STAFF SUMMARY FOR OCTOBER 19-20, 2016

18. COAST YELLOW LEPTOSIPHON (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Receive DFW's 90-day evaluation report on the petition from California Native Plant Society to list coast yellow leptosiphon (*Leptosiphon croceus*) as an endangered species under the California Endangered Species Act (CESA).

Summary of Previous/Future Actions

- Receive petition — May 25, 2016
- FGC transmits petition to DFW — May 27, 2016
- Publish notice of receipt of petition — Jun 10, 2016
- DFW request for 30-day extension — Aug 24-25, 2016; Folsom
- **Today's DFW 90-day evaluation** — **Oct 19-20, 2016; Eureka**
- Determine if candidacy listing is warranted — Dec 7-8, 2016; San Diego

Background

A petition to list coast yellow leptosiphon, *Leptosiphon croceus*, was submitted by California Native Plant Society on May 25, 2016. Fish and Game Code Section 2073.5 requires that, within 90 days of receiving a petition, DFW shall evaluate the petition and submit to FGC a written evaluation with a recommendation. DFW requested an extension of up to 30 days to complete the evaluation which was granted by FGC at the Aug 2016 meeting in Folsom.

Based upon the information contained in the petition and other relevant information, DFW has determined that there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. DFW recommends that the petition be accepted and considered. In making this recommendation, DFW emphasizes that limited information exists within the petition and in DFW's possession relating to coast yellow leptosiphon population trends, life history, and the kind of habitat necessary for coast yellow leptosiphon's survival.

Significant Public Comments

This meeting is not intended for FGC discussion as the law requires the public to have 30 days to review the petition and public release of the evaluation report; however, under Bagley-Keene, FGC must allow public comment on this item if requested.

Recommendation

FGC staff: Under a motion to adopt the consent calendar, accept DFW's evaluation report to allow staff to provide notice of consideration of DFW's candidacy recommendation in December .

DFW: The petition be accepted and considered.

Exhibits

1. DFW Memo
2. DFW's evaluation of the petition

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 17-22.

State of California
Department of Fish and Wildlife

Memorandum

Date: September 26, 2016

To: Valerie Termini, Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Initial Evaluation of the Petition to List Coast Yellow Leptosiphon (*Leptosiphon croceus*) as Endangered under the California Endangered Species Act**

The Department of Fish and Wildlife (Department) has completed its initial evaluation of the Petition to list coast yellow leptosiphon as an endangered species under the California Endangered Species Act, Fish and Game Code section 2050 et seq. The Fish and Game Commission (Commission) received the Petition from Ms. Toni Corelli on May 25, 2016, accompanied by a letter of endorsement from the California Native Plant Society (CNPS) stating that CNPS should be considered a co-sponsor of the Petition. Pursuant to Fish and Game Code section 2073, the Commission referred the Petition to the Department on May 27, 2016. In accordance with Fish and Game Code section 2073.5, subdivision (b), on July 29, 2016, the Department requested a 30-day extension to further analyze the Petition and complete its evaluation report.

The Department completed the attached Petition evaluation report as required by Fish and Game Code section 2073.5. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).) The Department's evaluation report delineates the categories of information required in a petition, evaluates the sufficiency of the available scientific information regarding each of the Petition components, and incorporates additional relevant information that the Department possessed or received during the review period. Based upon the information contained in the petition and other relevant information in the Department's possession, the Department has determined that there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted and considered.

State of California
Natural Resources Agency
Department of Fish and Wildlife

REPORT TO THE FISH AND GAME COMMISSION

EVALUATION OF THE PETITION FROM MS. TONI CORELLI AND THE CALIFORNIA NATIVE PLANT SOCIETY TO LIST COAST YELLOW LEPTOSIPHON (*LEPTOSIPHON CROCEUS*) AS AN ENDANGERED SPECIES UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

September 2016

Leptosiphon croceus, CDFW photo by Cherilyn Burton

Charlton H. Bonham, Director
Department of Fish and Wildlife

INTRODUCTION

The subject of this evaluation report is a petition (Petition) to the California Fish and Game Commission (Commission) to list coast yellow leptosiphon (*Leptosiphon croceus*) as an endangered species under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.; hereafter CESA). Ms. Toni Corelli (Petitioner) submitted the Petition, dated May 23, 2016, to the Commission on May 25, 2016. The Petition was accompanied by a letter of endorsement from the California Native Plant Society (CNPS) stating that CNPS should be considered a co-sponsor of the Petition.

