

A Petition to list the Blue Calamintha Bee (*Osmia calaminthae*) as an Endangered, or Alternatively as a Threatened, Species Pursuant to the Endangered Species Act and for the Designation of Critical Habitat for this Species



Blue Calamintha Bee (*Osmia calaminthae*) (Photo by Tim Lethbridge, used with permission, available at <http://bugguide.net/node/view/394002/bgimage>).

Submitted to the United States Secretary of the Interior acting through the United States Fish and Wildlife Service

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I. INTRODUCTION

Petitioner, Defenders of Wildlife (“Defenders”), is a national, non-profit, conservation organization dedicated to the protection of all native animals and plants in their natural communities. With more than one million members and activists, Defenders is a leading advocate for the protection of threatened and endangered species. Defenders’ 2013-2023 Strategic Plan identifies bees as one of several categories of key species whose conservation is a priority for our organization’s work.²

Through this Petition, Defenders formally requests the Secretary of the Interior, acting through the United States Fish and Wildlife Service (the “Service”), to list the Blue Calaminta Bee, *Osmia calaminthae*, (“Bee”) as an “endangered,” or alternatively as a “threatened,” species under the Endangered Species Act (“ESA”). 16 U.S.C. §§ 1531-44. Additionally, Defenders requests that the Service designate critical habitat for the Bee concurrently with the listing of the species. *See* 16 U.S.C. § 1533(b)(6)(C). This Petition is submitted pursuant to the ESA, 16 U.S.C. § 1533(b)(3)(A), the ESA’s implementing regulations, 50 C.F.R. § 424.14, and the Administrative Procedure Act, 5 U.S.C. § 553(e).

After receiving a petition to list a species, such as this, the Service is required to make a “90-day finding” within 90-days of receiving the petition, “to the maximum extent practicable.” 16 U.S.C. § 1533(b)(3)(A). The 90-day finding determines “whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted.” 16 U.S.C. § 1533(b)(3)(A). A “positive” 90-day finding leads to a “status review” of the petitioned species and a determination whether it warrants listing. The status review must be completed within twelve months of the Service’s receipt of the petition (a “12-month finding”). 16 U.S.C. § 1533(b)(3)(B).

The Service’s regulations define “substantial information,” for purposes of a 90-day finding, as “that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted.” 50 C.F.R. § 424.14(b)(1). In making a finding as to whether a petition presents “substantial information,” the Service considers whether the petition:

- i. Clearly indicates the administrative measure recommended and gives the scientific and any common name of the species involved;
- ii. Contains detailed narrative justification for the recommended measure; describing, based on available information, past and present numbers and distribution of the species involved and any threats faced by the species;
- iii. Provides information regarding the status of the species over all or significant portion of its range; and

² More information on Defenders’ work and our Strategic Plan is available on our website. *See* Defenders’ 2013-2023 Strategic Plan, available at <https://www.defenders.org/publications/defenders-strategic-plan-2013-2023.pdf>

- iv. Is accompanied by appropriate supporting documentation in the form of bibliographic references, reprints of pertinent publications, copies of reports or letters from authorities, and maps.

50 C.F.R. §§ 424.14(b)(2)(i)-(iv).

Both the language of the regulation (by setting the “reasonable person” standard for substantial information) and the relevant case law interpreting the ESA underscore that the Statute does *not* require “conclusive evidence of a high probability of species extinction” in order to support a positive 90-day finding. *Ctr. for Biological Diversity v. Morgenweck*, 351 F. Supp. 2d 1137, 1140 (D. Colo. 2004). The courts have consistently held that the evidentiary threshold for a positive 90-day finding is much lower than that required for a positive 12-month finding. *See, e.g., Moden v. U.S. Fish & Wildlife Serv.*, 281 F. Supp. 2d 1193, 1203 (D. Or. 2003) (holding that the substantial information standard is defined in “non-stringent terms” and that “the standard in reviewing a petition . . . does not require conclusive evidence.”). Rather, the courts have held that the ESA contemplates a “lesser standard by which a petitioner must simply show that the substantial information in the petition demonstrates that listing of the species *may* be warranted.” *Morgenweck*, 351 F. Supp. 2d at 1141 (quoting 16 U.S.C. § 1533(b)(3)(A)) (emphasis added).

The “may be warranted” standard . . . seems to require that in cases of . . . contradictory evidence, the Service must defer to information that supports [the] petition’s position. It would be wrong to discount the information submitted in a petition solely because other data might contradict it. At this stage, unless the Service has demonstrated the *unreliability* of information that supports the petition, that information cannot be dismissed out of hand.

Ctr. for Biological Diversity v. Kempthorne, No. C 06-04186 WHA, 2007 WL 163244, at *4 (N.D. Cal. Jan. 19, 2007) (emphasis added).

NatureServe has assessed the status of the Blue Calaminta Bee as “Globally Critically Imperiled,” assigning it a rank of G1, and thereby indicating this species faces the highest possible risk of extinction in NatureServe’s species ranking system. NatureServe is an independent scientific organization founded in 1994 to provide and summarize the best available scientific information on thousands of species to aid decision-makers in prioritizing their conservation efforts. NatureServe is comprised of more than 80 independent scientific organizations, with over 1,000 conservation professionals. NatureServe is a well-respected source of scientific information and is widely acknowledged as a neutral forum providing unbiased scientific determinations. NatureServe provides information publicly on its NatureServe Explorer database. This information is periodically updated through the input of hundreds of natural heritage program scientists and other collaborators to provide the public, conservation professionals, non-governmental organizations, and governmental agencies with the most current information on species and the threats that they face. If sufficient information is available, NatureServe assigns each species it assesses a Global Conservation Status Rank from G1-G5, with G1 (the highest threat category) consisting of “Globally Critically Imperiled” species and G5 (the lowest threat category) consisting of species that are “Globally Secure.”

This system aims to provide a clear, objective framework for the classification of species according to their extinction risk.

These NatureServe categories are widely recognized, are relied on in a variety of scientific publications, and are used by numerous governmental and non-governmental organizations. In fact the Service itself regularly cites to NatureServe in its species profiles maintained on the Agency’s website and has described NatureServe Explorer as “a source for authoritative conservation information . . . provid[ing] in-depth information on rare and endangered species . . .” (See, e.g., Fish and Wildlife Service, Undated). NatureServe’s species assessments and threat determinations reflect the best available science and are clearly the determinations of “reasonable persons,” in fact, “reasonable scientists.”

As mentioned above, NatureServe has identified the Blue Calaminta Bee as Globally Critically Imperiled (G1) due to the threats it faces throughout its constrained range, as well as the fact that it is a floral specialist dependent on a single plant as its food source, Ashe’s Calamint, *Clinopodium ashei*, which itself is ranked by NatureServe as a “Globally Vulnerable” (G3) species (NatureServe, 2013). NatureServe’s rankings of the Bee and its sole food source, standing alone, should be sufficient to convince a “reasonable person” that the Bee *may* warrant listing. Accordingly, the Service should be able to issue a positive “substantial information” 90-day finding on this Petition within 90-days, and should proceed to conduct a status review to determine if the Bee warrants listing as Defenders asserts below.

Defenders anticipates that in keeping with 50 C.F.R. § 424.14(a), the Service will acknowledge the receipt of this Petition in writing within 30 days, and, as discussed above, promptly issue a positive 90-day finding and proceed to perform a status review and issue a 12-month finding. As fully set forth below, this Petition contains all the information requested in 50 C.F.R. §§ 424.14(b)(2)(i)-(iv). All cited documents are listed in the bibliography and electronic copies of these documents accompany this Petition.

