

The Next Generation Science Standards: Reason for concern

Core Idea LS4

Biological Evolution: Unity and Diversity

Biological evolution explains both the unity and the diversity of species and provides a unifying principle for the history and diversity of life on Earth.¹

Evolution and its underlying genetic mechanisms of inheritance and variability are key to understanding both the unity and the diversity of life on Earth.²

Grade Band Endpoints for LS2.C

By the end of grade 12.

A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability. Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change—can disrupt an ecosystem and threaten the survival of some species.³

Evolution is being taught as a fact rather than what it is: Theory.

LS4.D: BIODIVERSITY AND HUMANS

What is biodiversity, how do humans affect it, and how does it affect humans?

Human beings are part of and depend on the natural world. Biodiversity—the multiplicity of genes, species, and ecosystems—provides humans with renewable resources, such as food, medicines, and clean water. Humans also benefit from “ecosystem services,” such as climate stabilization, decomposition of wastes, and pollination that are provided by healthy (i.e., diverse and resilient) ecosystems. The resources of biological

¹ 6 Dimension 3: Disciplinary Core Ideas - Life Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

² 6 Dimension 3: Disciplinary Core Ideas - Life Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

³ 6 Dimension 3: Disciplinary Core Ideas - Life Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

communities can be used within sustainable limits, but in many cases humans affect these ecosystems in ways—including habitat destruction, pollution of air and water, overexploitation of resources, introduction of invasive species, and climate change—that prevent the sustainable use of resources and lead to ecosystem degradation, species extinction, and the loss of valuable ecosystem services.⁴

But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. These problems have the potential to cause a major wave of biological extinctions—as many species or populations of a given species, unable to survive in changed environments, die out—and the effects may be harmful to humans and other living things.⁵

Humans have not only had negative effect on our natural resources but also positive effects. Are humans really the source of all that is negative? Do humans not take care of our natural resources? What do many agencies like the Conservation Districts do? Should we maybe point out the good things?

ESS2.D: WEATHER AND CLIMATE

What regulates weather and climate?

The “greenhouse effect” keeps Earth’s surface warmer than it would be otherwise.⁶

By the end of grade 8.Greenhouse gases in the atmosphere absorb and retain the energy radiated from land and ocean surfaces, thereby regulating Earth’s average surface temperature and keeping it habitable.⁷

By the end of grade 12. Changes in the atmosphere due to human activity have increased carbon dioxide concentrations and thus affect climate (link to [ESS3.D](#)).⁸

Global climate models incorporate scientists’ best knowledge of physical and chemical processes and of the interactions of relevant systems. They are tested by their ability to fit past climate variations. Current models predict that, although future regional climate changes will be complex and varied, average global temperatures will continue to rise. The outcomes predicted by global climate models strongly depend on the amounts of human-generated greenhouse

⁴ 6 Dimension 3: Disciplinary Core Ideas - Life Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

⁵ 6 Dimension 3: Disciplinary Core Ideas - Life Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

⁶ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

⁷ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

⁸ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

gases added to the atmosphere each year and by the ways in which these gases are absorbed by the ocean and the biosphere. Hence the outcomes depend on human behaviors (link to [ESS3.D](#)) as well as on natural factors that involve complex feedbacks among Earth's systems (link to [ESS2.A](#)).⁹

ESS2.E: BIOGEOLOGY

How do living organisms alter Earth's processes and structures?

Organisms ranging from bacteria to human beings are a major driver of the global carbon cycle, and they influence global climate by modifying the chemical makeup of the atmosphere. Greenhouse gases in particular are continually moved through the reservoirs represented by the ocean, land, life, and atmosphere.¹⁰

1. Again a theory, Greenhouse gases being taught as fact.
2. Yet again it implies humans are a detriment to society.

Core Idea ESS3

Earth and Human Activity

How do Earth's surface processes and human activities affect each other?

Earth's surface processes affect and are affected by human activities. Humans depend on all of the planet's systems for a variety of resources, some of which are renewable or replaceable and some of which are not. Natural hazards and other geological events can significantly alter human populations and activities. Human activities, in turn, can contribute to the frequency and intensity of some natural hazards. Indeed, humans have become one of the most significant agents of change in Earth's surface systems. In particular, it has been shown that climate change—which could have large consequences for all of Earth's surface systems, including the biosphere—is driven not only by natural effects but also by human activities.¹¹

Humans as it states have become one of the most significant agents of change in the Earth's surface. It goes on to say "In particular,climate change." Once again humans are bad and we have caused problems such as intensity of some natural hazards and climate change.

ESS3.A: NATURAL RESOURCES

How do humans depend on Earth's resources?

