



Comments submitted through www.regulations.gov

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Public Comments Processing
Attn: FWS-R4-ES-2012-0076
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 2042-PDM
Arlington, VA 22203

cc: Larry Williams
Field Supervisor, U.S. Fish and Wildlife Service
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Re: FWS-R4-ES-2012-0076; Proposed Endangered Species Status for the Cape Sable Thoroughwort, Florida Semaphore Cactus, and Aboriginal Prickly-Apple, and Designation of Critical Habitat for Cape Sable Thoroughwort

Dear Mr. Williams,

These comments on the proposed rule to list *Chromolaena frustrata* (Cape Sable thoroughwort), *Consolea corallicola* (Florida semaphore cactus), and *Harrisia aboriginum* (aboriginal prickly-apple) as endangered species are submitted on behalf of the Center for Biological Diversity (“Center”). The Center is a national, nonprofit conservation organization with more than 450,000 members and online activists dedicated to the protection of endangered species and wild places. The Center recently opened a southeast office headquartered in St. Petersburg, Florida. The Center’s southeast office focuses on Florida biodiversity issues and is supported by thousands of Floridians who share the Center’s mission.

The Center strongly supports an endangered listing for these highly imperiled Florida plant species, and urges the U.S. Fish and Wildlife Service (“FWS”) to promptly designate critical habitat for the Florida semaphore cactus and aboriginal prickly-apple given the important conservation benefits provided by critical habitat protection, including the designation of unoccupied habitat. As noted in the Proposed Rule, climate change and particularly sea level rise pose high-magnitude and growing threats to these species. These comments (I) discuss why FWS should designate critical habitat for the Florida semaphore cactus and aboriginal prickly-apple; (II) summarize and transmit important scientific information on sea level rise and storm surge projections for south Florida in the range of these species; (III) discuss the significant threats that sea level rise poses to these plant species; and (IV) discuss the need for critical habitat

designation that buffers these plant species from climate change threats, including unoccupied habitat that will be protected from inundation by sea level rise and storm surge and thus will provide essential future habitat. Each of these points is discussed in detail below.

I. FWS Should Designate Critical Habitat For The Florida Semaphore Cactus And Aboriginal Prickly-apple

FWS regulations state that designation of critical habitat is not prudent only in the following instances: (1) where the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of the threat; or (2) such designation would not be beneficial to the species. FWS has failed to show that either one of these exceptions exists for the Florida semaphore cactus or aboriginal prickly-apple.

A. Designating critical habitat would not increase unauthorized collection

The ESA requires that FWS designate critical habitat – at the time that it finds the species to be endangered or threatened – to the maximum extent prudent and determinable.¹ The imprudence exception to the designation of critical habitat should only be invoked “in rare circumstances where the specification of critical habitat concurrently with the listing would not be beneficial to the species.”² Under FWS regulations, critical habitat designation would be imprudent based upon the risk of unauthorized collection or other taking only if two conditions are met: the species is threatened by such taking and the designation would increase that threat.³

The proposed rule concludes that designation of critical habitat would not be prudent for the Florida semaphore cactus or aboriginal prickly-apple because designation would increase the likelihood and severity of illegal collection, and in doing so, make enforcement of take prohibitions more difficult. FWS determined that those threats outweigh the benefits of designation for the two species. In making this determination, FWS found both that “identification of critical habitat can be expected to increase the degree of threat to the species from over utilization by collectors and poachers” and that the benefits of designating critical habitat are “minimal.”

FWS’ analysis of threats of poaching the cactus is restricted to historic poaching in the 1970s and more recent potential poaching at one location. However, the FWS acknowledges that the remaining populations are somewhat protected due to their location on conservation lands. Similarly, FWS’ analysis of prickly-apple poaching is largely historical with recent observed poaching at one site. While these historic and present threats contribute to its status, FWS provides no information supporting its conclusion that designating critical habitat would increase the degree of that threat.

¹ 16 U.S.C. 1533(a)(3)(A)(i).

