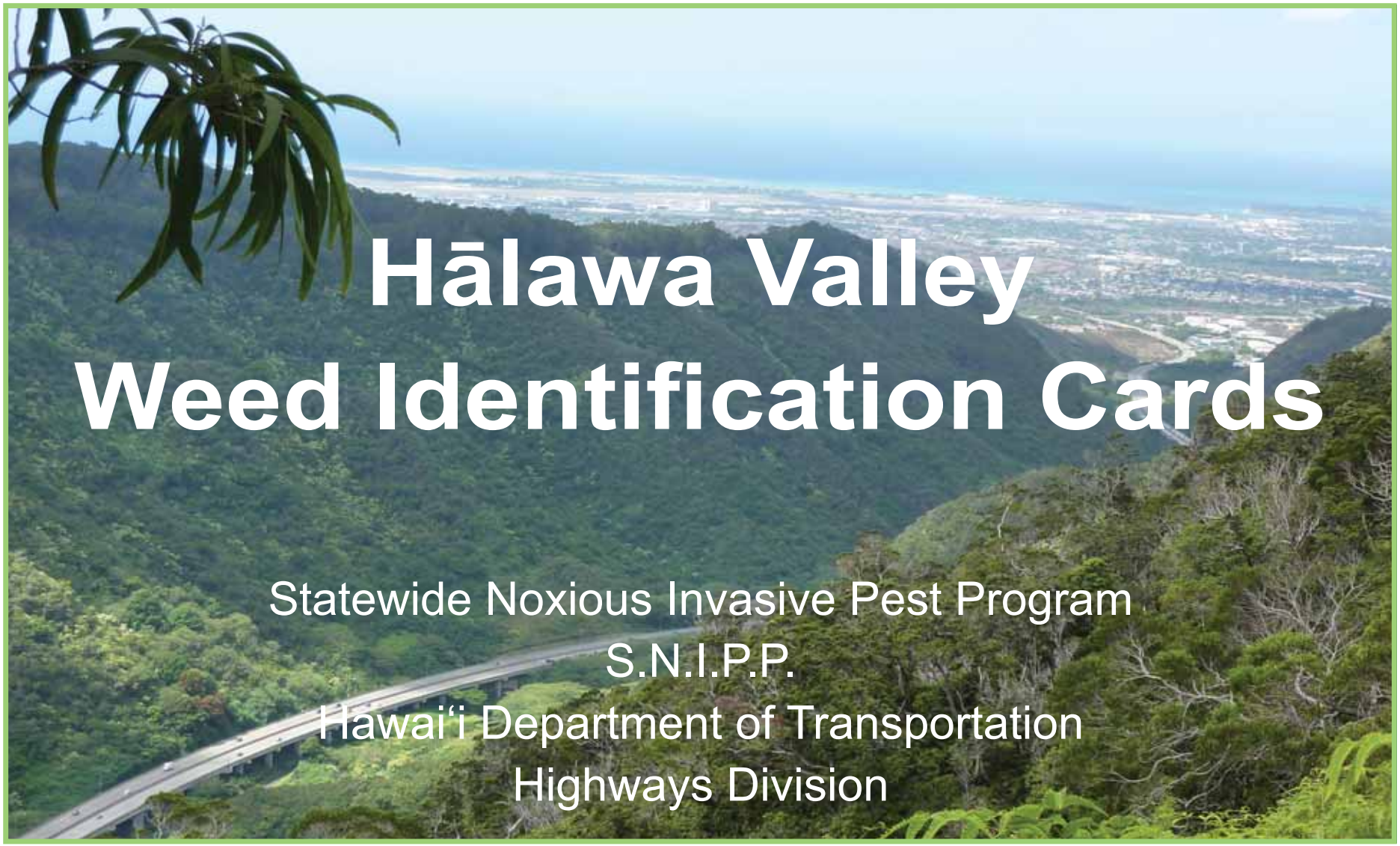

Hālawa Valley Weed Identification Cards

Statewide Noxious Invasive Pest Program
S.N.I.P.P.
Hawai‘i Department of Transportation
Highways Division

Hawai‘i Department of Transportation
Highways Division
Statewide Noxious Invasive Pest Program (S.N.I.P.P.)
HDOT Project Manager: Chris Dacus

This set of cards, developed in coordination with Sweets Matthews of Na Kūpuna A Me Na Kako‘o O Hālawa Inc., is designed to help you identify some common invasive plants in Hālawa Valley, O‘ahu. Keep it in your pocket while weeding. The Color Key indicates if the plant is a tree, shrub, vine, herb, grass or fern. Each card also provides information on the best chemical control method known to kill that plant.

