

# Facts & Frequently Asked Questions about the designation of critical habitat for five carbonate plants from the San Bernardino Mountains

## ***Q. What are the carbonate plants and why are they considered ‘endemic’?***

The San Bernardino Mountains in southern California support a diversity of specialized natural habitats resulting from their geographic position between desert and coastal environments; and their geological history, elevation, and uncommon geological substrates.

Within the northeastern portion of the San Bernardino Mountains, outcrops of carbonate substrates (primarily limestone and dolomite) occur in a series of bands extending about 35 miles from east to west along the desert-facing slopes. This portion of the mountains is generally referred to as the ‘carbonate belt’.

*Astragalus albens* (**Cushenbury milk-vetch**), *Eriogonum ovalifolium* var. *vineum* (**Cushenbury buckwheat**), *Lesquerella kingii* ssp. *bernardina* (**San Bernardino Mountains bladderpod**), *Oxytheca parishii* var. *goodmaniana* (**Cushenbury oxytheca**), and *Erigeron parishii* (**Parish’s daisy**) are all found within the carbonate belt.

These plants generally grow in soils derived primarily from limestone, dolomite, or other substrates rich in calcium carbonate, hence the name ‘carbonate plants’. The five plants occur in scattered populations within the carbonate belt at elevations ranging from 3,842 to 8,800 feet. The plants are considered ‘endemic’ because they are restricted to a limited geographic area. These plants are found nowhere else in the world except in the ‘carbonate belt’.

The Service listed four of the carbonate plants as endangered, and one as threatened, under the Endangered Species Act, as amended (the Act), on August 24, 1994. Following are brief descriptions of each of the plants.



Cushenbury milk-vetch  
Photo: Scott Eliason/USFS

**Cushenbury milk-vetch** (*Astragalus albens*) is a small, short-lived perennial member of the pea family that is typically found on carbonate soils along rocky washes and gentle slopes within pinyon woodland, pinyon-juniper woodland, Joshua tree woodland, and blackbush scrub communities. The plant produces purple flowers that bloom from March to May.

Populations of this federally endangered plant are scattered along the carbonate belt from Dry Canyon, southeast to the head of Lone Valley.

**Cushenbury buckwheat** (*Eriogonum ovalifolium* var. *vineum*) is a federally endangered plant that is a member of the buckwheat family. It grows in low, dense mats that are typically 6 to 10 inches in diameter, but can reach 20 inches in diameter. The flowers of this plant are whitish-cream colored, but can darken to a reddish or purple hue with age.

Populations of this plant are found within the carbonate belt from White Mountain, east to Rattlesnake Canyon.



Cushenbury buckwheat  
Photo: Scott Eliason/USFS

**San Bernardino Mountains bladderpod** (*Lesquerella kingii ssp. bernardina*) has the most restricted distribution of the carbonate plants and is found only on soils derived from dolomite. A member of the mustard family, the San Bernardino Mountains bladderpod grows 4 to 8 inches tall and can be seen blooming from May to June. It is listed as endangered. [No photo available].



Cushenbury oxytheca  
Photo: Scott Eliason/USFS

**Cushenbury oxytheca** (*Oxytheca parishii var. goodmaniana*) is found in scattered populations from White Mountain, east to Rattlesnake Canyon. A small, wiry member of the buckwheat family, this endangered plant usually grows to 2 to 12 inches tall and has white to rose or greenish-yellow petals.



Parish's daisy  
Photo: Scott Eliason/USFS

**Parish's daisy** (*Erigeron parishii*) is a small perennial herb that grows 4 to 12 inches tall and flowers from May through June. A member of the aster family, the federally threatened Parish's daisy has the widest geographic distribution of the carbonate plants.

