Plant Species Evaluation Form

Viburnum ellipticum Hook.

OVAL-LEAVED VIBURNUM

Family: Adoxaceae (CNPS 2018) | **PLANTS Symbol:** VIEL (USDA 2018) | **Calif. Endemic:** No (CNPS 2018)

Synonyms/Other Names: *Viburnum ellipticum* was described by Hooker (1833) from material collected in the Columbia River by David Douglas. A few sources report the synonym *Viburnum ellipticum* Hook. var. *macrocarpum* Suksd. (USDA 2018; ITIS 2018).

Identification Issues: *Viburnum* is a diverse genus of shrubs of the northern temperate to subtropical zone. *Viburnum*'s are distinctive in several features: opposite leaves, fuzzy stems and leaves, leaves typically simple and toothed, sometimes entire, lobed or compound. The flowers are typically small, with 5-lobed calyx and corolla, and a partly inferior ovary, and presented in a flat-topped compound cyme. *Viburnum* flowers are often fragrant, sometimes strongly so. The fruit is a small, fleshy drupe (Rosatti & Bell 2014).

In California, *Viburnum ellipticum* is the only widespread species. *Viburnum* species are popular horticultural shrubs, and many non-native species are planted in California landscaping. *Viburnum opulus* was discovered in McCloud, in Siskiyou County, belonging to the portion of Cascade Ranges dipping into California (Linstrand and Nelson 2008). This observation, which appears to be naturalized, was previously identified as *Viburnum edule*, but has since been referred to *Viburnum opulus* (Rosatti & Bell 2014, Kierstead editorial comments 2022). The southern European species *V. rigidum* has also become naturalized in Tilden Park in Berkeley, California (Rosatti and Bell 2014). Where they overlap, *Viburnum opulus* and *V. ellipticum*, both shrubs of mesic areas, can be distinguished by several traits: *V. opulus* has 3-lobed leaves, whereas those of *V. ellipticum* are oval and unlobed, with teeth on the terminal half only; *V. opulus* has a few large glands on the leaf petioles, whereas *V. ellipticum* is eglandular (Rosatti and Bell 2014).

Taxonomy:

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Species In Genus: +- 250 species: northern temperate, subtropics. Etymology: Latin: for pliable branches used in binding).

Genus Description – Habit: Shrub, slender, generally hairy, also +- glandular, especially in inflorescence, generally deciduous. Leaf: simple, entire to lobed. Inflorescence: compound cyme, umbel-like, generally terminal, rounded or +- flat-topped, generally with oblanceolate bracts, marginal flowers larger, sterile or all flowers +- alike; peduncles 1.5-4 cm; rays generally 7. Flower: ovary chambers 1 (2 abort), ovule pendent; style short, stigma lobes 3. Fruit: drupe, drupe-like. Seed: 1. Species Description: Leaf: petiole 6-12 mm, without glands, with many nonglandular hairs throughout; blade 2-6 cm, elliptic to round or cordate, unlobed, coarsely dentate above middle. Inflorescence: 1-3 cm; all flowers +- alike, fertile. Flower: 6-8 mm diam. Fruit: 10-12 mm, elliptic, +- red, in age black. Chromosome number unknown.

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	G4G5	CA: S3? NV: Not listed OR: Not listed	2B.3	Not listed	Not listed	Not listed

