



Via Electronic and Certified Mail

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RE: Notice of Intent to Sue for Violations of the Endangered Species Act Concerning “Not Warranted” Listing Decision for Florida Keys Mole Skink (*Plestiodon egregius egregius*)

Dear Sirs and Madam:

In accordance with Section 11(g) of the Endangered Species Act (ESA), 16 U.S.C. § 1540(g), the Center for Biological Diversity (Center) provides this 60-day notice of its intent to sue the U.S. Fish and Wildlife Service (Service) for violations of the ESA¹ in connection with the Service’s decision that the Florida Keys mole skink does not warrant listing as a threatened or endangered species.² The Service’s arbitrary and unlawful decision deprives this coastal lizard of the protections it needs to survive in the face of rising seas and climate change, leaving it at risk of extinction.

Climate change and the sea-level rise it is causing are steadily changing the world, and few animals will feel those impacts more acutely than the Florida Keys mole skink, a small, brown

¹ 16 U.S.C. § 1531, *et seq.*; 50 C.F.R. § 402, *et seq.*

² 82 Fed. Reg. 46,618 (Oct. 5, 2017).

lizard with a brilliant pink tail that lives along the high-tide line on the coasts of the Florida Keys. The best available science predicts that sea-level rise will inundate nearly half (44 percent) of the Florida Keys mole skink's last remaining habitat by 2060, with even more habitat degraded by saltwater intrusion and storm surges from increasingly intense and frequent storm events. Skinks will be forced to vie with growing human populations and development for what little habitat remains while struggling against a multitude of individual and synergistic threats ranging from road mortality to predation by feral animals. Still, sea-level rise will continue and accelerate, with seas projected to rise as high as 2.5 meters (8.2 feet) by the end of the century. Given the Florida Keys mole skink's low-lying, coastal habitat, located 50 to 80 centimeters (20 to 31 inches) above sea level, these projections define a foreseeable and imminent death sentence.

Despite these severe threats, the Service issued a 12-month finding for the Florida Keys mole skink concluding that it was not in danger of extinction or likely to become endangered in the foreseeable future, and thus did not warrant the protections of the ESA. The Service reached this conclusion through an assortment of legal violations, including its use of an unlawfully truncated foreseeable future analysis, its failure to use the best available science and draw rational connections between the facts found and the decision made, its reliance on an unlawful "certainty" standard to find listing was not warranted, its failure to analyze whether a distinct population segment of the Florida Keys mole skink warrants listing, and its failure to properly analyze whether the species is endangered or threatened throughout a significant portion of its range. The Service's clear disregard for the legal requirements of ESA Section 4 and the best available science led to an apparently predetermined decision based not on the best available science but on factors—political or otherwise—not authorized for consideration under the ESA. If the Service does not remedy the violations of law outlined in this letter within 60 days, the Center will file suit in federal court to resolve the matter.

I. FACTUAL BACKGROUND

a. Florida Keys Mole Skink

The Florida Keys mole skink (*Plestiodon egregius egregius*) is a shiny, brown lizard with a brilliant pink tail, known only from its namesake islands. Its Latin name *egregius* roughly translates to "standing out from the flock," which reflects both its distinctiveness and its tremendously secretive nature. In fact, the Florida Keys mole skink quietly lives out its life in sandy, hidden places under rocks, leaf litter, and tidal wrack (the line of dead, washed-up seaweed and marsh grass fringing shorelines).

The Florida Keys mole skink is isolated from mainland Florida and limited to a few small islands in the Dry Tortugas and Lower Keys, which have exceptionally high coastline-to-area ratios. The skink's suitable habitat lies just above sea level in woodlands, shrublands, and salt marshes, usually in sandy areas just above the mean high-tide line. This "transitional zone," which lies 50 to 80 centimeters (20 to 31 inches) above sea level, is frequently dry but periodically submerged in salt water.

The Florida Keys mole skink needs dry, loose sand to dig nest cavities and coastal detritus to provide insect prey and thermoregulatory refugia. Nest cavities may vary in depth from 0.33

centimeter (0.13 inch) to 1.83 meters (6 feet). Female skinks attend to their nests annually between April and June, spending much of their time licking, turning, and protecting their eggs from predators. If these essential behaviors are prevented, the eggs are at risk of failing to develop normally.

The best available science indicates that the most important factors for the Florida Keys mole skink's persistence are coastal beach and hammock habitat; loose, dry soils; ground cover, leaf litter, debris, or tidal wrack; and arthropod or insect food sources. Because the Florida Keys mole skink lives directly on the coast on a few small islands, the subspecies and its habitat are highly susceptible to inundation from sea-level rise, habitat isolation and destruction from coastal squeeze, and other pressures associated with rising temperatures.

Florida Keys mole skinks are also vulnerable to a variety of other threats including habitat destruction, degradation, and fragmentation; road mortality; pollution; pesticides; predation by feral animals and red imported fire ants; and disturbance from human activities on shorelines.

b. Listing History for Florida Keys Mole Skink

The Service first identified the Florida Keys mole skink as a federal Category 2 candidate species, meaning the Service possessed information indicating that proposing to list the species as Endangered or Threatened was possibly appropriate but that more data—particularly field data—were needed.³ The Florida Keys mole skink remained a Category 2 candidate species until the designation was discontinued in 1996, at which point the skink was removed from the candidate list and received no new designation.⁴

Center's Petition to List the Florida Keys Mole Skink

On April 20, 2010, the Center petitioned the Service to list the Florida Keys mole skink as threatened or endangered under the ESA based on its declining populations and restricted range, and because the best available science shows that climate change, sea-level rise, and development will squeeze the skink's remaining habitat out of existence. Additionally, the petition highlighted threats from overcollection, habitat degradation and fragmentation, and a lack of existing regulatory mechanisms to address all the mounting threats. The petition provided a detailed description of impacts from climate change, including sea-level rise, an increased incidence and severity of major storm events in the Southeast, and an expected shift in habitable ecological zones that would harm species with limited dispersal ability like the skink. At the time the petition was submitted, the Florida Keys mole skink had already experienced a decline of 10 to 30 percent.

³ 47 Fed. Reg. 58,454 (Dec. 30, 1982).

⁴ 50 Fed. Reg. 37,963 (Sept. 18, 1985) (candidate notice of review including Florida Keys mole skink); 54 Fed. Reg. 554 (Jan. 6, 1989) (same); 58 Fed. Reg. 58,804 (Nov. 21, 1991) (same); 59 Fed. Reg. 58,982 (Nov. 15, 1994) (same); 61 Fed. Reg. 64,481 (Dec. 5, 1996) (discontinuing category 2 candidate species status).

90-Day Finding

On September 27, 2011, the Service issued a positive 90-day finding for the Florida Keys mole skink,⁵ finding the petition presented substantial scientific information indicating that listing may be warranted. The 90-day finding recognized threats under four identified factors: present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting its continued existence. Specifically, the 90-day finding highlighted the threat to Florida Keys mole skinks from “sea level rise and increased storm intensity resulting from global climate change,” which may be “magnified . . . by . . . human population growth.”⁶

Deadline Litigation

The Service failed to timely render a 12-month finding for the Florida Keys mole skink, as required under Section 4 of the ESA, and in June 2013 the Center filed litigation in federal district court to compel the Service to comply with its statutory duty to issue the 12-month finding. On September 23, 2013, the Center and the Service entered a stipulated settlement agreement that the Service would submit to the Federal Register a 12-month finding on the petition to list the skink by September 30, 2017.

