

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17**

RIN 1018-AD14

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Two Tidal Marsh Plants—*Cirsium hydrophilum* var. *hydrophilum* (Suisun Thistle) and *Cordylanthus mollis* ssp. *mollis* (Soft Bird's-Beak) from the San Francisco Bay Area**AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes endangered status pursuant to the Endangered Species Act of 1973, as amended (Act), for two plants—*Cirsium hydrophilum* var. *hydrophilum* (Suisun thistle) and *Cordylanthus mollis* ssp. *mollis* (soft bird's-beak). These species are restricted to salt or brackish tidal marshes within the San Francisco Bay area in northern California. Habitat conversion, water pollution, changes in salinity, indirect effects of urbanization, stochastic events, mosquito abatement activities (including off-road vehicle use), competition with non-native vegetation, insect predation, erosion, inadequate regulatory mechanisms, and other human-caused actions variously imperil these two species. This proposal, if made final, would implement the Federal protection and recovery provisions afforded by the Act for these plants.

DATES: Comments from all interested parties must be received by August 11, 1995. Public hearing requests must be received by July 27, 1995.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, Sacramento Field Office, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room E-1803, Sacramento, California 95825-1846. Comments and materials received, as well as the supporting documentation used in preparing the rule, will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Kirsten Tarp, Sacramento Field Office (see ADDRESSES section) (telephone 916/978-5801; facsimile 916/978-5056).

SUPPLEMENTARY INFORMATION:**Background**

Cirsium hydrophilum var. *hydrophilum* (Suisun thistle) and

Cordylanthus mollis ssp. *mollis* (soft bird's-beak) occur in either salt water or brackish tidal marshes fringing San Pablo and Suisun Bays in the San Francisco Bay area of northern California. Since 1850, this habitat has been drastically curtailed.

Approximately 15 percent, 12,142 hectares (ha) (30,002 acres), of the historical tidal marshland habitat within the San Francisco Bay area remains (Dedrick 1989).

With the exception of the San Francisco Bay area, the mountainous coast of California and the narrow continental shelf provide few areas that are suitable for tidal marsh development (MacDonald 1990). Coastal salt marshes are found along sheltered margins of shallow bays, estuaries, or lagoons, in low lying areas that are subject to periodic inundation by salt water. Brackish marshes occur at the interior margins of coastal bays, estuaries, or lagoons where fresh water sources (streams and rivers) enter salt marshes. Brackish marshes are similar to salt marshes but differ in the degree of water and soil salinities. Brackish marshes are less saline than salt marshes. Salinity levels vary with time and space, depending on the height of the tides or on the amount of freshwater inflow. Vegetation communities in salt and brackish marshes often occur in distinct zones, depending on the frequency and length of tidal flooding. Both proposed plants are restricted to a narrow tidal band, typically in higher elevational zones within larger tidal marshes that have fully developed tidal channel networks. They usually do not occur in smaller fringe tidal marshes that are generally less than 100 meters (m) (300 feet (ft)) in width, or in nontidal areas.

Discussion of the Two Species Proposed for Listing

Asa Gray (1888) originally described *Cirsium hydrophilum* var. *hydrophilum* as *Cnicus breweri* var. *vaseyi*. Subsequent authors treated the taxon as *Carduus hydrophilus* (Greene 1892), *Cirsium hydrophilum* (Jepson 1901), and *Cirsium vaseyi* var. *hydrophilum* (Jepson 1925). John Thomas Howell (1959) concluded that Jepson's *Cirsium hydrophilum* and *Cirsium vaseyi* of the Mt. Tamalpais area in Marin County, California are varieties of a single species, *Cirsium hydrophilum*. According to the rules for botanical nomenclature, when a new variety is described in a species not previously divided into infraspecific taxa, an autonym (automatically created name) is designated. In this case, the autonym is *Cirsium hydrophilum* var. *hydrophilum*.

Cirsium hydrophilum var. *hydrophilum* is a perennial herb in the aster family (Asteraceae). Slender, erect stems 1.0 to 1.5 m (3.0 to 4.5 ft) tall are well branched above. The spiny leaves are deeply lobed. The lower leaves have ear-like basal lobes; the upper leaves are reduced to narrow strips with strongly spine-toothed margins. Pale lavender-rose flower heads, 2.0 to 2.5 centimeters (cm) (1 inch (in.)) long, occur singly or in loose groups. The bracts of the flower heads have a distinct green, glutinous ridge on the back that distinguishes *C. hydrophilum* var. *hydrophilum* from other *Cirsium* species in the area.

