Terms used in invasive plant management

TERM	DESCRIPTION
A	
a.i.	The active ingredient in a herbicide.
Adjuvant	An adjuvant is any compound that is added to a herbicide mix to facilitate the mixing, application, or effectiveness of that herbicide. Examples are stickers, spreaders, marker dyes.
B	
Baseline data	The pre-treatment measurement of an indicator. Important to compare before and after the treatment to establish the changes due to the management option.
Best Practice	An activity or procedure that has produced outstanding and consistent results and has been adopted and applied more widely, resulting in improved effectiveness, and/or efficiency.
Biocontrol **Biological Control**	A method of controlling invasive plants by using their natural enemies. Landcare Research produced '**Prioritisation of targets for biological control of weeds on Pacific Islands'** after a workshop in 2010. This publication is available from the PII website.
Biodiversity **Biological diversity**	The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Synonym: biological diversity.
Biosecurity	Keeping a site free from new invasive species, or reinvasion of previous ones. Involves prevention, surveillance and incursion response.
Broad spectrum herbicides	These can damage or kill many different plants, so care must be taken to only apply broad spectrum herbicides (e.g. *glyphosate*, *triclopyr*) to the target invasive plant.
C	
Control (control to zero density, containment)	Reducing the density or distribution (or both) of an invasive species to below a pre-set acceptable level, e.g. to where a vulnerable native species can recover and breed successfully.
Containment	Ongoing control to prevent the species spreading beyond a defined distribution/abundance/area. Stopping the spread of an invasive plant from its original location.
Chemical treatment	The application of herbicide to manage invasive plants
Cut-stump (CS)	The cut-stump method involves completely cutting the plant off at ground level. An appropriate herbicide solution is immediately applied around the cambium layer on the stump. This prevents shoots developing from the stem and kills the root system.
D	
Database	
Detection	Sighting of an invasive species through active or passive surveillance.

Dust mask	Some herbicides are powders which have to me mixed. A dust mask is necessary to avoid inhalation of powder.
E	
Endemic	Where a species is native to and limited to a particular geographic region, because of factors such as isolation or response to soil or climatic conditions. For example, the *Manilkara* genus is found throughout the tropical world, but *Manilkara samoensis* is only found in the Samoan archipelago.
Eradication	The removal of the entire population of an invasive species from a country or a site (e.g. outer island) where reinvasion is not likely to occur.
Evaluation	Evaluation is the use of information collected in the monitoring programme to answer some specific questions about the project.
F	
Flowering period	The start and finish dates of flowering. Application of treatments in an invasive plant management project is usually best done before flowering.
G	
GIS	Geographic Information System (GIS) is a graphic and interactive computer system for information management related to positions on the Earth's surface. GIS can be used for handling maps of one kind or another. These might be represented as several different layers where each layer holds data about a particular kind of feature. Each feature is linked to a position on the graphical image on a map and a record in an attribute table.
Goal	A goal is a general, long-term, desired result.
GPS	Global Positioning System (GPS) is a satellite -based navigation system that provides location and time information in all weather, anywhere on or near the Earth, where there is an unobstructed line of slight to four or more GPS satellites. Caution when using GPS is required - some areas do not have good satellite coverage at all times and GPS units vary in their ability to read satellite signals near buildings and under dense forest canopy.
Guidelines	The 'Guidelines for Invasive Species Management in the Pacific' is a Pacific strategy for managing pests, weeds, and other invasive species. Developed by SPREP and SPC at the request of and with the collaboration of its member countries, the Guidelines were endorsed by member countries in 2008 and are available from SPREP.
H	
Hack-and-squirt (HS)	The hack-and-squirt method can be used to treat trees in place. A sharp hatchet/tomahawk is used to make a series of downward cuts in the bark around the circumference of the tree trunk. For most species, it takes one cut for every 5-10 cm of trunk diameter. Immediately apply an appropriate herbicide solution into each cut. This will gradually kill the tree over a period of time (up to 2 years).
Hand-pulling (HP)	Manually removing invasive plants by using hands or hand tools

