

2021 REPORT

# Last Chance

100

U.S. Species Already Imperiled  
by Climate Change



**Our thanks go to all of our member groups who nominated species for this year's Top 10 report.**

And we would like to especially thank all of you who helped shape and share the stories in these pages: at the American Bird Conservancy, Chris Farmer and Jordan Rutter; at Bat Conservation International, Jon Flanders and Javier Folgar; at Laukahi / The Hawai'i Plant Conservation Network, Emily Grave; at Sierra Club, Diana Umpierre and Adam Bingman; at the Native Plant Society, Emily Brin Roberson; at the New Mexico Department of Energy, Minerals, and Natural Resources/Forestry Division, Daniela Roth; at Xerces, Sarina Jepsen and Matthew Shepherd.

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**Scientists have been studying the impact of gases in Earth's atmosphere since the 1800s, and they have been warning us about the trajectory of climate change since the 1970s.**

For the past 30 years, those warnings have been increasingly dire: *Two degrees Celsius of warming would mark a tipping point. We are nearly at that mark, and we are seeing the devastation wrought by climate change—extreme heat waves, prolonged droughts, severe storms and more frequent floods, and deadly wildfires—all around us. The United Nations' recent report on climate change sounded an alarm: We are now in a code red for all of humanity. But if we act now, it is not too late to save ourselves and other species.*

In these pages, we share the stories of ten species severely impacted by climate change—a small deer that swims through the ocean in search of fresh drinking water, a tiny family of plants surviving in the protective care of a nursery,

a bird found only on the slopes of a single mountain, where it is swiftly losing ground to mosquitoes. The monarch butterfly, whose wings have been the very symbol of summer in our skies for centuries. And more. Species pushed to the edge of extinction in our warming world.

Biodiversity is the key to a healthy planet. Indeed, without sufficient and vibrant biodiversity, we lose the resources—think clean air and water, and sufficient food—to support life. And biodiversity is being hit hard by climate change. The two are inextricably linked with significant feedback loops: Climate change speeds biodiversity loss, and biodiversity loss, in turn, speeds climate change. We increasingly see this dynamic play out around the world: When we destroy habitats, for example, we lose not only homes for species, but also nature's storehouses for carbon. The United Nations report detailed that *climate change will only be solved if governments address it concurrently with biodiversity loss.* Biodiversity loss cannot remain the forgotten environmental crisis.

This code red signals an emergency: We are at an urgent choice point. We will be able to curb the worst consequences of climate change—if we act. We have the ability, the resources, the technology, and the talent and ingenuity to make meaningful change.

**Leda Huta**  
Endangered Species  
Coalition

**Emily Brin Roberson**  
National Plant Society

**Emily Grave**  
Laukahi: Hawai'i Plant  
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**Dan Chu**  
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**Mike Parr**  
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Conservancy

**Scott Hoffman Black**  
Xerces

# Sierra Nevada Yellow-legged Frog

(*Rana sierrae*)

01



## A VANISHING MOUNTAIN AMPHIBIAN

A few decades ago, these frogs were hopping by the hundreds on riverbanks in their alpine habitat; indeed, the Sierra Nevada yellow-legged frog was the most common amphibian in the mountains for which it's named. But their population has declined by as much as 95 percent—these frogs are now found in only about 7 percent of their historic range. Formerly grouped as a single species with a near-relative, the mountain yellow-legged frog, the Sierra Nevada yellow-legged frog was designated a separate species in 2007 and federally listed as endangered in 2014.

This frog is two to three inches long, with females a bit bigger than males. It has a mosaic of light and dark patches on its back and yellow on the underside of its hind legs. They play an important role in the food web of their ecosystem, eating algae, small invertebrates, and insects; they're eaten, in turn, by fish, snakes, mammals, and birds. These frogs are highly aquatic, rarely straying more than a few hops from water's edge. They hibernate at the bottom of lakes in winter and breed in shallow pools in the summer. Water is essential to their survival.