⁹ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹⁰ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹¹ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

All forms of resource extraction and land use have associated economic, social, environmental, and geopolitical costs and risks, as well as benefits. New technologies and regulations can change the balance of these factors—for example, scientific modeling of the long-term environmental impacts of resource use can help identify potential problems and suggest desirable changes in the patterns of use. Much energy production today comes from nonrenewable sources, such as coal and oil.¹² However, advances in related science and technology are reducing the cost of energy from renewable resources, such as sunlight, and some regulations are favoring their use. As a result, future energy supplies are likely to come from a much wider range of sources.¹³

They have in here given us a solution to the problems humans have caused: regulations! Regulations it implies will be our saving grace as they favor renewable resources such as sunlight. It states that science and technology are reducing the cost of renewable resources, however, it never mentions that they are not a viable solution to our energy crisis at this point because the government is subsidizing the push for renewable resources and without government subsidizing no company could even afford to be in business related to the renewable energies. Not only do we pay higher prices for renewable energy through our utilities we also pay more taxes to subsidize them.

ESS3.B: NATURAL HAZARDS

How do natural hazards affect individuals and societies?

Human activities can contribute to the frequency and intensity of some natural hazards (e.g., flooding, forest fires), and risks from natural hazards increase as populations—and population densities—increase in vulnerable locations.¹⁴

Grade Band Endpoints for ESS3.B

By the end of grade 5...Humans cannot eliminate natural hazards but can take steps to reduce their impacts.

By the end of grade 12...Human activities can contribute to the frequency and intensity of some natural hazards.

Did the Endpoints for grade 5 and 12 just contradict one another? I believe so. If we can contribute to the frequency and intensity of natural hazards then by not doing whatever it is that we to do contribute shouldn't we be able to eliminate some natural hazards? What natural hazards to humans contribute to?

ESS3.C: HUMAN IMPACTS ON EARTH SYSTEMS

¹² 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹³ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹⁴ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

How do humans change the planet?

Recorded history, as well as chemical and geological evidence, indicates that human activities in agriculture, industry, and everyday life have had major impacts on the land, rivers, ocean, and air. Humans affect the quality, availability, and distribution of Earth's water through the modification of streams, lakes, and groundwater. Large areas of land, including such delicate ecosystems as wetlands, forests, and grasslands, are being transformed by human agriculture, mining, and the expansion of settlements and roads. Human activities now cause land erosion and soil movement annually that exceed all natural processes. Air and water pollution caused by human activities affect the condition of the atmosphere and of rivers and lakes, with damaging effects on other species and on human health. The activities of humans have significantly altered the biosphere, changing or destroying natural habitats and causing the extinction of many living species.¹⁵ These changes also affect the viability of agriculture or fisheries to support human populations. Land use patterns for agriculture and ocean use patterns for fishing are affected not only by changes in population and needs but also by changes in climate or local conditions (such as desertification due to overuse or depletion of fish populations by overextraction).

Thus humans have become one of the most significant agents of change in the near-surface Earth system. And because all of Earth's subsystems are interconnected, changes in one system can produce unforeseen changes in others.

Some negative effects of human activities are reversible with informed and responsible management. Regulations regarding water and air pollution have greatly reduced acid rain and stream pollution, and international treaties on the use of certain refrigerant gases have halted the growth of the annual ozone hole over Antarctica. Regulation of fishing and the development of marine preserves can help restore and maintain fish populations. In addition, the development of alternative energy sources can reduce the environmental impacts otherwise caused by the use of fossil fuels.¹⁶

If this doesn't give you pause then I don't know what will. Not only does it focus only on the negative effects humans have had and will continue to have but it also poses the solutions of regulations and international treaties! Is that what Wyoming is about, regulations and international treaties as solutions to all our problems?

¹⁵ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹⁶ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

Recorded history, as well as chemical and geological evidence, indicates that human activities in agriculture, industry, and everyday life have had major impacts on the land, rivers, ocean, and air.

By the end of grade 5. Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments..... regulating sources of pollution such as emissions from factories and power plants or the runoff from agricultural activities.

By the end of grade 8. Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of many other species.

By the end of grade 12. When the source of an environmental problem is understood and international agreement can be reached, human activities can be regulated to mitigate global impacts (e.g., acid rain and the ozone hole near Antarctica).¹⁷

Hasn't agriculture and industry been the catalyst for the progression of the human race? Isn't the farmer and rancher the first conversationalist? They have done more in the way of sustaining human life through responsible farming and ranching practices. They see the error of a practice quickly and change it just as quickly. Natural resources are how they make a living, they would never intentionally do anything to compromise them in any way. They continually look for ways to improve and protect the natural resources.

ESS3.D: GLOBAL CLIMATE CHANGE

How do people model and predict the effects of human activities on Earth's climate?

