



## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS–R4–ES–2025–0022; FXES1111090FEDR–256–FF09E21000]

RIN 1018–BI20

### Endangered and Threatened Wildlife and Plants; Endangered Species Status for Ghost Orchid

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Proposed rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), propose to list the ghost orchid (*Dendrophylax lindenii*), a flowering plant species found in the United States in southwestern Florida and in Cuba as an endangered species under the Endangered Species Act of 1973, as amended (Act). This determination also serves as our 12-month finding on a petition to list the ghost orchid. After a review of the best scientific and commercial data available, we find that listing the species is warranted. Accordingly, we propose to list the ghost orchid as an endangered species under the Act. If we finalize this rule as proposed, it would add this species to the List of Endangered and Threatened Plants and extend the Act’s protections to the species. We find that designating critical habitat for this species is not prudent.

**DATES:** We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. eastern time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in

**FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

**ADDRESSES:** *Comment submission* You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal:

<https://www.regulations.gov>. In the Search box, enter FWS–R4–ES–2025–0022, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment.”

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R4–ES–2025–0022, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments only by the methods described above. We will post all comments on <https://www.regulations.gov>. This generally means that we will post any personal information you provide us (see **Information Requested**, below, for more information).

*Availability of supporting materials:* Supporting materials, such as the species status assessment report, are available on <https://www.regulations.gov> at Docket No. FWS–R4–ES–2025–0022.

**FOR FURTHER INFORMATION CONTACT:** Nikki Colangelo, Supervisor, Division of Classification and Recovery, U.S. Fish and Wildlife Service, Florida Ecological Services Office, 777 37th Street, Suite D-101, Vero Beach, FL 32960; telephone 772–226–8138. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the

relay services offered within their country to make international calls to the point-of-contact in the United States. Please see Docket No. FWS–R4–ES–2025–0022 on <https://www.regulations.gov> for a document that summarizes this proposed rule.

## **SUPPLEMENTARY INFORMATION:**

### **Executive Summary**

*Why we need to publish a rule.* Under the Act (16 U.S.C. 1531 et seq.), a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the ghost orchid meets the Act's definition of an endangered species; therefore, we are proposing to list it as such. Listing a species as an endangered or threatened species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 et seq.).

*What this document does.* We propose to list the ghost orchid as an endangered species under the Act.

*The basis for our action.* Under the Act, we may determine that a species is an endangered or threatened species because of any of five 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. We have determined that the ghost orchid meets the Act's definition of an endangered species due to threats associated with poaching (Factor B), habitat degradation due to hydrological changes

(Factor A), and the damage to the species and the host trees from the increased intensity and frequency of hurricanes and impacts from saltwater intrusion (Factor E).

Section 4(a)(3) of the Act requires that the Secretary of the Interior (Secretary), to the maximum extent prudent and determinable, concurrently with listing designate critical habitat for the species. Section 3(5)(A) of the Act defines critical habitat as (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 protections; 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. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat. Because we have determined that the designation of critical habitat will likely increase the degree of threat to the species, we find that designation of critical habitat is not prudent for the ghost orchid.

### **Information Requested**

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning:

- (1) The species' biology, range, and population trends, including:

- (a) Biological or ecological requirements of the species, including habitat requirements for pollination and reproduction;
  - (b) Genetics and taxonomy;
  - (c) Historical and current range, including distribution patterns and locations of any additional populations of this species;
  - (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) Threats and conservation actions affecting the species, including:
- (a) Factors that may be affecting the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors;
  - (b) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species; and
  - (c) Existing regulations or conservation actions that may be addressing threats to this species.
- (3) Additional information concerning the historical and current status of this species.
- (4) Information regarding our determination that designating critical habitat for the ghost orchid is not prudent.

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.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an

endangered or a threatened species must be made solely on the basis of the best scientific and commercial data available, and section 4(b)(2) of the Act directs that the Secretary shall designate critical habitat on the basis of the best scientific data available.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via <https://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <https://www.regulations.gov>.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on <https://www.regulations.gov>.

Our final determination may differ from this proposal because we will consider all comments we receive during the comment period as well as any information that may become available after this proposal. Based on the new information we receive (and, if relevant, any comments on that new information), we may conclude that the species is threatened instead of endangered, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. In our final rule, we will clearly explain our rationale and the basis for our final decision, including why we made changes, if any, that differ from this proposal.

#### *Public Hearing*

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests

must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**.

We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing. We may hold the public hearing in person or virtually via webinar. We will announce any public hearing on our website, in addition to the *Federal Register*. The use of virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

### **Previous Federal Actions**

On January 24, 2022, we received a petition from The Institute for Regional Conservation, the National Parks Conservation Association, and the Center for Biological Diversity requesting that the ghost orchid be listed under the Act as a threatened species or an endangered species and that critical habitat for the species be designated. Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to add a species to the Lists of Endangered and Threatened Wildlife and Plants, remove a species from the Lists, or change a listed species' status (from endangered to threatened or from threatened to endangered) presents substantial scientific or commercial information indicating that the petitioned action may be warranted. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish the finding promptly in the *Federal Register*. On October 19, 2022, we published in the *Federal Register* (87 FR 63468) a 90-day finding that the petition contained substantial information indicating that listing the ghost orchid may be warranted and initiated a status review.

Under section 4(b)(3)(B) of the Act, we are required to make a finding within 12 months after receiving any petition that we have determined contains substantial scientific or commercial information indicating that the petitioned action may be warranted, as to whether the petitioned action is warranted, not warranted, or warranted

but precluded by other pending proposals. We must publish a notification of this 12-month finding in the *Federal Register*. This proposed rule constitutes our 12-month finding on the petition.

### **Peer Review**

A species status assessment (SSA) team prepared an SSA report for the ghost orchid. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review in listing and recovery actions under the Act (<https://www.fws.gov/sites/default/files/documents/peer-review-policy-directors-memo-2016-08-22.pdf>), we solicited independent scientific review of the information contained in the ghost orchid SSA report. We sent the SSA report to five independent peer reviewers and received two responses. The peer reviews can be found at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2025-0022. In preparing this proposed rule, we incorporated the results of these reviews, as appropriate, into the SSA report, which is the foundation for this proposed rule.

### **Summary of Peer Reviewer Comments**

As discussed in **Peer Review** above, we received comments from two peer reviewers on the draft SSA report. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the contents of the SSA report. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions, including clarifications in terminology and discussions of life history, and other editorial suggestions. New

information was provided about impacts from recent hurricanes and poaching in both Cuba and Florida, as well as saltwater intrusion on ghost orchid habitats in Florida. We added this information to the SSA report. Otherwise, no substantive changes to our analysis and conclusions within the SSA report were deemed necessary, and peer reviewer comments are addressed in version 1.1 of the SSA report.

## I. Proposed Listing Determination

### Background

A thorough review of the taxonomy, life history, and ecology of the ghost orchid is presented in the SSA report (version 1.1; Service 2025, pp. 11–15).

The ghost orchid is a white, showy flowering plant endemic to southwestern Florida and western Cuba (figure 1, below).