Cirsium hydrophilum var. *hydrophilum* flowers between July and September.

Cirsium hydrophilum var. *hydrophilum* is restricted to Suisun Marsh in Solano County. In 1975, the plant was reported as possibly extinct because it had not been collected for about 15 years.

Extensive surveys, however, relocated the thistle at two locations within Suisun Marsh (Brenda Grewell, California Department of Water Resources (CDWR), pers. comm. 1993). Collectively, the occurrences of *C. hydrophilum* var. *hydrophilum* total a few thousand individuals (Brenda Grewell, pers. comm. 1993). *Cirsium hydrophilum* var. *hydrophilum* grows in the upper reaches of tidal marshes associated with *Typha angustifolia*, *Scirpus americanus*, *Juncus balticus*, and *Distichlis spicata*. One occurrence is on California Department of Fish and Game (CDFG) lands and a second occurrence is on Solano County Farmland and Open Space Foundation lands. No active management is occurring at either location (Neil Havlik, Solano County Farmland and Open Space Foundation, pers. comm. 1993; Ann Howald, CDFG, pers. comm. 1993).

Its highly restricted distribution increases its susceptibility to catastrophic events such as disease or pest outbreak, severe drought, oil spills, or other natural or human caused disasters. Habitat conversion, habitat fragmentation, indirect effects from urban development, increased salinity, projects that alter natural tidal regime, mosquito abatement activities, competition with non-native plants, and inadequate regulatory mechanisms also threaten this taxon.

Charles Wright collected the type specimen of *Cordylanthus mollis* ssp. *mollis* in November 1855, on Mare Island in San Francisco Bay. Asa Gray (1868) published the original description, using the name *C. mollis*. Later botanists treated the taxon as *Adenostegia mollis* (Greene 1891) and *Chloropyron molle* (Heller 1907). Tsan-

Iang Chuang and Larry Heckard (1973) treated *C. mollis* and *C. hispidus* as subspecies of a single species (*C. mollis*) with *Cordylanthus mollis* ssp. *mollis* recognized as the autonym.

Cordylanthus mollis ssp. *mollis* is an annual herb of the snapdragon family (Scrophulariaceae) that grows 25 to 40 cm (10 to 16 in.) tall. It is sparingly branched from the middle and above.

Cirsium mollis ssp. *mollis* is a hemiparasite that extracts water and nutrients by attaching enlarged root structures to the roots of other plants (Chuang and Heckard 1971). The foliage is grayish-green (often tinged a deep red) and hairy. The oblong to lance-shaped leaves are 1.0 to 2.5 cm (0.4 to 1.0 in.) long, the lower leaves entire and the upper with one to three pairs of leaf lobes. The inflorescence consists of spikes 5 to 15 cm (2 to 6 in.) long. A floral bract with two to three pairs of lobes occurs immediately below each inconspicuous white or yellowish-white flower. The flowers have only two functional stamens. The narrowly ovoid seed capsule is 6 to 10 millimeters (mm) (0.2 to 0.4 in.) long and bears 20 to 30 dark brown seeds. *Cordylanthus mollis* ssp. *mollis* flowers between July and September. *Cordylanthus mollis* ssp. *mollis* is distinguished from another *Cordylanthus* found nearby (*C. maritimus* ssp. *palustris*) by its two functional stamens (*C. maritimus* ssp. *palustris* has four) and by its bracts with two to three pairs of lateral lobes (*C. maritimus* ssp. *palustris* has a pair of short teeth on the floral bracts).

Cordylanthus mollis ssp. *mollis* is found predominantly in the upper reaches of salt grass-pickleweed marshes at or near the limits of tidal action (Stromberg 1986). It is associated with *Salicornia virginica*, *Distichlis spicata*, *Jaumea carnosa*, *Frankenia salina*, and *Triglochin maritima* (Stromberg 1986). Of 18 reported occurrences of *C. mollis* ssp. *mollis*, 2 have been extirpated; 6 have been surveyed for and not relocated and possibly have been extirpated; and 10 are presumed extant (California Natural Diversity Data Base (CNDDDB) 1994; Jake Ruygt, California Native Plant Society (CNPS), *in litt.* 1993). The type locality at Mare Island for *C. mollis* ssp. *mollis* was destroyed by development and is now a dredge disposal site (CNDDDB 1994). A second occurrence, last seen in 1981 near Martinez in Contra Costa and Solano Counties, was dredged, filled, diked, and is now a marina (Stromberg 1986, CNDDDB 1994). Limited suitable habitat remains for two occurrences, which have not been relocated, in Napa, Sonoma, and Solano Counties (Stromberg 1986, CNDDDB 1994).