Sierra Nevada yellow-legged frogs face many challenges. They're prey for the non-native trout we've introduced, for sport fishing, in rivers of their alpine home. They're highly

vulnerable to chytrid fungus, a disease that disrupts their ability to breath or regulate their internal water balance and often kills them outright. Like all other frogs, they have permeable skin and can easily absorb chemical pollutants from both the water and air.

And like frogs everywhere, the Sierra Nevada yellow-legged frog is a marker for conditions in its ecosystem:

When its home becomes unhealthy, it does, too.

And climate change imperils this species. As temperatures warm, the alpine snowpack that feeds rivers and streams in the spring is shrinking—reduced snowpack leads to lower water levels, throwing off the fragile balance in this ecosystem. And as summers heat up and droughts occur more frequently, and for longer periods of time, already-shallow pools may dry up entirely. Without those pools, the critical breeding grounds that they depend on, this frog could hop to extinction in just a few decades.

### Population

Unknown, but estimated decline of 95%

### Status

Endangered

### Range

Northern and central Sierra Nevada range in California

### Habitat

Streams, lakes, and shallow ponds at high elevation

Endangered Species Coalition

Photos: US Forest Service



# Whitebark Pine

(*Pinus albicaulis*)

## Population

In decline; an estimated 51% of all standing whitebark pines were dead as of 2018

## Status

ESA Proposed Threatened; IUCN Endangered

## Range

Pacific Northwest through Wyoming and into Nevada; southwestern Canada

## Habitat

Cold and windy alpine and subalpine slopes

## Native Plant Society

Photos: Jacob W Frank/National Park Service (above), Diane Renkin/National Park Service (right)



## AN ALPINE JACK OF ALL TRADES

A keystone species, the whitebark pine supports countless other species in its ecosystem—mature pines provide food and shelter for at least 20 types of birds and mammals. Grizzly bears rely on the high fat content of the pine’s seeds to survive winter hibernation and give birth to healthy cubs. Clark’s nutcracker, a crow-shaped bird, also relies on this tree for food and returns the favor by dispersing the pine’s seeds: In a good year, a single nutcracker can spread close to 100,000 seeds. The pine’s roots stabilize soil, and its branches protect saplings as they get a foothold. The shade cast by this majestic pine slows spring snowmelt, retaining forest moisture and protecting lower elevations from flooding. And as a keystone species, this pine’s health indicates the health of the ecosystem. A whitebark pine may live up to 1,000 years.

About 70 percent of all whitebark pines are found across 80 million acres of mostly federal land in the Pacific Northwest (the balance of the population is in Canada). This species has been in decline for about a century, following the appearance of Asian blister rust, an invasive disease that can be lethal. Mountain pine beetles are also a critical threat to this tree. They lay their eggs under bark, and as the eggs hatch and mature, the beetles kill these pines outright.

In 2020, the U. S. Fish and Wildlife Service proposed listing the whitebark pine under the Endangered Species Act,

citing climate change as a critical threat to the species. Indeed, impacts of climate change are putting this species at increasing risk:

**A staggering 85 percent of whitebark pines have already disappeared from some parts of their historic range.**

Wildfires, which are increasing due to accelerating heat and drought, degrade and destroy the alpine habitat these pines rely on. Fluctuating temperatures change conditions and alter seasons, disrupting the delicate balance of the ecosystem and putting every species depending on that balance at risk.

And those mountain pine beetles that outright kill whitebarks? Under normal conditions, they help maintain balance in a forest by felling dead trees. But they are now spreading northward and into higher elevations—winters are no longer cold enough to contain them.

# Monarch Butterfly

(*Danaus plexippus*)

03



## COLOR IN THE SUMMER SKY

Nothing signals summer like the tawny orange wings of a monarch, flitting through blossoms in a backyard garden. Up to a billion of these butterflies used to color our skies each summer, but their numbers have plummeted by as much as 80 percent over the past 20 years. In California, volunteers counted millions in the late 1990s; by 2016, that count had dropped to under 300,000. And in 2020, only 2,000 were spotted in the state—a count below the threshold signaling likely extinction.