The Commission referred the Petition to the California Department of Fish and Wildlife (Department) pursuant to Fish and Game Code section 2073 for the initial evaluation required by Fish and Game Code section 2073.5 (Cal. Reg. Notice Register 2014, No. 37-Z, p. 1627). In accordance with Fish and Game Code section 2073.5 and section 670.1, subdivision (d)(1), of title 14 of the California Code of Regulations, the Department has prepared this Petition evaluation report. The purpose of this report is to inform the Commission as to whether the Petition, when considered with this evaluation report, provides sufficient scientific information to indicate that the petitioned action may be warranted and to recommend to the Commission whether the Petition should be accepted and considered. In its advisory capacity to the Commission, the Department's charge and focus is scientific. Consistent with controlling law, the Department bases its recommendation to the Commission on the sufficiency of scientific information.

PETITION PROCESS AND STANDARDS

CESA sets forth a two-step process for listing a species as threatened or endangered. First, the Commission determines whether to designate a species as a candidate for listing by determining whether a petition provides "sufficient information to indicate that the petitioned action may be warranted." (Fish & G. Code, § 2074.2, subd. (e)(2).) Second, if the Commission accepts a petition for consideration, the Commission is required to determine whether or not the petitioned action to list the species as endangered or threatened is warranted. (Fish & G. Code, § 2075.5, subd. (e).)

A petition to list a species under CESA must include "information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and other factors the petitioner deems relevant." (Fish & G. Code, § 2072.3; see also Cal. Code Regs., tit. 14, § 670.1, subd. (d).) The range of a species for the Department's petition evaluation and recommendation is the species' California range. (*Cal. Forestry Assn. v. Cal. Fish and Game Com.* (2007) 156 Cal. App. 4th 1535, 1551.)

Within ten days of receipt of a petition, the Commission must refer the petition to the Department for evaluation. (Fish & G. Code, § 2073.) The Commission must also publish notice that it received a petition in the California Regulatory Notice Register. (Fish & G. Code, § 2073.3.) Within 90 days of receipt of a petition, the Department must evaluate the petition on its face and in relation to other relevant scientific information and submit to the Commission a written evaluation report with one of the following recommendations:

- Based upon the information contained in the petition, there is not sufficient information to indicate that the petitioned action may be warranted, and the petition should be rejected.
- Based upon the information contained in the petition, there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered. (Fish & G. Code, § 2073.5, subds. (a)(1) and (2).)

The Department's recommendation to the Commission is based on an evaluation of whether or not a petition provides sufficient scientific information relevant to the petition components set forth in Fish and Game Code section 2072.3 and the California Code of Regulations, title 14, section 670.1, subdivision (d)(1).

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal. App. 4th 597, the California Court of Appeals addressed the parameters of the Commission's discretion in its determination of whether a petitioned action should be accepted for consideration pursuant to Fish and Game Code section 2074.2, subdivision (e), resulting in the species being listed as a candidate species. The Court began its discussion by describing the standard for accepting a petition for consideration previously set forth in *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal. App.4th 1104.

> As we explained in *Natural Resources Defense Council* [citation], "the term 'sufficient information' in section 2074.2 means that amount of information, when considered with the Department's written report and the comments received, that would lead a reasonable person to conclude the petitioned action may be warranted." The phrase "may be warranted" "is appropriately characterized as a 'substantial possibility that listing could occur.'" [citation] "Substantial possibility," in turn, means something more than the one-sided "reasonable possibility" test for an environmental impact report but does not require that listing be more likely than not.

(*Center for Biological Diversity*, *supra*, 166 Cal. App. 4th at pp. 609-10.)

The Court acknowledged that "the Commission is the finder of fact in the first instance in evaluating the information in the record." (*Center for Biological Diversity*, *supra*, 166 Cal. App. 4th at p. 611.) However, the Court clarified:

> [T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department under [Fish and Game Code] section 2074.6.

(*Ibid.*)

If the Commission accepts the petition for consideration, the second step requires the Department to produce within 12 months of the Commission's acceptance of the petition a peer-reviewed report based upon the best scientific information available that indicates whether the

petitioned action is warranted. (Fish & G. Code, § 2074.6.) The Commission, based on that report and other information in the administrative record, then determines whether listing the species as endangered or threatened is or is not warranted. (Fish & G. Code, § 2075.5.)

