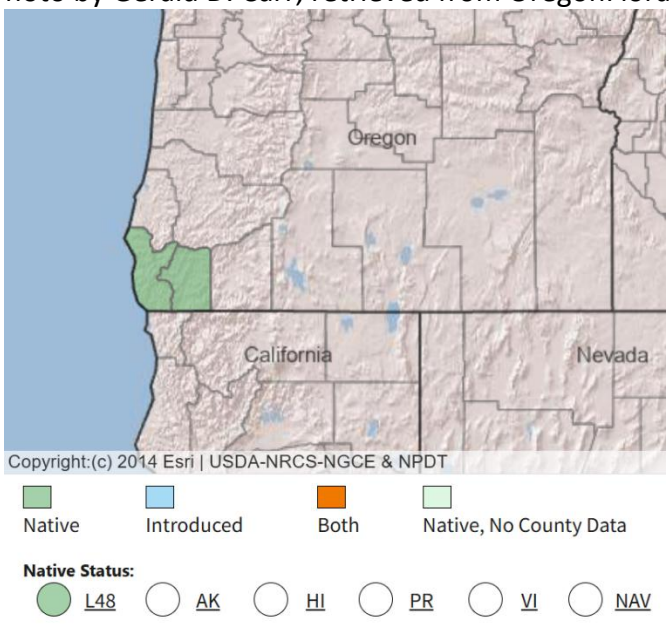
Plant Propagation Protocol for *Calochortus howellii*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/*2026*/*CAHO11.pdf*

Photo by Gerald D. Carr, retrieved from OregonFlora[8]



TAXONOMY	
Plant Family	Liliaceae – Lily family
Scientific Name	*Calochortus howellii*
Common Name	Howell's mariposa lily
Species Scientific Name	

Scientific Name	*Calochortus howellii* S. Watson
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	None
Common Name(s)	Howell's mariposa lily
Species Code (as per USDA Plants database)	CAHO11
GENERAL INFORMATION	
Geographical range	Only found in Curry and Josephine counties Oregon.[3] Limited to Illinois River Valley.[2,3] Species Range of only 40-100 square miles.[1]
Ecological distribution	Habitat restricted by geologic history.[4] Adapted to well-draining slopes with sparse vegetation.[1]
Climate and elevation range	Lower or middle elevations.[1]
Local habitat and abundance	Restricted to serpentine soils that are wet in early spring but drain quickly for a dry summer.[1,3] Soils are of ultramafic derivation and are notable for high concentrations of heavy metals such as nickel, zinc, and chromium.[4] Always found on dry slopes, associated with buckbrush (*Ceanothus cuneatus*), sticky manzanita (*Arctostaphylos viscida*), and occasionally Brewer oak (*Quercus breweri*) and Jeffrey pine (*Pinus jeffreyi*).[1]
Plant strategy type / successional stage	This species is locally abundant but restricted to very specific soil types in a small area.[1,4] Plants are long lived with low yearly recruitment and are unlikely to spread by clonal propagation.[4] It may take many years for plants to become reproductively mature.[4] Plants may also spend certain years dormant with no visible vegetation above ground.[4]
Plant characteristics	Bulbous lily with white, three-petaled flowers with lime green marking covered in dark purple hairs.[3] One to three flowers emerge from June-August in reproductive individuals, which make up the minority of plants at any given time.[3] Flowers develop into 2-cm long upright capsules that eventually release seeds.[3] Non-reproducing individuals produce a single large leaf.[3]
PROPAGATION DETAILS: FROM SEED **Compiled from the scientific works of Nancy Fredericks on *C. howellii*[2,4]**	
Ecotype	Not specified

Propagation Goal	Seeds
Propagation Method (Options: Seed or Vegetative)	Seed
Product Type	Propagules
Stock Type	Not specified
Time to Grow	Out planting not a realistic goal
Target Specifications (size or characteristics of target plants to be produced)	Plants are not mature until basal leaf reaches 6 mm.[4]
Propagule Collection Instructions (how, when, etc.)	Seed containing capsules were collected when they were mature but had not yet dispersed their seeds.[4]
Propagule Processing/Propagule Characteristics	Seeds were not stored
Pre-Planting Propagule Treatments	Seeds surface cleaned in dilute Clorox-Tween 20 solution then rinsed.[2] Seeds were sown on sterile filter paper in petri dishes moisten with 10-15 mL of distilled water and sealed with parafilm.[2] Dishes were then stored in 5 degrees Celsius, which corresponds to December and January temperatures at collection site.[2,4] After 8 weeks, 100% of seeds germinated.[4]
Growing Area Preparation / Annual Practices for Perennial Crops	Not specified
Establishment Phase Details	Small bulbs develop during the first growing season, and first year vegetation withers during first May.[4]
Length of Establishment Phase	Not specified
Active Growth Phase	Not specified
Length of Active Growth Phase	Not specified
Hardening Phase	Not specified
Length of Hardening Phase	Not specified
Harvesting, Storage and Shipping	Not specified
Length of Storage	Note specified
Guidelines for Outplanting / Performance on Typical Sites	Not specified
Other Comments	Growing plants in vitro is unlikely to result in successful outplanting of robust individuals.
PROPAGATION DETAILS: From Seed Based on USDA protocol on *Calochortus nitidus*[6] Both *C. howellii* and *C. nitidus* occupy the Nitidi subsect of *Calochortus*[2,5]	
Ecotype	Not specified
Propagation Goal	Seeds
Propagation Method	Seed
Product Type	Propagules

Stock Type	Field grown
Time to Grow	4 years
Target Specifications	Not specified
Propagule Collection Instructions	Seed capsules are collected when capsules start to split in late August
Propagule Processing/Propagule Characteristics	Seeds/capsule should be stored in paper envelopes at room temperature until cleaning.
Pre-Planting Propagule Treatments	Capsules can be crushed by hand. Course material can be removed by hand screen and seeds cleaned by air column separator. Cool, moist stratification is necessary. Seeds can be sown outside in containers or in the ground in November or December for natural stratification. Seeds sown in petri dishes spent 90 days at 5 degrees Celsius before germinating.
Growing Area Preparation / Annual Practices for Perennial Crops	Bulbs do not survive transplanting. Seeds sown outside emerge in April. Seeds sown in petri dishes should be transferred to weedless seedbeds and covered in less than 1/8 an inch of soil.
Establishment Phase Details	Weeds should be removed by hand
Length of Establishment Phase	1 growing season
Active Growth Phase	Continue careful hand weeding while weeds are still small. Plants will senesce in June and reappear the following spring.
Length of Active Growth Phase	3-4 years
Hardening Phase	Hardening not considered necessary for related species *Calochortus luteus.*[7]
Length of Hardening Phase	Not applicable
Harvesting, Storage and Shipping	Related *C. luteus* was collected during senescence and held in dry storage at 60-70 degrees Fahrenheit[7]
Length of Storage	Related *C. luteus* was stored for 3-5 months
Guidelines for Outplanting / Performance on Typical Sites	Not specified
Other Comments	None
INFORMATION SOURCES	
References	See below
Other Sources Consulted	See below
Protocol Author	Emma Howell
Date Protocol Created or Updated	5/17/26

Works Cited

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