Kelp forests provide a range of ecosystem services.

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Embrace kelp forests in the coming decade

The United Nations General Assembly recognizes that securing human lives and livelihoods will require putting an end to global habitat degradation and restoring hundreds of millions of hectares of lost habitats. In response, the organization has declared 2021 to 2030 the UN Decade on Ecosystem Restoration (*1*). Perhaps the greatest challenge for the upcoming decade is upscaling restoration efforts to match the extent of habitat loss (*2*). Coral reefs and tropical forests have been highlighted as flagships of conservation need and as priority ecosystems in the UN Decade (*1*). In contrast, kelp forests are conspicuously missing from the UN recommendations (*1*).

Kelp forests provide critical ecosystem services to humans, similar to those provided by coral reefs and tropical forests (*3*). They also possess a much greater capacity for rapid growth and regeneration than either of these ecosystems (*4*). The benefits provided by kelp forests span 14 of the 18 categories of nature's contributions to people identified by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (*5*), including key features such as biodiversity provisioning, coastal protection, and carbon dioxide absorption and storage (*3*). Recently, the US government included kelp forests as an "essential" component of the federal strategy to address the climate change crisis (*6*).

Kelp forests cover 28% of the world's coastlines (*7*) and five times more ocean area than coral reefs (*8*, *9*). They are declining under anthropogenic forces two and four times faster than coral reefs and tropical forests, respectively (*10*–*12*). Given the plethora of essential ecosystem services that kelp forests provide to humans, their rapid re-establishment and growth rates, and their past and current rates of decline, we contend that kelp forests hold unprecedented potential for restoration success. Embracing kelp forest restoration will greatly increase our chances of overcoming the upscaling challenge in restoration and delivering effective global action in the UN Decade.

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Mexico's final death blow to the vaquita

A recent decision by the government of Mexico to reduce enforcement of illegal fishing in the upper Gulf of California is pushing the vaquita (*Phocoena sinus*)—the world's smallest cetacean, endemic to Mexico—toward final extinction (*1*–*3*). Fewer than 10 individual vaquitas remain after decades of devastating bycatch mortality (*1*). Yet Mexico will expose the vaquita to continued risks of injury or death by allowing uncontrolled gillnet fishing for the totoaba, an endangered

fish in the vaquita's last habitat sanctuary, the upper Gulf of California World Heritage site (*1*, *3*). Mexico's decision will further facilitate the use of totoaba swim bladders in traditional Chinese medicine (*4*). Instead, the country should prioritize its responsibility to the Critically Endangered vaquita (*1*).

Previous attempts to protect this small harbor porpoise have failed, including collecting specimens for captive breeding in 2017 (*4*). Meanwhile, stressors such as vessel strikes, underwater noise, and pollution have increased (*4*–*8*). According to the International Union for Conservation of Nature, the vaquita is close to being functionally extinct as a result of its high mortality rates and low reproductive output, coupled with its historically low genetic diversity, all of which jeopardize population health (*9*, *10*).

The vaquita's essential protection measures decrease illegal fishing in these waters, helping to stabilize the ecosystem's functioning, sustainability, and biodiversity and supporting several of the UN's Sustainable Development Goals (*11*). A complex set of problems drives illegal fishing, including local poverty, local organized crime, and international demand for endangered species. Financial incentives attempted by the Mexican government have proven ineffective (*9, 12*). Mexico should increase enforcement of current regulations that limit fishing in the vaquita's habitat, which are critical to saving this species from extinction (*12*).

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Piecing together an African peace park

In August 2011, Angola, Botswana, Namibia, Zambia, and Zimbabwe signed a treaty to create the Kavango Zambezi (KAZA) Transfrontier Conservation Area (or Peace Park)—the world's largest transboundary terrestrial conservation area—to protect the region's biodiversity and cultural resources and to alleviate poverty (*1*, *2*). Ten years later, the five KAZA countries have made great strides, but the habitat connectivity that KAZA's wildlife requires for long-term ecological viability (*3*) remains in question. If key wildlife movement corridors are not reopened and secured, the vision of KAZA's wildlife providing benefits to the people of the region in perpetuity may not be realized.

KAZA is home to the majority (at least 220,000) of what is left of Africa's elephants (*4*), and perhaps no other species better demonstrates the need for KAZA to be a truly connected landscape. In northern Botswana's Ngamiland District, home of the Okavango Delta (a World Heritage site), where the elephant population continues to grow, thousands of elephants are increasingly bottled up between villages and vast livestock disease control fences that prevent them from moving through nearby Namibia into Angola and Zambia (*4*, *5*). Decreasing pressure on Ngamiland's elephants is crucial to reducing the human-elephant conflict that is unfortunately becoming more and more common (*5*).

Six wildlife dispersal areas, or habitat corridors, have been identified as critical to securing a long-term future for KAZA's iconic wilderness and species (*6*). However, the most important of these corridors, including those that connect Ngamiland to other key parts of KAZA, remain compromised by fences, many of which were put in place decades ago to control animal disease (*7*) but no longer necessarily serve their original purpose. Today, risks associated with foot and mouth disease can be managed by focusing on biosecurity across the beef production process (*8*), and contagious bovine pleural pneumonia is no longer the threat that it was in the mid-1990s (*9*).

Neither the livestock nor wildlife sector should dominate the other. Instead, now is the time to make land-use decisions that will be socially, ecologically, and economically sustainable for generations to come (*10*).

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Unobstructed corridors for wildlife such as elephants are crucial to southern Africa's conservation efforts.

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