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Color Key

Trees

Shrubs

Vines

Herbs

Grasses

Ferns

Weeding Tips:

- Always make sure that you are pulling out or chemically treating only the unwanted/invasive plants. ***When in doubt, don't kill.***
- When pulling out weeds, make sure you remove the plant with the entire root. Some plants can re-sprout from the residual stem/root. The use of weeding tools may facilitate mechanical removal of weeds.
- Unwanted plants often outnumber plants you want to protect in an area. Learn to identify the few valuable natives that occur at your site and avoid trampling them or pulling them out along with the weeds.
- **Always use personal protective equipment, such as gloves, to avoid bodily injury.**
- Integrate use of herbicides for invasive plant control. They can be very effective and less labor intensive.
  See the COMMONLY USED HERBICIDES card.
- When applying herbicides, follow the safety requirements specified by the manufacturer.
- Dispose the pulled weeds appropriately so that you are not spreading them in the process.

Commonly Used Herbicides

Active ingredient	Trade name	Effective on
2,4-D MCPP dicamba	Primera Triplet SF® (restricted)	Broadleaf plants
glyphosate	AquaMaster®, Roundup®	Non-selective
imazapyr	Arsenal®	Brush
picloram	Tordon 22K®	Broadleaf, brush
triclopyr	Garlon 3A®	Broadleaf, brush

Helpful Herbicide Application Techniques:

Foliar application

1. Use a backpack sprayer or hand-operated pump sprayer.
2. Spray herbicide directly onto the leaves and stems with a consistent back and forth motion.
3. Thoroughly cover the vegetation but not to the point of runoff.
4. Multiple follow-up applications are needed to accomplish full control.
5. It is important to control spray drift because it may inadvertently damage desirable species.

Basal bark application

1. Use a paint brush and paint the lower 12 to 18 inches of the stem/trunk with the herbicide and oil mixture.
2. For effectiveness, apply adequately all around the bark.
3. Control effects are only visible after several weeks.
4. Total control may take several months.

Cut surface application

Cut surface treatments typically include: hack and squirt, cut stump, and girdle/frill methods.

► Hack and Squirt

1. Use a small axe or machete.
2. Hack the entire circumference of the tree in a downward motion cutting through the bark and into the sapwood.
3. With a squirt bottle place the herbicide solution into the cuts; approximately one squirt of 1 ml in each cut.

Helpful Herbicide Application Techniques:

► Cut Stump

1. Apply using a backpack sprayer, squirt bottle or paint brush.
2. After cutting the tree at the base, apply the herbicide as quickly as possible after removing the saw dust.
3. For bigger stumps (greater than 3 inches in diameter) apply herbicide only to the outer edge avoiding runoff because the living tissue in larger trees is only around the outer edge.
4. For smaller stumps (less than 3 inches in diameter) apply herbicide to the entire cut surface.

► Girdle/Frill

1. Use an axe or similar tool.
2. Make cuts angled downward and around the base of the stem, deep enough to reach the sapwood.
3. Apply herbicide to the entire cut surface just to the point of overflow.

Soil application

1. Apply by hand or using mechanical spreaders in streams or grid pattern.
2. Granular or pellet type herbicides are designed for soil application.
3. Application rate and size of the grid depend on the soil texture and species composition.
4. See individual herbicide labels for instructions.
5. Soil application is not a selective technique, so use caution if desirable vegetation is in the vicinity.
6. Soil application is a slow process and may require multiple years to fully control some species.

African Tulip Tree (*Spathodea campanulata*)

Habit 1

Habit 2

Leaves & Flowers

Flowers

Seed Pods

How do I control it?

- **Use cut-surface applications of dicamba and glyphosate on trees.**
- **Use basal bark applications of 2,4-D and triclopyr on saplings.**

—photos by Forest & Kim Starr

Bingabing *(Macaranga mappa)*

Habit

Leaves

Flowers

How do I control it?

- **Use mechanical removal techniques.**

—photos by Forest & Kim Starr

Fiddlewood (*Citharexylum spinosum*)

Habit

Seedlings

Flowers

Leaves

Fruit

—photos by Forest & Kim Starr; Gerald D. Carr

How do I control it?

- **Use mechanical removal techniques.**
- **Spray an imazapyr methyl metsulfuron combination at 1.2 oz. and 0.2 oz. active ingredient per gallon of water.**

Formosa Koa (*Acacia confusa*)

Habit as tree

Habit as shrub

Flowers and leaves

Seed pods

How do I control it?