***Q. What is critical habitat?***

Critical habitat is defined as specific areas within the geographical area occupied by a species, at the time it is listed under the Act, on which are found physical or biological features that are “essential to the conservation of the species and which may require special management considerations or protection”. Critical habitat may also include “specific areas outside the geographic area occupied by the species at the time it is listed”, if it is determined that such areas are “essential for the conservation of the species.”

Critical habitat is determined using the best available scientific and commercial information about the physical and biological needs of the species and may include one or more of the following:

- ◆ space for individual and population growth, and for normal behavior;
- ◆ food, water, light, air, minerals or other nutritional or physiological needs;
- ◆ cover or shelter;
- ◆ sites for breeding, reproduction, and rearing of offspring; and
- ◆ habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

In designating critical habitat for the five carbonate plants, we determined areas that are “essential to the conservation of the species.” We also identified, to the extent known, habitats that contain the primary constituent elements necessary for the life cycle needs of the carbonate plants.

***Q. What are the primary constituent elements essential to the conservation of the carbonate plants?***

Habitat components essential for the five carbonate plants are found in vegetation communities classified as, but not limited to, pinyon woodland, pinyon-juniper woodland and forests, Joshua tree woodland, white fir forests, subalpine forest, canyon live oak woodlands and forests, and blackbush scrub in the San Bernardino Mountains, San Bernardino County, California. These habitat components provide for: (1) individual and population growth, including sites for germination, pollination, reproduction, pollen and seed dispersal, and seed dormancy; (2) areas that allow for and maintain gene flow between sites through pollinator activity; (3) areas that provide basic requirements for growth such as water, light, and minerals; and (4) areas that support pollinators and seed dispersal organisms.

Each of the carbonate plants has a separate set of primary constituent elements, as follows:

**Cushenbury milk-vetch:** (1) soils derived primarily from upper and middle members of the Bird Spring Formation and Undivided Cambrian parent materials that occur on dry flats or slopes, or along rocky washes with limestone outwash/deposits between 1,171 and 2,013 m (3,864 and 6,604 ft) in elevation; (2) soils with intact, natural surfaces that have not been substantially altered by land use activities; and (3) plant communities that have areas with an open canopy cover and little accumulation of organic material on the surface of the soil (leaf litter);

**Cushenbury buckwheat:** (1) soils derived primarily from the upper and middle members of the Bird Spring Formation and Bonanza King Formation parent materials that occur on hillsides between 1,400 and 2,400 m (4,600 and 7,900 ft); (2) soils with intact, natural surfaces that have not been substantially altered by land use activities; and (3) plant communities that have areas with an open canopy cover (generally less than 15 percent cover) and little accumulation of organic material on the surface of the soil (leaf litter);

**San Bernardino Mountains bladderpod:** (1) soils derived primarily from Bonanza King Formation and Undivided Cambrian parent materials that occur on hillsides or on large rock outcrops between 2,098 and 2,700 m (6,883 and 8,800 ft) in elevation; (2) soils with intact, natural surfaces that have not been substantially altered by land use activities; and (3) plant communities that have areas with an open canopy cover and little accumulation of organic material on the surface of the soil (leaf litter);

**Cushenbury Oxytheca:** (1) soils derived primarily from upslope limestone, a mixture of limestone and dolomite, or limestone talus substrates with parent materials that include Bird Spring Formation, all members; Bonanza King Formation; Monte Cristo Limestone, middle and lower members; and Sultan Limestone, Crystal Pass member between 1,440 and 2,372 m (4,724 and 7,782 ft); (2) soils with intact, natural surfaces that have not been substantially altered by land use activities; and (3) plant communities that have areas with an moderately open canopy cover (generally between 25 and 53 percent; Neel 2000);

**Parish's daisy:** (1) soils derived primarily from upstream or upslope limestone, dolomite, or quartz monzonite parent materials that occur on dry, rocky hillsides, shallow drainages, or outwash plains at elevations ranging from 1,171 to 1,950 m (3,842 and 6,400 ft); (2) soils with intact, natural surfaces that have not been substantially altered by land use activities; and (3) plant communities that have areas with an open canopy cover.

