Plant Species Evaluation Form

Ranunculus macounii Britton

MACOUN'S BUTTERCUP

Family: Runnunculaceae (CNPS 2017) **PLANTS Symbol:** RAMA2 (USDA 2017) **Calif. Endemic:** No (CNPS 2017)

Synonyms/Other Names: *Ranunculus macounii* was described by Nathaniel Lord Britton in 1892. This name remains active until this day (Tropicos 2017). An additional variety, *Ranunculus macounii* var. *oreganus* K.C. Davis, was declared in 1900. This subspecific designation is no longer recognized (Tropicos 2017; The Plant List 2017).

Identification Issues: California is home to nearly 38 species of *Ranunculus* L. A number of these species have multiple varieties that occur in the region, further obscuring identification efforts. *Ranunculus macounii* is a taxon that is distinguished from sister taxa by a distinct combination of characters. These characters include deeply lobed leaves, an erect to decumbent stem that roots at proximal nodes, presence of a style atop each pistil, thick fruit walls, cauline leaves that are well developed, and disk-like fruit with smooth faces (Whittemore 2017a).

Taxonomy:

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Species In Genus: +- 300 species: worldwide except lowland tropics; some ornamental. Etymology: (Latin: diminutive of Rana, frog, from wet habitats).

Genus Description Habit: Annual to perennial herb, occasionally from stolons or caudices, terrestrial or aquatic; roots generally fibrous. Stem: prostrate to erect. Leaf: basal, cauline, or both, alternate, generally reduced upward; petiole base flat, stipule-like or not; basal, proximal cauline petioles generally long; blades simple to dissected or compound, entire to toothed. Inflorescence: cyme, axillary or terminal, 1--few-flowered. Flower: sepals 3--5(6), generally early-deciduous, generally green to yellow or purple; petals 0--17[(150)], shiny, generally yellow, occasionally white or purple, nectaries near base, pocket-like or with flap-like scale; anthers yellow; pistils generally many. Fruit: achene, compressed or not, +- spheric, disk-like (width 3--15 × depth), or lenticular (width 1--2 × depth), beaked.

Species Description Habit: Perennial herb 20--65 cm, erect, or base decumbent, rooting at most proximal nodes. Leaf: basal, proximal cauline 3.7--7.5 cm, 4.5--9.5 cm wide, cordate to reniform, 1-ternate, leaflets 3-lobed or -parted, ultimate segments +- elliptic, toothed or again lobed, tip acute to widely acute; distal cauline much-reduced, deeply parted or compound. Flower: receptacle rough-stiff-hairy; sepals 5, spreading or reflexed +- 1 mm from base, 4--6 mm, 1.5--3 mm wide, early-deciduous; petals 5, 4--6 mm, 3.5--5 mm wide. Fruit: body 2.4--3 mm, 2--2.4 mm wide, disk-like, wall thick, smooth, beak 1--1.2 mm, straight or +- so, lanceolate. eFlora Treatment Author: Alan T. Whittemore.

Status:

