Dated: March 13, 2000.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AE80

Endangered and Threatened Wildlife and Plants; Threatened Status for *Holocarpha macradenia* (Santa Cruz tarplant)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), have determined threatened status according to the Endangered Species Act of 1973, as amended, for *Holocarpha macradenia* (Santa Cruz tarplant). *Holocarpha macradenia* is an aromatic annual herb that is currently known from coastal grasslands and prairies in Contra Costa, Santa Cruz, and Monterey Counties, California. It is threatened by alteration and destruction of habitat due to historic and ongoing urban and commercial development, historic habitat alteration due to grazing, limited success of seed transplant populations, and competition from nonnative plants.

DATES: This rule becomes effective April 19, 2000.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, California 93003.

FOR FURTHER INFORMATION CONTACT: Carl Benz, Assistant Field Supervisor, Listing and Recovery, Ventura Fish and Wildlife Office (see **ADDRESSES** section) (telephone number 805/644–1766; facsimile 805/644–3958).

SUPPLEMENTARY INFORMATION:

Background

Holocarpha macradenia (Santa Cruz tarplant) was first recognized by Augustin-Pyramus de Candolle, who published the name *Hemizonia macradenia* in 1836 (Ferris 1960). In 1897, E. L. Greene referred the species to the genus *Holocarpha* with publication of the new combination *Holocarpha macradenia* (DC.) E. Greene (Ferris 1960). This name continues to be recognized in the most recent treatment for the genus (Keil 1993).

Holocarpha macradenia, an aromatic annual herb in the aster (Asteraceae) family, is one of only four species of *Holocarpha,* which are all geographically restricted to California. The genus name, derived from the Greek *holos* for whole and *karphos* for chaff, refers to the scales found among the florets on the receptacle (the structure that supports the florets in the daisy-like flower head). The plant is rigid, with lateral branches that arise to the height of the main stem, which is 1 to 5 decimeters (dm) (4 to 20 inches (in.)) tall. The lower leaves are broadly linear and up to 12 centimeters (cm) (5 in.) long. The upper leaves are smaller, with rolled back margins, and are truncated by a distinctive craterform gland. The yellow flower head is surrounded from beneath by individual bracts that have about 25 stout gland-tipped projections (Keil 1993). *Holocarpha macradenia* is distinguished from other members of the genus by its numerous ray flowers and black anthers. However, as with all other members of the genus, *H. macradenia* establishes seedbanks, so that sites that support a population of this plant, particularly those that support small populations (fewer than 100 individuals), may not display individuals in any given year, but still have a viable population in other years.

Habitat for *Holocarpha macradenia* historically consisted of grasslands and prairies found on coastal terraces below 100 meters (m) (330 feet (ft)) in elevation, from Monterey County, north to Marin County. In the 1800s, coastal prairies covered an estimated 350,000 hectares (ha) (865,000 acres (ac)) (Huenneke 1989). This coastal prairie habitat is becoming increasingly fragmented and restricted in distribution. Four major factors contributed to changes in the distribution and composition of coastal prairies: grazing; introduction of highly competitive, nonnative species; elimination of periodic fire; and cultivation (Heady *et al.* 1988). Currently, the California Department of Fish and Game's Natural Diversity Database (CNDDB 1996, cited in Holl 1998) lists just over 800 ha (1977 ac) of high-quality coastal prairie remaining, of which less than 5 percent is *H. macradenia* habitat.

Holocarpha macradenia populations occur on the alluvium resulting from the terrace deposits (Palmer 1986). Typically terrace soils are sandy clay soils; the clay component of these soils holds moisture longer into the growing season compared to the surrounding sandy soils. In the Santa Cruz area, *H. macradenia* exists on the gently sloping terrace platforms that are separated by steep-sided ''gulches,'' whereas in the Watsonville (Santa Cruz County) and Monterey areas, and on the east side of San Francisco Bay, the terraces are more extensively dissected.

Although *Holocarpha macradenia* is historically associated with native herbaceous species and grasses (including other tarplants (*Hemizonia* sp.), needlegrass (*Nasella* sp.) and California oatgrass (*Danthonia californica)),* nonnative grasses, such as wild oats (*Avena fatua*), Mediterranean barley (*Hordeum hystrix*), and bromes (*Bromus* sp.), have invaded its habitat. At some locations, *H. macradenia* is found with other species that may be threatened or endangered, including the Ohlone tiger beetle (*Cicindela ohlone;* federally proposed as endangered), San Francisco popcorn flower (*Plagiobothrys diffusus;* State-listed as endangered), Santa Cruz clover (*Trifolium buckwestiorum;* State-listed as a species of concern), and Gairdner's yampah (*Perideridia gairdneri)* (CNDDB 1997). Other locally unique plant species, such as Choris's popcorn flower (*Plagiobothrys chorisianus* var. *chorisianus),* triteleia (*Triteleia ixiodes),* coast coyote thistle (*Eryngium armatum*), and San Francisco gumplant (*Grindelia hirsutula* var. *maritima*) also occur in these areas (Kathy Lyons, pers. comm. 1998).

Historically, *Holocarpha macradenia* was known from ''low dry fields about San Francisco Bay'' (Jepson 1925). Around the San Francisco Bay, herbarium collections were made from Tamalpias in Marin County in 1934; near Berkeley, Oakland, and San Lorenzo in Alameda County as early as 1894; and Pinole in Contra Costa County (CNDDB 1997, Specimen Management System for California Herbaria (SMASCH) 1997). All of the native San Francisco Bay area populations have since been extirpated. The last remaining native population, known as the Pinole Vista population, consisting of 10,000 plants, was eliminated in 1993 by a commercial development (California Department of Fish and Game (CDFG) 1997).

In 1959, Keck (in Munz 1959) noted the species in Santa Cruz County, but also added that the species could possibly be extinct. Fortunately, numerous collections were made from the Monterey Bay area in Santa Cruz County in the late 1950s and early 1960s. In 1966 and 1969, Hoover made the first collection of the species in northern Monterey County, just south of the Santa Cruz County line (SMASCH 1997). Additional populations were found in Monterey County in the

subsequent decades, although the lack of specific location noted on herbarium labels makes it difficult to determine exactly how many populations occurred there. According to CNDDB, nine populations in Santa Cruz and Monterey Counties have been extirpated by development (CDFG 1994). The most recent extirpation occurred in 1993 when a population in Watsonville (Anna Street site) was destroyed during construction of office buildings and a parking lot (CDFG 1995a).

Holocarpha macradenia is currently known from a total of 20 populations; 12 of these are remaining native populations, and 8 are a result of experimental seedings. Eleven of the native populations occur in Santa Cruz County. Six occur around the City of Santa Cruz (Graham Hill Road, Twin Lakes, Arana Gulch, O'Neill/Tan, Winkle, and Fairway), and five occur around the City of Watsonville, scattered from Watsonville Airport to Hall Road, 8 kilometers (km) (4 miles (mi)) to the south-southeast (Watsonville Airport, Harkins Slough, Apple Hill, Struve Slough, and Spring Hills Golf Course). Only one population (Porter Ranch) occurs in Monterey County, just south of the Santa Cruz County line and the City of Watsonville. The size of each of these populations and the last year they were surveyed are as follows: Graham Hill Road, 475 (1999); Twin Lakes, 16 (1999); Arana Gulch, 12,820 (1998); O'Neill/Tan, 0 (1998); Winkle, 0 (1994); Fairway, 1,500 (1993); Watsonville Airport, 8 million (1999); Harkins Slough, 15,000 (1993); Apple Hill, 0 (1999); Struve Slough, 1 (1994); Spring Hills Golf Course, 4,000 (1990); Porter Ranch, 3,200 (1993). As stated earlier, there are years where few or no plants are present on a site, but a viable population is still probable due to the established seedbank.

The other eight existing populations of *Holocarpha macradenia* have resulted from experimental planting of seeds in Wildcat Regional Park in the east San Francisco Bay area. The names of the eight populations and their population size, based on 1997/1998/1999 surveys, are as follows: Big Belgum, 148/318/74; Big Belgum West, 51/23/0; Upper Belgum, 22/59/59; Mezue, 5,000–7,000/3,128/10,000; Fowler, 22/7/0; Nimitz Way 0/56/0; Upper Havey, 17/1/2; and Lower Sather 0/2/0 (Olson *et al.* 1997; Olson, pers. comm. 1998; CDFG, *in litt.* 1999).