SUMMARY OF KEY FINDINGS

Having reviewed and evaluated the Petition on its face and in relation to other relevant information, including the material referenced in the Petition and other information possessed or received by the Department, the Department recommends that there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted and the Petition should be accepted and considered. In making this recommendation to the Commission, the Department emphasizes that limited information exists within the Petition and in the Department's possession relating to coast yellow leptosiphon population trends, life history, and the kind of habitat necessary for coast yellow leptosiphon's survival. However, the Department believes there is sufficient scientific information, particularly with respect to the most biologically critical factors (i.e. limited range, distribution, ongoing and potential habitat modification and destruction, and impacts from non-native plant species) to indicate that the petitioned action may be warranted. (See Fish & G. Code, § 2073.5, subd. (a)(2); Cal. Code Regs. tit. 14, § 670.1, subd. (d)(1).)

BACKGROUND ON COAST YELLOW LEPTOSIPHON

Coast yellow leptosiphon is a low-growing plant in the Phlox family (Polemoniaceae) first described by Alice Eastwood in 1904 as a "strictly local species" (Strother and Kersh 2016). It is an annual plant, which means it completes its life cycle within one year or one growing season. It is often much-branched from the base and grows to a height of 4 to 7 centimeters (1.5 to 2.75 inches). The inflorescence is in a dense, bracted head consisting of bright yellow flowers that generally appear from April to May (Patterson and Battaglia 2012, CNPS 2016).

Coast yellow leptosiphon is only known to exist in one colony on Vallemar Bluff in Moss Beach, San Mateo County, California (CNDDB 2016; Figure 1). This location is atop a sea bluff at the edge of the coastline on a marine terrace supported by sedimentary sandstone-derived soil, and is located within the Fitzgerald Marine Reserve. This habitat is highly influenced by wind, cool salt-laden air, and fog. The only known population of coast yellow leptosiphon occupies an area approximately 18 meters by 9 meters (60 feet by 30 feet) or 167 square meters (1,800 square feet) in size and is growing in an area that supports a diverse array of perennial grasses and annual and perennial forbs, including two other rare plant species: Blasdale's bent grass (*Agrostis blasdalei*) and johnny-nip (*Castilleja ambigua* var. *ambigua*). The location of this occurrence is shown in Figure 4 of the Petition, and in Figure 2 of this evaluation report.

EVALUATION OF THE PETITION

The discussion below presents the Department's component-specific evaluation of the Petition on its face and in relation to other relevant information received or possessed by the Department. (See Fish & G. Code, §§ 2072.3, 2073.5; Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).).

Species Occurrence Data Source: California Natural Diversity Database (July 2016)

0 1 2 4
Miles

Figure 1. Vicinity of Coast Yellow Leptosiphon

Figure 2. Coast Yellow Leptosiphon Occurrence

POPULATION TREND

The population trend of coast yellow leptosiphon is discussed in the following sections of the Petition: "Executive Summary" on page 3, "Occurrences" on pages 7 and 8, and "Population Trends and Threats" on pages 11 and 12.

The Petition states that coast yellow leptosiphon is currently known from a single, extant occurrence. The colony is limited to an 18 meter by 9 meter (60 foot by 30 foot) area located on Vallemar Bluff in Moss Beach, San Mateo County. The Petition notes that when Alice Eastwood first described this colony in 1904, she stated that "it covered the ground for several acres, but was seen in no other place...."

The Petition states that the earliest survey reported of this population was conducted in 1998 and estimated approximately 1,000 plants. The Petition also reports that a survey was conducted in 1999 and another in 2015. In 1999, the estimated number of plants was 400 to 500. In 2015, less than 500 plants were estimated. Compared to 1998, there was a decrease in the number of plants in 1999. The Petition notes that the decline could be explained by inherent natural demographic variation in this annual plant, and/or it could be the result of different sampling methods. It could also be due to the timing of surveys and variation in the environmental conditions such as the amount of antecedent rainfall.

The Petition reports yearly field observation visits were made between 2000 and 2014, but were not documented, and that the colony is observed as resilient.

The Department recognizes that annual plant population size can be highly variable depending upon environmental conditions and is thus very difficult to monitor directly to detect population trends. Annual and short-lived plant numbers can fluctuate greatly from year to year depending on seed production in previous years, germination of seedlings, and environmental conditions (e.g. timing and amount of rainfall) (Fischer and Matthies 1998; Harrison, Maron and Huxel 1999).

Scientific information on coast yellow leptosiphon's population trends is limited; however, the population that was once described as covering several acres (Corelli 2016) is now limited to an area covering approximately 167 square meters (1,800 square feet), clearly indicating a significant declining population trend. The Department concludes that the Petitioner has submitted sufficient information to demonstrate that the existing population of coast yellow leptosiphon has declined.