² H.R. Rep. No. 95-1625 at 17 (1978), reprinted in 1978 U.S.C.A.N. 9453, 9467; see also *Enos v. Marsh*, 769 F.2d 1363 (9th Cir. 1985); *Northern Spotted Owl v. Lujan*, 758 F.Supp. 621 (W.D. Wash. 1991).

³ 50 C.F.R. 424.12(a)(1)(i).

First, information regarding the locations of the plant species is already publically available.⁴ The proposed listing rule itself lists the areas where these plants can be found.⁵ The FWS online species profile for the Florida semaphore cactus links to the 2011 Candidate Notice of Review which lists the locations of extant populations.⁶

Next, contrary to FWS' assertion, nothing in the ESA or its implementing regulations requires FWS in designating critical habitat to include "the exact locations where the species may be found." The ESA does not discuss what level of specificity is required. FWS' implementing regulations provide only that:⁷

Each critical habitat will be defined by specific limits using reference points and lines as found on standard topographic maps of the area. Each area will be referenced to the State(s), county(ies), or other local governmental units within which all or part of the critical habitat is located. Unless otherwise indicated within the critical habitat descriptions, the names of the State(s) and county(ies) are provided for information only and do not constitute the boundaries of the area.

The level of detail required would not direct people to individual plants. Rather, the scale of mapping and narrative would only need to define the outer boundary of the designation. Indeed, the threat of unauthorized collection would not increase with designation of critical habitat because the public already has access to information about known location of the species.

In sum, FWS simply states, without providing any support, that the designation would in fact lead to increased poaching. Absent a showing that the designation itself would increase that threat, FWS' not prudent finding is not supportable.

B. Designating critical habitat would benefit the species

The primary benefit of critical habitat designation comes where there is a federal nexus that would bring an action within the purview of section 7 of the ESA. Section 7(a)(2) of the ESA requires federal agencies to consult with FWS to "insure that any action authorized, funded, or carried out by such agency...is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of that species' critical habitat. Additionally, in conducting a Section 10 review, FWS must also self-consult under Section 7 on the issuance of the incidental take permit ("ITP") and likewise ensure that the authorization is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat.⁸

⁴ http://www.centerforplantconservation.org/Collection/CPC_ViewProfile.asp?CPCNum=3030; http://www.dep.state.fl.us/cmp/programs/files/Bound_CayoCosta.pdf; Gann, G.D., K.A. Bradley, S.W. Woodmansee. 2006. Species Account Update, Floristic Inventory of South Florida Database Online. The Institute for Regional Conservation: Miami.

⁵ 77 Fed. Reg. 61836, 61842-61845.

⁶ <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q3HT>; 76 Fed. Reg. 66416.

⁷ 50 C.F.R. 424.12(c).

⁸ *Id.*

Regardless of whether critical habitat is designated, an agency must consult with the Secretary where an action will “jeopardize the continued existence” of a species. But if critical habitat has been designated, the ESA imposes an additional consultation requirement when an action will result in the “destruction or adverse modification” of critical habitat.⁹ The imposition of this additional consultation requirement for actions affecting critical habitat is a real benefit to the species that cannot be ignored.¹⁰ Any federal actions – on federal or non-federal lands – that are likely to result in the destruction or adverse modification of critical habitat would require consultation with FWS, even if those actions do not jeopardize the continued existence of the species.¹¹

Critical habitat designation is also valuable because it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. It is well-established that public outreach is a benefit of critical habitat designation.¹² FWS acknowledges this benefit, concluding that the outreach value would “likely provide benefits concerning awareness by private entities where management of the species could be enhanced or initiated.”¹³

Yet, FWS found that designation of critical habitat in areas that are currently occupied is unlikely to provide a measurable benefit for Florida semaphore cactus, and that it is unlikely the loss of occupied habitat would have an adverse effect on the conservation of the aboriginal prickly-apple. It is unbelievable that FWS could predict what future impacts there may be to critical habitat and whether those future impacts would have an effect on the conservation of the species. Indeed, such an assertion is not supported by FWS in its proposed rule. Absent support for this statement, FWS must assume that critical habitat designation of occupied habitat is beneficial.