Holocarpha macradenia is threatened primarily by historic and recent habitat alteration and destruction caused by residential and commercial development. Future loss of habitat may also result from recreational development, airport expansion, and agriculture. Occupied habitat that has been set aside in preserves, conservation easements, and open spaces also suffers secondary impacts from casual use by residents, introduction of nonnatives (*e.g.,* French broom (*Genista monspessulana*), eucalyptus (*Eucalyptus* sp.), acacia (*Acacia decurrens, A. melanoxylon*), artichoke thistle (*Cynara cardunculus*), and grass species), and changes in hydrology, problems that are all exacerbated by the lack of management plans. In addition, smaller preserve areas with *H. macradenia* suffer because they are cut off from the ecosystem functions that would be present in larger, more contiguous sites. More often, these smaller areas are left as open spaces, but without the benefit of the grassland management needed to sustain them. Finally, random disturbance, including unseasonable fires or a drought event, also threatens small populations of this species. Probability of population extirpation increases as the number of individuals and the area of habitat decrease.

Previous Federal Action

Federal action on this plant began as a result of section 12 of the Endangered Species Act (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 (House Document No. 94–51) was presented to Congress on January 9, 1975, and included *Holocarpha macradenia* as endangered. We published a notice in the July 1, 1975, **Federal Register** (40 FR 27823) of our acceptance of the Smithsonian Institution report as a petition within the context of section 4(c)(2) (petition provisions are now found in section 4(b)(3)) of the Act, and our intention to review the status of the reported plant species.

On June 16, 1976, we published a proposal in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. *Holocarpha macradenia* was included in this **Federal Register** publication. General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). However, the Endangered Species Act Amendments of 1978 required that all proposals more than 2 years old be withdrawn. A 1-year grace period was given to those proposals already more than 2 years old. In the December 10, 1979, **Federal Register** (44 FR 70796), we published a notice of withdrawal of the June 16, 1976, proposal, along with four other proposals that had expired.

We published an updated Notice of Review (NOR) for plants on December 15, 1980 (45 FR 82480). This notice included *Holocarpha macradenia* as a category 1 candidate species. Category 1 candidates were formerly defined as a species for which we had on file substantial information on biological vulnerability and threats to support preparation of a listing proposal, but for which issuance of a proposed rule was precluded by other listing activities of higher priority.

On February 15, 1983, we published a notice (48 FR 6752) of our prior finding that the listing of *Holocarpha macradenia* was warranted but precluded in accordance with section 4(b)(3)(B)(iii) of the Act as amended in 1982. Pursuant to section 4(b)(3)(C)(i) of the Act, this finding must be recycled annually, until the species is either proposed for listing, or the petitioned action is found to be not warranted. Each October, from 1983 through 1990, further findings were made that the listing of *H. macradenia* was warranted, but that the listing of this species was precluded by other pending proposals of higher priority.

Holocarpha macradenia continued to be included as a category 1 candidate in plant NORs published on September 27, 1985 (50 FR 39526), February 1, 1990 (55 FR 6184), and September 30, 1993 (58 FR 51144). Upon publication of the February 28, 1996 NOR (61 FR 7596), we ceased using category designations and included *H. macradenia* as a candidate. Candidate species are those for which we have on file sufficient information on biological vulnerability and threats to support proposals to list them as threatened or endangered. Our September 19, 1997, NOR (62 FR 49398) retained *H. macradenia* as a candidate, with a listing priority of 2. On March 30, 1998, we published a proposed rule in the **Federal Register** (63 FR 15142) to list *H. macradenia* as threatened.

The processing of this final rule conforms with our Final Listing Priority Guidance published in the **Federal Register** on October 22, 1999 (64 FR 57114). The guidance clarifies the order in which we will process rulemakings. Highest priority is processing emergency listing rules for any species determined to face a significant and imminent risk to its well-being (Priority 1). Second priority (Priority 2) is processing final determinations on proposed additions to the lists of endangered and threatened wildlife and plants. Third priority (Priority 3) is

processing new proposals to add species to the lists. The processing of administrative petition findings (petitions filed under section 4 of the Act) is the fourth priority (Priority 4). The processing of this final rule is a Priority 2 action.

Summary of Comments and Recommendations

In the March 30, 1998, proposed rule (63 FR 15142), we requested interested parties to submit factual reports or information that might contribute to development of a final rule. We contacted appropriate Federal agencies, State agencies, county and city governments, scientific organizations and other interested parties and requested information and comments. We published newspaper notices inviting public comment in the Monterey Herald, the Santa Cruz Sentinel, and the Oakland Tribune on, respectively, April 2, 3, and 4, 1998. The comment period closed on May 29, 1998.

During the comment period, we received 16 comments from 15 individuals, agencies, or group representatives concerning the proposed rule. Five commenters supported the proposal, six provided neutral comments, and four were opposed to the proposal. Several commenters provided additional information that, along with other clarifications, has been incorporated into the ''Background'' or ''Summary of Factors'' sections of this final rule. Opposing and technical comments have been organized into specific issues, and our responses to each are summarized as follows:

Issue 1: One commenter stated that the ''tarplant'' is a useless and unattractive weed that gums up mowers, is difficult to eradicate, and is not worthy of listing. Another commenter offered that there is no shortage of ''tarweed,'' as there are about 400 ha (990 ac) of it in San Benito County. A third commenter stated that protection is not needed because *Holocarpha macradenia* can be propagated on sites other than native stands.

Our response: Many different plant species are commonly referred to as tarweeds or tarplants. However, the species that is the subject of this rulemaking is known from only a few locations. The total acreage of currently occupied habitat is less than 40 ha (99 ac). The species has been eliminated from a number of sites within its historic range and has become not only rare, but is likely to become endangered within the foreseeable future, throughout its range. Although experimentally seeded populations have been established on sites that historically have not been occupied by *Holocarpha macradenia*, these sites have had limited success in maintaining a viable population.

Issue 2: A number of commenters were concerned that listing of the species would result in project delays, additional permitting requirements or restrictions on private property owners, and increased cost of land. For example, several commenters were concerned that Federal listing would delay or affect the proposed expansion of the Watsonville Airport. On the other hand, one commenter was concerned that the airport should not be allowed to expand into habitat for *Holocarpha macradenia*.

Our response: The Act requires us to base our listing decisions on the best scientific and commercial information available, without regard to the effects, including economic effects, of listing. The Federal listing of *Holocarpha macradenia* should not lead to significant project delays, additional permitting requirements or restrictions on private property owners, or increased cost of land. Because the species is already State-listed, many project sites have already been subject to California Environmental Quality Act (CEQA) review and permitting requirements under the California Endangered Species Act (CESA). Agencies responsible for review of those few projects that are pending are aware of the declining status of this species and are taking this issue into consideration. In addition, most populations of this species are on private land where there is no Federal nexus.

CDFG and the airport are currently developing a memorandum of understanding (MOU) to ensure that loss of *Holocarpha macradenia* habitat from airport expansion would be offset by establishing the plant in adjacent suitable locations. We are participating in this effort. The Federal Aviation Administration (FAA) should also have conferred with us under the provisions of section 7(c) of the Act since the plant was proposed for listing. Because the conservation solution is currently being developed through the MOU, and a conference opinion can be expeditiously converted to a biological opinion, pursuant to section 7(a)(2) of the Act, the Federal listing in itself should not delay the proposed expansion of the airport. Likewise, the expansion of the airport, as long as the requirements of both the State and Federal regulations are followed, should not adversely affect the *H. macradenia* population currently located at the airport.

Issue 3: One commenter suggested that cooperation is needed between the Service, the University of California Agricultural Extension Service, and California Department of Transportation (CALTRANS), so that the species can be propagated and out-planted on CALTRANS property where they can be viewed and appreciated by millions of people. Another commenter wanted to know what we know about minimum population size/areas to support continued existence of the species.

Our response: We agree that cooperation among agencies is important to prevent further losses of currently occupied habitat, as well as for developing options for future management and conservation of the species. Although our recovery planning process typically occurs after the species has been federally listed, the previous State listing of this species has served to advance the process of identifying appropriate recovery actions. We currently do not know what minimum plant population size and habitat areas are needed to support the continued existence of this species. However, the specific recovery objectives and criteria to delist the species in the future, including targets for population/habitat sizes, will be developed during the formal recovery planning process. This process will involve species experts, scientists, and interested members of the public, in accordance with the interagency policy on recovery plans under the Act, published on July 1, 1994 (59 FR 34272).