While many birds make roundtrip migrations, monarchs are the only butterflies known to do so. Monarchs west of the Rockies may migrate a few hundred miles to overwinter in southern California, while the eastern population typically journeys thousands of miles, from southern Canada to overwintering sites in central Mexico. A monarch can find its way to the very home that sheltered its great-great-grandparent the winter before—truly one of the most astonishing feats of nature.

Their return trip, in the spring, is completed by several generations that hatch at milkweed-rich stops along the way. And that milkweed is essential to a successful migration; it is the only thing that monarch caterpillars

eat. But with the introduction of glyphosate (commonly known as Roundup®) in the mid-1970s, milkweed has all but disappeared from the United States' vast agricultural belt over which the majority of monarchs migrate—without milkweed, no new generations can take to the skies.

These beautiful butterflies are also at great risk due to climate change, which is altering weather conditions and flowering seasons—changes that imperil the monarch's very ability to migrate.

As they attempt their long flights, these fragile butterflies and their waystations—with those critical patches of milkweed blossoms—are pummeled by increasingly severe storms, floods, droughts, fires, and temperature extremes. And climate change is lowering reproduction rates in the monarch's spring and summer breeding grounds, too.

### Population

Fluctuating: Total population has declined by approximately 80% over 20 years

### Status

Under review for listing

### Range

Primarily the continental United States

### Habitat

Summer: Open meadows, gardens, and agricultural areas with nectar-producing plants and milkweed;  
Winter: Protected, temperate forests



# Western Ridged Mussel

(*Gonidea angulata*)

04



## A SMALL SHELL WITH A BIG STORY

A mature western ridged mussel would easily fit in the palm of your hand; at first glance, it might not look all that remarkable—just a pair of plain, curved shells. But those shells hold a small species with a big story—this mussel plays an outsized role in its freshwater habitat. Mussels are filter feeders, and large beds of them pump out purified water, benefitting all species in their ecosystem. And those beds provide shelter for other species, too. Once abundant in rivers and streams in a number of western states, western ridged mussels are no longer found in more than 40 percent of the rivers and streams in their historic range.

The western ridged mussel's fate is on the line. Recent unexplained mass die-offs have significantly decreased populations, and they have disappeared entirely from parts of their historic range. And their survival is jeopardized by human-driven activities—dams and diverted channels, chemical pollution, residential and commercial development, and grazing all degrade and destroy the rivers and streams this species calls home.

With all the challenges this species is facing, the impacts of climate change are a step too far.

Like all living things, this mussel has to have optimal conditions to reproduce successfully. When mussels are in their larval stage, they lodge in the gills of host fish and remain there for weeks, even months, becoming juveniles. They then drop from their hosts and burrow into the sandy bottom of a shallow river or stream and mature into adults. Those adults may live 30 years or more, not moving much more than a hundred feet from where they first landed. The species' survival is directly linked to having enough of the right kind of host fish nearby. And the host fish depend on the mussel, too, as they need clean water to survive and thrive.

More frequent and severe storms increase water flow in rivers and streams, altering the fragile balance in their watery habitat and flushing away essential nutrients they rely on. Rising temperatures could lead to fewer host fish for the young. And in the next 50 years, warmer temperatures might kill young mussels outright, throughout this species' range, before they even have a chance to burrow into those sandy stream beds and live out long lives.

