



## THREATENED AND ENDANGERED PLANT PERMIT REPORTING

Department of Land and Natural Resources  
Division of Forestry and Wildlife  
Native Ecosystem Protection and Management  
Hawai'i Rare Plant Program

### Introduction

Managing data for successful plant conservation requires combining up-to-date field observations of wild and outplanted plant populations with current nursery or seed bank inventories and location information. If these data and the connections between them are defined and consistently utilized, then they can be used to guide management priorities that adapt to recent monitoring results and new project opportunities: Which plants need help? When do these seedlings need to go and how do we get them there? To react in time to stop extinctions of Hawai'i's native plants, we need to simultaneously decide where to go in the field today to collect seeds and how to secure habitat for the seedlings when they grow. Besides our staff, the Division of Forestry and Wildlife (DOFAW) relies on partners who work with Threatened and Endangered species to provide this information. The standard fields for documenting *in situ* information about rare plants are defined by the Hawaii Rare Plant Restoration Group ([HRPRG](#)) on its [Rare Plant Monitoring Form](#) and the [Instructions](#). Well-curated *ex situ* inventories from nurseries, seed banks, micropropagation, and botanical gardens are also arranged using the same HRPRG classification to connect each seed or seedling to the plant and place it represents.

As a permit holder, the information about each population site you work with, the plants at that site, any collections you make, and where the collections are held gets reported annually. The information we need has been divided into four steps, each on its own tab in the accompanying Excel workbook. The worksheets should be completed in the following order:

- 1-Population Site: Enter every site where work was done (monitoring, collection, outplanting)
- 2-Population Site Monitoring: Population numbers and habitat characteristics observed at each site
- 3-Nursery Accessions: Information about each plant grown for a living collection or outplanting
- 4-Individual Plants & Collections: Data on each plant monitored, outplanted, or collected from

Definitions for each of these fields are as follows (letters correspond to columns in each sheet):

1. Population Site
  - b. Island: Select which island the population is on from the drop-down list
  - e. Geographic Reference Area: Select which population area the site is in from the drop-down list. Don't know? A map of the areas is here: [GeoRefMap](#).
  - g. Population Reference Site: Select a letter for each site. Each site should be small enough to monitor all the plants in it on a single visit. It is best if they are defined using landmarks visible in the field, so it is obvious where one site ends, and another begins (below and above a waterfall, on each side of a ridge, etc.).
  - h. Taxon: Select a taxon from the list. The list is filtered when you select which 'Island' you are on. If the taxon is not on the list, write it into the comments.
  - j. PopRefSite Name: Provide the name you use for the site
  - k. Type: In Situ= wild plants; Ex Situ= botanical garden; Reintro= outplanted into natural setting; Inter Situ= managed planting site; Unknown= unsure if the site is wild or planted or both
  - l. Population Unit Name: Which population is the site part of? If unknown, leave blank.

- m. Directions: Provide directions to the site
- n. Elevation: Elevation or elevation range of the site in feet
- o. UTM Zone: Enter 4 or 5
- p. UTM Northing: Location of the center of the site
- q. UTM Easting: Location of the center of the site
- r. Latitude: in decimal degrees
- s. Longitude: in decimal degrees
- t. Comments
- s-al. Threats: Indicate which threats are present at the site and whether any control is ongoing. Yes= the threat is being controlled around all plants at the site; No= no threat control is happening; Partial= the threat is being controlled around some of the plants or some of the time

## 2. Population Site Monitoring

- b. TaxonPopRefCode: Select from the list or enter a new Population Site on that tab
- c. Date: Enter observation date using this format DD/MM/YYYY
- d. Observer Name: Enter lead observer name
- e. Organization Name: Enter organization name
- f. #Mature Plants: Has flowered
- g. #Immature Plants: More than one year old, but not mature
- h. #Seedlings: Less than 1 year old
- i. Comments: Enter any comments
- j. Accuracy: Is this population structure a complete census of all the plants at this site?
- k. Phenology: Enter the percentage of the plants in each category using decimals (.15 = 15%)
- p. Vigor: Enter the percentage of the plants in each category using decimals (.15 = 15%)
- t. Light Level: Enter the percentage of the plants in each category using decimals (.15 = 15%)
- x. Overstory Cover: Enter the percentage of the plants in each category using decimals (.15 = 15%).  
The overstory is anything above two meters.
- aa. Overstory Height: Se Enter YES for each category that applies to the plants at this site. The overstory is anything > 2 meters.
- ad. Understory Cover: Enter the percentage of the plants in each category using decimals (.15 = 15%). The understory is anything less than two meters.
- ag. Soil Drainage: Enter YES for each category that applies to the plants at this site
- ak. Topography: Enter YES for each category that applies to the plants at this site
- aq. Aspect: Enter YES for each aspect the plants are facing
- az. Associated Species: Enter six-letter codes for each overstory and understory plant at the site
- bb. Substrate: Enter YES for each category that applies to the plants at this site