	(trowels, grubbers, etc.). This method is most useful for small infestations of invasive plants or with a large team of people to help. Care must be taken to remove all the tiny pieces of plants, such as wedelia (*Sphagneticola trilobata*), that can regrow from fragments. This method doesn't work well with plants with large root systems of underground tubers, e.g. chain-of-love (*Antigonon leptopus*).
Herbicide (also see **Selective herbicides** and **Broad spectrum herbicides**)	A substance that is toxic to plants and is used to kill or reduce unwanted vegetation. They can be applied to relatively large areas quickly with relatively little labour making them a cheap form of invasive plant management.
Herbicide types (Contact, Residual, Systemic) **NOTE 1:** All herbicides must be applied by people who have been trained in the use of herbicides and know how to use herbicides safely. **NOTE 2:** Some herbicides may have more than one of the characteristics described here, e.g. Banvine (a.i. *2,4,D + dicamba*) is a systemic herbicide with residual activity.	**Contact** herbicides, e.g. Gramoxone (a.i. = *paraquat*), kill only the cells in those plant parts to which they are applied (usually sprayed). They are normally used for management of annual plants. **Residual** herbicides, e.g. Tordon (a.i. *picloram*), can be applied to the soil to kill invasive plants. Some can remain active in the ground for some time and can kill germinating seedlings. Caution - residual herbicides in the soil can also kill nearby native plants. **Systemic** herbicides move to cells inside the plant including the root system, e.g. Roundup (a.i. *glyphosate*). Some are sprayed on and others can be injected into the plant circulation system at one spot.
I	
Implementing agency	The agency that is responsible for undertaking a invasive species management project.
Incursion	The arrival of a new invasive species.
Incursion response	The actions a project team will take if an incursion is thought to have occurred. A biosecurity action.
Indicator	Something that can be measured (either Qualitatively or Quantitatively, or both) that represents the changes in outcomes due to the project and tells you if you have achieved the project objectives.
Indigenous species	Another name for native species.
Integrator (Invasiveness Category)	Naturalised in your islands but growing with native vegetation without causing major habitat change (mainly small weeds)
Intentional introduction	The purposeful movement by humans of a species outside its natural range and dispersal potential (such introductions may be legal or illegal).
Interception	Detection of an organism on or in risk goods in a transitional facility or a biosecurity control area, or found during active or passive surveillance.
Introduction	The movement, by humans, of a species outside its natural range. This movement can be either within a country or between countries.
Introduced species	Plants, animals and other organisms taken beyond their natural range by people, deliberately or unintentionally.
Invasiveness category	Six categories developed in the Galapagos Islands to help with prioritizing invasive plants for action.
Invasive species (IS)	An alien species whose introduction and/or spread threaten biological

Previously known as Invasive Alien Species (IAS) or pests or weeds.	diversity. Plants, animals and other organisms taken beyond their natural range by people, deliberately or unintentionally, and which become destructive to the environment or human interests.
Invasive Species Management (ISM)	The invasive species management strategies for invasive plant management are: prevention, eradication, control, or do nothing. Any invasive species management project needs to be carefully planned.
Invasion	The establishment and reproduction of a new species not previously recorded.
K	
Knapsack sprayer	Knapsack sprayers for applying herbicide come in many different forms but the basic components and requirements for use are similar for all. The basic components are: Tank to hold chemical; Hand pump to create pressure; Filtration system behind the nozzle tip to reduce blockages; Control Valve to control pressure and turn of the sprayer; Nozzle tip to control application rate an produce the correct size droplets. Most knapsack tanks hold 10-20lites of mix and use a diaphragm or piston type hand pump to build pressure for spraying.
L	
Likely transformer (Invasiveness Category)	Established and reproducing in your islands and known as a habitat modifier elsewhere
M	
Management options	The invasive species management options for invasive plant management are: prevention, eradication, control or do nothing.
Marker dye	An adjuvant that allows you to see where you have already applied a herbicide. Commercial dyes are available, but food colouring works too.
Mechanical treatment	Mechanical invasive plant management is using machinery, such as mowers, tractor slashers and bulldozers, or power tools, such as chainsaws to remove plants.
Monitoring	Monitoring is the repeated measurement of an indicator to assess how the indicator is changing through time. Monitoring can be: - Qualitative monitoring (visual assessment but can't be measured - based on observations, e.g. photo-points), or - Quantitative monitoring (this can be measured, e.g. marked plots or quadrats where you count actual plants)
N	
Naturalised (Invasiveness Category)	Non-native organisms are said to be naturalised once they escape from cultivation or spread into the wild and their reproduction is sufficient to maintain the population. Naturalised species may become invasive species if they have an adverse effect on native plants and animals.
Nozzle	The most important component of a knapsack sprayer as it determines the flow and distribution of the spray. Nozzles have a

