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Dated: February 10, 2011.

Thomas L. Strickland,

Assistant Secretary for Fish and Wildlife and Parks.

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DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17****[Docket No. FWS-R1-ES-2010-0096; MO 92210-0-0008]****Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Sand Verbena Moth as Endangered or Threatened****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service, announce a 90-day finding on a petition to list the sand verbena moth, *Copablepharon fuscum*, as endangered or threatened under the Endangered Species Act of 1973, as amended. Based on our review, we find the petition presents substantial information indicating that listing the sand verbena moth may be warranted. Therefore, with the publication of this notice, we are initiating a review of the status of the species to determine if listing the sand verbena moth as endangered or threatened is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding this species. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before April 18, 2011. Please note that if you are using the Federal eRulemaking Portal (see **ADDRESSES** section, below), the deadline for submitting an electronic comment is 11:59 p.m. Eastern Time on this date. After April 18, 2011, you must submit information directly to the Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT** section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. In the box that reads "Enter Keyword or ID," enter the Docket number for this finding, which is FWS-R1-ES-2010-0096. Check the box that reads "Open for Comment/ Submission," and then click the Search button. You should then see an icon that reads "Submit a Comment." Please ensure that you have found the correct document before submitting your comment.

- *U.S. mail or hand-delivery:* Public Comments Processing, Attn: FWS-R1-ES-2010-0096; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will post all information we receive on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Request for Information section below for more details).

FOR FURTHER INFORMATION CONTACT: Ken S. Berg, Manager, Washington Fish and Wildlife Office, 510 Desmond Drive, Lacey, WA 98503; by telephone (360) 753-9440; or by facsimile (360) 534-9331. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:**Request for Information**

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the sand verbena moth from governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties. We seek information on:

- (1) The species' biology, range, and population trends, including:
 - (a) Habitat requirements for feeding, breeding, and sheltering;
 - (b) Genetics and taxonomy;
 - (c) Historical and current range, including distribution patterns;
 - (d) Historical and current population levels, and current and projected trends; and
 - (e) Past and ongoing conservation measures for the species, its habitat, or both.
- (2) The factors that are the basis for making a listing determination for a

species under section 4(a) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), which are:

- (a) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (b) Overutilization for commercial, recreational, scientific, or educational purposes;
- (c) Disease or predation;
- (d) The inadequacy of existing regulatory mechanisms; or
- (e) Other natural or manmade factors affecting its continued existence.

(3) Information on yellow sand verbena (*Abronia latifolia*), the host plant for the sand verbena moth, such as patch size and distribution, including distribution of known or potential sand verbena moth habitats; information on ongoing or future activities in potential sand verbena moth habitat; information on yellow sand verbena population trends; and information on other native or nonnative plant distributions, particularly nonnative beachgrass (*Ammophila* spp.), in the range of the yellow sand verbena, especially where the sand verbena moth occurs.

If, after the status review, we determine that listing the sand verbena moth is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, within the geographical range currently occupied by the sand verbena moth, we request data and information on:

- (1) What may constitute "physical or biological features essential to the conservation of the species";
- (2) Where such physical or biological features are currently found; and
- (3) Whether any of these features may require special management considerations or protection.

In addition, we request data and information on whether there are any specific areas outside the geographical area occupied by the species that may be considered essential to the conservation of the species. Please provide specific comments and information as to what, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and explain why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under

consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your information concerning this status review by one of the methods listed in the **ADDRESSES** section. We will not accept comments sent by e-mail or fax or to an address not listed in the **ADDRESSES** section of this document. If you submit information via <http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the Web site. If you submit a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

Information and supporting documentation that we received and used in preparing this finding is available for you to review at <http://www.regulations.gov>, or you may make an appointment during normal business hours at the U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office (*see* **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(A) of the Act (16 U.S.C. 1533(b)(3)(A)) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information readily available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information with regard to a 90-day petition finding is “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted” (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly conduct a species status review, which we

subsequently summarize in our 12-month finding.

Petition History

On February 17, 2010, we received a petition, dated February 4, 2010, from WildEarth Guardians and the Xerces Society for Invertebrate Conservation requesting that the sand verbena moth be listed as endangered or threatened throughout its entire range and that critical habitat be designated under the Act (WildEarth Guardians and the Xerces Society for Invertebrate Conservation 2010, hereafter cited as “Petition”). The petition clearly identified itself as such and included the requisite identification information for the petitioner(s), as required by 50 CFR 424.14(a). In a March 22, 2010, letter to the petitioners, we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. We also stated that due to court orders and judicially approved settlement agreements for other listing and critical habitat determinations under the Act that required nearly all of our listing and critical habitat funding for fiscal year 2010, we would not be able to further address the petition at that time but would complete the action when workload and funding allowed. On May 26, 2010, we received a notice of violation with intent to file suit, dated May 20, 2010, from WildEarth Guardians and the Xerces Society requesting that we make a 90-day finding on the listing petition within the next 60 days. On July 14, 2010, we notified the petitioners that funding became available and we were currently reviewing the petition. This finding addresses the petition.

Species Information

The sand verbena moth was first described and collected in 1995 (Troubridge and Crabo 1995, pp. 87–90), and is the only species of the genus *Copablepharon* known to occur west of the Cascade Mountains (Troubridge and Crabo 1995, p. 89; Committee on the Status of Endangered Wildlife in Canada (COSEWIC) 2003, p. 4). The adults of the sand verbena moth can be easily identified by their distinctive physical characteristics. The sand verbena moth is dark in color with yellow and black forewing lines and is the only species within the genus with a predominantly gray underside to its forewing and hindwing (Troubridge and Crabo 1995, p. 89). Total wingspan varies from 35 to 40 millimeters (mm)

(1.38 to 1.47 inches (in)) in length (COSEWIC 2003, p. 5).

There is very little information on the biology and habitat requirements of the sand verbena moth (British Columbia Invertebrates Recovery Team (BCIRT) 2008, pp. 3, 5) and data on its distribution are known to be incomplete (NatureServe 2010 [online]). Virtually all of the available information is based on the original description of the species (Troubridge and Crabo 1995, pp. 87–90) and observations of the four metapopulations located in British Columbia (*see* “Distribution and Status” below). The adult sand verbena moth has a lifespan of 5 to 14 days (Species At Risk Act (SARA) Registry 2009, p. 4) and one flight period that occurs from mid-May to late July (Troubridge and Crabo 1995, p. 89; COSEWIC 2003, p. 16). Adults have been observed at dusk and early evening (COSEWIC 2003, p. 16) and lay eggs singly or in groups on leaves or flowers of its only host plant, the yellow sand verbena. Larvae feed exclusively at night on the leaves and flowers of the plant (COSEWIC 2003, pp. 5, 16) and burrow in the sand during the day (Troubridge and Crabo 1995, p. 89). Larvae are green in color in early instars (developmental stages) and turn brown with pale longitudinal stripes in late instars. Mature larvae are found in the sand below the host plant and are dormant during the winter (SARA Registry 2009, p. 4). Pupation occurs between late April and late May. Pupae measure approximately 20 mm (0.8 in) in length, are brown in color, and are protected by a thin layer of sand particles. Pupae have a distinct external compartment in which the proboscis develops (COSEWIC 2003, pp. 5, 16).