Furthermore, FWS found that unoccupied areas as critical habitat could provide a measurable benefit to the Florida semaphore cactus, and that “unoccupied habitat may be necessary for the recovery of the cactus and the prickly-apple.” FWS’ finding that designation of unoccupied habitat may be necessary for the recovery of the cactus and prickly-apple indicates that such a designation would bring a significant conservation benefit.

C. The benefits of critical habitat designation outweigh the risks

Section 4(b)(2) of the ESA states that FWS may only exclude portions of habitat from critical habitat designation if “the benefits of such exclusion outweigh the benefits of specifying such areas as part of the critical habitat.”¹⁴

⁹ See, e.g., *Sierra Club v. United States Fish & Wildlife Serv.*, 245 F.3d 434, 439 (5th Cir. 2001).

¹⁰ *Id.* at 441.

¹¹ 16 U.S.C. 1536(a)(2); *Sierra Club*, 245 F.3d at 439-41.

¹² *Conservation Council*, 2 F.Supp.2d at 1286.

¹³ At 61858.

¹⁴ 16 USC 1533(b)(2); *Natural Resources Defense Council*, 113 F.3d at 1125.

FWS found that designating critical habitat “is likely to confer only an educational benefit to these cacti beyond that provided by listing” and that the designation of unoccupied critical habitat “could provide an educational and at least some regulatory benefit for each species.” Because FWS did not provide support for its predicted increase in poaching threats, and because it undervalued the importance of critical habitat designation and the process for assessing impacts, FWS’ balancing of the risks and benefits to the species is also flawed.

D. FWS must designate unoccupied areas as critical habitat

FWS regulations instruct that “the Secretary shall designate as critical habitat areas outside the geographical area presently occupied by a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species.”¹⁵ Indeed, FWS found that “unoccupied habitat may be necessary for the recovery of the cactus and the prickly-apple.” As supported by information in the Proposed Rule, the designation of both occupied and unoccupied habitat, followed by habitat restoration and the establishment of new populations, is critical to the conservation of the proposed plant species because (a) each species has suffered extirpations and currently occupy only a portion of their historic range, (b) many populations are declining in the occupied range, (c) each species is threatened by small population size and isolation which make them vulnerable to extirpation from demographic stochasticity, environmental stochasticity, and genetic loss, and (d) each species faces population declines and extirpations due to climate change threats, particularly sea level rise, and requires protection in occupied and unoccupied habitat to reduce these threats.

II. Scientific Studies On Current And Projected Sea level Rise, Storm Intensity, Storm Surge, Salt-Water Intrusion, and Coastal Squeeze In South Florida

A. Global sea level rise is accelerating in pace and is likely to increase by one to two meters within this century

Global average sea level rose by roughly eight inches over the past century, and sea level rise is accelerating in pace (Karl et al. 2009). Global average sea level rose at an average rate of 3.2 ± 0.5 mm per year between 1993 and 2011 (Rahmstorf et al. 2012) compared with 1.6 ± 0.2 mm per year between 1961 and 2003 (Domingues et al. 2008). In fact, the sea level rise trend between 1993 and 2011 was 60% faster than predicted by the IPCC for this time interval (Rahmstorf et al. 2012).

As noted in the Proposed Rule, recent studies indicate that sea level rise will be substantially higher than projected by the 2007 IPCC Fourth Assessment Report. The IPCC Fourth Assessment Report projected a global mean sea level rise in the 21st century of 18 to 59 cm (7 to 23 inches), although the report explicitly acknowledged that this estimate did not represent a “best estimate” or “upper bound” for sea level rise because it assumed a negligible contribution from the melting of the Greenland and west Antarctic ice sheets (IPCC 2007). Studies that have improved upon the IPCC estimate have found that a mean global sea level rise of at least one to two meters is highly likely within this century (Rahmstorf 2007, Pfeffer et al.

