

# The Decline of Living Things

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The amount and variation of living things are declining worldwide. In roughly half a century, the fish in our oceans has declined by nearly half<sup>1</sup> and invertebrate populations are down by 45%.<sup>2</sup> North America has lost 3 billion birds<sup>3</sup> and continues to lose amphibians at over 3% every year.<sup>4</sup> The number of protected and endangered species has risen over time, and many formally abundant species are becoming locally rare.

## Economy

- ◆ Millions of people birdwatch around the country, contributing nearly \$80 billion to the national economy.<sup>5</sup>
- ◆ Many native species, such as mudpuppies, prey upon invasive species that would otherwise add costs to our economy. Aquatic invasive species alone cost Michigan about \$100 million annually.<sup>8</sup>

## Public Health

- ◆ Amphibians are environmental indicators of water quality and act as an early warning sign before contaminants become harmful to people.
- ◆ Wetlands and forests improve local water quality. This process is so effective that some municipalities save up to 90% on water treatment costs by constructing wetlands rather than water treatment plants.<sup>6</sup>

## Natural Resources

- ◆ Pollinators, such as bees, are vital to the production of 1/3 of food made in the United States
- ◆ A single silver maple tree sequesters 400 pounds of greenhouse warming carbon dioxide from the atmosphere<sup>7</sup>
- ◆ Genetic diversity is essential to the longevity and productivity of agriculture
- ◆ Many technological advances were drawn directly from other living things. A decline of species could have potentially drastic consequences on future development.

## Michigan Severely Lacks Environmental Education

Michigan wildlife is changing dramatically. The youth of today are experiencing a landscape different from their parents' generation as wildlife that used to exist is becoming rare or absent. Species such as the Poweshiek skipperling butterfly that were formally abundant, are now locally rare or even endangered.<sup>14</sup> Amidst this, Michigan is experiencing a growing "Nature Deficit disorder" as children spend less time in the outdoors. These concerns on youth engagement were echoed in a joint article by Governor Whitmer regarding the future plans for the new Michigan Office of Outdoor Recreation.<sup>16</sup>

Every citizen needs a fundamental understanding of environmental science to do well in the 21st century. Yet jobs in environmental education are almost always temporary low wage positions. Solving these problems requires supplying educators with curriculums and training to teach essential skills such as environmental quality evaluations, ecological services, and energy infrastructure. Careers in environmental education that teach more advanced materials need to pay well enough to attract and keep talent.

Education is the foundation of implementing the programs needed to restore historic wildlife populations. Or, in the event of species absence, the youth need to know how to mitigate environmental consequences.

There is no singular cause to the decline of life, and likewise no singular solution will expand biodiversity in our state.

Here are the major threats:

### **Habitat Loss**

Habitat loss is the greatest contributor to declines in biodiversity, and thus, the creation or retention of habitat is the most impactful contribution to species survival. Overall, Michigan has lost 4.2 million acres of wetlands since the 1800s.<sup>11</sup>

### **Habitat Degradation**

Degradation is the reduced quality of a habitat through either pollution or the presence of invasive species. Preventing or cleaning pollution that negatively impacts wildlife likewise improves the public health for humans. In the case of invasive species, ornamental plants imported for landscaping hold almost no ecological value and equate to near total habitat loss for many species of native wildlife.

### **Climate Change**

Climate Change poses an existential threat for many of the Earth's organisms. Nearly half of all North American bird species are severely threatened by climate change.<sup>8</sup> Under 2 degrees of warming, virtually all coral reefs will go extinct.<sup>9</sup>

### **Habitat Fragmentation**

Fragmentation occurs when formally large portions of habitat are divided into several smaller ones. This prevents animals from traveling to other populations and creates situations where siblings mate with siblings. Removing wildlife from the endangered species status is impossible if their range is severely restricted and fragmented.



Formerly one of the most abundant frogs in Michigan, Leopard Frog populations have severely declined across the Midwest. This species suffers from the loss of wetlands and from the common agricultural herbicide Atrazine.<sup>12</sup>

## **Key Resources**

[Audubon Climate Report](#)  
[Union of Concerned Scientists](#)  
[Extinction Rebellion](#)

[www.climate.audubon.org](http://www.climate.audubon.org)  
[www.ucsusa.org](http://www.ucsusa.org)  
[www.rebellion.earth/the-truth/the-emergency/](http://www.rebellion.earth/the-truth/the-emergency/)

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- 3 Rosenberg, Kenneth., et al. "Decline of the North American avifauna" *Science* Vol 366 Issue 6461, October 2019
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- 5 "Birds, Bird Watching, and the U.S. Economy" U.S. Fish and Wildlife Service, <https://www.fws.gov/birds/bird-enthusiasts/bird-watching/valuing-birds.php>
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- 7 "How much carbon do trees really store?" Sierra Club, March 2016, <https://www.sierraclub.org/sierra/2016-2-march-april/ask-mr-green/how-much-carbon-do-trees-really-store>
- 8 "Updated: The Cost of Aquatic Invasive Species to the Great Lakes State" Anderson Economic Group, January 2017, <https://www.andersoneconomicgroup.com/updated-the-cost-of-aquatic-invasive-species-to-great-lakes-states/>
- 9 "Survival by Degrees: 389 Bird Species on the Brink" Audubon Society <https://www.audubon.org/climate/survivalbydegrees>
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- 12 "Department of Interior Finds Atrazine and Other Pesticides Is Causing Local Frog Extinctions" NRDC, October 2011, <https://www.nrdc.org/experts/andrew-wetzler/department-interior-finds-atrazine-and-other-pesticides-causing-local-frog>
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