RANGE

Range is considered the general geographical area in which a species is found. For purposes of this petition evaluation, the range is the species' California range. (*Cal. Forestry Assn. v. Cal. Fish and Game Com., supra,* 156 Cal. App. 4th at p. 1551.) The range of coast yellow leptosiphon is discussed in the following sections of the Petition: "Executive Summary" on page 3, "Habitat" on page 5, "Distribution and Abundance" on page 6, and "Attempts to Locate Additional Populations" on pages 9 and 10.

The Petition relies on historical scientific collections and information within the California Natural Diversity Database (CNDDB), which indicate that coast yellow leptosiphon is restricted to one occurrence in Moss Beach, San Mateo County. The Petition notes that many plant specimens originally identified as coast yellow leptosiphon have been collected by botanists in Lake, Marin,

Mendocino, Monterey, San Francisco, San Luis Obispo, San Mateo, and Santa Cruz counties since as early as the 1890s, but that many of those specimens were misidentified and are actually other species of *Leptosiphon*. The Petition indicates that only the historic specimens collected from the occurrence at Moss Beach were correctly identified as coast yellow leptosiphon, and the specimens from other previously reported occurrences are of different species.

The Petition also notes that the Petitioner and other well-known botanists, including Robert Patterson and Robyn Battaglia, who are the co-authors of the treatment of the genus *Leptosiphon* in the Jepson Manual, Second Edition (Patterson and Battaglia 2012), have searched for other occurrences of coast yellow leptosiphon along the San Mateo coast for more than 15 years but have not located any additional populations. No other scientific collections of coast yellow leptosiphon exist from other locations in California. The available data indicate that coast yellow leptosiphon has always been limited in its range and restricted to one occurrence.

The Department concludes that the Petitioner has submitted sufficient information to describe coast yellow leptosiphon's current and historical geographic range, and to strongly infer that coast yellow leptosiphon's range has likely always been restricted.

DISTRIBUTION

Distribution is considered the spatial arrangement of populations or individuals within an area. The distribution of coast yellow leptosiphon is discussed in the following sections of the Petition: "Executive Summary" on page 3, "Distribution and Abundance" on pages 6 - 8, "Attempts to Locate Additional Populations" on page 10, and "Population Trends and Threats" on page 11.

The Petition specifically discusses the distribution of coast yellow leptosiphon on pages 6 and 7. The Petition relies on historical scientific collections, surveys, and other information from the CNDDB to describe the distribution of coast yellow leptosiphon. This information in the Petition indicates that the distribution of coast yellow leptosiphon is limited to one occurrence, located at Vallemar Bluff in Moss Beach, San Mateo County. The colony occupies an area approximately 18 meters by 9 meters (60 feet by 30 feet) or 167 square meters (1,800 square feet) in size at an elevation of 14 meters (46 feet) above mean sea level, atop a sea bluff at the edge of the coastline on a marine terrace supported by sedimentary sandstone-derived soil. The habitat is highly influenced by wind, cool salt-laden air, and fog. The colony is located on the Fitzgerald Marine Reserve, which is a San Mateo County park, and is also adjacent to the Montara State Marine Reserve, which is a California Marine Protected Area (MPA) that is located in California state waters below the mean high tide line. The Petition in Figure 4 on page 8 includes a detailed distribution map depicting this area and showing the location of the only known coast yellow leptosiphon population.

Department staff visited the population of coast yellow leptosiphon with the Petitioner on June 8, 2016. During the site visit, the Petitioner indicated that one individual coast yellow leptosiphon plant was identified outside of the mapped colony during a site visit on May 16, 2016, on adjacent private property proposed for development.

The Department concludes that the Petitioner has submitted sufficient information to describe coast yellow leptosiphon's current distribution, and demonstrate that it is very limited.

ABUNDANCE

The abundance of coast yellow leptosiphon is discussed in the following sections of the Petition: "Distribution and Abundance" on page 8 and "Population Trends and Threats" on pages 11 and 12.

The Petition states that a census was conducted in 1999 and in May 2015 utilizing the same survey technique. In 1999, the estimated number of plants was 400-500. In 2015, fewer than 500 plants were estimated. The Petition also states that the earliest survey reported by R. Battaglia was conducted in 1998, and approximately 1,000 plants were estimated in that survey. The Petition states that the 1999 and 2015 surveys utilized a roughly similar method, but the 1998 survey utilized a different sampling scheme. The Petition also notes that yearly field observation visits occurred between 2000 and 2014 but without formal surveys and documentation.

The Petitioner speculates that coast yellow leptosiphon may have been more abundant when it was first mentioned by Alice Eastwood in 1904. She stated "it covered the ground for several acres, but was seen in no other place, and is probably a strictly local species...The great masses almost monopolized the ground." The Petition also states that since 1904, most of California's coastal prairie habitat, which supports coast yellow leptosiphon, has been extirpated as a result of agriculture, urban development, habitat fragmentation, and non-native plant encroachment.