¹⁵ 50 C.F.R. 424.12(e).

2008, Vermeer and Rahmstorf 2009, Grinsted et al. 2010, Jevrejeva et al. 2010). Rahmstorf (2007) used the tight, observed relationship between global average temperature rise and sea level rise over the recent observational record (~120 years) to project a global mean sea level rise of 0.5 to 1.4 m by 2100. Other studies have estimated global mean sea level rise of one to two meters by 2100 as follows: 0.75 m to 1.90 m (Vermeer and Rahmstorf 2009), 0.8 m to 2.0 m (Pfeffer et al. 2008), 0.8 m to 1.3 m (Grinsted et al. 2010), and 0.6 m to 1.6 m (Jevrejeva et al. 2010). In its 2012 sea level rise assessment, the National Research Council estimated global sea level rise at 8 to 23 cm by 2030, 18 to 48 cm by 2050, and 50 to 1.40 m by 2100 (NRC 2012). Moreover, studies that have reconstructed sea level rise based on the geological record, including oxygen isotope and coral records, have found that larger rates of 2.4 to 4 m per century are possible (Milne et al. 2009).

B. Sea level rise of one to two meters in south Florida is highly likely within this century

On a regional level, projections for south Florida indicate that sea level rise between one to two meters is highly likely within this century. The Southeast Florida Regional Climate Change Compact Counties—Monroe, Miami-Dade, Broward, and Palm Beach counties—released the Southeast Florida Regional Climate Change Action Plan in October 2012 which included a detailed “Unified Sea Level Rise Projection” for south Florida.¹⁶ The sea level rise projections for south Florida are similar what has been estimated globally the National Research Council: 8 to 18 cm (3 to 7 inches) by 2030, 23 to 61 cm (9 to 24 inches) by 2060, and 48 cm to 1.45 m (19 to 57 inches) by 2100 (Southeast Florida Regional Climate Change Compact Technical Ad hoc Work Group 2011). Based on sea level rise projections from the best-available science, FWS should analyze the impacts of sea level rise of up to two meters on the proposed plants’ habitat because this falls within the range of likely scenarios and because sea level rise will be exacerbated by increasing storm surge.

C. Storms and storm surge are increasing in intensity

Increasingly intense storms and storm surge in this century will increase the impacts of sea level rise on the plants’ coastal habitat. Several studies have found that the frequency of high-severity hurricanes is increasing in the Atlantic (Elsner et al. 2008, Bender et al. 2010, Kishtawal et al. 2012), along with an increased frequency of hurricane-generated large surge events (Grinsted et al. 2012) and wave heights (Komar and Allan 2008). High winds, waves, and surge from storms can cause significant damage to the plants’ coastal habitat. When storm surges coincide with high tides, the chances for damage are greatly heightened (Cayan et al. 2008). As the sea level rises, storm surge will be riding on a higher sea surface which will push water further inland and create more flooding of coastal habitats (Tebaldi et al. 2012). For example, one study estimated that hurricane flood elevations along the Texas coast will rise by an average of 0.3 meters by the 2030s and 0.8 meters by the 2080s, with severe flood events reaching 0.5 meters and 1.8 meters by the 2030s and 2080s, respectively (Mousavi et al. 2011). Thus, the

¹⁶www.broward.org/NATURALRESOURCES/CLIMATECHANGE/Pages/SoutheastFloridaRegionalClimateCompact.aspx.

FWS must take into account the added impacts from more severe hurricanes and increasing storm surge and coastal flooding on the plants' habitat.

