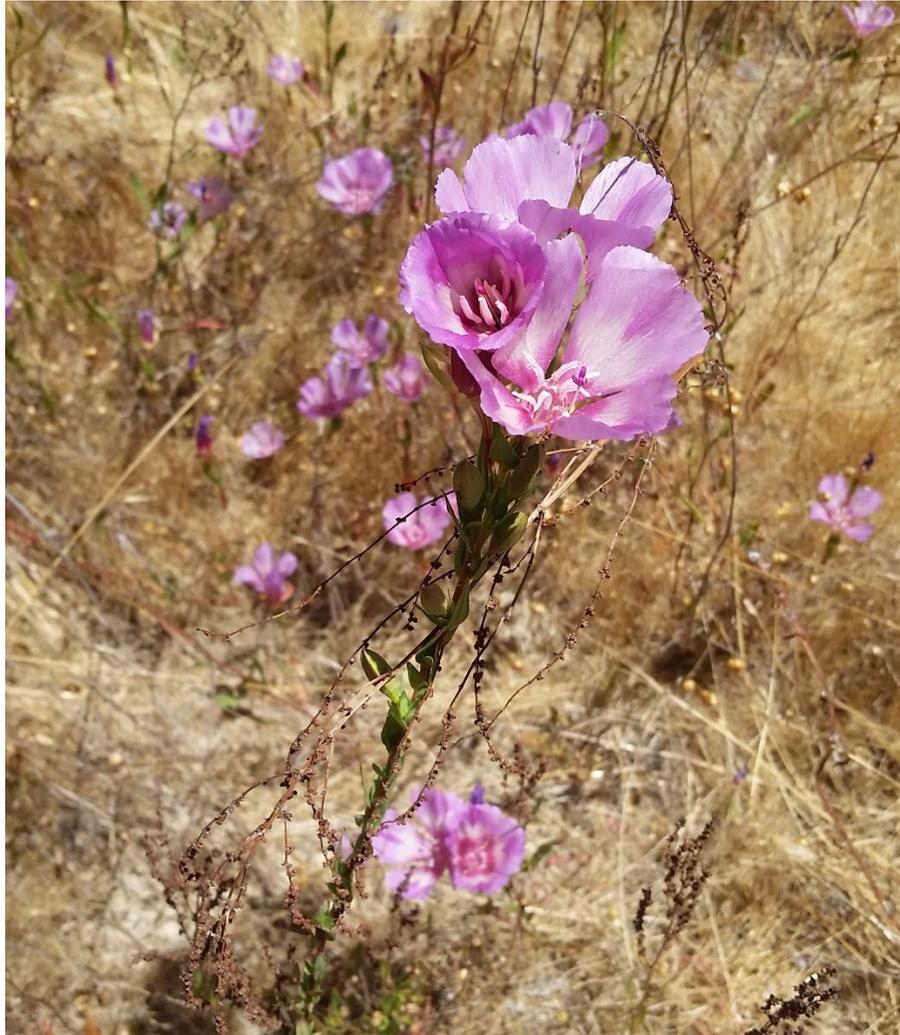


**Vine Hill Clarkia
(*Clarkia imbricata*)**

**5-Year Review:
Summary and Evaluation**



**U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
Sacramento, California**

May 2019

5-YEAR REVIEW

Vine Hill clarkia (*Clarkia imbricata*)

GENERAL INFORMATION

Species: Vine Hill clarkia (*Clarkia imbricata*)

Date Listed: October 22, 1997

FR citation(s): 62 FR 54791

Classification: Endangered

BACKGROUND

Most recent status review:

[USFWS] U.S. Fish and Wildlife Service. 2011. *Clarkia imbricata* (Vine Hill clarkia) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento, California. 15 pp. [[CLICK HERE TO VIEW DOCUMENT](#)]

FR Notice citation announcing this status review:

[USFWS] U.S. Fish and Wildlife Service. 2018. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 50 Species in California, Nevada, and the Klamath Basin of Oregon. Federal Register 83:28251 – 28254. [[CLICK HERE TO VIEW DOCUMENT](#)]

ASSESSMENT

Information acquired since the last status review:

This 5-year review was conducted by the U.S. Fish and Wildlife Service's (USFWS) Sacramento Fish and Wildlife Office. Data for this review were solicited from interested parties through a Federal Register notice announcing this review on June 18, 2018. We contacted volunteers from the California Native Plant Society (CNPS) and the Laguna De Santa Rosa Foundation for data and information. We used survey information from the California Natural Diversity Database (CNDDDB) maintained by the California Department of Fish and Wildlife. Personal communications with experts were our primary sources of information used to update the status of the species. Additionally, we conducted a literature search and review of information in our files.

Vine Hill clarkia is an annual herb in the evening primrose family (Onagraceae), and as such, shows natural, inter-annual population fluctuation (USFWS 2011, 2016). As described previously by the USFWS (2011, 2016), the only known, extant population of Vine Hill clarkia exists at the Vine Hill Preserve (preserve) in Sonoma County, California. The preserve is owned and managed by CNPS volunteers (USFWS 2016; K. Symonds, *in litt.* 2018). Historically, there were as many as three locations where the plant existed in central Sonoma County. All known populations existed on Goldridge acidic sandy loam soils, in an area known as the Sonoma Barrens.