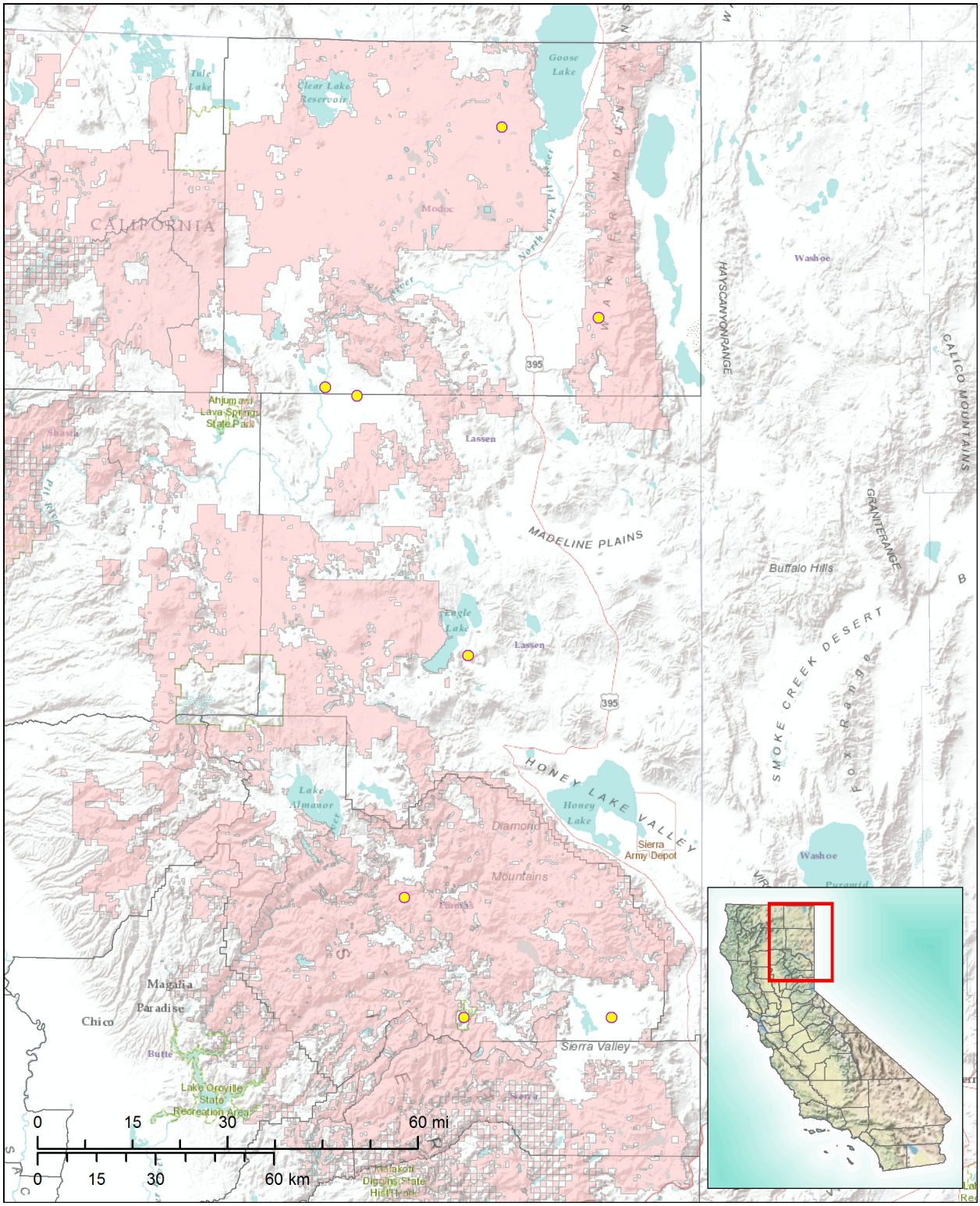
Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

State Listing	G-rank	S-rank	CRPR	R5 FSS	NFP SM	CA BLM
CA: Not listed NV: Not listed OR: Not listed	G5	CA: S2 NV: SNR OR: Not listed	2B.2	Not listed	Not listed	Not listed

SWAP:	NNHP:	NNPS:	ORBIC:	OCS:	IUCN:
Not listed	Do not track	Not listed	Not listed	Not listed	Least Concern

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2017b), Nevada Division of Forestry Fully Protected Plant Species (NAC 527) (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status (CDFW 2017a; NatureServe 2017); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2017a; NatureServe 2017; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2017); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP=Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).

Distribution: *Ranunculus macounii* is found throughout western Unites States and Canada (NatureServe 2017). Within California, plants occur in the northeast in Lassen, Modoc, and Plumas counties. Three of nine (3/9, ~33%) records are found on NFS lands; two of nine (2/9) on the Modoc NF and one of nine (1/9) on the Plumas NF. A total of three records are within five miles of NFS lands (2 records nr. Modoc NF, 1 record nr. Lassen NF). A total of six (6/9, ~67%) of records are associated with NFS lands (CNDDB 2017; CCH 2017; Calflora 2017).



Basemap Sources: Main map: Esri, DeLorme, USGS, NOAA, NPS. California inset map: ©2013 National Geographic Society, i-cubed.

Locations within California:

(Note: Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other (per the California Natural Diversity Database (CNDDB) definition of Element Occurrences in California). Official Element Occurrence (EO) numbers for plants in California are determined solely by the CNDDB and are included within the Reference (Source) column for CNDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations in meters from source were converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) column unless additional citation is given.)

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
1	N OF BIG VALLEY CANAL; N OF BEAN BARN. ASH CREEK WILDLIFE AREA.	Lassen	Big Swamp (4112121)	CNDDB, May 2017 (EO 1)	Unknown	NEEDS FIELDWORK. THERE COULD ALSO BE OTHER SITES ON THE WILDLIFE AREA IN RIPARIAN AREAS.		DFG-ASH CREEK WA	4150
1	335 feet NW of Big Valley Canal, 2.1 miles (air) S of County Road 87, 6.6 miles (air) NE of Bieber, 7.9 miles (air) W by SW of Adin, Big Valley	Lassen	Big Swamp (4112121)	CCH, Jan 2017 (CHSC108009)	21-Jun-2011			Ash Creek Wildlife Area	4150
2	DEVILS GARDEN, GOOSE LAKE.	Modoc	McGinty Reservoir (4112075)	CNDDB, May 2017 (EO 2)	Unknown	SEVERAL REFERENCES TO "GOOSE LAKE" INCLUDED IN THIS OCCURRENCE; THERE COULD BE MORE POPULATIONS IN THE GOOSE LAKE AREA; NEEDS FIELDWORK.		Modoc NF	5150
3	Sierra Nevada. Sierra Valley Marsh, S of metal bridge on Dyson Lane.	Plumas	Reconnaissance Peak (3912073)	CCH, Jan 2017 (CAS905447)	1-Jul-1976				5000