Letter Updating Best Available Science

On March 31, 2016, the Center submitted a letter providing updated best available science for the Florida Keys mole skink. This letter explained that the Florida Keys mole skink’s coastal, pine rockland, and tropical hardwood hammock ecosystems continue to be subject to human development, particularly on islands where the skinks are known to exist. Remaining skink habitat is also vulnerable to habitat fragmentation, groundwater withdrawal, and deficient fire management. As suitable habitat is diminished and fragmented by development, skinks are exposed to increased anthropogenic threats from road mortalities, predation by pets and feral cats, and collection for personal or commercial purposes.

The letter also presented evidence of multifaceted and synergistic negative impacts to Florida Keys mole skinks and their habitat from climate change and sea-level rise based on the best scientific projections available. Global average sea level rose by roughly eight inches over the past century, and sea-level rise in the Caribbean has largely followed the global trend. Scientists predict that sea-level rise is accelerating in pace and will be much more extreme this century. The Third National Climate Assessment estimated that global sea level is likely to rise by 1 to 4 feet by 2100, with sea-level rise of 6.6 feet possible, while the National Research Council similarly estimated global sea-level rise at 1.6 to 4.6 feet (0.5 to 1.4 meters) by 2100. The effects of sea-level rise will be long-lived. Scientists estimate that we lock in 8 feet of sea-level rise over the long term for every degree Celsius (1.8 degrees Fahrenheit) of warming.

The letter explained that sea-level rise poses exceptional challenges to the Florida Keys mole skink because of the islands’ extensive coastlines, low topography, and frequent intense storm

⁵ 76 Fed. Reg. 59,836 (Sept. 27, 2011).

⁶ 76 Fed. Reg. at 58,855.

events from climate change. For example, the Florida Fish and Wildlife Conservation Commission (FWC) estimated that a rise in sea level of 18 centimeters (7 inches) would inundate approximately 23,800 ha (58,800 acres) in the Florida Keys, and rise in sea level of 140 centimeters (4.6 feet) would inundate 57,500 ha (142,000 acres). The Southeast Florida Regional Climate Change Compact forecast that Big Pine Key and the Torch Keys, where Florida Keys mole skinks are known to exist, will be substantially inundated beginning at *one foot* of sea-level rise, which is a level of rise predicted to occur before mid-century. Likewise, FWC predicted that a sea-level rise of 18 centimeters (7 inches) would inundate 34 percent of Big Pine Key, resulting in the loss of 11 percent of the island's upland habitat; a sea-level rise of 140 centimeters (4.6 feet) would inundate 96 percent of Big Pine Key, leaving only 4 percent of the island above water.

The letter also clarified that although sea-level rise occurs gradually, it intensifies the effects of other weather events such as spring tides and storm surges, causing habitat damage, migration, elimination, and conversion into other habitat types. Increasingly intense storms and higher storm surge will pose additional threats to the skink's coastal habitat. Studies have found that the frequency of high-severity hurricanes is increasing in the Atlantic, as are frequencies of hurricane-generated large surge events and wave heights. The risk of extreme storm surges has already doubled as the planet warms, and these events could become 10 times more frequent in the coming decades. High winds, waves, and surge from storms can cause significant damage to coastal habitat. As sea levels rise, storm surge will ride on a higher sea surface, which will push water further inland and create more flooding of coastal habitats. Approximately 80 percent of the Florida Keys is subject to storm surge impact from a Category 1 hurricane. Though many lizard species in the Keys may be adapted to periodic flooding, FWC has expressed doubt that mole skinks on smaller keys would survive complete inundation by severe hurricanes and anticipates that increasingly severe hurricanes in the Keys will result in increased mortality of skinks from storm surge.

The letter warned that impacts from climate change and sea-level rise are intensified by pressures stemming from an increasingly fragmented and human-altered landscape. As an exclusively coastal subspecies, the Florida Keys mole skink faces significant risks from coastal squeeze, which occurs when habitat is pressed between rising sea levels and coastal development that prevents landward movement. Human responses to sea-level rise such as coastal armoring and landward migration pose significant risks to the ability of skinks threatened by sea-level rise to move landward. Moreover, because the skinks live in increasingly fragmented, isolated island habitats, they are unable to migrate in keeping with climate-change-induced shifts in habitable ecological zones.

12-Month Finding

On October 5, 2017, the Service issued a finding that listing the Florida Keys mole skink is not warranted.⁷ The Service's summary of its status review recognized that "the primary stressors affecting the current and future condition of the Florida Keys mole skink are sea-level rise; climate-change-associated shifts in rainfall, temperature, and storm intensities; and human development" and that "[t]hese stressors account for indirect and direct effects at some level to

⁷ 82 Fed. Reg. 46,618 (Oct. 5, 2017).

all life stages and the habitat and soils across the subspecies' range.”⁸ The Service also found that the habitat Florida Keys mole skinks rely on for food, shelter, and nesting “are susceptible to flooding, inundation, and saltwater intrusion from sea-level rise and climate-change-associated factors.”⁹

The Service's status review summary indicated that it assessed suitable habitat for the Florida Keys mole skink, arriving at an estimate of 9,100 acres.¹⁰ The Service also assessed potentially available suitable soils with some overlap with the identified suitable habitat areas, concluding that 340 to 472 acres of suitable soils occur mainly on six Keys in Monroe County, Lower Matecubme, Long Key, Boot Key, Bahia Honda, Big Pine, and Key West.¹¹

The long-term trend in sea-level rise at the National Oceanic and Atmospheric Administration's (NOAA) Key West station shows a 2.4 mm (0.09 in) increase of the mean high water line per year from 1913 to 2015 (9.18 in over 102 years), and the NOAA Vaca Key station shows a 35 mm (0.14 in) increase per year from 1971 to 2015 (6.16 in over 44 years).¹²

With regard to ongoing and projected changes in climate, the Service considered projections within the next 83 years, paying attention to suitable habitats and soils for the Florida Keys mole skink, to predict habitat inundation across the subspecies' range. Although the Service had available science providing sea-level-rise projections at 2040, 2060, and 2100, it limited its “foreseeable future” analysis for the Florida Keys mole skink to 30 to 40 years when making its final listing determination.¹³ Using this timeframe, the Service concluded that the Florida Keys mole skink would lose 2 to 17 percent of its suitable habitat range-wide by 2040.¹⁴ Likewise, suitable soils are projected to decline by 19 to 37 percent by 2040.¹⁵ By 2060, suitable habitat is projected to decline by 4 to 44 percent, and suitable soils are projected to decline by 25 to 50 percent.¹⁶ Based on these limited projections over the next 30 to 40 years, the Service concluded that the Florida Keys mole skink “may experience reductions in population resiliency, subspecies redundancy, and subspecies representation” from sea-level rise and climate change.¹⁷

The Service conceded in its 12-month finding that “[t]he sea-level-rise projections predict inundation only and do not model the complex set of shifts that are anticipated to be triggered over time as the effects of sea-level rise are experienced.”¹⁸ In fact, the 12-month finding does not account for climate-change-driven shifts in suitable climate, the subspecies' ability to disperse, stochastic events such as storms of unusual intensity, and the intensifying impacts of coastal development, despite the existence of information in the Service's own species status assessment report showing these factors will negatively influence the species' viability. Yet the Service concluded in its 12-month finding that “the stressors acting on the subspecies and its

⁸ *Id.* at 46,638.

