

# SAVING LIFE ON EARTH

A PLAN TO HALT THE GLOBAL EXTINCTION CRISIS



Center for Biological Diversity • January 2020

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Cover photo ©Joel Sartore /National Geographic Photo Ark

## EXECUTIVE SUMMARY

**W**ildlife populations are crashing around the world. From the blinking lights of fireflies at night to the dawn chorus of migratory birds and the evening chirping of frogs, the animals and plants that many of us grew up with are disappearing before our eyes. Each species lost tells the story of a place that has been irrevocably harmed and together they reveal the heartbreaking wildlife extinction crisis unfolding all around us.

Scientists predict that more than 1 million species could face extinction in the coming decades – and we lose about one species every hour.

This crisis is entirely of our own making. More than a century of habitat destruction, pollution, the spread of invasive species, wildlife exploitation, climate change, population growth and other human activities have frayed the web of life. With each extinction, natural systems continue unraveling. The drivers of wildlife extinction also undermine the life-support systems of human societies including pollination, water purification, oxygen production and disease regulation. It's in our own self-interest to fight to protect biodiversity.

The physical, emotional and spiritual wellbeing of humans depends on thriving wildlife populations. Wildlife have inspired our histories, myths, and cultures and losing them impoverishes us and leaves the planet a lonelier place for future generations. In addition, every plant and animal species has value in and of itself and deserves the right to continue to exist. We must stop seeing the world as ours for the taking, but instead as a shared world that we must take care of.

Ending the extinction crisis will require leadership—especially from the United States—alongside bold, courageous, far-reaching initiatives.

Specifically the United States must:

- **Show global leadership by declaring the extinction crisis to be a national emergency and investing \$100 billion to stem the disappearance of the world's wildlife and plants**, protect irreplaceable places at home and around the world, and end the trafficking and overexploitation of wildlife and plants.
- **Embark on an unprecedented campaign to protect wildlife habitat so that 30% of U.S. lands and waters are fully conserved and protected by 2030 and 50% by 2050.** And clarify that the primary mandate of federal public lands is to protect biological diversity, ensure clean water, provide recreational opportunities, increase climate resiliency, and sequester carbon dioxide.
- **Restore the full power of the Endangered Species Act and invest \$20 billion to save the 1,800 endangered and threatened species in the United States** while dedicating an additional \$10 billion to state-level wildlife conservation to maintain abundant population levels.
- **Crack down on all forms of air and water pollution, toxics and pesticides** to protect wildlife (as well as people) from the harms caused by the modern industrial world. End the scourge caused by plastic pollution in the oceans and the terrestrial environment by phasing out single-use and fossil-fuel based plastics, mandating extended producer responsibility, and enacting a moratorium on petrochemical plants that turn fracked gas into plastic.
- **Stem the tide of invasive species** by investing in new resources to detect invasive species in global trade, enact zero-discharge requirements for cargo ships, and work toward the eradication of invasive species in critical wildlife habitats.



# \$20 BILLION TO PROTECT WILDLIFE HABITAT SO THAT 30% OF U.S. LANDS AND WATERS ARE FULLY RESTORED, PROTECTED AND CONSERVED BY 2030 AND 50% BY 2050

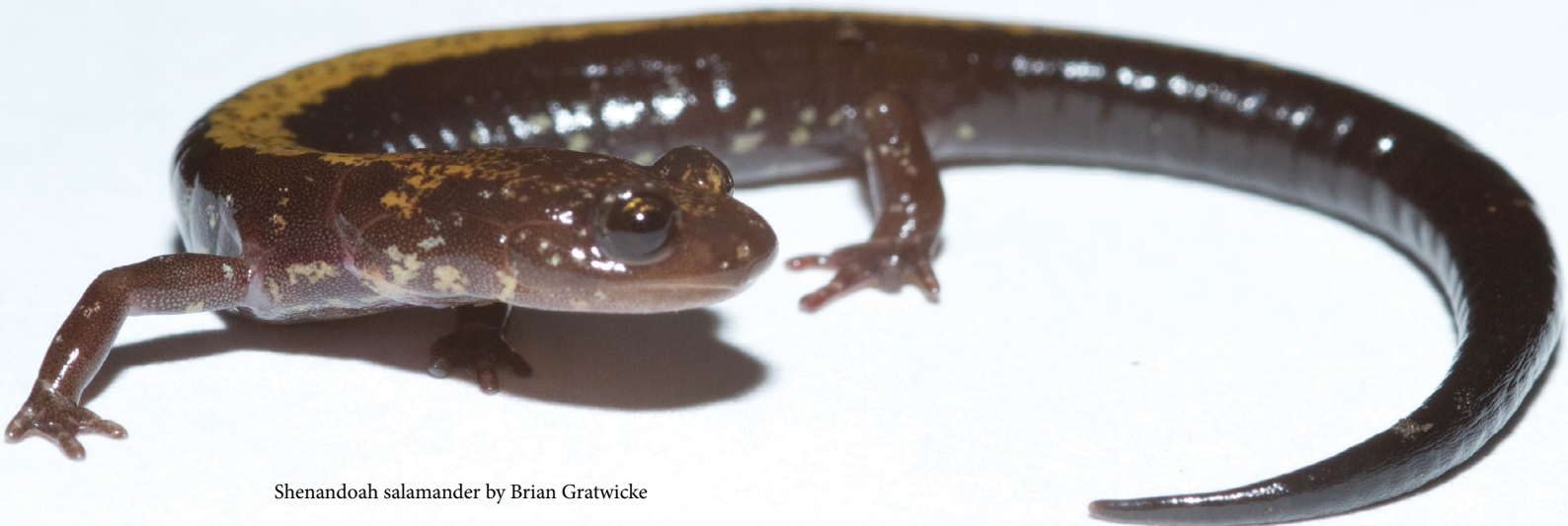
- \$20 Billion to Recover Endangered Species
- \$10 Billion in Assistance to the State Fish and Wildlife Agencies to Conserve Declining Wildlife
- \$10 Billion for Global Coral Restoration
- \$10 Billion for Neotropical Migratory birds in the Western Hemisphere
- \$10 Billion to Save International Biodiversity Hotspots
- \$10 Billion to Combat Illegal Wildlife Trafficking
- \$10 Billion to Address the Spread of Invasive Species Around the World





# KEY PRESIDENTIAL ACTIONS TO ADDRESS THE EXTINCTION CRISIS

1. Declare the global extinction crisis to be a national emergency.
2. Create protected areas for wildlife so that 30% of U.S. lands and waters are fully restored, protected and conserved by 2030 and 50% by 2050
3. Strengthen public-land management to prioritize biodiversity and maintain abundant wildlife.
4. Protect all critically imperiled wildlife and plants that are not yet on the endangered species list.
5. Implement an ecosystem-approach to recovery that protects habitat, fosters ecological processes and addresses climate change.
6. Require all federal agencies to develop proactive conservation plans for endangered species and to identify and protect critical habitat on their properties.
7. Require the Environmental Protection Agency to adopt the precautionary principle when it regulates chemicals and pesticides.
8. Ban the discharge of chemicals, pesticides and pollutants into the environment, phase out single-use and fossil-fuel based plastics and mandate extended producer responsibility.
9. Require all federal agencies to use their full authorities to combat the spread of invasive species.
10. Designate and protect wildlife corridors, including the construction of 1,000 new wildlife overpasses and underpasses.