Distribution and Status

The sand verbena moth was first described by Troubridge and Crabo (1995, pp. 87–90) after its discovery in Deception Pass State Park, Washington, and Saanichton, British Columbia. Troubridge and Crabo (1995, p. 89) state, “where it occurs, *C. fuscum* can be relatively abundant,” and “it was the most common noctuid at Deception Pass State Park, Washington.” Currently, the sand verbena moth has been collected only in the Georgia Basin-Puget Sound Region in British Columbia and Washington, but this area has not been thoroughly surveyed for the species, and roughly 90 percent of the range of its host plant, yellow sand verbena, has not been surveyed for the sand verbena moth. Because the range of the sand verbena moth’s host plant extends along the coast from British Columbia southward into California, additional

sampling in Washington, Oregon, and California is needed to evaluate the full extent of the range of the sand verbena moth.

Exactly how many populations of the sand verbena moth are currently known is unclear. Although the petitioners at times state that 10 populations are known, 4 in British Columbia and 6 in Washington (e.g., Petition, pp. 1, 6, 8), they also point out that not all of these sites may be separate occurrences, and at one point list a total of 9 populations, 4 in British Columbia and 5 in Washington (Petition, p. 9). We are aware of nine populations of the sand verbena moth, distributed over a total of approximately 4,850 square kilometers (km²) (1,873 square miles (mi²)). In Canada, surveys conducted between 2001 and 2007 confirmed the presence of the sand verbena moth on Goose Spit, Sandy Island, Cordova Spit/Island View Beach, and James Island. All but one of these locations occur on public, military, and indigenous lands. The James Island population, discovered in 2007, occurs entirely on private land. The BCIRT considers each location to be a metapopulation that is defined by a combination of many subpopulations (BCIRT 2008, p. 2). In Washington in the United States, five populations have been confirmed. Although according to the COSEWIC (2003, p. 15) all known U.S. locations occur primarily on public or military lands, we only know the specific locations for sites on Dungeness National Wildlife Refuge in Sequim, Deception Pass State Park on Whidbey Island, and San Juan Island National Historical Park (San Juan Island NHP) on San Juan Island. Two other populations are located in Port Townsend and Whidbey Island; however, we have no information regarding their exact locations (COSEWIC 2003).

There is also conflicting information as to whether the known populations are isolated from one another. Although the petitioners state, "all populations are isolated from each other," citing COSEWIC 2003 and BCIRT 2008 (Petition, p. 7), the petitioners also cite NatureServe (2009) as indicating that not all of the known sites may be separate occurrences.

The COSEWIC (2003, p. 8) describes the methodology for surveys conducted in British Columbia and Washington between 2001 and 2002. In most cases, a single light trap was set from dusk to dawn next to patches of yellow sand verbena during the sand verbena moth's flight season. Occasionally, two traps were set, and some hand-netting occurred. In British Columbia, 19 locations were surveyed for the sand

verbena moth over a period of 19 days between May 20 and August 14, 2001. A total of nine sand verbena moths were collected at two of these locations (COSEWIC 2003, pp. 32–36). In 2002, seven locations were surveyed in British Columbia between May 30 and June 15. During this period, one sand verbena moth was collected at a single location in the Comcox area over a period of 6 days (COSEWIC 2003, pp. 36–39). In the Puget Sound Region in Washington, surveys were conducted between June 6 and June 12, 2002. A total of 36 sand verbena moths were collected at 5 of the 9 locations surveyed over a period of 4 days (COSEWIC 2003, pp. 36–38). According to the COSEWIC (2003, p. 9), one survey was conducted in Oregon in 2002. Light-trapping was not possible, and the sand verbena moth was not detected by hand-searching flowering patches of yellow sand verbena. The COSEWIC (2003, p. 9) did not present any additional information or citation regarding this survey, and concluded that additional sampling is needed to determine if the sand verbena moth is present in Oregon and California in areas where its host plant is found.

According to the COSEWIC (2003, p. 18), the use of data collected from light traps is an inappropriate method for estimating population sizes or characterizing population densities of the sand verbena moth. Thus, there are no reliable population estimates for British Columbia populations (BCIRT 2008, p. 2) or populations in the United States (NatureServe 2009 [online]). Because of the recent discovery of the sand verbena moth, there is no historical information on population sizes, nor is there any evidence of any decline. The petitioners acknowledge, "because this species was only recently described, information on historical population abundance that would inform whether or not this species has declined over time is unavailable" (Petition, p. 7).

The sand verbena moth is listed as endangered under the Species At Risk Act in British Columbia (SARA Registry 2009, p. 1) and is a candidate species in the State of Washington (Washington Department of Fish and Wildlife (WDFW) 2010 [online]). NatureServe (2009 [online]) ranks the species as critically imperiled to imperiled (G1G2). NatureServe notes this global rank, "is explicitly based on the conclusion by COSEWIC and others that the purported range is essentially correct and that the moth is not nearly as widespread as its foodplant" (NatureServe 2009 [online]).

Although the petitioners contend the moth is facing an "accelerating decline,"

they offer no support for this statement (Petition, p. 2). Furthermore, the petitioners cite NatureServe (2009) as describing global long-term declines of 75 to 90 percent for the sand verbena moth. Although NatureServe does classify the global long-term trend for the species as "large decline (75–90%)," it is unclear how NatureServe may have arrived at this conclusion, as the moth was only discovered in 1995, and there are no reliable quantitative data regarding sand verbena moth population sizes or trends. The projected decline is apparently an inferred consequence of presumed habitat loss due to dune stabilization and exotic plants, but no documentation is provided to support this inference (NatureServe 2010 [online]). The petitioners further suggest that possible declines in the host plant, yellow sand verbena, may have resulted in declines in the sand verbena moth (Petition, p. 7). They cite COSEWIC (2003) as stating that yellow sand verbena populations in many sites have likely declined substantially over the past 50 years because of vegetation changes. However, we note that NatureServe (2010 [online]) ranks the yellow sand verbena as "globally secure."