Past surveys have documented as many as 8,700 plants and as few as 60 plants at the reserve, suggesting a high degree of population variation at the site, typical of annual plant species (USFWS 2016; S. Gordon, *in litt.* 2018). Previous reports have described the population trend to be increasing and stable (USFWS 2011, 2016). However, recent data suggest the population has declined in the past decade (CNPS 2018; Appendix A.)

Threats described in recent USFWS documents on Vine Hill clarkia (USFWS 2011, 2016) were habitat loss from agriculture, urbanization, and ecological community succession, as well as competition with non-native species, and an increased risk of extinction from stochastic events associated with small populations (such as a fire). Competition with native species, including Vine Hill manzanita (*Arctostaphylos densiflora*), continues to be an unmitigated threat (S. Gordon, pers. comm. 2018). Areas of the preserve that were once vineyards have been restored to natural habitat and seeded with Vine Hill clarkia seeds (S. Gordon, pers. comm. 2018). A large section of the area seeded was at a higher elevation (upslope), but over time the population has shifted downhill towards an area primarily occupied by the Vine Hill manzanita. The Vine Hill manzanita is also an endemic plant that occurs on the Vine Hill Preserve and is listed as endangered in the state of California under the California Endangered Species Act (USFWS 2016). The two species probably compete for light and space at the preserve (USFWS 2016). If the Vine Hill clarkia are limited by downhill dispersal of seed and competition with the perennial manzanita, continuous uphill seeding efforts might be required to ensure persistence in this habitat (S. Gordon, pers. comm. 2018).

Vine Hill clarkia continues to be located only within the 0.6 hectare (1.5 acre) Vine Hill Preserve (K. Symonds, pers. comm. 2018; S. Gordon, pers. comm. 2018). The 2011 5-year review (USFWS 2011) is still an accurate assessment of the status of the species. Data and observations from CNPS suggests some of the threats have marginally increased within the past two years (S. Gordon, pers. comm. 2018); populations show an overall downward trend, as Vine Hill manzanita continue to shade available habitat. However, this does not alter our overall understanding of threats to the species or its overall distribution.

Conclusion:

Vine Hill clarkia has a recovery priority number of 5 (Endangered and Threatened Species Listing and Recovery Priority Guidelines, 48 FR 43098-43105, September 21, 1983). A recovery priority of 5 denotes a species with a high degree of threat and low recovery potential. Threats to this taxon are still pervasive. The narrow range and low numbers of the Vine Hill clarkia might make it susceptible to a variety of natural and anthropogenic random effects. There is little information on the possibility of establishing populations outside of the Vine Hill Preserve. Additionally, few public lands exist within the Sonoma Barrens, further limiting the possibility of establishing new populations of Vine Hill clarkia (Sonoma County Open Space District 2018); any introductions offsite would rely on voluntary partnerships with private landowners.

After reviewing the best available scientific information, we conclude that the Vine Hill clarkia remains an endangered species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Act and analysis of the status of the species in the 5-year review (USFWS 2011) remains an accurate reflection of the species current status.

RECOMMENDATIONS FOR FUTURE ACTIONS

Pruning and managing the extent of Vine Hill Manzanita

Reports suggest the Vine Hill clarkia and Vine Hill manzanita coexisted naturally in the Sonoma Barrens prior to European settlement (USFWS 2016). Today, both plants only exist at the Vine Hill Preserve. In previous years, Vine Hill clarkia existed in the margins between individual Vine Hill manzanitas. Currently, the Vine Hill manzanita have grown to a point that they are shading and excluding the Vine Hill clarkia from these areas, limiting the number of individual clarkia which can grow at the site. We suggest pruning the Vine Hill manzanita to increase the amount of available habitat for the Vine Hill clarkia. This will require coordination with the California Department of Fish and Wildlife, as the Vine Hill manzanita is a state listed species.

Continued seeding upslope

Vine Hill clarkia populations could be dispersal limited (S. Gordon, pers. comm. 2018). Upslope areas at the Vine Hill Preserve previously contained plants (S. Gordon, pers. comm. 2018); however, today the population has shifted spatially within the preserve to areas where its survival is threatened by competition with the Vine Hill manzanita (USFWS 2016). This threat would decrease if individual Vine Hill clarkia seeds were collected and distributed upslope habitat every few years.

Lead Field Supervisor, Fish and Wildlife Service

Approve  Date 5/2/2019

LITERATURE CITED

- [CNDDDB] California Natural Diversity Database. 2018. Natural Heritage Division. California Department of Fish and Wildlife, State of California. Element Occurrence Reports for *Clarkia imbricata*. Unpublished cumulative data current to 2018.
- Sonoma County Open Space District. 2018. "Sonoma County Public and Protected Areas Database" Sonoma County Agricultural Preservation and Open Space District via Arc GIS online. Web. September 27, 2018.
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- _____. 2016. Recovery Plan for *Clarkia imbricata* (Vine Hill Clarkia). U.S. Fish and Wildlife Service, Sacramento, California. 45 pp.
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Gordon, S. 2018. Laguna De Santa Rosa Foundation. Electronic mail correspondence to Elizabeth Bainbridge, Sacramento Fish and Wildlife Office, June 20, 2018. Subject: Vine Hill Clarkia.