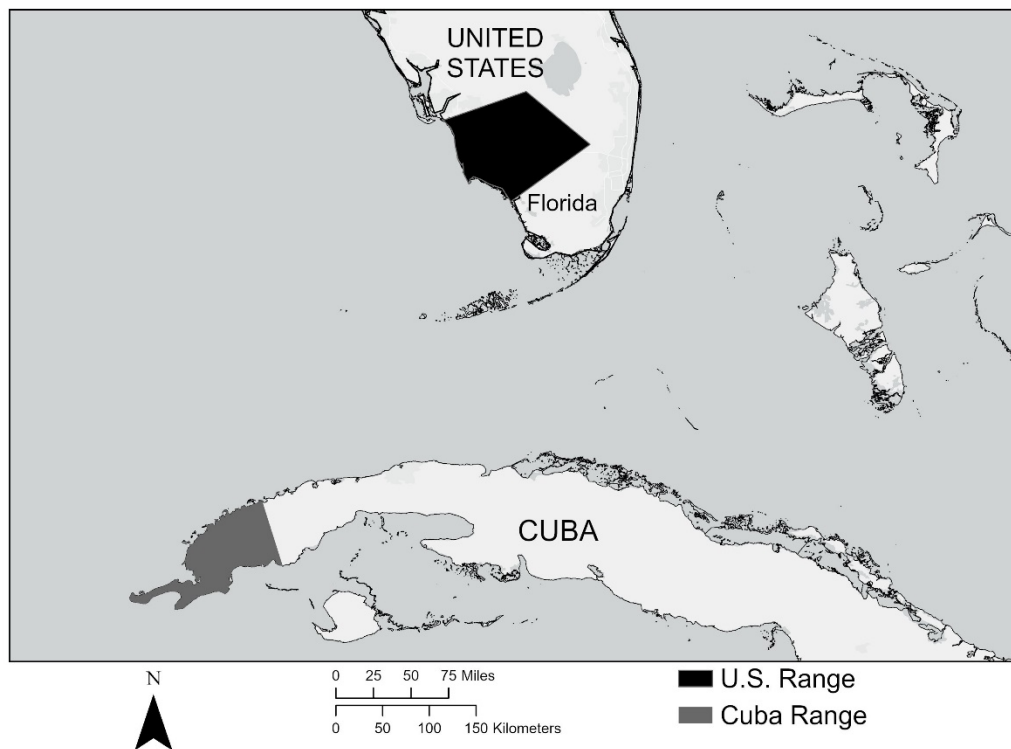


Figure 1. Map showing the range of ghost orchid in southwest Florida and western Cuba.

Ghost orchid populations in Florida occur in the western Greater Everglades ecosystem in approximately eight isolated locations (on mostly protected or managed lands), across an area just over 1,450 square miles (3,757 square kilometers). In Cuba, fewer than 230 ghost orchid plants are known from one area in Guanahacabibes National Park in the southwestern part of the country. For the purposes of evaluating current resiliency, we identified analysis units for ghost orchids that relate to ownership and management areas (see table 1, below) and likely represent discrete populations (see *Current Condition* below for more details).

Ghost orchid plants have also been reported in eastern Cuba including the province of Granma (Rio Portillo), Las Tunas, Santiago de Cuba, Guantanamo, and Holguin provinces (Zettler et al 2019, p. 140; Natureserve 2021, p. 3). None of these populations are believed to be extant (Mújica 2021, entire). In addition, two plants were reported from Ciénaga de Zapata National Park about 200 miles (320 kilometers) to the east of Guanahacabibes, but these reports were unconfirmed and the plants are presumed to be extirpated (Zettler et al. 2019, p. 140).

Table 1—Ghost Orchid Analysis Units

<b>Analysis unit</b>	<b>Ownership/Management</b>	<b>Population size</b>
Florida Panther National Wildlife Refuge	U.S Fish and Wildlife Service	275 ± 20
Fakahatchee Strand Preserve State Park	Florida Department of Environmental Protection (DEP)	230 ± 50
Big Cypress National Preserve	National Park Service (NPS)	Approximately 300
Audubon Corkscrew Swamp Sanctuary	National Audubon Society	2
Coastal Transition Site 1	Florida DEP	19
Collier-Seminole State Park	Florida DEP	4–5
Hendry County	Undisclosed	6–40
Naples Urban Site	Undisclosed	31
Guanahacabibes National Park (Cuba)	Cuba	230
Six Mile Slough	Lee County Parks and Recreation	Extirpated
Picayune Strand State Forest	Florida Forest Service	Likely extirpated
Ciénaga de Zapata National Park (Cuba)	Cuba	Likely extirpated

The ghost orchid is a leafless plant species that uses its roots to photosynthesize and attach itself to a host tree. In Florida, ghost orchids are found in wet freshwater environments including dome swamps (an isolated, forested, depression wetland occurring within a fire-maintained community such as mesic flatwoods (an open canopy of tall pines and a dense, low ground layer of low shrubs, grasses, and forbs)), sloughs (broad channels inundated with slow moving or nearly stagnant water, except during extreme droughts), and strand swamps (a shallow, forested, usually elongated depression or channel situated in a trough within a flat limestone plain, and dominated primarily by bald cypress (*Taxodium distichum*)). Across these habitat types, ghost orchids are primarily found on Florida water ash (*Fraxinus cubensis*) (Nesom 2010, entire; Weakley 2023, pp. 818–819) and pond apple (*Annona glabra*) host trees, and to a lesser extent on bald cypress (Owen 2024, entire). In Cuba, ghost orchids are found growing on tropical semi-deciduous hardwood host trees that are rooted in fractured reef limestone with little or no standing water (Mújica et al. 2018, p. 573). Ghost orchids in Cuba are typically found growing on 5 different host tree species, though 18 host tree species have been recorded (Mújica et al. 2018, p. 577).

In Florida, reproductively mature ghost orchid plants produce flowers from May to August, though flowers have occasionally been observed outside of these months (Brown 2002, p. 80; Flora of North America 2002, p. 621). Plants in Cuba typically flower between October and December (Mújica et al. 2018, p. 575). In the wild, it may take 15 years or more for a ghost orchid plant to first produce flowers (Houlihan et al. 2019, p. 7). By contrast, in controlled environments plants can become reproductive earlier (Davis 2009, pp. 414–415; Hoang et al. 2016, p. 390; Houlihan et al. 2019, p. 7). At night, flowers produce a sweet, fruity fragrance that attracts two specific pollinators, the fig sphinx moth (*Pachylia ficus*) and pawpaw sphinx moth (*Dolba hyloeus*), that are

nocturnally active (Houlihan et al. 2019, p.4; Danaher et al. 2020, p. 673).

## **Regulatory and Analytical Framework**

### *Regulatory Framework*

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and 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.

We use the term “threat” to refer in general to actions or conditions that are known to 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 meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the species’ expected response 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 evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. 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. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis which is further described in the 2009 Memorandum Opinion on the foreseeable future from the Department of the Interior, Office of the Solicitor (M-37021, January 16, 2009; “M-Opinion,” available online at <https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37021.pdf>). The foreseeable future extends as far into the future as the U.S. Fish and Wildlife Service (and

the National Marine Fisheries Service for species under the agency's jurisdiction) can make reasonably reliable predictions about the threats to a species and the species' responses to those threats. We need not identify the foreseeable future in terms of a specific period of time. We will describe the foreseeable future on a case-by-case basis, using the best scientific and commercial data available and taking into account considerations such as the species' life-history characteristics, threat projection timeframes, and environmental variability. In other words, the foreseeable future is the period of time over which we can make reasonably reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.

