prioritise invasive species for management

B2: Actions	#	Activities	Responsibility	Financing
B2.1 Priorities for the prevention of invasive species arrival are established and maintained	1	Priorities have been identified (See Annex 2). Partners to advise ECNR if new threat species arrive in Mangareva or in New Zealand or	PRISMSS, SPC, APHA, NNSS and other partners. See also A1 – this could be incorporated into partner support requirements	N/A

¹⁶ Currently PBIF has no data for Pitcairn, however, this can be extracted from [GBIF](#)

B2: Actions	#	Activities	Responsibility	Financing
		distributions change (see Annex 2)		
B2.2 Priorities for the management (control or eradication) of invasive species already present are established and maintained	1	Priorities have been identified (See Annex 1). ECNR staff to update as community views change	ECNR PRISMSS, SPC, APHA, NNSS and other partners to assist with prioritisation	N/A
	2	“Kaikui” grass ¹⁷ is a new plant species that is crowding out Grab A Le”. The species need to be identified for prioritisation and so management approaches can be determined	ECNR FERA for identification FERA and other partners to advice on potential management	

9.2.3 B3 – Research on priorities

Outcome B3: Knowledge is updated for priority invasives, including species biology and impacts, and development of effective management techniques

B3: Actions	#	Activities	Responsibility	Financing
B2.1 Risk profiles for the most important invasive species threats are known	1	Risk profiles (pathways, species priorities) for the most important threats updated as needed	PRISMSS, APHA, NNSS and other partners to advise and provide support	N/A

9.3 THEME C – MANAGEMENT ACTION

9.3.1 C1 – Biosecurity

OUTCOME C1: Mechanisms are established to prevent the spread of invasive species across international or internal borders and quickly detect and respond to those that arrive.

C1: Actions	#	Activities	Responsibility	Financing
C1.1 Honeybees are protected from bee diseases and Varroa mite	1	Ensure any potential future imports of honeybees ¹⁸ are from verified disease-free sources (Chatham Islands or Niue) Continue to prevent the importation of honey and bee products, and regulate the	ECNR APHA, NNSS and other partners to advise and provide support	Operational budgets

¹⁷ *Melinis* sp.? to be determined – see species list

¹⁸ In case the current bee population exhibits decline, or the population needs supplementation in future

C1: Actions	#	Activities	Responsibility	Financing
		import of beekeeping equipment into Pitcairn using existing mechanisms		
C1.2 Operationalise the Biosecurity Ordinance	1	Review the alignment of existing tools with the Biosecurity Ordinance (the draft biosecurity manual, any Import Health Standards, phytosanitary requirements, biosecurity checklists, awareness materials, Guide for Visiting Vessels and so on) Revise those tools as needed to reflect the Ordinance, and streamline biosecurity tools if needed. Develop a Biosecurity Register as required by the Ordinance	ECNR APHA, RSPB, NNSS, PRISMSS (particularly SPC) and other partner support for assistance with review and revision of the Manual (if needed) and other tools, including any risk assessments for controlled imports on the Biosecurity Register	Operational budgets DEFRA Partner budgets
	2	Support the Silver Supporter Master and crew in the adoption of the Vessel Risk Management Plan via ongoing vessel training and discussion when within Pitcairn waters (see also A1)	ECNR/APHA, NNSS, PRISMSS and other partner support Silver Supporter	Operational budgets Additional funding to be determined if needed
	3	Work with Shuttle Express Services and the Silver Supporter Master to ensure “all reasonable steps” are taken to prevent animals from landing, including rope/rat guards at ports in New Zealand ¹⁹	ECNR Silver Supporter management Shuttle Express Services agent in New Zealand APHA, NNSS, PRISMSS and other partners to advise and provide support on what “all reasonable steps” should entail	Operational budgets Additional funding to be determined if needed
	4	If needed, seek assistance for risk assessment of goods to be imported	ECNR	Operational budgets and additional funding

¹⁹ Biosecurity Ordinance s 22. This could also lead to future provision for rodent or other animal tracking/trapping programme on the ship if wanted (Action C1.3), and which could potentially be managed by through future provisions in the contract with Shuttle Express Services.

C1: Actions	#	Activities	Responsibility	Financing
			Use existing publicly available import standards One of SPC's mandated roles is to assist with risk assessment PRISMSS, APHA, NNSS support	to be determined if needed
C1.3 Prevent rodents from entering Pitcairn, and being transported to Henderson and the atolls	1	Currently the draft plan is for Pitcairn and Henderson eradications to occur around the same time. In preparation for rodent eradication, consider installing rodent traps (A24 traps) within the boat storage sheds at Bounty Bay. Consider feasibility of ongoing monitoring and trapping on the Silver Supporter (and ongoing monitoring at the boat storage sheds)	ECNR RSPB RSPB, APHA, NNSS, PRISMSS and other partner support once rodent eradication work is complete	RSPB for biosecurity to support eradications Operational budgets and additional funding to be determined if needed
C1.4 Completion of a biosecurity inspection/quarantine facility	1	A biosecurity inspection facility upgrade had been planned and is waiting on delivery of materials. When building materials are available refurbish the inspection facility, if labour is available Consider whether this could double as a quarantine facility for plant cuttings brought in by residents	ECNR/Operations APHA, NNSS, PRISMSS and other partner support	Operational budgets And additional funding to be determined if needed
	2	Confirm protocols and procedures for the use of the inspection facility	ECNR APHA, NNSS, PRISMSS and other partner support	Operational budgets And additional funding to be determined if needed
C1.5 Secure Mangareva, Rapa Nui and other transit points or locations visited prior to Pitcairn	1	Work through what is needed for each passenger pathway (large cruise ships versus small expedition ships)	ECNR APHA, NNSS, RSPB support	Operational budgets APHA, NNSS