Issue 4: One commenter asked what additional protection Federal listing will provide given that the species is already State-listed.

Our response: Federal listing will provide additional protection for the species through Federal regulations and recovery efforts. Additional protection will potentially be provided through the consultation process for projects that are funded, permitted, or carried out by a Federal agency. At this time, the only projects in occupied habitat, with an identified Federal nexus, are the expansion of the Watsonville Airport and the construction of a bicycle path in Arana Gulch. In addition, Federal listing of a species generally provides for recognition and additional funding, by our agency as well as others, for the conservation and recovery of the listed species.

Issue 5: One commenter believed that the current status of *Holocarpha macradenia* warranted listing as endangered rather than threatened. Another commenter thought that the appropriate status hinged on opportunities for funding current management needs; should no funding

be available for appropriate management, the status of the species should more appropriately be endangered.

Our response: We believe that the determination of threatened status is appropriate for the species at this time because ongoing intensive management has forestalled imminent extinction. However, should factors such as reduced funding for managing the species result in its continued decline, we would have the option of reclassifying the species to endangered.

Issue 6: One commenter suggested that we lack jurisdiction to enact the proposed rule and that the rule should be withdrawn, believing that no connection exists between regulation of these plants and a substantial effect on interstate commerce.

Our response: The Federal Government has the authority under the Commerce Clause of the U.S. Constitution to protect this species, for the reasons given in Judge Wald's opinion and Judge Henderson's concurring opinion in *National Association of Home Builders* v. *Babbitt*, 130 F.3d 1041 (D.C. Cir. 1997), *cert. denied*, 1185 S.Ct. 2340 (1998). That case involved a challenge to application of the Act's prohibitions to protect the listed Delhi Sands flower-loving fly *(Rhaphiomidas terminatus abdominalis)*. As with *Holocarpha macradenia*, the Delhi Sands flower-loving fly is endemic to only one State. Judge Wald held that application of the Act's prohibition against taking of endangered species to this fly was a proper exercise of Commerce Clause power to regulate: (1) use of channels of interstate commerce; and (2) activities substantially affecting interstate commerce, because applying the Act in that case prevented destructive interstate competition and loss of biodiversity. Judge Henderson upheld protection of the fly because doing so prevents harm to the ecosystem upon which interstate commerce depends and regulates commercial development that is part of interstate commerce.

Peer Review

We requested and received the expert opinions of four peer reviewers regarding pertinent scientific or commercial data and assumptions related to population status and supporting biological and ecological information for *Holocarpha macradenia*. This action is consistent with the interagency policy on peer review published on July 1, 1994 (59 FR 34270). Three of the four reviewers supported the listing of the species, and one reviewer was neutral. One of the reviewers provided typographical corrections to the proposed rule. The second reviewer provided minor technical corrections and updates to the background information on several of the populations. Both reviewers also addressed the lack of funding available to provide management for populations at Arana Gulch and in the East Bay Regional Parks District. The third reviewer commented that, with lack of needed management, the species qualified for endangered rather than threatened status, particularly because the viability of seed banks at unmanaged locations could be extirpated within a decade. The fourth reviewer provided updates on the Graham Hill Road, Arana Gulch, and O'Neill/Tan sites.

Summary of Factors Affecting the Species

Section 4 of the Act and regulations (50 CFR part 424) issued to implement the listing provisions of the Act set forth the procedures for adding species to the Federal Lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to *Holocarpha macradenia* (DC.) Greene are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Urbanization has been responsible for severely reducing the extent of coastal prairie habitat that supports *Holocarpha macradenia*. Since *H. macradenia* was listed as endangered by the State of California in 1979, CDFG has been tracking the status of its populations. Although it is difficult to assess the total number of historical populations, since herbarium specimens often have only general location information, it is apparent that the species has declined considerably. All native populations of *H. macradenia* have been extirpated from Alameda, Contra Costa, and Marin Counties around the San Francisco Bay (CDFG 1997a). Habitat for the last naturally occurring population in the San Francisco Bay area, near Pinole in Contra Costa County, was converted to a shopping center in 1993 (CDFG 1997a, CNDDB 1997). The only populations that persist in this area are eight populations that were planted from seed in Wildcat Canyon Regional Park in Contra Costa County. The CDFG has also determined that the plant has been extirpated from nine locations around the Monterey Bay since 1979 (CDFG 1993, CNDDB 1997). Most recently, sometime after a 1992 survey, a population at the Anna Street site in Watsonville was destroyed during construction of office buildings and a parking lot (CDFG 1995a, CNDDB 1997).

In the last 5 years, increasing concern over the loss of *Holocarpha macradenia* habitat and populations has prompted some permitting agencies to require conservation of remaining habitat through the review and permitting of development projects. This permitting requirement has decreased the rate of habitat destruction. However, although occupied habitat has been conserved in developed areas, the indirect effects of residential and local use in these areas often threaten the remaining *H. macradenia* habitat and populations. In many cases, the historical alteration of native *H. macradenia* habitat has been further exacerbated by current human activities. Descriptions of the 12 remaining native sites and the current threats of habitat destruction or modification facing these sites are given below. These descriptions do not include the eight sites that were seeded with *H. macradenia* in Contra Costa County where the species was not known to be native. The threats to those sites are discussed under ''Factor E.''

The Graham Hill Road site is owned by Standard Pacific Corporation. An Environmental Impact Report (EIR) was approved by the County of Santa Cruz in 1996 for a development that comprises 52 residences, a fire station, a common area, a park, and an equestrian facility and trails on a 69-ha (170-ac) parcel (Environmental Science Associates 1996). The approved EIR also includes 0.2 ha (0.5 ac) of occupied *Holocarpha macradenia* habitat, and 4 ha (10 ac) of coastal prairie habitat within a 7-ha (17-ac) conservation easement. The EIR provides for prairie management, habitat restoration, and a 20-year maintenance and monitoring program (Lyons, *in litt.* 1998). In 1994, five colonies of *H. macradenia* occupied less than 0.4 ha (1 ac) of habitat. One colony supported 10,000 individuals, and the other four collectively supported 2,000 individuals. By this time, French broom had invaded the coastal prairie habitat and threatened all of the plant species of concern, including *H. macradenia* (Environmental Science Associates 1995). In 1998, French broom was removed from the conservation easement area, and in June and September, mowing was implemented (Valerie Haley, Native Vegetation Network, pers. comm. 1998). In 1998, only 2 of the 5 colonies were located, supporting a total of 675 individuals (V. Haley, pers. comm. 1998). In addition to *H. macradenia,* other species of concern occur on the site, including Gairdner's

yampah, San Francisco popcorn flower, and Santa Cruz clover.

The Twin Lakes site is owned by the California Department of Parks and Recreation (CDPR). The site has been fragmented by an access road for park vehicles and several hiking paths. The population occupies less than 0.4 ha (1 ac) and appears to have been declining since 1986 (120 individuals in 1986; fewer than 10 in 1994; 1 in 1996; 0 in 1997; and 12 in 1998). The decline has been attributed to competition from French broom and nonnative grasses (CDFG 1995a; G. Gray, ecologist, CDPR, pers. comm. 1997). In the last 3 years, CDPR has made progress in removing French broom from the site. They also have experimented with management actions that would enhance habitat for *Holocarpha macradenia* through mowing, raking, simulating cattle hoof action with wood blocks, and burning. However, the population has continued to decline. In 1997, CDPR committed significant funding to continue with experimental management actions, and by 1998, a draft management plan was prepared (G. Gray, pers. comm. 1997, CDPR 1998). In 1997, a portion of the habitat was accidentally disturbed through the use of a road grader; in 1998, another portion of the habitat was scraped with hand tools. Of the 12 plants that appeared in 1998, 6 appeared in each of the 2 disturbed areas (CDPR 1998).