Habitat

The yellow sand verbena occurs in spits, dunes, and sandy coastal habitat that lack dense plant cover (COSEWIC 2003, p. 11). This species is distributed from the Queen Charlotte Islands, British Columbia, to Santa Barbara County, California (Hickman 1993, p. 769). NatureServe (2010 [online]) ranks the yellow sand verbena as globally secure (G5). This plant is considered to be vulnerable in Oregon and British Columbia, but its conservation status has not been assessed in Washington or California (NatureServe 2010, [online]). Yellow sand verbena is not listed by the Washington Department of Natural Resources, Natural Heritage Program (COSEWIC 2003, pp. v-vi), nor is it considered a sensitive species by the National Park Service or Forest Service (Thomas 2010, pers. comm.).

The patch size, structure, and configuration of yellow sand verbena necessary to sustain populations of sand verbena moth are poorly understood (BCIRT 2008, pp. 3, 5). To date, there is no quantitative or qualitative measure of habitat at known sand verbena moth locations in Washington. At known locations in British Columbia, the sand verbena moth occurs in small satellite patches within 200 m (656 ft), or so, of larger populations of yellow sand verbena. Isolated small, sparse, or non-

flowering populations of the plants do not appear to support the sand verbena moth (NatureServe 2009 [online]). In addition, the sand verbena moth has not been collected in yellow sand verbena patches less than 500 square meters (m²) (5,382 square feet (ft²)) (BCIRT 2008, pp. 3, 5); however, the BCIRT cautions, “this statement is only quantitative and neither indicates this area as a minimum patch size nor suggests that patches should be managed to this size.”

Evaluation of Information for This Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. 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:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the exposure of the species to a particular factor to evaluate whether the species may respond to that factor in a way that causes actual impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat and we attempt to determine how significant a threat it is. The threat may be significant if it drives, or contributes to, the risk of extinction of the species such that the species may warrant listing as endangered or threatened as those terms are defined by the Act. The identification of factors that could impact a species negatively may not be sufficient to compel a finding that substantial information has been presented suggesting that listing may be warranted. The information should contain evidence or the reasonable extrapolation that any factor(s) may be an operative threat that acts on the species to the point that the species may meet the definition of endangered or threatened under the Act.

In making this 90-day finding, we evaluated whether information regarding threats to the sand verbena moth, based on information presented

in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

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

Dune Stabilization

Information Provided in the Petition

According to the petitioners, yellow sand verbena requires chronic disturbance to maintain long-term populations of the sand verbena moth (Petition, p. 10, citing COSEWIC 2003, p. 19). The petitioners state stabilization of dunes by both native and introduced species, such as the nonnative European beachgrass, *Ammophila arenaria*, degrades habitat for yellow sand verbena and consequently the sand verbena moth as well (Petition, p. 10). The petitioners further state that nonnative beachgrass displaces yellow sand verbena, although no supporting documentation is provided for this claim (Petition, p. 10). The petitioners maintain (Petition, p. 10, citing BCIRT 2008, p. 19) this threat is severe at all locations in British Columbia and most locations in Washington. Troubridge and Crabo (cited as 1995, p. 99, in Petition, p. 10) note European beachgrass has stabilized most of the dune habitat on the Pacific Coast, replacing native vegetation. In addition, the petitioners cite nonnative beachgrass as dominating most Washington dunes (Petition, p. 10, citing Washington State Department of Ecology pp. 1–2, [online]).

Evaluation of Information Provided in the Petition and Available in Service Files

We reviewed the information presented in the petition and information in our files and found no information indicating that dune stabilization (referred to as “vegetation stabilization” by the petitioners) is a significant threat at sand verbena moth locations in Washington. Only one reference, L. Crabo (2010, pers. comm.), was presented in the petition regarding the threat of beachgrass at known sand verbena moth locations in the Puget Sound Region of Washington (Petition, p. 10). According to the petitioners, L. Crabo noted that the dunes at Deception Pass State Park have been less affected by European beachgrass and Scotch broom (*Cytisus scoparius*) than some of the other sites (Petition, p. 10). The petitioners did not document this communication (S. Jepsen, Xerces

Society, 2010, pers. comm.); thus we are unable to verify and assess this claim or any other information that was referenced as “L. Crabo 2010, pers. comm.” in the petition. According to the Washington State Department of Ecology (pp. 1–2, [online]), both American beachgrass (*Ammophila breviligulata*) and European beachgrass have changed sediment transport, plant communities, and habitat along the southwest coast of Washington. Currently, American beachgrass dominates most foredunes, from the mouth of the Columbia River to the mouth of the Copalis River (Washington State Department of Ecology p. 2, [online]). The current distribution of European beachgrass was not discussed, nor was information provided regarding beachgrass in the Puget Sound Region of Washington (Washington State Department of Ecology pp. 1–2, [online]).

We acknowledge that beachgrass may outcompete native dune species, including yellow sand verbena. Wiedemann and Pickart (1996, p. 287) state that beachgrass has outcompeted native plant species and drastically reduced their habitat. However, displacement has so far been demonstrated indirectly by correlation studies between beachgrass and species diversity (cited as Barbour *et al.* 1976, in Wiedmann and Pickart 1996, p. 295), and responses to beachgrass differ among foredune species (cited as Boyd 1992, in Wiedmann and Pickart 1996, p. 295).

At occupied sand verbena moth locations in Washington, the total area of beachgrass and yellow sand verbena available to the sand verbena moth has not been quantified. Limited information is available for other nearby sites that support both yellow sand verbena and beachgrass. At Graveyard Spit in Dungeness National Wildlife Refuge (NWR), yellow sand verbena is distributed throughout the refuge, but does not appear to be outcompeted by either native or nonnative grasses. This spit is located in a designated research natural area and supports a relatively intact native beach strand community (Thomas 2010, pers. comm.). On Protection Island NWR, approximately 42 acres on Violet Spit support beachgrass. Yellow sand verbena has also been noted on Protection Island, and beachgrass is reported to be dense at this location; however, comprehensive surveys of either yellow sand verbena or beachgrass have not been completed, as the area is avoided during flowering due to its overlap in timing with the Salish Sea’s largest nesting colonies of glaucous-winged

gulls (*Larus glaucescens*). The refuge is planning native strand restoration at this site. On San Juan Island NWR, beachgrass has been noted on Smith Island, and no vegetation occurs on Minor Spit. The density of beachgrass and yellow sand verbena available to the sand verbena moth has not been quantified at these locations (Thomas 2010, pers. comm.).