C1: Actions	#	Activities	Responsibility	Financing
		<p>Work with foreign authorities to instal signs on their territory</p> <p>Update Annex 5 in the draft Biosecurity Manual if needed</p>	<p>French Polynesia²⁰ authorities and other authorities, depending on departure point</p> <p>SPREP to assist with establishing relationship with French Polynesia biosecurity/invasive species authorities</p>	
C1.6 Ensure biosecurity risk assessments are factored in upfront when defining infrastructure projects	1	Anticipated imports of construction materials require biosecurity and other environmental impact assessment, which can all affect project costings and/or risks	<p>ECNR/GPI</p> <p>APHA, NNSS, PRISMSS and other partner support</p>	Party undertaking infrastructure project
C1.7 Ensure terrestrial biosecurity provisions are included in the Guide for Visiting Vessels	1	Update the Guide for Visiting Vessels to require visiting yachts to ensure that terrestrial biosecurity provisions are also included in the Guide, consistent with the Biosecurity Ordinance and Manual	<p>ECNR/Tourism department</p> <p>MMO, APHA, NNSS</p> <p>And other partners to provide support</p>	Operational budgets
C1.8 Domestic biosecurity to protect Oeno, Ducie and Henderson	1	<p>The new Biosecurity Ordinance have provisions to support domestic biosecurity</p> <p>See Annex 5 in the draft Biosecurity Manual</p>	<p>ECNR</p> <p>Pitcairn community</p> <p>APHA, NNSS support</p>	<p>Operational budgets</p> <p>APHA, NNSS support</p>
C1.9. If a new invasive species is detected on any of the islands, contact partners to facilitate rapid response	1	<p>See A1.3 regarding developing agreements for assistance with rapid response to a new invasive species</p> <p>If rats should reinvade Ducie or Oeno (or Henderson if eradications have taken place) ECNR can reach the islands within three days</p>	<p>ECNR/GPI</p> <p>Partner support</p>	<p>Operational budgets</p> <p>Partner support</p>

²⁰ Working with French Polynesia authorities to install English and French language signs could be promoted as also having a benefit to them to enhance their inter-island biosecurity (for example from Mangareva to the rest of the Gambier Archipelago).

9.3.2 C2 – Management of established invasives

Outcome C2: The impacts of priority established invasive species are eliminated or reduced by eradicating or controlling the target species

C2: Actions	#	Activities	Responsibility	Financing
C2.1 Eradication of rats from Henderson	1	Continuing feasibility (including community motivation) for eradication See also C2.9	ECNR RSPB undertaking feasibility study	Darwin project and RSPB
C2.2 Eradication of rats from Pitcairn Island	1	Continuing feasibility (including community motivation) for eradication	ECNR RSPB undertaking feasibility study	Darwin Project and RSPB
C2.3 Consider opportunities for NENS biocontrol of invasive plants	1	Of the invasive plants present on Pitcairn, Rose-apple (see also C2.7), ²¹ Lantana and Arrow-leafed Sida potentially have effective agents available. Note that these agents will only control the plants to limit their impacts, but not eradicate them. Community to work with partners decide on priorities for biocontrols.	ECNR Assistance from PRISMSS NENS (MWLR)	To be determined
C2.4 Management of domestic goats	1	Legislation is in place regarding control of domestic goats. When goat numbers increase beyond about 100, their impact on the vegetation and erosion visibly escalate. Regular culling could be needed to keep numbers below this level	ECNR Owners of escaped domestic goats Support from the police officer to dispatch goats when owners cannot be identified, or the goats are in dangerous places that are too difficult to reach	Operational budgets
	2	Consider protecting at least parts of Faute Valley and Tautama from goats by fencing. This would require outside support	ECNR Partner support to advise and provide support and seek funding if fencing for Faute and Tautama is	To be determined

²¹ A biocontrol beetle, *Paropsides calypso*, is a *Syzygium* specialist and could be used to control Rose-apple