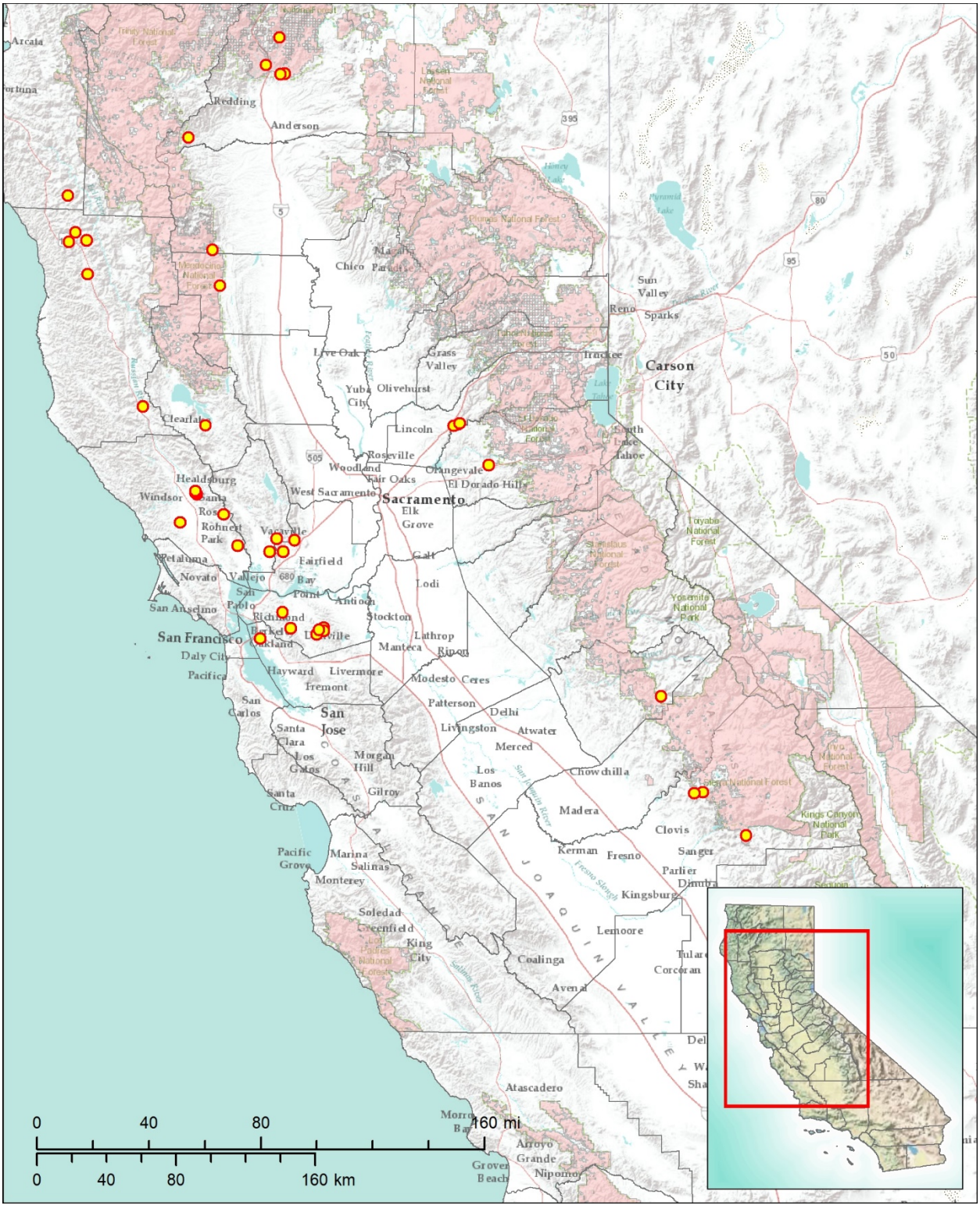
SWAP:	NNHP:	NNPS:	ORBIC:	OCS:	IUCN:
Not listed	Not listed	Not Listed	Not Listed	Not listed	Not Listed

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2018b), 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 2018a; NatureServe 2018); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2018a; NatureServe 2018; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2018); 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: *Viburnum ellipticum* occurs north of California to the Puget Sound region of Washington, mainly on the west side of the Cascade Ranges (Rosatti & Bell 2014; CNPS 2018; CPNWH 2018). Some sources also list an occurrence in North Dakota (NatureServe 2018; USDA 2018). Its bioregional distribution within California includes the entire northwest portion of the state: from the coastal communities inland to the Klamath Ranges and North Coast both inner and outer ranges, and south to the San Francisco Bay region.

Viburnum ellipticum also has sporadic occurrences through the north and central Sierra Nevada foothills to Fresno County (Rosatti & Bell 2014). Its distribution is notably discontinuous in the Sierra Nevada foothills, with the preponderance of records coming from older herbarium specimens (CCH 2018). This is possibly due to its preference for brushy, somewhat inaccessible, canyon slopes. One Sierra Nevada foothills occurrence (EO 31, Mariposa County, marked in pink on the locations table) is mistakenly listed as Wawona Golf Course, Yosemite National Park. This specimen, *Enid Michael s.n.*, 1 June 1930 (YM-YOSE66910) is a specimen that Ranger Naturalist Michael prepared from material presented to her for identification by a Yosemite Park visitor, collected along "The *Viburnum* Highway," a nickname of the Tollhouse Grade in Fresno County (EO 1 and 2) (A. Colwell, Pers. comm. 2018).

Viburnum ellipticum Hook.



Sources: *Distribution*: CNDDB 2017, NRIS 2017. *Layers*: USDA Forest Service, Pacific Southwest National Forests: CPAD 2016. California counties: CDF 2009. *Basemaps*: California inset map: © 2013 National Geographic Society, i-cubed (Esri 2017a). Main map: Esri, DeLorme, USGS, NPS (Esri 2012) and Esri, USGS, NOAA (Esri 2017b).

Locations within California:

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 2017) definition of Element Occurrences (EOs) in California. Official 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 provided in meters from source have been 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) unless additional citation is given.

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
1	ON U-SHAPED TURN ON OLD TOLLHOUSE GRADE, HWY 168 AT TURNOFF OF DIRT FIRE ROAD TO THE NORTH, ~1.4 AIR MI NNE TOLLHOUSE.	Fresno	Auberry (3711914)	CNDDB, May 2017 (EO 1)	12-May-2011	<10 PLANTS SEEN IN 2011. COLLECTIONS FROM 1956, 1959, 1970, AND 1980 ARE ALSO ATTRIBUTED TO THIS OCCURRENCE.		Sierra NF	3400
2	HOPLAND FIELD STATION.	Mendocino	Hopland (3812381)	CNDDB, May 2017 (EO 10)	27-May-1953	A COUPLE OF PLANTS SEEN AT AN UNKNOWN DATE. A 1953 LONGHURST COLLECTION FROM "HOPLAND FIELD STATION, FOSTER PASTURE W OF HEADQUARTERS" ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.		UC-Hopland RES/EXT Center	
3	JUST WEST OF THE INTERSECTION OF LESLIE ROAD AND MARK WEST SPRINGS ROAD, MARK WEST SPRINGS.	Sonoma	Mark West Springs (3812256)	CNDDB, May 2017 (EO 11)	Unknown	A FEW PLANTS SEEN AT AN UNKNOWN DATE.		Unknown	520

