

Pope Francis' environmental encyclical cannot be ignored

Our lives are connected with every other species on Earth and we cannot live without them.

By Charles C. Davis and Aaron M. Ellison
Special to The Times

IT is easily forgotten as we spend our days in cities and offices, in front of our computers or our clients, and caught up in social networks, that we are but one leaf on the much larger Tree of Life. In Pope Francis' environmental encyclical, *Laudato Si'* (or Praise Be To You), the Pope reminds us of the intrinsic rights of these nonhuman species, and our moral and ethical obligation to protect them. But as long as we refer to other organisms as "resources" and not beings, they will continue to be neglected, exploited, or abused. As long as we disregard the intrinsic value of other species, the leaves of the Tree of Life will continue to fall, its branches will be cut down, and eventually the trunk that supports us all may rot and disappear.

Our lives are intimately connected with those of every other species, and we cannot live without them. The Earth's wealth of biodiversity delivers priceless ecosystem services. Coral reefs and mangrove forests protect our coasts from the storms that are increasing in frequency and intensity. Birds, bees, and even beetles, flies, and ants pollinate our crops. As these species disappear, in many countries people now perform their work to ensure plentiful crops of fruit. The plants of our forests and fields create the air we breathe. And thousands of organisms, including the smallest microbes, are the source of more than 70 percent of the proven and newly-discovered drugs, that treat debilitating diseases such as cancer.

We live in The Anthropocene, defined as the period of time that started when humans began to significantly alter the ecosystems of the Earth. We have inherited our current predicament from generations past. Now it is up to us, and generations to come, to rediscover the intrinsic value of nature's biodiversity and stop what is known as the sixth mass extinction.

In recent weeks we have seen well-deserved attention by world leaders, the media, and the general public to the Pope's encyclical, particularly with respect to climate change. However, to bring such a singular focus to this revolutionary document is to overlook the broader issues it encompasses. As biologists, we feel that in the ensuing discussion, one of the cornerstones of the encyclical has been missed — the tremendous loss of our planet's biodiversity at the hands of humans.

Rapid change in the Earth's climate is undeniably a major and pressing concern of our time. The Pope reiterates the broad scientific consensus that human actions are its primary cause, but regardless of what or who is responsible for climate change, it is of great consequence not only to our cities, our coasts, our health, and our way of life, but also a threat to the incredible diversity of species, from the largest whales and redwoods to the smallest microbes, with which we share this planet — our only home.

A defining feature of the Anthropocene is the rapid extinction of nonhuman species. As people left Africa and migrated to new regions — including Australia, Eurasia, the Americas, and even the most remote islands in the Pacific Ocean — species that had inhabited these places for millions of years disappeared. Over the last century alone, vertebrates, which include our closest relatives and nearly all of the animals that we rely on for food, fibers, and farm labor, have gone extinct at a rate more than 100 times faster than the natural (or "background") extinction rate that has prevailed since life first emerged on Earth, over 3.5 billion years ago.

Pope Francis recalls for us that Saint Francis of Assisi said that "each and every creature was a sister united to him by bonds of affection." Similarly, Saint Bonaventure would call creatures, no matter how small, by the name of "brother" or "sister." These brothers and sisters are the species with whom we share our planet. As good shepherds of this world we would do well, and do what is morally right, to heed the Pope's words to "protect the Earth and ensure its fruitfulness for coming generations." Time is running out.

Charles C. Davis is professor of organismic and evolutionary biology at Harvard University and Director of the Harvard University Herbaria. Aaron M. Ellison is the senior research fellow in ecology at Harvard University and author of “A Field Guide to the Ants of New England.”