90-DAY FINDING PETITION REVIEW FORM
LISTING AS A THREATENED OR AN ENDANGERED SPECIES

Federal Docket No. FWS–R3–ES-2021–0063

90-DAY FINDING ON A PETITION TO LIST THE AMERICAN BUMBLE BEE *Bombus pensylvanicus* (De Geer, 1773) AS AN ENDANGERED SPECIES UNDER THE U.S. ENDANGERED SPECIES ACT

Petitioned action being requested:
☒ List as an endangered or a threatened species
☐ Reclassify (uplist) from a threatened species to an endangered species

Petitioned entity:
☒ Species
☐ Subspecies
☐ DPS of vertebrates
☐ Subset of listed entity (species, subspecies, DPS, etc.)

Background

Section 4(b)(3)(A) of the Endangered Species Act (Act) requires that we make a finding on whether a petition to list, delist, uplist (reclassify the species from a threatened species to an endangered species), or downlist (reclassify the species from an endangered species to a threatened species) a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is "credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted" (50 CFR § 424.14(h)(i)).

Petition History

On February 1, 2021 we received a petition from the Center for Biological Diversity and the Bombus Pollinators Association of Law Students of Albany Law School, requesting that the American bumble bee be listed as an endangered species and critical habitat be designated for this species under the Act. We note that designating critical habitat is not a petitionable action under the Act. Petitions to designate critical habitat (for species without existing critical habitat) are reviewed under the Administrative Procedure Act and are not addressed here. See 50 C.F.R. § 424.14(j). To the maximum extent prudent and determinable, any proposed critical habitat will be addressed concurrently with a proposed rule to list a species, if applicable. The petition clearly identified itself as such and included the requisite identification information for the petitioner, required at 50 CFR 424.14(c).

Evaluation of a Petition to List the American Bumble Bee Under the Act

Species and Range

Does the petition identify an entity that may be eligible for listing as a threatened species or endangered species (i.e., is the entity a species, subspecies, or DPS)?

☒ Yes
☐ No

American Bumble Bee (*Bombus pensylvanicus*)

Historical range: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, Wyoming; Canada (Ontario); Mexico

Current range: Alabama, Arizona, Arkansas, California, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia; Canada (Ontario); Mexico

This is a recognized species by Charles De Geer in *Mémoires Pour Server à L'Histoire des Insectes* (De Geer 1773, pp. 575-576), Henry J. Franklin in *The Bombidae of the New World* (Franklin 1913, p. 399), and Jeffrey D. Lozier et al. in *Patterns of Range-Wide Genetic Variation in Six North American Bumble Bee (Apidae: Bombus) Species* (Lozier et al. 2011, entire). The American bumble bee is a valid species under the Integrated Taxonomic Information System (ITIS) (ITIS 2020, p. 1).

Statutory and Regulatory Standards for Evaluation of the Petition

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an "endangered species" or a "threatened species." The Act defines an endangered species as a species that is "in danger of extinction throughout all or a significant portion of its range," and a "threatened species" as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether any species is an "endangered species" or a "threatened species" because of any of the following factors:

(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.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

In reviewing the petition, we use the term "threat" to refer in general to actions or conditions that may, or are reasonably likely to, negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition, or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species may meet the statutory definition of an "endangered species" or a "threatened species." In determining whether a species may meet either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts.

In accordance with 50 CFR 424.14(d), the Service's determination as to whether the petition provides substantial scientific or commercial information indicating that the petitioned action may be warranted will depend in part on the degree to which the petition includes the following types of information: (1) Information on current population status and trends and estimates of current population sizes and distributions, both in captivity and the wild, if available; (2) identification of the factors under section 4(a)(1) of the Act that may affect the species and where these factors are acting upon the species; (3) whether and to what extent any or all of the factors alone or in combination identified in section 4(a)(1) of the Act may cause the species to be an endangered species or threatened species (i.e., the species is currently in danger of extinction or is likely to become so within the foreseeable future), and, if so, how high in magnitude and how imminent the threats to the species and its habitat are; (4) information on adequacy of regulatory protections and effectiveness of conservation activities by States as well as other parties, that have been initiated or that are ongoing, that may protect the species or its habitat; and (5) a complete, balanced representation of the relevant facts, including information that may contradict claims in the petition.

