

1st PLACE

CLIMATE CHANGE EDUCATION: PROTECTING IDAHO'S FUTURE
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Since 1931, Idaho's official state song, "Here We Have Idaho," has praised the beauty and wonder of our state. "You've heard of the wonders our land does possess/ Its beautiful valleys and hills," the song proclaims¹, clearly demonstrating Idahoans' strong love for the state's unique beauty. However, few residents of Idaho fully understand the massive threat our proud state currently faces: climate change. In order to fully protect our home from the destruction of global warming, we must acknowledge the true causes and threats of climate change, and take legislative action to ensure that our citizens are fully cognizant of such scientific truths.

The scientific community unanimously agrees that recently, Earth's temperatures have risen at startling rates. According to the National Aeronautics and Space Administration, "The planet's average surface temperature has risen about 2.0 degrees Fahrenheit...since the late 19th century."² In fact, the decade spanning 2006 and 2015 is the warmest on record³. Increases of these magnitudes are completely unprecedented. To understand this unsettling increase, experts direct our attention to the Earth's atmosphere. When sunlight passes through our atmosphere, its heat is reflected off of Earth's surface and back into space in the form of infrared rays. However, gasses in the atmosphere such as carbon dioxide, methane, and nitrous oxide⁴ trap the majority of these rays, much like the glass of a greenhouse, resulting in a controlled and consistent climate on our planet. This aptly named Greenhouse Effect is not inherently negative; its creation of a

¹ "Idaho State Song." Governor C.L. "Butch" Otter - The State of Idaho. Accessed November 29, 2017. <https://gov.idaho.gov/about/song.html>.

² "Climate change evidence: How do we know?" NASA: Global Climate Change. August 10, 2017. Accessed November 27, 2017. <https://climate.nasa.gov/evidence/>.

³ "Climate Change Indicators: U.S. and Global Temperature." EPA. December 17, 2016. Accessed November 26, 2017. <https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-temperature>.

⁴ "Overview of Greenhouse Gases," United States Environmental Protection Agency. April 13, 2017. Accessed November 25, 2017. <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

stable atmospheric conditions makes life on Earth possible⁵. A problem arises when the greenhouse gasses become too prevalent in the atmosphere and begin trapping too much heat, causing a rise in temperatures like those documented in recent years.

Researchers also agree that the source of this intensely troubling progression is undeniably humans, especially our use of fossil fuels. Over the past century, petroleum, natural gas, and coal have made up 80% of the United States' energy consumption⁶, and when such fossil fuels are burned, carbon dioxide, one of the aforementioned greenhouse gases, is released into the atmosphere, thus worsening the Greenhouse Gas Effect and raising global temperatures. Researchers have linked increases in fossil fuel consumption with a growth of the carbon dioxide makeup of our atmosphere. Members of the Union of Concerned Scientists assert, "the atmospheric concentration of CO₂ has increased dramatically, from a pre-industrial era (AD 1000 – 1750) concentration of approximately 280 parts per million (ppm) to today's 400 ppm,"⁷ thus establishing a compelling correlation between widespread use of fossil fuel and the key source of climate change, an increase in carbon dioxide within the atmosphere.

Some argue that global warming qualifies as a purely natural occurrence, as our climate is constantly changing. Yes, natural changes do occur through processes known as Milankovitch Cycles, which consist of the warming and cooling of the planet due to the variation of the Earth's cycle around the sun⁸. However, these changes are gradual; a single cycle takes 100,00 years to

⁵ Peter Rillero, *Time for Learning: Science*, (Publications International, 2005), 82-83

⁶ "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Fossil fuels still dominate U.S. energy consumption . July 1, 2016. Accessed November 28, 2017. <https://www.eia.gov/todayinenergy/detail.php?id=26912>.

⁷ "How Do We Know that Humans Are the Major Cause of Global Warming?" Union of Concerned Scientists. Accessed November 26, 2017.

http://www.ucsusa.org/global_warming/science_and_impacts/science/human-contribution-to-gw-faq.html#.