***Q. What information was used to map the critical habitat boundaries for the carbonate plants?***

To determine the areas essential to the conservation of the carbonate plants, we relied on a variety of data and information including habitat modeling, peer-reviewed articles, geographic information system (GIS) coverages of land ownership, vegetation, soils, plant occurrences provided by the San Bernardino National Forest (SBNF) and the Carbonate Habitat Management Strategy (CHMS), site visits, and aerial photography.

***Q. How much land has been designated as critical habitat for the five carbonate plants?***

We are designating critical habitat for each of the five carbonate plants, as follows:

Cushenbury milk-vetch =	4,365 acres
Cushenbury buckwheat =	6,955 acres
San Bernardino Mountains bladderpod =	1,025 acres
Cushenbury Oxytheca =	3,150 acres
Parish's daisy =	4,420 acres
Combined total =	19,915 acres

**Due to the considerable overlap in the habitats for each of the plants, the net total critical habitat designated for the five carbonate plants is 13,180 acres.**

Areas designated as critical habitat are identified in three separate units:

- ◆ **Unit 1:** Northeastern Slope - Includes approximately 11,980 acres extending west to east from White Mountain to Rattlesnake Canyon, San Bernardino County, California. This unit contains four of the five carbonate plants: Cushenbury milk-vetch, Parish's daisy, Cushenbury buckwheat, and Cushenbury oxytheca.
- ◆ **Unit 2:** Bertha Ridge - Located on the north side of Big Bear Lake, adjacent to Big Bear City, California. Covering approximately 685 acres, this unit contains two of the five carbonate plants: Cushenbury buckwheat and the San Bernardino Mountains bladderpod.
- ◆ **Unit 3:** Sugarlump Ridge - The smallest of three units, this unit encompasses 515 acres of land managed by the San Bernardino National Forest, and is centered on the north-facing slope of Sugarlump Ridge, south of Bear Valley, California. The San Bernardino Mountains bladderpod is the only carbonate plant that occupies this unit.

All of the lands that we proposed as critical habitat for the five carbonate plants have been included in our final designation because we determined these areas are essential to the conservation of the plants. All lands designated as critical habitat for the carbonate plants support standing populations of the plants or seed banks, and contain one or more of the primary constituent elements that provide for their individual life cycle needs.

About 11,280 acres of land designated as critical habitat is under Federal management; specifically, on lands managed by the San Bernardino National Forest (SBNF) and the Bureau of Land Management (BLM). Approximately 1,900 acres of private land are included in the critical habitat designation.

***Q. What is an economic analysis and why is it required?***

Section 4(b)(2) of the Endangered Species Act, as amended (the Act), requires the U.S. Fish and Wildlife Service (Service) to designate critical habitat, based on the best scientific information available, after taking into account the economic impact, or any other relevant impact, of specifying a particular area as critical habitat.

We may exclude an area from critical habitat designation, if we determine that the benefits of exclusion outweigh the benefits of including it as critical habitat, unless such an exclusion would lead to the extinction of the species. This determination can only be made on the basis of an economic analysis.

A draft economic analysis on the proposed critical habitat designation for the five carbonate plants was prepared by Economic & Planning Systems, Incorporated (EPS), under subcontract to Industrial Economics, Inc., (IEc), for the Service's Division of Economics.

***Q. What methodology was used to develop the draft economic analysis?***

To determine the economic impact resulting from the designation of critical habitat for the five carbonate plants, EPS first reviewed the proposed critical habitat Units and developed a comprehensive list of all possible Federal nexuses for lands included in each of the Units. A Federal nexus exists when an action is undertaken, authorized, permitted, or funded by a Federal agency, regardless of ownership of the land. Under section 7 of the Act, if a Federal agency determines an action may affect a federally listed species or its designated critical habitat, it must consult with the Service.

