

Global assessment shows targeted conservation to preserve endangered species provides benefits to people

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A new study published in the journal *PLoS ONE* assessed, for the first time, more than 500 Alliance for Zero Extinction (AZE) sites around the world to review the potential and realized benefits which conserving these places would provide not just for species, but for human well being. The researchers determined that protecting habitats in these priority areas to halt the loss of biodiversity will yield multiple benefits to people in terms of ecosystem services such as - climate change mitigation, freshwater, the future "option value" of biodiversity and cultural services.

The study, conducted by Conservation International (CI) and NatureServe, focused on a global network of sites identified by the Alliance for Zero Extinction (AZE) - areas which are home to the last remaining population of one or more severely threatened species. The Alliance for Zero Extinction (AZE) is a joint initiative of 76 biodiversity conservation organizations around the world, which aims to prevent extinctions by identifying and safeguarding key sites, each one of which is the last remaining refuge of one or more Endangered or Critically Endangered species. The goal of the Alliance is to create a frontline of defense against extinction by eliminating threats and restoring habitat to allow species populations to rebound.

The Alliance for Zero Extinction network is currently made up of 587 sites, covering 920 species of mammals, birds, amphibians, reptiles,

conifers, and reef-building corals. AZEs make up a network of sites for global species conservation that serve as an important blueprint for targeted conservation of species, informing actions by institutions like the Global Environmental Facility (GEF) and the World Bank.

The four [ecosystem services](#) the authors assessed were: (1) climate change mitigation through avoidance of CO₂ emissions from deforestation; (2) freshwater services to downstream human populations; (3) retention of biodiversity's option value for future use and benefit; and (4) benefits to maintenance of human cultural diversity. The benefits found in the global network of AZEs significantly exceeded those from randomly selected networks of sites within the same countries and regions used for comparison.

"Since world leaders have agreed to increase the current global coverage of protected areas from 13 percent to 17 percent of Earth's land by 2020, it is essential that this expansion of protected areas focus on the unprotected AZE sites," said Dr. Frank W. Larsen, an author of the paper and scientist with Conservation International. "It is encouraging that protecting the AZE sites will not only prevent imminent species extinctions but also increase the benefits of ecosystem services for people." The results found the protection of priority areas overall would provide approximately three times more emission reduction than non-AZE sites because they tend to have a higher proportion of carbon-dense forest. The AZEs are also important for providing clean freshwater due to their forest cover, their location in areas with more precipitation, at higher elevations, and with more people downstream. These critical sites lie in areas of significantly higher linguistic diversity, which suggest a potential importance of priority [site](#) conservation for the maintenance of cultural value.

Option value is the as-yet-unknown benefit that conservation of biodiversity provides for current and future generations. "Interestingly,

the AZEs, which are identified solely based on species-level information for one or more severely threatened species, also seem to have a high potential for preserving unique evolutionary history, "said Dr. Thomas M. Brooks, Chief Scientist of NatureServe.

The Sierra Nevada de Santa Marta National Natural Park and its surrounding areas in Colombia is an example of an AZE site that is very important for both species and people. This site is the last remaining refuge of 13 highly threatened species, but also provides many benefits to people. The river basins are an important source of clean freshwater to downstream human populations and the tropical rainforest stores a significant amount of carbon important for climate change mitigation. The site also has considerable cultural value as about 30,000 indigenous people of four ethnic groups are living in the area and consider it sacred.

"These critical conservation sites, essential for halting imminent species extinctions, are also effective choices for delivery of ecosystem services for human well-being," said Dr. Will Turner, an author of the paper and Conservation International's Vice President of Conservation Priorities & Outreach. "If we don't conserve these AZE sites, we will not only witness [species](#) extinctions, but we will witness a significant loss of the benefits that people derive from nature."

Additional research is needed to determine the magnitude of benefits for individual sites, which can help inform payment for ecosystem service schemes - for example how [climate change mitigation](#) value of sites can benefit from funding coming from a mechanism of Reducing Emissions from Deforestation and Forest Degradation (REDD+). Further research will improve the understanding of the importance of the AZEs for additional ecosystem services, and enable scientists to understand how vital areas for biodiversity also deliver a variety of benefits to people on a local, regional and global scale.

"Irrespective of their benefits to people, AZE sites are important conservation targets in their own right, but it is very encouraging that there are a lot of additional benefits gained from protecting them," said Mike Parr, Vice President for American Bird Conservancy and current Chair of AZE. "There is tremendous variation among AZE sites in their importance for delivering ecosystem services to people, but a great number have significant added value in this regard."

More information: Larsen FW, Turner WR, Brooks TM (2012) "Conserving Critical Sites for Biodiversity Provides Disproportionate Benefits to People." *PLoS ONE* 7(5): e36971. [DOI: 10.1371/journal.pone.0036971](https://doi.org/10.1371/journal.pone.0036971)

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