Although not currently a known location for sand verbena moth, we received a yellow sand verbena inventory report from Willapa NWR, located in southwest Washington. In 2006, all sandy beaches from the Columbia River North Jetty to Leadbetter Point were surveyed. A total of 1,003 mature plants and 2,447 immature plants were documented over the course of the survey (Lewis 2006, unnumbered p. 2). Lewis noted the shape of a few large plants was altered by encroaching beachgrass. The beachgrass appeared to shade out yellow sand verbena and reduce its vigor, and thus may outcompete it. Yellow sand verbena plants were not documented in areas or zones established by beachgrass (Lewis 2006, unnumbered p. 3).

In British Columbia, dune stabilization has been identified as the primary threat to yellow sand verbena and, therefore, to the sand verbena moth (COSEWIC 2003, p. 19; NatureServe 2009, [online]). According to COSEWIC (2003, p. 14), the introduction of invasive nonnative plants, such as Scotch broom and exotic grasses, has accelerated dune stabilization at sand verbena moth locations in British Columbia.

In summary, we have little information to suggest that dune stabilization may pose a significant threat to the sand verbena moth within its known range in the State of Washington, and whether the sand verbena moth may occur elsewhere on the Pacific Coast of the United States where its host plant is found is uncertain. However, we acknowledge that the Committee on the Status of Endangered Wildlife in Canada, which we consider to be a reliable source of scientific information, considers dune stabilization to be a significant threat to the species within its range in British Columbia. Therefore, based on this information, we find that the petition presents substantial scientific or commercial information indicating that dune stabilization may pose a threat to the sand verbena moth such that the petitioned action may be warranted.

Habitat Conversion

Information Provided in the Petition

The petitioners state that at least four sand verbena moth locations, three in British Columbia and one in Washington, have experienced habitat reduction due to park infrastructure, and additionally they claim that military buildings and marine development may result in reduced moth habitat as well (Petition, p. 10). According to the petition (2010, p. 10), L. Crabo (2010, pers. comm.) stated, "a parking lot has already converted sand dune habitat in the Deception Pass State Park location, and a housing development occurs nearby; only about 300 yards of beach dune habitat remain at the type locality for the sand verbena moth, making this species vulnerable to extirpation at this location." We were unable to verify and assess the petitioners' reference, as no documentation of this personal communication exists (Jepsen 2010, pers. comm.).

Evaluation of Information Provided in the Petition and Available in Service Files

Sand verbena moth and yellow sand verbena populations that occur in U.S. National Park lands and National Wildlife Refuges are generally protected from development; thus habitat conversion due to park infrastructure would not affect habitat at two known sand verbena moth locations in Washington. The petitioners did not provide information, nor do we have any in our files, that supports the claim that military buildings and other infrastructure or marine development have reduced sand verbena moth habitat in Washington. As the total habitat occupied by sand verbena moth populations in Washington has never been documented, any putative reduction in sand verbena moth habitat cannot be determined.

In British Columbia, the COSEWIC (2003, p. 19) considers habitat conversion to be a secondary threat to the sand verbena moth and notes it may have substantial local impacts. According to the BCIRT (2008, p. 16), all of the sites located in Canada have been impacted by habitat conversion, including destruction of sand dunes for park use, development of military training facilities, expansion of beach areas, and marine development.

In summary, we have little information to suggest that habitat conversion may pose a significant threat to the sand verbena moth within its known range in the State of Washington, and whether the sand verbena moth

may occur elsewhere on the Pacific Coast of the United States where its host plant is found is uncertain. However, we acknowledge that the Committee on the Status of Endangered Wildlife in Canada, which we consider to be a reliable source of scientific information, considers habitat conversion to be an important threat to the species within its range in British Columbia. Therefore, based on this information, we find that the petition presents substantial scientific or commercial information indicating that dune stabilization may pose a threat to the sand verbena moth such that the petitioned action may be warranted.

Recreation

Information Provided in the Petition

The petitioners state that recreational foot traffic on beach dunes presents a threat to the sand verbena moth and its habitat, and claim the threat is likely to increase due to population growth (Petition, p. 10). According to the petitioners (Petition, p. 10), L. Crabo (2010, pers. comm.) noted the sand verbena moth population at Deception Pass State Park is threatened by high levels of human recreation.

Evaluation of Information Provided in the Petition and Available in Service Files

We were unable to verify or assess the petitioners' reference cited as a personal communication in regard to recreation at Deception Pass State Park, Washington, as no documentation of this communication exists (Jepsen 2010, pers. comm.). At Dungeness NWR, yellow sand verbena is distributed within a research natural area that is closed to the public (Thomas 2010, pers. comm.); thus recreation is not likely to pose a threat to the sand verbena moth or its habitat now or in the foreseeable future at this location. We have no additional information regarding recreational use at other sand verbena moth locations in Washington.

In British Columbia, the COSEWIC (2003, p. 19) considers recreation a secondary threat to the sand verbena moth; however, actions have been taken to reduce this threat at several locations (BCIRT 2008, pp. 8–9). At Goose Spit, preliminary guidelines for activities near sand verbena moth populations have been developed and signs posted near the site at the dune entrance (BCIRT 2008, p. 8). This population was temporarily fenced to prevent disturbance from military training activities (BCIRT 2008, p. 9). At Island View Regional Park, a split rail fence was constructed to reduce access to the

sand verbena moth population. In addition, an educational program was implemented to encourage visitors to stay on established walkways (BCIRT 2008, p. 9).

Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that recreation may pose a threat to the yellow sand verbena moth such that the petitioned action may be warranted.

Coastal Erosion

Information Provided in the Petition

The petitioners state that all sand verbena moth habitat occurs within 25 to 100 m (82 to 328 ft) of the shoreline, and therefore it is vulnerable to coastal erosion caused by severe winter storms, wildfire, and heavy winds during the moth's flight season (Petition, p. 10). Furthermore, they point out that in British Columbia, storms over the winter of 2005–2006 eroded 2 to 10 m (6.6 to 32.8 ft) of dunes along Goose Spit (Petition, p. 11). According to the petitioners, the population on San Juan Island is threatened by erosion because it is located on an eroded dune and the roots of yellow sand verbena are visible (Petition, p. 10).

Although they have identified coastal erosion as a threat to the sand verbena moth, the petitioners also make the converse argument that yellow sand verbena and, therefore, the sand verbena moth are adversely affected by the construction of artificial barriers, such as bulkheading and hard protection techniques, constructed to reduce coastal erosion (Petition, p. 15).

