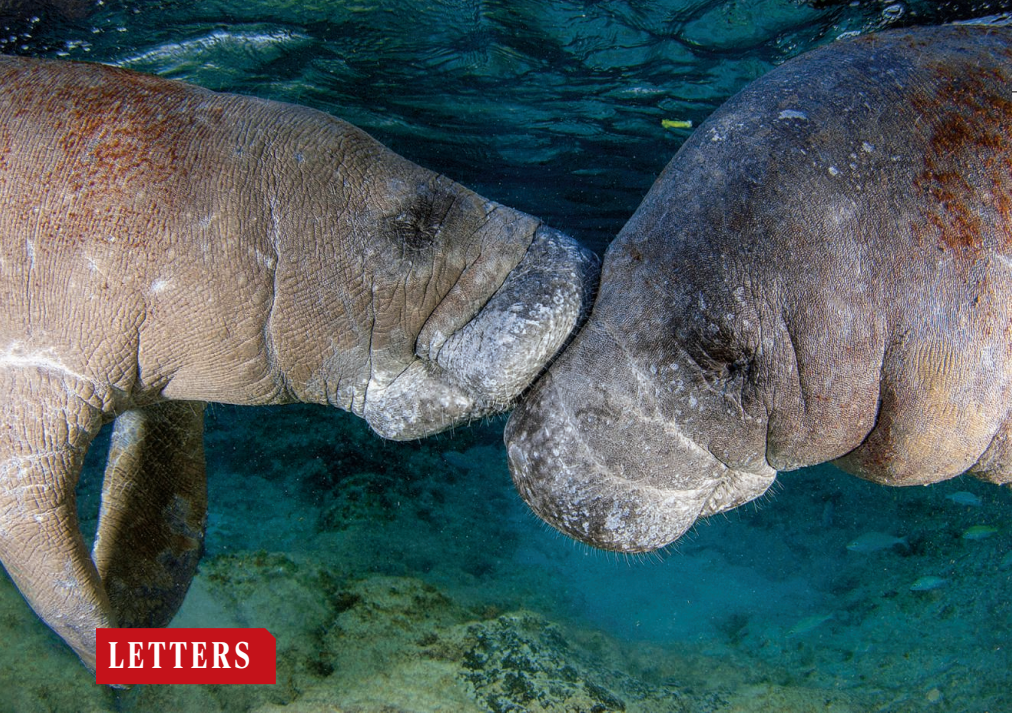

LETTERS

Manatees in Mexico's waters face a range of threats, and their populations are declining.

Edited by **Jennifer Sills**

Losing Mexican manatees

Over the past 2 years, the Antillean manatee (*Trichechus manatus*) in Tabasco, Mexico, has shown an alarming increase in mortality. In 2018, the Mexican government reported 48 manatee deaths attributed to algal blooms (*1*). By the end of June 2019, another 13 manatees had been found dead (*2*). It is estimated that a few hundred manatees remain throughout the Mexican territory (*3*, *4*), but population counts have not been updated since 1999 (*5*). Continued threats put these manatees at risk of local extinction.

Despite the manatees' classification as endangered by Mexico (*6*) and vulnerable by the International Union for Conservation of Nature (*7*), Mexico has yet to invest the economic resources required to save them. Their habitat is exposed to contamination by agrochemicals, byproducts of oil industry, and urban waste such as pesticides, hydrocarbons, and toxic metals (*1*). Initially, the deaths in 2018 were attributed to toxic metals (*8*), but given that manatees can accumulate more toxic metals than other mammals (*9*), uncertainty about the cause of death remains.

Manatees are important to Mexico's culture, ecology, and tourism (*10*). The species requires urgent financial and technical support, starting with short- and medium-term diagnostics and monitoring studies to clarify the causes of mortality. Rescuing the manatee will require joint efforts by national and international private foundations and nongovernmental organizations. Mexican financial resources are limited; government investment in conservation of natural resources and science in general, combined, has not exceeded 0.55% of GDP in recent years (*11*).