Although suitable habitat exists for three historical occurrences in Marin, Solano, and Sonoma Counties, the occurrences have not been relocated after repeated surveys (Stromberg 1986, CNDDDB 1994). A fourth occurrence reported from Sacramento County in 1972 has not been relocated (Jake Ruygt, *in litt.* 1993).

The remaining ten disjunct occurrences are widely scattered throughout coastal salt or brackish tidal marshes fringing San Pablo and Suisun Bays, in Contra Costa, Napa, and Solano Counties (CNDDDB 1994; Brenda Grewell, *in litt.* 1993). The entire distribution of *Cordylanthus mollis* ssp. *mollis* currently is restricted to about 8 ha (20 acres) of habitat (Jake Ruygt, *in litt.* 1993). The total number of individuals reported among populations varies from 1 at the smallest site to 141,000 plants at the largest site. Most sites have between 1,000 and 6,000 individuals (Jake Ruygt, *in litt.* 1993; CNDDDB 1994). Individual populations fluctuate in size from year to year, as is typical of annual plants. *Cordylanthus mollis* ssp. *mollis* occurs primarily on private or non-Federal land; one occurrence is found on Department of Defense (U.S. Navy) land. Habitat conversion, water pollution, increases in salinity of tidal marshes due to upstream withdrawals of fresh water, habitat fragmentation, indirect effects of urbanization, competition with non-native vegetation, insect predation, projects that alter natural tidal regime, mosquito abatement activities (including off-road vehicle use), inadequate regulatory mechanisms, erosion, and stochastic events variously threaten the remaining occurrences of *C. mollis* ssp. *mollis*.

Previous Federal Action

Federal government actions on the two plants began as a result of section 12 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975, and listed *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* as possibly extinct. The Service published a notice on July 1, 1975 (40 FR 27823), of its acceptance of the report of the Smithsonian Institution as a petition within the context of section 4(c)(2) (petition provisions now are found in section 4(b)(3) of the Act) and its intention thereby to review the status of the plant

taxa named therein. The above two taxa were included in the July 1, 1975, notice. On June 16, 1976, the Service published a proposal (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94-51 and the July 1, 1975, **Federal Register** publication. *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* were included in the June 16, 1976, **Federal Register** proposal.

General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, notice (43 FR 17909). The Endangered Species Act Amendments of 1978 required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to those proposals already more than 2 years old. In a December 10, 1979, notice (44 FR 70796), the Service withdrew the June 16, 1976, proposal, along with four other proposals that had expired.

The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82480). The two taxa were listed as category 1 candidates for Federal listing in this document. Category 1 taxa are those that the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals. On November 28, 1983, the Service published a supplement to the Notice of Review (48 FR 53640); there were no changes to these taxa in this supplement.

The plant notice was revised again on September 27, 1985 (50 FR 39526), February 21, 1990 (55 FR 6184), and September 30, 1993 (58 FR 51144). In these three notices *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* were included as category 1 candidate species.

Section 4(b)(3)(B) of the Act requires the Secretary to make certain findings on petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis*, because the 1975 Smithsonian report had been accepted as a petition. On October 13, 1982, the Service found that the petitioned listing of these species was warranted, but precluded by other pending listing

actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). The finding was reviewed annually in October of 1983 through 1994, pursuant to section 4(b)(3)(C)(i) of the Act. Publication of this proposal constitutes the final finding for the petitioned action.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (Act) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists of endangered and threatened species. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Cirsium hydrophilum* (Greene) Jepson var. *hydrophilum* (Suisun thistle) and *Cordylanthus mollis* Gray ssp. *mollis* (soft bird's-beak) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Their Habitat or Range

Habitat for *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* has been severely curtailed by past human activities. Hydraulic mining, diking and filling involved in agricultural land conversion and urbanization, waste disposal, port and industrial development, railroad construction, dredging, salt production, and sedimentation have drastically reduced the amount of tidal marsh in California (Atwater 1979, MacDonald 1990, Association of Bay Area Governments (ABAG) 1991). Changes in freshwater inflow, pollution, habitat conversion, habitat fragmentation, and alteration of the natural tidal regime continue to threaten the habitat of both species.