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

¹³ *Id.* at 46,638–46,639.

¹⁴ *Id.* at 46,639.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

habitat, either singly or in combination, are not of sufficient imminence, intensity, or magnitude to indicate the Florida Keys mole skink is in danger of extinction . . . , or likely to become endangered within the foreseeable future . . . , throughout all of its range.”¹⁹

Likewise, the Service found no “concentration of threats in a particular area that would cause the subspecies to be in danger of extinction or likely to become so in the foreseeable future throughout any portion of its range.”²⁰

The Service also noted that preliminary genetic research discovered at least four genetically distinct populations of Florida Keys mole skinks, with little to no breeding between the populations; however, the Service did not consider the possibility of listing any distinct populations segments “because [they] were not petitioned to do so.”²¹

II. REQUIREMENTS OF THE ENDANGERED SPECIES ACT

The ESA “represent[s] the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.”²² To that end, the ESA’s purpose is to “provide a program for the conservation of . . . endangered species and threatened species” and “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved . . . [and] to provide a program for the conservation of such endangered species and threatened species.”²³ The ESA requires that “all Federal departments and agencies . . . seek to conserve endangered species and threatened species and . . . utilize their authorities in furtherance of the purposes” of the ESA.²⁴

To accomplish these goals, the ESA directs the Secretary of the Interior, through the Service, to list species it determines are endangered or threatened.²⁵ A species is “endangered” if it “is in danger of extinction throughout all or a significant portion of its range.”²⁶ A species is “threatened” if it is “likely to become an endangered species within the foreseeable future.”²⁷ The definition of “species” includes “subspecies” and “distinct population segments of any species of vertebrate fish or wildlife which interbreeds when mature.”²⁸

Section 4 of the ESA establishes a detailed process by which the Service must add to or modify the list of threatened and endangered species through notice and comment rulemaking.²⁹ Crucially, in making all listing determinations, the Service must assess five categories of threats:

- (A) the present or threatened destruction, modification or curtailment of a species’ habitat or range;

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.* at 46,638.

²² *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180 (1978).

²³ 16 U.S.C. § 1531(b).

²⁴ *Id.* § 1531(c)(1).

²⁵ *Id.* § 1533(a).

²⁶ *Id.* § 1532(6).

²⁷ *Id.* § 1532(20).

²⁸ *Id.* § 1532(16).

²⁹ *Id.* § 1533.

- (B) overutilization for commercial, recreational, scientific or educational purposes;
- (C) predation or disease;
- (D) the inadequacy of existing regulatory mechanisms; and
- (E) other manmade or natural factors affecting the species' continued existence.³⁰

If a species meets the definition of “endangered” or “threatened” because of *any one or a combination* of these five factors, the ESA requires the Service to list the species.³¹

The ESA also mandates that the Service make listing determinations “solely on the basis of the best scientific and commercial data available.”³² Courts have consistently held that the “standard does not require that [the Service] act only when it can justify its decision with absolute confidence.”³³ Rather, “[e]ven if the available scientific and commercial data were quite inconclusive, [the Service] may—indeed must—still rely on it.”³⁴ Mandating reliance on the best available science, as opposed to scientific certainty, “is in keeping with congressional intent” that the Service “take preventive measures *before* a species is ‘conclusively’ headed for extinction.”³⁵

Requiring the Service to base its listing decisions “solely” on the best available science also means that the Service cannot consider economics or politics in deciding whether to list a species. As courts have explained, “the ESA clearly bars economic considerations from having a seat at the table when the listing determination is being made.”³⁶ Similarly, the standard “requires [the Service] to disregard politics” in making listing decisions.³⁷ In fact, “the word ‘solely’ is intended to remove from the process of the listing or delisting of species any factor not related to the biological status of the species.”³⁸

Once a species is listed, it receives an array of statutory protections. For example, Section 4 requires the Service to designate “critical habitat” for listed species and engage in recovery planning.³⁹ Section 7 requires all federal agencies to ensure that their actions neither “jeopardize the continued existence” of any listed species nor “result in the destruction or adverse modification” of its “critical habitat.”⁴⁰ Section 9 makes it unlawful to “take” listed species, which means no person can harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species without receiving authorization from the Service.⁴¹

³⁰ *Id.* § 1533(a)(1).

³¹ *Id.*; 50 C.F.R. § 424.11(c); *see also Fed’n of Fly Fishers v. Daley*, 131 F. Supp. 2d 1158, at 1164 (N.D. Cal. 2000) (“These factors are listed in the disjunctive; any one or a combination can be sufficient for a finding that a particular species is endangered or threatened.”).

³² 16 U.S.C. § 1533(b)(1)(A).

³³ *Ariz. Cattle Growers’ Ass’n v. Salazar*, 606 F.3d 1160, 1164 (9th Cir. 2010), *cert denied*, 131 S. Ct. 1471 (2011).

³⁴ *Sw. Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000).

³⁵ *Defenders of Wildlife v. Babbitt*, 958 F. Supp. 670, 679–80 (D.D.C. 1997).

³⁶ *N.M. Cattle Growers Ass’n v. U.S. Fish & Wildlife Serv.*, 248 F.3d 1277, 1285 (10th Cir. 2001).

³⁷ *Save Our Springs v. Babbitt*, 27 F. Supp. 2d 739, 747 (W.D. Tex.1997).

³⁸ *N.M. Cattle Growers*, 248 F.3d at 1284–85 (quoting H.R. Rep. No. 97-567, pt. 1, at 29 (1982)) (internal quotation marks omitted).

³⁹ 16 U.S.C. § 1533(a)(3), (f).

⁴⁰ *Id.* § 1536(a)(2).

⁴¹ *Id.* § 1538.

III. VIOLATIONS OF THE ENDANGERED SPECIES ACT

The Service’s decision not to list the Florida Keys mole skink violated the ESA. Specifically, the Service used an unlawfully truncated foreseeable future analysis, failed to use the best available science and draw rational connections between that facts found and the decision made, relied on an unlawful “certainty” standard to find listing was not warranted, failed to analyze whether a distinct population segment of the Florida Keys mole skink warrants listing, and failed to properly analyze whether the species is endangered or threatened throughout a significant portion of its range.

a. The Service used an Unlawfully Truncated Foreseeable Future Analysis

The Service unlawfully defined the “foreseeable future” for threats to the Florida Keys mole skink from climate change and sea-level rise as 30 to 40 years, or until approximately the year 2060. This determination is contrary to the best available science, which projects sea-level rise out to 2100, and contrary to law.