The Arana Gulch population is on a 25-ha (62-ac) parcel of land that has been owned and managed by the City of Santa Cruz since 1994. In the late 1980s, the population comprised approximately 100,000 individuals. In 1988, cattle grazing was terminated, and over the next few years, population sizes decreased due to competition with nonnative grasses. In 1993, only 133 individuals appeared, and in 1994, no individuals were seen. In 1994, the City of Santa Cruz acquired the land from the private landowner. The city entered into an MOU with CDFG in 1997 to manage the four remaining colonies, which covered approximately 2 ha (5 ac) within a 7-ha (17-ac) management area (CDFG 1997b). In 1995, management of one colony included fall mowing, raking, hoeing, and mechanical scraping of the habitat. By the summer of 1996, the *Holocarpha macradenia* colony had recovered to approximately 7,500 individuals (summer 1996). However, in the fall of 1996, a portion of the treated colony was accidentally burned, and the City and local volunteers began management of a second colony (by grass raking, hoeing, and mowing). A total of 20,000 individuals were observed in these two areas in 1997, and a total of 12,820 were observed in 1998 (K. Lyons, consultant, pers. comm. 1997, 1998). The City now proposes to construct a bicycle path that would bisect the management area (Brady and Associates, Inc. 1997). Direct impacts to occupied *H. macradenia* habitat would be avoided, but secondary impacts associated with increased recreational use, such as increased trampling from humans, pets, and bicycles, may have a negative impact on the remaining habitat and increase the difficulty of managing this site.

The O'Neill/Tan population straddles the boundary of two parcels, the O'Neill Ranch owned by the County Redevelopment Agency (CRA) and the privately owned Tan property. In 1996, the county approved development of the 40-ha (100-ac) O'Neill property into a county park. *Holocarpha macradenia* is located in the upper reaches of the park where past recreational use consisted of occasional hiking. A park management plan is currently being developed and will include the population of *H. macradenia* in a 6-ha (15-ac) conservation easement that is zoned for ''passive recreation.'' The plan may recommend fencing around 0.4 ha (1 ac) of *H. macradenia* habitat in lieu of trying to restrict hikers to designated trails (S. Gilchrist, CRA, pers. comm. 1997). Although the site receives light use currently, development of the adjacent Tan property will allow easier access to a larger number of people. The County hopes to establish a cooperative management strategy with the developers of the Tan property to address management of this population. The size of the *H. macradenia* population on the O'Neill property has fluctuated from up to 200 plants in 1979 down to 0 in 1998 (1979—between 100 to 200 plants; 1984–0; 1985–0; 1986–170; 1990–0; 1991–170; 1993–2; 1997–0; 1998–0) (Brady and Associates 1995, K. Lyons, pers. comm. 1998). Santa Cruz clover and Gairdner's yampah also occur on this site.

The 43-ha (106-ac) Tan property was approved in 1997 for the development of 28 residential units. The habitat mitigation plan for this development includes approximately 0.2 ha (0.5 ac) that support *Holocarpha macradenia* in the 4.2-ha (10.4-ac) conservation parcel. This parcel will be managed by the homeowner's association (HRG 1996). Management prescriptions for the conservation parcel include mowing, weed control, fencing, and removal of invasive nonnative plants. These invasive nonnative plants include French broom, rattlesnake grass (*Briza* sp.), and eucalyptus (HRG 1996).

The size of the *Holocarpha macradenia* population on the Tan parcel is difficult to determine because historic surveys did not count these individuals separately from those on the O'Neill parcel. However, the total number of individuals in the entire population has never been larger than 200 individuals, with the Tan parcel supporting only a portion of those. In 1996, only one tarplant individual was seen (Val Haley, consultant, *in litt.* 1997). In 1997 and 1998, no individuals were seen (K. Lyons, pers. comm. 1997, 1998).

In addition to *Holocarpha macradenia,* the privately owned Winkle Avenue site also supports populations of the Ohlone tiger beetle and Gairdner's yampah. Part of the *Holocarpha macradenia* population at this site was destroyed by two phases of a residential development in 1986, and a portion of the remaining 23 ha (57 ac) of habitat was placed in a ''temporary open space easement'' (Strelow Consulting 1995). The 23-ha (57-ac) parcel is now being proposed for the development of 21 residential units (Parsons Engineering Science, Inc. 1997). Although approval by the County of Santa Cruz is still pending, the planning department has recommended that the development be limited to 10 residential units, with the remaining 11 lots being placed in a preservation easement (K. Tschantz, County of Santa Cruz Planning Department, pers. comm. 1997; CDFG *in litt.* 1997). In 1993, the *H. macradenia* population consisted of approximately 100 plants covering 16 cubic meters (174 square feet) (Parsons Engineering Science, Inc 1997). In 1994, no plants were seen on the site (CDFG 1995). In addition to the threat of development, the population on this site has been subject to competition and habitat alteration from the invasion of French broom and nonnative grasses.

The Fairway Drive site is a 12-ha (30-ac) parcel of land that is privately owned. In 1989, the year that grazing by horses ceased, the site supported a population of approximately 5,000 plants on less than 0.4 ha (1 ac). At the time, the site was considered a ''well-preserved fragment of native grassland'' that supported native bunchgrasses (California oatgrass and purple needlegrass (*Nasella pulchra*)) as well as several species of concern, including Gairdner's yampah and San Francisco popcorn flower (CNDDB 1997). In 1993, the population was approximately 1,500 plants (CDFG 1995a, Greening Associates 1995); the decline being attributed to cessation of grazing. Several woody nonnative species, including French broom, acacia, pampas

grass (*Cortaderia jubata*), and eucalyptus (*Eucalyptus globulus*), have invaded the grasslands and are rapidly spreading. In 1996, the County approved a lot split into four parcels, with the condition that the coastal terrace prairie habitat be placed in a preservation easement of approximately 6 ha (15 ac) and a management plan be developed and implemented (K. Tschantz, pers. comm. 1997).

The Watsonville Airport site, owned by the City of Watsonville, supports the largest population of *H. macradenia.* Successive population estimates at this site show an overall increase in population size and extent over time: 459,000 plants in 1993; 240,000 plants in 1994 (CNDDB 1997); 27,854,000 plants in 1998 (a year with greater than average rainfall) (John Gilchrist & Associates 1999); and 8,200,000 plants in 1999 (L. Kiguchi, John Gilchrist & Associates, pers. comm. 1999). Portions of the 15-ha (37-ac) site are grazed, and other portions are mowed several times between late spring and late summer to maintain visual clearance of the runways. This management appears to have benefitted *H. macradenia* by reducing competition from nonnative species. In 1994, the City released an initial study for a proposed clay mining operation and a 20-year airport expansion plan. Both activities would potentially reduce available *H. macradenia* habitat (Denise Duffy & Associates 1994). Since then, the proposal to mine clay has been removed from consideration due to permitting complications. CDFG is working with city representatives to formalize an agreement to use ongoing management activities to enhance the available habitat, but a final agreement has not been reached. CDFG is also working with representatives from the City of Watsonville to develop a strategy to phase in airport expansion over a number of years so that loss of habitat would be mitigated in advance, by enhancing habitat for *H. macradenia* in adjacent suitable areas.

The Harkins Slough site is privately owned. In 1993, the population consisted of about 15,000 plants in 2 colonies; the current status of the population is unknown due to limited access to the property. The first colony covers 0.4 ha (1 ac), and the other colony is 0.4 ha (1 ac) in size. Cattle grazing was discontinued in 1990. Current uses of the property include fava bean production. In 1997, the owners requested that the property be annexed to the City of Watsonville in anticipation of developing residences and a golf course. The city council turned down the request due to public concern over the loss of prime agricultural land in the area. The CDFG has approached the owners with a proposal to assist in conservation efforts; however, no agreement has been reached.

The Apple Hill site is owned by CALTRANS. The population previously comprised three colonies. However, two colonies were extirpated by the construction of a housing development on adjacent private property. The remaining colony occurs on a strip of land between the housing development and Highway 152. The continued existence of this colony is in jeopardy due to use of the habitat strip by local residents as a play area, repository for yard waste, and walkway to adjacent businesses (CDFG 1994; G. Smith, resource ecologist, CDPR, pers. comm 1997). In an effort to protect the colony, CALTRANS had proposed placing a fence along the highway to limit access (G. Ruggerone, CALTRANS, pers. comm. 1997). However, prior to taking this action, CDFG and CALTRANS agreed that additional fencing would also limit access to the site for mowing and that a monitoring program to determine the extent of indirect effects posed by the adjacent development and the fence should be established (CALTRANS and CDFG pers. comm. 1999). The *Holocarpha macradenia* population has fluctuated between 4,000 (1986) and 81 plants (1994). In 1995, the population supported 700 individuals (CNDDB 1997). In 1998, the population supported 1,000 individuals, and habitat was mowed in the fall to reduce biomass of nonnative grasses (Thomas M. Edell, *in litt.* 1998). In 1999, no plants appeared at this site (T. Edell, pers. comm. 1999).