In San Pablo Bay, historical tidal wetlands have been diked and converted to agricultural lands that were farmed for oat hay. In addition, approximately 4,050 ha (10,000 acres) also were converted to salt ponds. In Suisun Bay, most of the 28,780 ha (71,100 acres) of tidal marshes that existed in 1850 were converted originally to agricultural land, and then to diked seasonal wetlands used for waterfowl management. Only 3,780 ha (9,340 acres) within Suisun Marsh remain as tidal marsh (Dedrick 1989). Most of the remaining tidal marshes are backed by steep levees, allowing for little or no transitional wetland habitat—the habitat required by *Cirsium*

hydrophilum var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis*.

The change of freshwater inflow has modified the habitat for these two taxa. Agricultural and municipal uses have diverted over 50 percent of the historical annual inflow of freshwater from the Suisun Marsh and Delta (ABAG 1991). During the past 40 years, significant portions of the tidally-influenced brackish marsh within Suisun Bay have become more saline due to decreased freshwater flows (Pavlik 1992). Increased salt levels within the Suisun Marsh may threaten *Cordylanthus mollis* ssp. *mollis* and *Cirsium hydrophilum* var. *hydrophilum*. Salt stress causes decreased plant growth and lower reproduction. When salinity levels remain high during extended drought conditions, population viability may be greatly impaired to the extent they lose their ability to maintain themselves as components of a healthy wetlands ecosystem (Pavlik 1992). When salinity increases in the root zone, salt stress reduces plant abundance and causes shifts in plant distribution. This has occurred even in common salt-tolerant plants (Pavlik 1992). *Cordylanthus mollis* ssp. *mollis* and *C. hydrophilum* var. *hydrophilum* may be especially vulnerable to increased salt levels due to the limited number of individuals and their restricted distribution.

The two plant species also face threats from habitat fragmentation associated with commercial and residential development, road construction, and effects of historical fragmentation by activities associated with clearing for agriculture, railroad construction, dredging, and conversion to salt ponds. These activities have split habitat into smaller, more isolated units. Habitat fragmentation may alter the physical environment, changing the amount of incoming solar radiation, water, wind, or nutrients for the remnant vegetation (Saunders *et al.* 1991). In addition, a higher proportion of the area of these fragmented natural areas is subject to the influences from external factors (e.g., additional development, off-road vehicular use, competition with non-native vegetation, human intrusion, and numerous other human influences) that disrupt natural ecosystem processes. Further effects of habitat fragmentation on the two plant species are discussed in Factor E.

Projects that convert habitat from tidal marsh to diked seasonal wetlands potentially threaten both *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis*. Within Suisun Marsh, the conversion of tidal marsh to diked seasonal wetlands, a

practice common in the development of waterfowl managements areas, is a potential threat for both species (Randall Brown, *in litt.* 1993). The planned conversion of 40 ha (100 acres) of salt grass (*Distichlis spicata*), an associated species for both *C. hydrophilum* var. *hydrophilum* and *C. mollis* ssp. *mollis*, in Hill Slough as enhancement of habitat for wildlife (California Department of Water Resources (CDWR) 1984) will further diminish the amount of suitable habitat for these two plant species.

Habitat conversion for planned future urbanization threatens both species. In ABAG's analysis of the San Francisco Bay Estuary, over 4,856 ha (12,000 acres) of wetlands in the Bay will be subject to moderate to high development uses over the next 12 years (ABAG 1991). Highway expansion projects within the San Francisco Bay Estuary during the next 20 years are expected to fill 146 wetland ha (362 acres) (ABAG 1991). Some of the expansion projects will threaten *Cordylanthus mollis* ssp. *mollis* by eliminating additional habitat. Widening of California Highway 37 will threaten wetlands that occur along the Napa River (ABAG 1991) and may adversely affect habitat for *C. mollis* ssp. *mollis*. Proposed widening of Highway 12 near the Suisun Marsh would threaten the habitat of both plants (Brenda Grewell, *pers. comm.* 1993), either due to habitat fragmentation as discussed above or by runoff.