Under the ESA, the Service must list a species as “threatened” if it “is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”⁴² Although the ESA does not define the term “foreseeable future,” the Service must use a definition that is reasonable, ensures protection for the petitioned species, and gives the benefit of the doubt regarding any scientific uncertainty to the species.⁴³

The Service’s unsupported limitation of the foreseeable future to only the next 30 to 40 years is contrary to the plain language of the term “foreseeable future.”⁴⁴ The ordinary meaning of “foreseeable” in the context of the “foreseeable future” is “lying within the range for which forecasts are possible.”⁴⁵ Thus, the ordinary meaning of the term “foreseeable future” is directly tied to the range of time in which forecasts regarding sea-level rise are possible.

Here, forecasts for sea-level rise impacts on the Florida Keys mole skink through the year 2100 are not only possible but already published using models widely recognized as the international scientific consensus on climate change. For example, the Intergovernmental Panel on Climate Change’s (IPCC) Fifth Assessment Report, published in 2013, provides climate change projections through 2100 under a range of plausible emissions scenarios using 23 models by 14 modeling groups from 10 countries to project future climate.⁴⁶ Based in part on IPCC’s models

⁴² *Id.* § 1532(20).

⁴³ *See Or. Natural Res. Council v. Daley*, 6 F. Supp. 2d 1139, 1151 (D. Or. 1998); *see also Defenders of Wildlife*, 958 F. Supp. at 680 (explaining that the Service should list species based on the “best available data” presently available, giving “the benefit of the doubt to the species”); *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988) (explaining that the Service cannot “ignore available biological information or fail to develop projections” because it would “eviscerate Congress’ intent to ‘give the benefit of the doubt to the species’” (quoting H.R. Conf. Rep. No. 96-697, 96th Cong., 1st Sess. 12, *reprinted in* 1979 U.S. Code Cong. & Admin. News 2572, 2576)).

⁴⁴ *See Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 187 (1995) (in the absence of a statutory or regulatory definition, the phrase must be defined using its ordinary meaning).

⁴⁵ Merriam-Webster, at <http://www.merriam-webster.com/dictionary/Foreseeable> (accessed Oct. 30, 2017).

⁴⁶ Flato, G., et al. 2013: Evaluation of Climate Models. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)] [*hereinafter* IPCC 2013].

and projections, in 2017 NOAA published Global and Regional Sea Level Rise Scenarios for the United States.⁴⁷ These models are freely available and were before the Service at the time it made its decision.⁴⁸

Consistent with clear statutory requirements and the available climate-change science, both the National Marine Fisheries Service (NMFS)—the Service’s sister agency with jurisdiction over most marine species—and the Service itself have relied on climate change impacts through the end of the century in making listing decisions under the ESA. For example, in determining the bearded seal is a threatened species, NMFS defined the foreseeable future for threats from sea ice loss as 2100 because the best available climate change science projected impacts through 2100.⁴⁹ NMFS also assessed threats to ribbon seals using a foreseeable future of 2100 and used the full IPCC scenarios out to 2100 in its listing decision for 82 coral species.⁵⁰ Indeed, NMFS’s guidance on considering climate change impacts in listing decisions states that the agency should “project effects over the longest possible period for which credible projections are available in order to ensure the best available science is fully considered.”⁵¹ Likewise, in its 2011 12-month finding for the Pacific walrus, the Service analyzed threats to the species from sea ice loss through 2100 because climate change science supported that time frame.⁵² In 2013 the Service analyzed threats of habitat loss to climate change and sea-level rise through 2100 for the Florida bonneted bat.⁵³

The Service’s apparent short-sightedness in its decision to limit its foreseeable future analysis to 30 to 40 years from present violates the requirements of the ESA, is arbitrary and capricious, and is contrary to the best available science that predicts the foreseeable future out to the year 2100.

b. The Service’s Decision is Not Based on the Best Available Science and Fails to Draw a Rational Connection Between the Facts Found and the Decision Made

The Service ignored the best available science when making its 12-month finding for the Florida Keys mole skink. Specifically, the Service failed to consider models widely accepted as the international scientific consensus on climate change and sea-level rise and failed to analyze other negative impacts climate change will have on the Florida Keys mole skink. Likewise, the Service failed to meaningfully consider the synergistic interaction of sea-level rise and habitat loss to human development. The Service also disregarded other threats to the subspecies that cumulatively contribute to the subspecies’ risk of extinction, including development, road mortality, habitat fragmentation, pesticides, pollution, predation by feral animals and invasive red fire ants, and disturbance from human activities on shorelines. The Service’s failure to base its decision on all the best available science when making its listing decision is arbitrary and capricious and violates the ESA.

⁴⁷ NOAA. 2017. Global and regional sea level rise scenarios for the United States. NOAA Technical Report NOS CO-OPS 083. Silver Spring, Maryland. January 2017 [*hereinafter* NOAA SLR Report].

⁴⁸ U.S. Fish & Wildlife Serv. 2017. Species status assessment report for the Florida Keys mole skink (*Plestiodon egregius egregius*). Version 1.1. July 2017. Atlanta, GA [*hereinafter* SSA Report].

⁴⁹ 77 Fed. Reg. 76,740 (Dec. 28, 2012).

⁵⁰ 78 Fed. Reg. 41,371 (July 10, 2013); 77 Fed. Reg. 73,220 (Dec. 7, 2012).

⁵¹ NMFS, Revised Guidance for Treatment of Climate Change in NMFS Endangered Species Act Decisions, June 17, 2017, http://www.nmfs.noaa.gov/pr/pdfs/pr_climate_change_guidance_june_2016.pdf.

⁵² 76 Fed. Reg. 7,634, 7,643, 7,646–47 (Feb. 10, 2011).

⁵³ 78 Fed. Reg. 61,004, 61,028 (Oct. 2, 2013).

Sea-level Rise

With regard to sea-level rise, the Service ignored the best available science showing: (1) the skink will lose nearly *half* of its habitat by 2060; and (2) the skink will lose even more habitat at an exponential rate through the end of the century. Based on the best available science before the Service, the foreseeable near- and long-term threats from sea-level rise warrant listing the Florida Keys mole skink under the ESA.

First, the Service failed to use the best available science when it based its analysis of sea-level-rise scenarios on the University of Florida's regional projections from its 2015 Sea level Scenario Sketch Planning Tool, which "do not yet reflect modeling based on new increased rate estimates[,]which are approximately 15% higher" based on NOAA's projections.⁵⁴

Despite having the best available science showing the Florida Keys mole skink will likely lose nearly half its remaining habitat by 2060—and even referencing this information in its Species Status Assessment Report (SSA Report) for the subspecies⁵⁵—the Service arbitrarily concluded in its 12-month finding that the subspecies did not warrant ESA protection. Given the massive loss and degradation of habitat projected from sea-level rise by as early as 2060, the Florida Keys mole skink should have received the ESA's protections.

The Service also arbitrarily ignored devastating sea-level rise threats to the Florida Keys mole skink beyond 2060 despite the existence of scientific projections through the year 2100. In fact, the Service expressly stated in the 12-month finding that it did not consider impacts beyond 2060 in making its final listing decision.⁵⁶ This includes sea-level rise models derived from the IPCC's models in the Fifth Assessment Report and NOAA's Global and Regional Sea Level Rise Scenarios for the United States, which project global sea-level rise to increase between 0.3 meters (11.8 inches) to 2.5 meters (8.4 feet) by 2100. These projections reflect accelerating sea-level rise, particularly in southeast Florida, from added ocean mass from melting ice and thermal expansion. The IPCC models are the best available climate science,⁵⁷ and had the Service appropriately relied on this best available science it would have relied on sea-level-rise impacts out to 2100 in making its final listing decision.