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
4	TWIN ROCKS, RATTLESNAKE CREEK.	Mendocino	Tan Oak Park (3912375)	CNDDB, May 2017 (EO 12)	8-May-1934	SITE BASED ON 1921 & 1923 EASTWOOD COLLECTIONS AND A 1934 JEPSON COLLECTION. NEEDS FIELDWORK.		Unknown	
5	CUMMINGS.	Mendocino	Leggett (3912376)	CNDDB, May 2017 (EO 13)	27-May-1923	SITE BASED ON NUMEROUS HISTORICAL COLLECTIONS FROM NEAR CUMMINGS. NEEDS FIELDWORK.		Unknown	1500
6	NEAR BLUE ROCK.	Mendocino	Bell Springs (3912385)	CNDDB, May 2017 (EO 14)	1899-06-07	ONLY SOURCES OF INFORMATION FOR THIS SITE ARE HISTORICAL COLLECTIONS BY DAVY. NEEDS FIELDWORK.		Unknown	
7	6 MILES NORTHEAST OF PLATINA.	Shasta	Arbuckle Mtn. (4012247)	CNDDB, May 2017 (EO 15)	27-May-2011	SITE IS BASED ON A 1949 CUFF COLLECTION. 2011 O'BRIEN PHOTOS FROM "DFG OCC #15 NEAR ARBUCKLE MT AND PLATINA" ALSO ATTRIBUTED HERE. NEEDS MAP DETAIL.		Unknown	2000
8	CLICKAPUDI TRAIL, ABOUT 0.5 MILE EAST OF JONES VALLEY BOAT RAMP, PIT RIVER ARM, LAKE SHASTA.	Shasta	Bella Vista (4012262)	CNDDB, May 2017 (EO 16)	12-Jun-2014	"A FEW PLANTS" SEEN IN 1994. UNKNOWN NUMBER OF PLANTS SEEN IN 2006 & 2007. 10-15 SHRUBS OBSERVED IN WESTERN POLYGON IN 2010. FEWER THAN 50 PLANTS OBSERVED IN EASTERN POLYGON IN 2014.		Shasta-Trinity NF	1200

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
9	1 MILE SOUTH OF HARRIS.	Humboldt	Harris (4012316)	CNDDB, May 2017 (EO 17)	20-Jul-1908	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1908 GODDARD COLLECTION. NEEDS FIELDWORK.		Unknown	
10	NEAR EL CERRITO RANCH, SONOMA.	Sonoma	Sonoma (3812234)	CNDDB, May 2017 (EO 18)	May-14	SITE BASED ON TWO 1914 KUHN COLLECTIONS & A FIELD OBSERVATION BY KUHN IN MADRONO VOL. 1 (1916). ACCORDING TO KUHN, THE PLANT IS ALSO FOUND "2 MILES HIGHER UP ALONG THE SAME ROAD." NEEDS FIELDWORK.		Unknown	
11	OFF OF LAKE CLEMENTINE ROAD, 0.3 MI SOUTH OF NORTH FORK LAKE; ABOUT 0.7 MI WEST OF SQUAW FLAT.	Placer	Auburn (3812181)	CNDDB, May 2017 (EO 19)	6-Jun-2006	5 PLANTS OBSERVED IN 2004. UNKNOWN NUMBER SEEN IN 2006.	TRAIL MAINTENANCE, FIRE CLEARING.	USBOR-Auburn SRA	1300
12	4.1 MILES WEST OF TOLLHOUSE ON ROAD TO PRATHER.	Fresno	Auberry (3711914)	CNDDB, May 2017 (EO 2)	28-May-1972	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1972 MENZIES & MENZIES COLLECTION. NEEDS FIELDWORK.		Unknown	3300
13	ALONG LAKE CLEMENTINE ROAD, 0.5 MI SW OF NORTH FORK LAKE DAM; AUBURN STATE RECREATION AREA.	Placer	Auburn (3812181)	CNDDB, May 2017 (EO 20)	11-May-2004	3 PLANTS OBSERVED IN 2004.	TRAIL MAINTENANCE, FIRE CLEARING.	USBOR-Auburn SRA	1300