D. The coastal communities inhabited by the proposed plant species are threatened by increasing salt-water intrusion

The Cape Sable thoroughwort and Florida semaphore cactus inhabit coastal buttonwood forests and rockland hammocks that are threatened by salt water intrusion due to sea level rise, even before inundation occurs (Saha et al. 2011). Research by Saha et al. (2011) predicted a decline in extent of coastal buttonwood and hardwood forests due to decreasing freshwater recharge and increasing porewater salinity, as well as the potential extirpation of endemic plant species including the Cape Sable thoroughwort. The study concluded:

Coastal hammocks and buttonwood forests are compositionally different from inland hammocks in the ENP, with unique combinations of common and rare species. Importantly, whereas all hammocks in the estuarine/coastal zone rely upon localized freshwater for much of the year, periods of drought force the plants to either use saline water or tolerate some measure of drought. We predict a decline in the extent of coastal hardwood hammocks and buttonwood forests with the initial rise in sea level before the onset of sustained erosional inundation. The change in the extent of hardwood and buttonwood forests will be brought about by decline in freshwater recharge volume in conjunction with an increase in porewater salinity, which will push the hardwood species to the edge of their drought (freshwater shortage and physiological) tolerance. Along with the coastal hammocks and buttonwood forests, scores of critically imperiled and or endemic species will be jeopardized, and possibly be extirpated from the United States. Reductions in freshwater inflows into the estuarine portion of the Everglades will accelerate the loss of salinity-intolerant coastal plant communities. Restoring freshwater inflow might be the only mechanism to mitigate, in the short term, the effects of rising sea levels in the Everglades. (Saha et al. 2011: 105).

E. Coastal squeeze threatens the habitat of the Cape Sable thoroughwort, Florida semaphore cactus, and aboriginal prickly-apple

The proposed plant species faces significant risks from coastal squeeze that occurs when habitat is pressed between rising sea levels and coastal development that prevents landward movement (Scavia et al. 2002, Fitzgerald et al. 2008, Defeo et al. 2009, LeDee et al. 2010, Menon et al. 2010, Noss 2011). Human responses to sea level rise including coastal armoring and landward migration also pose significant risks to the ability of the proposed plant species and the coastal communities they inhabit to move landward (Defeo et al. 2009). Projected human population growth and development in Florida threaten existing plant populations with coastal squeeze (Zwick and Carr 2006), particularly in the Florida Keys where “all vacant land...is projected to be developed by [2060], including lands not currently accessible by automobile” (77 Fed. Reg. 61846) and Sarasota, Charlotte, and Lee counties which “are expected to build out before 2060” (77 Fed. Reg. 61846).

F. Climate change threats should be analyzed through the year 2100 at minimum

The FWS should use a timeframe through at least 2100 to analyze the climate change threats to the proposed plant species. Climate change projections through 2100 are the standard in the climate literature, including the IPCC assessments. For example, the IPCC Fifth Assessment is using a suite of emissions pathways, the Representative Concentration Pathways, which provide emissions trajectories and impacts analysis through 2100, with estimates of uncertainty (vanVuuren et al. 2011). Furthermore, the National Marine Fisheries Service (NMFS) determined in three recent listing-related decisions that the year 2100 represents the most appropriate, science-based timeline for considering climate change threats to species. For example, the proposed listing rules for the ringed seal and bearded seals concluded that climate projections through the end of the 21st century “currently form the most widely accepted version of the best available data about future conditions” (75 Fed. Reg. 77482, 77503). NMFS in its peer-reviewed Status Review Report for 82 coral species petitioned under the U.S. Endangered Species Act similarly stated that “the year 2100 was used as the time horizon for this risk evaluation because this century was the timeframe over which the BRT [biological review team] had access to reasonable, scientifically vetted predications of key threats and their impacts,” and “the IPCC collection of CO₂ emissions scenarios and climate models provided projections with adequate confidence to the year 2100” (Brainard et al. 2012: 100). NMFS in its proposed rule for these corals concurred: “We agree with the BRT’s judgment that the threats related to global climate change (e.g., bleaching from ocean warming, ocean acidification) pose the greatest potential extinction risk to corals and have been assessed with sufficient certainty out to the year 2100” (NMFS 2012: 25). These determinations by NMFS and NMFS scientists that climate projections through 2100 represent the best-available science for assessing climate change threats provide a solid basis for applying the same timeframe to the climate change analyses for the proposed plant species.