Projects that alter the natural tidal regime also threaten both taxa. The Western Suisun Marsh Salinity Control Project (CDWR and U.S. Bureau of Reclamation (USBR) 1991, CDWR and USBR 1993) is proposed to lower channel salinity in the western portion of Suisun Marsh to comply with water quality standards specified by the State Water Resources Control Board's Water Right Decision 1485. Project alternatives initially proposed for this project include the Cutoff Slough Water Delivery System, Cordelia-Goodyear Ditch, and the Boynton-Cordelia Ditch. The proposed Cutoff Slough Water Delivery System includes tide gates that would threaten tidal marsh by subjecting it to higher water elevations and converting the area to a natural water storage reservoir (Randall Brown, CDWR, *in litt.* 1993). Although this proposed alternative initially has been eliminated, this project is still in the proposed stage and has not been finalized.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Overutilization currently is not known to be a factor for these two plants. Increased collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result, however, from increased publicity resulting from publication of this proposal.

C. Disease or Predation

The health of one of the largest occurrences of *Cordylanthus mollis* ssp. *mollis* is declining due to insect predation (Brenda Grewell, pers. comm. 1993). Intense insect seed predation has been observed in the population at Joice Island and Hill Slough within Suisun Marsh in Solano County (Randall Brown, *in litt.* 1993). Neither disease nor predation is known to be a factor for *Cirsium hydrophilum* var. *hydrophilum*.

D. The Inadequacy of Existing Regulatory Mechanisms

Section 404 of the Clean Water Act represents the primary Federal law that affords some protection for these two plants. Under section 404 of the Clean Water Act, nationwide permits may be issued for certain activities that are considered to have minimal impacts, including oil spill cleanup, minor dredging, maintenance dredging of existing basins, and minor bank stabilization. Activities that do not qualify for authorization under a nationwide permit, including projects that would result in more than minimal adverse environmental effects, either individually or cumulatively, may be authorized by an individual or regional general permit, which are subject to more extensive review. Regardless of the type of permit deemed necessary under section 404, candidate species may receive no special consideration.

The Army Corps of Engineers (Corps) is the Federal agency responsible for administering the section 404 program. The Service, as part of the section 404 review process, provides comments on both pre-discharge notices for nationwide permits and public notices for individual permits. The Service's comments are only advisory, although procedures exist for elevation when disagreements between the agencies arise. In practice, the Corps' actions under section 404 are insufficient to protect these candidate plants.

CDFG has listed *Cordylanthus mollis* ssp. *mollis* as rare under the California Endangered Species Act (chapter 1.5 sec. 2050 *et seq.* of the California Fish and Game Code and title 14, California

Code of Regulations 670.2). Listing by the State of California requires individuals to obtain a memorandum of understanding with the CDFG to possess or "take" a listed species. Although the "take" of State-listed plants is prohibited (California Native Plant Protection Act, chapter 10 sec. 1908 and California Endangered Species Act, chapter 1.5 sec. 2080), State law exempts the taking of such plants via habitat modification or land use changes by the owner. After CDFG notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the land owner notify the agency "at least 10 days in advance of changing the land use to allow salvage of such a plant" (Native Plant Protection Act, chapter 10 sec. 1913).

Under the California Environmental Quality Act (CEQA), the public agency with primary authority or jurisdiction over the project (the lead agency) is responsible for conducting a review of the project and consulting with the other agencies concerned with the resources affected by the project. However, the lead agency may approve projects that cause significant environmental damage, such as the destruction of State-listed threatened and rare species, and does not always require adequate mitigation for the replacement or protection of the affected resources. The protection of species under CEQA is, therefore, dependent upon the discretion of the lead agency.

Legislation enacted by the State of California in 1977 provided for the preservation of Suisun Marsh. This legislation established primary and secondary management areas. The secondary management areas were established to provide a buffer against development. In 1982, the Preservation Act was amended to exclude, in the primary management area, land proposed for the Lawlor Ranch development. Exclusion of this land has reduced the buffer between urbanization and Suisun Marsh. The indirect effects of urbanization are discussed further in Factors A and E.