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
14	TOYON CANYON TRAIL, BRIONES REGIONAL PARK.	Contra Costa	Briones Valley (3712282)	CNDDB, May 2017 (EO 21)	5-May-2004	UNKNOWN NUMBER OF PLANTS SEEN IN 1994, 1997, AND 1998. LOCALIZED POPULATION OF ~10 SHRUBS SEEN IN 2001. 14 PLANTS SEEN IN 2004.		EBRPD-Briones RP	500
15	NEAR SEBASTOPOL.	Sonoma	Sebastopol (3812247)	CNDDB, May 2017 (EO 22)	Unknown	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A FIELD OBSERVATION FROM KUHN (DATE OF OBSERVATION UNKNOWN; MENTIONED IN MADRONO, 1916) THAT THIS PLANT HAS BEEN FOUND NEAR SEBASTOPOL. NEEDS FIELDWORK.		Unknown	
16	1 MILE NORTH OF END OF LESLIE ROAD OFF MARK WEST SPRINGS ROAD.	Sonoma	Mark West Springs (3812256)	CNDDB, May 2017 (EO 23)	1984	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1984 MOCK COLLECTION MENTIONED IN A 1995 COMMUNICATION WITH GUGGOLZ & GUGGOLZ. NEEDS FIELDWORK.		Unknown	
17	WEST OF ELK CREEK, SANHEDRIN ROAD, AT BORDER OF MENDOCINO NATIONAL FOREST.	Glenn	Chrome (3912265)	CNDDB, May 2017 (EO 24)	24-Apr-1995	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1995 WALKER COLLECTION. NEEDS FIELDWORK.		Unknown	1000

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
18	NEAR CAHTO (AT TRACY BRIDGE), LONG VALLEY.	Mendocino	Laytonville (3912364)	CNDDB, May 2017 (EO 25)	29-Sep-1929	MAIN SOURCE OF INFORMATION FOR THIS SITE IS A 1929 CLARKE COLLECTION. AN 1882 RATTAN COLLECTION FROM LONG VALLEY, 3600 FT IS ALSO ATTRIBUTED TO THIS OCCURRENCE. NEEDS FIELDWORK.		Unknown	1500
19	NEAR THE OLD SAWMILL SITE WEST OF BENNETT SPRING ON THE NEWVILLE-COVELO ROAD.	Tehama	Hall Ridge (3912276)	CNDDB, May 2017 (EO 26)	16-Jun-1915	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1915 HELLER COLLECTION. NEEDS FIELDWORK.		Mendocino NF	3000
20	NEAR CURRY CREEK SWIM AREA ON MORGAN TERRITORY ROAD, MORGAN TERRITORY AREA.	Contra Costa	Antioch South (3712187)	CNDDB, May 2017 (EO 27)	Unknown	SITE BASED ON A 1991 COMMENT BY JOHNSON THAT BOB DOYLE FOUND PLANTS HERE "SEVERAL YEARS AGO", EXACT OBSERVATION DATE UNKNOWN. NEEDS FIELDWORK.		Unknown	
21	WOODS SOUTH OF THE END OF SKYCREST DRIVE IN ROSSMOOR.	Contra Costa	Las Trampas Ridge (3712271)	CNDDB, May 2017 (EO 28)	2002	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A PERSONAL COMMUNICATION WITH ELLIS & THAYER REPORTED BY EAST BAY CNPS IN 2005. SEEN BY THAYER IN 2002. NEEDS FIELDWORK.		Unknown	600

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
22	EAST OF THE SULPHUR SPRING IN SULPHUR CANYON, ABOUT 0.7 AIR MILE NNE OF WINDY POINT.	Contra Costa	Tassajara (3712177)	CNDDB, May 2017 (EO 29)	16-May-2010	11 PLANTS OBSERVED IN 2010; POPULATION APPEARED ROBUST AND VIGOROUS. 1933 BOWERMAN COLLECTION FROM "SULPHUR SPRING CANYON, E FORK" AND 1967 BOWERMAN COLLECTION ALSO ATTRIBUTED TO THIS OCCURRENCE.	SOME BROWSING ON PLANTS EVIDENT, LIKELY BY DEER.	PVT	1248
23	SYCAMORE CANYON, SOUTH OF CURRY CANYON, MOUNT DIABLO.	Contra Costa	Diablo (3712178)	CNDDB, May 2017 (EO 3)	21-May-1933	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1933 BOWERMAN COLLECTION. IN 2000, WINCHESTER REPORTS THAT MT DIABLO POPS OF THIS PLANT ARE STILL EXTANT; HOWEVER OTHERS REPORT THEY HAVE NOT FOUND THE POPS IN RECENT ATTEMPTS. NEEDS FIELDWORK.		California Department of Parks and Recreation	1200
24	ALONG DELILAH SPRINGS ROAD, 1 MILE WEST OF DAVIS FLAT ROAD, SEQUOIA NATIONAL FOREST, KINGS RIVER DRAINAGE.	Fresno	Verplank Ridge (3611971)	CNDDB, May 2017 (EO 30)	29-Jul-1981	SEVERAL SHRUBS OBSERVED IN 1981. COLLECTION LOCALITY CITES SEQUOIA NF, BUT LOCATION APPEARS TO BE IN SIERRA NF, JUST EAST OF THE BOUNDARY WITH SEQUOIA NF.		Sequoia NF	3600