The privately owned Struve Slough site currently supports a very small population of *Holocarpha macradenia*, as well as the Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), a federally endangered species. In the late 1980s, the site supported one of the largest populations of Santa Cruz tarplant, occupying 2 ha (5 ac) and comprising 400,000 plants (CDFG 1995). When cattle grazing was terminated on the site in 1989, the population size dropped considerably. This trend currently continues. The site is now dominated by nonnative wild oats (*Avena* sp.), prickly lettuce (*Picrus echioides*), and fennel (*Foeniculum vulgare*), which are outcompeting the *H. macradenia* (CDFG 1995). As of 1994, only one Santa Cruz tarplant has been observed. In 1992, the City of Watsonville approved an Environmental Impact Report for the Bay Breeze housing development at this site. In 1999, the City circulated a draft supplemental EIR for the housing project. It proposed to set aside a portion of the site that supports *H. macradenia* as a conservation area, but proposed no active management plan for the project. Due to the extent of area that is occupied by nonnative grasses, it is unlikely that *H. macradenia* will reappear at the site unless it is actively managed. The CDFG has expressed an interest in enlisting the property owners in conservation efforts, but no agreements have yet been reached (D. Hillyard, plant ecologist, CDFG, pers. comm. 1997).

The Spring Hills Golf Course site is privately owned. In 1989, *Holocarpha macradenia* was observed growing in five separate colonies scattered over 5 ha (12 ac) in unlandscaped patches between the fairways of the golf course. The distribution of the colonies suggests that *H. macradenia* habitat was altered by development of the golf course, especially in the fairways. In 1989 and 1990, the largest colony supported 2,000 to 3,000 plants. Each of the other four colonies supported between 100 and 400 plants (CNDDB 1997). *H. macradenia* was last observed at this site in 1995; no population size estimates were made, but all of the colonies appeared to still be present (B. Davilla, pers. comm. 1997). In 1997, CDFG approached representatives of the golf course and expressed an interest in enlisting them in conservation efforts. To date, however, no agreements have been made (D. Hillyard, pers. comm. 1997). Since there are no apparent plans for expansion of the golf course, the continued threats to H. macradenia on this site are uncertain.

The Porter Ranch site, the only site in Monterey County, is privately owned. Taylor (1990) noted that this site is unusual in that the *Holocarpha macradenia* population is primarily in the bottom of a small canyon, rather than on the adjacent terrace or upper slope. The population is scattered over approximately 1 ha (2.5 ac). Between 1984 and 1993, population sizes fluctuated between 1,500 (1984) and 43,000 plants (1989) (CNDDB 1997). The most recent population estimate in 1993 was 3,200 plants. Cattle grazing at this site continues with varying intensity (M. Silberstein, Elkhorn Slough Foundation, pers. comm. 1997). Within cattle exclosures, constructed to protect *H. macradenia* from heavy grazing, the number of plants had decreased to fewer than 100 by 1996 (R. Morgan, pers. comm. 1997). The owners are interested in developing management plans in conjunction with The Nature Conservancy that would address

appropriate grazing levels to benefit *H. macradenia* (CDFG 1994, M. Silberstein, pers. comm. 1997). In 1998, CDFG acquired a 16-ha (40-ac) conservation easement on the Porter Ranch that surrounds the *H. macradenia* population (D. Hillyard, *in litt.* 1998). The threats to *H. macradenia* on this site are uncertain.

In summary, development, with its associated effects, is a primary threat to *Holocarpha macradenia.* Six of the 12 remaining native populations are on privately owned lands that are currently or anticipated to be proposed for urban development (Graham Hill Road, the Tan portion of O'Neill/Tan, Winkle Avenue, Fairway Drive, Harkins Slough, and Struve Slough). One site has plans for a phased, 20-year airport expansion (Watsonville Airport). Three sites have also been subjected to secondary effects of adjacent residential development (Arana Gulch, Twin Lakes, Apple Hill). Seven of the 12 sites include plans for conservation of *H. macradenia,* either through development-related mitigation, or by virtue of being on city, county, or State agency lands. However, none of these conservation plans have yet been successful. In particular, the size and quality of conservation areas and management actions prescribed through the environmental review process (see Factor D) may not be biologically adequate to meet the goal of long-term conservation of the species. Also, some *H. macradenia* conservation areas where populations are small in number, small in area, whose habitat is degraded, or that continue to receive secondary effects of adjacent human activities are more vulnerable to extirpation from random, natural events (see Factor E).

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Overutilization is not known to be a problem for this species.

C. *Disease or predation.* Disease is not known to be a problem for this species. Predation of adult plants by cattle, livestock, or other wildlife species is not known to occur, probably due to the presence of oil glands that would make the plant unpalatable. Whether very young plants are subject to predation prior to maturation of oil glands is unknown.

Although *Holocarpha macradenia* does not appear to be directly impacted by grazing, it has altered the plant's habitat at a number of sites (Arana Gulch, O'Neill/Tan, Watsonville Airport, Harkins Slough, Struve Slough, Porter Ranch, and all eight seed transplant populations in Wildcat Regional Park). Prior to the spread of nonnative annual grasses in the valleys and foothills of California, the openings between perennial grasses in grassland and oak woodland communities were probably occupied by native herbaceous plants (Barbour *et al.* 1993). With the introduction of nonnative grasses, cattle grazing has changed, and continues to alter, the species composition of grasslands in several ways. The hooves of cattle sufficiently disturb soil to create open ground and a seedbed for the establishment of nonnative species. Cattle selectively forage on native species, thus favoring the establishment of nonnative species (Painter 1995). Cattle also act as dispersal vectors for nonnative species to new sites (Heady 1977, Willoughby 1986, Sauer 1988). Once nonnative plants become established, these species compete with native herbs and grasses for water, nutrients, and light (Heady 1977, McClintock 1986). Because nonnative grasses are typically prolific seeders, they continue to increase in abundance at the expense of the native taxa, even after grazing is discontinued (Painter 1995).

Once *Holocarpha macradenia* habitat has been altered by grazers and nonnative plants have proliferated throughout the native ecosystem, continued grazing may either be deleterious or beneficial to the viability of *H. macradenia.* The indirect effects of continued grazing depend on several factors, including the current condition of the site, the timing, and the amount of grazing. In some cases, light to moderate grazing will remove sufficient biomass of nonnative grasses to allow *H. macradenia* to persist (CDFG 1995a, CDFG 1995b). For example, a combination of mowing and grazing has likely favored the persistence of *H. macradenia* at the Watsonville Airport site. The decline of *H. macradenia* on the Struve Slough site has been attributed to the elimination of grazers without new grassland management (Taylor 1990, CDFG 1995a). On the other hand, the indirect result of heavy grazing is most likely responsible for the decline or restriction in *H. macradenia* population sizes at the Arana Gulch, Tan, and portions of the Porter Ranch sites (CDFG 1995a, CNDDB 1997), as well as one of the seed transplant populations (Big Belgum) in Wildcat Canyon Regional Park (CDFG 1995b). Additional discussion on this issue is found under Factor E of this rule.

D. *The inadequacy of existing regulatory mechanisms.* The California Fish and Game Commission listed *Holocarpha macradenia* as an endangered species in 1979 under the California Native Plant Protection Act (CNPPA) (Division 2, chapter 10 section 1900 *et seq.* of the CDFG Code). In 1984, this species became an endangered species under the California Endangered Species Act (CESA) (Division 3, chapter 1.5 sec. 2050 *et seq.*). Although the ''take'' of State-listed plants has long been prohibited under the CNPPA (Division 2, chapter 10, section 1908) and CESA (Division 3, chapter 1.5, section 2080), these statutes do not provided adequate protection for such plants from the impacts of habitat modification and land use change. For example, under CNPPA, certain activities, such as agricultural or timber operations, mining assessment work, or removal of plants from a right-of-way (e.g., canal, lateral ditches, building site or road), are exempt from the general take prohibitions. Also under CNPPA, after CDFG notifies a landowner that a State-listed plant grows on his or her property, the statute requires only that the landowner notify the agency ''at least ten days in advance of changing the land use to allow salvage of such plant'' (section 1913). With recent amendments to CESA, a permit under section 2081(b) of the CDFG Code is required to ''take'' State-listed species incidental to otherwise lawful activities. The amendments require that impacts to the species be fully mitigated. However, these new requirements have not yet been tested, and evaluating their effectiveness will take several years. The scope of these exceptions to the CNPPA take prohibition, and consequently to the protections for plants under CESA, have been the subject of some controversy, even after an opinion in 1998 by the California Attorney General (Opinion #98–105, June 23, 1998). This opinion cataloged the legal mechanisms for take of California-listed plants, and included both incidental take permits issued under the CESA and projects that are statutorily exempt from CNPPA's take prohibition. The opinion did not, however, clarify the scope of the CNPPA exemptions, including a provision that allows the removal of California-listed rare and endangered plants from building sites.