Shenandoah salamander by Brian Gratwicke

# INTRODUCTION

In May 2019 a groundbreaking report from the United Nations' Intergovernmental Platform on Biodiversity and Ecosystem Services warned that 1 million animal and plant species face extinction in the next few decades due to the threats of habitat loss, climate change and other human activities.<sup>1</sup> While past mass-extinction events were caused by asteroids, global volcanic eruption events and other geological cataclysms, this mass-extinction event is entirely due to human civilization.

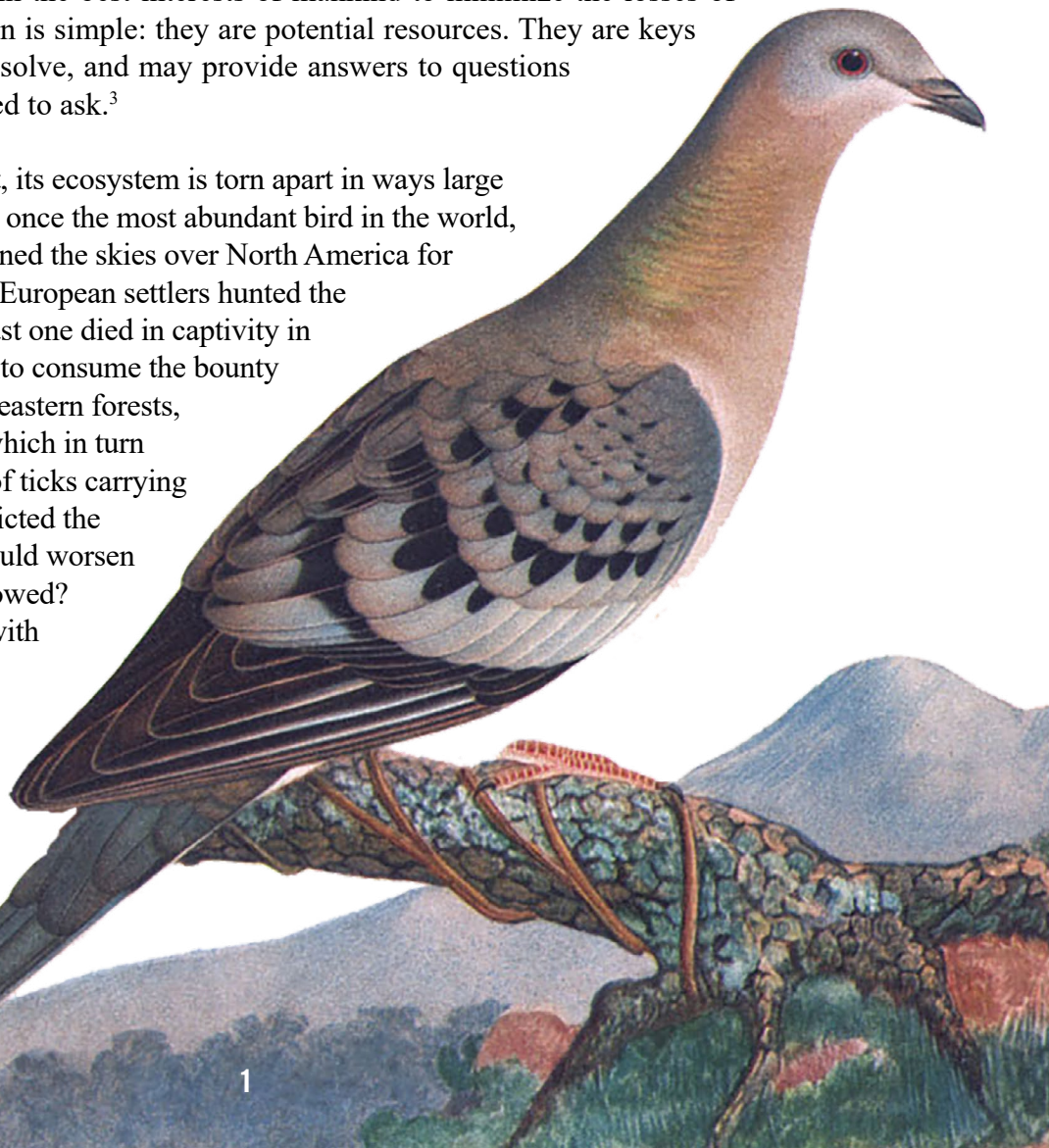
This looming mass extinction should shock the conscience. The loss of a single species represents a moral failing of our civilization. Every animal and plant species on this planet embodies a unique response to the challenges of life that has been shaped over time. When European sailors first encountered the dodo on an island in the Indian Ocean in 1598, they happened upon a bird that had lived in an island paradise without natural predators and had lost its ability to fly. Without knowledge or fear of predators — or people — it was an easy target for those who wished to exploit it out of greed and ignorance. By 1681 it had vanished.<sup>2</sup> Every additional lost species alerts us that we should know better by now.

We should now understand the potential that every species of wildlife and plants represents, and the cost of extinction to the environment and ourselves. In passing the Endangered Species Act of 1973, Congress explained that:

the value of this genetic heritage is, quite literally, incalculable...From the most narrow possible point of view, it is in the best interests of mankind to minimize the losses of genetic variations. The reason is simple: they are potential resources. They are keys to puzzles which we cannot solve, and may provide answers to questions which we have not yet learned to ask.<sup>3</sup>

When an animal or plant goes extinct, its ecosystem is torn apart in ways large and small. The passenger pigeon was once the most abundant bird in the world, and flocks over a billion strong darkened the skies over North America for days on end. But in under 100 years, European settlers hunted the passenger pigeon to extinction (the last one died in captivity in 1914). Without the passenger pigeon to consume the bounty of acorns and chestnuts produced by eastern forests, small rodent populations exploded, which in turn apparently increased the population of ticks carrying Lyme disease.<sup>4</sup> Who could have predicted the extinction of the passenger pigeon could worsen Lyme disease in the century that followed? Although we cannot always predict with certainty the specific consequences when we destroy pieces of the natural world, we know they exist and are often significant and profound.

Illustration of female passenger pigeon





We are the first human generations to fully understand the consequences of mass extinction. The question now is simply, will we act to stop it? As Congress warned “if the blue whale, the largest animal in the history of this world, were to disappear, it would not be possible to replace it — it would be gone. Irretrievably. Forever.” What will future generations think if we allow the largest animals the world has ever known to vanish forever?

Animal and plant extinctions are symptomatic of a much larger problem: the unravelling of ecosystems all around the world. An October 2019 report found that bird populations in North America had declined by 30% in the past 50 years.<sup>5</sup> The saiga antelope of Eurasia, once a species numbering in the millions, collapsed in just two years.<sup>6</sup> The eastern monarch butterfly population, which numbered over a billion, crashed to just 30 million in 2013, while the western population of monarch butterfly has crashed by 99%.<sup>7</sup> Scientists are warning of an insect apocalypse as populations of once-common pollinators and other insects plummet around the world.<sup>8</sup>

Hawaii retains the unfortunate title of the “extinction capital of the world” with more than 75% of its remaining bird species classified as endangered or already extinct, and dozens of beautiful forest land snails already having succumbed to extinction.<sup>9</sup> In the continental United States more than 10 species have been declared extinct since 2010, including two butterflies, two beetles, two freshwater snails, a snake, a crustacean, a pocket gopher and the eastern puma. Numerous other species haven’t been detected in decades and will likely be declared extinct in coming years.