III. Sea Level Rise Will Have Significant Impacts On The Proposed Plant Species

As documented above and acknowledged in the Proposed Rule, climate change and particularly sea level rise pose current and growing threats to the proposed plant species. Although the Proposed Rule does not specify the sea level rise projections considered, FWS should analyze the impacts of one to two meters of sea level rise based on the best-available science and to account for the effects of increasing storm severity, storm surge, salt-water intrusion, and wave heights. The proposed plant species have already likely suffered population declines due to salt water intrusion and/or inundation of their occupied habitat, and continued impacts from sea level rise threaten these species with extinction within this century. Given these ongoing, high-magnitude threats, FWS must be proactive in designating critical habitat and implementing recovery efforts that sufficiently protect these imperiled species from climate change threats (Maschinski et al. 2011, Schmidt et al. 2012).

A. Sea level rise impacts on *Chromolaena frustrata* (Cape Sable thoroughwort)

The Proposed Rule reports that the Cape Sable thoroughwort occurs in coastal Florida habitats including coastal berms, coastal rock barrens, buttonwood forests, and rockland hammocks that are highly vulnerable to inundation due to sea level rise. The current range

includes eleven populations numbering ~1,634 to 2,633 plants in Everglades National Park from the Coastal Prairie Trail to Madeira Bay, and populations on six islands of the Florida Keys: Upper Matecumbe Key, Lower Matecumbe Key, Lignumvitae Key, Long Key, Big Munson Island, and Boca Grande Key.

In its sea level rise impacts analysis for the thoroughwort, the Proposed Rule notes that most populations are located just slightly above mean sea level, and that scenarios for the Florida Keys predict that sea level rise will result in conversion of habitat and eventually complete inundation of habitat (77 Fed. Reg. 61852).

We estimated the potential for inundation of the seven current locations using the NOAA Sea Level Rise and Coastal Flooding Impacts Viewer¹⁷ at sea level rise levels from one to six feet (~30 cm to 1.8 m) expected within this century. We found that mainland habitat in Everglades National Park is substantially inundated by one foot of sea level rise, and habitat in the Florida Keys is partially or completely inundated at sea level rise beginning at one foot, with the Lignumvitae Key providing the highest-elevation habitat.

B. Sea level rise impacts on *Consolea corallicola* (Florida semaphore cactus)

The current range of the Florida semaphore cactus includes two naturally occurring populations in Biscayne National Park and Little Torch Key (76 Fed. Reg. 66416), and experimental plantings at two sites in the Florida Keys in rockland hammocks near sea level and buttonwood forests in the transition areas between rockland hammocks in mangrove swamps. As noted in the Proposed Rule, most populations are located just slightly above mean sea level, research indicates that increasing soil salinity levels can cause mortality of these cacti, and natural populations do not occur on saturated soils (fresh or saline) and “would likely be extirpated at sites affected by sea level rise” (77 Fed. Reg. 61852). In addition, the Proposed Rule reports that populations at two sites have been declining and this may be partially attributable to sea level rise given that these plants occur near sea level in the transition zone between the buttonwood/hammock and mangrove habitats (77 Fed. Reg. 61852).

C. Sea level rise impacts on *Harrisia aboriginum* (Aboriginal prickly-apple)

The current range of the aboriginal prickly-apple includes 12 coastal sites in Manatee, Charlotte, Sarasota, and Lee counties in maritime hammock, shell mound, coastal strand, coastal berm, and spoil mound habitat. As noted in the Proposed Rule, most populations are located just slightly above mean sea level and natural populations do not occur on saturated soils (fresh or saline) and “would likely be extirpated at sites affected by sea level rise” (77 Fed. Reg. 61852).