The Service attempted to explain away its decision to ignore climate change and sea-level-rise impacts beyond 2060 by citing "too much uncertainty in the projections that far out."⁵⁸ However in rationalizing its failure to consider sea-level-rise through the end of the century in its final decision, the Service again ignored the best available science that demonstrates sea-level is certain to continue rising at an accelerated pace through the end of the century. For example, in the Service's own SSA Report for the Florida Keys mole skink, it recognized that sea-level has

⁵⁴ SSA Report at 47.

⁵⁵ SSA Report at 63, 69 (explaining that approximately 44 percent of the suitable habitat and 50 percent of suitable soils will be inundated across the Keys at the projected high sea-level rise scenario for 2060 (0.7 meters, 28 inches)). NOAA recommends using higher end estimates for future projections. *Id.* at 23.

⁵⁶ Notably, the Service refused to consider sea-level rise impacts beyond 2060 in its 12-month finding *after* extensively discussing devastating sea-level-rise scenarios through the end of the century in its SSA Report.

⁵⁷ *Alaska Oil and Gas Ass'n v. Jewell*, 815 F.3d 544, 558–59 (9th Cir. 2016); *Safari Club Int'l v. Salazar*, 709 F.3d 1, 4–6, 9–11 (D.C. Cir. 2013).

⁵⁸ 82 Fed. Reg. at 46,638.

risen approximately 0.003 meters (0.12 in) per year since 1993.⁵⁹ Likewise, the Service acknowledged that the rate of global and regional sea-level rise is beginning to accelerate,⁶⁰ and based on this observed acceleration, global sea-level rise projections for 2100 have been adjusted to a lower bound of 0.3 meters (11.8 in) and an upper bound of 2.5 meters (8.2 feet).⁶¹ Florida's projections are in line with global projections.⁶² There is approximately 100 percent likelihood of exceeding the low (0.3 m/11.8 in) global sea-level rise curve by 2100,⁶³ and current greenhouse gas emissions remain high, placing the trend for sea-level rise on the higher end of projections.⁶⁴

Indeed the Service itself stated that “based on projections, coastal beach and low-lying areas [in the Keys] will either be lost to the sea or converted to predominantly saltwater habitat.”⁶⁵ Likewise, it acknowledged that

no mechanisms are currently in place, globally or regionally, which indicate an aggressive or immediate reduction in global GHG emissions. Regardless of the time frames used in the modeled projections, SLR and other climactic changes will continue to progress and further impact the FL Keys mole skink until interventions are in place to minimize or reverse these stressors.⁶⁶

Even using the unlawfully truncated “foreseeable future” of 2060, the skink is expected to lose nearly half (44 percent) of its suitable habitat, which scientists anticipate will decrease the size of their already small populations.⁶⁷ Therefore, based on the best available science before the agency at the time it made its decision, significant habitat inundation and degradation from saltwater intrusion are certain and foreseeable through the end of the century. The Service's failure to account for that information in its final listing decision is unlawful.

To the extent the Service refused to analyze sea-level-rise impacts to the Florida Keys mole skink beyond 2060, its rationale that there is “uncertainty of what will occur in the future as [sea-level rise] is projected to reach a tipping point and rapidly accelerate” is arbitrary and irrational.⁶⁸ Uncertainty about precisely *when* the anticipated rapid acceleration of sea-level rise will occur

⁵⁹ SSA Report at 45 (citing NOAA SLR Report at 8).

⁶⁰ *Id.* (citing Park, J. and W. Sweet. 2015. Accelerated sea level rise and Florida Current transport. *Ocean Science* 11:607–615 (entire); NOAA SLR Report (entire); Rahmstorf, S., J. Box, G. Fuelner, M. Mann, A. Robinson, S. Rutherford, and E. Schaffernicht. 2015. Exceptional twentieth-century slowdown in Atlantic Ocean overturning circulation. *Nature Climate Change* 5:475–480 (entire); Zhang, K., J. Dittmar, M. Ross, and C. Bergh. 2011. Assessment of sea level rise impacts on human population and real property in the Florida Keys. *Climatic Change* 107:129–146).

⁶¹ *Id.* at 46 (citing NOAA SLR Report at 17); *see also id* at 45 (recognizing there will be “accelerated rates of SLR due to ice cap melt contributing to the Atlantic ocean current’s influence on the East coast of the United States”).

⁶² *Id.* at 47 (citing NOAA SLR Report at 40).

⁶³ *Id.* at 46 (citing NOAA SLR Report at 21).

⁶⁴ *Id.* at 46–47, 73 (citing Southeast Florida Regional Climate Change Compact (Compact). 2012. Inundation mapping and vulnerability assessment work group. August 2012. Analysis of the Vulnerability of Southeast Florida to Sea Level Rise. p. 103.; NOAA SLR Report at 33).

⁶⁵ *Id.* at 45.

⁶⁶ *Id.* at 74.

⁶⁷ *Id.* at v, 72.

⁶⁸ *Id.* at 72.

does not permit the Service to ignore impacts beyond the year 2060,⁶⁹ particularly when the Service conceded that it *is certain* that sea-level rise will occur and will *accelerate* in the foreseeable future.⁷⁰

Likewise, the Service’s allusion to “uncertainty about how the Florida Keys mole skink will respond and how suitable habitats may transition”⁷¹ is contradicted by the best available science indicating that habitat will significantly degrade and the sub-species will not be able to adapt quickly enough or disperse in response to rapidly changing climate and habitat. For example, the Service concluded in its SSA Report that sea-level rise has already been attributed to the conversion and loss of pine forest habitat in the Florida Keys, leading to drastic changes in the naturally occurring vegetation.⁷² Similarly, storm surge can inundate soils, causing saltwater intrusion, compaction of sand, and the inability or difficulty for Florida Keys mole skinks to dig nests and burrow.⁷³ These habitat transitions are certain and will negatively impact the Florida Keys mole skink’s chances of survival.

This is true particularly because the best available science shows that skinks cannot successfully adapt to changes from climate change and sea-level rise where their habitat is entirely submerged. Although the Service recognized “rafting” (floating on debris from an area of submerged habitat to an area of suitable habitat) may contribute to Florida Keys mole skink dispersal in response to habitat inundation, it acknowledged that “colonization of an unoccupied island would require a mating pair or a gravid female to . . . become established” and that “this strategy to assure or even contribute to future persistence is . . . believed to be low.”⁷⁴ Even though sea-level rise may increase the incidence of possible rafting, “the effectiveness . . . of this dispersal would ultimately be expected to worsen with inundation as land mass decreases and the distance between land increases.”⁷⁵ Rafting is the only identified dispersal method for this subspecies. Thus, as the skink’s habitat becomes inundated—both gradually and during periods of extreme storms, surge, and flooding—the best available science indicates the Florida Keys mole skink will not be able to respond sufficiently to ensure its persistence. Even if the skink’s ability to adapt was uncertain, which it is not, uncertainty alone would not be sufficient to warrant not listing the subspecies.⁷⁶

Other Climate-Change Impacts

The Service’s 12-month finding also failed to incorporate the best available science regarding other climate-change-related impacts. For example, the Service found in its SSA Report that negative impacts “most directly associated with the Florida Keys (more hot days, increase in precipitation events, and increase in storm intensity) are already being documented, . . . there is

⁶⁹ *Alaska Oil & Gas Ass’n v. Pritzker*, 840 F.3d 671, 684 (9th Cir. 2016) (holding “the ESA does not require an agency to quantify . . . a projected ‘extinction date’ or ‘extinction threshold’ to determine whether a species is ‘more likely than not’ to become endangered in the foreseeable future” and that “[t]he fact that climate projections for 2050 through 2100 may be volatile does not deprive those projections of value in the rulemaking process”).