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
4	Lower Murrer's Meadow along Willow Creek	Lassen	Gallatin Peak (4012056)	CCH, Jan 2017 (CHSC13795)	8-Jul-1970				4800
5	Big Valley, along Hiway 299	Modoc	Lookout (4112122)	CCH, Jan 2017 (CHSC1486)	11-May-1963				3999
6	Sierra Valley Marsh. S of metal bridge on Dyson Lane	Plumas	Reconnaissance Peak (3912073)	CCH, Jan 2017 (GH364190)	1-Jul-1976				
7	Plumas NF	Plumas	Crescent Mills (4012018)	CCH, Jan 2017 (GH369808)	6/1/1877			Plumas NF	
8	0.3 mi W West Warner Rd on Parker Crk rd, W side Warner Mts. T41N, R14E, sec 27	Modoc	Soup Creek (4112033)	CCH, Jan 2017 (OBI48153)	28-Apr-1989			Modoc NF	
9	Plumas-Eureka SP	Plumas	Johnsville (3912076)	Calflora, May 2017 (casp109)	1-Jan-1979	1+ individuals		Plumas-Eureka SP	5614

Distribution on National Forest System (NFS) Lands:

(Please see Reference column of Locations table above for references pertaining to Record Numbers indicated on NFS lands.)

National Forest System (NFS) lands	Record #s (from Locations table above)	CNDDB EOs	Non-CNDDB Records	Recent (seen in past 20 yrs.)	Historic (not seen in past 20 yrs.)	Most Recent Obs.	EOs/ Recs. (5 mile buffer)	Total Records on NFS lands
Angeles:	-	-	-	-	-	-	-	0
Cleveland:	-	-	-	-	-	-	-	0
Eldorado:	-	-	-	-	-	-	-	0
Inyo:	-	-	-	-	-	-	-	0
Klamath:	-	-	-	-	-	-	-	0
Lake Tahoe Basin MU:	-	-	-	-	-	-	-	0
Lassen:	-	-	-	-	-	-	1	0
Los Padres:	-	-	-	-	-	-	-	0
Mendocino:	-	-	-	-	-	-	-	0
Modoc:	2,8	1	1	-	1	28-Apr-89	2	2
Plumas:	7	-	1	-	-	1-Jan-79	-	1
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	-	-	-	-	-	-	-	0
Shasta-Trinity:	-	-	-	-	-	-	-	0
Sierra:	-	-	-	-	-	-	-	0
Six Rivers:	-	-	-	-	-	-	-	0
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
Totals:	N/A	1	2	0	1	N/A	3	3

Demographic and Population Trends: Demographic and population level information is lacking for California records of *R. macounii*.

Life History: *Ranunculus macounii* is a perennial herb that blooms from June until July (CNPS 2017). It has an erect to decumbent stem that is known to root at the proximal nodes (Whittemore 2017a). Unlike select sister taxa, the roots of *R. macounii* are not tuberous. This taxon produces hispid herbage throughout most of its range, except in southwestern Washington (Whittemore 2017b). *Ranunculus macounii* shares a recent common ancestor with *R. repens* (Emadzade

2011). Both of these taxa root at their nodes (Whittemore 2017a). Researchers have referred to this decumbent, nodal rooting, in *R. repens*, as the production of stolons, which result in the production of genetically identical ramets. These stolons are known to decompose during the off-season, leaving behind isolated and clonally reproduced plants. In addition, plants in woodland habitat allocate more biomass to aboveground tissue and sprawling of its stolons, whereas in open grassland habitat, a great proportion of biomass is distributed in the root system (Doust 1981).