The Department concludes that the Petitioner has submitted sufficient information to describe the known abundance of coast yellow leptosiphon, and demonstrate that it has limited abundance at its only known occurrence.

LIFE HISTORY

The life history of coast yellow leptosiphon is discussed in the following sections of the Petition: "Executive Summary" on page 3, "Description" on pages 3 - 4, "Phenology" on page 4, and "Pollination" on page 5.

The Petition notes that coast yellow leptosiphon is an annual plant that flowers from April to May (Patterson and Battaglia 2012; CNPS 2016). The Petition states that pollination studies conducted on other species of *Leptosiphon* have shown them to be predominantly bee fly-(Bombyliidae) and wind-pollinated. The Petition indicates that other potential pollinators such as a beetle (*Listrus* sp.) in the Melydridae family (soft-wing flower beetles) have been recently observed on coast yellow leptosiphon.

While there is limited scientific information available that is specific to coast yellow leptosiphon's life history, the Department nonetheless concludes that the Petitioner has submitted sufficient information to describe the known life history of coast yellow leptosiphon.

KIND OF HABITAT NECESSARY FOR SURVIVAL

The kind of habitat necessary for coast yellow leptosiphon survival is discussed in the following sections of the Petition: "Habitat" on page 5 and "Preservation of Potential Habitat" on page 13.

The Petition includes a discussion of currently occupied coast yellow leptosiphon habitat on page 5 and potential coast yellow leptosiphon habitat on page 13. The Petition indicates that

coast yellow leptosiphon grows at the edge of the coastline on a marine terrace supported by sedimentary sandstone-derived soil, in habitat that is highly influenced by wind, cool salt-laden air, and fog. The Petition notes that of the natural communities on the California Department of Fish and Wildlife Hierarchical List of Natural Communities with Holland Types (CDFW 2010), the most similar association for coast yellow leptosiphon is Coastal Terrace Prairie. The Petition further describes coastal prairie along the San Mateo Coast as being characterized by low-growing perennial grasses and annual and perennial forbs.

While there is limited scientific information available regarding the kind of habitat necessary for coast yellow leptosiphon survival, the Department nonetheless concludes that the Petitioner has submitted sufficient information on the kind of habitat necessary for coast yellow leptosiphon survival. The Department also concludes the Petition has also demonstrated that this type of habitat has limited distribution and continues to be impacted by the invasion of non-native plant species and other habitat modification and destruction, as discussed below.

FACTORS AFFECTING THE ABILITY TO SURVIVE AND REPRODUCE

The factors affecting the ability of coast yellow leptosiphon to survive and reproduce are discussed in the following sections of the Petition: "Executive Summary" on page 3, "Habitat" on page 5, "Population Trends and Threats" on pages 11 and 12, "Adequate Buffering" on page 13, and "Research Needs" on page 15. The Petition indicates that the primary factors affecting the ability of coast yellow leptosiphon to survive and reproduce are (1) habitat destruction through potential development; (2) competition from non-native plants; and (3) other human-related activities. The Petition also lists bluff top erosion and rising ocean levels as additional threats. These factors are discussed separately under the headings below.