C2: Actions	#	Activities	Responsibility	Financing
			considered feasible and desirable	
	3	Tethered goats could be used as a management tool for weeds such as Morning Glory, Sweet Pea, Alwyn Grass and Rose-apple seedlings, particularly in the Aute Valley. This could be combined with replanting in areas where goats have cleared as part of restoration (see C3.2)	ECNR Community	N/A
C2.5 Integrated pest management plan (IPM) ²² for Fruit Flies	1	Seek assistance to develop an IPM plan to control Fruit Fly numbers to an acceptable level This could include toxic baits, pheromones, wasp biocontrol or sterile male approach, and should be adapted as lessons are learned about the effectiveness of treatments A “zonal” approach could be taken to focus on priority fruit-growing areas	ECNR SPC to provide advice Other partners to assist with developing a plan and securing <i>regular</i> supplies of treatment products, biological controls or sterile males	Operational budgets once plan completed To be determined for plan development
C2.6 Weeding of native vegetation to remove non-native and invasive species from plots identified for restoration ²³	1	Ideally, the best pockets of native vegetation should be weeded periodically, for example in Faute Valley and Tautama This would likely have to be accompanied by a restoration programme to be manageable (see C3.1)	ECNR PRISMSS (WOW) and other partners to advise and provide support and seek funding The partner(s) would need to clearly specify the work required of any sub-contractors (who would need to be able to communicate in English), and closely manage objectives	To be determined Funding for labour, which would have to be brought from off-island, is required

²² The goal of IPM is to keep pest populations to a level below which they cause economic harm. Integrated Pest Management involves using multiple control options together for the economic control of pests. Control tools can include cultural (weeding), natural (such as biocontrol) and chemical methods.

²³ For all weed management activities, natural herbicides are desirable

C2: Actions	#	Activities	Responsibility	Financing
C2.7 Integrated Pest Management approach for Rose-apple	1	<p>Consider coopting the IPM approach, using multiple techniques to: a) control numbers below a level at which environmental harm is caused; while b) retaining sufficient numbers for nectar production</p> <p>Control outside of areas with active hives would be a priority, perhaps with the island divided into “zones”, maintaining Rose-apple free areas around priority sites</p>	<p>ECNR</p> <p>PRISMSS, APHA, NNSS and other partners to advise feasibility, assist with planning, provide support and seek funding</p> <p>The partner(s) would need to clearly specify the work required of any sub-contractors (who would need to be able to communicate in English), and closely manage objectives</p>	<p>To be determined</p> <p>If extensive manual control is needed, funding for labour, which would have to be brought from off-island, is required</p>
	2	<p>Seek advice on economic opportunities to monetise Rose-apple</p> <p>Although exploitation of invasive species is not advised as a management option (as it doesn't resolve the problem, and can make it worse), the Pitcairn context might make it the only viable option for control</p>	<p>ECNR/GPI</p> <p>Partners for advice</p>	To be determined
C2.8 Better protect woven handicrafts and weaving materials from attack by insects, which makes the materials deteriorate and the products unfit for sale	1	<p>Woven products and weaving materials are being attacked by unknown insects,²⁴ suspected to be a small beetle. Seek advice for identification, and then treatment options</p>	<p>ECNR to send samples to FERA</p> <p>FERA to identify insects causing damage</p> <p>FERA or other partners to identify treatment options (options might be found on PestNet)</p>	<p>Operational budgets for identification</p> <p>To be determined if funding is required for treatment products</p>
C2.9 Investigate options to reverse Miro and Tau decline on Henderson	1	<p>Conduct a feasibility study for reducing numbers of coconut palms on Henderson Island every year or two, for the benefit of conserving Miro and Tau</p> <p>This could be particularly useful to enhance rat eradication as it reduces</p>	<p>ECNR</p> <p>RSPB to advise on when and how coconuts could be reduced to benefit eradication success</p> <p>PRISMSS (WOW) and other partners to</p>	To be determined

²⁴ Suspected to be some sort of beetle or weevil

C2: Actions	#	Activities	Responsibility	Financing
		alternative food resources (a major factor influencing success)	advise and provide support and seek funding if needed	
	2	Reseed Miro and Tau on Henderson, by harvesting from existing trees and spreading seeds Numbers of Taatramoe might also need to be controlled	ECNR	Operational budgets

9.3.3 C3 – Restoration

Outcome C3: Following invasive species management the best methods are determined and implemented to facilitate effective restoration of native biodiversity or recovery of other values

C3: Actions	#	Activities	Responsibility	Financing
C3.1 Review and reinstate Pitcairn-appropriate nursery capability to support replanting where weeds have been removed	1	If needed, existing nursery facilities would need to be refurbished. Rather than have a centralised nursery that requires a lot of labour, it could be more effective to support households who wish to create mini nurseries with the resources they would need	ECNR PRISMSS RERC and WOW, APHA, NNSS and other partners to advise and provide support and seek funding Community (for raising native trees for replanting)	To be determined Funding is required to set up mini nurseries for households Centralised nursery facilities would require paid outside support
	2	To complement weed control actions (C2.3, C2.4, C2.6 and C2.7), in areas where Rose-apple, Lantana and other weeds are controlled, replant with propagated native species	ECNR PRISMSS RERC and WOW, APHA, NNSS and other partners to advise and provide support and seek funding	To be determined Extensive replanting would require paid outside support
	3	If needed, seek advice to develop a replanting programme to mimic natural succession of vegetation and site appropriate approaches	ECNR PRISMSS RERC and WOW, APHA, NNSS and other partners to advise	Operational budgets
C3.2 Restoration of priority sites	1	The Eco trail site has been identified by the RERC programme as a good site to trial restoration	ECNR PRISMSS RERC, APHA, NNSS and other partners to advise and	To be determined Extensive replanting would