The California Environmental Quality Act (CEQA) requires a full disclosure of the potential environmental impacts of proposed projects on State-or federally listed species or species that are eligible for State listing as rare, threatened, or endangered but have not yet been listed. The public agency with primary authority or jurisdiction over the project is designated as the lead agency, and is responsible for conducting a review of the project and consulting with other agencies concerned with the resources affected by the project. However, protection of listed species through

CEQA is dependent upon the discretion of the agency involved. Section 15065 of the CEQA Guidelines requires a finding of significance if a project has the potential to ''reduce the number or restrict the range of a rare or endangered plant or animal.'' Once significant effects are identified, the lead agency may require mitigation for those effects by changing the project or deciding that overriding considerations make the significant effects acceptable. In the latter case, projects may be approved that cause significant environmental damage, such as destruction of endangered species.

The County of Santa Cruz recently revised its Local Coastal Program and General Plan (Santa Cruz County 1994). Under this plan, ''grasslands in the coastal zone'' are identified as one of a number of official Sensitive Habitats. Uses allowed within Sensitive Habitat areas are restricted to those that are dependent on the habitat's resources unless other uses are ''(a) consistent with protection policies and serve a specific purpose beneficial to the public; (b) it is determined through environmental review that any adverse impacts on the resource will be completely mitigated and that there is no feasible less-damaging alternative; and (c) legally necessary to allow a reasonable economic use of the land, and there is no feasible less-damaging alternative'' (Santa Cruz County 1994). The County has attempted to protect *Holocarpha macradenia* during the review of proposals for development that fall under their jurisdiction with conservation easements voluntarily established by the project applicant, or preservation easements requested of the applicant by the County. To date, these include development projects at the Graham Hill Road, O'Neill, Tan, Winkle, and Fairway Drive sites. These easements typically set aside all or most of the occupied habitat of *H. macradenia* and provide for implementation of management plans for the coastal prairie habitat. Despite these efforts, the easements cover only small remnants that represent a fragment of the coastal prairie habitat that historically occurred in the region. Intensive grassland management will be needed to sustain and enhance populations of *H. macradenia* on these sites.

In the late 1980s and early 1990s, CDFG became more concerned about the status of *Holocarpha macradenia* when it became apparent that native populations were being destroyed by development, both in the San Francisco Bay area and the Monterey Bay area. In 1993 and 1995, CDFG hosted three *H. macradenia* recovery workshops to review the status of the species and identify actions needed to conserve the species. These workshops resulted in the development of an MOU between the CDFG and the City of Santa Cruz to address management of the population at Arana Gulch. The workshops also initiated discussion with the City of Watsonville regarding the development of an MOU for management of the Watsonville Airport site. Funding for management of several populations was generated (including those at Arana Gulch and at Wildcat Regional Park), and a conservation plan was developed for the species that included a list of four sites to be targeted. In 1998, CDFG secured a conservation easement over a 16.4–ha (40.5–ac) parcel on one of the four sites (Porter Ranch) prioritized for conservation. Currently, however, efforts to secure conservation easements with the other three property owners have been suspended (Cochrane, *in litt.*, 1998).

E. *Other natural or manmade factors affecting its continued existence.* In addition to the threats described above, three additional factors threaten the continued existence of *Holocarpha macradenia*: limited success of transplant efforts conducted as part of mitigation projects, competition with nonnative plants, and extinction caused by random, naturally occurring events.

In Factor A above, detailed accounts were given of the 12 remaining native populations of *Holocarpha macradenia*. The other eight existing populations of *H. macradenia* are the result of experimental seed transplants. In 1911, Jepson referred to *H. macradenia* as being ''abundant'' in west Berkeley and Oakland (Havlik 1986). However, close to 50 years later, due to loss of habitat to urbanization, Munz (1959) considered the taxon ''possibly extinct.'' Therefore, when several populations were found near Pinole and Richmond in Contra Costa County in the late 1970s and early 1980s, botanists placed a high priority on establishing additional populations to forestall extinction. Experiments were carried out to establish new populations by seeding what was thought to be appropriate habitat (Havlik 1986). Most of the seedings were done at Wildcat Canyon Regional Park, which straddles Alameda and Contra Costa Counties, but several were done on lands owned and managed by East Bay Municipal Utility District (EBMUD).

Havlik (1989) reviewed the first 7 years of monitoring sites that were seeded with *Holocarpha macradenia* and included discussions on how habitat characteristics such as soil type, grazing pressure (cattle), and landscape position within the coastal fog belt may have affected the species' seeding success. In initial results, populations exposed to moderate grazing pressure were larger than those exposed to low grazing pressure. From 1982 to 1986, 22 sites were seeded within Wildcat Regional Park and on EBMUD land. Most of the sites are monitored annually. By 1989, 3 sites supported over 3,000 plants; 2 had over 1,000 plants; 11 had over 100 plants; 2 had over 10 plants; and 4 had no plants.

By 1993, 1 site (referred to as Mezue) supported a population of 6,400 plants; 4 had fewer than 300 plants; 2 had fewer than 100 plants; 10 had no plants; and 3 sites could not be relocated (CDFG 1994). By 1997, the Mezue site supported between 5,000 and 7,000 plants; one had fewer than 300 plants; 4 had fewer than 100 plants; and 7 had no plants. Most of the remaining sites were not checked because previous multiple-year monitoring indicated that plants had disappeared from those sites. In 1998, the Mezue site supported 3,128 plants; one had 318 plants; 6 had fewer than 100 plants; and 5 had no plants (B. Olson, pers. comm. 1998). Although more sites supported plants in 1998 (eight compared to six in 1997), the total number of plants was less. Also, of those sites that support small populations (fewer than 100 individuals), some may not display any individuals in a given year, even though a seedbank may be present. Although the seeds were probably planted in less than perfect habitat, the competition for limited resources between *H. macradenia* and artichoke thistle and nonnative grasses probably contributed to the decline in populations of the former.

Although the information gathered from these seeded sites has been valuable for understanding the life-history of the plant and how it responds to various types of management, these sites have had limited success in establishing viable populations of *Holocarpha macradenia*. The seeded sites, therefore, have a limited value for maintaining the viability of the species when compared to the native populations.

One of the most prevalent forms of habitat alteration occurring within the coastal prairie habitat of *Holocarpha macradenia* is the conversion of the plant community from one dominated by native grasses to one dominated by nonnative grass species. Nonnative grasses may quickly gain a competitive advantage over native grasses because they germinate early and seed prolifically (Heady 1977, McClintock

1986). As discussed in Factors A and C, the conversion of native prairie habitats to grazing lands enhances the opportunity for nonnative grasses to be introduced and disseminated into the surrounding areas. Field survey reports show that nonnative grasses often dominate coastal prairie habitat and represent a potential threat at eight *H. macradenia* sites (Arana Gulch, Twin Lakes, Tan, Watsonville Airport, Harkins Slough, Struve Slough, Spring Hills and Porter sites) (CNDDB 1997, Taylor 1990).

In 1989, the Struve Slough site supported one of the largest populations of *Holocarpha macradenia*. Before 1989, the cattle grazing regime in place favored the presence of nonnative grasses such as oatgrass (*Avena barbada*), ryegrass (*Lolium multiflorum*), and quaking grass (*Briza maxima*). However, even after cattle were removed from the site in 1989, wild oat and other nonnatives, primarily prickly lettuce and wild fennel, further invaded the site. Even without continual grazing to facilitate the growth of nonnative plants, previous grazing practices had established sufficient numbers of these nonnative plants that they could outcompete the native plants and increase their abundance. Probably as a result of nonnative competition, *H. macradenia* has not been seen on the site since 1994, despite the apparent existence of a seedbank.