⁸"Milutin Milankovitch ." NASA: Earth Observatory. March 24, 2000. Accessed November 29, 2017. <https://earthobservatory.nasa.gov/Features/Milankovitch/>.

complete, and scientists agree that the recent jump in worldwide temperature significantly deviates from this meticulously extrapolated natural cycle⁹. In fact, a 2013 study confirms that the majority of scientists cite human influences as the greatest contributor to global warming¹⁰, even though the public does not.

It is essential to disperse such dangerous misconceptions about climate change so that the public fully understands the extreme dangers of an overheated planet. Such threats are especially prevalent in our own state of Idaho. According to the Environmental Protection Agency, Idaho's main source of water, mountain snowpack, will diminish as the planet warms and precipitation decreases, leaving the state susceptible to drought. Concerningly, a decline in snowpacks has already been observed over the past fifty years¹¹. The resulting water shortages that Idaho could experience in a warmer future would harm the agriculture business, a large component of our economy, and even result in extreme drought and wildfires¹². Simply, if climate change continues to progress unchecked, the splendor and prosperity of our state will fade into a distant memory.

Even though the Idahoan way of life is severely threatened, public concern about climate change remains troublingly low. According to the Pew Research Center, only 42 percent of Americans believe that climate change could result in severe harms to water supplies in the country. In addition, fewer than half of those surveyed felt that global warming would result in

⁹ "Milankovitch Cycles." OSS Foundation. February 19, 2014. Accessed November 29, 2017. <http://ossfoundation.us/projects/environment/global-warming/milankovitch-cycles>.

¹⁰ Cook, John, Dana Nuccitelli, Sarah A. Green, Mark Richardson, and Bärbel Winkler. "Quantifying the consensus on anthropogenic global warming in the scientific literature." *Environmental Research Letters*. May 15, 2013. Accessed November 28, 2017. <http://iopscience.iop.org/article/10.1088/1748-9326/8/2/024024>.

¹¹ "Snowpack, 1955–2015 Percent Change." Chart. Environmental Protection Agency. August 2016. Accessed November 28, 2017. <https://www.epa.gov/sites/production/files/2016-09/documents/climate-change-id.pdf>.

¹² "What Climate Change Means for Idaho." Environmental Protection Agency. August 2016. Accessed November 28, 2017. <https://www.epa.gov/sites/production/files/2016-09/documents/climate-change-id.pdf>.

worsening storms, declining wildlife populations, or rising sea levels¹³, demonstrating several severe misjudgements of the effects of climate change circulating among the American public, including Idahoans.

The best way to combat these concerning misunderstandings is through education. In detailing their Sustainable Development Goals, the United Nations Education, Scientific, and Cultural Organization notes, "Education and awareness-raising enable informed decision-making, play an essential role in increasing adaptation and mitigation capacities of communities, and empower women and men to adopt sustainable lifestyles¹⁴." If we truly aim to protect the natural beauty and thriving economy of our beloved state, we first must inform the public of the causes and dangers of climate change by keeping such topics in State Science Standards. With a better understanding of humanity's impact on global temperatures and the dangers of such changing conditions, a new generation of educated Idahoans will possess the necessary motivation and tools to take action to protect our home state.

The Idaho state song's final verse ends with a promise to cherish the legacy of Idaho, and in our quest to defend the beauty, prosperity, and legacy of our great state, we have overcome a multitude of challenges. However, in order to truly realize our oath in the twenty-first century, we must truly address the growing changes to our climate and the real threats that such changes pose to our homeland. Facing climate change head on certainly presents a challenge, but by truly understanding the issue and educating our children, perhaps we can preserve the astonishing beauty and outstanding character of Idaho for generations to come.

¹³ Funk, Cary, and Brian Kennedy. "Public views on climate change and climate scientists." Pew Research Center: Internet, Science & Tech. October 04, 2016. Accessed November 28, 2017. <http://www.pewinternet.org/2016/10/04/public-views-on-climate-change-and-climate-scientists/>.

¹⁴"Changing Minds, Not the Climate." United Nations Education, Scientific, and Cultural Organization. Accessed November 29, 2017. <http://unesdoc.unesco.org/images/0024/002459/245977e.pdf>.