Evaluation of Information Provided in the Petition and Available in Service Files

According to the COSEWIC (2003, p. 19) the primary threat to the sand verbena moth is habitat loss and degradation as a result of dune stabilization. Natural disturbance of yellow sand verbena populations in open sand areas or new sand deposition, in which colonization may occur, is required to maintain populations of the sand verbena moth (COSEWIC 2003, p. 19). Erosion, winter storms, wildfire, and heavy winds are all natural processes that occur in coastal habitat that likely have maintained suitable dune habitat for yellow sand verbena over time. The BCIRT (2008, p. 5) states, “yellow sand-verbena locations typically lack dense herbaceous or bryophyte plant cover, likely a result of periodic

disturbance by natural environmental processes (e.g., storms, wave-washed logs, and wind). Such weather processes prevent dune stabilization which would otherwise occur through natural succession and plant encroachment.” COSEWIC (2003, p. 20) states, “accelerated coastal disturbance and sediment transport associated with increased storm frequency may result in increased development of open sand habitats, which would have a positive effect” on the sand verbena moth.

In 2005–2006, 2 to 10 m (6.6 to 32.8 ft) of coastal erosion of dune front occurred at Goose Spit, British Columbia, for a length of 200 m (656 ft) along the beach (cited as Allan, pers. comm., 2007 in BCIRT 2008, p. 7). This resulted in a loss of yellow sand verbena plants that are used by the sand verbena moth. In 2007, the dunes were stabilized with abutments to minimize further erosion in this area (BCIRT 2008, p. 9). Erosion barriers have likely impacted sediment transport within the dune ecosystem and may lead to dune and vegetation stabilization (BCIRT 2008, p. 7).

According to a document cited by the petitioners, the shoreline of the Puget Sound region “consists of a diverse suite of coastal landforms ranging from rocky cliffs to beaches and broad river deltas” (cited as Shipman 2008 in Shipman 2009, unnumbered p. 2). This diversity results in complex relationships among and between landforms (Shipman 2009, unnumbered p. 3); each landform responds differently to coastal erosion (Shipman 2009, unnumbered p. 3). For example, erosion from coastal bluffs may provide sediment to beaches and spits, thus providing new area for yellow sand verbena to colonize.

According to the BCIRT (2007, p. 6), in British Columbia sand verbena moth habitat occurs within 100 m (328 ft) of shoreline (BCIRT 2008, p. 6). The petitioners did not present any information, nor could we find any readily available in our files, regarding habitat at known sand verbena moth locations in Washington. Information lacking thus includes the distance from shoreline in which suitable habitat occurs, habitat structure and configuration, and total area of yellow sand verbena needed to support the sand verbena moth. Thomas (2010, pers. comm.) noted that erosion is occurring in dune habitat at San Juan Island NHP; however, new sand deposition occurs simultaneously with the erosion process, which may provide new areas for yellow sand verbena to colonize. Lewis (2006, p. 3) found that taproots of the plant grow deep in the sand. A seedling with four leaves was found to

have taproots growing to a depth of more than 25 cm (10 in). Taproots can easily reach 1 m (3.28 ft) or greater in depth (Thomas 2010, pers. comm.). In addition, roots of yellow sand verbena are tough, leathery, and well-designed to resist desiccation from exposure.

The petitioners did not provide any information, nor do we have information in our files, directly relating to the claim that wildfire, heavy winds, or severe winter storms may be factors threatening the continued existence of sand verbena moth or its habitat. The frequency or existence of coastal zone wildfires is poorly understood. However, very little fuel is available in coastal habitats; therefore any fires would be short in duration and likely infrequent.

The petitioners did not present any information, nor do we have any in our files, that indicate bulkheads and other ‘hard protection’ techniques may be a factor threatening the continued existence of sand verbena moth throughout its range. At San Juan Island NHP and Dungeness NWR, no bulkheads or other types of hard structures exist, and natural processes dominate. In British Columbia, erosion barriers have decreased sand transport to Goose Spit; however, dunes were stabilized at this location and yellow sand verbena populations have been augmented by transplants (BCIRT 2008, p. 9).

Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that coastal erosion may be a threat to the sand verbena moth such that the petitioned action may be warranted.

Climate Change

Information Provided in the Petition

The petitioners state that rising sea levels and increasingly severe coastal storms and summer droughts as a result of climate change threaten the sand verbena moth (Petition, p. 13, citing BCIRT 2008, p. 8). Sand verbena moth populations in Canada are located less than 5 m (16.4 ft) above sea level, and most habitat occurs within 25 m (82 ft) of the shoreline (BCIRT 2008, pp. 6, 8). According to the petitioners (Petition, p. 13), the Puget Sound region is projected to experience sea level rises estimated at 22 in (55 cm) by 2050 and 50 in (128 cm) by 2100 (Mote *et al.* 2008, p. 10).

Evaluation of Information Provided in the Petition and Available in Service Files

The BCIRT (2008, p. 8) considers climate change to be a potential, but poorly understood, threat to sand verbena moth habitat. Although we acknowledge that climate change may lead to sea level rise (IPCC 2007, p. 30; Mote *et al.* 2008, p. 3; Karl *et al.* 2009, p. 84), it is important to note that “the present shoreline of the Salish Sea has formed and is maintained under a regime of gradually rising sea levels” (Shipman 2009, unnumbered p. 2). Projections of future sea levels are highly uncertain, vary across regions, and are unpredictable (Mote *et al.* 2008, pp. 3, 9; Shipman 2009, unnumbered p. 1). Mote *et al.* (2008, p. 9) stress that these “estimates have not formally quantified the probabilities, sea level rise cannot be estimated accurately at specific locations, and the estimates are for advisory purposes only.” Mote *et al.* (2008, p. 10) present sea level rise estimates in three categories: very low, medium, and very high. The sea level rise estimates presented in the petition are those categorized as very high for the Puget Sound region. Mote *et al.* (2008, p. 10) consider the very low and very high sea level rise estimates to be low probability scenarios; a formal framework to quantify the probabilities of the very high or very low sea level rise estimates has not been developed.

According to Mote *et al.* (2008, p. 10), the medium sea level rise estimate for Puget Sound is 6 in (15 cm) by 2050. Assuming that sand verbena moth populations and yellow sand verbena habitat in Washington are located similarly to those in Canada with respect to distance from shoreline and location above sea level, this level of projected sea level rise would not inundate yellow sand verbena and thus sand verbena moth populations in Washington. Mote *et al.* (2008, p. 10) also provide medium sea level rise estimates along the entire coast of Washington. Because uplifting occurs in the Northwest Olympic Peninsula, they estimated no sea level rise by 2050. Along the central and southern coast of Washington, sea level rise was estimated to be 5 in (12.5 cm) by 2050. The petition did not present, nor do we have in our files, sea level rise estimates along the coasts of British Columbia, Oregon, or California.