C3: Actions	#	Activities	Responsibility	Financing
		An RERC workbook would be developed to detail the operational requirements including the list of equipment and tools needed	provide support and seek funding	require paid outside support
	2	It would be more manageable for the community to begin with areas that are easier to access, perhaps by dividing the island into “zones” for targeted actions Areas Like Saint Paul would need specific plans that consider the soil and weather conditions	ECNR Community PRISMSS RERC, APHA, NNSS and other partners to advise and provide support and seek funding	To be determined Extensive replanting would require paid outside support
	3	If the Rose-apple has not yet reached the southern flank of Pitcairn, this could be a priority area for reseeding (Faute Valley and Tautama, for example) See also Annex 3, Priority sites	ECNR PRISMSS RERC, APHA, NNSS and other partners to advise and provide support and seek funding	To be determined Extensive replanting would require paid outside support

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11 Annexes

11.1 Annex 1: Priority invasive species for management in Pitcairn

The following list was derived from the species list of Pagad (2019), cross-referenced to the selection of 100 of the world’s worst invasive species. Unless otherwise noted, species are present on Pitcairn Island only.

PLANTS	
Lantana <i>Lantana camara</i>	Effective biological controls are available for Lantana, but the plant is valued by Pitkerners as a soil improver, so would need to be replaced by an alternative non-invasive soil improver.
Rose-apple <i>Syzygium jambos</i>	Displacing native species and contributing to erosion. A beetle, <i>Paropsides calypso</i> , is a <i>Syzygium</i> specialist and could be used to control Rose-apple. Pitkerners also value the plant for its nectar source, and it provides habitat for the Reed-warbler. It is unlikely it could ever be removed entirely, and the goal is to limit its distribution and density to allow native plants to return, while maintaining a nectar source for honey production.
Butterfly Pea <i>Centrosema pubescens</i>	A relatively new arrival, it is progressively colonising disturbed and cleared areas of the Pitcairn Island. A biological control would be useful as it is too widespread to eradicate.
Arrow-leafed Sida <i>Sida rhombifolia</i>	A biological control agent is available that could be introduced if the plant is considered a priority for management.
Other weeds	Several other weeds are widespread, but not considered locally to be less seriously problematic, including Indian Shot <i>Canna indica</i> ,

	Creeping Beggarweed <i>Desmodium incanum</i> , Blue Morning Glory <i>Ipomoea indica</i> , Strawberry Guava <i>Psidium cattleianum</i> , and Johnson Grass <i>Sorghum halepense</i> .
Ornamental escapes	Several popular indoor ornamental plants, including Swiss Cheese Plant <i>Monstera deliciosa</i> , Devil's Ivy <i>Epipremnum aureum</i> and Arrowhead Vine <i>Syngonium auritum</i> could become serious weeds over time, as they have elsewhere.

MAMMALS

Escaped Domestic Goat <i>Capra hircus</i>	Goats contribute to erosion and loss of topsoil. The feral goat population was removed, but there are a few free-roaming domestic goats. As noted by Birdlife International "Consideration should also be given to protecting at least parts of these areas [Faute Valley and Tautama] from goats by fencing." Again, labour support is needed.
Feral House Cat <i>Felis catus</i>	Cats prey on ground-nesting seabirds, restricting them to nesting on cliffs on Pitcairn Island. Ideally feral cats would be controlled or eradicated and wanted domestic cats neutered.
Pacific rat <i>Rattus exulans</i>	Found on Henderson and Pitcairn, rats prey extensively on ground nesting birds. They are the largest threat to biodiversity on Henderson, and eradication is being considered. If successful, eradication on Pitcairn would contribute to human welfare, improve agricultural output, allow the recolonisation of Pitcairn by ground-nesting seabirds, and reduce the risk of reinvasion of rats to Ducie and Oeno.

INSECTS

Queensland Fruit Fly <i>Bactrocera tryoni</i>	Damages fruits. Difficult to control. The community would like assistance with solutions to control all of the crop pests listed here.
Green Back Beetle/Green Vegetable Bug <i>Nezara viridis</i>	Damages tomatoes and other fruiting plants.
White Moth/Beet Webworm <i>Spoladea recurvalis</i>	Damages cabbages, beets.
Unidentified soil insect ²⁵	Damages sweet potato, potato, and carrots.
Yellow Fever Mosquito <i>Aedes aegypti</i>	Widespread in the Pacific, including French Polynesia and a carrier of dengue, chikungunya, zika and yellow fever.

11.2 Annex 2: Priority invasive species for prevention from entering Pitcairn

The following list was initially derived as a consensus of Malumphy et al. (2019), Key (2020), and Dawson et al. (2023), with the addition of the Pacific regional priorities. This list should be used as a guideline. Ideally, the goal should be to prevent the arrival of any potentially invasive non-native species. However, this is virtually impossible, so a focus is on the worst threats that could result in the most harm.

MICRO-ORGANISMS

Bee diseases	Bee diseases (viruses, bacteria, fungi, and other micro-organisms) act together with other stressors (such as invasive ants and Varroa Mite) to reduce hive productivity.
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²⁵ likely the larvae of a beetle or weevil.

PLANTS

All invasive plants See species list for key species for prevention in Pitcairn and the Pacific region in general. Generally these plants outcompete native or valued crop species. They can also contribute to soil erosion and amplify the impacts of extreme weather events.