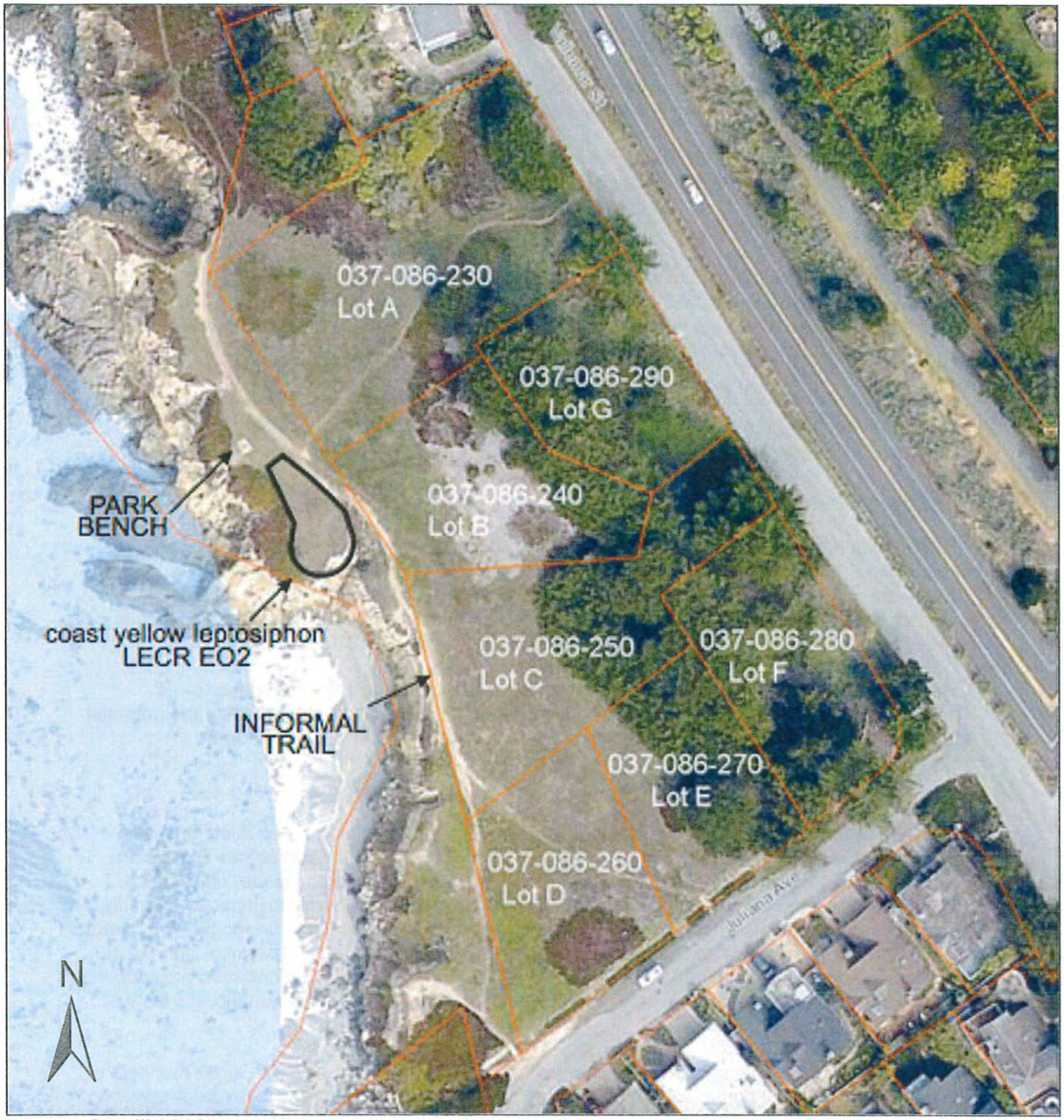
Habitat destruction through potential development:

The Petition notes that the primary threat to this species is habitat destruction through potential development. The Petition states that coast yellow leptosiphon has been buffered from impacts from the adjacent highway by the 1.0-hectare (2.5-acre) undeveloped coastal prairie that provides a natural buffer between Highway 1 and the coast yellow leptosiphon population. However, there is now a proposed development plan to build six houses on the 1.0 hectare (2.5 acres) of coastal prairie habitat immediately adjacent to the coast yellow leptosiphon population. The lot plan is shown on Figure 6 in the Petition, and on Figure 3 of this report.

The Department has also considered other information related to the threats associated with habitat modification and destruction. Department staff visited the population with the Petitioner on June 8, 2016, and observed that proposed development may cause indirect impacts such as establishing and expanding non-native plant populations, changing hydrologic conditions due to increased or altered runoff patterns, and changing soil chemistry from inadvertent or intentional application of herbicides, fertilizers, or pesticides. Additionally, one individual plant was identified on the property proposed for development on May 16, 2016. Since annual plants reproduce by seed, it can be assumed that a seed bank is present in the area where this plant was identified, and this species could be directly impacted by the proposed development.

Competition from non-native plants:

The Petition also includes a discussion of threats to coast yellow leptosiphon associated with competition from non-native plants, especially the invasive ice plant (*Carpobrotus edulis*) that is a highly ranked noxious weed (CAL-IPC 2016). The Petition notes that most coastal prairie



Source: Corelli 2016 No Scale

Figure 3. Proposed Development in Relation to the Coast Yellow Leptosiphon Occurrence

habitat has been extirpated by non-native plant encroachment, agriculture, urban development, and habitat fragmentation (Ford and Hayes 2007).

Department staff observed ice plant growing on the bluff adjacent to the coast yellow leptosiphon population and encroaching into the population (see Figure 4).

Other human related activities:

The Petition notes that other human activities threaten the population of coast yellow leptosiphon. The Petition states that the population is insufficiently buffered from direct impacts on the bluff top resulting from human use of an informal trail and a park bench. In addition, the proposed development would likely result in increased human activity in the area.