II. SPECIES DESCRIPTION

a. Common Name

Osmia calaminthae is known by the common name Blue Calaminta Bee (NatureServe, 2013).

b. Taxonomy

The taxonomy of *Osmia calaminthae* is as follows:

Kingdom	<i>Animalia</i>
Phylum	<i>Mandibulata</i>
Class	<i>Insecta</i>
Order	<i>Hymenoptera</i>
Family	<i>Megachilidae</i>
Genus	<i>Osmia</i>
Species	<i>Osmia calaminthae</i>

(NatureServe, 2013).

NatureServe indicates the taxonomic status of *Osmia calaminthae* is “accepted” (NatureServe, 2013). The species was first discovered in 2002 (See Rightmyer, *et al.*, 2011 at 258).

c. Physical Characteristics

Female Blue Calamintha Bees have a total length of approximately 11 millimeters and a forewing length of approximately 7 millimeters (Rightmyer, *et al.*, 2011 at 262). They are dark blue in color, except that they have brown integument on mouthparts, labrum, mandible, apical edge of clypeus, antenna, legs distal to trochanters, apical margins of metasomal terga, and metasomal sterna (Rightmyer, *et al.*, 2011 at 262). Their wings moderately infusate, except along the leading edge of the forewing which more strongly infusate (Rightmyer, *et al.*, 2011 at 266).

Male Blue Calamintha Bees have a total length of approximately 10 millimeters and a forewing length of approximately 6 millimeters (Rightmyer, *et al.*, 2011 at 266). The head and mesosoma of male Blue Calamintha Bees are pale blue, while the metasoma is dark blue (Rightmyer, *et al.*, 2011 at 266).

A much more elaborate description of the physical characteristics of the Blue Calamintha Bee is found in Rightmyer, *et al.*, 2011 at 262-269, which is incorporated by reference rather than restated.

d. Distinctive Traits

All bees in the *Osmia* genus, which includes the Blue Calamintha Bee, are commonly referred to as mason bees because they cap their nests with mud (Encyclopedia of Life, 2014). However, both male and female Blue Calamintha Bees are distinct from other species in the *Osmia* genus. The males are distinguished from many other *Osmia* species by relatively slender pointed teeth (Rightmyer, *et al.*, 2011 at 260). The females have modified hairs on the face that readily distinguish them from other similar *Osmia* species (Rightmyer, *et al.*, 2011 at 258). Researchers believe that these hairs, which are short, evenly spaced, simple, and stout, are specialized to trap pollen from the Bee’s sole food source, Ashe’s Calamint (*Clinopodium ashei*) (Rightmyer, *et al.*, 2011 at 258), also known as *Calamintha ashei* (Integrated Taxonomic Information System, 2014).

Female Bees are also distinct from other *Osmia* species in their behavioral patterns. Females exhibit unusual behavior when visiting the Ashe’s Calamint—they rapidly bob their heads two to four times upon entering the flower—likely to dislodge the pollen (Rightmyer, *et al.*, 2011 at 273). Researchers have not observed this behavior in the twenty-three other bee species that visit the Ashe’s Calamint (Rightmyer, *et al.*, 2011 at 273).

Another mason bee species, *Osmia sandhouseae*, is superficially similar to the Blue Calamintha Bee and also feeds on the Ashe’s Calamint (Rightmyer, *et al.*, 2011 at 260). However, the *sandhouseae* bee’s facial hairs, mandible, and punctures in the lateral part of its head differ considerably from those of the Blue Calamintha Bee (Rightmyer, *et al.*, 2011 at 260).

e. Feeding

Adult Blue Calamintha Bees are nectarivores and depend on nectar for food, while larvae depend on pollen gathered by the adults (NatureServe, 2013). Thought to be a floral specialist, the Blue Calamintha Bee visits only a single plant species, Ashe's Calamint (*Clinopodium ashei*) (Rightmyer, *et al.*, 2011 at 258). Ashe's Calamint is a woody mint found in the sand pine and scrub habitat of the Florida central highlands, as well as two counties in southeastern Georgia (though the Blue Calamintha Bee has not been found in Georgia) (Rightmyer, *et al.*, 2011 at 258). NatureServe lists Ashe's Calamint as Globally Vulnerable (G3) (NatureServe, 2013), and the State of Florida includes Ashe's Calamint in its "Threatened Plant List." FLA. ADMIN. CODE r. 5B-40.0055 (2004).

f. Habitat and Range

The Blue Calamintha Bee was first discovered in 2002 during a survey of Archbold Biological Station near Lake Placid, Florida (Rightmyer, *et al.*, 2011 at 258). As a result of its recent discovery, the species has not been extensively studied and little is known about the Blue Calamintha Bee's range (Rightmyer, *et al.*, 2011 at 258). However, the currently known distribution and natural history "suggest this bee may be among the most geographically restricted and host specific bees in eastern North America." (Rightmyer, *et al.*, 2011 at 274). This is because the Bee is currently only known from four sites in an area that is less than sixteen square miles (Rightmyer, *et al.*, 2011 at 275). These four sites all occur on scattered undeveloped lots in a platted subdivision called Placid Lakes that is at the southern end of Lake Wales Ridge, south of Lake Placid, in Highlands County, Florida (Rightmyer, *et al.*, 2011 at 258, 275).

The Lake Wales Ridge ("Ridge") is a highly unique region in central Florida (Rightmyer, *et al.*, 2011 at 258). The Ridge is approximately 115.7 miles long and averages 7.4 miles wide, stretching north to south through the center of the Florida peninsula (Fish and Wildlife Service, 2010 at 1). The Ridge was formed as part of an archipelago approximately 2.5 million years ago when sea levels were much higher than today and much of Florida was covered by ocean water (Fish and Wildlife Service, 2010 at 1). Lake Wales Ridge is the oldest ecosystem in the southeast United States (Fish and Wildlife Service, 2015). The ancient scrub of the Ridge is remnant of beaches and sand dunes that existed when the Ridge was still part of an archipelago (Fish and Wildlife Service, 2010 at 1). Much of the Lake Wales Ridge scrub and wildlife are endemic and the Ridge has one of the highest concentrations of threatened and endangered species in the United States (Fish and Wildlife Service, 2015; *see also* Fish and Wildlife Service, 2010 at 1 ("Many of the endemic plants found on the ridge face extinction.")). The Service has already listed twenty-two rare plant species, four vertebrate species, and forty invertebrate species from Lake Wales Ridge as threatened or endangered under the ESA (Fish and Wildlife Service, 2015).

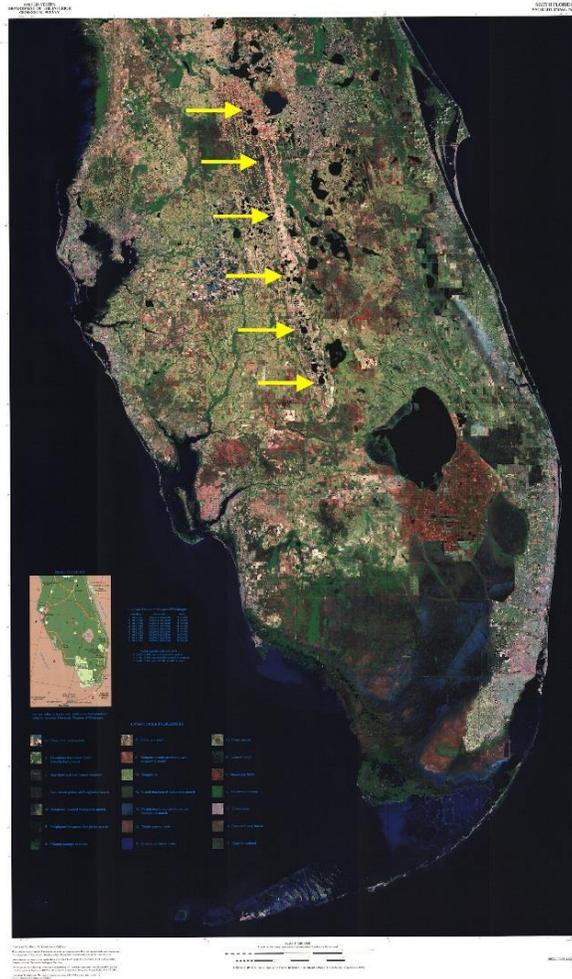


Figure 1. Marked satellite photo of Florida; arrows pointing to Lake Wales Ridge (U.S. Geological Survey, South Florida Satellite Image Map (1993)).