Both the native populations and the seeded ones are threatened to some extent by competition with artichoke thistle. An individual thistle, the wild variety of the edible artichoke, occupies a large area, has allelopathic properties, and creates shade (Kelly and Pepper 1996). The artichoke thistle also resprouts vigorously from a perennial taproot, has extended flowering, and prolific seed production. Other weedy characteristics of the artichoke thistle include germinating and resprouting in a variety of environmental conditions and over several seasons (Kelly and Pepper 1996). In the 1880s, artichoke thistle was introduced around Benicia, only a few miles north of the Regional Park. By the 1930s, 28,330 ha (70,000 ac) in the hills around the east and north side of San Francisco Bay were infested with the artichoke thistle (Ball in Thomsen *et al.* 1986). In 1996, the Regional Park and Alameda County initiated a cooperative artichoke thistle removal program using herbicides. Although sites that support *Holocarpha macradenia* are a priority for artichoke thistle removal, the abundance of artichoke thistle in adjacent areas allows it to reseed back into treated areas.

Nonnative grasses also occur with *Holocarpha macradenia* at the eight seeded sites. All eight sites are grazed by cattle. If nonnative grasses become too abundant, they can outcompete *H. macradenia*. As stated above in Factor C, cattle grazing can decrease the abundance of nonnative grasses; however, at the Big Belgum site an increase in grazing pressure is believed to have caused the *H. macradenia* population to decline (CDFG 1995b).

French broom is another aggressive nonnative species that threatens *Holocarpha macradenia*. French broom colonizes easily and spreads rapidly in many types of habitats. It is especially aggressive in disturbed areas such as roadsides and newly cleared land. French broom can eventually form dense thickets that displace native vegetation, including *H. macradenia* (Habitat Restoration Group (HRG) n.d.). French broom occurs at five of the natural *H. macradenia* sites (Arana Gulch, Graham Hill Road, Twin Lakes, O'Neill/Tan, Fairway Drive) (CDFG 1997, HRG 1996).

So much of the coastal prairie habitat that supports *Holocarpha macradenia* has been altered, fragmented, or destroyed that most of the remaining habitat is of small acreage and supports only very small populations. Species with a small number of populations and few individuals (compared to historical numbers) are vulnerable to the threat of local extinction from random, naturally occurring events. Such random events can affect long-term survival or cause extinction at several different levels—genetic, demographic, environmental, and catastrophic. For example, the random loss of a few individuals in these small populations can further decrease a species' already diminished gene pool. This loss of genetic diversity can affect the species' ability to adapt to routine environmental change, such as drought. The loss of genetic diversity is often manifested in depressed reproductive vigor. In other circumstances, sites with small populations or few individuals may be vulnerable to forces that affect their ability to successfully complete their life cycle. For example, the loss of pollinators may reduce successful seed-set, and could lead to reduced species viability and possible extirpation over time. Large-scale disturbances such as floods, drought, or untimely fire can destroy a significant percentage of a species' individuals or entire populations.

Since *Holocarpha macradenia* populations naturally tend to fluctuate in number due to climatic factors, the species is especially vulnerable to catastrophic disturbance during periods when population numbers are low. Watsonville Airport, the largest of the 12 native sites, supports a population that fluctuates from 200,000 to 28 million plants on 15 ha (37 ac). The Struve Slough site formerly supported 400,000 individuals on 1.6 ha (4 ac), but had declined to a single individual in 1994. The Spring Hills Golf Course site supports up to 3,500 plants on 5 ha (12 ac). The Porter Ranch site once supported 43,000 plants on 1 ha (2.5 ac), but by 1996, the population had declined to fewer than 100 plants. The Arana Gulch site supported 12,820 plants on 2 ha (5 ac) in 1998. The remaining seven native sites support approximately 0.4 ha (1 ac) or less of occupied habitat. In 1997, 2 of these native sites (Twin Lakes and O'Neill/Tan) had no plants, while Twin Lakes had only 12 plants in 1998. Of the 8 seed transplant sites in Wildcat Canyon Regional Park, in the east San Francisco Bay area, 1 site supported a population of 3,128 individuals, and the remaining 7 supported between 0 and 318 individuals (1998). Each of these sites is estimated to cover 0.4 to 1.2 ha (1 to 3 ac). The total area of all eight seeded sites is between 3 and 8 ha (8 and 20 ac) (B. Olson, biologist, EBRPD, pers. comm. 1997).

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this taxon in determining to make this final rule. Based on this evaluation, we find that *Holocarpha macradenia* (Santa Cruz tarplant) meets the definition of a threatened species under the Act. This species is likely to become endangered in the foreseeable future throughout all or a significant portion of its range due to habitat alteration and destruction, resulting primarily from urban and commercial development; invasion of its habitat and competition from nonnative species due to grazing; limited success of seed transplant populations; and vulnerability to random disturbance in populations of small size and number. Although a few of the native populations are on city, county, or State lands, most are on private lands. Conservation efforts indicate that this species may be maintained by applying intensive management techniques. These efforts will be most effective on sites with large tracts of remaining habitat that support naturally large populations and that can be secured from threats to the species. Although conservation efforts have been prescribed as part of mitigation for a number of development projects, the

small acreage, small population sizes, and physical proximity of threats lessen the chance that such efforts will lead to secure, self-sustaining populations at these sites.

Critical Habitat

Critical habitat is defined in section 3, paragraph (5)(A) of the Act as 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 essential to the conservation of the species and that may require special management considerations or protection; and specific areas outside the geographical area occupied by a species at the time it is listed in accordance with the provisions of section 4 of the Act, upon a determination by the Secretary 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.

Critical habitat designation, by definition, directly affects only Federal agency actions through consultation under section 7(a)(2) of the Act. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat.

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, we designate critical habitat at the time the species is determined to be endangered or threatened. Our 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 activity and the 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.

In the proposed rule, we indicated that designation of critical habitat for *Holocarpha macradenia* was not prudent because we believed that designation of critical habitat would not provide any additional benefit beyond that provided through listing as threatened, since most of the current populations of the plant occur on private land or on local/county/State land that is subject to additional conservation regulations.

We now find that designation of critical habitat is prudent for *Holocarpha macradenia*. In the last few years, a series of court decisions have overturned Service determinations regarding a variety of species that designation of critical habitat would not be prudent (e.g., *Natural Resources Defense Council* v. *U.S. Department of the Interior* 113 F. 3d 1121 (9th Cir. 1997); *Conservation Council for Hawaii* v. *Babbitt*, 2 F. Supp. 2d 1280 (D. Hawaii 1998)). Based on the standards applied in those judicial opinions, we believe that the designation of critical habitat for *H. macradenia* would be prudent.

Due to the small number of populations, we are concerned that *Holocarpha macradenia* could be vulnerable to unrestricted collection, vandalism, or other disturbance. Although we have found no specific evidence of such activities, we are also concerned that these threats might be exacerbated by the publication of critical habitat maps and further dissemination of locational information. However, consistent with applicable regulations (50 CFR 424.12(a)(1)(i)) and recent case law, we do not expect that the identification of critical habitat will increase the degree of threat to this species of taking or other human activity.

In the absence of a finding that identification of critical habitat would increase threats to a species, if any benefits would result from a critical habitat designation, then a prudent finding is warranted. In the case of this species, designation of critical habitat may provide some benefits. The primary regulatory effect of critical habitat is the section 7 requirement that Federal agencies refrain from taking any action that destroys or adversely modifies critical habitat. While a critical habitat designation for habitat currently occupied by this species would not be likely to change the section 7 consultation outcome because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy to the species, in certain instances, section 7 consultation might be triggered only if critical habitat is designated. Examples could include unoccupied habitat or occupied habitat that may become unoccupied in the future. Designating critical habitat may also provide some educational or informational benefits. Therefore, we find that critical habitat is prudent for *Holocarpha macradenia*.

As explained in detail in the Final Listing Priority Guidance for FY 2000 (64 FR 57114), our listing budget is currently insufficient to allow us to immediately complete all of the listing actions required by the Act. We anticipate in FY 2000 and beyond giving higher priority to critical habitat designation, including designations deferred pursuant to the Final Listing Priority Guidance for FY 2000, such as the designation for this species, than we have in recent fiscal years. We plan to employ a priority system for deciding which outstanding critical habitat designations should be addressed first. We will focus our efforts on those designations that will provide the most conservation benefit, taking into consideration the efficacy of critical habitat designation in addressing the threats to the species, and the magnitude and immediacy of those threats. Therefore, deferral of a critical habitat designation for this species will allow us to concentrate our limited resources on higher priority critical habitat and other listing actions, without delaying the final listing decision for *Holocarpha macradenia*. We will develop a proposal to designate critical habitat for *H. macradenia* as soon as feasible, considering our workload priorities. Unfortunately, for the immediate future, most of Region 1's listing budget must be directed to complying with numerous court orders and settlement agreements, as well as due and overdue final listing determinations.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in public awareness and conservation actions by Federal, State, and local agencies, private organizations, and individuals. The Act provides for possible land acquisition and cooperation with the States, and requires that recovery actions be carried out for all listed species. Funding may be available through section 6 of the Act for the State to conduct recovery activities. 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, as amended, 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) requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a species proposed for listing 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 a listed species or destroy or adversely modify its critical habitat, if designated. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with us, under section 7(a)(2) of the Act. Federal agency involvement, on the part of the Federal Highway Administration, has been identified for the Arana Gulch site. In addition, the FAA will be involved in the expansion of the Watsonville Airport.