#### *Analytical Framework*

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data available regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be proposed for listing as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

To assess ghost orchid viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency is the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy is the ability of the species to withstand catastrophic events (for example, droughts, large pollution events); and representation is the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions, pathogens). In general, species viability will increase with increases

in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA process involved making predictions about the species' future condition, including responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best scientific and commercial data available to characterize viability as the ability of a species to sustain populations in the wild over time, which we then used to inform our regulatory decision.

The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R4-ES-2025-0022 on <https://www.regulations.gov>.

### **Summary of Biological Status and Threats**

In this discussion, we review the biological condition of the ghost orchid and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

#### *Species Needs*

The ghost orchid is a long-lived perennial flowering plant found in high humidity, shaded environments. It may take 15 years or more for a ghost orchid plant in the wild to first produce flowers (Houlihan et al. 2019, p.7). They are epiphytic, which means they require host trees as substrates to live on. Their root system keeps them attached to the host tree and provides the means for photosynthesis since ghost orchids are leafless. Like

other orchids, for survival and germination, ghost orchids require a fungal symbiont. For ghost orchid, this fungal symbiont is a *Ceratobasidium* species recognized as distinct but not yet named (Johnson et al. 2023, p. 4). Ghost orchids primarily rely on just two pollinators, the fig sphinx moth and the pawpaw sphinx moth. These pollinators are necessary for cross-pollination and successful reproduction.

In Florida, one of the most important ecological conditions necessary for ghost orchid survival is the presence of sufficiently wet conditions throughout the year. The year-round presence of standing or very slow-moving freshwater in slough and swamp habitats protects against occasional frost and provides the necessary conditions for seedling recruitment. Standing water conditions year-round also protect against intense wildfires from burning into the interior of these swamps and sloughs, which could damage or kill host trees. Ghost orchid habitat in Cuba is different; plants are found growing on semi-deciduous hardwood host trees in areas with little or no standing water (Mújica et al. 2018, p. 573). However, in both Cuba and Florida ghost orchid plants colonize host trees with moist, corrugated or semi-corrugated bark, which is necessary for seed germination (Mújica et al. 2018, p. 583).

Regardless of the habitat, ghost orchid recruitment is dependent on having sufficiently wet conditions (even with little or no standing water) present throughout the year (Mújica et al. 2021, p. 8), likely because moist bark allows for the growth of its mycorrhizal fungal partner (Mújica et al. 2018, p. 583; Mújica et al. 2021, p. 8). Without successful recruitment, populations will eventually become extirpated when the mature individuals perish (Rasmussen et al. 2015, p. 392). Therefore, resilient populations of ghost orchid need high seedling numbers and robust recruitment rates for population stability and growth (Chung et al. 2011, pp. 2034–2036; Ackerman et al. 2020, pp. 677–682). For the ghost orchid, at least 20–25 percent of plants should be in the seedling stage to achieve a positive population growth rate (although having a percentage above this

level does not guarantee population growth) (Mújica et al. 2021, p. 4; Service 2025, p. 35).

In summary, based upon the best available scientific and commercial information, and acknowledging existing uncertainties, we recognize that ghost orchids need host trees for a growth substrate; they need year-long standing water in Florida and wet conditions in both Florida and Cuba to facilitate mycorrhizal fungi relationships for successful recruitment and to protect against fire and frost (in Florida); and they need pollinators for successful reproduction to occur.

#### *Threats (Stressors/Risk Factors/Etc.)*

##### Illegal Collection (Poaching)

Illegal collection or poaching is one of the primary, ongoing threats to ghost orchid populations throughout its range. Orchids as a group are highly prized and sought after by collectors for their beauty and diversity (Wraith and Pickering 2017, pp. 3410–3414; Fay 2018, p. 2). The ghost orchid is one of the most desirable species for collection due to its rarity, unusual growth form, and overall stunning appearance. This desirability is enhanced by the difficulty in successfully growing the species in greenhouse settings (Service 2025, pp. 27–28). Poaching from wild populations endangers the viability of populations by removing the individuals most likely to contribute to reproduction and recruitment (e.g., flowering adults). In Florida, poaching is illegal under Chapter 5B–40 Preservation of Native Flora of Florida (FL Admin Code R 5B-40).

In the last several decades, poaching has affected many ghost orchid populations, even in protected conservation areas. For example, recent poaching in the summer of 2020 at Big Cypress National Preserve likely had a significant impact on that population (Angelo 2024, p. 4). Although Big Cypress National Preserve staff have taken important steps to reduce the accessibility of the site, such as locking the gate to the access road near the population and discontinuing maintenance of the road, these areas remain vulnerable

to poaching and disturbance. Additionally, there are several unauthorized flagged trails to ghost orchid sites within Big Cypress National Preserve that contribute to this threat. The unauthorized flagging is an ongoing problem and has been discovered and removed by Big Cypress National Preserve staff as recently as summer 2024 (Angelo 2024, p. 5).

In another population at Fakahatchee Strand Preserve State Park, where individual ghost orchid plants are closely monitored, 10 plants were illegally collected between 2005 and 2020, which represents 8 percent of plants monitored (Owen 2024, entire). Even as recently as 2023, poachers were caught at Fakahatchee Strand Preserve State Park attempting to steal reproductively mature ghost orchid plants (Fox 13 Tampa Bay 2024, entire). Some poaching has been documented or is presumed to have occurred at Coastal Transition Site 1 (Franklin 2024, entire) and Naples Botanical Garden, but this threat is considered minimal here and/or has been reduced recently (Owen 2024, entire). While poaching has not been specifically documented at the population within Collier-Seminole State Park, local managers believe it has been a problem in the past (Patel 2024, entire). It is likely that poaching has occurred at other Florida populations and has simply not been recorded, since populations are hard to access and not all are visited regularly. In Guanahacabibes National Park in Cuba, poaching of at least one mature ghost orchid has been documented since 2015 (Zettler 2024, entire) and poaching of 42 individuals of another co-occurring epiphytic orchid (*Broughtonia cubensis*) were documented (Raventós et al. 2015, p. 180).

What is especially detrimental to the health of ghost orchid populations is poachers' preference for reproductively mature plants, which can take 15 years or more to mature and are crucial to the production of future generations. As such, the population level effects may not be realized for many years after poaching has occurred. Even though plants have been made available in the commercial horticultural trade in recent

years, poachers are still persistent in their efforts (Herdman 2024, entire). Poaching is an ongoing rangewide threat that is highly likely to continue into the future.

#### Habitat Degradation Related to Hydrological Changes

Canalization, ditching, and groundwater extraction have caused hydrological changes and habitat modifications in areas occupied by the ghost orchid. Southwestern Florida has undergone transformative canalization over the last century to divert water away from residential areas and roads (Service 2025, p. 18). Ditching associated with past cypress logging has also contributed to alteration and diversion of natural water flow (Fakahatchee Strand Preserve State Park Unit Management Plan 2014, p. 19).