MAMMALS

Brown Rat *Rattus norvegicus*
Ship Rat *Rattus rattus*
Asian Black Rat *Rattus tanezumi* Although the Pitcairn Reed-warbler co-exists and does not seem to be threatened by Pacific Rats, the arrival of these larger rats could devastate the population and further threaten seabirds. The impacts would be profound on Henderson, Ducie and Oeno, and could lead to the extinctions or drastic population reductions of several globally important species.

House Mouse *Mus musculus* Mice are known to prey on tree-nesting birds in New Zealand, but impacts are not reported from Pitcairn, where they are probably indistinguishable from Pacific Rat predation.

Indian Grey Mongoose *Herpestes indica/javanicus* Present in Fiji and Hawai'i with recent incursions occurring in several other Pacific countries. It is likely able to live aboard ships and has survived voyages in containers, jumping out when containers are opened. Like rats, it is a threat to native plants and animals.

INSECTS/INVERTEBRATES

Giant African Snail *Achatina fulica* Found in Samoa and Tahiti and regularly intercepted in Fiji. Environmental impacts through herbivory on plants and competition with native snails. Vector of a parasitic nematode that can cause meningitis, a sometimes-fatal infection of the brain, in people.

Tiger Mosquito *Aedes albopictus* Found in The Federated States of Micronesia, Fiji, Guam and Hawai'i. Is a carrier of at least 10 human diseases, including dengue and West Nile fever.

Yellow Crazy Ant *Anoplolepis gracilipes* Established throughout much of the Pacific and recorded from both Mangareva and Tahiti. Occasional reports in New Zealand. Have occasional population outbreaks that can be devastating for people, agriculture, and the environment.

Oriental Fruit Fly *Bactrocera dorsalis* Found in the Pacific in French Polynesia, Palau, and Papua New Guinea. A serious pest of a wide variety of fruits and vegetables. Damage levels can be up to 100% of unprotected fruit.

Tobacco Whitefly *Bemisia tabaci* Present in many Pacific countries, including French Polynesia and New Zealand, it can be a serious crop pest, and can carry many plant viruses.

Rosy Wolfsnail *Euglandina rosea* Introduced as a biological control of the Giant African Snail, Rosy Wolfsnail preys on native and endemic snails, and has led to the extinction of many snail species elsewhere, including thirty-three species of *Partula* snails from Raiatea, French Polynesia.

Argentine Ant *Linepithema humile* Present in Australia, New Zealand and Hawai'i and Pacific Rim countries, but unknown from the rest of the Pacific islands region. Argentine ants raid honeybee hives and compound the impact of bee diseases and Varroa.

Coconut Rhinoceros Beetle <i>Oryctes rhinoceros</i>	Established throughout much of the Pacific. Has a damaging genetic form that is found in Guam, Papua New Guinea, Solomon Islands, and Vanuatu.
African Big-headed Ant <i>Pheidole megacephala</i>	Established throughout much of the Pacific. Have occasional population outbreaks that can be devastating for the environment.
Diamondback Moth <i>Plutella xylostella</i>	Found throughout New Zealand and in several other countries in the Pacific region. Considered the main insect pest of vegetables like cabbages, broccoli and cauliflowers and oilseed crops (such as canola and mustard).
Red Imported Fire Ant <i>Solenopsis invicta</i>	Established in several Pacific rim countries, such as Australia (Brisbane), China, Japan, Korea, and USA and occasionally intercepted in New Zealand. Causes devastating socioeconomic and environmental damage, and in rare cases, deaths of people.
Fall Armyworm <i>Spodoptera frugiperda</i>	Present in New Zealand, where it is under eradication, and locally present in several Pacific island countries. When in large numbers it can be devastating to crops like corn.
Singapore Ant <i>Trichomyrmex destructor</i>	A stinging ant that is widespread in the Pacific and causes occasional harm. Reports from Tuvalu that toddlers are repeatedly stung when playing outside, which leads to itchy pustules that become infected.
Varroa Mite <i>Varroa destructor</i>	Found throughout the Pacific apart from Pitcairn, Niue and Chatham Islands. Devastating to beehives, particularly in combination with bee diseases.
Wasps (including German Wasp <i>Vespula germanica</i> , Common Wasp <i>Vespula vulgaris</i> and Paper wasps)	<i>Vespula</i> spp. wasps are found in Kiribati and Hawai'i, and New Zealand. Paper wasps (<i>Polistes</i> spp.) are found in the Cook Islands, Easter Island, Hawai'i, Marquesas Islands, and Samoa. They cause harm to native animals and can cause deaths of people if they attack in large numbers.
Little Fire Ant <i>Wasmannia auropunctata</i> ²⁶	Established in Tahiti, Guam and Hawai'i and actively spreading in the Pacific. Not reported from Mangareva. Has the potential to harm biodiversity and impact agricultural activities.

