buildings which utilizes this concept to cut down on energy.

Industry has also adapted nature's strategies. Over one hundred companies in the US and Canada use building material made from captured CO2 to replace concrete. So far, in excess of 240 companies have consulted with Ms. Benyus for bio--inspired strategies. You can see other examples of nature-inspired designs on the Web at https://biomimicry.org//biomimicry-examples/ for work to be done. Both the book *Drawdown* and the Biomimicry project engage and educate us in the important task of learning from Nature. In particular, Biomimicry's youth challenge engages the younger generation; they are tomorrow's voting population and hopefully the source of the political will necessary to carry on the task of preserving our planet as a livable home."

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LEARNING FROM NATURE TO FIGHT GLOBAL WARMING

UUANI
UNITARIAN UNIVERSALIST ADVOCACY NETWORK OF ILLINOIS

Our earth has existed for at least 4 billion years, and we who occupy the planet at this time, have been blessed with a reasonably temperate climate. For two centuries though, ominous changes have been occurring. Global warming due to human activity has contributed to frequent extreme weather events, drought, flood and the resulting population dislocation. Perhaps it's time to work with nature to alleviate some of these threats caused by our own species' bad choices.

According to the Conservation of Marine Life Scientists there are an estimated 6.5 million species on earth and an additional 2.2 million dwelling in the ocean. All species rely on a thriving insect population to maintain the life systems on which they rely for food and other support. Habitat loss, use of chemicals, plus climate change have caused a steep decline in insects. Some scientists believe, the loss of insect species could lead to wide-spread starvation. Literally "no insects, no food." However, there is some good news on that front. Common sense solutions which work with nature, such as regenerative agriculture, are available to help restore the carbon content of farmland soil, increase the population of supporting organisms including insects and produce healthy nutritious plants. Most importantly, this greatly reduces or eliminates the need for chemical agents utilized in conventional agriculture.

Tilling exposes and kills the life within the soil while emitting carbon from the soil into the atmosphere. An estimated 50% of carbon contained in earth's soil has been released so far. Allowing the carbon to remain in the soil, increases new life in the soil, supports microbial activity,

improves soil texture and enhances nutrient uptake. These factors also increase plant fertility. Further, the soil is able to retain more water, helping to reduce flooding.

Restorative farmers often plant a variety of cover crops, e.g., clover, alfalfa, and grasses such as sorghum. This helps to fix nitrogen in the soil and make nutrients bioavailable.

If the practice of restorative agriculture continues to grow at the rate that organic farming has thus far, one billion acres are projected to be converted to this practice by 2050. This will lead, not only to improved food security, but to an estimated reduction of 23.2 gigatons of carbon dioxide by 2050, (A gigaton is one billion metric tons) For much more see: *Drawdown The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, edited by Paul Hawken, Penguin
Books, 2017, Food, Regenerative Agriculture, pp.54- 55

While agriculture and food production are a leading cause of CO2 emissions, they are only one of many factors. Industry, transportation, and many other activities which are part of our current lives all contribute to a total of more than 32 gigatons of CO2, and that total is growing. In May, 2019 CO2 levels in the global atmosphere as measured at the Mauna Loa Observatory in Hawaii surpassed 415 part per million, the highest average ever recorded. Clearly, we need to use every feasible strategy for dealing with the threat of global warming.

Let's look at one of the lesser known strategies, Biomimicry. It seeks sustainable solutions by simulating nature's time- honored practices and strategies. The movement has been popularized by Janine Benyus, natural sciences writer, consultant and lecturer whose talks can be found on the web. She reminds us that in the past 3.8 billion years, life has done remarkable things. She invites us to ask "How does nature create things without causing waste or pollution?"

Based on this philosophy, Ms. Benyus co- founded the Biomimicry Institute in 2006. The Institute issues challenge grants to encourage promising sustainable solutions.

One of the problems addressed recently by a winning entry concerned the Brazilian Rain Forest, where nearly four million acres of forest have been lost. This loss has severely depleted wildlife habitat and limited the ability of the rainforest a natural sink for excess carbon emissions from the atmosphere

Bruno Ferrari and his brother Pedro, won a $10,000 Ray of Hope award for their design called "Nucleario". Its circular design protects seedlings as they grow in the Brazilian forest devastated by logging and other practices. This device is designed to act like leaf litter, protecting the developing seeds from invasive grasses while collecting much needed moisture. This design is: https://biomimicry.org/nucleario_2018. A winning team from Mexico and the U.S. created BioThermosmart, a thermal management system that harvests waste heat from large commercial buildings and cycles it back into the system. This system is inspired by elephants, crocodiles, toucan beaks, and the human circulatory system. Another winning team turned to the yareta, an ancient plant which thrives in mountainous regions. The yareta is called the nurse plant because it shields other species from harsh conditions, shares nutrients and helps the plants to survive. Using the yareta, they have developed a self-sustaining biodegradable, and low cost patch which can be planted to help restore degraded farm land despite the challenges of the terrain. A team in Kenya developed a mesh which automatically deploys, covering tea plants and preventing frost from settling on the leaves. This protected tea plants from the frost since the lobelia and the giant groundsel are native to Kenya.

This also has practical applications. There's a Japanese engineer who was a bird-watcher. The Japanese bullet train had a serious problem. Compressed air would rush out of tunnels creating a deafening sound. The engineer turned to his observations of the kingfisher and how that bird is able to land in water without causing turbulence. His suggested change to the design of the train's engine cut down the noise.

The younger generation is invited for solutions to global warming, through the Biomimicry Youth Design Challenge. This year the second prize was taken by a high-school team from Rochester NY. They were inspired by the design which prairie dogs utilize for their burrows here in the Midwest. Their burrows have two entrances located at different heights, to passively circulate fresh air. The youth offered a design for