According to the COSEWIC (2003, p. 20), the potential effects of climate change on the sand verbena moth are complex, and they state, “climate change may be associated with sea level rise which could threaten coastal dune

habitats directly. However, accelerated coastal disturbance and sediment transport associated with increased storm frequency may result in increased development of open sand habitats, which would have a positive effect.”

The petitioners also state that climate change may cause an increase in summer drought, which may result in early senescence (aging) of yellow sand verbena. The petitioners assert that this will detrimentally affect the sand verbena moth, larvae of which feed on leaves and shoots throughout the summer in preparation for winter diapause (a state of dormancy) (Petition, p. 14).

The petitioners did not provide any evidence, nor could we find any in our files, documenting any increase in summer drought conditions resulting from climate change as causing a loss of leaves, early dormancy, or early senescence of yellow sand verbena. According to BCIRT (2008, p. 8), climate change is a potential, but poorly understood, threat to the sand verbena moth, but they do acknowledge that during drought conditions the plant may lose leaves and enter dormancy early, thus reducing forage for the larvae of the sand verbena moth.

Yellow sand verbena has unique adaptations including deep taproots with high water storage capacity, prostrate growth, and succulent leaves with a thick epidermis (COSEWIC 2003, p. 12) that would enable it to withstand drought conditions. Because changes in precipitation in Puget Sound have been highly variable over recent decades, no particular trend has been observed. Mote *et al.* (2005, p. 7) state that in Puget Sound, “there is little indication that annual and interannual variation in precipitation in the 21st century will be vastly different from those in the 20th century. Secondly, properties or characteristics of the living and non-living environment that respond to precipitation have probably already experienced the range that they will experience in the next century.” We could not locate any information in our files, nor was any provided in the petition, concerning evidence of increases in drought over the range of yellow sand verbena.

Based on the above evaluation, we find that the information provided in the petition, as well as other information readily available in our files, fails to meet our standard for substantial scientific or commercial information indicating that climate change may be a threat to the yellow sand verbena moth such that the petitioned action may be warranted.

Summary of Factor A

Given the uncertainties regarding the potential significance of the threat of dune stabilization and habitat conversion on the sand verbena moth throughout all or a significant portion of its range, as well as the determination by the Committee on the Status of Endangered Wildlife in Canada that these factors pose a significant threat to the sand verbena moth within its range in that country, we find that the questions raised by information presented in the petition are sufficient to meet the “substantial information” standard for a positive 90-day finding, according to our regulations (50 CFR 424.14(b)). In cases where we have no information in our files that would contradict the opinion of a credible expert on the species, we defer to that expert’s opinion for purposes of a 90-day finding. Therefore, we find that the information presented in the petition, as well as other information in our files, presents substantial scientific or commercial information to indicate that dune stabilization and habitat conversion may be threats potentially resulting in the present or threatened destruction, modification, or curtailment of the habitat or range of the sand verbena moth such that the petitioned action may be warranted.

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

Information Provided in the Petition

The petitioners state that collection is not known to threaten the sand verbena moth, but the rarity of the species may make it attractive to collectors (Petition, p. 11). According to the petitioners, small populations are especially vulnerable to overcollection (2010, p. 11). The petitioners did not offer any supporting documentation for their statements.

Evaluation of Information Provided in the Petition and Available in Service Files

According to COSEWIC (2003, p. 20), collection of the sand verbena moth is considered to have a very minor effect on population size. Direct human-caused mortality is low (NatureServe 2009, [online]). Under Federal regulations, the collection of living or dead wildlife, fish, or plants, or the parts or products thereof, is prohibited on lands under National Park Service and NWR jurisdiction without a permit (36 CFR 2.1(a)(1)(i) and (a)(1)(ii)). Similar regulations exist on Washington State lands (Washington Administrative Code (WAC) section 232–12–064). The

sand verbena moth is thus protected from collection within its known range in the United States and apparently is only minimally impacted by collection within its range in Canada.

Summary of Factor B

The petitioners did not provide any information, nor did we have any available in our files, to indicate that overutilization may have a significant negative impact on sand verbena moth populations. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that overutilization for commercial, recreational, scientific, or educational purposes may present a threat to the yellow sand verbena moth such that the petitioned action may be warranted.

C. Disease or Predation

Information Provided in the Petition

The petitioners state the sand verbena moth is likely subject to predation by bats, birds, and small mammals (Petition, p. 11, citing BCIRT 2008, p. 7). The petitioners also assert that alien parasitic tachinid flies, if introduced to control gypsy moths, may harm the sand verbena moth (Petition, p. 11). According to the petitioners (Petition, p. 11), herbivory of yellow sand verbena is considered a minor threat at all sand verbena moth locations (BCIRT 2008, p. 7).

Evaluation of Information Provided in the Petition and Available in Service Files

All species are subjected to endemic levels of disease and predation under natural conditions. Gypsy moths attack conifers and broadleaf trees (Boersma *et al.* 2006, p. 126), habitat the sand verbena moth is not known to occupy. Between 1974 and 2007, only 14 gypsy moths have been collected in the three Washington counties where sand verbena moth is known to occur (Washington State Department of Agriculture (WSDA), 2008, [online]). Between 2007 and 2009, only one moth was collected in these counties (WSDA, 2009, [online]). Alien tachinid flies have not been introduced to the western United States and Canada (BCIRT 2008, p. 7), nor do we have any evidence that such an introduction is planned or likely to occur. While we agree that introducing the fly, should it ever occur, may have a negative effect on the moth, at this time we have no evidence, and the petitioners have offered none, that supports the claim that these threats may rise to the level of acting as a

significant limiting factor to the sand verbena moth throughout its range.

Summary of Factor C

We reviewed our files and the information provided by the petitioners, and did not find substantial information to indicate that disease or predation may be outside the natural range of variation such that it could be considered a threat to the sand verbena moth. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that disease or predation may present a threat to the yellow sand verbena moth such that the petitioned action may be warranted.