### Population

Unknown, but this species has declined by an estimated 43% from its historic range

### Status

Not listed

### Range

Northern Nevada, California, Oregon, Washington, Idaho, southern British Columbia

### Habitat

Freshwater streams and rivers, primarily at low elevation

Xerces

Photos: Wolfram Burner (above), Jayne Brim Box/Confederated Tribes of the Umatilla Indian Reservation Mussel Project (right)



# Maui Parrotbill (Kiwikiu)

(*Pseudonestor xanthophrys*)

05



## Population

Fewer than 300

## Status

ESA – endangered/  
IUCN – critically  
endangered

## Range

Under 12 square miles on  
eastern-northeastern slope  
of Haleakalā Volcano

## Habitat

Wet forestland, typically at  
elevations above 5,000 feet



## A SONGBIRD SO RARE

Once common on the Hawaiian islands of Maui and Molo-ka'i, the Maui parrotbill is rare—approximately 150 remain in the wild, and likely fewer, and only in a small forested region on the eastern slope of Haleakalā volcano. This bird is so rare that it was thought extinct for the first half of the 20th century, but was rediscovered in 1950. Rare to the point that its Hawaiian name was lost, and it was given a new one in 2010: *Kiwikiu*, named for the curve of its beak and its shy, secretive behavior. This songbird was one of the first species listed as endangered, in 1967, under the Endangered Species Preservation Act, predecessor to the Endangered Species Act.

Not a parrot, but sporting a parrot-like bill, this Hawaiian songbird is about 5.5" long. The male is olive green with a bright yellow breast and eyebrow; the female is less colorful and has a shorter bill. They form monogamous pairs and breed once between November and June, each time producing just a single egg—this low reproduction rate contributes to the population's vulnerability. Maui parrotbills eat larvae and pupae of fruit- and wood-boring beetles, using their specialized bills to split bark and small twigs and slice open fruit in search of food.

Habitat degradation and loss—largely due to human activities and feral pigs—forced the Maui parrotbill to retreat to about 19 square miles of dense, high altitude

forest by the 1990s. Fencing and pig removal now protects these forests, but this bird's biggest threat, disease-carrying mosquitoes, cannot.

Hawai'i has no native mosquito species, but a number have arrived by ship, starting in the 1820s.

**Invasive mosquitoes transmit deadly diseases—and because they evolved in isolation, native Hawaiian birds have no defenses against these diseases.**

Non-native avian malaria could easily cause extinction of parrotbill—as well as many other Hawaiian birds.

The upper slopes of this bird's habitat used to be high enough that they were too cool for lowland mosquitoes, but as a direct consequence of a warmer climate, mosquitoes have moved upslope. You can now be bitten by a mosquito at many of the highest spots in Hawai'i year-round—and so can the Maui parrotbill.

# Mexican Long-nosed Bat

(*Leptonycteris nivalis*)



## Population

Fewer than 5,000

## Status

Endangered in the United States (1998) and Mexico (1991)

## Range

Central Mexico to west Texas and New Mexico

## Habitat

Dry desert scrub and pine-oak forests at moderate to high elevations with shelter for daytime roosting



## IN SYNC WITH DESERT BLOOMS

Less than four inches long, the Mexican long-nosed bat isn't exactly large, as bats go, and it weighs less than an ounce—about as much as a pencil. This bat was discovered in 1938 and listed as endangered 50 years later, in 1988. Fewer than 5,000 remain.

Bats are the only mammals that have evolved true flight. While many species of bats hibernate through the winter, others migrate—including female Mexican long-nosed bats. They spend winters as far south as central Mexico, where they congregate with males and mate in just a single cave. Some begin their migration still pregnant, while others set out after giving birth and fly north with their newborn pups to summer homes in northern Mexico, western Texas, and New Mexico. Adult males generally don't migrate and are rarely seen in the United States.

These bats feed on nectar, and their migration syncs with the blooming of desert plants, especially agave. Mexican long-nosed bats rely on agave—and agave relies on them, too. An agave may take decades to blossom, and then blooms only once, and it produces seeds for the next generation only if it's pollinated. With their long tongues, these bats are key agave pollinators.

These two species—a small, flying mammal and an iconic desert and mountain plant—are essential to each other's survival.