Habitat for the Blue Calamintha Bee and its sole host plant, Ashe’s Calamint, consists of “scrub” (or shrubland) in Lake Wales Ridge (Rightmyer, *et al.*, 2011 at 274). Scrub is essentially low-growing, shrubby plants that live in dry, sandy soil. Florida scrub is a unique scrub found in low, open areas of ridges and knolls of wind-deposited sand (Rightmyer, *et al.*, 2011 at 274). The scrub vegetation consists of *sclerophyllous* oaks and other shrubs and small trees, including Florida-Rosemary (*Ceratiola ericoides*) (Rightmyer, *et al.*, 2011 at 274). Florida-Rosemary grows among bare sand patches in the most highly drained scrub sites of Lake Wales Ridge (Rightmyer, *et al.*, 2011 at 274). Researchers believe that Ashe’s Calamint, the Blue Calamintha Bee’s host plant, is a scrub specialist that needs these sand patches between the Florida-Rosemary plants in order to grow (Rightmyer, *et al.*, 2011 at 274).

No nest sites for the Blue Calamintha Bee have been found (Rightmyer, *et al.*, 2011 at 275); however, nesting behavior can be inferred from the behavior of other mason bees. Mason bees build nests inside hollow reeds or in holes in wood made by other insects (Encyclopedia of Life, 2014). They are solitary nesters that create their nests by gathering pollen and nectar on which to lay their eggs (Encyclopedia of Life, 2014).

g. Population Size and Trend

The Blue Calamintha Bee is currently known from only four sites in the southern end of the Lake Wales Ridge in Florida (Rightmyer, *et al.*, 2011 at 258, 275). NatureServe indicates that these four known populations are probably remnants of a larger metapopulation,³ and that these remaining populations have very low viability (NatureServe, 2013).

NatureServe also estimates that the Bee's population has declined by 70-90% from historic levels (NatureServe, 2013). The number of individuals in the four populations is unknown because the Bee was only discovered in 2002 and there has only been one study of this species, published in 2011, to date (*See* Rightmyer, *et al.*, 2011). However, based on the best available information, NatureServe has identified the Blue Calamintha Bee as Globally Critically Imperiled (G1) due to its constrained range, the threats it faces, estimated population declines, and the fact that it is a floral specialist dependent exclusively on a Globally Vulnerable (G3) pollen source, Ashe's calamint (NatureServe, 2013).

III. GEOGRAPHIC DISTRIBUTION: HISTORIC AND CURRENT

All available evidence indicates that the Blue Calamintha Bee is endemic to the Lake Wales Ridge region of Highlands County, Florida (Rightmyer, *et al.*, 2011 at 258). Although the Bee's sole pollen source, Ashe's calamint, and scrub habitat (*Ceratiola ericoides*) are both present in limited areas of southern Georgia as well, the Bee has not been located in Georgia (Rightmyer, *et al.*, 2011 at 258).

IV. IDENTIFIED THREATS TO THE PETITIONED SPECIES: CRITERIA FOR LISTING

The Blue Calamintha Bee meets at least three of the criteria for listing identified in the ESA (in bold), and possibly at least one other (C. Disease or predation):

- 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.**

16 U.S.C. § 1553(a)(1).

The Service is required to make an ESA listing determination for the Bee under these factors based exclusively on the best *available* scientific and commercial data. *See* 16 U.S.C. § 1533(b)(1)(A); 50 C.F.R. § 424.11(b). Therefore, the Service cannot deny listing merely because there is little information available if the best *available* information indicates that the

³ The term "metapopulation" refers to a situation where spatially separated populations of a species interact on some level (i.e. where the populations are not physically and genetically isolated).

Bee is threatened or endangered under any one, or any combination, of the five ESA listing criteria. The only available scientific study of the Blue Calamintha Bee was published by Rightmyer, *et al.*, in 2011, and it contains both the best available science and substantial scientific information demonstrating that the Blue Calamintha Bee warrants listing. *See* 16 U.S.C. § 1533(b)(3)(A).

a. The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (Listing Factor A)

The primary threat facing the Blue Calamintha Bee is the destruction and modification of its habitat in southern Lake Wales Ridge, Highlands County, Florida, the area to which the Bee is endemic (*See* Rightmyer, *et al.*, 2011 at 275). Scientists surveying the Bee have mostly observed it in unprotected areas and scattered undeveloped subdivision lots (Rightmyer, *et al.*, 2011 at 275). The Service indicates that the Lake Wales Ridge ecosystem is the fastest disappearing ecosystem in the United States (Fish and Wildlife Service, 2015). The Service estimates that approximately 80,000 acres of Lake Wales Ridge scrub existed before European settlers arrived, but about 85% of that has since been lost or converted to agricultural (mainly citrus), commercial, and residential development (Fish and Wildlife Service, 2010 at 1).

i. Agricultural Development

Currently, there are more than 8,000 citrus growers, cultivating almost 550,000 acres of land and generating over \$9 billion of economic activity in Florida (Florida Citrus Mutual, 2012). In its final rule to list the Florida sand skink (*Neoseps reynoldsi*) and blue-tailed mole skink (*Eumeces egregious lividus*) under the ESA, the Service cited a Florida State University Foundation study, which concluded that Florida's citrus production doubled from 1960 to 1978. 52 Fed. Reg. 42,658, 42,659 (Nov. 6, 1987). Most of this increase in crop acreage was in southern Florida counties. 52 Fed. Reg. at 42,659. Highlands County alone contains approximately 65,000 acres of citrus crop, is Florida's third largest total citrus producer, and provides 13 percent of North America's orange juice (Agarwal, 2013). In addition to removal of habitat that is physically within the footprint of an agricultural operation, the habitat loss caused by agricultural development can expand further as a result of pesticide and herbicide drift, discussed *infra*, thus potentially impacting even larger areas. Therefore, the large agricultural industry in Highlands County has, and will inevitably continue to, reduce the habitat available for the Blue Calamintha Bee.

ii. Commercial and Residential Development

The Service indicates that the Lake Wales Ridge scrub lands "have high real estate interest," 52 Fed. Reg. 20,715, 20,717 (June 3, 1987); and Florida's population is continuing to grow at an extremely fast rate (*Compare* Census Bureau, 1990 at 1; Census Bureau, 2014 – 1). Over the last two decades, the population in Florida has skyrocketed by approximately 51%, from 12,937,926 people in 1990 to 19,552,860 people in 2013 (Census Bureau, 1990 at 1; Census Bureau, 2014 – 1). During that same period, Highlands County has seen a population boom of almost 43% from 68,432 to 97,616 people (Census Bureau, 1990 at 3; Census Bureau, 2014 – 2), and the Service has indicated that Highlands County's population is expected to increase by another 126% by

2060 (Fish and Wildlife Service, 2010 at 24). Growing populations require increased development, and the “Florida 2060” studies by 1000 Friends of Florida predict that more than seven million acres of additional Florida lands will be converted to urban uses by the year 2060 (1000 Friends of Florida, 2006 at 1).