Freshwater species, especially in the southeast United States, have been decimated by dams, pollution and invasive species. We have already lost more than 70 species of freshwater snails and 23 species of freshwater mussels to extinction, and nearly 70% of the remaining freshwater mussels are threatened with extinction.<sup>10</sup>

People of many faiths recognize that the loss of the planet’s biodiversity represents a profound moral failure. As Pope Francis explained in *LAUDATO SI’ OF THE HOLY FATHER FRANCIS ON CARE FOR OUR COMMON HOME*, “each year sees the disappearance of thousands of plant and animal species which we will never know, which our children will never see, because they have been lost forever. The great majority become extinct for reasons related to human activity. Because of us, thousands of species will no longer give glory to God by their very existence, nor convey their message to us. We have no such right.”<sup>11</sup>

This report offers a detailed plan of actions that the president and Congress can, and should, implement to stem the extinction crisis at a scale necessary to achieve lasting results. We recommend a series of presidential executive actions, combined with meaningful funding and resources from Congress, to reverse the trend toward extinction both inside the United States and around the world. This plan would enact new programs to stem the decline



Girl with monarch butterfly  
by Brenda Hawkins

in common species including birds and pollinators, combat global deforestation, tackle the illegal global trade in wildlife and address pernicious threats of invasive species and pollution. If enacted these five critical policy changes would ensure that the biological richness of our planet can be preserved for generations and centuries to come. In brief, those changes are:

### **1. Restore American Leadership at Global Level on Fighting the Extinction Crisis.**

The United States has historically led the world in enacting wildlife protection laws and conserving its natural resources, but it has lost that position in recent decades. It can become a world leader again in protecting the environment through two key strategies.

First, the president must declare that the extinction crisis is a national emergency, since the destruction of the planet's natural life-support systems are in every respect an emergency of the highest order. The National Emergencies Act unlocks specific powers that the president can employ to stem the loss of biodiversity both within the United States and around the world. Declaring a national emergency would compel all federal agencies to stop ignoring the impacts to the environment that their actions continue to inflict upon the world and would allow the United States to use its economic influence to address everything from deforestation in the tropics and pollution disproportionately affecting disadvantaged communities in the United States to fighting illegal wildlife trade that is sanctioned by governments and corporations.

Second, the United States should reject its increasingly isolationist position in the global community by ratifying all wildlife protection treaties including the Convention on Biological Diversity, rejoining the World Heritage Convention, ratifying the Convention on Migratory Species, ratifying species-focused wildlife protection treaties like the Agreement on the Conservation of Albatross and Petrels and ratifying the Paris Climate Agreement. More importantly, after it rejoins these conventions, it should be a leader in their implementation by providing funding, resources and expertise to strengthen these international conservation efforts. The United States should spend approximately \$50 billion dollars on international conservation efforts to stem the global extinction crisis.



California red-legged froglet by Rob Schell





Red Cliffs National Conservation Area, Washington County, Utah by Bob Wick, BLM

- 2. Create , restore and connect protected areas for wildlife with so that 30% of U.S. lands and waters are fully conserved and protected by 2030 and half by 2050. Establish metrics by ecosystem type to ensure diverse biomes and areas with high biodiversity are represented.**

Habitat loss and degradation remains the largest driver of extinction in the United States and around the world. Using existing laws the president can administratively establish new national wildlife refuges and marine monuments to protect the full diversity of habitats and biodiversity across the entire United States. Furthermore, because many protected areas are ecological islands that cannot support self-sustaining wildlife populations, policy makers should expand existing protected areas, designate wildlife corridors and fund efforts to restore connectivity on the landscape, such as over- and underpasses for wildlife to safely cross highways and railroads. In total Congress should spend at least \$20 billion to jump-start a habitat-protection and land-acquisition effort that's commensurate with the scale of the extinction crisis so that 30% of U.S. lands and waters are fully conserved and protected by 2030 and 50% by 2050.

The president should also issue a set of executive orders that directs public-land management agencies to prioritize curbing the extinction and climate crises. Public lands have significant potential to mitigate the impacts of climate change and maintain healthy wildlife populations. Currently, though, the “multiple use” mandates that govern the management of those lands have resulted in a situation where most are managed for the benefit of the fossil fuel industry, logging industry and other damaging private interests. But “multiple use” does not have to mean that our public lands are managed for short-term profit. Instead they could, and should, be managed primarily for the benefit of wildlife and climate protection.





Grizzly bear courtesy National Park Service

### **3. Restore the full power of the Endangered Species Act and Rebuild Wildlife Populations.**

In conjunction with the declaration of a national emergency, the president should issue a set of executive orders requiring all federal agencies to prioritize the conservation of endangered species in the United States. Federal agencies would be required to develop proactive programs that assist in the recovery of endangered species, manage federal lands to protect critical habitat, and guarantee that their activities do not undermine recovery plans for any endangered species.

To ensure that no species of wildlife or plants falls through the cracks, the U.S. Fish and Wildlife Service and National Marine Fisheries Service should immediately assess the approximately 3,000 species found in the United States that have already been identified by NatureServe as critically imperiled to determine which of those species needs to be protected under the Endangered Species Act. These imperiled species should be proactively protected before their populations have declined to such a low level that recovery becomes more difficult and expensive. To address declines of common wildlife species, the federal government should also provide substantial funding and resources to help build and modernize the state fish and wildlife agencies so that they are able to fully protect wildlife and plants within their states at abundant population levels. In total Congress should spend approximately \$30 billion on the recovery of endangered species and on the conservation of declining wildlife populations.

### **4. Establish Strict “No-Discharge” Pollution Limits That Are Protective of Wildlife.**

Wildlife remains the “canary in the coal mine” that warns us about the dangers of modern, synthetic chemicals and other toxic pollutants. The crash of pollinator and bird populations around the world is a stern warning that pollution continues to wreak havoc on the environment and wildlife. Leveraging the declaration of a national emergency, the president must order the Environmental Protection Agency to immediately adopt a precautionary approach to regulating all toxic pollutants and chemicals, and set zero-discharge standards for all forms of water pollution.

Perhaps the starkest example of our economic systems’ egregious unsustainability is the plastic pollution crisis. Unless action is taken, by 2050 there will be more plastic by weight in the ocean than there are fish. Plastic pollution breaks down into microplastics that are ingested by all living creatures, including people, causing health impacts. The Environmental Protection Agency should also take strong action to reduce plastic production by phasing out single-use and fossil-fuel based plastics, mandating extended producer responsibility, and enacting a moratorium on petrochemical plants that turn fracked gas into plastic.





Bald eagle by Andy Morffew

## 5. Stem the Tide of Invasive Species.

The United States is a primary driver of global trade, and one of the main consequences of the rapid movement of goods around the world is an accelerating spread of invasive species. Invasive species can devastate natural ecosystems, leading directly to the extinction of species and costing the U.S. economy billions of dollars in terms of mitigation costs and lost economic opportunities. Several agencies, including the U.S. Department of Agriculture, U.S. Coast Guard and U.S. Fish and Wildlife Service, share responsibilities for preventing the spread of invasive species. However, these agencies routinely place the short-term interests of corporations above the protection of the United States' long-term biosecurity.

Accordingly, we recommend the president issue an executive order requiring that all federal agencies use their full authority to combat the spread of invasive species. For example, the Coast Guard should be required to immediately implement a “zero-discharge” standard of aquatic invasive species that travel in cargo ship ballast waters. Likewise, the U.S. Department of Agriculture and U.S. Homeland Security Department should be required to prioritize inspections of all invasive pest species found in agriculture coming into and going out of the United States and prohibit the import or export of products that are potentially invasive. Having adequate staff to inspect all imports and exports will require significant new staff for the federal agencies, as well as significant resources for the shipping industries to facilitate a transition to technologies and practices that limit the spread of invasive species.