D. The Inadequacy of Existing Regulatory Mechanisms

Information Provided in the Petition

The petitioners state that Federal or State laws or policies do not adequately protect the sand verbena moth from endangerment or extinction (Petition, p. 12). In Canada, the sand verbena moth is listed as Endangered under the Species At Risk Act. According to the petitioners (Petition, p. 12), actions that provide protection and recovery of the species are well underway for populations in Canada (BCIRT 2008, pp. 8–9, 12). The petitioners (Petition p. 12) claim the designation of the sand verbena moth as a candidate species by the State of Washington does not provide protection for the sand verbena moth. The petitioners further state (Petition, p. 12) that the sand verbena moth is included in the State of Washington's Priority Habitat and Species (PHS) List (WDFW 2008, p. 30). According to the petitioners (Petition, p. 12), the habitats and species included on the PHS List are considered to be priorities for conservation and management, and the PHS List is used to aid in developing management strategies and mapping purposes (WDFW 2008, pp. 1–2).

Evaluation of Information Provided in the Petition and Available in Service Files

The petitioners further provide a discussion of the Global, National, and State or Provincial rankings of the sand verbena moth on NatureServe (Petition, p. 12). However, we note the NatureServe rankings are not regulatory in nature and thus are not relevant to Factor D under the Act.

Information provided by the petitioners suggests existing regulatory mechanisms in Canada are adequate for the conservation of the species (Petition, p. 12). Within its range in the United

States, the sand verbena moth populations in Washington occur primarily on public lands. Under Federal regulations, the collection of living or dead wildlife, fish, or plants, or the parts or products thereof, is prohibited on lands under National Park Service and National Wildlife Refuge jurisdiction without a permit (36 CFR 2.1(a)(1)(i) and (a)(1)(ii)). Similar regulations exist on Washington State lands (WAC section 232–12–064). Additional protection is provided to sand verbena moth habitat and therefore the sand verbena moth at Dungeness NWR. Yellow sand verbena is distributed in a research natural area there that is closed to the public (Thomas 2010, pers. comm.).

The petitioners do not identify any threats presumably impacting the sand verbena moth that are inadequately controlled by existing regulatory mechanisms within its range in the United States. The petitioners have not provided any information, nor do we find any available in our files, to suggest that existing regulatory mechanisms in Washington are inadequate to protect the sand verbena moth from any specific factors that may threaten its continued existence.

Summary of Factor D

Within the framework of a 90-day finding we are not required to conduct a far-reaching assessment of the adequacy of existing regulatory mechanisms for the sand verbena moth, and neither the information presented in the petition nor in our files supports this factor as a threat to the sand verbena moth. We find the petition did not present, nor could we locate in our files, substantial scientific or commercial information to indicate that the lack of regulatory mechanisms may be a factor threatening the continued existence of the sand verbena moth throughout its range such that the petitioned action may be warranted.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

Insecticides

Information Provided in the Petition

According to the petitioners, the use of insecticides such as *Bacillus thuringiensis* var. *kurstaki* (Btk) near sand verbena moth locations can harm the sand verbena moth (Petition, p. 14, citing BCIRT 2008, p. 7). Btk is typically applied from early April to early May to control gypsy moths, *Lymantria dispar*. The petitioners state that spraying would overlap with the larval feeding period of sand verbena moth and would

result in high mortalities (Petition, p. 14).

Evaluation of Information Provided in the Petition and Available in Service Files

Gypsy moths attack conifers and broadleaf trees (Boersma *et al.* 2006, p. 126), habitat the sand verbena moth is not known to occupy. In fact, between 1974 and 2009, only 15 gypsy moths have been collected in the three Washington counties where the sand verbena moth is currently known to occur (Washington Department of Agriculture 2009, [online]). To date, Btk has never been sprayed near sand verbena moth populations, but is named as a potential threat by BCIRT (2008, p. 7).

While we agree that use of insecticides such as Btk near sand verbena moth populations would potentially have a negative effect on the species, at this time we have no evidence that such usage is likely to occur, since Btk is utilized in forested environments and the sand verbena moth inhabits coastal dunes. We have no information available in our files, and the petitioners have offered none, that supports the claim that the threat of insecticides may rise to the level of acting as a significant limiting factor to the sand verbena moth throughout its range.

Based on the above evaluation, we find the petition did not present, nor could we locate in our files, substantial scientific or commercial information to indicate that insecticides may be a threat to the sand verbena moth such that the petitioned action may be warranted.

Herbicides

Information Provided in the Petition

According to the petitioners (Petition, p. 14), chemical control of European beachgrass is the most cost-effective method for, and may be the most common approach to, its eradication (Pickart 1997, p. 6). The petitioners (Petition, p. 14) suggest the Service consider whether mechanical, chemical, or manual means used to control European beachgrass may have an adverse effect on yellow sand verbena and therefore the sand verbena moth. However, they offer no supporting evidence in support of the argument that these control methods may impact yellow sand verbena.

Evaluation of Information Provided in the Petition and Available in Service Files

Neither COSEWIC (2003), nor BCIRT (2008), nor NatureServe (2009, [online]);

2010, [online]) identify herbicides as being a threat to yellow sand verbena and therefore the sand verbena moth. The petitioners did not provide any information, nor could we locate any in our files, that documents specific methods in which beachgrass is controlled at any of the known sand verbena moth locations. Yellow sand verbena, distributed throughout Graveyard Spit in Dungeness National Wildlife Refuge, is located in a research natural area and supports a relatively intact native strand community (Thomas 2010, pers. comm.); efforts to control beachgrass at this sand verbena moth location using herbicides are not planned. Although not a current sand verbena moth location, efforts to restore dune habitat at Willapa NWR involve a variety of mechanical, manual, and chemical means (Ritchie 2009, p. 2). As a result of these actions, a self-sustaining pink sand verbena (*Abronia umbellata*) population now exists on the refuge (Ritchie 2009, p. 4). Since yellow sand verbena may be outcompeted by beachgrass and may not occur in established beachgrass zones (Lewis 2006, unnumbered p. 3), the long-term positive effects of habitat restoration through control of beachgrass, regardless of means, is likely to significantly outweigh any short-term impacts that may occur to yellow sand verbena, and therefore the sand verbena moth.

Based on the above evaluation, we find the petition did not present, nor could we locate in our files, substantial scientific or commercial information to indicate that herbicides may be a threat to the sand verbena moth such that the petitioned action may be warranted.

Biological Vulnerability

Information Provided in the Petition

The petitioners state the sand verbena moth's dependence on yellow sand verbena is a biologically limiting factor (BCIRT 2008, pp. 5–6) that may compound any threats to the species (Petition, p. 14). According to the petitioners, the sand verbena moth's small population size, restricted range, and vulnerability to weather events may increase the likelihood of its extinction. The petitioners go on to say that the sand verbena moth's narrow range should be considered a threat to the species (Petition, p. 15).