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
25	OAKLAND.	Alameda	Oakland West (3712273)	CNDDB, May 2017 (EO 32)	14-May-1914	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1914 COLLECTION BY HUNT. NEEDS FIELDWORK.		Unknown	
26	ABOUT 0.5 MILE WEST OF GRIZZLY BEAR HOUSE ON FORESTHILL ROAD, SOUTH SIDE OF NORTH FORK AMERICAN RIVER.	Placer	Greenwood (3812088)	CNDDB, May 2017 (EO 33)	18-Apr-2013	FEWER THAN 50 PLANTS OBSERVED IN 2013.		USBOR	1400
27	ABOUT 2.75 AIR MILES WEST OF THE VACAVILLE AIRPORT, WESTERN SLOPE OF THE VACA MOUNTAINS.	Napa	Fairfield North (3812231)	CNDDB, May 2017 (EO 34)	23-May-2011	11 PLANTS OBSERVED IN 2011.		PVT	697
28	ROCKVILLE TRAILS, SOLANO LAND TRUST.	Solano	Mt. George (3812232)	CNDDB, May 2017 (EO 35)	11-May-2012	SITE IS BASED ON 2012 WIRTZ PHOTOS IN CALPHOTOS. NEEDS MAP DETAIL.		Solano Land Trust	
29	SOUTH OF HIGHWAY 29, ABOUT 0.8 MILE ESE OF EAST EDGE OF MANNING FLAT, SOUTH OF THURSTON LAKE.	Lake	Clearlake Highlands (3812286)	CNDDB, May 2017 (EO 36)	9-Jun-2003	1 PLANT OBSERVED IN 2003.	HIGHWAY 29 ROAD WIDENING PROPOSED IN GENERAL AREA.	Unknown	1960

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
30	JONES VALLEY; APPROXIMATELY 0.5 MILE NORTHWEST OF JONES VALLEY RESORT/MARINA, SHASTA LAKE.	Shasta	Bella Vista (4012262)	CNDDB, May 2017 (EO 37)	19-May-2014	OPEN STAND OF 15-20 SHRUBS OBSERVED IN 2014.	RECENT (2004) WILDFIRE, AND (~2011) USFS FUELS REDUCTION/BURN WORK IN IMMEDIATE VICINITY.	Shasta-Trinity NF	1200
31	ABOVE GILLMAN ROAD OPPOSITE ENTRANCE TO PINE POINT CAMPGROUND, MCCLOUD RIVER ARM, LAKE SHASTA.	Shasta	Bollibokka Mtn. (4012282)	CNDDB, May 2017 (EO 38)	21-May-2010	55 PLANTS OBSERVED IN 2010.	SEVERAL LARGE NOXIOUS WEED POPULATIONS IN VICINITY.	Shasta-Trinity NF	1200
32	ABOVE FROG POND, MOUNT DIABLO.	Contra Costa	Diablo (3712178)	CNDDB, May 2017 (EO 4)	1990	OLSON SAYS THAT HE LOOKED FOR IT BUT DID NOT FIND IT; HE BELIEVES EDWARDS HAS SEEN IT HERE CA. 1990. IN 2000, WINCHESTER REPORTS THAT MT DIABLO POPS ARE STILL EXTANT; BUT OTHERS HAVE NOT FOUND THEM IN RECENT ATTEMPTS. NEEDS FIELDWORK.		California Department of Parks and Recreation	1500
33	PLACERVILLE.	El Dorado	Placerville (3812067)	CNDDB, May 2017 (EO 5)	Sep-01	SITE BASED ON A 1900 & A 1901 IRWIN COLLECTION. NEEDS FIELDWORK.		Unknown	
34	ABOUT 2 MILES EAST OF MOUNT GEORGE.	Napa	Mt. George (3812232)	CNDDB, May 2017 (EO 6)	5-Jun-1987	SEVERAL (10-20) SAPLINGS SEEN IN 1987.		Unknown	1480

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
35	SKYLINE PARK, ABOUT 0.5 MILE NORTHWEST OF LAKE MARIE.	Napa	Mt. George (3812232)	CNDDB, May 2017 (EO 7)	4-Nov-2012	ONE MATURE SHRUB SEEN IN 1986. 3 PLANTS SEEN IN 1999. UNKNOWN NUMBER SEEN IN 2005 AND 2012. IN 2003, CALLIZO REPORTS THAT THERE ARE SEVERAL PLANTS AT THIS SITE (YEAR PLANTS SEEN UNKNOWN); UNCLEAR WHETHER OR NOT PLANTS ARE NATURALIZED.		Skyline Citizens Association	600
36	NATTKEMPER TRAIL FROM ADOBE CANYON ROAD TO SUMMIT OF HOOD MOUNTAIN, TO HOOD MOUNTAIN REGIONAL PARK.	Sonoma	Kenwood (3812245)	CNDDB, May 2017 (EO 8)	Apr-32	MAIN SOURCE OF INFORMATION FOR THIS SITE IS A 2004 AREA CHECKLIST, UNKNOWN WHEN PLANTS SEEN. 1931 AND 1932 BAKER COLLECTIONS ARE ALSO ATTRIBUTED HERE. NEEDS FIELDWORK.		Sonoma County?	
37	PEPPERWOOD RANCH, IN WEST ARM OF GARRISON CANYON.	Sonoma	Mark West Springs (3812256)	CNDDB, May 2017 (EO 9)	11-May-1987	MAIN SOURCE OF INFO FOR THIS SITE IS A 1981 DE NEVERS COLLECTION, 4 SHRUBS SEEN. 10-12 SHRUBS SEEN BY DE NEVERS AT MARK WEST CRK & LESLIE CRK IN 1982. SEEN IN PRESERVE IN 1987. 1 SHRUB SEEN BY EDWARDS ON AN UNKNOWN DATE. NEEDS FIELDWORK.		CAS-Pepperwood Ranch Preserve	