REPTILES AND AMPHIBIANS

Brown Tree Snake <i>Boiga irregularis</i>	Native to Australia, the Solomon Islands and Papua New Guinea, it established in Guam where its high numbers have caused extensive damage, impacting biodiversity, economy, and human health.
Asian/Common House Gecko <i>Hemidactylus frenatus</i>	Found throughout the Pacific region, including French Polynesia and New Zealand. Impacts are mainly due to predation on native insects and invertebrates, and competition with native geckos.
New Zealand Common Skink <i>Oligosoma polychroma</i>	Not reported as invasive (or introduced) anywhere, this skink is common in New Zealand. While there is a risk of introduction, any potential impacts are unknown.
Raukawa Gecko <i>Woodworthia maculata</i>	Not reported as invasive (or introduced) anywhere, this gecko is common in New Zealand. While there is a risk of introduction, any potential impacts are unknown.

²⁶ Other ants could also arrive and cause serious impacts. African Big-headed Ant and Yellow Crazy Ant are present on Mangareva and have been implicated in species extinctions. Little Fire Ant is present in Tahiti.

Plague Skink/Rainbow Skink <i>Lampropholis delicata</i>	An Australian native, this skink has caused ecological problems in New Zealand and Hawai'i, where it outcompetes native lizards.
Cane Toad <i>Rhinella marina</i>	Various frogs are established in both Guam and Hawai'i and Cane Toads are established in Fiji, most of the Federated States of Micronesia including Kosrae, and Tuvalu. The Cane Toad is toxic to mammals and competes with native species.
BIRDS	
Myna birds (Family Sturnidae)	Several species established throughout the Pacific, including Common Myna in Fiji, French Polynesia, Hawai'i and New Zealand, and Jungle Myna in Fiji and Hawai'i.
Passerine Birds such as Sparrows and Finches	Several species established on Pacific islands, including Eurasian Tree Sparrow (established in Guam and Pohnpei), Java Sparrow (established in Fiji, Guam, and Hawai'i), House Sparrow (established in Fiji and Hawai'i and New Zealand), and House Finch (established in Hawai'i).
Red-vented Bulbul <i>Pycnonotus cafer</i>	Abundant in Fiji and widespread in the Pacific, including French Polynesia. Reported to destroy fruits, flowers, beans, tomatoes, peas and help in the spread of seeds of invasive plants.
MARINE SPECIES²⁷	
Killer Algae <i>Caulerpa taxifolia</i>	Found in French Polynesia and New Zealand, and elsewhere in the Pacific, it smothers other seaweed species and alters fish habitat, leading to declines in fish diversity and catch numbers.
Mediterranean Mussel <i>Mytilus galloprovincialis</i>	Originally from the Mediterranean region, the mussel has spread widely across the Atlantic and Pacific and is an aquaculture species. It is found in New Zealand and is invasive in Hawai'i. It can displace native mussels, although its full impacts are not known.
Black-striped Mussel <i>Mytilopsis sallei</i>	The mussel was introduced to Fiji as well as other places around the world, but its impacts are not well-known.
Asian Green Mussel <i>Perna viridis</i>	Native to the Indo-Pacific region, it has been introduced to several countries in the Pacific, including French Polynesia, likely via ballast water. It can grow rapidly and change the benthic marine community.

11.3 Annex 3: Priority sites

Pitcairn Islands Marine Protected Area

One of the largest marine protected areas in the world, the MPA covers the islands' entire exclusive economic zone of 841,910 km². The intention is to protect some of the world's most pristine ocean habitat from illegal fishing and other damaging human activities.

Ducie IBA

Ducie is important for its colonies of Murph's, Herald and Kermadec petrels, and Christmas shearwaters.

Pitcairn IBA

Pitcairn Island is recognised as an IBA because it is the only nesting site of the Pitcairn Reed-warbler.

²⁷ Based on the list of Dawson et al. (2023). The Marine Biosecurity Toolkit has a list of the 25 highest priority invasives that are undesirable in the Pacific region.

Several protected areas have been suggested for Pitcairn for conservation, including areas of high local biodiversity (such as Brow's Water), good remaining native forest habitat (Faute Valley, upper McCo's Valley), a forestry and timber reserve (St Pauls), cultural reserves (Tautama) and provision of a reserve with guided trails (The Hollow/Garne's Ridge).

Many of these areas are threatened by invasive plants, which would be difficult to remove if they encroached further.

Although not an officially designated area, an Eco Trail near Adamstown provides an opportunity for tourists to observe relatively intact habitat and would be a relatively easy site (from the perspective of native species representation) to trial restoration and expansion of that habitat.

Oeno IBA

Oeno has a large Murph's petrel colony.

Henderson IBA

Henderson Island is important for its endemic land-birds as well as its breeding seabirds.–

11.4 Annex 4: Consultations for TISSAP development

More than any other country or territory, the small population of Pitkerners each fill several roles, including government jobs, maintaining their properties, tending their gardens and hives, and creating crafts. Consultations were intended to be flexible to cater to the day-to-day commitments of the Pitkerners.

Two consultation visits were made to Pitcairn, in October and December 2023.

11.4.1 Pitcairn TISSAP consultations October 2023

In September-October 2023, Dominic Sadler and Josef Pisi (SPREP), Quentin Paynter (Manaaki Whenua), and Greg Sherley (independent consultant) undertook consultations around the [PRISMSS programmes](#) (except Protect our Islands) These consultations, over two meetings and numerous informal discussions with members of the community, identified issues of concern, introduced the draft TISSAP actions at a high level and informed an updated draft of the TISSAP.