### I. **RESTORE AMERICAN LEADERSHIP AT A GLOBAL LEVEL TO FIGHT THE EXTINCTION CRISIS**

Our civilization depends on the services the natural world provides, yet many ecosystems are unraveling at an unprecedented pace in history. Even though the world's rainforests and oceans provide the majority of the oxygen we breathe, as the Amazon fires of 2019 demonstrate, our remaining tropical forests could be lost simply due to the indifference or whims of a single politician. Meanwhile our oceans are rapidly acidifying due to fossil fuel emissions and are being polluted with microplastics, while widespread pollinator declines are imperiling the global food supply.

A small number of countries, including the United Kingdom, France, Canada and Argentina, have declared that the climate crisis represents a national emergency.<sup>12</sup> But no nation has taken the bold step of declaring that the extinction crisis warrants a similar pronouncement. Given the scale and profound consequences of a mass extinction event on Earth, there is no excuse for the United States to take a back seat in the efforts to

combat the extinction crisis. To establish American leadership, we recommend three critical actions to elevate mass extinction to a national priority of the highest order and establish the United States as a global leader in addressing this crisis:

A) Declare that the global extinction crisis represents a national emergency.

Since the National Emergencies Act was passed in 1976, every president has declared national emergencies to elevate issues to the highest priority for executive branch agencies to address.<sup>13</sup> It is far past time that a president declare that the global extinction crisis represents a national emergency. Doing so would galvanize public awareness and support for action. Declaring an emergency would also unlock specific emergency powers enumerated in dozens of U.S. laws whose powers would otherwise be unavailable to the executive branch to combat extinction.

Once a national emergency on the extinction crisis is declared, immediate actions could be taken, both within the United States and abroad, to address the emergency. For example, under the International Emergency Economic Powers Act, the Commerce Department and the State Department would be able to invoke additional powers to regulate, restrict or sanction businesses and place tariffs on foreign governments that are contributing to the destruction of global biodiversity hotspots.<sup>14</sup>

Tariffs could be placed on nations like Vietnam — which has become the key conduit in Asia for the illegal trade of elephants, rhinos and pangolins — and Brazil, which has weakened key laws designed to protect the Amazon and turned a blind eye to logging of the rainforest. Likewise, the government could identify, sanction and freeze access to U.S. markets by individual corporations and businesses like those that are converting Indonesia's rainforests to palm-oil monocultures.



Dugong by Julien Willem

Declaring a national emergency would also spur action by federal agencies like the Defense Department, which has a mixed track record when it comes to the stewardship of wildlife. To its credit the military has implemented trailblazing conservation efforts to stabilize the conservation of endangered species on some of its bases.<sup>15</sup> However, in other places, military-training activities have left a legacy of toxic pollution that continues to harm people, the environment and wildlife.<sup>16</sup> On Okinawa, for instance, construction activities are pushing both the Okinawa dugong and the Okinawa woodpecker closer to extinction.<sup>17</sup> And the U.S. Navy's ocean sonar training activities have harmed millions of marine mammals around the world.<sup>18</sup> Globally the U.S. Defense Department operates nearly 800 military bases in more than 70 countries and territories. An emergency declaration would force it to consistently be the best possible steward of the environment by elevating environmental stewardship across the board in all of the department's actions and requiring that it not take actions that substantially harm wildlife or push species closer to extinction.



B) Rejoin and lead international efforts to conserve wildlife.

In 1911 the United States, Great Britain, Japan and Russia signed the North Pacific Fur Seal Convention to manage the harvests of fur seal in the North Pacific ocean. This treaty was the first international wildlife conservation treaty in the world.<sup>19</sup> A few years later, the United States and Great Britain signed the Migratory Bird Treaty to protect migratory species shared by both countries.<sup>20</sup> In the decades that followed, the United States was a world leader in the advancement of international wildlife conservation, including ratifying the Convention on International Trade in Endangered Species of Wild Fauna and Flora.<sup>21</sup>

Unfortunately, in more recent times, the United States has refused to sign international wildlife and biodiversity protection treaties, disengaging almost completely from these global efforts.<sup>22</sup> In order to reestablish a leadership role in the global community, the U.S. Senate should ratify the Convention on Biological Diversity, the Convention on Migratory Species, the Convention on the Law of Sea, the Agreement on the Conservation of Albatross and Petrels, and rejoin the World Heritage Convention and the Paris Climate Agreement.

Even more importantly, after the United States rejoins these conventions, it should demonstrate leadership in these treaties' implementation by providing funding, resources and expertise to strengthen these international conservation efforts. First, the United States should provide \$10 billion to conserve international biodiversity hotspots. While biodiversity hotspots make up just 2.5% of the planet's land surface area, they are home to over 40% of the world's plant, bird, mammal, reptile and amphibian species.<sup>23</sup> Funding should go to hotspots facing the greatest threats — those assessed by scientists as having less than 30% of their natural habitats remaining.<sup>24</sup> While many biodiversity hotspots are already targeted for protection by nongovernmental organizations and intergovernmental organizations, the amount of resources needed to secure these areas and prevent mass extinction remain deeply inadequate. An infusion of \$10 billion in foreign assistance — approximately \$300 million for each of the 35 hotspots around the world — would likely secure a future for each of these hotspots for future generations and save a massive amount of the planet's biodiversity from extinction.

Second, the United States should spend \$10 billion on coral reef restoration in the United States and around the world. Often known as the rainforests of the sea, coral reefs are the most diverse of all marine ecosystems. They harbor 25% of all marine species even though they only cover 2% of the entire ocean floor.<sup>25</sup> Millions of people depend on the bounty from coral reefs for their livelihoods. Unfortunately reefs are also under the greatest threats of all marine ecosystems and are being destroyed by overfishing, destructive dynamite and cyanide fishing, pollution, invasive species and climate change.<sup>26</sup>

As temperatures rise from climate change, mass coral-bleaching events and infectious disease outbreaks



are becoming more frequent. Additionally, carbon dioxide absorbed into the ocean from the atmosphere has already begun to reduce calcification rates in reef-building and reef-associated organisms by altering seawater chemistry.<sup>27</sup> Coral reef restoration, including actively replanting corals, addressing pollution and better fisheries management, can help make coral reefs more resilient to climate change.<sup>28</sup> These restoration activities could provide an alternative and sustainable livelihood for local communities around the world which most directly depend on healthy coral reefs, and would help shepherd coral reefs through the worst impacts of climate change in the coming decades.

Third, we recommend that the United States spend \$10 billion to rebuild populations of neotropical birds in the Western Hemisphere. Approximately 350 species of birds migrate from North America to Central and South America each year. Stabilizing declining bird populations will require actions to restore habitat in these birds' breeding grounds, their key migratory stopover locations, and their wintering grounds. Currently Congress allocates just under \$5 million per year to the Neotropical Migratory Bird Conservation Act<sup>29</sup> — or just \$14,000 per migratory bird species — which is woefully insufficient to reverse the conservation trend of even one species of migratory bird. \$10 billion would allow the United States to provide sufficient funding to conserve key habitats on each species' breeding grounds in North America, in their key migration areas, and their wintering grounds in Central America, South America and the Caribbean.

C) Redouble efforts to address exploitation, poaching and wildlife trafficking.