Department staff visited the population of coast yellow leptosiphon with the Petitioner on June 8, 2016, and observed the potential for impacts from human disturbance, including the trail, disturbance surrounding the park bench, and visitors walking on the trail near the population.

Bluff top erosion and rising ocean levels:

The Petition notes that bluff top erosion and rising ocean levels pose a threat to coast yellow leptosiphon. The Petition states that this colony has been steadily reduced by cliff erosion and that in areas where the coast erodes easily, sea-level rise will likely accelerate shoreline recession due to erosion. The Petition notes that mean sea level along the California coast is expected to rise from 1.0 to 1.4 meter (3.3 to 4.6 feet) by the year 2100 (Heberger et al. 2009).

The Department concludes that the Petitioner has submitted sufficient information to demonstrate that coast yellow leptosiphon is subject to numerous threats that have the potential to adversely affect its ability to maintain self-sustaining populations within California.

DEGREE AND IMMEDIACY OF THREAT

The degree and immediacy of threat to coast yellow leptosiphon is discussed in the following sections of the Petition: "Executive Summary" on page 3, "Population Trends and Threats" on pages 11 and 12, "Ecological Management" on page 14, and "Research Needs" on page 15. The discussion of the degree and immediacy of threats to coast yellow leptosiphon is primarily based on an existing proposal to develop the land immediately adjacent to the population, direct observation of destruction and degradation of existing habitat, coastal bluff erosion, and direct observation of encroachment of invasive plant species populations. The information provided in the Petition demonstrates that coast yellow leptosiphon is under an immediate threat from the factors described in the Petition.

The Department also recognizes the vulnerability of extinction for species with small numbers of populations and small population sizes, such as coast yellow leptosiphon, due to stochastic (chance) demographic and environmental and/or genetic events (Shaffer 1981, 1987; Primack 2006; Groom et al. 2006). The Department also recognizes that such species may also be subject to increased genetic drift and inbreeding (Menges 1991; Ellstrand and Elam 1993).

The Department concludes that the Petitioner has submitted sufficient information to demonstrate that the only known population of coast yellow leptosiphon faces a high degree

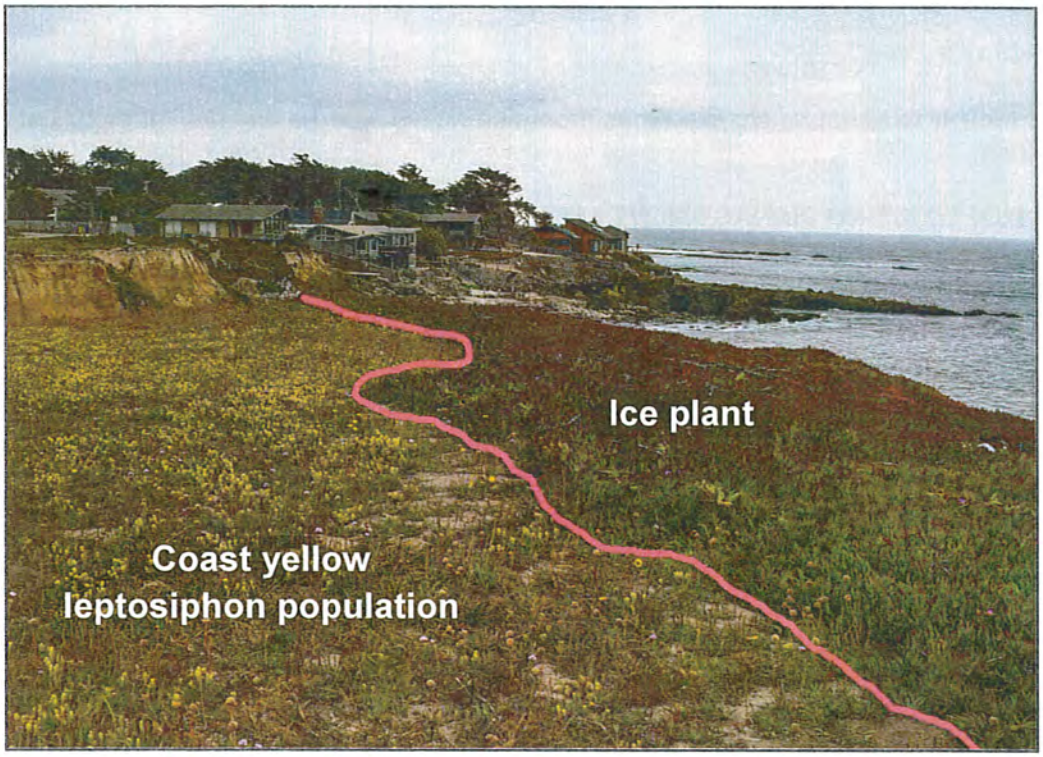


Photo 1: Ice plant encroachment into coast yellow leptosiphon population

Photo 2: Approximate extent of coast yellow leptosiphon population

Figure 4. Photos of Coast Yellow Leptosiphon Occurrence on June 8, 2016

and immediacy of threat by encroachment from non-native species and habitat modification and destruction.