E. Other Natural or Manmade Factors Affecting Their Continued Existence

Both occurrences of *Cirsium hydrophilum* var. *hydrophilum* are adversely affected by non-native plants. *Lepidium latifolium* (perennial peppergrass), a rated noxious weed (California Department of Food and Agriculture 1993), has "moved in especially in the last 5 years" (Brenda Grewell, pers. comm. 1993). *Cirsium hydrophilum* var. *hydrophilum* is outcompeted by *L. latifolium*. Hybridization with *C. vulgare* (bull

thistle), a non-native, also is a potential threat. *Cirsium vulgare* hybridizes readily with other *Cirsium*. Hybridization with *C. vulgare* was suggested as a possible explanation for the previously presumed extinction of *C. hydrophilum* var. *hydrophilum* (Smith and Berg 1988).

Chronic pollution from petroleum products is an ongoing threat to the habitat of both plants within San Pablo Bay and southern Suisun Bay. Oil spills can result in severe and long lasting destruction of salt marsh vegetation. Studies on mangroves, seagrasses, salt marsh grasses, and algae have shown that petroleum causes death, reduced growth, and impaired reproduction in large plants (Albers 1992). The effects of a petroleum spill to plants depends on several factors including the time of year, the type of petroleum product (crude or refined), and the degree of coverage (Hershner and Moore 1977; Rob Ricker, CDFG, pers. comm. 1993). A plant entirely covered by oil will die. Oil that seeps into sediments can affect the roots or rhizomes of plants as well. Oil spills may also affect plants by decreasing the amount of plant biomass (either above or below ground), or by decreasing the reproductive capacity of the plant (Rob Ricker, pers. comm. 1993).

Four hundred to 800 oil spills occur annually within California (Rob Ricker, pers. comm. 1993). Within northern California, 309 reported spills affecting marine or estuarine habitats within the jurisdiction of the Service's Sacramento Field Office occurred between March 1992 and March 1993 (Office of Environmental Services (OES) 1992 and 1993). Most of these spills occurred in the San Francisco Bay Estuary.

In 1988, an oil spill in Martinez, California, flowed as far as Suisun Bay. Although these plants are found within the northern part of the Suisun Marsh and may not be threatened directly by an oil spill in San Francisco Bay, the potential for oil spills exists from vessels operating within the marsh, as well as from an accidental spill from railroads that bisect the marsh. Oil spills also are an ever present threat to *Cordylanthus mollis* ssp. *mollis* occurring near Point Pinole (Pat O'Brien, General Manager, East Bay Regional Parks District, *in litt.* 1994).

Chronic pollution from other sources also may threaten the habitat of both plants. It is unknown, however, what effects heavy metals in industrial discharges have on these two taxa. In 1978, 52 municipal treatment facilities and 42 industrial facilities continuously discharged wastewater into San Francisco Bay (Western Ecological

Services Company (WESCO) 1986). By 1982, over 200 permits for industrial discharges had been granted (WESCO 1986).

The amounts of heavy metals in the San Francisco Bay Estuary are projected to increase during the next 10 years. The San Francisco Bay Conservation and Development Commission, Center for Environmental Design Research, and the Greenbelt Alliance (1992) collectively modelled plausible land use changes and their impact to the health of the San Francisco Bay Estuary. Several methods were used to determine the effects of land use change including two future land use models. The model projecting the highest increase in heavy metal was based on a composite of the general plan maps for all of the counties in the estuary. Amounts of heavy metals including lead, nickel, and cadmium were projected to increase under both future land use models in all the watersheds that include habitat for these two plants.

As discussed in Factor A, habitat fragmentation may alter the physical environment. In addition, habitat fragmentation increases the risks of extinction due to chance events such as pest or disease outbreaks, reproductive failure, or other natural or human-caused disasters. The small, isolated nature of *Cirsium hydrophilum* var. *hydrophilum*, which has only two occurrences, makes extinction from stochastic (random) events more likely. Chance events, such as disease outbreak, oil spills, extended drought, or a combination of several such events, could destroy part of a single population or entire populations. The risk of extirpation due to genetic and demographic problems associated with small populations is a threat to at least the two occurrences of *Cordylanthus mollis* ssp. *mollis* that have fewer than 25 individuals.