After developing a list of all possible Federal nexuses, the draft analysis identifies whether a specific project or activity would result in a section 7 consultation and, if a consultation is required, the estimated costs of the consultation including possible project modifications. The draft analysis also identifies costs associated with both the listing of the species under the Act and the designation of critical habitat, and those costs which are solely attributable to the designation of critical habitat.

***Q. What were the conclusions of the draft economic analysis?***

The draft economic analysis estimates that the combined impacts of consultations and lost mining opportunities associated with the listing of the five carbonate plants under the Act and the designation of critical habitat could range from \$174 million to \$281 million, over a 60-year time frame.

Unlike other economic analyses, which traditionally rely on a 10-year time frame to estimate economic impacts, the nature of commercial mining as a long-term economic pursuit requires an expanded time frame to adequately estimate potential costs associated with the proposed rule.

Calculations of the estimated impacts associated with the potential for lost mining opportunities and consultations costs were based on an average weighted sales price of \$37.00 per ton for Portland cement and ground calcium carbonate (GCC)

To calculate an average cost of a consultation, the draft economic analysis considered the components of a consultation including costs to conduct surveys, administrative costs to the Service for conducting a consultation, possible costs associated with delays to projects, and costs that could be incurred as a result of conservation measures or modifications necessary to complete projects.

***Q. What are the results of the final economic analysis?***

Based on a careful review of comments and information received on the draft economic analysis and proposed rule, including the receipt of economic reports prepared by outside sources, a final addendum to the draft economic analysis was prepared.

The final addendum revised the average weighted sales price for Portland cement and GCC from \$37.00 per ton upwards to \$47.06 per ton. This resulted in revisions to the estimated impacts from the combined listing of the plants and designation of critical habitat. The revised impacts are estimated to range from \$220 million to \$356 million over a 60-year period, with an annualized impact of between \$16 million and \$25 million.

***Q. Why didn't the Service rely more on the economic analyses prepared by Mr. Edward Jucevic and Mr. John Husing?***

Mr. Edward C. Jucevic submitted a report on behalf of Mitsubishi Cement Corporation, Omya (California) Inc., and Specialty Minerals, Inc., concerning the impact of the proposed designation of critical habitat. EPS carefully reviewed the report and determined that there were several flaws in the methodology used to determine the level of impacts associated with the proposed critical habitat designation, among them:

- failure to account for costs associated with extracting the minerals or the likelihood that these minerals would be mined or sold in a given time frame (value added);
- assumption that all of the reserves would be economically viable to mine. In some cases, distance from transportation, absence of roads, and inaccessibility would likely make extraction cost ineffective;
- assumption that all future mining opportunities would be lost in areas designated as critical habitat. It is likely that some amount of mining will be allowed in areas designated as critical habitat, but those determinations can only be made through the section 7 section consultation process. To date, the Service has not issued a jeopardy opinion for mining within the San Bernardino Mountains.

Mr. John Husing also submitted an economic report that estimates the surface area disturbed by mining as of 2002 is 700 acres, and 565 surface acres are currently in production. This results in a production value per-acre of \$242,387. No information was provided as to how the 700 acre or 565 acre figures were derived.

EPS utilized the SBNF's analysis of data provided by aerial photographs to estimate the amount of surface disturbance to be 570 acres as of 2002. It is estimated that 410 acres in active production. Based on these estimates, EPS' calculation of the production value per-acre is \$333,902. This is significantly higher than Mr. Husing's estimate and could indicate an overestimate of the economic impacts associated with the listing of the species and designation of critical habitat.

***Q. How will the designation of critical habitat for the carbonate plants affect housing supplies in southern California?***

Regional consumption of Portland cement currently exceeds supply, with consumption projected to increase from 8 million tons in 2000 to about 12.5 million tons by 2015. It is likely that regional consumers will depend more heavily on imported Portland cement, which should be readily available at competitive prices. There is currently only one company (Mitsubishi Cement Corporation) in the vicinity of critical habitat which produces Portland cement for southern California. Information on the production and consumption of GCC indicates that regional supplies have been sufficient to meet demand.