Community participants October 5 2023 meeting

Pawl Warren	Melva Evans	Tian Christian
Sue Warren	Jay Warren	Tim van der Velde
Charlene Warren-Peu	Shawn Christian	Gavin Cyprian
Sid Gould	Michele Christian	Sharlene Cyprian
Kevin Young	Steve Christian	Stephen Townsend

Weeds

Arrowhead Vine, Devil's Ivy and Butterfly Pea were considered the top three priority species for potential WOW programme management. The community also pointed out the Swiss Cheese Plant was found in other parts of the island but did not seem to spread.

The goat population had previously kept weeds under control. Since their removal, the weeds had spread more widely. There was concern that controlling Rose-apple could remove important nesting grounds for the Pitcairn Reed-warbler (locally, the Sparrow). Lantana is seen as a useful plant for agriculture as the soil underneath it is good for growing vegetables.

The community noted that the absence of seed eating birds had probably slowed down the spread of invasive weeds. They also noted that any introduced biocontrol could become a target for native insectivorous birds.

Biosecurity

The community were concerned about the quality of imports from New Zealand, such as imported potatoes covered in soil. However, the additional cost for washed potatoes was prohibitive and once washed they did not last as long.

Concerns were also raised about the use of non-sterilized compost from New Zealand. The store owner indicated that if the community preferred, they would stop importing the compost.

Crop pests

The community raised concern about pests, such as Fruit Flies and other insects damaging crops.

Invasive mammals

Rats were identified as another invasive species of concern.

Community participants October 7 2023 meeting

Pawl Warren	Jay Warren	Meralda Warren
Sue Warren	Shawn Christian	Gavin Cyprian
Charlene Warren-Peu	Michele Christian	Sharlene Cyprian
Sid Gould	Steve Christian	Stephen Townsend
Kevin Young	Tian Christian	William Gordon
Melva Evans	Tim van der Velde	

Weeds and restoration

The Christian's Cave Eco-trail was identified as a potential site for restoration as it has easy access, tourism values and existing signage covers endemic species.

A community member indicated *Leucaena* had been brought from Fiji in 1964 for the hardness of its wood but it had not spread widely. The community was informed that *Leucaena* had proven invasive elsewhere but that it was likely the natural enemy that is also present has slowed down spread on Pitcairn.

Biosecurity

The community indicated there was a need for more awareness and agreed awareness was important.

While the importance of clear biosecurity guidance for non-residents was noted, the community also discussed the role they play in the introduction of new species on the island.

Invasive mammals

The community agreed rats and feral cats were an issue.

The community indicated that feral goats are rare, and are mostly escaped domestic goats. While the biosecurity officer has the right to shoot any escaped goats, they currently have to do so with their own gun and ammunition, due to supply issues from New Zealand.

TISSAP queries

The community asked what the next steps were and what the expected outcomes are from the TISSAP development. The community was informed that the next step was to organise Monica Gruber's visit, to work with the biosecurity team and finalise the TISSAP. Once the TISSAP has been reviewed by local authorities and endorsed, SPREP could progress efforts to identify funding to meet the priorities through operational planning and on-the-ground activities.

Other

The meeting ended and the community was informed the SPREP team would continue to work with Michele Christian and the Administrator's office.

11.4.2 Pitcairn TISSAP consultations December 2023

In December 2023, Monica Gruber (Pacific Biosecurity) visited Pitcairn to:

- Present the draft TISSAP Action Plan (which was informed by the October consultation and discussions with partners) and get community feedback.
- Review the TISSAP text and Action Plan with the ECNR team and the Administrator.
- Incorporate feedback from consultation and discussions.
- Work with Biosecurity team to get an understanding of next steps for Biosecurity (for the TISSAP but also how Protect our Islands can help).
- Identify next steps for endorsement of the TISSAP.

Community participants December 12 2023 meeting

Pawl Warren	Jay Warren	Meralda Warren
Sue Warren	Darralyn Warren	Gavin Cyprian
Charlene Warren	Michele Christian	William Gordon
Heather Menzies	Peter Adams	John Skerritt V
Kevin Young	Simon Young	Melva Evans

Each action in the draft Action Plan was presented and discussed as a group.

FOUNDATIONS

The overarching view from the community was that given the small, gaining population, the larger actions could not be completed autonomously, and this needed to be considered when designing projects, as well as the approach, which might be quite different in Pitcairn compared to other places.

A1 – Generating support

The draft Actions were generally supported. Additional comments included support for managing fruit flies (which was incorporated as an action in C2).

A2 – Building capacity

Comments were made that in the October consultation, some of the data presented about species present did not align with what was known on island. A single place for Pitcairn data was important to the community, which Pitkerners could control, and which would encompass both terrestrial and marine biodiversity and invasive species.

A3 – Legislation, policy, and protocols

The actions were agreed without significant discussion.