Increases in foot traffic and mosquito abatement also will result from increased urbanization (Brenda Grewell, pers. comm. 1993). Mosquito abatement activities threaten *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis*. Within Suisun Marsh, both species grow along or near either first order channels or mosquito abatement drainage ditches. Cleaning or dredging along these channels may adversely impact individual plants due to their proximity to the mosquito abatement drainage ditches. Vehicular damage to plant populations parallel to these channels has been noted (Randall Brown, *in litt.* 1993).

Foot traffic is a threat to *Cordylanthus mollis* ssp. *mollis*. A trail runs through the occurrence located on East Bay

Regional Park's Point Pinole Regional Seashore. Foot traffic also is a potential threat to the largest occurrence of *C. mollis* ssp. *mollis* due to the increased urbanization occurring within 1/4 mile. Although foot traffic may create opportunities for *C. mollis* ssp. *mollis* to become established by reducing competition from *Salicornia*, this disturbance cannot be considered beneficial because *C. mollis* ssp. *mollis* plants have shallow roots, are very brittle, and can be easily damaged (Stromberg 1986).

Erosion is a threat to *Cordylanthus mollis* ssp. *mollis* located on the Point Pinole Regional Seashore. The main population of *C. mollis* ssp. *mollis* is immediately adjacent to a slough that is undergoing bank slumping (Stromberg 1986). Individual plants are threatened by the slumping and subsequent undercutting of the bank.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to propose this rule. *Cirsium hydrophilum* var. *hydrophilum*, limited to only two occurrences, is threatened variously by indirect effects of urbanization, vulnerability to extinction due to chance environmental events including oil spills, competition with non-native vegetation, projects that alter natural tidal regime, stochastic events, and inadequate regulatory mechanisms across all of its current range. Urbanization, industrial development, and agricultural land conversion have extirpated or potentially extirpated nearly 45 percent of known occurrences of *Cordylanthus mollis* ssp. *mollis*. The species currently is restricted to about 8 ha (20 acres) of habitat. Indirect effects of urbanization including habitat fragmentation, habitat conversion, alteration in water and salinity levels, inadequate regulatory mechanisms, mosquito abatement activities (including off-highway vehicle use), water pollution, insect predation, projects that alter natural tidal regimes, erosion, foot traffic, and extirpation due to genetic and demographic problems variously continue to threaten most occurrences of *C. mollis* ssp. *mollis* across its remaining range. Because *C. hydrophilum* var. *hydrophilum* and *C. mollis* ssp. *mollis* are in danger of extinction throughout all or a significant part of their respective ranges, they fit the definition of endangered species in the Act. The preferred action, therefore, is to list *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* as endangered. Other alternatives to this action were

considered but not preferred because not listing them at all or listing them as threatened would not provide adequate protection and would not be in keeping with the Act.

Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is listed. The Service finds that designation of critical habitat is not prudent for *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* at this time. Service regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist—(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

The listing of these species under the Act publicizes the rarity of these plants and, thus, can make these plants attractive to researchers or collectors of rare plants. Incidents of collection or vandalism could contribute to the decline of the species.

Critical habitat designation for *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* is not prudent due to lack of benefit. Most populations of the two taxa occur on private or State lands. Because both plant species occur at very few locations, any activity that would adversely modify critical habitat would likely jeopardize the continued existence of the species as well. The designation of critical habitat on private or State lands affords no additional

benefit for these species over that provided as a result of listing.

Protection of the habitat of these species will be addressed through the section 4 recovery process and the section 7 consultation process. The Service believes that Federal involvement in the areas where these plants occur can be identified without the designation of critical habitat. For the reasons discussed above, the Service finds that the designation of critical habitat for these plants is not prudent.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the State and requires that recovery plans be developed all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

One occurrence of *Cordylanthus mollis* ssp. *mollis* occurs on land that is managed by the U.S. Navy. The USBR and the Corps would become involved with these plants through their funding of projects that may directly impact the plants' habitat or support development of areas that contain suitable salt or brackish marshes. The Corps also would

be involved as an authorizing agency for permits to dredge or fill wetlands and navigable waters of the United States. The Corps regulates dredging and filling of jurisdictional wetlands and navigable waters, including salt water marshes, under section 404 of the Clean Water Act. By regulation, nationwide permits may not be issued where a federally listed endangered or threatened species may be affected by the proposed project without first completing consultation pursuant to section 7 of the Act. The presence of a listed species would highlight the national importance of these resources. Highway construction and maintenance projects that receive funding from the Department of Transportation (Federal Highway Administration) also would be subject to review under section 7 of the Act.