But this bat has competition for agave nectar. We humans like it, too—think syrup on Sunday pancakes, a sweet drink on a hot summer's day. We also harvest plants to make alcoholic beverages like mezcal—but each plant we harvest is one fewer in the wild. And a host of animals rely on agave flower stalks, which are a rare source of water in their dry desert home. When a flower stalk goes, its blossoms go, too.

This endangered bat and the unusual plant it depends on are both impacted by climate change. Hotter, drier conditions spark more fires—some 40,000 agaves were burned in northeastern Mexico in the first half of 2021, alone. And as climate change alters agave blooming cycles, bats may migrate at their usual time but find themselves without enough nourishment to complete the flight. Without these bats, their critical pollinators, agaves may blossom and die without seeding future generations—the food for future generations of bats.

Bat Conservation International

Photo: Mike Timmons/miketimmonsphoto.com



# Ka palupalu o Kanaloa

(*Kanaloa kahoolawensis*)



## EXTINCT IN THE WILD

Chances are you've never heard of Ka palupalu o Kanaloa; it is rare—stunningly rare, even. Just two specimens have ever been seen in the species' natural habitat. Both were confirmed dead in 2015; Ka palupalu o Kanaloa is extinct in the wild. Seeds were collected from the plants before they died.

Researchers discovered this flowering shrub in 1992, as they were scrambling on the rugged sea cliffs of Kaho'olawe, the smallest of Hawai'i's eight main islands. While Ka palupalu o Kanaloa has been found alive only on that island, fossilized pollen grains from nearby O'ahu, Maui, and Kaua'i show that it was once widespread in Hawai'i. The species is named for the Hawaiian god Kanaloa; legend has it that he came to Kaho'olawe to rest and restore his energy. For now, Kanaloa plants are seeking restoration elsewhere, though. Twenty-three plants are now growing, flowering, and producing new seeds in conservation nurseries and gardens on Maui.

This densely branched shrub is low-growing, rarely more than a few feet high. It has papery, oval leaves and produces large clusters of small white flowers. Even as Ka palupalu o Kanaloa's natural habitat is fairly arid, the shrub is sensitive to drought and needs good, clean water. Those 23 young plants are given just the right amount to drink, and they drink only carefully collected rainwater.

Ka palupalu o Kanaloa was listed under the Endangered Species Act in 1999, but even with federal protections and attention from Hawai'i's Plant Extinction Prevention Program, these rare shrubs are at risk. Even as they're in protective care, rodents could damage or destroy them. They could die of disease, or a single tropical storm could kill all the plants if they're not sheltered in time. As conditions change—and likely worsen—they are threatened by prolonged droughts and increasingly severe storms.

A 2013 study ranked Hawai'i's native plants, assessing how each might fare in the face of climate change.

**Ka palupalu o Kanaloa is at the top of the list—the species most at risk.**

And those 23 plants? They will live out their lives being fed rainwater in conservation nurseries and gardens. But if we take the right steps to slow climate change, their *keiki*—children in Hawaiian language—will have the chance to sink their roots in the rocky, sea cliffs their ancestors once called home.

### Population

Two mature plants and 23 seedlings, all in nurseries

### Status

Endangered

### Range

Historically found on Hawaiian island of Kaho'olawe and likely other nearby islands; now extinct in the wild

### Habitat

Rocky seaside cliffs in coastal tropical regions

# Florida Key Deer

(*Odocoileus virginianus clavium*)

08



## Population

700 - 800

## Status

Endangered

## Range

Florida Keys, from Big Pine to Sugarloaf

## Habitat

All ecosystems in the Keys, including salt marshes, freshwater wetlands, beach berms, and rocky pine and hardwood regions



## A SMALL BUT MIGHTY SWIMMER

The flick of a tall white tail, a flash of fawn through the trees: Who hasn't seen deer in the woods, or even in our own backyards? Millions roam freely throughout the Americas. But the Key deer, a whitetail subspecies, isn't as free. They live in isolation, and only on the southernmost Florida Keys—about two-thirds on Big Pine Key, alone. While this deer is a strong swimmer, they migrated to these islands over a land bridge during North America's last glacial period, some 75,000 years ago.