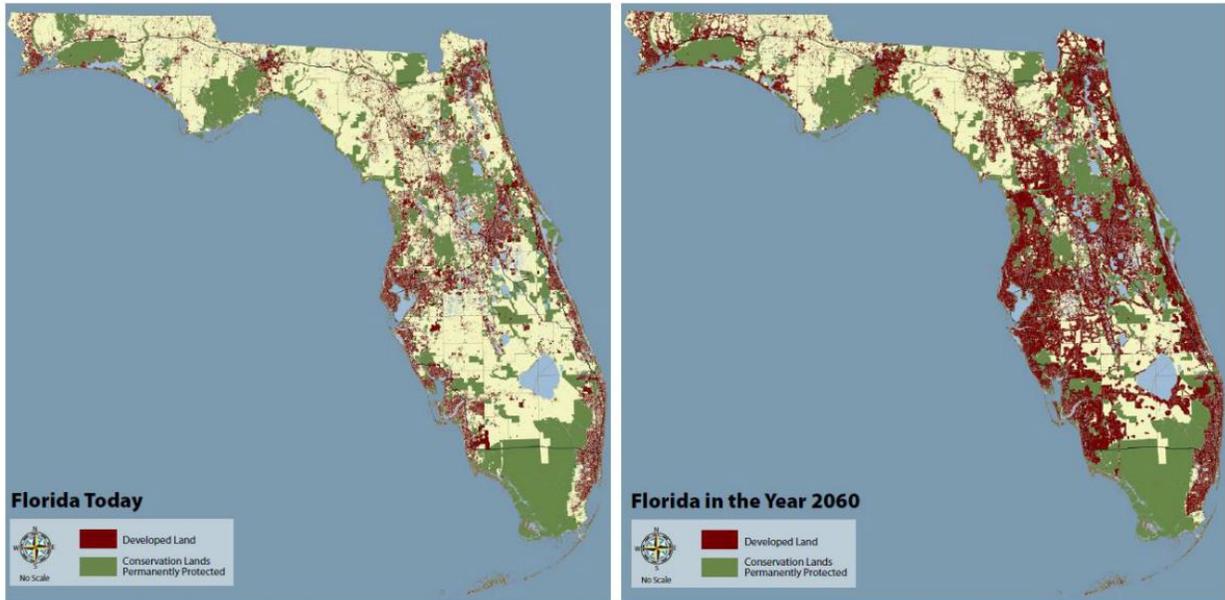


Figure 2. Growth of urban development in Florida, as estimated by the Florida 2060 studies (1000 Friends of Florida, 2006 at 2, 3). Note the significant growth in and around the Lake Wales Ridge area in the center of the state in particular.

The Service is well aware of the deleterious effect that habitat destruction is having on the Ridge’s biodiversity. In its previous ESA listing decisions for species endemic to the Lake Wales Ridge, the Service has continually reiterated that the major cause of the species’ decline is habitat destruction. *See, e.g.*, 52 Fed. Reg. at 42,659-60; 52 Fed. Reg. at 20,715-17. Further, in its 2010 Lake Wales Ridge National Wildlife Refuge Comprehensive Conservation Plan, the Service stated that:

Lake Wales Ridge [National Wildlife Refuge] faces major threats and various challenges resulting from the direct and indirect impacts of population growth and land development, including habitat loss and fragmentation, the spread of exotic plants and feral animals, illicit use of refuge resources, and added constraints on the ability to manage resources. . . . Florida scrub habitat is ranked as the 15th most endangered ecosystem nationally and is identified as an “extreme risk” endangered ecosystem in the southeastern United States. . . . Since 1945, land-use changes on the ridge have greatly reduced the native upland habitats of oaks and pines and the populations of plants and animals dependent on them. . . . Regionally, development of the remaining Lake Wales Ridge natural areas severely limits the ability of species to successfully migrate from one natural area to another—a life need central to species persistence and success. Throughout the

Lake Wales Ridge, this notion is severely challenged as a result of land development and consequential habitat destruction.

(Fish and Wildlife Service, 2010 at 24-25 (citations omitted)).

This development directly threatens the Blue Calamintha Bee. For example, the Bee is currently only known from four sites in an area representing less than sixteen square miles (Rightmyer, *et al.*, 2011 at 275). These four sites all occur on scattered undeveloped lots in a platted subdivision called Placid Lakes (Rightmyer, *et al.*, 2011 at 258, 275). Should development on these lots take place, the threats to the Bee would be extreme and could lead to extirpation.

iii. Scarcity of Floral Host

Researchers believe that the Blue Calamintha Bee is a floral specialist reliant on only one plant species, the Ashe's Calamint (Rightmyer, *et al.*, 2011 at 278). NatureServe has declared Ashe's Calamint to be Globally Vulnerable (G3) (NatureServe, 2013), and the State of Florida lists it as "threatened." FLA. ADMIN. CODE r. 5B-40.0055. There are only sixty to eighty occurrences of Ashe's Calamint in the Florida central highlands and southeastern Georgia, and the primary threat to this plant species is habitat destruction through commercial and residential development and conversion of land to citrus groves (NatureServe, 2013). In addition to this species-specific information, the Florida Fish and Wildlife Conservation Commission lists the current condition of *all* Florida scrub, which would include the Ashe's Calamint's habitat, as "poor and declining" (Florida Fish and Wildlife Commission, 2015).

Because the Bee appears to be a specialist, feeding only on the Ashe's Calamint, which Florida has listed as "threatened" and NatureServe has classified as Globally Vulnerable (G3), and because all Florida scrub, which makes up the Bee's exclusive known habitat, is described by Florida as being in poor condition and declining, the Bee faces a consequent threat. In reviewing this Petition, the Service must take into account these Ashe's calamint threat determinations and the related implication that the Blue Calamintha Bee is also an imperiled species.

Herbicides from nearby agricultural operations may also pose a threat to Ashe's Calamint, Florida scrub, and, consequently, also to the Blue Calamintha Bee. When broad-spectrum herbicides are applied to control weeds on agricultural lands, they indiscriminately remove floral resources, host plants, and nesting habitat. This change in vegetation can have a negative impact on all pollinator populations (*See generally* Kearns & Inouye 1997). Scientists have noted that "herbicide use affects pollinators by reducing the availability of nectar plants. In some circumstances, herbicides appear to have a greater effect than insecticides on wild bee populations . . . Some of these bee populations show massive declines due to the lack of suitable nesting sites and alternative food plants." (Kearns, *et al.*, 1998 at 91-92). The extent to which herbicides are further impacting the Ashe's Calamint and the Blue Calamintha Bee is thus far unclear, but should be evaluated by the Service in a status review in response to this Petition.

b. Disease or Predation (Listing Factor C)

Due to the lack of studies relating directly to the Blue Calamintha Bee, there is currently no firm indication that the species either is or is not impacted by disease or predation. However,

parasites, like the Varroa mite, and diseases, like colony collapse disorder, severely impact a number of other bee species (*See generally* Hachiro & Knox, 2000).