IV. Critical Habitat Designation Must Buffer The Proposed Plant Species From Climate Change Threats

The critical habitat designation should not only protect occupied areas, but should also protect currently unoccupied areas that will help ensure the species persistence and facilitate

¹⁷ <http://www.csc.noaa.gov/digitalcoast/tools/slrvviewer>.

movement in the face of climate change. A recent report on the effects of climate change and sea level rise on Florida biodiversity noted that protected areas “along all of Florida’s coasts face the same problem: the very habitats they are trying to protect are moving right out from under their protection” (Cameron Devitt et al. 2012). The same will be true for the proposed plant species if FWS only designates currently occupied habitat as critical habitat.

A. Unoccupied inland habitat areas should be identified and designated as critical habitat for the three proposed plant species

The ESA requires the designation of critical habitat for listed species, encompassing all areas “essential to the conservation [survival and recovery] of the species.” Importantly in a climate change context, the ESA explicitly allows the Services to designate critical habitat “outside the geographical area occupied by a species at the time it was listed, upon a determination that such areas are essential for the conservation of the species” (16 U.S.C. § 1532(5)). As species and habitats shift in response to climate change, protecting habitat areas outside of the current range, including stepping stone patches and corridors to facilitate species movements to new areas and shifting habitat, will become critical to allowing species to persist in a changing climate. The FWS should identify and designate unoccupied inland habitat that will be protected from inundation and salt-water intrusion by sea level rise and increasing storm surge, including habitat for restoration and establishment of new populations.

B. FWS has the legal authority and ample precedent for designating unoccupied habitat to buffer these plants from climate change threats

The FWS has designated unoccupied habitat at the time of listing as critical habitat for six species to buffer them from climate change impacts. These species include the Western snowy plover for which unoccupied upland coastal habitat was designated to facilitate inland movement in response to sea level rise (77 Fed. Reg. 36728); the Quino checkerspot butterfly for which an unoccupied northern, higher-elevation habitat unit was designated to facilitate movement in response to hotter, more arid conditions due to climate change (74 Fed. Reg. 28776); the dusky gopher frog for which an unoccupied habitat unit was designated for the purposes of re-establishing a population to help buffer it from climate change (77 Fed. Reg. 35118); and three montane plant species for which unoccupied habitat was designated to facilitate upslope and downslope movement in response to climate change (77 Fed. Reg. 48368). Thus, there is ample precedent, legal authority, and conservation imperative for the FWS to similarly identify and designate unoccupied inland habitat for the proposed plants to buffer them from the effects of sea level rise and increasing storm surge.

C. Critical habitat designation for the Cape Sable thoroughwort should explicitly include both occupied and unoccupied habitat areas that will buffer this species from climate change and explain how these areas will be sufficient to ensure the species persistence in the face of ongoing sea level rise

We support FWS’ approach to select critical habitat units for the Cape Sable thoroughwort in areas occupied at the time of listing that “allow the dynamic nature of coastal berm, buttonwood forest, rockland hammock, and coastal rock barren habitats to respond to

hurricane and salt-water intrusion” and that “ensure the persistence of *Chromolaena frustrata* in the face of imminent effects on habitats as a result of sea level rise” (77 Fed. Reg. 61862). However, these criteria should be applied to the designation of unoccupied habitat as well, since proactive protection of unoccupied upland areas that are buffered from the effects of salt-water intrusion and inundation from sea level rise will be critical to the persistence of this species. FWS has not explained how the current designation will “ensure the persistence” of the thoroughwort under current and projected salt-water intrusion and inundation, especially given that the proposed areas are all low-lying and highly vulnerable to imminent sea level rise. The Proposed Rule notes that the ecological communities and substrate used by the thoroughwort differ between mainland and Florida Keys populations. The differences between mainland and island populations in habitat types and potential for movement and dispersal may have important influences on their vulnerability to climate change, and should be considered in the designation of unoccupied habitat.

We are submitting these comments and pdfs of the cited references via www.regulations.gov. If you have any questions about the comments submitted, please contact Shaye Wolf at (415) 632-5301 or at swolf@biologicaldiversity.org.

Sincerely,



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