Groundwater extraction for crops and residential use has markedly increased in the last several decades as both agricultural land use and human population size increased in the region (Florida Regional Economic Analysis Project 2023, pp. 1–2). These hydrological changes to the landscape have contributed to reduced water flow and water availability to the adjacent natural areas that the ghost orchid occupies (Clem and Duever 2019, pp. 365–367). Increased water recession rates during the dry season have been documented in the Corkscrew Swamp Sanctuary (Clem and Duever 2019, p. 365), Collier-Seminole State Park (Collier-Seminole State Park Unit Management Plan 2004, p.18), and Big Cypress National Preserve (National Park Service 2021, entire) in recent years.

These documented hydrological changes within the ghost orchid range in Florida present several threats to populations. Ghost orchid recruitment depends on having sufficiently wet conditions present throughout the year (Mújica et al. 2021, p. 8). As noted above, without successful recruitment, populations will eventually become extirpated when mature individuals perish and are not replaced by younger generations (Rasmussen et al. 2015, p. 392). Drier conditions also increase potential exposure of ghost orchids to frost, which they are not adapted to survive and are largely intolerant. Historically, the long hydroperiods and high humidity of the ghost orchid's swamp and

slough habitats would protect these areas from frosts. With recent decreases in year-round standing water conditions, frosts have become more common and have contributed to extirpation of the only population at Six Mile Cypress Slough Preserve in Lee County, Florida (Greeno 2024, entire), possibly 1 of 3 subpopulations at Coastal Transition Site 1 (Florida DEP 2024, entire), and 35 or more plants at Fakahatchee Strand Preserve State Park (Owen 2024, entire). Drier conditions have also been observed in Collier-Seminole State Park and Big Cypress National Preserve in recent years, which can increase the negative impacts from frost in these areas (Florida DEP 2004, p. 18).

As a result of the hydrological change and subsequent drier conditions, wildfires are now more frequent and represent a significant threat to Florida ghost orchid populations (Clem and Duever 2019, entire; Clem and Cornell 2021, entire; NatureServe 2021, pp. 5,7). A wildfire in 2018 at Picayune Strand State Park is presumed to have extirpated one ghost orchid subpopulation (Sowell 2024, entire). The Silver King Wildfire in 2020 at Big Cypress National Preserve burned over 600 acres (243 hectares) and came within 6.5 feet (2 meters) of the closest known ghost orchid, just narrowly missing the population (Angelo 2024, p. 4). Nearby, the fire burned into the peat ground layer and burned tree roots; had the fire reached just slightly farther, ghost orchid host trees would have been directly impacted. Even without reaching the host trees themselves, an intense fire in such close proximity may still have negative future effects on ghost orchids nearby, as the increased sunlight reaching the understory where the plants are located can increase temperature and decrease humidity (Herdman 2024, entire). Hydrological changes are an ongoing, rangewide threat that is likely to continue into the future.

#### Hurricanes and Saltwater Intrusion

Hurricanes are regularly occurring natural weather events that affect all parts of the ghost orchid range. Although hurricanes have always been a component of Florida

and Cuba's climate, their intensity and frequency are increasing (Jay et al. 2023, p. 16). Category 4 and 5 hurricanes produce high winds (greater than 130 miles per hour) and can uproot and kill host trees or damage branches, thereby killing any ghost orchid plants on host trees and their branches. A single host tree can support multiple ghost orchid plants. Therefore, the loss of even one host tree could result in the loss of several ghost orchids. Furthermore, the sudden and near complete loss of leaf canopy over ghost orchid populations can have significant impacts to the species' survival and health. Typically, ghost orchids are shaded from intense sun exposure from the summer to early fall. The deciduous leaf canopy is gradually lost over a period of two months in mid to late fall; however, hurricanes can result in complete loss of leaves during the storm. Such a dramatic change can expose ghost orchids to direct sunlight and make them more prone to heat and desiccation stress. These orchids may not immediately perish but may instead decline in health over 1 to 2 years and then die (Owen 2024, entire). Any ghost orchids occurring higher in the canopy would be especially susceptible to this heat and desiccation threat, as well as to direct wind damage from storms (Clem 2024a, entire).

Impacts from hurricanes have already been observed in multiple populations. For example, at the Florida Panther National Wildlife Refuge, at least 48 orchids died after their host tree fell or had branches damaged during Hurricane Irma in 2017 (Mújica et al. 2021, p. 8). Additionally, the number of seedlings observed in that population dropped in the following 2 years after the hurricane, demonstrating the negative demographic effects from storms (Mújica et al. 2021, p. 3). The recent 30 percent decline of a population at Big Cypress National Preserve is also directly attributable to Hurricane Irma. A survey of the largest population within the preserve took place just a few months before the storm and then subsequently following the storm documenting the loss of numerous host trees. Additionally, loss of ghost orchids due to changes in canopy cover and humidity in the damaged area of the slough was also evident (Angelo 2024, entire). The loss of one ghost

orchid at Audubon Corkscrew Swamp Sanctuary also occurred as a direct result of Hurricane Irma (Clem 2024b, p. 1).

Strong hurricanes also produce flooding events from a high amount of rainfall over a short period of time, which greatly increases normal water levels in ghost orchid habitat. Some plants that would normally be located above the water line on their host tree become inundated as a direct result of this flooding and, if prolonged, can perish. Indeed, this type of mortality was observed at the Florida Panther National Wildlife Refuge following Hurricane Irma (Mújica et al. 2021, pp. 3–4) and was observed at Fakahatchee Strand Preserve State Park following Hurricane Wilma (Owen 2024, entire).

Storm surges and saltwater intrusion are also threats affecting the ghost orchid. Both the increased frequency and severity of storm surge events after hurricanes and increased water salinity in wetland habitats threaten coastal populations. At Coastal Transition Site 1, measured surface water salinities have reached as high as 2.0 part per trillion (ppt) in areas occupied by ghost orchids; soil porewater salinities at this level are high enough to kill off host canopy trees (Florida DEP 2024, entire). Nearby surface water salinities have been measured even higher at up to 5.3 ppt, which has led to complete canopy die-off and a steep decline in epiphyte diversity.

In summary, the increased frequency and intensity of hurricanes over the last couple of decades has damaged host trees and reduced overstory shading, which along with storm surges and associated saltwater intrusion into the ghost orchid's freshwater habitat, has led to a significant reduction in ghost orchid populations and their habitat, thereby reducing overall population resiliency and the species' redundancy. The threats of frequent and intense hurricanes are occurring rangewide and are likely to continue into the future.

*Conservation Efforts and Regulatory Mechanisms*

Ghost orchid is currently State-listed as an endangered species by Florida's Department of Agriculture and Consumer Services (FDACS) and is included in the Florida Regulated Plant Index (endangered, threatened and commercially exploited species) as defined in Chapter 5B-40 Preservation of Native Flora of Florida (FL Admin Code R 5B-40). The State listing does not provide any direct habitat protection or automatic conservation protections for the species. State government regulations associated with this listing require both written permission from the owner or legal representative and a permit issued by FDACS to collect or remove plants listed as endangered on the Florida Regulated Plant Index. Additionally, Title 62D-2.013, Park Property and Resources, of the Florida Administrative Code (FL Admin Code R 62D-2.013) prohibits the removal, destruction, or damage of plants from Florida Department of Environmental Protection and Division of Recreation and Park properties. This regulation provides protection for the populations that occur on State lands but relies on public awareness and voluntary adherence to the Florida administrative code since monitoring is limited. As indicated in the *Poaching* section above, these State-level legal restrictions have not dissuaded poachers.