⁷⁰ SSA Report at 23–24, 28, 45–46, 69–70, 72, 74 (referencing anticipated rapid acceleration in sea-level rise).

⁷¹ 82 Fed. Reg. at 46,638.

⁷² SSA Report at 23.

⁷³ *Id.* at 26.

⁷⁴ *Id.* at 18–19.

⁷⁵ *Id.* at 71.

⁷⁶ *Nw. Ecosystem Alliance v. U.S. Fish and Wildlife Serv.*, 475 F.3d 1136, 1147 (9th Cir. 2007).

high confidence in the occurrence into the late 21st century,”⁷⁷ and “[t]hese stressors account for indirect and direct effects at some level to all life stages and the habitat and soils across the subspecies’ range.”⁷⁸ Likewise, the Service found that “[l]arge scale habitat loss is quite feasible during a strong hurricane as is direct mortality of skinks via drowning.”⁷⁹ However, in its final 12-month finding, the Service simply concluded that there’s “no indication that these factors are currently acting on the subspecies” when determining not to list it.⁸⁰ Finally, while the Service focused heavily on threats from habitat inundation when making its decision, it did not meaningfully account for impacts such as changed rainfall patterns, increasing temperatures, and increasing storm frequency and intensity, which will impact habitat quality and lead to direct skink mortality.⁸¹ The 12-month finding also neglected to account for the clear synergistic threat of climate change and development combined,⁸² relying instead on simple predictions for habitat inundation.⁸³

Impacts Unrelated to Climate Change

Although the Service acknowledged in its SSA Report that a wide range of threats to Florida Keys mole skink will cumulatively affect it,⁸⁴ the Service failed to analyze in its final listing decision these threats and the impacts they have individually and cumulatively on the species. A species must be listed under the ESA if the best available science shows “that the species is endangered or threatened because of any one *or a combination of* the [five listing] factors.”⁸⁵ Thus, the Service must analyze threats to the Florida Keys mole skink both individually *and cumulatively* to determine if the species is threatened or endangered.⁸⁶ Here, there is evidence of global threats from sea-level rise and climate change, as well as impacts from development, habitat degradation and fragmentation, road mortality, stochastic events such as major storms and oil spills, pesticides, pollution, predation by feral animals and red imported fire ants, and disturbance from human activities on shorelines. Yet the Service failed to account for the individual and cumulative impacts of these threats in making its listing decision.

For example, when analyzing land development and conversion in the SSA Report, the Service noted that the main islands of the Keys are “highly impacted by human development” but then

⁷⁷ SSA Report at 49 (emphasis added); *see also id.* at 50 (citing IPCC 2013 at 7) (concluding that in the late 21st century, warmer and/or fewer cold days and nights over most land areas are “virtually certain” (99–100% probability); warm spells and heat waves are “very likely” (90–100%); heavy precipitation events are “very likely” (90–100%) over tropical regions; increases in intensity and/or duration of drought “likely” (66–100%); increases in intense storms more likely than not (33–66%); and increased incidents of extreme high sea level “likely” (66–100%)).

⁷⁸ *Id.* at v.

⁷⁹ *Id.* at 42.

⁸⁰ 82 Fed. Reg. at 46,639.

⁸¹ *See, e.g.,* SSA Report at 22–26, 59–61; *see also id.* at 70 (conceding that the sea-level rise projections “do not model the complex set of shifts that are anticipated to be triggered over time as the effects of [sea-level rise] are experienced”).

⁸² *Id.* at 49–61.

⁸³ 82 Fed. Reg. at 46,639.

⁸⁴ *See, e.g.,* SSA Report at 45 (“*Even if in the unlikely scenario that all other current stressors are nullified, the habitat of the Keys is being inundated, and based on projections, coastal beach and low-lying areas [in the Keys] will either be lost to the sea or converted to predominantly saltwater habitat.*” (emphasis added)).

⁸⁵ 50 C.F.R. § 424.11(c) (emphasis added).

⁸⁶ *See WildEarth Guardians v. Salazar*, 741 F. Supp. 2d 89, 102 (D.D.C. 2010).

dismissed the threat because “parcels of suitable habitat remain,” without any analysis of whether the remaining suitable habitat could support a viable population.⁸⁷ Similarly, the Service acknowledged the severe impacts of stochastic events such as intense storms, which kill skinks and destroy their habitat via storm surge and flooding; oil spills; predation by native and human-introduced predators; collection; and pesticide use. However, the Service failed to connect these individual and cumulative impacts—together with climate change and sea-level rise—back to its ultimate finding that the threats do “not impose negative effects at the population or subspecies level.”⁸⁸

The Service’s decision also fails to accurately account for the Florida Keys mole skink’s low viability, as reflected in the Service’s own evaluation of the subspecies’ resiliency, redundancy, and representation.⁸⁹ The Service concluded in the 12-month finding that “[t]he persistence of occupied habitat (as well as potentially occupied suitable habitat) across the subspecies’ range demonstrates resiliency, redundancy, and representation to sustain the subspecies beyond the near term.”⁹⁰ However, the Service’s analysis in the SSA Report reveals low levels of resiliency, redundancy, and representation due in large part to the small, degraded, patchily distributed available habitat; low geographic redundancy; a possible restriction in the northern portion of the species’ range; and low genetic and environmental diversity.⁹¹ Population structure, abundance, and growth rate are largely unknown for this subspecies; so the Service cannot assume that the existence of the species equates to its viability or persistence.

The subspecies’ low viability places it at risk of extinction from sea-level rise and stochastic events related to climate change. In fact, the Service concluded in its analysis of the subspecies’ future condition that “[r]egardless of the time frames used in the modeled projections, [sea-level rise] and other climactic changes will continue to progress and further impact the Florida Keys mole skink until interventions are in place to minimize or reverse these stressors.”⁹² “No mechanisms are currently in place, globally or regionally, which indicate an aggressive or immediate reduction in global [greenhouse gas] emissions.”⁹³ In light of this information, the Service’s conclusion in its 12-month finding that the Florida Keys mole skink “demonstrates resiliency, redundancy, and representation to sustain the subspecies beyond the near term,”⁹⁴ despite current and future impacts from climate, change, sea-level rise, and a whole host of other

⁸⁷ SSA Report at 26.

⁸⁸ *Id.* at 33.