Diversity: The genus *Ranunculus* L. contains 300 species that are represented throughout the globe, except in the regions of the lowland tropics (Whittemore 2017b). Taxonomists have historically been in strong disagreement over classification schemes within the genus (Horandl et al. 2005; Whittemore 2017b). Previous classification systems were based on combinations of achene morphology, receptacle shape, floral features, life form, and root system. These systems failed to hold up under molecular scrutiny (Horandl et al. 2005; Emadzade 2011). Upward of 40% of species of *Ranunculus* are either auto- or allopolyploids with a base chromosome number of n=7,8 (8 most common). Hybridization is known to occur within sections. Hybridization between sections is rare, and has only been witnessed among white-flowered alpine taxa in Europe (Horandl et al. 2005). Members of this genus occupy an assortment of habitats in aquatic and terrestrial settings. Many taxa occur in alpine regions and in high latitudes. *Ranunculus* taxa exhibit a number of reproductive strategies (apomixis, agamospermy, and autogamy) that are considered to have facilitated its widespread distribution and occupation of extreme habitats in alpine and arctic regions. In addition, hybridization and polyploid formation is a considerable impetus for species formation and adaptive radiations in certain groups (Horandl et al. 2005). The overall history of the group is characterized by transoceanic, amphitropical, and intracontinental dispersal followed by independent and geographically structured radiations in separate regions throughout the globe. Long distance dispersal of taxa within these localized radiations is known. The same reproductive strategies that encourage persistence in extreme habitats (alpine and arctic regions), also encourage persistence in novel habitats after long-distance dispersal events. *Ranunculus macounii* is the result of a historical long-distance dispersal event. This is demonstrated by the evidence of the recent common ancestry between *R. macounii* and the Eurasian species, *R. repens* (cpDNA+ITS; 95% bootstrap, 100% posterior probability), and, in addition, the historical biogeographic analysis (LaGrange and Mesquite) indicating a Eurasian distribution for their common ancestor (Emadzade et al. 2011).

Habitat: The two California occurrences of *R. macounii* are associated with mesic sites among meadows and seeps in Great Basin scrub and pinyon and juniper woodland (CNPS 2017; CNDDB 2017). General descriptions indicate that *R. macounii* occurs in meadows, depressions in woodlands, ditches, stream/pond edges, and in wet soil or emergent from shallow water (Whittemore 2017a; Whittemore 2017b). Records from the Pacific Northwest, outside California, document *R. macounii* growing along roadsides, willow-dominant wetlands, sandy river shorelines, stony riparian areas, limestone alluvium in sedge-dominant riparian zones, shorelines of reservoirs, slough areas, and an assortment of additional moist habitats. These Pacific Northwest records also indicate that *R. macounii* grows alongside *Myosotis scorpioides*, *Impatiens noli-tampere*, *Juncus balticus*, *Potentilla gracilis*, *Epilobium ciliatum*, *Salix exigua*,

Geum macrophyllum, *Artemisia tridentata*, *Pinus ponderosa*, *Viola canadensis*, *Carex sprengelii*, *Erysimum cheiranthoides*, *Scirpus microcarpus*, *Calamagrostis canadensis*, *Elymus mollis*, *Lupinus nootkatensis*, *Phleum pratense*, *Heracleum maximum*, *Picea* sp., *Luzula multiflora*, *Cirsium foliosum*, *Gentianella amarella*, *Agoseris glauca*, *Trifolium repens*, *Rhinanthus crista-galli*, *Anemone multifida*, *Festuca idahoensis*, *Phleum pratense*, and *Chamerion angustifolium* (CPNWH 2017).

Habitat Status or Trend: *Ranunculus macounii* is restricted to two locations within California (Modoc and Lassen Counties). Records that are associated with these occurrences provide the only source of information about *R. macounii* within the boundaries of California. Future and ongoing fieldwork is needed in order to determine any considerable trends associated with its habitat (CNDDB 2017). *Ranunculus macounii* is ranked S2 within California. It is either unranked, or ranked S4/S5 throughout its entire distribution, except in Quebec (S3), Newfoundland and Labrador (S2), West Virginia (S1), and Michigan (S1). *Ranunculus macounii* has a global rank of G5 (NatureServe 2017).

Capacity for the Species to Disperse: The global distribution of *Ranunculus*, and the multiple long-distance disjunctions in the group suggest a propensity for dispersal. Albeit, *Ranunculus* taxa lack obvious characters that indicate dispersal adaptation or specialization (Emadzade et al. 2011).

Threats: *Ranunculus macounii* is likely threatened by grazing and hydrological alteration (CNPS 2017).

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Persons Contacted:

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Taylor, D. Wm. 2017. Environmental contractor, Aptos, CA. Information submitted at Modoc/Lassen FS-SCC and IPA Workshop, Susanville, CA. 25-26 July 2017.

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Formatting: Form is set up as 508 compliant. Please use the "styles" if further formatting is necessary.

Purpose: This is to maintain the best available science on a species that could be used by the Forest Service in a variety of functions. Specifically, there would be additional steps and evaluations to determine whether or not this species would be considered a Species of Conservation Concern under the 2012 Planning Rule or a Sensitive Species under the 1982 Planning Rule.

Additional Considerations at the Forest Level: Habitat amount and juxtaposition of both the species and habitat locations.