Rec. #	Locality	County	Quad	Reference (Source)	Date Last Observed	Population Info	Threats	Land Manager	Elev. (ft.)
38	Shasta-Trinity NF	Shasta	O'Brien (4012273)	NRIS, Apr 2017 (0514_VIEL_58_0001)	27-Jun-2010	individuals		Shasta-Trinity NF	

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:	-	-	-	-	-	1-Sep-1901	1	0
Inyo:	-	-	-	-	-	-	-	0
Klamath:	-	-	-	-	-	-	-	0
Lake Tahoe Basin MU:	-	-	-	-	-	-	-	0
Lassen:	-	-	-	-	-	-	-	0
Los Padres:	-	-	-	-	-	-	-	0
Mendocino:	19	1	0	0	1	16-Jun-1915	1	1
Modoc:	-	-	-	-	-	-	-	0
Plumas:	-	-	-	-	-	-	-	0
San Bernardino:	-	-	-	-	-	-	-	0
Sequoia:	24	1	0	0	1	29-Jul-1981	0	1
Shasta-Trinity:	8, 30, 31, 38	3	1	4	0	12-Jun-2014	1	4
Sierra:	1	1	0	1	0	12-May-2011	2	1
Six Rivers:	-	-	-	-	-	-	-	0
Stanislaus:	-	-	-	-	-	-	-	0
Tahoe:	-	-	-	-	-	-	-	0
Totals:	N/A	6	1	5	2	N/A	5	7

Demographic and Population Trends: As of 2019, *Viburnum ellipticum* is known from 38 occurrences in California, 37 of which are Element Occurrences (EOs) from the CNDDB database (CNDDB 2018) and the remaining one is an NRIS (2017) occurrence. Of the 38 occurrences, four occur on the Shasta-Trinity NF, one occurs on the Mendocino NF, one on the Sequoia NF, and one on the Sierra NF. The remaining occurrences are located on a mix of State Parks, UC Reserve System sites, private parcels, and several have unknown ownership (CNDDB 2018). Additional locations may occur on the Shasta Trinity NF near Shasta Lake along the Clikapudi Trail (Kierstead editorial comments 2022).

All EOs are listed as Presumed Extant, with 15 EOs have been visited in the past 20 years. Of the EO site quality rankings, one is listed as Excellent, five as Good, one as Fair, and 31 as unknown (CNDDB 2018).

Population sizes have been estimated for 17 of the EOs and are consistently very small. Of these, the largest one is EO 38, for which there were 55 individuals reported in 2010. All other reported counts give a specific number of individuals fewer than 20, with six EOs reporting between 10 and 20 individuals, and the rest reporting fewer than 10. One EO was unclear as to how many individuals were present as count stated simply "<50 plants" (CNDDB 2018).

Adults of *V. ellipticum* would be large, discrete clusters of branches and thus possible to tell apart as individuals, but given the dense vegetation of their habitat, any intertwined individuals and juveniles could be obscured. This is a long-lived shrub, with relatively small seed production per year and low recruitment (Englund 1993), so population size is not expected to fluctuate in short term. EO 6 reports saplings observed, but all other counts reported are of mature shrubs specifically, or do not mention age classes (CNDDB 2018).

All of the EOs list the population trend as "unknown". Four EOs, however, have been censused in more than one year. In none of these was the census data specific enough to detect trends, other than the populations remained small in all cases, and, in two cases, retained similarly small numbers over a 20-year time-span (CNDDB 2018).

Life History: *Vibernum ellipticum* is a perennial deciduous shrub, blooming between April and August, depending on location (Rosatti and Bell 2014; CNPS 2018; OFP 2019). It is typically reported to be 2-3 meters tall, but one report is of 4.6 m tall (CPNWH 2018). Longevity of *V. ellipticum* has not been reported, but studies of *V. opulus* in Europe indicate that mature plants are long-lived and resilient to damage as, during the course of predator studies, some mature individuals survived complete defoliation by insects and others regained reproductive status in three years after being cut to the ground. In nature, however, few seedlings are seen, so recruitment is presumed to be extremely low (Englund 1993).