Additionally, all orchid species, including the ghost orchid, are covered under the Convention on International Trade in Endangered Species of Wild Fauna and Flora treaty under Appendix II, which requires permits for the trade of plants across international borders, whether for commercial, scientific, or personal purposes (American Orchid Society 2024, p. 1). However, this treaty does not regulate any collection or movement of plants within an individual country and does not appear to be a deterrent against ghost orchid poaching.

In 2024, the Florida Fish and Wildlife Conservation Commission (FWC) finalized an addendum to the Florida's State Wildlife Action Plan that added almost 600 plant species, including the ghost orchid, to its list of Species of Greatest Conservation Need.

However, even with this change, the State Wildlife Action Plan does not ensure specific conservation actions will be accomplished for any particular plant species. Currently, almost all known extant populations are located on public, protected lands, often with mixed ownership and management. These include both State and federally managed lands, specifically Florida Department of Environmental Protection State Parks, National Wildlife Refuges, National Park Service units, Florida Forest Service lands (historically but not extant), Lee County lands (historically but not extant), and in Cuba at Guanahacabibes National Park (see table 1). Additionally, there is also a privately owned and protected site at the National Audubon Society's Corkscrew Swamp Sanctuary.

The level of monitoring and species-specific management at these protected sites varies. For example, at the Fakahatchee Strand Preserve State Park, the most recent management plan lists the ghost orchid as a known imperiled species within the park. As such, it lists hydrological maintenance, restoration and protection from visitor impacts as the main management actions for the species and monitoring efforts. The park management plan calls for a population census to count the entire population with demographic analysis, including mortality, reproduction, emigration, and immigration (Florida DEP 2014, pp. 38–56). Conversely, the Collier-Seminole State Park's management plan identifies the ghost orchid as a known species within the park, but no species-specific management or monitoring actions are listed (Florida DEP 2004, p. 84). However, their management goals of controlling invasive exotic plant species and restoring hydrology to pre-drainage conditions would likely benefit ghost orchid. At Florida Panther National Wildlife Refuge, the population is monitored annually for survival, flowering, fruiting, and recruitment rates (Danaher 2024, entire). In their Natural Resource Prioritization Phase II Decision Report, the Florida Panther National Wildlife Refuge lists improving and conserving hydrology of forested and herbaceous

wetlands as a goal to increase and/or maintain ghost orchid populations within slough habitats.

While the ghost orchid is known for being difficult to grow in ex situ (e.g., outside of natural) conditions, recent research has made cultivation in greenhouses possible. One major step forward was the discovery of the fungal strain (*Ceratobasidium*), harvested from ghost orchid roots in the wild, that could be used in the lab to greatly increase seed germination and successful seedling development rates (Hoang et al. 2016, p. 383). Like all orchid species, ghost orchid seeds and seedlings require a fungal mycorrhizal symbiont. Thus, culturing the seeds with its specific *Ceratobasidium* fungal partner has allowed for increased growth success of ghost orchids. Additionally, although ghost orchids are considered intolerant of desiccation in their natural, high-humidity environments, they appear to be somewhat tolerant of desiccation in greenhouse settings (Coopman and Kane 2019, p. 64). This discovery may allow for the direct use of greenhouse-derived plants for field restoration and conservation of the species (Coopman and Kane 2019, pp. 69, 106).

These advancements in greenhouse propagation could have important conservation impacts for future restoration of ghost orchids. Such efforts began in 2015 with the first translocation study in which ghost orchids attached to burlap in the greenhouse were transplanted to host trees at Florida Panther National Wildlife Refuge. Survival of plants was about 90 percent after 1 year and about 73 percent 20 months later (Kane 2023, entire). Following this success, 120 six-year-old ghost orchids grown from culture were directly outplanted to the Florida Panther National Wildlife Refuge. Survival of these plants decreased over time; in 2023, only 34 of the original 120 plants (28 percent) remained. Additionally, despite flowering and developing seed capsules, all fruits from these plants were aborted before fully maturing. One likely explanation for this fecundity failure is inbreeding depression, as all outplants were derived from a single

seed capsule collected from the Florida Panther National Wildlife Refuge (Herdman 2024, entire). Therefore, this population of outplants is not considered viable, as successful reproduction has not been achieved.

### *Cumulative Effects*

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have analyzed the cumulative effects of identified threats and conservation actions on the species. To assess the current and future condition of the species, we evaluate the effects of all the relevant factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative-effects analysis.

### *Current Condition*

For the purposes of evaluating current conditions, we used analysis units to evaluate population resiliency. Analysis units are based largely on management areas and represent discrete groups and/or populations of the ghost orchid. Most analysis units have just one area where ghost orchids occur, but some analysis units consist of separate locations that we refer to as subpopulations. When referring to ghost orchids within an analysis unit, we use the term population or subpopulation, as appropriate.

To assesses resiliency, we evaluated seven components that relate to the species' needs and its population demography and habitat conditions. Resiliency for each analysis unit was categorized as low, moderate, or high based on information from documented studies, available unpublished information, and expert opinion (see table 2, below). In some instances, a low–moderate or moderate–high designation was appropriate. For example, for the Florida Panther National Wildlife Refuge analysis unit, the number of seedlings and percent of seedlings can vary from year to year, thus, in order to capture

this variation, we considered recent seedling abundance data collected over a six-year period (2015–2020). Overall, we categorized the Florida Panther National Wildlife Refuge as moderate–high because the first four years of monitoring, seedling abundance was high (range 24–44 percent), but the last two years of monitoring seedling abundance was moderate (14 percent) and low (0 percent) (Mújica et al. 2021, p. 4). Therefore, for this six-year period, capturing interannual variation, we consider the current condition of seedling abundance to be moderate–high for this analysis unit (Service 2025, pp. 37–38). After resiliency categories were assigned, we numerically scored each population demography and habitat condition category (high = 3, moderate = 2, low = 1) and then calculated the average current condition resiliency for each analysis unit (see table 3, below). Please see the SSA report for a detailed description of current resiliency methods and results (Service 2025, pp. 29–43).

Table 2—Resiliency Categories and Metrics for Assessing Current Condition

Resiliency category	Total abundance	Seedling abundance	Reproductive output	Population status	Hydrological condition	Poaching	Forest condition
High	>175 orchids	>20% seedlings	>10% fruiting	Population stable to increasing	Year-long standing water; freshwater hydrological conditions same as historical	No evidence or history of poaching	Intact canopy/subcanopy; host trees present
Moderate	50–175 orchids	10–20% seedlings	5–10% fruiting	Population fluctuating but overall stable	Some evidence of hydroperiod shortening and evidence of slightly inadequate freshwater conditions	Poaching has been documented but threat has been reduced and or is minimal	Some intact canopy/subcanopy; some host trees present
Low	<50 orchids	<10% seedlings	<5% fruiting	Population decreasing	Obvious hydroperiod shortening and/or inadequate freshwater condition	Poaching has been documented and is ongoing	Open canopy; host tree availability minimal

Table 3—Summary of Ghost Orchid Current Condition by Analysis Unit

Analysis unit	Total abundance	Seedling abundance	Reproductive output	Population trends	Hydrologic condition	Poaching	Forest condition	Overall resiliency
Florida Panther National Wildlife Refuge	High	Moderate–High	Moderate	Low	Moderate	High	Low	Moderate