- **For saplings use foliar application of 2,4-D at 1 lb/acre and of triclopyr at 1 lb/acre.**
- **Use cut-surface applications of 2,4-D, dicamba, glyphosate, picloram (45), and triclopyr.**
- **For trees use very low-volume basal bark application of 20% triclopyr in oil or triclopyr ester at 5% in diesel oil.**

—photos by Forest & Kim Starr

Native Koa (*Acacia koa*) Note difference from Formosa koa

Young and mature native koa leaves

Please don't confuse Formosa koa (*Acacia confusa*) with native koa (*Acacia koa*) trees. See chart at right for detailed differences.

Leaves and flowers

Seed pods

Plant Feature	Formosa Koa	Native Koa
Mature trees	Up to 15 m tall	Up to 35 m tall
Leaves/Phyllodes (sickle shaped)	Slightly sickle shaped and smaller (6 to 11 cm long and 0.5 to 0.8 cm wide).	Sharply sickle shaped and bigger (7.5 to 26 cm long and 0.5 to 2.5 cm wide). Young leaves first appear like those of fern – the small leaf lobes arranged on either side of the common axis.
Flower heads	Yellow	White
Seed pods	Flat, smaller (about 7 to 10 cm long and 0.7 to 1 cm wide)	Flat, bigger (8 to 30 cm long and 0.8 to 2.5 cm wide)
Seeds	Convex on both sides; shaped like a lentil.	Elliptical in shape

—photos by Forest & Kim Starr

Guava (*Psidium guajava*)

Flowers

Leaves & Fruit

How do I control it?

- **Use foliar applications of triclopyr, dicamba, and 2,4-D at 1 lb/acre and cut-surface applications of concentrates of these herbicides.**
- **Use basal bark treatments of triclopyr ester and 2,4-D ester at 2% and 4% of product, respectively, in diesel or crop oil, or 20% triclopyr in crop oil used in low volume.**
- **Use soil application of tebuthiuron at 2 lb/acre, especially when plants are tolerant of foliar applications, which may be the case with a small-leafed shrubby variety.**

—photos by Forest & Kim Starr

Gunpowder Tree/Charcoal Tree (*Trema orientalis*)

Habit

Leaves

Branch with flowers

How do I control it?

- **Use cut-surface applications (to drilled holes) of hormone-type herbicides and glyphosate.**
- **Use triclopyr amine at 10% product in water applied to cut stumps.**
- **Use basal bark, frill, and cut-stump applications of triclopyr, and foliar or drizzle application of glyphosate.**

—photos by Forest & Kim Starr

Strawberry Guava (*Psidium cattleianum*)

Habit

Leaves

Flowers

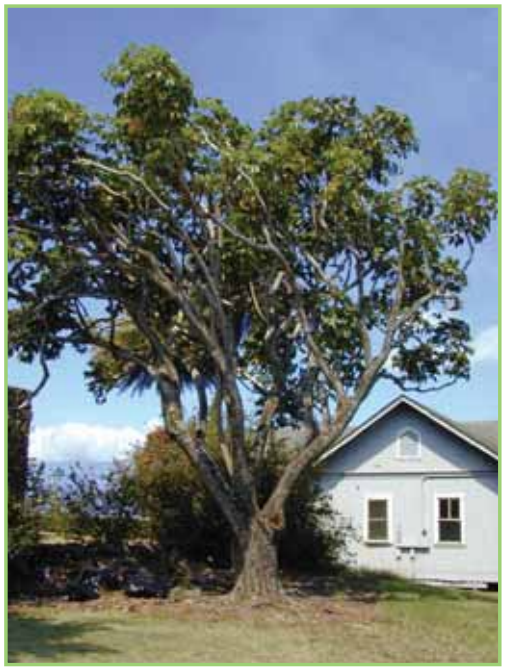
Fruits

How do I control it?

- **Glyphosate is ineffective.**
- **Use bark applications of triclopyr ester at 2% and 2,4-D ester at 4% mix.**
- **Apply triclopyr amine at 50% to cut stumps or frills.**

—photos by Forest & Kim Starr

Umbrella Tree/Octopus Tree (*Schefflera actinophylla*)



Habit

Leaves

Fruits

Fruits

Young plant

How do I control it?

- **Use basal bark applications or cut-stump applications of triclopyr.**

—photos by Forest & Kim Starr

Christmas Berry/Brazilian Pepper Tree (*Schinus terebinthifolius*)

Habit tree

Habit shrub

Leaves

Flowers

Hawaiian name: Naniohilo/Wilelaiki

Fruits

How do I control it?

- **Use basal bark application or triclopyr ester at 5% or 10% in diesel oil, or 20% triclopyr ester in crop oil.**
- **Use foliar application of 1% imazapyr or 1% triclopyr amine.**
- **Use cut surface application of 50% triclopyr amine, or dicamba, glyphosate or picloram.**

—photos by Forest & Kim Starr

Koa Haole/Lead Tree (*Citharexylum spinosum*)

Habit 1

Habit 2

Seed pods

Buds and flowers

Leaves

How do I control it?