PROBLEM DEFINITION, PRIORITIZATION AND DECISION-MAKING

B1 – Baseline & Monitoring

No significant discussion

B2 – Prioritization

Deciding priorities was discussed, along with how to prioritise new weeds. The example was given of a new invasive grass referred to as “Kaikui”, which is invasive on Hawai’i and overtaking established invasives such as “Grab-a-leg”. A subsequent web search found no invasive grass with the name “Kaikui” (only Kikuyu), but a Google Lens search identified a sample of the grass as *Melinis repens*, which is invasive in Australia and found in French Polynesia. It might not be this species, and identification is needed to better understand the threat, determine treatment options, prioritise, and decide a management approach.

Importing items with soil attached was raised as an issue, and inspections in New Zealand would be useful, but the cost of this (or only importing soil-free items) also needs to be weighed up against the risk.

B3 – Research on priorities

The actions were agreed without significant discussion.

MANAGEMENT ACTION

C1 – Biosecurity

Pitcairn are prepared for a response to rat incursions on rat-free islands within three days. But removing the rats would not be something that Pitcairn could do independently. However, it is hoped that after the eradications RSPB will leave some rat bait behind on Pitcairn.

It was pointed out that Expedition ships could come from a range of places, not just Mangareva (which was in the draft), and all those sources needed to be assessed and secured (action updated). A major concern was hitchhikers, such as seeds on shoes. Division Manager ECNR commented that plans were underway for chemical treatment of boots prior to boarding the Silver Supporter, which would be expanded to all sources. Passengers will be notified on booking once that process is activated (along with all other biosecurity advice).

Some discussions were had around incorporating risk assessment for aggregates in projects, and whether this should be an action. Treatment can add significant costs that need to be known upfront at the project definition stage, so it was decided to leave the action in place for now as a reminder for when projects are being costed.

Participants noted that terrestrial biosecurity provisions should be included in the Guide for Visiting Vessels, and vessels have asked for this information.

C2 – Management of established invasives

The draft actions were agreed, and several new actions added for consideration, including:

- an integrated pest management plan for fruit flies,
- some way of treating weaving materials and woven products to stop attacks by insects
- conservation of Miro and Tau by management of encroaching coconuts and reseeded. A visit every year or two was suggested
- looking for economic opportunities from invasive species

Regarding both biocontrol and conventional control of weeds, community members felt there needed to be more discussion around prioritisation, and what areas should be targeted for control and restoration (for example zones with easier access for targeted work). The comment was made that sometimes it is better to let things be.

Concerns were raised about chemical use and potential impacts on bees, and the comment was made that there are more “natural” alternatives that could be used.

The control of goats was discussed briefly, with comments by some that it was too difficult, and disagreement from others.

C3 – Restoration: As noted under C2, restoration plans would need to first identify the best sites that would work for the community. Rather than reinstating a central nursery, it was suggested that it might be more effective to support individual households who wanted to grow natives. Any approach chosen needed to fit what would work for the community and be adapted as needs change.

A decline in dragonflies had been observed by a community member but the cause was not known.

11.5 Annex 5: Regional and international organisations and databases related to invasive species management

11.5.1 Organisations

The Pacific Community (SPC)

[SPC](#) helps Pacific island people respond effectively to the challenges they face and make informed decisions about their future and the future they wish to leave for the generations that follow. The SPC website has a description of the core business of each of SPC’s Divisions and more detailed information about how they can help. SPC is a supporting partner in the PRISMSS [Protect our Islands programme](#).

Secretariat of the Pacific Regional Environment Programme (SPREP)

[SPREP](#) works for its member countries towards the ongoing goal of improved sustainable management of island and ocean ecosystems and biodiversity, in support of communities, livelihoods, and national sustainable development objectives, through an improved understanding of ecosystem-based management and implementation of National Biodiversity Strategy and Action Plans.

The [SPREP Island and Ocean Ecosystem Services Strategy](#) is delivered through four main priorities: 1) Biodiversity; 2) Invasive Species; 3) Coastal and Marine; 4) Threatened species. SPREP is a leading partner in the PRISMSS programmes [War on weeds](#) and [Resilient ecosystems – resilient communities](#).

Pacific Regional Invasive Species Support Service (PRISMSS)

Made up of five programmes, [PRISMSS](#) is a coordinating mechanism to facilitate the scaling up of operational management of invasive species in the Pacific. PRISMSS brings together experts to provide support within the Pacific region with a focus on protection of indigenous biodiversity and ecosystem function. The goal is to reduce the ecological and socio-economic impact of invasive species on ecosystems through the management or eradication of prioritised species and the protection of valued sites.

PRISMSS currently provides technical support across five programmes for the Pacific region:

1. [Protect our islands](#) - “Prevent the arrival, establishment and spread of invasive species”
2. [Predator free Pacific](#) - “Removing introduced mammalian predators from islands”
3. [War on weeds](#) - “Management of high priority weeds”
4. [Natural enemies - natural solutions](#) - “Biological control of widespread weeds”
5. [Resilient ecosystems – resilient communities](#) - “Priority area ecological restoration”

11.5.2 Databases and information resources

Pacific Invasive Species Battler Resource Base

The [Battler Resource Base](#) provides a central base for all invasive species information needs. It offers national invasive species practitioners and interested parties from around the Pacific an easier way to find information and knowledge products to assist with their programme of works, research on priority species and management of invasive species projects.

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author	version	description	date
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