Fakahatchee Strand Preserve State Park	High	Low	Low–Moderate	Low	Moderate	Low	Low	Low
Big Cypress National Preserve	High	Low	Low	Low	Low	Low	Low	Low
Audubon Corkscrew Swamp Sanctuary	Low	Low	Low	Low	Low–Moderate	High	Low–Moderate	Low
Coastal Transition Site 1	Low	Low	Moderate	Low	Low	Moderate	Moderate	Low
Collier-Seminole State Park	Low	Low	Low	Low	Moderate	Moderate	Low–Moderate	Low
Hendry County	Low	Low	Low	Unknown	Moderate	High	Unknown	Low–Moderate
Naples Urban Site	Low	Low	Low–moderate	Low	Moderate	Moderate	Unknown	Low
Guanahacabibes National Park	High	Moderate	Moderate	Low	None	Moderate	Low	Moderate
Six Mile Slough	Low	Low	Low	Low	Low	Extirpated	Low	None
Picayune Strand State Forest	Low	Low	Low	Low	Low	Likely Extirpated	Low	None
Ciénaga de Zapata National Park	Low	Low	Low	Low	N/A	Likely Extirpated	Unknown	None

Based on our current condition analysis, no ghost orchid populations are considered to have high resiliency. This is largely due to all analysis units experiencing declines in recent years, and all analysis units are in low condition for multiple demographic and habitat factors. Florida Panther National Wildlife Refuge and Guanahacabibes National Park are the only two analysis units with moderate resiliency. Florida Panther National Wildlife Refuge has one of the larger populations (approximately 275 plants) and seedling abundance and fruit production are good in most years with little to no threat of poaching. However, recent hurricane impacts have been significant, and this analysis unit has a declining population trend (approximately 70 percent between 2015–2023) (Danaher 2024, entire). Additionally, hydrological impacts have been significant due to the widespread alteration of natural water flow from surrounding roads and canals. Thus, the Florida Panther National Wildlife Refuge analysis unit received an overall moderate resiliency score.

Guanahacabibes National Park also has a relatively large population (approximately 230 plants) with some seedling and reproductive output, and hydrological

impacts do not pose a threat due to the different type of habitat utilized by the species in Cuba. However, similar to the Florida Panther National Wildlife Refuge, hurricanes have had significant impacts to the Guanahacabibes National Park analysis unit. After Hurricane Ivan in 2004, a significant population decline (59 percent) was documented (Wiegand et al. 2013, pp. 444–447). If the greater frequency and intensity of hurricanes continues in the near term, it is estimated that this population could be extirpated by 2040 (Raventós et al. 2015, pp. 182–184). Additionally, at least one mature ghost orchid has been poached from this population in the last decade (Zettler 2024, entire) and in 2010, 42 individuals of another co-occurring epiphytic orchid (*Broughtonia cubensis*) were poached from the park (Raventós et al. 2015, p. 180).

Although Fakahatchee Strand Preserve State Park is one of the larger populations (approximately 180 to 280 plants) it has an overall low resiliency due to a high rate of poaching, low seedling abundance, poor seedling survival rates, and, in most years, low reproductive output (Owen 2024, entire). Furthermore, this analysis unit has experienced a steep population decline of approximately 60–77 percent over the last 30 years (Owen 2024, entire).

Similarly, the Big Cypress National Preserve population, although larger in size (around 300 plants), has a documented decline of at least 30 percent since 2017 (Angelo 2024, entire), has low seedling abundance or fruit production and suffered large losses after Hurricane Irma in 2017. Ghost orchids within this analysis unit also face a high threat of poaching with significant poaching documented in recent years (Angelo 2024, entire). The habitat within the Big Cypress National Preserve has also been much drier in recent years and an intense 2020 wildfire reached dangerously close to ghost orchid areas. Together, these factors resulted in an overall low resiliency score for Big Cypress National Preserve.

Population trends for the Hendry County analysis unit are unknown as the presence of this population is known from only one survey in 2023. We know the population is small (less than 40 plants, but likely between 10 and 20 plants), reproductive output is likely low, and poaching is apparently not an issue (no evidence of poaching, to date) (Nesmith 2024, entire; Owen 2024, entire). Thus, Hendry County site is considered to have low to moderate resiliency.

Coastal Transition Site 1 is considered to have low resiliency and consists of a small population (approximately 19 plants) with little seedling abundance and survival. This analysis unit has significantly decreased in size, with two of the three areas with ghost orchids extirpated from impacts related to poaching, hurricanes, storm surges, and saltwater intrusion. Surface water salinities in this analysis unit have reached concerning levels and the remaining 19 plants are extremely susceptible to impacts from saltwater intrusion as well as other threats (Florida DEP 2024, pers. comm.; Service 2025, p. 22).

Audubon Corkscrew Swamp Sanctuary is one of the most well-known populations due to its high flowering rates (plants flower regularly with many flowers on each plant), unusually high height in its host trees, and easy accessibility. However, this population is very small with currently only two plants documented. This analysis unit has been significantly impacted by drier hydrologic conditions and recent hurricane damage, giving it an overall low resiliency.

The Collier-Seminole State Park analysis unit scored low for every demographic factor, and the population consists of just four or five plants (Patel 2024, entire). These factors, combined with the hydrologic and hurricane impacts affecting the analysis unit, results in low overall resiliency.

Lastly, the Naples Urban Site scored low for total abundance because it consists of only 31 plants. Though many of these plants are reproductively mature, this population experienced a decline of approximately 25 percent from 2001 to 2017 due to impacts

from hurricanes (Owen 2024, entire). Given this information, we consider Naples Urban Site to have low resiliency.

### Redundancy

Redundancy is the ability of a species to withstand catastrophes. We can best gauge redundancy by analyzing the number and distribution of populations relative to the scale of anticipated species-relevant catastrophic events. Because three ghost orchid populations are considered recently extirpated and most extant ghost orchid populations are in low or low to moderate resiliency and are distributed in a narrow geographic area (limited range in Florida, only one population in Cuba, and no connectivity between the Florida and Cuba populations), redundancy for this species is limited. A single catastrophic event, such as a strong hurricane, could impact a large component of the species' range at one time and cause significant declines at multiple sites simultaneously. Such impacts have already been observed following Hurricane Irma in 2017 when at least five out of eight analysis units in Florida (Big Cypress National Preserve, Fakahatchee Strand Preserve State Park, Audubon Corkscrew Swamp Sanctuary, Coastal Transition Site 1, and Florida Panther National Wildlife Refuge) and the Guanahacabibes National Park analysis unit in Cuba, were negatively affected at the same time. With hurricane frequency and intensity projected to increase in the future, negative population-level to species-level impacts could likely happen again.

### Representation

Representation reflects a species' adaptive capacity to respond to changing near-term and long-term environmental conditions and can be characterized by the breadth of genetic and ecological diversity within and among populations. A species' adaptive capacity is essential for viability, as species need to adapt to their continuously changing environments (Nicotra et al. 2015, p. 1269). We do not have information on the genetic diversity within or among ghost orchid populations across the species' range, though the

need for such studies has been highlighted (Danaher et al. 2020, p. 682; Houlihan et al. 2019, p. 7) and some genetic work has begun but is not yet available (Danaher 2024, entire; Herdman 2024, entire).