- **Use foliar-applied triclopyr.**
- **Use cut-surface applications of picloram.**
- **Use triclopyr ester applied to basal bark and stump bark, 2,4-D in diesel and sometimes diesel alone on basal bark.**

—photos by Forest & Kim Starr

Pluchea spp.

Indian fleabean
(*Pluchea indica*)

Leaves

Flowers

Sourbush
(*Pluchea carolinensis*)

Flowers

Marsh fleabean
(*Pluchea x fosbergii*)

Leaves and flowers
A hybrid of Indian fleabean and sourbush

How do I control sourbush?

- **Use 1 lb/acre 2,4-D, 0.5 lb/acre dicamba, and 0.25 lb/acre triclopyr.**
- **Use 0.5 lb/acre triclopyr in drizzle applications (56).**
- **Use foliar application of glyphosate at 1% product.**

How do I control Indian fleabean?

- **Use 2,4-D or other hormone-type dicot killers.**
- **Use 1% glyphosate product in foliar application.**
- **Use drizzle applications of 1 lb/acre of glyphosate.**

—photos by Forest & Kim Starr

Stink Vine/Skunk Vine (*Paederia foetida*)

Habit

Flowers

Leaves

Fruits and leaves

Hawaiian name: Maile pilau

How do I control it?

- **Control by chemical or mechanical means should consider damages to vegetation supporting the vine.**

Chemical

- **Triclopyr and glyphosate products can be used for controlling, but complete control cannot be achieved with a single application and follow-up applications are necessary.**

—photos by Forest & Kim Starr

Purple Bushbean (*Macroptilium atropurpureum*)

Habit

Leaves

Flower

Fruits/ pods

How do I control it?

- **Use herbicides with 2,4-D, clowpyralid, aminopyralid and triclopyr within label rates.**

—photos by Forest & Kim Starr

Bamboo Orchid (*Arundia graminifolia*)

Habit 1

Habit 2

Leaves

Flower

How do I control it?

- **Use mechanical removal techniques.**

—photos by Forest & Kim Starr

Buddleia (*Buddleia asiatica*)

Habit

Flowers

Leaves

Seed heads

How do I control it?

- **Use glyphosate and hormonetype herbicides.**
- **Use triclopyr ester applied to basal bark (10% product in oil).**
- **Use triclopyr amine in foliar application at 2% product in water.**

—photos by Forest & Kim Starr

Koster's Curse (*Clidemia hirta*)

Habit

Leaves

Flowers

Fruits

How do I control it?

- **Use triclopyr amine at 1 to 2% in water in foliar application.**
- **Use a 50% triclopyr amine application to cut stumps.**
- **Thinline basal bark application of triclopyr ester is effective at one month to plants 7 to 9 feet tall.**
- **Use triclopyr ester at 2 lb/acre with 0.5% crop oil.**
- **Drizzle applications of glyphosate and of triclopyr are ineffective. Use drizzle applications of triclopyr in oil on recovering clidemia that has been previously cut back.**

Physical — Pulling is difficult but can be effective if done repeatedly for an extended period.

—photos by Forest & Kim Starr

Mule's Foot Fern (*Angiopteris evecta*)

Habit

Frond

Close up of fern leaf

Base of fern

Swollen base of each leaf/ frond

Spores underneath the frond

—photos by Forest & Kim Starr

How do I control it?

- **Use mechanical removal techniques.**

Bushy Beard Grass (*Andropogon glomeratus* var. *pumila*)

Habit

Seeds

Flowering

Bagging flowering heads

How do I control it? DO NOT REMOVE IT.

Report bushy beard grass to OISC: 292-6691

- **OISC (Oahu Invasive Species Committee) is controlling this grass in Hālawa Valley.**

—photos by OISC

West Indian foxtail grass (*Andropogon bicornis*)

Flowering heads

Habit

How do I control it? DO NOT REMOVE IT.

Report West Indian foxtail grass to OISC: 292-6691

- **OISC (Oahu Invasive Species Committee) is controlling this grass in Hālawa Valley.**
- **OISC will carefully cut and bag the flowering heads. The standing stalks can then be sprayed with glyphosate. Smaller plants can be uprooted by hand.**

—photos by Oahu Early Detection

Guinea Grass (*Urochloa maxima*)

Habit 1

Habit 2

Leaf blade

Flowers 3

How do I control it?

- **Use glyphosate, including drizzle application. Before herbiciding, cut tall guinea grass with weed eater.**
- **Use selective grass killers.**

—photos by Forest & Kim Starr; SWCA

643-7378

643 PEST

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