Key deer are small—a large male might push 30 inches at the shoulder and weigh in at 75 pounds, about as hefty as a large Labrador retriever. Females are smaller, and a newborn fawn weighs maybe two to four pounds—less than a small house cat. Mating typically peaks in October and again in December, and fawns are born in the spring, but reproductive rates are low. Key deer eat a wide variety of plants, and while they can tolerate low levels of salt in their drinking water, during dry spells, they often swim to nearby islands in search of fresh water—if they find none, they may die of dehydration.

We humans have not been kind to these deer. We legally hunted them until that was banned, in 1939, and then we poached them to near extinction; by the mid-1950s, only

about 25 remained. We established the National Key Deer Refuge in 1957, but we left a door open: Privately owned portions of that refuge could be up for residential development, and not too far down the road.

And this small herd of small deer, living on small islands, is vulnerable to impacts of climate change.

Increasingly severe storms are flooding salt water inland, tainting the fresh water these deer already struggle to find.

Their habitat is less and less hospitable—heat stress, droughts, and loss of tree canopy are taking a toll. And as climate change impacts its habitat, this deer is struggling to disperse to new areas—a necessary move to ensure not just survival but also healthy genetic diversity. Key deer rely on a fragile, vulnerable habitat; if it is destroyed, they will be gone, too—and with not much more than a flick of the tail.

Sierra Club

Photos: Tiomax80 (above); Ray Hennessey (right)



# Elkhorn Coral

(*Acropora palmata*)

09



## SWEEPING THICKETS OF THE CARIBBEAN

Like all other coral reef ecosystems, elkhorn reefs shelter an extraordinary range of species—biodiversity that is rivaled only by that found in tropical rainforests. Elkhorn coral has historically been found in shallow Caribbean waters from southern Florida to northern Venezuela. Starting in the 1980s, an aggressive bacterial disease decimated elkhorn reefs; only about 3 percent of the former population remains today. Elkhorn coral received protections under the Endangered Species Act in 2006.

The sweeping thickets that give elkhorn its name are formed by colonies made up of thousands of genetically identical animals, each with its own shell-like exterior skeleton. These colonies reproduce once a year, during a full moon in late summer or early fall, by spurting eggs and sperm into a water column. Fertilized eggs then fall to hard surfaces, where they form new colonies. Fragments of a thicket may also break off in stormy water, attach to a different thicket, and continue to grow. A mature thicket can be six feet tall and 12 feet in diameter—and several hundred years old.

Elkhorn coral are nocturnal feeders, catching plankton in their slender tentacles. Like most other shallow-water corals, elkhorn has symbiotic algae living inside its cells that color the coral—in the case of elkhorn, gold to warm browns to green—and supply the oxygen necessary for life.

Rising ocean temperatures, caused by climate change, pose the single greatest threat to elkhorn coral. Overly warm (or overly cold) water stresses coral, causing it to expel the colorful algae it depends on—it becomes completely white and loses its source of oxygen. If bleaching doesn't outright kill coral, it typically leaves it weak and vulnerable to disease. Scientists predict that most coral reefs on the planet may bleach within the next 20 years as climate change accelerates ocean warming.

Ocean acidification, which occurs as warming waters absorb more carbon dioxide, also threatens elkhorn coral—and every shelled animal in the ocean.

Acidification prevents corals from building their protective exterior skeletons, making it impossible for them to colonize, as well. Acidification can cause an entire coral ecosystem to crash. If acidification continues to increase at its current rate, most of the world's coral reefs may disappear within our lifetime.