Different habitat types within the species' range, or morphological or phenological differences, can also reflect a species' ability to adapt to changing conditions. One of the biggest distinctions between the Florida and Cuba populations is the type of habitat occupied. While all current ghost orchids in Florida occur in long hydroperiod subtropical dome swamps, strand swamps, and sloughs, plants in Cuba's extant population occur in a tropical semi-deciduous forest with soils characterized as fractured reef limestone, and little or no standing water present (Raventós et al. 2015, p. 180; Mújica et al. 2018, p. 573). It is possible that at least some habitat differences may be attributable to the difference in climate between the two regions, with subtropical southwest Florida occasionally experiencing frost conditions while tropical western Cuba never experiences frost. The southwest Florida populations may require long hydroperiod environments to protect ghost orchids from frost events, while the Cuba populations do not experience frost and therefore lack this requirement.

Another difference between the Florida and Cuba populations is host tree species availability, with most Florida ghost orchids primarily found growing on just two species of trees (Florida water ash and pond apple), while ghost orchids in Cuba can be primarily found growing on 5 different host tree species, though 18 species of host tree have been recorded (Mújica et al. 2018, p. 577). There is no overlap in host tree species between the two regions, as nearly all the trees that ghost orchids grow on in Cuba do not occur in Florida and the host trees of Florida are much less common in Cuba. However, in both regions, ghost orchids prefer host trees with moist, corrugated or semi-corrugated bark (Mújica et al. 2018, p. 581).

There is also a distinct difference in the phenology of ghost orchids in Florida compared to those found in Cuba. While flowering typically occurs from May to August in Florida, flowering in Cuba occurs later in the year, typically from October to December (Mújica et al. 2018, p. 575). Consequently, there is also a distinct difference in fruiting times between the two regions, with Florida ghost orchids typically fruiting in January to April and Cuba plants fruiting from May to June (Mújica et al. 2018, p. 575). One morphological difference between ghost orchids in these two regions is nectar spur (serves as the pathway for pollinators to access nectar) length, which on average appears to be several centimeters longer in the Cuba population compared to those in Florida, which could indicate a genetic component causing this distinction (Zettler 2024, entire).

Although there are regional differences in ghost orchid habitat, morphology, and phenology, it is also important to recognize the ways in which the species' life history and ecological associations remain constant across its range. For example, in both Florida and Cuba, plants appear to prefer growing on trees with corrugated or semi-corrugated bark on average about 3 to 6 feet (0.9 to 1.8 meter) above ground, though Florida plants may grow slightly higher, probably to accommodate the higher water levels (Mújica et al. 2018, p. 581). Additionally, flowers in both regions are pollinated primarily by two species of moths (fig sphinx moth and pawpaw sphinx moth), and ghost orchids in both regions need to form symbiotic relationships with mycorrhizal fungi. While the presence/absence of frost distinguishes the two regions, other climatic conditions such as average total annual rainfall and average annual temperature are similar between Florida and Cuba (Mújica et al. 2018, p. 575).

Taken altogether, there are some differences between the two main regions of occurrence (Florida and Cuba), which reflect some degree of representation, but there is little if any difference within ghost orchid populations in Florida where most ghost orchids are currently located. In Florida, the species is highly dependent on habitats with

standing water year-round and just a few host tree species. In both Cuba and Florida, ghost orchids are dependent upon moist bark for seedling germination, a specific type of mycorrhizal fungal relationship, and two species of pollinators. Thus, overall, the representation of ghost orchid is considered to be relatively low.

#### Summary of Current Condition

Historically, ghost orchid occurred in 12 analysis units. Two analysis units in Florida and one analysis unit in Cuba have recently extirpated populations. Thus, ghost orchid currently occurs in nine analysis units, eight of these are in Florida and one is in Cuba. In Florida, six analysis units are considered to have low resiliency; one analysis unit is considered to have low to moderate resiliency; and one analysis unit is considered to have moderate resiliency. In Cuba, only one analysis unit has an extant ghost orchid population and is considered to have moderate resiliency. All analysis units have declining populations. Overall, the species has low abundance within each analysis unit with no more than 300 individuals within any analysis unit; most contain less than 40 plants.

With declining population health (overall low resiliency due to low abundances and declining habitat conditions) coupled with a relatively small geographic extent and the extirpation of recent populations (low redundancy), and relatively low adaptive capacity, the species now possesses limited ability to withstand inherent stochasticity (environmental, demographic, and genetic), catastrophic events (hurricanes, wildfire, frost), and other changing environmental conditions (storm surge and saltwater intrusion).

#### *Future Condition*

As part of the SSA, we also developed a future condition analysis which provides a summary of the primary threats to the species and how these threats are projected to continue to impact ghost orchid viability. Because we determined that the current condition of ghost orchid is consistent with an endangered species (see **Determination of**

**Ghost Orchid Status**, below), we are not presenting the results of the future scenarios in this proposed rule. Please refer to the SSA report (Service 2025) for the full analysis of future scenarios.

### **Determination of Ghost Orchid's Status**

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 meets the definition of an endangered species or a threatened species. The Act defines an “endangered species” as a species in danger of extinction throughout all or a significant portion of its range and a “threatened species” as a species 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 a species meets the definition of 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.

#### *Status Throughout All of Its Range*

After evaluating threats to the ghost orchid and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the viability of the species is currently at risk. The primary threats currently impacting the species are poaching (especially of mature plants) (Factor B), habitat degradation (related to hydrological changes) (Factor A), and the increased intensity and frequency of hurricanes that cause damage to or loss of the species' host trees and overstory shading and impacts from saltwater intrusion (Factor E). Overall, the species has relatively low abundance with no more than 300 plants within any analysis unit; most analysis units have less than 40 plants (see table 1). All analysis units have declining populations, and all analysis units

have experienced negative impacts from hydrological change and recent hurricanes. Two-thirds of the analysis units have a significant amount of poaching pressure, including two analysis units with an especially high degree of poaching pressure (Fakahatchee Strand Preserve State Park and Big Cypress National Preserve). The two analysis units with especially high degree of poaching pressure also have the largest populations of ghost orchids. Of the nine analysis units that currently have ghost orchid populations, six analysis units are in overall low resiliency condition, one analysis unit has low to moderate resiliency, and two analysis units have moderate resiliency (see table 3, above). Three analysis units have been extirpated within the last 10 to 15 years.

With declining population health (declining abundances and deteriorating habitat conditions) coupled with recent extirpation of populations and small geographic extent, the ghost orchid now has low resiliency, redundancy, and representation and possesses limited ability to withstand inherent stochasticity (environmental, demographic, and genetic), catastrophic events (hurricanes, frost, wildfire), and changing environmental conditions (storm surges and saltwater intrusion). Similar to Hurricane Irma in 2017, another catastrophic storm or hurricane, could severely impact multiple populations simultaneously, and further reduce the already low population resiliency and redundancy of the species. Additionally, given the ghost orchid's relatively narrow range, limited habitat types and number of host tree and pollinator species, and highly specific mycorrhizal fungi requirements, we consider the species to have relatively low representation.