In addition, there has been significant scientific alarm over recently introduced bee pathogens, such as the exotic strain of the microsporidium *Nosema bombi*, the protozoan parasite *Crithidia bombi*, the tracheal mite *Locustacarus buchneri*, the Deformed Wing Virus, and their impacts on bees. These introduced pathogens likely originated in imported bees used in agriculture that escaped and infected wild bees (*See Colla, et al., 2006*). Once infected by these pathogens, bees exhibit numerous maladies including reduced reproduction rates, increased susceptibility to starvation, reduced foraging ability, increased mortality, and physical abnormalities (*See, e.g., Meeus, et al., 2011 at 5*). The effects of these changes on a bee species can be significant. For instance, the National Academy of Sciences National Research Council report on the Status of Pollinators in North America attributes the recent decline of the entire *Bombus* bee subgenus and the likely extinction of *B. franklini* to “pathogen spillover” from infected commercially reared bumble bees (National Research Council, 2007 at 87-89).

While the currently available literature generally focuses on social bees, such as honeybees and bumblebees, the effects of pathogens may be even more serious for solitary bees, like the Blue Calaminta Bee, because solitary bees lack gut microbiota that social bees have and which protects social bees against *Crithidia bombi* and possibly other pathogens (*See generally* Koch & Schmid-Hempel, 2011). Research suggests that antimicrobial defenses increase with bee sociality and are likely an adaptation to living in close proximity to other bees (*See generally* Stow, *et al., 2007*). Therefore, the solitary Blue Calaminta Bee is at a high risk of infection because it not only evolved without exposure to these pathogens, and therefore has no natural resistance to them, but also because it is a solitary species, and has therefore likely adapted much more limited antimicrobial defenses than more social bee species. Infection of solitary bees with honeybee pathogens has already been observed and has even been referred to as “widespread” (*See generally* Ravoet, *et al., 2014*). The Blue Calaminta Bee may also be at increased risk of infection as compared to other solitary bees due to the remaining populations’ proximity to agricultural areas, and thus potentially to infected commercially-reared bees used to pollinate crops in these areas.

While there is currently no direct evidence that either introduced or native pathogens either do or do not infect the Blue Calaminta Bee, the Service should examine the possibility that they do, or that they will in the future due to interaction with other infected bees, during a status review in response to this Petition.

c. **The Inadequacy of Existing Regulatory Mechanisms (Listing Factor D)**

The Blue Calaminta Bee currently receives no protection under federal or state law. NatureServe has identified the Bee as Globally Critically Imperiled (G1) due to its limited populations that all exist in areas of ongoing residential and commercial development and pesticide drift, as well as the fact that it is a floral specialist dependent on a single, Globally Vulnerable (G3) pollen source, Ashe’s calamint, (NatureServe, 2013), which the State of Florida has listed as a threatened species. FLA. ADMIN. CODE r. 5B-40.0055. However, NatureServe’s designation is only informative and does not provide any protection for the Bee or its habitat and

Florida’s listing of the Bee’s host plant is insufficient to protect the Bee, offering, at best, incidental habitat protection.

i. **Federal Protection**

1. **Lake Wales Ridge National Wildlife Refuge**

The Blue Calamintha Bee is endemic to the Lake Wales Ridge area, small portions of which are managed by the Service as the Lake Wales Ridge National Wildlife Refuge (“LWRNWR” or “Refuge”), the first refuge designated specifically for the recovery of endangered and threatened plants (See Fish and Wildlife Service, 2015; Fish and Wildlife Service, 2010 at 1). However, the Service has not found the Bee’s host plant, Ashe’s Calamint, in the areas protected by the Refuge (Fish and Wildlife Service, 2010 at 77). The Bee’s complete reliance on this host plant means that it is therefore unlikely to make substantial use of the Refuge, and, even where it may be present, the purpose of the Refuge is not to afford invertebrate species like the Blue Calamintha Bee protection. While the LWRNWR might afford protection to plants within its boundaries, it does not necessarily protect the insects that rely on those plants from threats like pesticide drift that may not harm plants but will likely kill invertebrates. The Refuge is directly designed for and managed to protect different interests, namely plants, and only potentially protects invertebrates incidentally. Based on this information, it is not surprising that most of the researchers’ sightings of this Bee have not been tied to areas protected within the LWRNWR (Rightmyer, *et al.*, 2011 at 270).

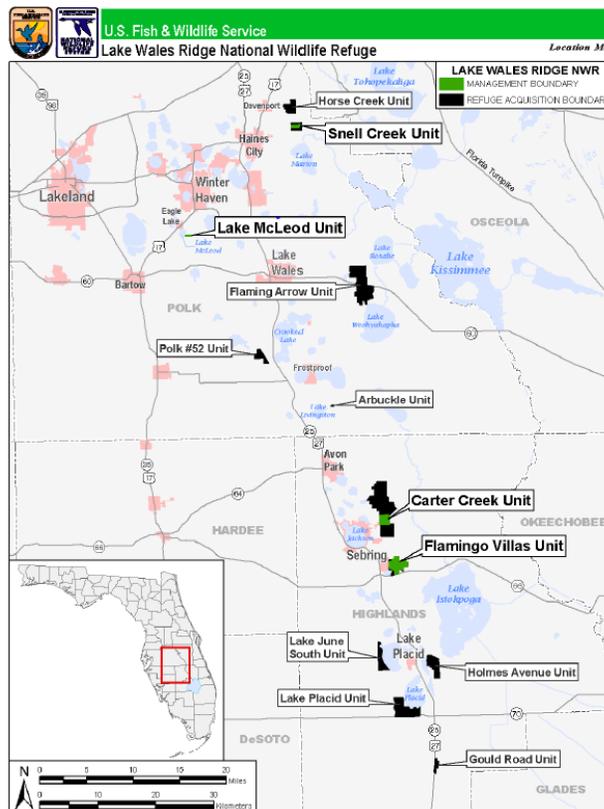


Figure 3. Map showing areas presently managed as part of the LWRNWR in green and areas proposed for future acquisition in black (Fish and Wildlife Service, 2010 at 3).

The LWRNWR is currently composed of over 1,800 acres of land across four management units, within a 12-unit approved acquisition area (*See* Figure 3, *supra*). There have been several Blue Calamintha Bee sightings in areas that Congress approved for acquisition by the Service in 1994, specifically the Gould Road and Holmes Avenue Preserves, but the Service has not yet acquired these areas, or indicated whether it intends to acquire them, as part of the Refuge (*See* Rightmyer, *et al.*, 2011 at 270; Fish and Wildlife Service, 2010 at 3, 12-16). Most other Bee sightings occurred completely outside of these preservation areas in scattered lots already approved for subdivision development (Rightmyer, *et al.*, 2011 at 270, 275). Therefore, despite any incidental protections the Bee might receive by occupying Florida scrub within the LWRNWR, the majority of the Bee's known habitat is currently outside of the Refuge.

2. Federal Pesticide Regulation

There is evidence that pesticides, and in particular neonicotinoid pesticides, are having extreme adverse effects on bees. In response to scientific studies on the sub-lethal effects of neonicotinoids, the European Union amended its previous regulation of these pesticides and banned the use of three types of neonicotinoids because of their effects on bees (European Union, 2013 at 139/13). The Environmental Protection Agency ("EPA") regulates the use of pesticides in the United States under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136-136y, and the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. §§ 301-399f. However, these laws are not specifically designed to protect bees. In response to the global concern over the status of pollinators, the EPA has accelerated its review of neonicotinoid pesticides and results of this review should be available between 2016 and 2019 (EPA, 2014). However, to date there are no effective regulations of these pesticides to protect bees in the United States. This lack of regulatory protection is concerning for the Blue Calamintha Bee due to its proximity to agricultural areas, which increases its likelihood and frequency of exposure to pesticides.