### Population

Unknown; estimated 80 to 98% decline since the 1980s

### Status

ESA – Threatened / IUCN – Critically Endangered

### Range

Southern coastal Florida through the Caribbean to northern Venezuela

### Habitat

Clear, shallow ocean waters

### Endangered Species Coalition

Photos: Sean Nash (above); Carlos Rodriguez (right)



# Diamondback terrapin

(*Apalone terrapin*)

10



## DISAPPEARING DIAMONDS

These terrapins, which have intricately ridged diamond patterns on their shells, swim in tidal marshes and estuaries from Massachusetts to Texas. They are the only turtles in the world that live exclusively in brackish waters—a mix of fresh water from rivers and saltwater from the sea. While their narrow coastal range is a couple of thousand miles long, diamondbacks don't travel far, living most of their lives close to where they hatch. As top predators, terrapins play an important role in maintaining balance in their ecosystem.

Sturdy swimmers, these turtles are relatively small, five to 11 inches long, and females are larger than males. Diamondbacks venture onto land only to breed in the spring. Many of the young that hatch don't make it to adulthood, and while we don't have a headcount, we do know that the diamondback population is in decline. Massachusetts and Rhode Island have laws protecting them, but they are not listed under the Endangered Species Act.

Diamondbacks can live for 35 or 40 years, but they face many threats, some from natural predators—foxes, raccoons, birds—and many due to human activities. They're struck by propellers and tangled in fishing gear—it's estimated that some 14,000 are caught in crab traps each

year along the New Jersey coast, alone. They lose critical foraging and nesting habitat due to our residential and commercial developments. Diamondbacks are targeted by poachers and sold through the illegal wildlife trade; some end up as pets, here at home, and others are shipped overseas for use in traditional Asian medicine and as meat.

Climate change looms as the single biggest threat to this species' survival. Warming conditions in the diamondback's habitat may throw generations out of evolutionary balance, as the sex of the young is determined by sand temperature during incubation—a warmer nest produces more females. And since diamondbacks live in brackish water, they are sensitive to sea level rise, which may change the ratio of salt to fresh water beyond what they can tolerate.

**And a sea level rise of even a few feet could destroy as much as 95 percent of their habitat in Florida, alone.**

These marshy habitats—where rivers meet the sea—are where diamondbacks feed, hibernate, and nest.

### Population

Unknown but in decline

### Status

Endangered (Rhode Island); Threatened (Massachusetts); IUCN Near Threatened

### Range

Cape Cod south through Florida Keys to Texas Gulf Coast

### Habitat

Brackish tidal marshes and estuaries

### Endangered Species Coalition

Photos: Jeffrey Schultz (above); Ray Hennessey (right)



## HONORABLE MENTION

# Goodding's Onion

(*Allium gooddingii*)

Take a hike high on a shady slope of a mountain in Arizona or New Mexico in late spring or summer, and you may find Goodding's onion carpeting the forest floor with its bright green leaves and pinkish-purple flowers. Sniff, and you may catch a pungent aroma in the air. Native only to these two states, this onion is at home under a dense tree canopy at elevations of about 7,000 to 11,300 feet. It is still found on wide-open ski slopes, but likely established on those slopes before they were cleared for recreation.

Goodding's onion has flat, narrow leaves and an erect stalk, about 17 inches tall, topped by a multi-petaled flower that blooms for about a month in the summer. This non-woody, herbaceous perennial revives each year, after the snow melts, and persists from June into September.

Currently, the impacts of climate change are the most serious threat to the onion's survival. Hot, dry conditions increasingly spark fires that race through the forested slopes. All known populations of Goodding's onion on federal lands in New Mexico and Arizona have been impacted by seven different wildfires since 2006.



### Population

Unknown; estimated  
70 to 80% decline

### Status

Limited state protections in  
Arizona and New Mexico;  
no federal protections

### Range

Limited mountainous  
regions in Arizona and  
New Mexico

### Habitat

Mature mixed-conifer and  
spruce forests at elevations  
from 7,000 and 11,300 feet

Photo: Daniela Roth

For references, video clips, and more information, visit [endangered.org/references](https://endangered.org/references)