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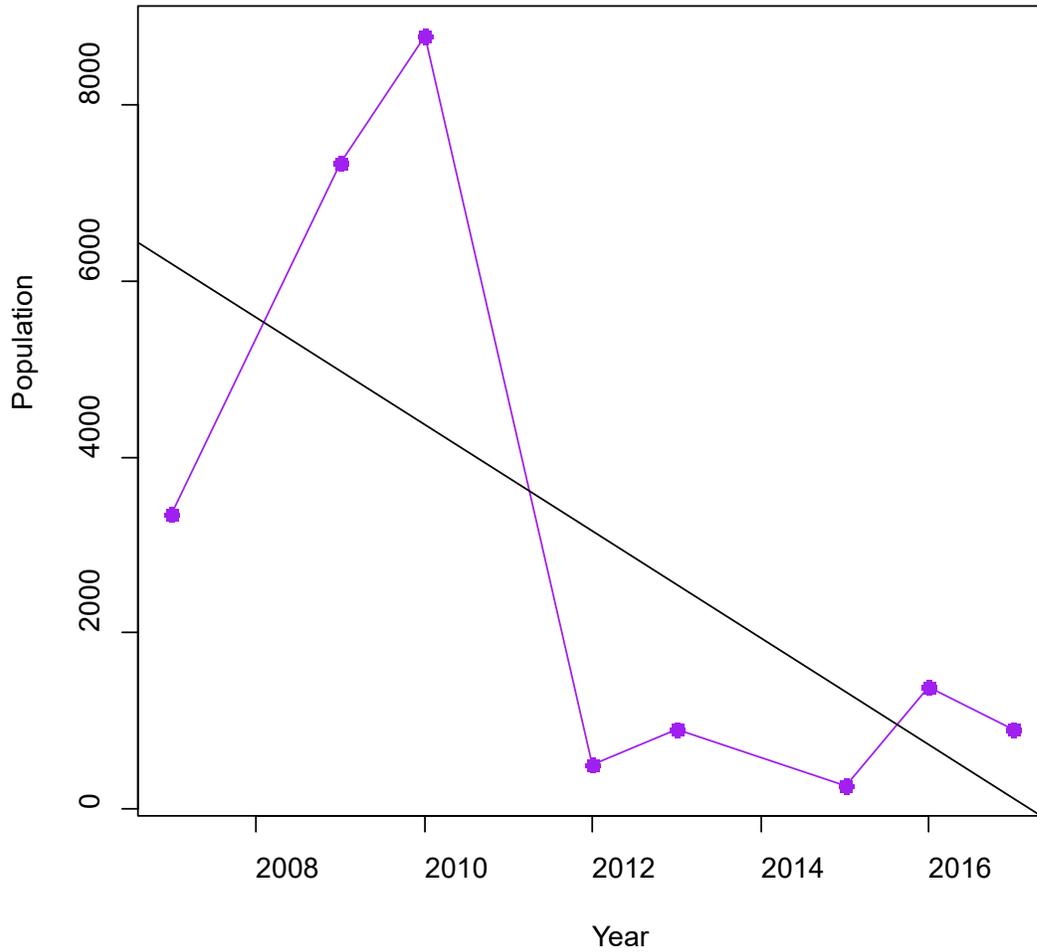
Symonds, K. 2018. U.S. Fish and Wildlife Service (Retired). Electronic mail correspondence to Elizabeth Bainbridge, Sacramento Fish and Wildlife Office, June 19, 2018. Subject: Sonoma County Plants.

Personal Communications

Gordon, S. 2018. Botanist for the Laguna De Santa Rosa Foundation and Volunteer for the Milo Baker Chapter of the California Native Plant Society. Conversation with Elizabeth Bainbridge, of the Sacramento Fish and Wildlife Office. July 10, 2018. Subject: Management of rare plant species at the Vine Hill Preserve.

Appendix A. Annual population census and population trend for the Vine Hill clarkia over the past decade. While annual plants often show annual population variation these data show an overall decline of this species at the only known location, the CNPS managed Vine Hill Preserve.

Annual Population Variation of Vine Hill Clarkia



Appendix B. Population counts for Vine Hill clarkia. Population counts were done infrequently (less than once per decade) prior to 2007. The past 10 years of data show a decline of Vine Hill clarkia.

Year	Population	Source
1978	60	CNDDDB
1987	200	CNDDDB
1992	320	CNDDDB
1997	2020	CNDDDB
2007	3357	USFWS 2016
2009	7341	USFWS 2011
2010	8781	USFWS 2011
2012	500	USFWS 2016
2013	908	USFWS 2016
2015	270	USFWS 2016
2016	1376	CNPS 2018
2017	~900	CNPS 2018