Current federal law-enforcement efforts are simply inadequate to address the illegal, global trade of endangered wildlife — a \$20 billion market that is fourth in size after the illegal drug trade, human smuggling and trade of illegal weapons.<sup>30</sup> Wildlife trafficking undermines human security in resource-dependent local communities, severely harms the way of life of indigenous people and causes substantial economic losses. Wildlife trafficking is a lucrative source of funds for terrorism as well, posing real risks to national security.<sup>31</sup> The continued decline of rhinos, elephants, tigers, pangolins and other species illustrates that global efforts to combat wildlife trafficking are continuing to fail. The United States should be a leader in enforcement efforts around the world to combat the illegal trade of wildlife.



Philippine pangolin mother and pup by Gregg Yan

We recommend that the United States dramatically increase funding for law enforcement from approximately \$100 million each year to combat the illegal international wildlife trade to \$10 billion per year, which would include significant funding to build law enforcement capacity in foreign nations. Funds should be specifically allotted to fully implement the National Strategy for Combating Wildlife Trafficking and Implementation Plan, as developed in 2015 by the Presidential Task Force for Combating Wildlife Trafficking.

Furthermore, in conjunction with the declaration of a national emergency, law enforcement should take a proactive approach to conservation. Rather than waiting to act until the situation becomes dire, agencies should scrutinize all wildlife trade for every species protected under the Convention on International Trade in Endangered Species as well as those species that are listed as “critically endangered,” “endangered,” or “vulnerable” on the International Union for the Conservation of Nature’s Red List to ensure trade is legal and sustainable.



## II. EXPANDING PUBLIC LANDS TO COMBAT THE EXTINCTION CRISIS

Habitat loss and degradation remains the largest driver of extinction in the United States and around the world. Scientists estimate that people have already converted 70% of the world's ice-free land to agriculture, livestock and urban development.<sup>32</sup> One of the most effective solutions for reversing biodiversity loss is the establishment of protected areas that limit those destructive human activities that are driving declines of wildlife and plants.<sup>33</sup> Given the scale of the extinction crisis, scientists are increasingly calling for protecting half of the planet for nature in some form of managed areas.<sup>34</sup>

To combat the extinction and climate crises, the United States must protect half of land, freshwater and marine ecosystems by 2050, and 30% by 2030. We recommend that the president and states establish new protected areas including national wildlife refuges, national monuments, parks and sanctuaries to protect the full spectrum of habitats and biological diversity found across the entire United States. Furthermore, because many protected areas are ecological islands that cannot support self-sustaining wildlife populations, policy makers should expand protected areas, designate wildlife corridors, and fund efforts to restore connectivity on the landscape. Congress should spend at least \$20 billion to jump-start a habitat-protection and land acquisition effort that is commensurate with the scale of the extinction crisis so that 30% of U.S. lands and waters are fully conserved and protected by 2030 and 50% by 2050.



Papahānaumokuākea Marine National Monument courtesy BLM

Policy makers must honor and respect the rights of Tribal Nations to modify or deny proposed government actions that impact their lands and sacred places. Land proposals must recognize and include indigenous people in management and honor Native lands and place names.

### A) Protect 30% of U.S. lands and waters for wildlife by 2030 and half by 2050.

In order to protect the full diversity of the United States, new public lands must be created, especially in the central, eastern and southern United States. Additional public lands should also focus on protecting more freshwater ecosystems and marine ecosystems in areas with the highest concentration of rare, endemic and endangered species. The National Wildlife Refuge System Improvement Act of 1997 already allows the U.S. Fish and Wildlife Service to administratively create new wildlife refuges without congressional action while the National Marine Sanctuary Act allows the National Oceanic and Atmospheric Administration to establish new marine sanctuaries without congressional action.<sup>35</sup> In addition, the Antiquities Act allows the president to establish new national monuments on existing public lands.

These new protected areas should focus on preserving biodiversity hotspots in the United States, the habitat of critically endangered species, and the diversity of habitats found across the nation.

The United States is a biologically diverse nation that contains 15 broad ecoregions — geographically distinct assemblages of natural communities and species of plants, animals and ecosystems that are broadly similar in composition.<sup>36</sup> These ecoregions can be divided into 50 Level II ecoregions or 182



Spring pygmy sunfish by Conservation Fisheries

Level III ecoregions, each of which identify unique patterns and assemblies of wildlife and plants.<sup>37</sup> To fully protect the diversity of the United States, there must be protected areas that capture the full spectrum of species in this nation, including at least two wildlife refuges in each Level III ecoregion. Similarly, there are 24 different marine ecoregions in our nation's offshore waters, each of which should have at least three new marine sanctuaries designed to protect a representative sample of marine wildlife.<sup>38</sup>

Fortunately there is a large existing source of money available for land protection. Decades ago Congress passed the Land and Water Conservation Act, which was designed to allocate \$900 million per year for land acquisition from offshore oil and gas royalties. Unfortunately, in the years that passed Republican members of Congress routinely opposed fully spending the money promised under the law, effectively stealing from the public the ability to protect the United States' natural heritage.

Today more than \$20 billion remains unspent in the Land and Water Conservation Fund. Congress should immediately allocate the entire \$20 billion for the creation of new protected areas.<sup>39</sup> These critical investments in America's natural heritage would not cost the taxpayer any money and would likely generate many millions of dollars — if not billions — in ecotourism revenues to local economies.<sup>40</sup>

B) Expand existing national parks and develop a network of habitat corridors to reconnect wildlife populations.

National parks offer some of the most rigorous protections for plants and animals of any public land category in the United States. But most national parks are too small to support self-sustaining wildlife populations and thus have become ecological islands on which wildlife are effectively stranded.<sup>41</sup> Even Yellowstone National Park and the Greater Yellowstone Ecosystem have long been recognized as too small and isolated to support a genetically viable population of grizzly bears in the long term.<sup>42</sup>

In order to ensure that all wildlife and plants are viable over the long term, Congress should expand the boundaries of most national parks so that they are ecologically viable and also resilient to threats like climate change. It should allocate 10% of the funding from the highway surface transportation funding bills — approximately \$5 billion to \$6 billion per year<sup>43</sup> — to protect key wildlife corridors that connect wildlife populations between public lands via the building of at least 1,000 wildlife overpasses and underpasses around the United States.

C) Issue an executive order to strengthen public-land management to maintain abundant wildlife.





Olympic National Park by Rachel the Cat

While public lands already encompass about 28% of the United States' landmass, only a small percentage are truly protected. For example 90% of lands managed by the Bureau of Land Management are currently open to oil, gas and other resource extraction activities.<sup>44</sup> America's public lands are managed under a "multiple use" mandate that has resulted in unsustainable logging, mining and grazing practices that have degraded and fragmented habitat and caused harm to native wildlife.<sup>45</sup> As a result, most of the mature and old-growth forests of the Pacific Northwest that are home to northern spotted owls, Pacific fishers, salmon and many other species have already been logged. Meanwhile oil and gas development across public lands in western states is driving steep declines in many populations of once-abundant wildlife, including pronghorn and greater sage grouse.

We recommend that the president issue an executive order to all federal land agencies to first and foremost prioritize stopping the extinction crisis and the climate crisis in all of their management decisions. If a land-management activity is not compatible with the primary objective of combating the extinction crisis, it cannot be allowed to proceed. This paradigm shift in public-land management is fully compatible with the "multiple use" mandate of the public lands' laws, and it would elevate the protection of wildlife as the highest and most important use of public lands.