Global climate change, shown to be driven by both natural phenomena and by human activities, could have large consequences for all of Earth's surface systems, including the biosphere (see [ESS3.C](#) for a general discussion of climate). Humans are now so numerous and resource dependent that their activities affect every part of the environment, from outer space and the stratosphere to the deepest ocean.¹⁸

By the end of grade 8. Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.

By the end of grade 12. Global climate models are often used to understand the process of climate change because these changes are complex and can occur slowly over Earth's history. Though the magnitudes of humans' impacts are greater than they have ever been, so too are humans' abilities to model, predict, and manage current and future impacts. Through computer

¹⁷ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

¹⁸ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences ." *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

simulations and other studies, important discoveries are still being made about how the ocean, the atmosphere, and the biosphere interact and are modified in response to human activities, as well as to changes in human activities. Thus science and engineering will be essential both to understanding the possible impacts of global climate change and to informing decisions about how to slow its rate and consequences—for humanity as well as for the rest of the planet.¹⁹

Global Warming whether you believe in it or not is only a theory, it is not fact. There is science both for and against it and as such should never be taught in our schools as fact. Schools should teach facts as facts and theories as theories!

ETS2.B: INFLUENCE OF ENGINEERING, TECHNOLOGY, AND SCIENCE ON SOCIETY AND THE NATURAL WORLD

How do science, engineering, and the technologies that result from them affect the ways in which people live? How do they affect the natural world?

From the earliest forms of agriculture to the latest technologies, all human activity has drawn on natural resources and has had both short- and long-term consequences, positive as well as negative, for the health of both people and the natural environment. These consequences have grown stronger in recent human history. Society has changed dramatically, and human populations and longevity have increased...

Not only do science and engineering affect society, but society's decisions (whether made through market forces or political processes) influence the work of scientists and engineers. These decisions sometimes establish goals and priorities for improving or replacing technologies; at other times they set limits, such as in regulating the extraction of raw materials or in setting allowable levels of pollution from mining, farming, and industry.²⁰

By the end of grade 8. All human activity draws on natural resources and has both short- and long-term consequences, positive as well as negative, for the health of both people and the natural environment.²¹

Do we want regulations as this says in extraction of raw materials or allowable levels of pollution from mining, farming and industry?

In reading through The Next Generation Science Standards although they are more comprehensive standards than what we now have in Wyoming, they are not conducive in my opinion to who we are in Wyoming. The under tones of the human population being already

¹⁹ 7 Dimension 3: Disciplinary Core Ideas - Earth and Space Sciences . " *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

²⁰ 8 Dimension 3: Disciplinary Core Ideas - Engineering, Technology, and Applications of Science . " *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

²¹ 8 Dimension 3: Disciplinary Core Ideas - Engineering, Technology, and Applications of Science . " *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* . Washington, DC: The National Academies Press, 2012 .

overpopulated and that human impact on the Earth has been negative at best is simply
WRONG!

I have intentionally copied and pasted every word in black directly from the Wordpress website, from the “A Framework for K-12 Science Education: Practices, Crosscutting Concepts and Core Ideas” as well as adding footnotes. I want you to only have the facts! In reading through this and spending hours and hours wading through misconceptions and someone else’s interpretations of what the standards were I was able to find what the facts are. My intention in this is so that if you have any questions you will not have to go through all the hoops and unnecessary hours of time to look up the facts if you would like. When it all came down to the nuts and bolts I learned that very, very few people in Wyoming have the facts, they frankly don’t have the time or know how to do what I spent weeks doing. The bullet points that are published only give a small portion and many “in the know” or who should be, haven’t read through the standards themselves.

It is no secret that Wyoming is near the bottom of the barrel when it comes to our science standards and have been lacking for some time. The consensus is that we all want better standards for the students of Wyoming. What we don’t want is to hastily adopt standards written by people who don’t value the same things we do. The people of Wyoming may not have “caught up” to the ideologies of the rest of the nation or the world, but is that what we really want. Isn’t what makes Wyoming so special is that we believe in the “good ol’ boy” way of life? We go against the grain, fight for what is right and true and never back down when it comes to our beliefs. We believe in doing what’s right, in fact we didn’t just come to that but have lived it from the very beginning. The farmers and ranchers of this country and Wyoming have led in innovation, conservation and the protection of our rights and freedoms. Are we now going to let what our fore fathers fought with blood, sweat and tears for, to be trampled on each and every day in our schools? Teaching the next generation that more government, more regulations, more international treaties, more involvement in our lives, taking away our freedoms is what is best for their future and ours.

I urge you to look carefully at these standards. In fact don’t take my word for it research it for yourselves. Contact me for any questions or more information. More importantly once you have read the facts, if you don’t agree with these standards **MAKE A STANCE!** If we do nothing they will be our standards. They will be taught to the next generation and we will be to blame for doing nothing.

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