⁸⁹ *Id.* at 39–45 (reflecting low resiliency due to limited suitable habitat and generally unknown population abundance; low redundancy value due to limited range of populations and lack of information regarding their resiliency; and low representation due to low genetic and environmental diversity and isolated subspecies). Although individual skinks have been found on islands without historically documented populations, the Service may not assume that there are “resilient” or “viable” populations on those islands without more information. *Tucson Herpetological Soc. v. Salazar*, 566 F.3d 870, 879 (9th Cir. 2009) (“[I]f the science on population size and trends is underdeveloped and unclear, the [Service] cannot reasonably infer that the absence of evidence of population decline equates to evidence of persistence.”).

⁹⁰ 82 Fed. Reg. at 46,639.

⁹¹ SSA Report at 39–45.

⁹² SSA Report at 74.

⁹³ *Id.*

⁹⁴ 82 Fed. Reg. at 46,639.

factors, is arbitrary and capricious. The best available science indicates Florida Keys mole skinks are declining.⁹⁵

The Service also arbitrarily concluded that threats unrelated to climate change such as “predation, collection, disease, pesticides, human disruption from human activities, and oil spills” are “not expected to change from current condition.”⁹⁶ This assumption is unfounded, particularly in light of projected increases in human population,⁹⁷ which will bring increased anthropogenic threats like predation by feral animals, pollution, road mortality, and other human disruptions. As the Service itself concedes, “a reassessment of the species condition would need to be reviewed” as evidence arises showing these stressors will increase. Such evidence already exists and must be considered in the 12-month finding.

The Service acted arbitrarily, capriciously, and in violation of the ESA when it failed to use the best available science about the individual and cumulative impacts of the many threats to the Florida Keys mole skink as well as its failure to draw rational conclusions from that science when making its decision not to list the species.

c. The Service Improperly Raised the Bar for Listing Decisions by Requiring Scientific Certainty Instead of Applying the Statutory Best Available Science Standard

The Service also appeared to require scientific “certainty” to make a positive listing decision rather than the appropriate “best available science” standard. For example, the Service’s decision to exclude the best available science on sea-level rise to the year 2100 because of “uncertainty in the projections”⁹⁸ or “uncertainty about how the Florida Keys mole skink will respond and how suitable habitats will transition”⁹⁹ infers a vague and superfluous “certainty” standard. This invented standard is not authorized under the ESA or its implementing regulations. In fact, it cuts against the plain language of the ESA, which requires the Service to make listing decisions solely on the best available science. The Service “may not ignore evidence simply because it falls short of absolute scientific certainty.”¹⁰⁰ Indeed, “[a]pplication of such a stringent standard violates the plain terms of the [ESA].”¹⁰¹

Moreover, the Service may not rely on uncertainty regarding the precise timeline for sea-level rise and other climate-change-related impacts to make a finding that they will not threaten the Florida Keys mole skink’s existence. Likewise, the Service cannot rely on uncertainty with

⁹⁵ Florida Fish and Wildlife Conservation Commission (FWC). 2011. Florida Keys mole skink biological status review. March 31, 2011. Tallahassee, Florida. 16pp at p. 3.

⁹⁶ SSA Report at 45.

⁹⁷ *Id.* at 27 (citing “projections that all vacant land in the FL Keys could be consumed by development by 2060”), 60–61 (providing future projections for population growth).

⁹⁸ 82 Fed. Reg. at 46,638.

⁹⁹ *Id.*

¹⁰⁰ *Nw. Ecosystem Alliance*, 475 F.3d at 1147.

¹⁰¹ *Defenders of Wildlife*, 958 F. Supp. at 679.

regard to Florida Keys mole skink population trends or adaptation abilities to conclude that they will be able to withstand the numerous threats facing them.¹⁰²

In short, “rather than explain why” the threats posed to the Florida Keys mole skink from sea-level rise in the face of climate change “are no cause for alarm, the [Service] simply stated there was no threat because there was no data confirming a threat.”¹⁰³ “Such conclusory treatment based on a dearth of information is impermissible under the APA and ESA.”¹⁰⁴

d. The Service Failed to Consider Whether any Distinct Population Segments of the Florida Keys mole skink should be listed as Endangered or Threatened

The Service arbitrarily failed to consider whether any distinct population segments of Florida Keys mole skink warrant listing as threatened or endangered. The Service acknowledged in its 12-month finding that there are “at least four genetically distinct populations within the Florida Keys mole skink subspecies”; however, it “did not explore the possibility of those genetically distinct populations qualifying as distinct population segments under the Act[,] because [it] was not petitioned to do so.”¹⁰⁵ The Service’s failure to properly analyze whether a distinct population segment of Florida Keys mole skink is threatened or endangered is unlawful.

The ESA defines “species” as any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.”¹⁰⁶ The Service’s policy explains that in a decision regarding the status of a possible distinct population segment, the Service must consider:

1. Discreteness of the population segment in relation to the remainder of the species to which it belongs;
2. The significance of the population segment to the species to which it belongs; and
3. The population segment’s conservation status in relation to the Act’s standards for listing (i.e., is the population segment, when treated as if it were a species, endangered or threatened?).¹⁰⁷

When considering discreteness, the Service must determine whether the population segment “is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors.”¹⁰⁸ Genetic or morphological discontinuity may be evidence of such a separation.¹⁰⁹ The Florida Keys mole skink clearly meets this

¹⁰² See, e.g., *Tucson Herpetological Soc’y*, 566 F.3d at 879 (“[I]f the science on population size and trends is underdeveloped and unclear, the Secretary cannot reasonably infer that the absence of evidence of population decline equates to evidence of persistence”).

¹⁰³ *Defenders of Wildlife v. Jewell*, 176 F. Supp. 3d 975, 1006 (D. Mont. 2016).

¹⁰⁴ *Id.*

¹⁰⁵ 82 Fed. Reg. at 46,638.

¹⁰⁶ 16 U.S.C. § 1532(16); 50 C.F.R. § 424.02.

¹⁰⁷ 61 Fed. Reg. 4,722, 4,725 (Feb. 7, 1996).

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

distinctiveness standard, as it is geographically separated onto isolated islands *and* it is split into at least four genetically distinct populations.¹¹⁰

The ESA requires the service to “determine whether any *species* is an endangered species or threatened species.”¹¹¹ This includes any distinct population segment of a species. Courts have found that the ESA “mandates that in response to a listing petition the Services must conduct a ‘review of the status of the species concerned’ on the basis of the best available science” and recognized many instances when the best available science has obliged the service to reach beyond the grounds in a listing petition when making listing determinations.¹¹² The Service’s disregard of its own policy and scientific evidence indicating the existence of a DPS, and its utter failure to consider whether a Florida Keys mole skink DPS might warrant listing renders the 12-month finding arbitrary and unlawful.

e. The Service Failed to Lawfully Consider Whether the Florida Keys Mole Skink is Endangered or Threatened in a Significant Portion of its Range

The Service also unlawfully determined that the Florida Keys mole skink did not warrant listing based on threatened or endangered status in a significant portion of its range. Under the ESA, the Service is required to list the species if it “is in danger of extinction throughout all *or a significant portion of its range*” or “likely to become in danger of extinction throughout all *or a significant portion of its range* within the foreseeable future.”¹¹³ Yet the Service did not analyze whether the Florida Keys mole skink is threatened or endangered throughout a significant portion of its range. Instead, the Service “evaluated the current range of the Florida Keys mole skink to determine if there are any apparent geographic concentrations of potential threats to the subspecies” and “did not find that there was a concentration of threats in a particular area that would cause the subspecies to be in danger of extinction or likely to become so in the foreseeable future throughout any portion of its range.”¹¹⁴

By focusing solely on “concentrations of threats,” the Service’s “significant portion of its range” (SPR) analysis is unlawfully narrow. The ESA requires the Service to consider whether a species

¹¹⁰ SSA Report at 5, 8–9.

