



CHANGE THE FORECAST FOR WILDLIFE  
SOLUTIONS TO GLOBAL WARMING

# Wildlife at RISK

Global warming threatens to unravel many of the local conservation success stories that our parents fought for, and that our children will cherish – but only if we fail to act now.

Bringing wolves back to Yellowstone; protecting the last Florida panthers from extinction; conserving water resources for salmon in the Pacific Northwest—these are some of the conservation successes Americans have achieved in the last few decades. But today, wildlife faces an even greater threat. We all are contributing to a problem that has the potential to undo years of our hard-fought conservation work: global warming. Science shows a direct relationship between the amount of global warming pollution being released into the atmosphere and the increase in surface temperatures around the world. Since the industrial revolution, the amount of carbon dioxide and other greenhouse gases has increased to a level greater than at any time in the past 400,000 years. By burning fossil fuels—mostly oil, natural gas and coal—we humans are fast becoming a driving force behind global warming.

## GLOBAL WARMING THREATENS WILDLIFE

In just one century, the earth's temperature has risen by about 1 degree Fahrenheit, and is expected to rise by another 2-10 degrees Fahrenheit by 2100. As temperatures increase, local climate systems are being altered in ways that directly affect fish and wildlife, as well as forests, lakes, prairies, rivers, wetlands and other habitats upon which they depend. A recent study by The Wildlife Society shows North American wildlife species are beginning to shift their ranges northward and upward in elevation in response to this slight but consistent rise in temperature.



## THE NEED FOR ACTION IS URGENT

Scientists recently concluded that within the next 50 years, as many as one-third of all wildlife species in some regions of the world could be headed toward extinction due to global warming. Without open spaces, wetlands and protected corridors that allow wildlife to adapt and move in response to global warming, many species will simply disappear.

“I’ve seen global warming happen during my own lifetime, and I’m convinced that the world of wildlife we now know and many of the places we’ve invested decades of work in conserving as refuges and habitats for wildlife will cease to exist as we know them, unless we change this forecast. We have a moral obligation to protect wildlife so that generations from now, our children and grandchildren will enjoy the benefits we enjoy from our natural world.”

—Larry Schweiger, President & CEO, National Wildlife Federation

## YOU CAN HELP

To stop global warming, we must control global warming pollution. By increasing the energy efficiency of our homes, buildings, factories and cars, and using cleaner, renewable energy sources, we can tackle the largest source of global warming pollution: our growing dependence on fossil fuels such as coal, oil and natural gas. As a global leader in technologies that reduce pollution, the United States has a unique opportunity to lead the way in safeguarding our future from this threat. As the world's largest emitter of the pollution that causes global warming, we have a responsibility to take action now.



## 10 STEPS You Can Take To Combat Global Warming –

Save Energy and Money while Protecting the Environment!

### 5 THINGS YOU CAN DO STARTING TODAY

- 1) Check your attic or basement to make sure your home is well-insulated; test windows and doors for air leaks; and look for holes or cracks in walls that may be letting air into or out of your home.
- 2) Change or clean your furnace and air conditioner filters regularly to keep heating and cooling systems running efficiently.
- 3) Set your water heater to a lower setting or call a service person to adjust it for you.
- 4) Recycle aluminum cans, glass bottles, plastic, paper, cardboard and newspapers, which will reduce the energy needed to make new products.
- 5) Regularly check your car's tire pressure—poorly inflated tires waste gas and cause extra pollution. Better yet, carpool or take mass transportation whenever possible.

### 5 WAYS TO MAKE YOUR PURCHASES WORK TO PROTECT THE ENVIRONMENT

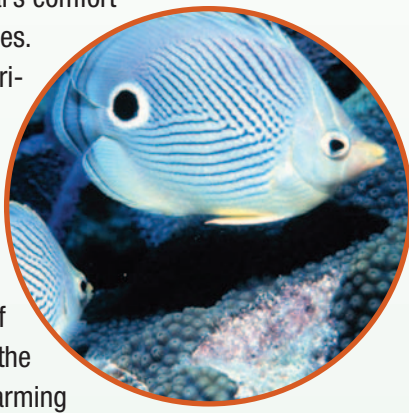
- 1) When replacing light bulbs in your home, buy compact fluorescent bulbs, which reduce energy use by up to 75 percent.
- 2) When shopping for home appliances and electronics, look for the “Energy Star” label.
- 3) When you purchase a car, buy the most fuel-efficient model that meets your needs. This will reduce your gas consumption, cut carbon dioxide pollution, and save you money at the pump.
- 4) Install a timer on your thermostat to save heating and cooling energy at night and when no one is home.
- 5) If available, buy “Green Power” that comes from non-polluting sources of electricity such as solar cells and windmills. Go to [www.nwf.org/globalwarming](http://www.nwf.org/globalwarming) to learn more about buying green energy.