### **III. TAKE BOLD ACTION TO STRENGTHEN THE CONSERVATION OF ENDANGERED SPECIES AND REBUILD WILDLIFE POPULATIONS**

The Endangered Species Act is one of the most effective conservation laws ever passed by any nation and has prevented the extinction of 99% of plants and animals under its protection.<sup>46</sup> The Act has been the gold standard for biodiversity protection laws around the world, and versions of it have been adopted by many other nations and U.S. states. While over half of all currently listed species are either stabilized or moving toward recovery, some endangered species continue to decline, and nearly 500 more are still waiting for an official determination as to whether or not they will be protected under the Act.<sup>47</sup>

While funding and resource shortfalls are the primary reason that animals and plants continue declining, the Endangered Species Act has been weakened over the years through actions from the executive branch, including most recently the Trump administration's efforts to weaken the regulations that implement the listing and consultation provisions of the law.<sup>48</sup> Since the passage of the Endangered Species Act, very few presidents have used executive orders to further conservation, the one notable exception being President Carter, who sought



to have all federal agencies protect habitats of endangered species on the lands they managed. Unfortunately several other presidents have weakened the Act through executive orders, including President George W. Bush<sup>49</sup> and President Barack Obama.<sup>50</sup>

In order to strengthen conservation of endangered species, the next president should implement a series of executive orders to stem the loss of biodiversity in the United States and put the overwhelming majority of endangered species on a road to recovery. Additionally, we recommend that \$30 billion be spent to stabilize endangered species and other declining wildlife and plant populations around the nation.

A) Issue an executive order to expeditiously protect all species that are endangered but not yet listed under the Endangered Species Act.

The U.S. Fish and Wildlife Service currently faces a backlog of more than 500 species that government scientists have found may warrant listing as threatened or endangered, most of which have been waiting a decade or more for actual protection. These species, however, represent a fraction of those that ultimately need protection. More than 6,500 unprotected species are currently classified as imperiled or critically imperiled and in need of review for protection.<sup>51</sup> Delay in protection of species has real consequences, risking further declines, making recovery more expensive and difficult, and ultimately contributing to extinction. Indeed at least 47 species have gone extinct while under consideration for protection under the Endangered Species Act.<sup>52</sup> Therefore we recommend an executive order that permanently clears this backlog by rapidly assessing all imperiled species to determine if they need protection and, if so, finalizing those protections within two years.



Wolverine by Audrey Magoun, USFWS

Under the Endangered Species Act, there are two routes for species to gain protections. First, any citizen can petition to list a species, and second, the U.S. Fish and Wildlife Service can conduct a discretionary review on its own initiative. Following citizen petitions, species can gain protections in as little as two years, but species can gain protection in half that time if the Service utilizes discretionary reviews. The executive order should require the Service to use the discretionary review process and conduct rapid assessments of all imperiled species. The agency should protect species using a precautionary approach rather than only extending protection to species once they are in serious trouble. Once the backlog of species listing is complete, then the work of stabilizing and recovering all of America's natural heritage can begin in earnest.

B) Issue an executive order requiring all federal agencies to develop proactive conservation plans for endangered species.

Under Section 7(a)(1) of the Endangered Species Act, all federal agencies are required to “utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species.”<sup>53</sup> Simply put, this mandate requires federal agencies to develop proactive programs





'Iiwi in Hawaii by Ludovic Hirlimann

using their own resources to advance recovery of endangered species around the nation. Unfortunately, decades after this mandate was enacted, very few agencies have taken even basic steps to establish proactive conservation programs.<sup>54</sup>

An executive order requiring all federal agencies to develop conservation programs to address species present on land they manage or that are harmed by their actions would go a long way toward stemming federal agency impacts, which are substantial. For example, the Federal Emergency Management Agency has for years refused to take any steps to address the harm it causes through its administration of the National Flood Insurance Program, despite numerous court decisions that have held that subsidizing construction within endangered species' habitats in floodplains causes significant harm.<sup>55</sup> An executive order to develop a Section 7(a)(1) program would compel FEMA and other federal agencies to finally shift its culture from one of intransigence to one of cooperation.

C) Issue an executive order requiring an ecosystem approach to recovery that protects habitat, fosters ecological processes, and addresses climate change.

In 1973 Congress made absolutely clear that the goal of the Endangered Species Act is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”<sup>56</sup> Despite this clear goal, the U.S. Fish and Wildlife Service did not develop a policy for implementing the ecosystem approach of the Act until 1994 and to this day has not even partially implemented that policy.<sup>57</sup>

An executive order that requires the Fish and Wildlife Service to develop an ecosystem approach to the recovery of endangered species, and that requires all agencies to implement ecosystem conservation strategies, would provide a critical tool in helping wildlife and ecosystems. It would require agencies to develop cooperative approaches to restore ecosystems, to facilitate connectivity and to repair the underlying damage to natural systems that has been cumulatively caused by human impacts.

An ecosystem approach, for example, would require federal agencies to work cooperatively to manage rivers across the entirety of watersheds, facilitating management of natural river flows, wildlife migration and appropriate wildfire management. The Northwest Forest Plan is one of the few examples of ecosystem management, resulting in the protection of millions of acres of federal forests to foster the recovery of old-growth forests and other habitats. This model, however, has not been replicated in many places beyond the Northwest, and it is long past time that federal agencies work together to ensure the recovery of ecosystems.

D) Issue an executive order for all federal agencies to identify and protect critical habitat on their properties.

Scientific research has shown that species with designated critical habitat are more than twice as likely to be on a path toward recovery than those without. In 1977 President Carter initiated a government-



Jaguar critical habitat, Santa Rita Mountains, Arizona by Murray Bolesta

wide effort, as required by the ESA, to “identify all habitat under Federal jurisdiction or control that is critical to the survival and recovery” of endangered species and avoid the possibility that such habitats will be identified too late to affect federal project planning.<sup>58</sup> Unfortunately that effort was never completed in President Carter’s only term in office, and in the past 40 years nearly 1,000 threatened and endangered species have been wrongly denied designation of critical habitat.

An executive order should be issued requiring every federal agency that administers public lands — including the National Park Service, the Fish and Wildlife Service, the Bureau of Land Management, the U.S. Forest Service, the Bureau of Reclamation, the Department of Defense and the U.S. Army Corps of Engineers — to expeditiously identify all potential critical habitat on their lands within one year, and to manage those lands primarily for the recovery of endangered species. After those lands and waters are identified, the U.S. Fish and Wildlife Service and National Marine Fisheries Service should then issue rules to formally designate all of these lands as critical habitat within the next three years.

E) Invest \$20 billion for the recovery of endangered species.

As the core of this plan to stem the extinction crisis, we recommend the United States spend \$20 billion to put every one of the 1,800 threatened and endangered species found within the United States and its territories on a path to recovery.

Once a species is protected under the Endangered Species Act, the Fish and Wildlife Service or National Marine Fisheries Service must develop a detailed recovery plan, including the projected cost needed to implement the recovery actions for that species. A 2016 study that examined 150 recovery plans revealed that at least \$2.4 billion would be needed per year just to meet the anticipated costs of recovering most endangered species.<sup>59</sup>

One of the main reasons that we also recommend updating all recovery plans as quickly as possible is that current recovery estimates likely underestimate the true needs of endangered species. The majority of recovery plans are decades old and never considered the challenges involved in mitigating the impacts of climate change and other persistent threats, and many did not even include cost estimates in the first instance. After the initial down payment of \$20 billion is made, the Fish and Wildlife Service and National Marine Fisheries Service should present to Congress a comprehensive plan and estimate for what it will take to save all endangered species in the decades ahead. This is the only way of developing a long-term plan for every species’ conservation, many of which will take decades to recover even with





Coho spawning on the Salmon River courtesy BLM

aggressive funding and conservation due to the fact that many species have been allowed to drop to extremely low population numbers.