We do not find the ghost orchid meets the definition of a threatened species because the species is currently experiencing population declines resulting in low resiliency and has deteriorating habitat conditions driven or exacerbated by the identified threats. Because the ghost orchid has low redundancy and representation is limited, the species is vulnerable to a single catastrophic event like a hurricane that could impact the

entire range. Thus, after assessing the best scientific and commercial data available, we determine that ghost orchid is in danger of extinction throughout all of its range.

#### *Status Throughout a Significant Portion of Its Range*

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. We have determined that the ghost orchid is in danger of extinction throughout all of its range and accordingly did not undertake an analysis of any significant portion of its range. Because the ghost orchid warrants listing as endangered throughout all of its range, our determination does not conflict with the decision in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020), because that decision related to significant portion of the range analyses for species that warrant listing as threatened, not endangered, throughout all of their range.

#### *Determination of Status*

Based on the best scientific and commercial data available, we determine that the ghost orchid meets the Act's definition of an endangered species. Therefore, we propose to list the ghost orchid as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

#### **Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, foreign governments, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection

required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

The recovery planning process begins with development of a recovery outline made available to the public soon after a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions while a recovery plan is being developed. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) may be established to develop and implement recovery plans. The recovery planning process involves the identification of actions that are necessary to halt and reverse the species' decline by addressing the threats to its survival and recovery. The recovery plan identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery outline, draft recovery plan, final recovery plan, and any revisions will be available on our website as they are completed (<https://www.fws.gov/program/endangered-species>) or

from our Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If this species is listed, funding for recovery actions may be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Florida would be eligible for Federal funds to implement management actions that promote the protection or recovery of the ghost orchid. Information on our grant programs that are available to aid species recovery can be found at: <https://www.fws.gov/service/financial-assistance>.

Although the ghost orchid is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7 of the Act is titled Interagency Cooperation and it mandates all Federal action agencies to use their existing authorities to further the conservation purposes of the Act and to ensure that their actions are not likely to jeopardize the continued existence of

listed species or adversely modify critical habitat. Regulations implementing section 7 are codified at 50 CFR part 402.

Section 7(a)(2) of the Act states that each Federal action agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Each Federal agency shall review its action at the earliest possible time to determine whether it may affect listed species or critical habitat. If a determination is made that the action may affect listed species or critical habitat, formal consultation is required (50 CFR 402.14(a)), unless the Service concurs in writing that the action is not likely to adversely affect listed species or critical habitat. At the end of a formal consultation, the Service issues a biological opinion, containing its determination of whether the Federal action is likely to result in jeopardy or adverse modification.

In contrast, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. Although the conference procedures are required only when an action is likely to result in jeopardy or adverse modification, action agencies may voluntarily confer with the Service on actions that may affect species proposed for listing or critical habitat proposed to be designated. In the event that the subject species is listed or the relevant critical habitat is designated, a conference opinion may be adopted as a biological opinion and serve as compliance with section 7(a)(2) of the Act.

Examples of discretionary actions for the ghost orchid that may be subject to conference and consultation procedures under section 7 are management of Federal lands administered by the National Park Service, U.S. Fish and Wildlife Service National

Wildlife Refuges,, and Department of Defense as well as actions that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 et seq.)) or actions funded by Federal agencies such as the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency. Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation. Federal agencies should coordinate with the Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**) with any specific questions on section 7 consultation and conference requirements.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, and the Service's implementing regulations codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed any of the following acts with regard to any endangered plant: (1) import into, or export from, the United States; (2) remove and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; or remove, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; (3) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or (4) sell or offer for sale in interstate or foreign commerce. Certain exceptions to these prohibitions apply to employees or agents of the Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Service regulations governing permits for

endangered plants are codified at 50 CFR 17.62, and general Service permitting regulations are codified at 50 CFR part 13. With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

## **II. Critical Habitat**

### **Background**

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, we designate a species' critical habitat concurrently with listing the species. Critical habitat is defined in section 3(5)(A) of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3(3) of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened

species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that each Federal action agency ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of designated critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Rather, designation requires that, where a landowner requests Federal agency funding or authorization for an action that may affect an area designated as critical habitat, the Federal agency consult with the Service under section 7(a)(2) of the Act. If the action may affect the listed species itself (such as for occupied critical habitat), the Federal agency would have already been required to consult with the Service even absent the designation because of the requirement to ensure that the action is not likely to jeopardize the continued existence of the listed species. Even if the Service were to conclude after consultation that the proposed activity is likely to result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4(b)(2) of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information compiled in the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or

outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best scientific data available at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available at the time of those planning efforts calls for a different outcome.

### **Prudency Determination**

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered

species or a threatened species. Our regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat may not be prudent in circumstances such as, but not limited to, the following:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or

(iv) No areas meet the definition of critical habitat.

As described above, there is currently an ongoing and imminent threat of take attributed to poaching for this species. The precise location of all ghost orchid populations are not publicly available. Although some locations are known to the public and have been accessed by poachers, other population's locations have been kept confidential to deter poaching. For example, the Florida Natural Areas Inventory, which maintains a comprehensive database of the biological resources in Florida, classifies ghost orchid data as sensitive and does not make those data publicly available. During peer and technical review of the ghost orchid SSA, numerous reviewers requested that we do not use location information and where possible, asked that we use more general descriptions of where ghost orchids are found to keep location information private. Identification and mapping of critical habitat is expected to increase the threat of take attributed to poaching because when we designate critical habitat, we publish detailed maps and descriptions of species' occurrences in the *Federal Register*, which in this case, could make the ghost orchid more vulnerable to poaching. Because we have determined

that the designation of critical habitat will likely increase the degree of threat to the species, we find that designation of critical habitat is not prudent for the ghost orchid.

## **Required Determinations**

### *Clarity of the Rule*

We are required by E.O.s 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

### *Government-to-Government Relationship with Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951, May 4, 1994), E.O. 13175 (Consultation and Coordination with Indian Tribal Governments), the President's memorandum of November 30, 2022 (Uniform Standards for Tribal Consultation; 87 FR 74479, December 5, 2022), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with federally recognized Tribes and Alaska Native Corporations on a government-to-government basis. In accordance with Secretary's Order 3206 of June 5,

1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We sent letters to the Seminole Tribe and the Miccosukee Tribe, which are within the range of the ghost orchid. We will continue to work with relevant Tribal entities during the development of any final rules for the ghost orchid.

### **References Cited**

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

### **List of Subjects in 50 CFR Part 17**

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

### **Signing Authority**

Paul Souza, Regional Director, Region 8, Exercising the Delegated Authority of the Director of the U.S. Fish and Wildlife Service, approved this action on May 23, 2025, for publication. On May 30, 2025, Paul Souza authorized the undersigned to sign the document electronically and submit it to the Office of the Federal Register for publication as an official document of the U.S. Fish and Wildlife Service.

### **Proposed Regulation Promulgation**

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

### **PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. In § 17.12, in paragraph (h), amend the List of Endangered and Threatened Plants by adding an entry for “*Dendrophylax lindenii*” in alphabetical order under FLOWERING PLANTS to read as follows:

**§ 17.12 Endangered and threatened plants.**

\* \* \* \* \*

(h) \* \* \*

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * *				
<i>Dendrophylax lindenii</i>	Ghost orchid	Wherever found	E	[ <i>Federal Register</i> citation when published as a final rule]
* * * * *				

**Madonna Baucum,**  
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