

public inspection, by appointment, during normal business hours at the Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Suite W-2605, Sacramento, CA 95825.

**FOR FURTHER INFORMATION CONTACT:** Glen Tarr or Susan Moore, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, at the above address (telephone 916/414-6600; facsimile 916/414-6710).

**SUPPLEMENTARY INFORMATION:**

**Background**

*Delphinium bakeri* is a perennial herb in the buttercup family (Ranunculaceae). Ewan (1942) described *Delphinium bakeri* based on type material collected by Milo Baker in 1939 from "Coleman Valley, Sonoma Co., California." In the most recent treatment, Warnock (1997) retained the taxon as a full species. It grows from a thickened, tuber-like, fleshy cluster of roots. The stems are hollow, erect, and grow to 65 centimeters (cm) (26 inches (in)) tall. Shallowly five-parted leaves occur primarily along the upper third of the stem and are green (as opposed to withering) at the time the plant flowers. The flowers are irregularly shaped. The five sepals (members of the outermost set of flower parts) are conspicuous, bright dark blue or purplish, with the rear sepal elongated into a spur (hollow, often cone-shaped, projection). The inconspicuous petals occur in two pairs. The lower pair is oblong and blue-purple; the upper pair is oblique (having unequal sides or an asymmetric base) and white. Seeds are produced in several dry, many-seeded fruits, which split open at maturity on only one side (i.e., follicles). *D. bakeri* flowers from April through May (Warnock 1993). *D. bakeri* can be differentiated from other members of the genus by its crenate leaf margins (margins notched or scalloped so as to form rounded teeth), leaves that are not withering at time of flowering, and flowers that are loosely arranged (California Native Plant Society (CNPS) 1977).

*Delphinium bakeri* has only been known from three locations: Coleman Valley in southern Sonoma County, near the town of Tomales in northern Marin County, and approximately 10 km (6 mi) east of Tomales Bay in northern Marin County (California Natural Diversity Database (CNDDDB) 2001). *D. bakeri* is thought to have been extirpated from Coleman Valley sometime prior to 1986, and from the site near Tomales, where the species has not been relocated since 1925 (CNDDDB 2001). At the only known extant (currently existing, not extirpated

or destroyed) population, approximately 10 km (6 mi) east of Tomales Bay, the number of individuals has varied from 0 to 67 individuals over the last 20 years (CNDDDB 2001).

*Delphinium bakeri* occurs on decomposed shale. The sites where it is found range from 90 to 205 meters (m) (295 to 672 feet (ft)) in elevation (CNDDDB 2001). The collection from the type locality (the location where the species was first described) in Coleman Valley was described by Joseph Ewan as growing "along fence rows and in heavy low brush" (Ewan 1942). Two species listed as growing with *D. bakeri* at the type locality were *Potentilla elata* (now known as *Horkelia californica* ssp. *dissita* (California honeydew)) and *Ranunculus orthorynchus* (straightbeak buttercup) (Ewan 1942). No information is reported for the associated species or habitat for the other occurrence near Tomales that is thought to be extirpated (CNDDDB 2001).

The single extant occurrence of *Delphinium bakeri* grows in mesic (moderate moisture) conditions along an extensive north-facing slope under an overstory that includes *Umbellularia californica* (California bay), *Aesculus californica* (California buckeye), and *Quercus agrifolia* (coastal live oak). Other native plants associated with *D. bakeri* at this site include: *Baccharis pilularis* ssp. *consanguinea* (coyotebrush), *Symphoricarpos* cf. *rivularis* (snowberry), *Rubus ursinus* (California blackberry), *Pteridium aquilinum* (bracken fern), *Polystichum munitum* (sword fern), *Pityrogramma triangularis* (goldback fern), *Dryopteris arguta* (coastal woodfern), *Adiantum jordanii* (maidenhair fern), *Polypodium glycyrrhiza* (licorice fern), *Toxicodendron diversilobum* (poison oak), *Ceanothus thyrsiflorus* (blueblossom ceanothus), *Lithophragma affine* (woodland star), and *Holodiscus discolor* (oceanspray) (J. Koontz, Center for Biodiversity, *in litt.*, 2002; CNDDDB 2001). These plants are important indicators of remaining areas of natural habitat that support *D. bakeri*, and are likely to support ecological processes such as water retention, shading, nitrogen processing, and other factors that create suitable habitat conditions for *D. bakeri*. The property is privately owned, but Sonoma County has a right-of-way along the road. Pollinators have not specifically been identified for *D. bakeri*, but pollinators for species in the genus *Delphinium* typically are large hymenoptera, especially *Bombus* ssp. (bumblebees) (Guerrant 1978).

In 1942, Ewan noted that the habitat of *Delphinium bakeri* was formerly more abundant, but had been reduced

by cultivation (Ewan 1942). Habitat conversion, grazing, and roadside maintenance activities are cited as the reasons for the decline of the species, and two of the three known occurrences of *D. bakeri* in Marin and Sonoma counties, including the occurrence at the type locality in Coleman Valley, have been extirpated (California Department of Fish and Game (CDFG) 1994). The single location where *D. bakeri* is known to remain extant is threatened by road work, such as right-of-way maintenance (including use of herbicides), overcollection, and sheep grazing (CNDDDB 2001). For example, many plants were accidentally mowed by a county road maintenance crew in May 2002 (J. Koontz, *in litt.*, 2002). Because of the restriction in its range to a single population and the small population size of the one remaining occurrence, *D. bakeri* is extremely vulnerable to extinction from random natural events, such as unseasonal fire or insect outbreaks (Shaffer 1981; Primack 1993).

*Delphinium luteum* is a perennial herb in the buttercup family (Ranunculaceae). Heller (1903) described *D. luteum* based on type material collected from "grassy slopes about rocks, near Bodega Bay, along the road leading to the village of Bodega" in Sonoma County. Although Jepson (1975) reduced *D. luteum* to a variety of *D. nudicaule* (red larkspur), it is currently recognized as a full species (Warnock 1993). *D. luteum* grows from thin tuberous roots up to 30 cm (12 in) long to a height of 55 cm (22 in) tall. The leaves are mostly basal, fleshy, and green at the time of flowering. The flowers are cornucopia-shaped. The five conspicuous sepals are bright yellow, with the posterior sepal elongated into a spur. The inconspicuous petals occur in two pairs. The upper petals are narrow and unlobed; the lower petals are oblong to ovate (egg-shaped). The fruit is a follicle. *D. luteum* flowers from March to May. The species is distinguished from other *Delphinium* by its yellow flowers and its erect seed follicles (CNPS 1977). In contrast to typical pollinators for the genus *Delphinium*, potential pollinators for *D. luteum* are Allen's hummingbirds (*Selasphorus sasin*), which have been observed visiting *D. luteum* flowers. In addition, the flower shape and sucrose-dominated nectar are consistent with characteristics of species that are typically pollinated by hummingbirds (Guerrant 1978).

*Delphinium luteum* inhabits coastal prairie and coastal scrub areas, which typically have no overstory vegetation, at elevations ranging from sea level to