Listing of this plant as threatened provides for the development of a recovery plan. Such a plan would bring together Federal, State, and local efforts for its conservation. The recovery plan would establish a framework for cooperation and coordination in recovery efforts, set recovery priorities, and describe site-specific management actions necessary to achieve conservation and survival of the listed species. Additionally, pursuant to section 6 of the Act, we will be able to grant funds to affected States for management actions promoting the protection and recovery of this species.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all threatened plants. All prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.71 for threatened plants, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, or remove and reduce to possession the species from areas under Federal jurisdiction. In addition, for plants listed as endangered, the Act prohibits the malicious damage or destruction on areas under Federal jurisdiction and the removal, cutting, digging up, or damaging or destroying of such plants in knowing violation of any State law or regulation, including State criminal trespass law. Section 4(d) of the Act allows for the provision of such protection to threatened species through regulation. This protection may apply to *Holocarpha macradenia* in the future if regulations are issued. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that their containers are marked ''Of Cultivated Origin.'' Certain exceptions to the prohibitions apply to our agents and those of State conservation agencies.

The Act and 50 CFR 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. Such permits are available for scientific purposes and to enhance the propagation or survival of the species. For threatened plants, permits also are available for botanical or horticultural exhibition, educational purposes, or special purposes consistent with the purposes of the Act. We anticipate that few trade permits would ever be sought or issued because this species is not in cultivation or common in the wild. Requests for copies of the regulations on listed species and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Portland Regional Office, 911 NE 11th Avenue, Portland, Oregon 97232–4181 (telephone 503/231–6131, facsimile 503/231–6243).

As published in the **Federal Register** (59 FR 34272) on July 1, 1994, our policy is to identify to the maximum extent practicable those activities that would or would not be likely to constitute a violation of section 9 of the Act if a species is listed. The intent of this policy is to increase public awareness of the effect of the species' listing on proposed and ongoing activities within its range. Collection on Federal lands is prohibited without a Federal endangered species permit. Conducting commerce with this species is also prohibited.

Questions regarding whether specific activities, such as changes in land use, will constitute a violation of section 9 should be directed to the Field Supervisor, Ventura Fish and Wildlife Office (see **ADDRESSES** section).

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, 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 Endangered Species Act of 1973, as amended. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Paperwork Reduction Act

This rule does not contain any new collections of information other than those already approved under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and assigned Office of Management and Budget clearance number 1018–0094. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid control number. For additional information concerning permit and associated requirements for threatened plants, see 50 CFR 17.72.

References Cited

A complete list of all references cited herein, as well as others, is available upon request from the Ventura Fish and Wildlife Office (see **ADDRESSES** section).

Author:

The primary author of this final rule is Constance Rutherford, Ventura Fish and Wildlife Office (see **ADDRESSES** section).

List of Subjects in 50 CFR part 17

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

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of a 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. 4201–4205; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend 17.12(h) by adding the following, in alphabetical order under FLOWERING PLANTS, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
*	*	*	*	*	*	*	
Holocarpha macradenia.	Santa Cruz tarplant	U.S.A. (CA)	Asteraceae	T	690	NA	NA
*	*	*	*	*	*	*	

Dated: March 13, 2000.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 00–6834 Filed 3–15–00; 4:31 pm]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 300

[Docket No. 991220343–0071–02; I.D. 120999D]

RIN 0648–AM52

Pacific Halibut Fisheries; Catch Sharing Plans

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule; annual management measures for Pacific halibut fisheries and approval of catch sharing plans.

SUMMARY: The Assistant Administrator for Fisheries, NOAA (AA), on behalf of the International Pacific Halibut Commission (IPHC), publishes the annual management measures promulgated as regulations by the IPHC and approved by the Secretary of State governing the Pacific halibut fishery. The AA also announces the approval of modifications to the Catch Sharing Plan (Plan) for Area 2A and implementing regulations for 2000. These actions are intended to enhance the conservation of the Pacific halibut stock and further the goals and objectives of the Pacific Fishery Management Council (PFMC) and the North Pacific Fishery Management Council (NPFMC).

DATES: Effective March 15, 2000.

ADDRESSES: NMFS Alaska Region, 709 West 9th Street., P.O. Box 21668, Juneau, AK 99802–1668; or NMFS Northwest Region, 7600 Sand Point Way NE, Seattle, WA 98115–0070 (http://www.nwr.noaa.gov).

FOR FURTHER INFORMATION CONTACT: James Hale, 907–586–4345 or Yvonne deReynier, 206–526–6140.

SUPPLEMENTARY INFORMATION: The IPHC has promulgated regulations governing the Pacific halibut fishery in 2000, under the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention), signed at Ottawa, Ontario, on March 2, 1953, as amended by a Protocol Amending the Convention (signed at Washington, D.C., on March 29, 1979). The IPHC regulations have been approved by the Secretary of State of the United States under section 4 of the Northern Pacific Halibut Act (Halibut Act, 16 U.S.C. 773–773k). Pursuant to regulations at 50 CFR 300.62, the approved IPHC regulations setting forth the 2000 IPHC annual management measures are published in the **Federal Register** to provide notice of their effectiveness, and to inform persons subject to the regulations of the restrictions and requirements.

The IPHC held its annual meeting on January 10–13, 2000, in Lynnwood, WA, and adopted regulations for 2000. The substantive changes to the previous IPHC regulations (64 FR 13519, March 19, 1999) include:

1. New catch limits for all areas;

2. A requirement that the operator of a vessel that offloads halibut must completely offload all halibut from the vessel once the offloading commences;

3. Establishment of opening dates for the Area 2A commercial directed halibut fishery.

In addition, this action implements the Plan for regulatory Area 2A. This Plan was developed by the PFMC under authority of the Halibut Act. Section 5 of the Halibut Act (16 U.S.C. 773c) provides that the Secretary of Commerce (Secretary) shall have general responsibility to carry out the Halibut Convention (Convention) between the United States and Canada, and that the Secretary shall adopt such regulations as may be necessary to carry out the purposes and objectives of the Convention and the Halibut Act. The Secretary's authority has been delegated to the AA. Section 5 of the Halibut Act also authorizes the Regional Fishery Management Council having authority for the geographic area concerned to develop regulations governing the Pacific halibut catch in U.S. Convention waters that are in addition to, but not in conflict with, regulations of the IPHC. Pursuant to this authority, NMFS requested the PFMC to allocate halibut catches should such allocation be necessary.

Catch Sharing Plan for Area 2A

The PFMC prepared annual Plans from 1988 to 1994 to allocate the halibut catch limit for Area 2A among treaty Indian, non-Indian commercial, and non-Indian sport fisheries in and off Washington, Oregon, and California. In 1995, NMFS implemented a Council-recommended long-term Plan (60 FR 14651, March 20, 1995). In each of the intervening years between 1995 and the present, minor revisions to the Plan have been made to adjust for the changing needs of the fisheries. The Plan allocates 35 percent of the Area 2A total allowable catch (TAC) to Washington treaty Indian tribes in Subarea 2A–1, and 65 percent to non-treaty fisheries in Area 2A, with the treaty fisheries divided into commercial fisheries, and ceremonial and subsistence fisheries. The allocation to non-treaty fisheries is divided into three shares, with the Washington sport fishery (north of the Columbia River) receiving 36.6 percent, the Oregon/California sport fishery receiving 31.7 percent, and the commercial fishery receiving 31.7 percent. The commercial fishery is further divided into two sectors; a directed (traditional longline) commercial fishery that is allocated 85 percent of the non-Indian commercial harvest, and 15 percent for harvests of halibut caught incidental to the salmon troll fishery. The directed commercial fishery in Area 2A is confined to southern Washington (south of 46°53'18'' N. lat.), Oregon and California. The Plan also divides the sport fisheries into seven geographic areas, each with separate allocations, seasons, and bag limits.