A bill addressing neonicotinoid pesticides was introduced in the U.S. House of Representatives in 2013. Saving America's Pollinators Act of 2013, H.R. 2692, 113th Cong. (2013) ("H.R. 2692"). H.R. 2692 directed the EPA Administrator to suspend the registration of neonicotinoids until a determination could be made that neonicotinoids will not cause unreasonable adverse effects on pollinators based (1) on the best scientific evidence and (2) on whether a comprehensive field study meeting the criteria of the Administrator was completed. H.R. 2692. However, the bill did not pass and therefore does not represent any regulatory protection for the Bee.

ii. State Protection

1. State Protected Areas

The Florida Fish and Wildlife Conservation Commission ("FWCC") manages the Gould Road and Holmes Avenue Preserves as Lake Wales Ridge Wildlife and Environmental Areas, but this also offers little in the way of protection for the Bee (Rightmyer, *et al.*, 2011 at 275). The Gould Road Preserve purportedly has a large population of Ashe's Calamint and a Blue Calamintha Bee population, but the site is unfenced and subject to pesticide drift from adjacent orange groves (Rightmyer, *et al.*, 2011 at 275). Additionally, the Holmes Avenue Preserve includes a large

number of small private parcels of land that neither the FWCC nor the Service has acquired and that are often subject to destructive use by off-road vehicles (Rightmyer, *et al.*, 2011 at 275). Therefore, state protection of these preserves appears to be insufficient to protect the Blue Calamintha Bee populations therein.

2. State and Local Pesticide Control

Some states and municipalities have begun to address the lack of Federal regulation of pesticides harmful to pollinators with their own laws that attempt to protect pollinators from pesticides. States including New Jersey (N.J. Bill A1373) and Oregon (Oregon, 2014) and the city of Eugene, Oregon (Eugene City Council, 2014) have either considered or implemented partial pesticide bans and other regulations to protect bees. However, there do not appear to be any similar efforts underway in Florida or Highlands County that would protect the Blue Calamintha Bee.

3. Protection of Ashe's Calamint as a Threatened Plant in Florida

As discussed, *supra*, the Blue Calamintha Bee is a floral specialist dependent exclusively on a single plant, Ashe's calamint, as its only pollen source (NatureServe, 2013). Ashe's calamint is listed by the State of Florida as a threatened plant species. FLA. ADMIN. CODE r. 5B-40.0055. However, this State protection of Ashe's calamint is not sufficient to protect the Bee. Most importantly, Florida's protection of the relatively less imperiled plant is not designed to protect the more imperiled Bee and is directed at the plant alone. Accordingly, Florida's protection of the Ashe's calamint does not address many of the numerous threats to the Bee's survival, including pesticide drift. At most, Florida's protection of the Ashe's calamint serves to ameliorate the threat of habitat loss to the Bee, but even this potential benefit is heavily qualified.

Under Florida law, it is illegal to "willfully harvest, collect, pick, remove, injure or destroy any . . . plant listed as threatened growing on the private land of another or on any public land or water, [without] the written permission of the owner of the land or water or his legal representative." FLA. ADMIN. CODE r. 5B-40.005. Therefore, harm, destruction, or removal of Ashe's calamint performed by private land owners on their own land, or which are not willfully undertaken on the private land of another or on public land, or that proceed pursuant to written permission of the state or of private landowners are exempt from this regulatory protection. These exceptions greatly limit the usefulness of this protection and remove the certainty that Ashe's calamint will be adequately protected.

a. "Willfully"

Florida's listing of Ashe's calamint as a threatened plant species prevents *willful* acts that harm, remove, or destroy the plant. See FLA. ADMIN. CODE r. 5B-40.005. This is problematic because the Bee has been found in areas that are subject to harmful off-road vehicle use and, potentially, herbicide drift (See Rightmyer, *et al.*, 2011 at 275; Section IV(a), *supra*, "The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (Listing Factor A)"). Though these activities certainly harm Ashe's calamint and eliminate Bee habitat, it is unclear whether either activity *willfully* harms the Ashe's calamint. Willful and willfully are not defined in the threatened plant regulations or the Florida Statute sections cited therein. See FLA. ADMIN.

CODE r. 5B-40.001; FLA. STAT. § 581.011; FLA. STAT. § 581.185(2). However, willful conduct often requires an intention to violate the law, or at least an intention to take the action that causes harm. Therefore, it may not be enough that off-road vehicle use or herbicide drift incidentally cause serious harm to the Ashe's calamint, or even cause localized extirpations, as these activities may not be covered by the state of Florida's proscriptions as applied to threatened plant species unless Florida could prove that these actions were "willful." Similar problems are evident when attempting to apply this threatened plant protection to the most serious threats to the Bee's habitat, increased commercial and residential development, which will cause further loss of Lake Wales Ridge habitat, and expansion of agriculture, which will cause both further loss of Ridge habitat and increased risk of pesticide and herbicide drift (*See* Section IV(a), *supra*, "The Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range (Listing Factor A)"). Finally, this threatened plant listing does not protect the Bee itself from harm, removal, or destruction, regardless of whether it is done willfully, with permission, or otherwise.

b. Permission

The Florida threatened plant listing allows the owner of private lands or manager of public lands, or anyone with the landowner or manager of public land's written permission, to harm, remove, or destroy the threatened plants. *See* FLA. ADMIN. CODE r. 5B-40.005. This allows willful harm, removal, and destruction and puts the survival of the threatened plant at the whim of a private landowner or state agency. This exception is particularly problematic for the Blue Calamintha Bee as it appears to currently live only on private land within a platted subdivision (*See* Rightmyer, *et al.*, 2011 at 258, 275). Therefore, if the subdivision owner determined that they would like to begin development immediately, there would be no requirement to obtain permission for, and thus no regulatory oversight of, even the complete destruction of all of the Ashe's calamint plants that currently provide the Bee's only known occupied habitat. In short, the Bee's entire known occupied habitat could thereby be completely destroyed without running afoul of Florida's regulatory protection for the Ashe's calamint.

Furthermore, unlike for Florida's listed endangered and commercially exploited plants, no permit is required to harm, remove, or destroy Florida's state listed threatened plants, such as the Ashe's calamint. This severely limits, if not completely removes, regulatory oversight of threatened plant reductions. *Compare* FLA. ADMIN. CODE rr. 5B-40.003, 5B-40.004 (2004) *with* FLA. ADMIN. CODE r. 5B-40.005. As a result, this regulatory situation fails to provide the relevant decision-makers, private landowners or state land managers depending on land ownership, with access to information about prior and future threatened plant removals and the effect that those removals may have on the continued existence of the Ashe's calamint, and, consequently, the Bee.

c. Threats to the Bee that are not also Threats to Ashe's Calamint

The threats to the Bee are not coextensive with the threats to Ashe's calamint. For instance, pesticide drift will likely cause little or no harm to the Ashe's calamint, but could extirpate all of the Bees in the affected area. Therefore, because pesticide drift would not affect the Ashe's

calamint, and would not violate Florida's threatened plant regulations, serious harm to the Bee would go unregulated by the State. Specific protection of the Bee itself is needed to ensure its survival because protections for the Bee's host plant alone will always be insufficient to adequately protect the Bee from all threats.