Observations of *Viburnum macrocephalum* in China found that *Viburnum* inflorescences are non-specific pollinator attractors, attracting visitors from a wide variety of insect groups, mainly from 15 different genera in five orders: Hymenoptera (*Apis, Bombus*, and *Monomorium*), Lepidoptera (*Papilio, Byasa, Graphium*, *Achillides*, and *Parnara*), Diptera (*Sarcophaga, Drosophila, Episyrphus*, and *Chironomus*), Coleoptera (*Plagiodera, Oxycetonia*) and Hemiptera (*Cletus*). Bees and butterflies were the major visitors and pollinators of inflorescences (Englund 1993). This pollinator syndrome is associated with strong floral scent (Farré-Armengol et al. 2015). Although many species of *Viburnum* are notable for their strong floral scent, only a single herbarium label among 143 databased (HPSU 12246 from Skamania County, WA) mentions scent, and in this one case the scent is characterized as "flowers malodorous" (CPNW 2018). Field botanists queried have not noticed a scent associated with *V. ellipticum* (Clines, J. pers. comm. 2018; Stebbins pers. comm. 2018; Olmstead pers. comm. 2018).

In a study of fruit set in *V. macrocephalum*, far fewer fruits matured than number of open flowers present on inflorescences, and later-opening inflorescences set fewer mature fruits, suggesting that fruit abortion may be a significant factor in fruit set if resources become insufficient to develop all fertilized embryos (Jin et al. 2010).

Vibernum ellipticum produces fleshy fruits in July to September. These are 8-12 mm long, dark purple drupes (Rosatti and Bell 2014; CNPS 2018; OFP 2019). A Swedish study of *V. opulus* found that the mature fruits remain on the bushes for some months over the fall and into the winter, being removed over time by various birds, rodents and to a lesser extent by deer, and after nearby preferred *Sorbus aucuparia* fruits were taken (Englund 1993). In Washington, *V. ellipticum* seeds are characterized as persistent on shrub and not readily eaten by birds (Broadlick 2015). In contrast, *V. ellipticum* fruits are eaten enthusiastically by birds in the Sierra Nevada of California, and do not last long on the bushes once mature (Clines, J. pers. comm. 2018).

Diversity: *Viburnum* comprises a clade of 165-170 woody angiosperm species, popular as ornamental shrubs and well known for their diversity in leaf form, bud morphology, growth pattern, flower morphology, fruit color, and endocarp shape. *Viburnum* is distributed widely around the temperate regions of the northern hemisphere, as well as in tropical and montane Southeast Asia, and at higher elevations in Mexico, Central America, and the Andes of South

America. Temperate eastern Asia and the cloud forests of Latin America are modern centers of *Viburnum* species diversity, but Southeast Asia is the center of phylogenetic diversity (Clement et al. 2014). A series of phylogenetic studies on *Viburnum* (Donoghue et al. 2004; Winkworth and Donoghue 2004; Clement et al. 2014) show that *V. ellipticum* belongs in the *Mollotinus* clade, along with other North American species: *V. molle, V. rafinesquianum*, and *V. bracteatum*. Within this group, *V. ellipticum* is unique in that it has 3-4 pairs of bud scales whereas related species have naked leaf buds. Genetic or morphological studies of variation within *V. ellipticum* have not been published.

The large degree of divergence between *Viburnum* and other genera in Adoxaceae has sparked debate about the familial affinity of *Viburnum*, with the result that different sources place it differently, in Viburnaceae, Caprifoliaceae, Adoxaceae, or Tinaceae (Donoghue et al. 2004).

Habitat: Throughout its range, *V. ellipticum* is found in bottomlands and low montane slopes. It spans an elevation from 215 to 1,400 meters in California, and from sea level to 1,700 meters in western Oregon and Washington (Hitchcock and Cronquist 2018; CNPS 2018; Rosatti and Bell 2014). It is found both in drier open woods, chaparral, and shrub thickets as well as in moist woods, on riverbanks or lakesides. Less frequently, it is reported on rocky slopes and outcrops where there is some moisture influence, especially in Washington and Oregon (Hitchcock and Cronquist 2018; Flora of Oregon 2018; CNPS 2018). The fire return interval of these habitats varies from 15 to 150 years, and from a preponderance of surface or low-intensity fire to a preponderance of stand-replacing fire (Fryer and Luensmann 2012). The aspect of the microhabitat has been reported as both north and south-facing, and typically some moisture source is also mentioned (CPNWH 2018), so the critical habitat factor may be moisture reliability rather than insolation. The substrate, when mentioned, is usually characterized as loam soil, or clay loam, consistent with the alluvial-deposit influenced habitats reported. Rock substrates, rarely mentioned, include granite and peroxenite (an ultramaphic igneous rock) (CPNWH 2018).

Associated plant communities mentioned include several common low elevation community types. Throughout its range, mesic conifer forests and riparian forests are reported habitat, with the following species frequently mentioned: *Acer circinatum, Acer macrophyllum, Fraxinus* sp., *Malus domestica, Populus trichocarpa,* and *Pseudotsuga menziesii* (CPNWH 2018). In Oregon, *V. ellipticum* is considered strongly associated with *Quercus garryana-Fraxinus latifolia* woodland, occasionally with *Q. kelloggii* woodland, sometimes associated with mounded prairie. In California, yellow pine forest and chaparral are mentioned. Shrub species frequently mentioned as associated with *V. ellipticum* in shrub thickets include: *Amelanchier alnifolia, Arctostaphylos columbiana, Crataegus douglasii, Cornus* sp., *Holodiscus discolor, Oemleria cerasiformis, Philadelphus lewisii, Rhamnus* sp., *Rhus* sp., *Symphoricarpos albus, Spiraea* sp., and *Toxicodendron diversilobum* (CPNWH 2018). In the Sierra Nevada foothills, it is found associated with other uncommon shrubs: *Staphylea bolanderi* and *Styrax redivivus*. Herbs mentioned as associated with *V. ellipticum* include: *Bromus carinatus, Camassia leichtlinii, C. quamash, Eriophyllum lanatum, Geranium robertianum, Mimulus guttatus, Plectritis congesta, Rubus discolor*, and *Rubus ursinus* (CPNWH 2018).