¹¹¹ 16 U.S.C. § 1533(a)(1).

¹¹² *Ctr. for Biological Diversity v. Lohn*, 296 F. Supp. 2d 1223, 1242–43 (W.D. Wash. 2003); *see, e.g.*, 58 Fed. Reg. 29,390, 29,392 (May 20, 1993) (reviewing coastal steelhead populations in California, Oregon, and Washington in response to petition to list Illinois River winter steelhead in Oregon); 59 Fed. Reg. 21,744, 21,756 (Apr. 26, 1994) (status review broadened beyond coho salmon in Scott and Waddell Creeks, California); 59 Fed. Reg. 59,981, 59,983 (Nov. 21, 1994) (status review broadened beyond Deer Creek summer steelhead petition); 60 Fed. Reg. 51,928, 51,932 (Oct. 4, 1995) (status review broadened beyond Elwha and Dungeness River pink salmon petition); 66 Fed. Reg. 17,659, 17,665, 17,668 (Apr. 3, 2001) (listing review broadened beyond particular population of pacific herring); 65 Fed. Reg. 70,514, 70,520–21 (Nov. 24, 2000) (listing review broadened beyond particular stocks of pacific hake, pacific cod, and walleye pollock); *Defenders of Wildlife*, 958 F. Supp. at 674–75 (tracing how the Service’s response to petitions to list various populations of lynx had involved expanding focus from the Northern Cascades population species to the entire continental population when the smaller population segment did not independently warrant listing); *Sw. Ctr. for Biological Diversity v. Babbitt*, 926 F. Supp. 920, 922 (D. Ariz. 1996) (noting that the Service addressed the issue of whether the northern goshawk was a distinct population segment when a petition asked only to list that subpopulation but then spontaneously considered the entire species when listing of the subpopulation was not warranted).

¹¹³ 16 U.S.C. § 1532(6), (20) (emphasis added).

¹¹⁴ 82 Fed. Reg. at 46,639.

is in danger of extinction or likely to become endangered within an SPR, which may practically include a consideration not only of threats to the SPR but also of a species unique vulnerability to those threats in an SPR.¹¹⁵ Here the Service arbitrarily limited its analysis to whether the identified threats were geographically concentrated, without regard for how species in an SPR may be impacted. This narrow interpretation leads to unsound results. For example, although sea-level rise may not be geographically concentrated in one area of the Florida Keys more than another, it may have drastically different impacts on habitats of varying elevations across the Florida Keys mole skink's range. The Service itself acknowledged in the SSA Report that "the land area of the Lower Keys is shown to be more susceptible to [sea-level rise] than the Upper Keys" and that the Lower Keys will experience the impacts of sea-level rise first.¹¹⁶ Additionally, local elevation and topography of habitat also influence the skinks' vulnerability to sea-level rise.¹¹⁷ Thus, some portions of the Florida Keys mole skink's range are more vulnerable to sea-level rise than others, despite the fact that rising seas will not be "concentrated" in any particular area.¹¹⁸ Because the SPR analysis the Service applied in its decision omitted information relevant to determining whether the Florida Keys mole skink is in danger of extinction or likely to become endangered in the foreseeable future in an SPR (i.e., the subspecies' unique *vulnerability* to threats in an SPR), its decision not to list the Florida Keys mole skink is arbitrary and capricious.

Moreover, even using its "concentration of threats" analysis, the Service failed to consider all threats to Florida Keys mole skinks, opting only to consider "sea-level rise; climate-change-associated shifts in rainfall, temperature, and storm intensities; and human development,"¹¹⁹ to the apparent exclusion of threats such as road mortality, habitat fragmentation, pesticides, and unnatural levels of predation from feral animals and red imported fire ants. The Service's conclusion is entirely unsupported by the best available science and violates the ESA.

Additionally, the Service failed to consider the Florida Keys mole skink's historic range when determining whether the subspecies is endangered or threatened in a significant portion of its range. In the absence of such an analysis, the Service must explain why the area in which the subspecies can no longer live (the historic range) is not "a significant portion of its range."¹²⁰ Here, the Florida Keys mole skink's current range appears to be significantly smaller than its historic range. For instance, while the subspecies was historically observed as far north as Key Largo, the northernmost recent observation was a single skink on Long Key, 50 km south of Key Largo.¹²¹ Similarly, there are no current records of Florida Keys mole skinks from the Dry Tortugas, where there were historic records.¹²² The Service's unexplained failure to consider

¹¹⁵ *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 246 F. Supp. 3d 1272 (N.D. Cal. 2017) (explaining the SPR standard as a broader question of whether a species is "especially vulnerable to extirpation" in a significant portion of its range).

¹¹⁶ SSA Report at 70.

¹¹⁷ *Id.*

¹¹⁸ *See id.* (comparing the varying vulnerability of different Florida Keys to sea-level rise and explaining that Big Pine Key in the middle keys is more vulnerable at the early stages of sea-level rise than Key West).

¹¹⁹ 82 Fed. Reg. at 46,639.

¹²⁰ *Colo. River Cutthroat Trout v. Salazar*, 898 F. Supp. 2d 191, 201 (D.D.C. 2012) (citing *Defenders of Wildlife v. Norton*, 258 F.3d 1136, 1145 (9th Cir. 2001)); *W. Watersheds Project v. Ashe*, 948 F. Supp. 2d 1166, 1189–90 (D. Idaho 2013).

¹²¹ SSA Report at 14.

¹²² *Id.*

whether the absence of skinks from either or both of these portions of the subspecies' range indicates the subspecies is endangered or threatened in a significant portion of its range is arbitrary and capricious.

Further, the Service's finding that there was not a concentration of threats in a particular area rendering the Florida Keys mole skink at threatened or endangered in a significant portion of its range is directly contradicted by the best available science. For example, the Service's own SSA Report concludes that islands with higher elevations have higher levels of development,¹²³ and with that development, higher levels of anthropocentric risk such as unnatural predation by feral animals, pollution, and road mortality. Thus, threats from development are concentrated in portions of the Florida Keys mole skink's range that overlap with higher-elevation islands, potentially rendering the subspecies endangered or threatened in a significant portion of its range.

IV. CONCLUSION

For the foregoing reasons, the Service's determination that listing the Florida Keys mole skink is not warranted is arbitrary, capricious, and violates Section 4 of the ESA. If the Service does not cure these violations within 60 days, the Center intends to pursue litigation in federal court to resolve the matter.

Sincerely,



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¹²³ *Id.* at 71.