## 3. Nursery Accessions

- b. Nursery Name: Select the nursery from the list.
- c. Other: If not on the list, enter nursery name here
- d. Island: Select the island the plant being grown is from
- g. PropaguleNum: Enter an accession number for each plant or group of plants
- h. Date Received: Enter the date the propagule or plant was received by the nursery
- i. Taxon Code: Select a taxon from the drop-down list which will be filtered by the 'Island'
- j. Founder Population Site: Select the original founder Population Site for this accession
- k. Founder Plant Number: Enter the original wild plant (founder) for this accession
- l. Propagule Source Population Site: Select the Population Reference Code of the source of this accession. If the propagule this accession came from was collected from the original founder, then the source is that founder. If the accession came from an outplant, the source is that outplant. If the accession came from an ex situ source (seed bank, Lyon micropropagation, or nursery), skip this section. Please enter the source population on the Population Site tab to get it onto the drop-down list.

- m. Source Plant #: Enter the source plant for this accession
- n. Source (other): Select what ex situ source the accession came from
- o. Source Accession: Enter the ex situ accession number of the source
- p. Cloned: Is this accession a clone of another plant? Yes/No
- q. Collection Date: Enter the date the propagule for this accession collected
- r. What type of propagule did this accession come from?

#### 4. Individual Plants and Collections

- b. TaxonPopRefCode: Select the Population Site from the list. Enter new sites in the 'Population Site' tab to add them to the drop-down list.
- c. Wild or Outplanted: Select whether this individual plant is Wild or Outplanted
- d. Plant 3: Enter the number of the plant (eg. 0005)
- e. Nursery: If outplanted, select the nursery it came from
- f. Nursery Accession Code: Enter the code for each plant
- g. SeedBank: Enter the seed bank this plant came from
- h. SeedBankAccessionCode: Enter the seed bank's accession number
- i. Tagged?: Is the plant tagged with its number in the field?
- j. Sex: Enter the Sex for this plant
- k. Height: Enter the height in meters
- l. Basal Diameter: Enter the diameter in centimeters
- m. Age Class: Select an Age Class from the list
- n. Phenology: Select a phenology for each plant
- o. Vigor: Select a measure of vigor for this plant
- p. Collection Type: Select the material collected from the drop-down list
- q. Number Collected: Enter the total number of propagules or other material collected. If you collected more than one type of propagule, enter each on another row.
- r. Destination Nursery: If the material is headed for a nursery, select it from the list
- s. Destination Seed Bank: If the material is headed for a seed bank, select it from the list
- t. Other Destination" If the material is headed somewhere else, enter it here
- u. Purpose: Select the purpose the material was collected from the drop-down list
- v. Date: Enter collection date using this format DD/MM/YYYY

#### 5. Stored Seed

- a. TaxonPopRefCode: Select the Population Site from the list. Enter new sites in the 'Population Site' tab to add them to the drop-down list.
- b. Founder Plant#: Enter the original wild plant (founder) for this accession
- c. Accession #: Enter an accession number for each seed lot
- d. Propagule Source Population Site: Select the Population Reference Code of the source of this accession. If the propagule this accession came from was collected from the original founder, then the source is that founder. If the accession came from an outplant, the source is that outplant. If the accession came from an ex situ source (seed bank, Lyon micropropagation, or nursery), skip this section. Please enter the source population on the Population Site tab to get it onto the drop-down list.
- e. Source Plant#: Enter the source plant for this accession
- f. # of Seeds: Enter the total number of seeds for each accession
- g. Purpose: Select the purpose the material was collected from the drop-down list
- h. Storage Conditions: Select from drop down list
- i. Comments: Add any notes

#### 6. Living Collection

- b. TaxonPopRefCode: Select the Population Site from the list. Enter new sites in the 'Population Site' tab to add them to the drop-down list.
- c. Date: Enter observation date using this format DD/MM/YYYY
- d. Observer Name: Enter lead observer name
- e. Organization Name: Enter organization name
- f. #Mature Plants: Has flowered
- g. #Immature Plants: More than one year old, but not mature
- h. #Seedlings: Less than 1 year old
- i. Comments: Enter any comments
- j. Accuracy: Is this population structure a complete census of all the plants at this site?
- k. Phenology: Enter the percentage of the plants in each category using decimals (.15 = 15%)
- p. Vigor: Enter the percentage of the plants in each category using decimals (.15 = 15%)
- t. Purpose: Select the purpose of the collection from the drop-down list
- u. Propagule Source Population Site: Select the Population Reference Code of the source of this accession. If the propagule this accession came from was collected from the original founder, then the source is that founder. If the accession came from an outplant, the source is that outplant. If the accession came from an ex situ source (seed bank, Lyon micropropagation, or nursery), skip this section. Please enter the source population on the Population Site tab to get it onto the drop-down list.