F) Strengthen and build capacity for state fish and wildlife agencies to conserve declining wildlife.

State fish and wildlife agencies play a central role in the management of wildlife that are not currently listed as endangered or threatened.<sup>60</sup> While it is vital that the 3,000 critically imperiled species in the United States be rapidly assessed for protection under the Endangered Species Act, there are approximately 4,000 other species identified as “imperiled” by NatureServe, along with several thousand more species that are vulnerable. Given the sheer size of the conservation challenge in the United States, it is not surprising that most species do not receive any attention or funding from the state agencies charged with their conservation.

In order to build capacity for the state fish and wildlife agencies, and to ensure that every species of plant and animal that is declining receives conservation attention, we recommend \$10 billion in support and assistance to the state agencies. Depending on the exact number of species in need, this represents approximately \$1.5 million in conservation for each of the “imperiled” and “vulnerable” species in the country. These funds should be allocated based on where these species are located so that the states with the greatest conservation challenges and number of species that are at risk receive the correct proportion of funds to implement conservation measures for each species.

#### **IV. ESTABLISH STRICT “NO-DISCHARGE” POLLUTION LIMITS THAT ARE PROTECTIVE OF WILDLIFE**

Wildlife have long served as a warning to humanity about the perils of pollution. Polar bears and other Arctic animals have become some of the most contaminated species on Earth as ocean and wind currents transport pollutants north from southern latitudes.<sup>61</sup> Heavy metals and other industrial pollution have pushed hundreds of America’s freshwater fish and invertebrates toward extinction.<sup>62</sup> Stormwater and other non-point runoff pollution is causing ever-expanding dead zones in the Gulf of Mexico and other major estuaries on the nation’s shores. Meanwhile 8 million tons of plastic pollution enter the water each year. Thousands of seabirds and sea turtles, seals and other marine mammals are harmed or killed after ingesting plastic or becoming entangled. Plastic has been found in our drinking water, seafood and farthest reaches of the oceans. If current trends continue, plastics will outweigh all the fish in ocean by 2050.<sup>63</sup>

Unfortunately, in the decades since the ban of DDT, the Environmental Protection Agency has ossified and become captured by powerful industries that have thwarted efforts to fully address the devastating impacts of pollution. Despite the use of thousands of chemicals that are potentially harmful to people and the environment, the EPA has only assessed the dangers from a couple dozen chemicals under the Toxic Substances Control Act over 40 years, and has failed to enact new safeguards on a single chemical despite the enacted reforms to the law in 2016.<sup>64</sup> At current rates, the EPA will not review all of the potentially toxic chemicals in use today for decades or even centuries to come.

Likewise, the EPA has failed to address the nationwide impacts of pesticides on endangered species for a single pesticide in over 30 years despite the clear legal requirement to do so. The agency has refused to ban dozens of pesticides that have been banned by other nations for being too dangerous,<sup>65</sup> and refuses to act on extremely dangerous pesticides such as atrazine, neonicotinoids and chlorpyrifos, which are known to drive wildlife toward extinction.<sup>66</sup> The EPA has also failed to set any new water-quality criteria in decades for endocrine disruptors, PFAS-class chemicals, or other emerging toxic pollutants that harm both wildlife and people.<sup>67</sup> Indeed, even the EPA's flagship Integrated Risk Information System (IRIS) has failed to result in a completed evaluation of a chemical under TSCA.<sup>68</sup> To address the pollution crisis, we recommend the following key actions:

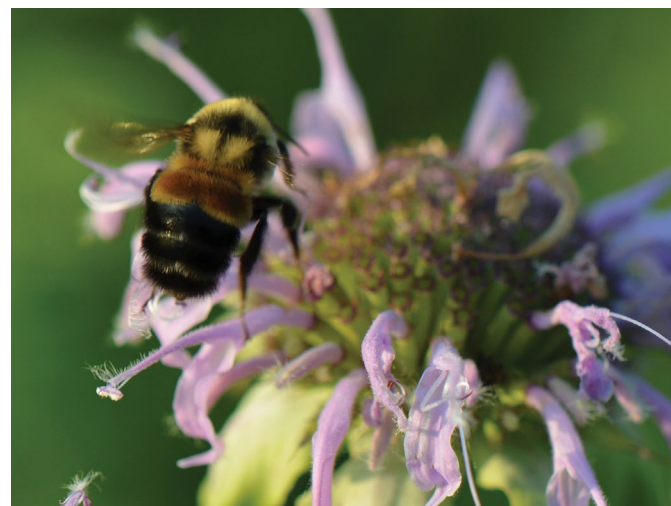
A) Require the Environmental Protection Agency to adopt the precautionary principle in regulating chemicals and pesticides.

Every major pollution-control law allows the EPA to take emergency action to crack down on pollution, or take swift action to restrict or even ban chemicals and pesticides, in order to protect wildlife or the environment.<sup>69</sup> Accordingly we recommend that the president issue an executive order requiring the EPA to take emergency action on every toxic chemical and every pesticide that peer-reviewed information indicates may be harming wildlife or human health. The EPA rarely uses these emergency authorities, instead often taking years or decades to review a potential threat to wildlife — all the while the pollutant or chemical continues to be allowed for use. If and when the EPA finally gets around to addressing the significant harms being caused by a pollutant, massive harm has already occurred.

Under this order the EPA would be required to rapidly evaluate each chemical and every source of toxic pollution within the next four years and evaluate them using a precautionary approach similar to that employed by the European Union's regulatory bodies. Rather than forcing the EPA to prove that a chemical or pollutant is unsafe — a burden that time has shown the agency cannot achieve — the burden would be placed on the business or industry to prove that the chemical or pollutant is safe, with no detrimental impacts to wildlife or the environment.<sup>70</sup> If there is uncertainty about the environmental impacts of the chemical or pollutant, then the EPA must immediately ban the use of that chemical or eliminate all environmental exposure until the point that the science fully demonstrates that it is safe for the environment.

B) Ban the discharge of chemicals, pesticides and pollutants into freshwater and marine ecosystems.

Freshwater ecosystems are some of the most degraded



Rusty patched bumble bee by USFWS



on the planet, and hundreds of aquatic endangered species in the United States continue to decline across the country. Meanwhile runoff loaded with fertilizers, excess nutrients and sediment contribute to dead zones in more than 150 estuaries and bays across the nation.<sup>71</sup> When Congress passed the Clean Water Act in 1972, the stated goal of the law was for “the discharge of pollutants into the navigable waters be eliminated by 1985.”<sup>72</sup>

There are many reasons that the EPA completely and abjectly failed to meet this goal. One of the easiest to address is the discredited environmental risk assessment processes that the EPA employs in order to avoid taking strong regulatory actions. Due to the power of special interests, the EPA still uses antiquated scientific assessment



Brook floater mussel by Michael Perkins, North Carolina Wildlife Resources Commission

methods developed in the 1980s and early 1990s. These assessment methodologies set “acceptable levels” of pollution based on arbitrary acceptable levels of harm to aquatic life. While the EPA has acknowledged that these assessments are woefully out of date,<sup>73</sup> it has failed to modernize them, meaning that the most sensitive wildlife and plants continue to be harmed by unacceptable levels of water pollution, pesticide exposure and other dangerous toxics.

These industry-friendly assessments on the impacts of pesticides, chemicals and water pollutants — often written by the very corporations that produce the chemicals that would face regulation — have pushed more species toward extinction, and have been integral in the decline of pollinators and other common wildlife. The sad reality is that no technocratic fixes or minor policy adjustments will transform the EPA’s assessments into a process that puts the interests of wildlife, human health or the environment ahead of those of industry and special interests.

