

Top predators' decline disrupts ecosystems, says study

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As top-level predators such as lions, sharks, and wolves decline, smaller mesopredators including baboons, rays, and coyotes proliferate and cause economic and ecological disruptions, according to new research published in the journal *BioScience*.

"We are seeing that there are interconnections in nature that are important. When we disrupt the interconnections, when we lose our top predators, it can affect the other parts of the ecosystem," said Dr William Ripple, professor of forest ecosystems and society at Oregon State University.

Ripple and his colleagues found that since all of the largest terrestrial predators in North America have been in



TOP OF THE GAME: Lionesses rest in the bushes of the Masai-Mara Game reserve in Kenya. Researchers claim that the reduction in the numbers of large predators caused by humans has led to the proliferation of smaller predators, such as coyotes in North America or baboons in sub-Saharan Africa, leading to both ecological and economic disruption



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decline for the last 200 years, the geographic ranges of 60 per cent of mesopredators have expanded.

Compared to the 18th and 19th centuries, the current North American range of grey wolves has declined by 42 per cent, likely contributing to the 40 per cent range increase for coyotes and 18 per cent

increase for raccoons, according to the study.

"Top predators are not tolerated by humans as much as other animals. And there's a long history of humans persecuting large predators. For example, there's a history of humans persecuting wolves

throughout the world.

"In the United States, where we lost wolves, we have a huge increase in the number of coyotes. The coyotes prey on farmers' sheep. That's an example of just one cascading effect when we lose our top predators.

"Americans are very familiar with highly abundant raccoons, which might proliferate in our own neighbourhoods," Ripple said.

The problems are not confined to terrestrial ecosystems. Deep in the Atlantic Ocean, sharks are facing serious

decline due to overfishing.

"As a result of the decline in sharks, we have an explosion of rays, which are smaller predators. This increase in rays collapsed the bay scallop industry, constituting both an ecological and economic loss," Ripple said.

The rise of mesopredators – in a good number of North Americans' eyes – is only as serious as needing to be more vigilant of raccoons or eating fewer bay scallops. But in Africa, mesopredator proliferation is barring some children from education.

In parts of sub-Saharan Africa, "children are being kept at home from school to guard their family gardens against crop-raiding baboons. The baboons are eating their garden crops," Ripple said. The huge surge of baboons is likely due to a decline in population

of their predators – lions and leopards.

Collaborators on the *BioScience* article included researchers from Oregon State University, the University of California at Berkeley, and New Mexico State University at Las Cruces.

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