IMPACT OF EXISTING MANAGEMENT EFFORTS

The impact of existing management efforts on coast yellow leptosiphon is discussed in the "Current Management Activities" section of the Petition on page 12.

The Petition includes a discussion of the County of San Mateo's Master Plan for the Fitzgerald Marine Reserve, which was released in May 2002. The Petition notes that the area where coast yellow leptosiphon occurs was not surveyed and none of the three rare plants that occur here, including coast yellow leptosiphon, are accounted for in the Master Plan. The Petition notes that the San Mateo County Parks Department has been contacted and informed about these rare plant locations and habitat, and San Mateo County will survey the property in 2016 (Corelli 2016). The Petition also indicates that the Master Plan will be revised to include management and protection of coast yellow leptosiphon and other rare plants at the Fitzgerald Marine Reserve. The Petition does not provide any information on land management activities that may be taking place or are likely to occur.

While there is limited scientific information available regarding the impact of existing management efforts on coast yellow leptosiphon, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate that existing management may not be adequate to maintain self-sustaining populations of coast yellow leptosiphon in California.

SUGGESTIONS FOR FUTURE MANAGEMENT

Suggestions for future management of coast yellow leptosiphon are discussed in the following sections of the Petition: "Potential Management Activities" on pages 12 and 13 and "Ecological Management" on pages 14 and 15.

The Petition's discussion of potential management activities includes; (1) listing the species under CESA, (2) adequate buffering, (3) preservation of potential habitat, (4) ecological management, (5) research, and (6) monitoring. On page 13, the Petition notes that principles of conservation biology emphasize the need to preserve both occupied habitat and unoccupied potential habitat. The Petition also notes that there is no current evidence that coast yellow leptosiphon can survive outside of its current distribution since it occurs at no other location. However, the Petition states that an extent of disturbed coastal terrace bluff top at Montara State Beach approximately 2.1 kilometers (1.3 miles) north of the coast yellow leptosiphon population should be examined for restoration potential to provide habitat for this species. The Petition also recommends collecting and storing seed at a reputable seed bank and conducting research to determine how seeds should be used. The Department considers these suggestions to be possible valid components for the future management of coast yellow leptosiphon.

The Department concludes that the Petitioner has submitted sufficient information to demonstrate that additional management efforts may aid in maintaining self-sustaining populations of coast yellow leptosiphon in California.

AVAILABILITY AND SOURCES OF INFORMATION

The sources of information for the Petition are included in the "Source Information" section of the Petition on pages 16 through 18. The sources of information for the Petition include published literature and other sources. The sources listed in the Petition were not included with the Petition when submitted to the Commission. The Petitioner provided the Department with an electronic copy of the Fitzgerald Marine Reserve Master Plan (County of San Mateo, Parks Department 2002), a letter report from Zander Environmental Consultants to the developers of the adjacent property (Zander 2015), and a site development plan on June 8, 2016, (Pearson Design Group 2015). The availability of information was not provided in the Petition.

The Department concludes that the Petitioner has submitted sufficient information on the sources of information used in the Petition regarding coast yellow leptosiphon. Although the Petition does not include the availability of information, sources provided are available from the Petitioner or other sources.

DISTRIBUTION MAP

As described in the Distribution section of this evaluation report, Figure 4 on page 8 of the Petition includes a map showing the location of the only known coast yellow leptosiphon population. The Department concludes that the Petition includes a detailed distribution map.

RECOMMENDATION TO THE COMMISSION

Pursuant to section 2073.5 of the Fish and Game Code, the Department has evaluated the Petition on its face and in relation to other relevant information the Department possesses or received. In completing its petition evaluation, the Department finds there is sufficient scientific information to indicate that the petitioned action may be warranted, and recommends the Commission accept and consider the Petition.

REFERENCES

The following references were used during the Department's Petition evaluation presented in this report. These references include those provided by the Petitioner, and additional sources used by the Department for this report.

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PERSONAL COMMUNICATION

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