Florida's listing of the Ashe's calamint as a threatened plant does not purport to replace ESA listing and cannot do so in this case. *See* FLA. ADMIN. CODE r. 5B-40.0055(2) (2004) (discussing fact that plants listed under ESA are subject to additional regulations as compared to those that are only state listed). Though the state listing of Ashe's calamint may help avoid some Blue Calamintha Bee habitat loss, it cannot prevent many of the other threats to the species. It does not target specific threats to the Bee; cannot protect the Bee from all of the threats that it faces; does not prevent private land owners from harming, removing, or destroying the Ashe's calamint on their own land; only prevents *willful* harm, removal, or destruction of the Ashe's calamint on the lands of others; and can be completely avoided by simply obtaining the permission of the landowner or land manager before harming, removing, or destroying the Ashe's calamint. Additionally, Florida's threatened plant listing does not appear to provide for any monitoring or accountability, and it has already been shown to insufficiently protect even the Ashe's calamint, the species it is directed towards protecting but which is continuing to decline (NatureServe, 2013). In sum, Florida's threatened plant listing of the Ashe's calamint is inadequate to protect the Blue Calamintha Bee and is not an adequate alternative regulatory measure making it unnecessary to list the Bee under the ESA.

d. Other Natural or Manmade Factors Affecting its Continued Existence (Listing Factor E)

There are additional natural and manmade factors that threaten the Blue Calamintha Bee's continued existence and exacerbate the already considerable threats of habitat degradation, inadequate regulation, and, potentially, native and exotic diseases.

i. Rarity, Constrained Range, Stochastic Events, and Inbreeding

The Blue Calamintha Bee's rarity and constrained range present additional threats to the species' continued existence. There was probably once a Blue Calamintha Bee metapopulation, but it has since broken down into four separate, seemingly-isolated populations (NatureServe, 2013). These individual populations may not ever reconnect as a metapopulation if the distances between them are too far apart for this Bee, which has a short flight period (Rightmyer, *et al.*, 2011 at 275), to travel. Additionally, the Bee is unlikely to colonize outside of the Lake Wales Ridge as it appears to be highly reliant on, and to have evolved within, this unique ecosystem. These factors threaten the species by, *inter alia*, increasing susceptibility to stochastic events and increasing inbreeding.

1. Stochastic Events

While there is substantial evidence that the Bee's remaining populations are in decline, NatureServe estimates 70 to 90 percent from historic levels (NatureServe, 2013), a potentially more concerning fact is that the small, unconnected Lake Wales Ridge populations are the only

known Blue Calamintha Bee populations in the world. Given its geographically constrained population in small, isolated areas of habitat, the Bee is extremely vulnerable to stochastic events, like habitat reduction and modification, hurricanes, and fire. As discussed, *supra*, habitat reduction and modification from sources including development and agriculture are extreme in the Lake Wales Ridge area. However, the area is also highly susceptible to hurricane damage. During the 2004 hurricane season, for example, Hurricanes Charley, Frances, and Jeanne caused extensive damage to the Lake Wales Ridge area, including several of the federally managed LWRNWR units (*See* Fish and Wildlife Service, 2010 at 3; National Weather Service, 2004-1 at 20; National Weather Service, 2004-2 at 27; National Weather Service, 2004-3 at 18). The area is also very vulnerable to unwanted fire with the Service documenting nine unwanted fires in the LWRNWR over the past fifteen years, including one that burned over 600 acres of Refuge land (Fish and Wildlife Service, 2010 at 39-41).

2. Inbreeding

Inbreeding represents a significant threat to small populations. For example, in reference to the sisi snail (*Ostodes strigatus*), the Service noted that

Small populations are particularly vulnerable to reduced reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary potential and ability to cope with environmental change.

(Fish and Wildlife Service, 2012 at 5).

Bumblebee studies determined that inbreeding and reduced genetic diversity can also lead to a reduction in adult bee longevity and fecundity (Darvill, *et al.*, 2006 at 608) and decreased immunocompetence and higher susceptibility to parasites (*See generally* Whitehorn, *et al.*, 2011; Whitehorn, *et al.*, 2014). The reduction of genetic diversity inherent in small, isolated populations such as those currently existing for the Blue Calamintha Bee and the corresponding increase in disease and parasite prevalence may cause populations to become more prone to extinction (*See* Cameron, *et al.*, 2011; Whitehorn, *et al.*, 2011).

This lack of adequate gene flow may be exacerbated by the apparent lack of a metapopulation structure across the seemingly isolated Blue Calamintha Bee populations.

ii. Pesticides

A large portion of the Bee's Lake Wales Ridge habitat is subject to the effects of pesticide use in nearby citrus groves. Pesticides can drift in excess of one mile from the locations where they are applied and can kill 80% of bees foraging close to the source (Evans, *et al.*, 2008 at 29). Foraging bees are poisoned by pesticides when they absorb the toxins directly through their exoskeleton, drink contaminated nectar, or gather pesticide covered pollen (Evans, *et al.*, 2008 at 29).

This concern over pesticide drift is not merely hypothetical and has been observed in at least one area of occupied Blue Calamintha Bee habitat. Researchers documented pesticide drift in the

Gould Road Preserve, a small area at the southern tip of Lake Wales Ridge between Lake Placid and Lake Okeechobee, which “apparently [has] a substantial population of [Blue Calamintha Bees].” (Rightmyer, *et al.*, 2011 at 275).

Pesticide toxicity, the probability and degree of exposure to pesticides, and the natural history and population dynamics of a bee species all factor into the species’ risk of harm or death from pesticides (Food and Agriculture Organization, 2013 at 4). The Food and Agriculture Organization of the United Nations completed a study that concluded that pesticide impacts on wild, solitary bees, like the Blue Calamintha Bee, are higher than those on managed, social bees (Food and Agriculture Organization, 2013 at 25-26). This is because the fraction of a total population that is out of the nest foraging or collecting nesting materials will be greater for solitary species since their population growth rates are lower (Food and Agriculture Organization, 2013 at 26).

The map below, taken from a 2009 U.S. Geological Survey (“USGS”) scientific report evaluating pesticides in the central Florida ridge region (Choquette & Kroening, 2008), shows that citrus crops, shown in shades of yellow and orange, cover a large percentage of the southern portion of the Ridge in Highlands County (See Figure 4, *infra*). This area corresponds to the only region where researchers have found the Blue Calamintha Bee thus far (See Figure 4, *infra*; Rightmyer, *et al.*, 2011 at 258, 275).

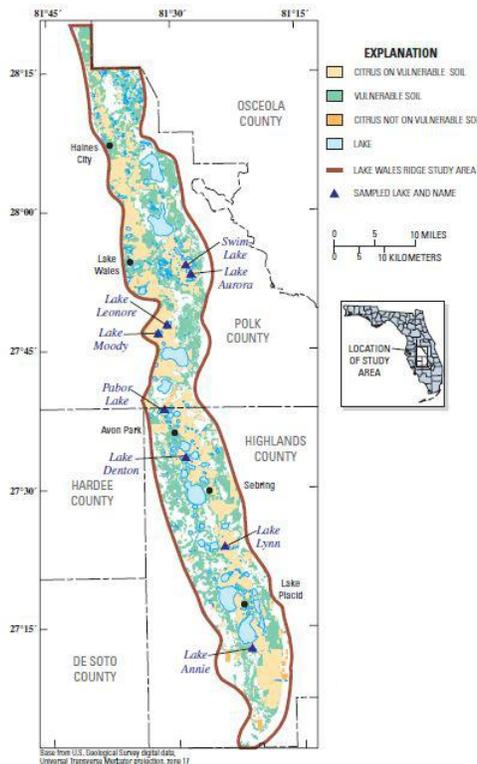


Figure 4. USGS Map of Citrus Land Use in Lake Wales Ridge (Choquette & Kroening, 2008 at 3).