Contact your representatives in Congress and encourage government to enact new laws to limit global warming pollution and improve clean, renewable energy sources.

## EARLY WARNING SIGNS OF GLOBAL WARMING

### CORAL REEFS

Coral reefs are among the ecosystems most vulnerable to global warming, particularly when they already are weakened by other stresses. One of the most striking signs that global warming is already affecting reefs is the growing incidence of coral "bleaching," caused in part by prolonged exposure of corals to higher-than-normal water temperatures. If temperatures remain outside the coral's comfort zone for too long, the coral dies. Scientists project that a majority of the nation's and world's coral reefs could be lost if average temperatures increase more than about 3.5 degrees Fahrenheit, which is in the lower range of what is expected to occur in the coming decades as global warming emissions continue to rise.



### ALASKA WILDLIFE

Alaska truly sounds the alarm in terms of what global warming and associated climate change could bring to the rest of the nation and other parts of the world. Winter temperatures in Alaska already have increased by 5 to 7 degrees Fahrenheit in the past 60 years. Higher temperatures have contributed to

more intense spruce bark beetle outbreaks in recent years, and some areas in the Kenai Peninsula have seen as much as 90 percent of their forests wiped out. Climate-related changes in food availability have also contributed to a 50 to 90 percent decline in the populations of some seabird species (including murrelets, kittiwakes, guillemots, puffins, and cormorants) as well as marine mammals such as stellar sea lions and harbor seals since the 1970s.



### WESTERN DROUGHT AND FIRES

Water is a critical resource for people and wildlife, and limited supplies in the American West have pushed many wildlife species to the limit. In recent years, water scarcity has become critical as persistent drought plagues states throughout the region. Drought has increased the incidence of forest fires, a problem made even worse by historically poor forest management. Although fire is helpful to some ecosystems, wildfires caused by unusual drought conditions can destroy old-growth forests, threaten nearby homesteads, and cause severe erosion, compounding the threats to endangered species and other wildlife. Global warming will worsen the drought conditions in the region. For example, a recent study projects that Montana could see a five-fold increase in acreage burned each summer by the end of the century.

## WILDLIFE AT RISK

### FISH AND GAME

#### TROUT

Higher stream temperatures associated with global warming will disrupt cold-water fish species, especially at the southern boundaries of their habitat ranges. If global warming continues unabated, experts estimate that some regions of the U.S. will lose 50 to 100 percent of brook and rainbow trout habitats in the coming decades.

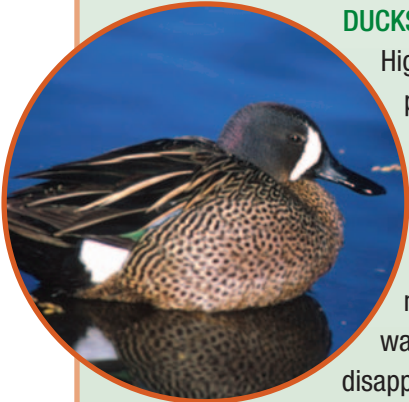


#### SALMON

Pacific salmon species are particularly vulnerable to global warming. Higher-than-normal sea surface temperatures and a corresponding reduction in the upwelling of nutrient-rich waters in the northeastern Pacific Ocean during El Niño events often lead to a decline in the production of coho and sockeye salmon. Some global warming models project stronger and more frequent El Niño events, which could devastate salmon populations. Changes in rain and snow patterns, lower snowpack, and earlier spring snowmelt in the Pacific Northwest could reduce critical stream flows in the region, disrupting salmon in their freshwater life cycle. Warming trends in the region over the past 50 years already have shifted the dates of peak snow accumulation and snowmelt-derived stream flow by an average of 10-40 days earlier, and snowpack has decreased 11 percent over the same period.