The designation of critical habitat for the carbonate plants should not have a significant impact of the future of housing supplies in southern California.

***Q. Was the public given an opportunity to comment on the proposed rule to designate critical habitat?***

Yes. The Service wanted to ensure that any final action resulting from our proposal would be as accurate and as effective as possible. We actively solicited comments and information from the public, other government agencies, the scientific community, industry representatives, and other interested parties.

We accepted comments and information in writing, and via electronic mail. Information about the proposed rule and draft economic analysis was made available through the Carlsbad Fish and Wildlife Office's website at <http://carlsbad.fws.gov>, and information was mailed to all identified interested parties.

All substantive comments and information received during the two open comment periods were carefully reviewed and addressed in the final rule. Supporting materials used in the development of this final rule are available for public inspection during normal business hours, at the Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, California 92009. You may contact the Carlsbad Fish and Wildlife Office at 760/431-9440 to schedule an appointment to view the supporting materials.

***Q. Are conservation or management plans being developed for the carbonate plants?***

Yes. In September 1997, we published a Draft San Bernardino Mountains Carbonate Endemic Plants Recovery Plan. The Draft Recovery Plan identifies actions needed to conserve and recover the carbonate plants including protecting significant existing populations, restoring habitat, reintroducing plants, and implementing appropriate management measures such as monitoring and surveying. We are currently revising the Draft Recovery Plan.

Since the listing of the carbonate plants under the Act, the Service has been working cooperatively with SBNF, BLM, mining interests, and the California Native Plant Society on a broad, cooperative effort to develop the Carbonate Habitat Management Strategy (CHMS). The CHMS will address the conservation of carbonate habitat within a 160,300-acre portion of the San Bernardino Mountains. The goals of the CHMS are to: (1) protect the carbonate plants and their habitats; (2) minimize impacts or mitigate for unavoidable impacts from projects within the CHMS area; (3) provide for streamlined project reviews within the planning area; and (4) to guide habitat restoration activities.

The designation of critical habitat for the carbonate plants should not impede ongoing efforts to complete the CHMS.

***Q. What happens if my private property is designated as critical habitat for the carbonate plants?***

The designation of critical habitat will not affect private landowners unless they are undertaking an activity that requires Federal funding, permitting, or authorization. If a project on private land does require Federal permitting, funding, or authorization, and the project may affect designated critical habitat for the carbonate plants, the Federal agency would be required to consult with the Service.

***Q. Does the designation of critical habitat create preserves?***

No. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve or preserve. It does not allow government or public access to private lands and will not result in closure of the area to all access or use.

***Q. How will any final designation of critical habitat affect activities for which a party has already consulted with the Service under section 7 of the Act?***

Regulations require Federal agencies to reinitiate consultation with the Service on previously reviewed actions if critical habitat is designated after the initial consultation, and if those actions may adversely affect critical habitat. This applies only to Federal agencies which have retained some type of involvement or control over the action, or if such involvement is authorized by law. Federal agencies may request to reinitiate consultation with the Service if a project may affect critical habitat.

***Q. What happens if a project is reviewed as part of a reinitiation of consultation and the Service determines it will adversely modify critical habitat?***

It is highly unlikely that an activity that was reviewed and permitted by the Service under section 7 of the Act, prior to the designation of critical habitat, will be changed. During a consultation, we must determine if the

proposed action will “jeopardize the continued existence” of a species by asking the question “*will the project appreciably reduce the likelihood of the species’ survival and recovery?*” A project that will “destroy or adversely modify” critical habitat is one that will appreciably reduce the value of habitat for the survival and recovery of the species. Regardless of whether critical habitat has been designated, we must still consider the effect a project may have on the continued existence and recovery of a listed species.

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