Listing *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis* as endangered would provide for development of a recovery plan (or plans) for them. Such plan(s) would bring together both State and Federal efforts for conservation of the plants. The recovery plan(s) would establish a framework for agencies to coordinate activities and cooperate with each other in conservation efforts. The plan(s) would set recovery priorities and estimate costs of various tasks necessary to accomplish them. It also would describe site-specific management actions necessary to achieve conservation and survival of the two species. Additionally, pursuant to section 6 of the Act, the Service could grant funds to affected States for management actions promoting the protection and recovery of these species.

It is the policy of the Service, published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of the listing on proposed and ongoing activities within a species' range. Most occurrences of both plants are either on private or non-Federal lands. One population of *Cordylanthus mollis* ssp. *mollis* occurs on land managed by the Department of Defense (U.S. Navy). Collection, damage or destruction of this species on public lands is prohibited, although in appropriate cases a Federal endangered species permit may be issued to allow collection. Removal, cutting, digging up, damaging or destroying endangered plants on non-Federal lands would constitute a violation of section 9 if conducted in knowing violation of State law or

regulations or in violation of State criminal trespass law. The Service is not aware of any otherwise lawful activities being conducted or proposed by the public that will be affected by this listing and result in a violation of section 9.

The Act and its implementing regulations found at 50 CFR parts 17.61, 17.62, and 17.63 for endangered plant species set forth a series of general prohibitions and exceptions that apply to all endangered or threatened plants. With respect to the two plants from the San Francisco Bay area, all prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, would apply. Activities that would violate section 9 of the Act include the import, export, delivery, receipt, carrying, transporting, or shipping such species in interstate or foreign commerce in the course of a commercial activity; the sale or offer for sale of such species in interstate or foreign commerce; removal and reduction to possession of federally listed plant species from areas under Federal jurisdiction; the malicious damage or destruction of any such plant species on any area under Federal jurisdiction; or the removal, cutting, digging up, damage, or destruction of any such plant species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Activities that are unlikely to violate section 9 of the Act include animal grazing, waterfowl hunting, bird watching, and fishing. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR parts 17.62, 17.63, and 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered or threatened plant species under certain circumstances. The Service anticipates few permits would ever be sought or issued for the two species because the plants are not common in cultivation or in the wild.

Requests for copies of the regulations on listed plants and inquiries regarding them may be addressed to U.S. Fish and Wildlife Service, Ecological Services, Endangered Species Permits, 911 NE 11th Avenue, Portland, Oregon 97232-4181 ((503) 231-2063 or FAX (503) 231-6243).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any

other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial, or other relevant data concerning any threat (or lack thereof) to *Cirsium hydrophilum* var. *hydrophilum* and *Cordylanthus mollis* ssp. *mollis*;

(2) The location of any additional populations of these species and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range, distribution, and population size of these species; and

(4) Current or planned activities in the subject areas and their possible impacts on these species.

The Service particularly solicits expert opinion from independent specialists regarding pertinent scientific or commercial data and assumptions relating to taxonomy, population models, and supportive biological and ecological information. Any final decision on this proposal will take into consideration the comments and any additional information received by the Service, and such communications may

lead to a final regulation that differs from this proposal.

The Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal. Such requests must be made in writing and addressed to the Field Supervisor, Sacramento Field Office (see **ADDRESSES** section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited herein is available upon request from the Field Supervisor, Sacramento Field Office (see **ADDRESSES** section).

Author

The primary author of this proposed rule is Kirsten Tarp, U.S. Fish and

Wildlife Service, Sacramento Field Office (see **ADDRESSES** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Proposed Regulation Promulgation

Accordingly, the Service hereby proposes to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Section 17.12(h) is amended by adding the following, in alphabetical order under FLOWERING PLANTS, to the List of Endangered and Threatened Plants, to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family name	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> .	Suisun thistle	U.S.A. (CA)	Asteraceae	E		NA	NA
<i>Cordylanthus mollis</i> ssp. <i>mollis</i> .	Soft bird's-beak	U.S.A. (CA)	Scrophulariaceae	E		NA	NA
	*	*	*	*	*	*	*
	*	*	*	*	*	*	*

Dated: February 8, 1995.

Mollie H. Beattie,

Director, Fish and Wildlife Service.

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