	spray tip, a filter/strainer and a body and cap. There are many different types of nozzle tips, each designed for a certain type of spray application.
O	
P	
Pest	Used to refer to invasive plants as 'pest' plants. Usually used in an agricultural sense.
Phloem	One of the two types of transport tissue in plants, phloem transports nutrients (sugars and starches known as photosynthate) from the leaves to all parts of the plant, including the roots, where needed.
Physical treatment	Manually removing invasive plants by using hands or hand tools (trowels, grubbers, etc.). See 'Hand-pulling' above.
Potential Invader (Invasiveness Category)	Not naturalised in your islands but a potential invader (based on behaviour elsewhere)
Pressure sprayer	A tool for applying herbicide as a spray. Can be a small hand-operated one, a knapsack sprayer, or a vehicle mounted tank sprayer.
Prevention	Stopping invasive species from getting to a site. A part of biosecurity.
Probably Harmless (Invasiveness Category)	In your islands only cultivated (not naturalised) and not known as an invader elsewhere
Q	
Quantitative measurement	An accurate measurement that provides numbers, e.g. marked plots or quadrats where you count actual plants.
Qualitative measurement	An assessment based on observations that can't be measured accurately, e.g. photo-points.
R	
Randomise	It is essential in any field trials that all the treatments, including a 'nil' treatment, are randomly allocated so that any bias can be reduced or explained. Help with trial design should be sought from a statistician.
Replicate	All treatments in a field trial need to be replicated so that any variation between habitat (e.g. soil type) and treatment (e.g. different workers) can be accounted for. There should be at least three replicates in any field trial, but help with trial design should be sought from a statistician.
Ringbarking (RB) Girdling	A treatment method that requires cutting through the inner and outer bark, cambium and phloem (not xylem) tissues on a tree to prevent nutrients (sugars and starches) from reaching the roots so that the plant dies from the roots up.
S	
Selective herbicides	These harm only a narrow range of plant species and can often be matched to the target invasive plant.
Site-led Projects	Projects that are focused on minimizing the numbers and impacts, or containing the distribution, of invasive plants in a specified area e.g. national park or reserve. They are usually control projects.
Species-led Projects	These projects are generally for complete eradication of the species from the country or a site where reinvasion is not likely.

Specified density	Used when a project needs to keep the number of invasive plants down to a level where the impacts of the plants are not serious. This is often zero density, but can be a higher density. These are control projects but, over time, can lead to eradication.
Spreader	A sticker combined with a surfactant is an adjuvant often called a 'spreader' because the materials help herbicide spray spread and stick to plant parts.
Sticker	An adjuvant that causes the herbicide to adhere to the plant foliage, and reduces the possibility that rain will wash it off before the herbicide can penetrate.
Surfactant	An adjuvant that reduce water surface tension and improve the spread of a herbicide spray on a plant surface.
Surveillance	Surveying to detect the presence of invasive species. Part of biosecurity.
T	
Targeted application equipment	Use of calibrated application tool (e.g. syringe, drench gun) to apply specific amount of herbicide to target tree species. Often used in conjunction with a backpack to carry the herbicide.
Treatment	The method used to kill or remove the target invasive plant(s).
Transformer (Invasiveness Category)	Already a habitat modifier in your islands (includes hybridising with endemics).
U	
V	
W	
X	
Xylem	One of the two types of transport tissue in plants, xylem transports the soil solution (water and soluble minerals) from the root system throughout the plant.
Y	
Z	
Zero density	An invasive plant management project when the treatment is designed to prevent target species from flowering, fruiting and seeding so that the population stays at zero. It is not eradication because regular surveillance and treatment is required to maintain zero population growth.