#### DUCKS AND OTHER WATERFOWL

Higher temperatures in the "prairie pothole" region will lead to drier conditions, which could cause lakes and ponds that were historically ideal for waterfowl reproduction to dry up. Over the next 50 years, the loss of these water bodies could contribute to the disappearance of up to 50 percent of mallards, northern pintails, blue-winged teals, and other waterfowl. Higher winter temperatures in northern states also could mean fewer ducks and geese traveling south in search of ice-free winter habitat.



### AMERICAN ICONS

#### POLAR BEARS

For the past 20 years, higher temperatures have caused the sea ice in the western Hudson Bay to break up earlier each spring. As a result, polar bears have had less access to ringed seals, their primary source of food. Since 1981, female polar bears have weighed less and had fewer cubs, and scientists are concerned that, if the trends continue, polar bears could disappear in the wild before the end of the century.

#### GRIZZLY BEARS

Global warming will disrupt North American wildlife species both directly and indirectly. For example, changes in rain and snow patterns and temperatures in the Greater Yellowstone Ecosystem could contribute to a reduction in whitebark pine seeds, an important food source for grizzly bears. Unless they can find suitable alternative food sources in their habitat range, the grizzly populations could decline.

#### FLORIDA PANTHERS

Global warming could push the Florida panther even closer to extinction. The greatest threat to the panther's survival is loss, fragmentation, and degradation of habitat. Sea level rise associated with global warming could contribute to this habitat decline. Sea water could inundate some of the last viable wetlands and other habitat the big cats depend on to survive.



### BACKYARD WILDLIFE

#### SONGBIRDS

As global warming intensifies, many bird species will alter their behavior and shift their traditional ranges. Birds that people treasure in their backyards and in the wild could disappear from local areas. Some models project that the climatic range of several state birds could shrink or shift entirely out of their official state. These recognized songbirds include: Maryland's Baltimore oriole, California's California quail, Massachusetts' black-capped chickadee, Georgia's brown thrasher, New Hampshire's purple finch and Washington's and Iowa's American goldfinch.

#### BUTTERFLIES

Butterflies are very sensitive to weather and climate, making them useful indicators of how other wildlife species may respond to global warming. Butterfly species in Europe and North America have shifted their ranges northward as average temperatures have risen throughout the latter half of the 20th century, and populations of some species – like the Edith's checkerspot in the Western U.S. – are more likely to become extinct in the southern part of their range and at lower elevations. Scientists also project that increasing cool-weather rain and snow in the winter habitat for eastern migratory North American monarch butterflies will become inadequate for the species' survival.



## NATURAL TREASURES

#### THE EVERGLADES

In the next 100 years higher coastal sea levels will flood waterways and forests in the southern section of the Florida Everglades. In addition to the influx of salt-water, the mangroves, wetlands and hardwood forests that protect this unique Everglades habitat must fight to keep pace with the encroachment of human development, pollution and increased diversions of fresh-water.



#### THE CHESAPEAKE BAY

Sea level rise is already altering the Chesapeake Bay. Water levels in the bay are rising twice as fast as the global average rate, and many of the bay's small islands have been inundated. In the coming decades, most of the bay's marshes and beaches could disappear, particularly where artificial barriers such as sea walls make it impossible for marshes to migrate inland. Not only are these habitats important nursery areas for many fish populations, but they are an important winter habitat for 35 percent of all waterfowl on the Eastern Flyway.

#### GREAT LAKES

Higher temperatures and increased evaporation are expected to contribute to a decline in Great Lakes water levels by 1.5 to 8 feet by the end of this century. Record low water levels in 2000-2001 disrupted navigation and left marinas high and dry, providing a costly glimpse of what this could mean for the region.

#### GLACIER NATIONAL PARK

The glaciers of Glacier National Park are shrinking. Rising temperatures over the last 60 years are melting them away. If nothing is done to curb global warming, by the year 2030 park scientists predict that there may not be a single glacier left in Glacier National Park. Not only would glaciers be gone forever, but the loss of annual snowmelt will seriously disrupt natural ecosystems.



### FOR MORE INFORMATION

Visit the National Wildlife Federation's Climate Change & Wildlife Program at: [www.nwf.org/globalwarming](http://www.nwf.org/globalwarming)

Or contact Outreach Coordinator Myra Wilensky at: [globalwarming@nwf.org](mailto:globalwarming@nwf.org)

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