Habitat Status or Trend: Throughout its range, *V. ellipticum* occurs in a suite of forest and shrub habitats that are adapted to recurring fire, but which vary a great deal in their fire return interval, from 15 to 150 years, and in the prevalence of stand-replacing fire (Fryer and Luensmann 2012). Fire suppression could therefore constitute a threat to this species' survival in some parts of its range, in the form of increased competition for resources in late successional habitats, reduction in seed set due to increasingly limited resources, from shifting pollinator and seed disperser presence due to successional change, or in low seedling recruitment due to lack of

open ground. A resilience to total loss of canopy, and a speedy recovery to fruiting stage from being cut to the ground was documented for *V. opulus* in Europe (Englund 1993), and *V. ellipticum* may be similarly fire-adapted in its ability to regenerate speedily. *Viburnum ellipticum* also inhabits bottomland and riparian communities where regular disturbance by flood or landslide would occur. Alteration of flood regimes and generalized climate drying are predicted to have consequences for riparian ecosystems, with models indicating reduction in connectivity and complexity of these plant communities being the result (Tonkin et al. 2017). Large-scale conversion of shrubland to agricultural grassland has likely had similar impacts on *V. elliptium* in parts of its range (Bentley 1967; Syphard et al. 2018).

On the Shasta-Trinity NF, one occurrence on the south side of Shasta Lake was top-killed by the Bear Fire of 2004, along with surrounding oaks and other shrubs; both the viburnum and the oaks resprouted from their bases (Kierstead editorial comments 2022).

Capacity for the Species to Disperse: The success of dispersal of *V. ellipticum* may be limited by the variety and prevalence of frugivore dispersers available. A study of fruit removal of *V. opulus* fruits (Englund 1993), which, like *V. edulis*, are fleshy with a single large seed each, indicate that this fruit type is adapted to frugivore dispersers such as bears and frugivore birds (waxwings, thrushes) that swallow the fruit and seed whole and excrete the seed. However, this study demonstrated that in fact, only a low percentage of *V. opulus* are taken by seed dispersers. Instead, in most years and in most sites, seed-eating birds (e.g. bullfinches), deer and rodents took most of the fruits, and these either specifically ate the seed within the fruit (birds, rodents) or inadvertently chewed up the seed (deer), thus functioning as seed predators. In this context, *V. opulus* (and presumably other large-fruited *Viburnum* species) has a high-risk strategy of depending on an occasional preponderance of frugivore visitation for dispersal (Englund 1993).

The rarity of observations of seedlings or saplings may be an indicator of low success of dispersal and recruitment (CNDDB 2018; Englund 1993). Propagation data demonstrates a strong seed dormancy, overcome by 18-month natural stratification period, and a 2-3 year seedling establishment (seedlings are 6” tall at end of first year, and 24-36” tall at end of second year (Broadlick 2015).

Viburnum ellipticum inhabits bottomland and riparian communities where regular disturbance by flood or landslide would occur. This species can be propagated by vegetative cuttings (Broadlick 2015), so the possibility exists for vegetative dispersal via fragmentation through riparian areas.

Viburnum ellipticum was used, and possibly dispersed, by native people. According to Loud (1918) it was an important plant for the Wiyot peoples of the Northern California coast. The seeds of *V. ellipticum* were used for decorative purposes such as on skirts, and were found in burials. The range of this species may still be expanding through human dispersal due to its popularity as a garden ornamental (Virginia Tech 2018).

Threats: The low montane and riparian habitats in which *V. ellipticum* occurs have long been utilized for agriculture, especially ranching and timber harvest, with a consequent large-scale conversion of shrubland to grassland, and shortening of the natural fire regime return interval (Syphard et al. 2018). Habitat alteration is consequently a generalized threat to this species (CNPS 2018), with specific examples being “Several large noxious weed populations in vicinity” (EO 38); “Recent 2004 wildfire and 2011 USFS fuels reduction/burn work in immediate vicinity. Improper burning regime” (EO 37); “Fire clearing” (EO 19, 20). Road/trail construction or maintenance is mentioned as a threat for three occurrences, e.g. “Highway road widening proposed in general area” (EO 19, 20, 36). A single occurrence has a note of susceptibility to grazing pressure “Some browsing on plants evident, likely by deer” (EO 29) (CNDDB 2018).

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Julie A. Kierstead, USDA Forest Service Region 5 Ecosystem Planning; July 23, 2020

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.