Evaluation of Information in the Petition

When evaluating a petition, we assess the information in the petition and use any readily available information (e.g., in our files or published literature that we are aware of) to determine the credibility of the information presented in the petition. Our implementing regulations at 50 CFR 424.14(h)(i) state conclusions drawn in the petition without the support of credible scientific or commercial information will not be considered "substantial information." "Credible scientific or commercial information" may include all types of data, such as peer-reviewed literature, gray literature, traditional ecological knowledge, etc. Thus, we first must determine

whether the information provided in the petition is credible. In other words, the Services must evaluate whether the information in the petition is substantiated and not mere speculation or opinion. Any claims that are not supported by credible scientific or commercial information do not constitute substantial information and will not be further evaluated. Next, we determine whether the conclusions drawn in the petition are reasonable (i.e., actually supported by that credible information).

After identifying the claims in the petition that are supported by credible information, we consider those claims in the context of the factors in section 4(a)(1) of the Act. When evaluating information presented in the petition, we consider factor D in light of the other factors, not independently. In other words, we consider whether the petition presents substantial information indicating that existing regulatory mechanisms may be inadequate to address the magnitude or imminence of threats identified in the petition related to the other four factors; therefore, we can consider factor D only after we have determined that the petition has presented substantial information that the species may warrant listing due to those other threats.

To complete our analysis for a 90-day petition finding: (1) We identify the claims in the petition that are supported by credible information indicating that threats are negatively affecting one or more individuals of the species; and (2) we determine which of those threats affect the species at a population or species level after taking into account any mitigating actions or conditions that may ameliorate those threats. If we find that the petition does not present substantial information that the petitioned action may be warranted based on one or more threat factors, we consider the cumulative impact of all of the threats that are supported by credible information. Based on these steps, we then draw our conclusion and petition finding based on the standard for 90-day findings, which is whether the petition presents "credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted."

Claims That Are Supported by Credible Information Indicating the Presence of Threats to Individuals

We first assess whether the claims in the petition are supported by credible information (i.e., whether there is credible information that the threat is occurring and that the species may be exposed to the threat) (Table 1). If there is credible information that the threat is occurring and that the species may be exposed to it, we then assess whether that information reasonably indicates the presence of negative effects to one or more individuals of the species as a result of that threat. If not, our analysis of that individual threat presented in the petition is complete; we may then analyze that threat later if we need to evaluate cumulative effects (that is, if there is not credible information indicating that any individual threat is having a negative effect on individuals or populations of the species). If the credible information about the particular threat does indicate the presence of negative effects to individuals, we assess the extent to which the credible information in the petition indicates that the threat is having a negative effect on one or more populations. If there are no population-level effects, our analysis of that individual threat presented in the petition is complete; we may then analyze that threat later if we need to evaluate cumulative effects. If the credible information about the particular threat does indicate the presence of population-level effects, we assess the extent to which the credible information in the

petition indicates that the threat is having a negative effect on the species as a whole, such that listing may be warranted.

If, for any one threat, we find that there is credible information indicating that the threat is having a negative effect on the species as a whole, we can stop and make a positive, “substantial information” finding. We would then evaluate all of the threats in detail based on the best scientific and commercial data available when we conduct the status assessment and make the 12-month finding. If we do not find substantial information indicating that any one threat is having an impact at a species level, we conduct a cumulative analysis of the effects of all of the threats.

TABLE 1: Assessment of the credibility of scientific and commercial information in the petition and the extent to which claims supported by credible scientific or commercial information in the petition corroborates the presence of negative impacts to individuals, populations, or the species.