As a result of this extensive agricultural development, pesticide use is widespread in and around the Lake Wales Ridge area. Another 2009 USGS report, this time from the National Water-

Quality Assessment Program, noted that Highlands County used an estimated 3,918,377 to 4,093,969 pounds of pesticides through its “Pesticide National Synthesis Project.”⁴ This extensive pesticide use includes amongst the pesticides that are highly toxic to bees a maximum estimated use of 131,122 pounds of carbamates, 36,896 pounds of organophosphates, and 4,851 pounds of neonicotinoids (*See* Stone, 2009; *Beyond Pesticides*, 2015).

Accordingly, the types of toxic pesticides used on crops in Highlands County, the Bee’s increased risk of exposure to pesticides, and the fact that the Bee is found in small, isolated populations with decreasing numbers all increase the risk to the Bee posed by pesticides. As discussed in Sections IV(c)(i)(2) and IV(c)(ii)(2), *supra*, “The Inadequacy of Existing Regulatory Mechanisms (Listing Factor D),” neither Federal, State, nor local pesticide regulations currently exist that would help protect the Bee from this potentially serious threat.

iii. Climate Change

The Blue Calamintha Bee is endemic to Florida and will face new and exacerbated threats as climate change impacts the state. The Southeast United States has already experienced a 2°F increase in annual average temperature since 1970, and climate models predict that temperatures will increase by another 4.5°F to 9°F by the 2080s (Karl, *et al.*, 2009 at 111). Scientists expect the temperature increase to result in a two-foot rise in average sea level and an increased hurricane intensity and associated storm surge (Karl, *et al.*, 2009 at 114). Meanwhile, the U.S. Geological Survey projects that *global* mean sea level rise could be higher than nine feet by the year 2300 (Gregory, 2013 at 13).

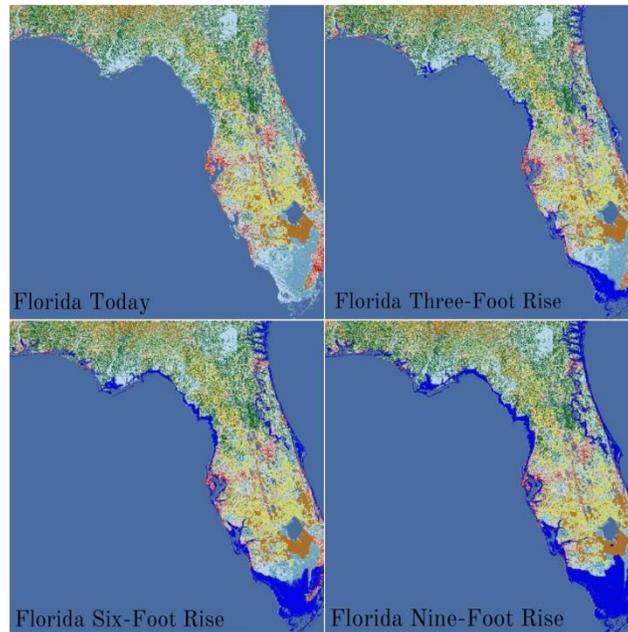


Figure 5. USGS’s projected inundation of Florida coastline under several sea level rise scenarios (USGS, 2015) (images derived from interactive website animation with text added).

⁴ Highlands County-level pesticide use was calculated by aggregating the data made available through an online USGS database (Stone, 2009).

When sea levels rise, coastal shorelines will retreat and low-lying areas will be inundated, sometimes permanently, by the advancing sea (*See Figure 5, supra; Karl, et al., 2009 at 114*). Furthermore, because the fresh water salinity is likely to increase in the southeastern coastal zone, ecosystems will be displaced farther inland (*Karl, et al., 2009 at 114*). As communities are inundated and eroded away, people will be displaced farther inland as well (*Karl, et al., 2009 at 114*). The Lake Wales Ridge area is several hundred feet above sea level, and will likely be a preferred location for the displaced ecosystems and people. This will increase development and competition and will have a negative impact on the Blue Calamintha Bee.

Additionally, in the Lake Wales Ridge Comprehensive Conservation Plan, the Service indicated that, although more investigation is necessary, the physical effects of climate change on ridge landscapes might actually be minimized (*Fish and Wildlife Service, 2010 at 160*). It is thus logical to conclude that, as climate change continues, coastal areas will erode and devalue and developers in Florida will have an even greater desire to develop on or near the Lake Wales Ridge. This potentially vast increase in development, already the main threat to the Bee, in the Blue Calamintha Bee's only known habitat would clearly endanger the species.

V. CONCLUSION AND REQUEST FOR CRITICAL HABITAT DESIGNATION

For all the reasons explained above, Defenders requests that the Service list the Blue Calamintha Bee, *Osmia calaminthae*, as an "endangered," or alternatively as a "threatened," species under the ESA. This Petition contains references to the best scientific and commercial data available for the Blue Calamintha Bee and presents substantial information that would lead a reasonable person to believe that ESA listing may be warranted.

Because the Blue Calamintha Bee faces threats under at least three of the five ESA listing factors, listing is warranted. The primary threat facing the Bee is increasing destruction and modification of its only known habitat on the Lake Wales Ridge for agricultural, residential, and commercial development purposes. This development is expected to intensify in the future, thus constituting an even more serious threat. This increased development will also likely intensify threats to the Bee and its habitat in the form of increased pesticide and herbicide drift. In addition, the Service should consider the extent to which the Bee's rarity, constrained habitat, and lack of adequate regulatory mechanisms render it particularly vulnerable to threats. The Service must also recognize the fact that NatureServe has assessed the Bee as Globally Critically Imperiled and that this should be sufficient for the issuance of a positive 90-day finding. Finally, the Service should consider whether disease or any other threats are currently harming the Bee, or may harm it in the future, during its status review of the Bee, after the issuance of a positive 90-day finding.

The ESA mandates that, when the Service lists a species as endangered or threatened, it generally must also concurrently designate critical habitat for that species. Section 4(a)(3)(A)(i) of the ESA states that, "to the maximum extent prudent and determinable," the Service "shall, concurrently with making a determination . . . that a species is an endangered species or threatened species, designate any habitat of such species which is then considered to be critical habitat" 16 U.S.C. § 1533(a)(3)(A)(i); *see also* 16 U.S.C. § 1533(b)(6)(C).

The ESA defines the term “critical habitat” to mean:

- i. the specific areas within the geographical area occupied by the species, at the time it is listed . . . , on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
- ii. specific areas outside the geographical area occupied by the species at the time it is listed . . . , upon a determination by the Secretary that such areas are essential for the conservation of the species.

16 U.S.C. § 1532(5)(A).

Defenders requests that the Service comply with this unambiguous mandate and designate critical habitat concurrently with the listing of the Blue Calamintha Bee. We believe that, since the Bee has such a constrained range and only four known populations, all current habitat utilized by the Bee meets the criteria for designation as critical habitat and must therefore be designated as such. In addition to all presently-occupied habitat, we believe that sufficient populations of the Blue Calamintha Bee’s only host plant, the Ashe’s calamint, as well as areas between these host plant populations and between the isolated Bee populations, must also be protected as critical habitat to allow this flight-limited species to migrate between populations, reconnect its metapopulation structure, and allow for potential expansion of the Bee’s current range via re-colonization, reintroduction, or translocation of the Bee to prevent genetic isolation, susceptibility to stochastic events, and to increase the species’ resilience to habitat changes and other threats.

Respectfully submitted on February 5, 2015,



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