We therefore recommend the president issue an executive order that requires the EPA to establish “zero-discharge” standards for pesticides, chemicals and other pollutants into fresh and ocean waters within four years, thereby declaring that there is simply no safe level of pollution in our nation’s waters. Fifty years after the passage of the Clean Water Act, there is no excuse to allow water pollution any longer. All of the solutions already exist to end water pollution, all that is required is the political will to put the interests in clean water ahead of those of special interest polluters.

- C) Phase out fossil-fuel based and single-use plastics and require extended producer responsibility for all plastic products.

Of the approximately 6 billion metric tons of plastic waste already produced globally as of 2015, only





Stomach contents of a dead albatross chick on Midway Atoll National Wildlife Refuge by Chris Jordan

9% are recycled. Some 12% are incinerated and the remaining 79% are accumulating in landfills and the natural environment.<sup>74</sup> The impacts to wildlife from microplastics and plastic debris are massive and continue to grow.

Aside from the legacy of pollution these products create, plastic-making facilities emit and discharge a variety of harmful air and water pollutants in the local communities and ecosystems where they are sited. This includes the discharge of plastic resin pellets, flakes, powders and granules, as well as harmful pollutants including phthalates, dioxin and benzene. Many of these pollutants are carcinogens and known to harm human health and the environment. Addressing the impacts of plastics would also have significant human health benefits. Across the United States, these facilities are often located in, and have a disproportionate impact on, low-income and minority neighborhoods.<sup>75</sup>

Thus we recommend that the president issue an executive order that the EPA must use all of its authorities under the Clean Water Act, Clean Air Act and Resource Conservation and Recovery Act (which regulates the disposal of solid and hazardous waste) to phase out single-use and fossil-fuel based plastics and enact extended producer responsibility. The EPA should also require that all phases of plastic production are adequately regulated so that all plastic waste flows into the environment are eliminated within the next four years. A moratorium should be placed on petrochemical plants producing plastic from fracked gas.

## V. STEM THE TIDE OF INVASIVE SPECIES

Invasive species are responsible for a significant share of the species extinctions that have occurred in the past





American alligator (native) struggles with a Burmese python (invasive) courtesy Everglades National Park

200 years, especially on island ecosystems. When early European explorers arrived in Hawaii, they inadvertently released mosquitos into the creeks and rivers when they refilled their water supplies. Mosquitos were not native to Hawaii and spread across the islands. Once mosquitos arrived, they began spreading avian malaria to Hawaii's honeycreeper songbirds and helped drive two dozen species extinct.<sup>76</sup> Equally tragic, the accidental introduction of the brown tree snake to Guam — likely brought by the military in the years after World War II — resulted in the extinction of 10 of the island's 12 endemic bird species.<sup>77</sup> While these introductions of invasive species were accidents and occurred before people understood the consequences of moving plants and animals around the world, we now understand such consequences. Unfortunately, despite this knowledge, we continue to allow new invasive species to become established in the United States and around the world every day.

For example, chytrid fungus has emerged as a major threat to amphibians, with the first documented outbreak occurring in the late 1990s simultaneously in Australia and Central America. Since then the fungus has been detected in more than 100 amphibian species and has been associated with severe population declines or extinctions in several regions throughout the world. Similarly, the fungus responsible for causing the death of millions of bats from white-nose syndrome is likely an invasive species that was introduced to North America from Europe.

The United States is a primary driver of global trade, and one of main consequences of the rapid movement of goods around the world is an accelerating spread of invasive species. Several agencies, including the U.S. Department of Agriculture, U.S. Coast Guard and U.S. Fish and Wildlife Service share responsibilities for preventing the spread of invasive species. However, these agencies routinely place the short-term interests of corporations above the protection of the United States' long-term biosecurity.

Accordingly, we recommend the president issue an executive order requiring that all federal agencies use their full authority to combat the spread of invasive species. For example, the Coast Guard should be required to immediately implement a "zero-discharge" standard of aquatic invasive species that travel in cargo ship ballast waters. Likewise, the U.S. Department of Agriculture and U.S. Homeland Security Department should be required to prioritize inspections of all invasive pest species found in agriculture coming into and going out of the United States and prohibit the import or export of products that are potentially invasive.

Eliminating the spread of invasive species is a mammoth task, and the removal of invasive species that have become established is even more daunting. We recommend that Congress invest \$10 billion immediately to fight the spread of invasive species. This initial down-payment would allow for more staffing to inspect all imports



Florida's aboriginal prickly apple cactus by Keith Bradley

and exports, hiring of ecological restoration specialists to remove invasive species from the most sensitive ecosystems, and helping industries adopt new technologies and practices that will limit the spread of invasive species in the first place.

## CONCLUSION

Famed conservation scientist E.O. Wilson stated that “if you save the living environment, the biodiversity that we have left, you will also automatically save the physical environment too. If you only save the physical environment, you will ultimately lose both.”<sup>78</sup> Stemming the extinction crisis is a prerequisite to saving the rest of the planet from the unsustainable way in which our civilization currently lives. Our plan to combat this crisis represents an important initial step to address the United States’ role — other nations must act as well — for humanity to thrive in a more sustainable manner in harmony with the 8 million other species that share the Earth.

As the human population continues to grow toward 10 billion people, the challenges of making sure that every species has a future will be increasingly difficult. However, if we take these meaningful steps to address the biodiversity crisis now, we will be setting ourselves up for success in tackling the greatest challenges our civilization faces: overpopulation, climate change and unsustainable use of our remaining natural resources.

It is not too late to save the world’s natural heritage from annihilation. The black-footed ferret was nearly wiped out due to the loss of its grassland habitat, the eradication of prairie dogs and the introduction of sylvatic plague from Asia. Fortunately, a handful of individuals were discovered in Meeteetse, Wyoming in 1981 and brought



into a captive breeding program. From the seven individual ferrets that survived and reproduced, over 400 ferrets now live in the wild, and 300 live in captivity.<sup>79</sup> This is but one example of when humanity has saved species from extinction. The Mauritius Kestrel was reduced to just four individuals, but thanks to intensive conservation efforts, there are nearly 1,000 living in the wild today.<sup>80</sup> The New Zealand black robin was reduced to five individuals and, after decades of conservation work, its population has grown to more than 250 individuals.<sup>81</sup>

Humanity has thoughtlessly dominated and exploited wildlife populations, yet every year, more restoration projects are initiated to conserve the natural environment. Dams are now being removed around the world to restore the natural state of rivers so that salmon and other migratory fish species can thrive again.<sup>82</sup> After decades of relentless hunting to the point of extinction, the great whales of the oceans have begun to recover, with some species like humpback and gray whales recovering to pre-whaling population levels. Despite relentless persecution for centuries, wolves have been reintroduced to their historic habitats in the western United States. The bald eagle was nearly wiped out in the lower 48 states due to DDT but can now be found nesting in every state, and even in Washington, D.C. Around the world, countries are actively bringing back wildlife that had earlier been wiped out due to human carelessness and greed.

In less than 10,000 years — a mere blink of an eye in our planet's history — human beings have become the dominant species on Earth. That progress has come with a steep price, especially for wild animals and plants. Some losses will remain forever but, for many, it's not too late. With sufficient care, knowledge, restraint and love, we can guarantee that there is still a place for every species on Earth, in all their extraordinary forms and spectacular varieties.





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