Evaluation of Information Provided in the Petition and Available in Service Files

We acknowledge that small population size and restricted range increases the vulnerability of a species

to extinction and that complete dependence on one host plant is a potentially limiting factor for the sand verbena moth. However, not all species with limited ranges and small population sizes warrant listing under the Act (*see* our 12-month finding on a petition to list the island marble butterfly (*Euchloe ausonides insulanus*) as threatened or endangered at 71 FR 66292; November 14, 2006), and to date, the global population size, distribution, and status of the sand verbena moth is uncertain. According to NatureServe (2009, [online]), "distribution data for U.S. states and Canadian provinces is known to be incomplete or has not been reviewed for this taxon." In addition, Troubridge and Crabo note the sand verbena moth may have a limited distribution, " * * * although it could also be an artifact of lack of collecting in suitable habitats" (Troubridge and Crabo 1995, p. 89). We have evidence of only two surveys that were completed outside of the Puget Sound region. One survey, which was unsuccessful in capturing the sand verbena moth, was conducted by hand-searching patches of yellow sand verbena in Oregon (COSEWIC 2003, p. 9). According to COSEWIC (2003, p. 9), additional sampling in Oregon and California is needed to determine the presence or absence of the sand verbena moth. The petitioners state that surveys conducted on the Long Beach peninsula in Washington were not successful in locating the species (cited as L. Crabo, 2010, pers. comm. in the Petition, p. 7). However, we could not verify or access this information because the petitioners do not have a record of this conversation (Jepsen 2010, pers. comm.).

Based on the available information, the surveys conducted to date are not sufficient to constitute substantial information indicating that the sand verbena moth is distributed over a narrow range. Yellow sand verbena is distributed over approximately 1,500 miles (mi) (2,414 kilometers (km)) of shoreline. To date, 90 percent of the range of the yellow sand verbena has not been surveyed for the sand verbena moth. In 2006, all sandy beaches from the North Jetty of the Columbia River to the tip of Leadbetter Point, approximately 28 mi (45 km), were surveyed for yellow sand verbena (Lewis 2006, unnumbered p. 2). This survey documented the existence of a metapopulation and recruitment of yellow sand verbena (Lewis 2006, unnumbered p. 3). Yellow sand verbena also occurs along the Oregon and California coast, indicating both suitable

habitat and that the sand verbena moth may be present in additional locations as yet unsearched in Washington, Oregon, and California. However, for the purposes of this finding based on the assessments of NatureServe (2009, [online]) and COSEWIC (2003), we defer to their expert opinion that the sand verbena moth currently has a narrow known range.

BCIRT (2008, p. 8) identifies small and isolated populations as biological limiting factors for the sand verbena moth. In addition, BCIRT states that the sand verbena moth's dependence on a single host plant may increase its risk of extinction. However, both of these factors are not specifically identified as threats to the species. Many species have limited distributions or small population sizes, but these two factors alone (*i.e.*, rarity), without additional information regarding threats, do not meet the substantial information threshold indicating that the species may warrant listing. Information indicating whether the range or abundance of a species has been significantly curtailed helps us assess whether the species has always been rare, or if it was once more widespread and has been reduced in response to threats.

Based on the above evaluation, we find the petition did not present, nor could we locate in our files, substantial scientific or commercial information to indicate that inherent biological vulnerability may be a threat to the sand verbena moth such that the petitioned action may be warranted.

Human Population Growth

Information Provided in the Petition

The petitioners (Petition, p. 14) state that human population growth in the Puget Sound region has been more than twice that of the U.S. national average for the past 50 years (Mote *et al.* 2005, p. 3). According to the petitioners, the population growth has caused degradation to the Puget Sound Region that includes conversion of natural habitat, armoring of the shoreline with riprap and concrete, spread of nonnative plants, and an increase in recreational use of coastal dune habitats (Petition, p. 14).

These factors relating to habitat and recreational use have been addressed under Factor A, The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range, as they relate to the sand verbena moth and its host plant, yellow sand verbena.

Summary for Factor E

Based on our evaluation of the information submitted by the petitioners and available in our files, we did not find evidence suggesting that insecticides, herbicides, or inherent biological vulnerability may pose a significant threat to the sand verbena moth. With regard to inherent biological vulnerability, in particular, we note that many species have limited distributions or small population sizes, but we do not consider these two factors alone (*i.e.*, rarity) to meet the substantial information threshold indicating that the species may warrant listing without additional information regarding threats. In the absence of information identifying threats to the species, and linking those threats to the rarity of the species, we do not consider rarity itself to be a threat. Therefore, we find the petition does not present substantial scientific or commercial information indicating that other natural or manmade factors may affect the continued existence of the sand verbena moth such that the petitioned action may be warranted.

Cumulative Threats Under All Factors Information Provided in the Petition

According to the petitioners (Petition, p. 15), the Service should consider whether the aforementioned threats intersect and act synergistically to increase the likelihood of extinction or endangerment of the sand verbena moth.

Evaluation of Information Provided in the Petition and Available in Service Files

We have no information in our files, nor was any presented in the petition, that suggests these threats, acting synergistically or collectively, are likely to threaten the continued existence of the sand verbena moth. However, as noted under our Summary of Factor A, we find the questions raised by the petitioners regarding the possible impacts of dune stabilization and habitat conversion are sufficient to meet our "substantial information" standard for a positive 90-day finding under our implementing regulations (50 CFR 424.14(b)).

Finding

On the basis of our evaluation of the information presented under section 4(b)(3)(A) of the Act, we find that the petition presents substantial scientific

or commercial information indicating that listing the sand verbena moth may be warranted based on potential threats posed under Factor A, The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range. Specifically, we find that dune stabilization and habitat conversion may pose a threat to the sand verbena moth throughout all or a significant portion of its range such that the petitioned action may be warranted. Because we find the petition presents substantial information indicating that listing the sand verbena moth throughout its range may be warranted, we are initiating a status review to determine whether listing the sand verbena moth under the Act is warranted.

The "substantial information" standard for a 90-day finding differs from the Act's "best scientific and commercial data" standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether the petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Washington Fish and Wildlife Office (*see FOR FURTHER INFORMATION CONTACT*).

Authors

The primary authors of this notice are the staff members of the Washington Fish and Wildlife Office (*see FOR FURTHER INFORMATION CONTACT*).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Rowan W. Gould,

Acting Director, U.S. Fish and Wildlife Service.

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