Threat or Activity	**Exposure. Is the Claim of the Threat in the Petition Supported by Credible Scientific and Commercial Information? Does the petition support the claim that there is a potential threat and it is occurring or is likely to occur within the range of the species? If No, Explain. If Yes, Include Citations to the Credible Information.**	**Response (Individuals). For the Claims That Are Supported by Credible Information, Do the Claims and the Supporting Information Indicate the Presence of Negative Effects to One or More Individuals of the Species? Yes or No. Explain and Describe Below.**	**Response (Populations/Species). Do the Claims and the Supporting Information Indicate the Presence of Negative Effects to One or More Populations and if so, to the Species as a Whole? Yes or No. Explain and Describe Below.** Ensure your explanation includes the effects of any existing regulatory mechanisms or conservation efforts that are ameliorating or exacerbating these negative effects from the petition or information in our files.
Pathogen spillover (Factor C)	Yes, the petition presents credible evidence that pathogens, *Nosema ceranae* and *Nosema bombi*, spill over to American bumble bees from domesticated bees used to pollinate greenhouse crops (Cameron and Sadd 2020, p. 10.10; Szabo et al. 2012, p. 236; Colla et al. 2006, pp. 463-465). The petition claims that pathogens present in areas of highest bee declines are also areas of increasing use of domesticated bees. The credible scientific and commercial information supports the claim of increasing use of domesticated bees for pollination (Velthuis and van Doorn 2006, p. 429) and the claim that the pathogens are spilling over directly from greenhouses where domesticated bees are used for pollination (Colla et al. 2006, pp. 463-	Yes, the credible information supports negative effects of pathogens to fecundity and survivorship to one or more individuals by reducing a queen's ability to successfully establish a colony, male and worker longevity, and survivability (Cameron and Sadd 2020, pp. 10.9-10.11). There is credible information that the pathogens *N. ceranae* and *N. bombi* infect European honeybees (*Apis mellifera*) (Graystock et al. 2016, p. 68-69). *N. ceranae* is spilling over as a novel pathogen to wild bumble bees wherever honeybees are used for pollination services (Fürst et al. 2014, pp. 3-4).	Yes, there is credible information to support the negative effects of pathogen spillover throughout the entire range of the American bumble bee. The petitioners present credible information about the mechanisms of pathogen spillover and the negative effects to multiple populations that may rise to negatively affect the species as a whole (USDA 2020; Graystock et al. 2016, pp. 68-69; Fürst et al. 2014, p.4; Szabo et al. 2012, pp. 235-236; Velthuis and van Doorn 2006, p. 433; Colla et al. 2006, pp. 463-465). The pathogens, *Nosema bombi* and *Nosema ceranae*, negatively impact wild colony growth, immune function, and reproduction (Graystock et al. 2016, pp. 68-69; Graystock et al. 2013, pp. 116-117; Otti and Schmid-Hempel 2008, p. 579). The petitioners

	465). There is also credible evidence that American bumble bees are declining within areas of high vegetable greenhouse density (Szabo et al. 2012, p. 236).		also provide credible information that existing regulatory mechanisms are insufficient for protecting American bumble bees. The existing regulation is limited to screening for pathogens and not mitigation of pathogen spillover (Evans 2017, pp. 38-39). Furthermore, regulation is predominantly at the State level and varies across the range of the American bumble bee.

Cumulative Effects of Claims Supported by Credible Information Indicating the Presence of Negative Effects to the Individuals, Populations, or the Species as a Whole

If we do not find substantial information indicating that any one threat is having an impact on the species, we consider the cumulative effects of all of the claims in the petition that are supported by credible information indicating the presence of potential threats affecting individuals of the species. Because we have found that the petition presented substantial information that one or more threats are having an impact on the species, the petition presents substantial information indicating that the species may warrant listing. We do not need to assess cumulative effects at the 90-day finding stage because we will address cumulative effects of all threats in the 12-month finding.

Summary

The petitioner provided credible information indicating potential threats to individuals of the species within multiple populations due to pathogen spillover from domesticated bumble bees or commercial honeybees used in vegetable greenhouses throughout North America. The petitioner also provided credible information linking these threats to reductions in population size and growth of American bumble bees (Factor C). The petitioner also provided credible information that the existing regulatory mechanisms may be inadequate to address these potential threats (Factor D).

Petition Finding

We reviewed the petition and sources cited in the petition. We considered the factors under section 4(a)(1) and assessed the effect that the threats identified within the factors—as may be ameliorated or exacerbated by any existing regulatory mechanisms or conservation efforts—may have on the species now and in the foreseeable future. Based on our review of the petition and sources cited in the petition regarding pathogen spillover (Factor C), we find that the petition presents substantial scientific or commercial information indicating that listing the American bumble bee (*Bombus pensylvanicus*) as a threatened or endangered species may be warranted. The petitioners also presented information suggesting habitat destruction from agricultural intensification, livestock grazing and pesticide use, loss of genetic diversity, climate change, and competition from non-native honeybees may be threats to the American bumble bee. We will fully evaluate these potential threats during our 12-month status review, pursuant to the Act's requirement to review the best scientific and commercial information available when making that finding.

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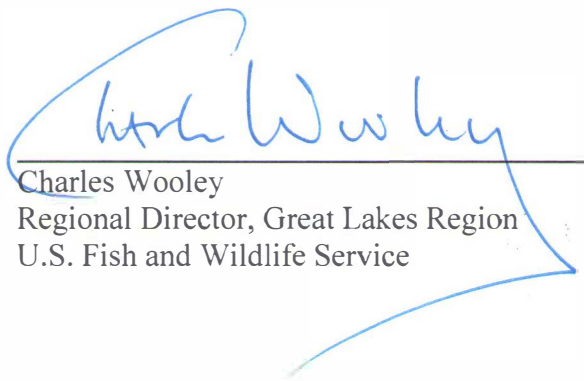
Date: May 6, 2021



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Specific Requests for Information

No specific requests for information.