The rescue of manatees in Tabasco has become urgent because the manatee is one of only four extant species of sirenids, along with the dugong (*Dugong dugon*), which is also threatened (*12*). Mexico, and international conservation allies, must prioritize manatee protection by addressing the effects of human activities and climate change on their habitat.

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10.1126/science.aba2925

Support Austria's glyphosate ban

The herbicide glyphosate is the most used agrochemical herbicide weedkiller worldwide (*1*). Since 1974, more than 8.6 billion kilograms of glyphosate have been sprayed on crop fields (*2*). It was for decades thought to be a harmless alternative to legacy pesticides such as the banned DDT and parathion, which kill insects but also harm humans (*3*). However, new evidence shows that glyphosate causes a cascade of neuro-endocrine disruption to the development, physiology, and behavior of honeybees (*4*) and is thereby adding to the ongoing negative effects from neonicotinoids, which have led to the deaths of pollinators and songbirds (*5*, *6*). Moreover, some evidence has indicated that glyphosate could promote cancer in humans (*1*). If true, these compounds could pose a risk to human consumers as well. These effects are reminiscent of the events more than 50 years ago, when DDT caused substantial losses in biodiversity and ecosystem services (*7*). We must work to prevent history from repeating itself.

In 2017, the European Union reapproved its use of glyphosate for another 5-year period (*1*). Likewise, the U.S. Environmental Protection Agency states that glyphosate is below the levels of concern and has continued their use (*1*). Austria is the only EU member country that has passed a total ban of the herbicide. Although the Austrian parliament has voted to implement the ban in January (*8*), the EU Commission may try to veto it. The European Union and the United States should follow Austria's example and enact a total ban of glyphosate use, just like the international limitations that are currently underway to ban neonicotinoids (*9*, *10*). Such a ban should be implemented through the UN Environmental Program to give it global reach. By banning glyphosate,

we can avoid further irreversible ecosystem changes.

To make a ban on harmful herbicides possible, we must focus on natural and ecological weedkilling alternatives, such as root exudates (organic compounds secreted by plant roots), crop rotation, mulch, herbicidal soaps, fatty acids, and industrial vinegar (*11*). Most important, we must move to less intensive farming practices to reduce the massive global use of herbicides (*12*).

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10.1126/science.aba5642

Fund plant conservation to solve biodiversity crisis

In their Letter "Solve the biodiversity crisis with funding" (20 September 2019, p. 1256), J. Malcom *et al.* called on the U.S. Congress to fund wildlife conservation programs to protect biodiversity. We agree that such funding is critically important, but we were disappointed that their discussion of biodiversity did not include plants. Even when unintentional, as this omission likely was, citing only animal examples can perpetuate the perception that plant conservation is less important and less worthy of funding (*1*). Plant conservation programs have been consistently underfunded, especially when compared to funding for animals. Although more than half of the species listed under the federal Endangered Species Act are plants, they receive less than 5% of the total funding for endangered species recovery (*2*, *3*).

This problem is exemplified by the Recovering America's Wildlife Act, introduced in July 2019 (*4*) and supported by fish and wildlife conservation groups (*5*, *6*). The bill would substantially improve funding for State Wildlife Action Plans (SWAPs), which are among the most effective species conservation programs in the United States. Plants can be listed in SWAPs, but because of antiquated authorizing language, the primary grants that fund SWAPs may only be used to conserve animal species of greatest conservation need, not plants (*7*). The proposed legislation does not update this language and would allow continued neglect of imperiled plants in SWAPs.

A recent global assessment found that at least 600 plant species are now extinct and that we are losing plant species at a rate 500 times higher than the extinction rate before human impacts (*8*). The conservation of plant species is essential to the successful conservation of fish, wildlife, pollinators, and other animals, as well as to human survival. It is critical that all efforts to improve funding for conservation explicitly include increased funding for plants. Without adequate conservation programs for plants, wildlife and biodiversity conservation efforts will inevitably be ineffective.

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10.1126/science.aba4360

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Science **367** (6475), 257-258.
DOI: 10.1126/science.aba5642