

Targeting enforcement where needed most in Africa's heart of biodiversity

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Park guards on patrol in the Greater Virunga Landscape. Scientists seeking a more efficient way of protecting the heart of Africa's wildlife have developed a method to make the most of limited enforcement resources, specifically by channeling data on wildlife sightings and park guard patrolling routes into spatial planning software. Conservationists hope that this cost-effective method for maximizing the deterrence effect of patrolling will help protect Africa's

threatened wildlife from poaching and other illegal activities. Credit: A. Plumptre/Wildlife Conservation Society

Scientists seeking a more efficient way of protecting the heart of Africa's wildlife—the Greater Virunga Landscape—have developed a method to make the most of limited enforcement resources, according to a new study by the Wildlife Conservation Society, the University of Queensland, Imperial College London, and the Uganda Wildlife Authority.

By channeling data on [wildlife](#) sightings and park guard patrolling routes into spatial planning software, conservationists have devised a cost-effective method for maximizing the deterrence effect of patrolling to protect Africa's threatened wildlife from poaching and other illegal activities.

The enforcement-targeting method is described in a study appearing in the current edition of the *Journal of Applied Ecology* and is freely available online.

"The Greater Virunga Landscape contains many natural wonders, but resources for enforcement across this huge area are limited," said Dr. Andrew Plumptre, lead author of the study and Director of the Wildlife Conservation Society's Albertine Rift Program. "Our spatial analysis allows us to identify weaknesses in current efforts, which we can use to redirect enforcement and increase efficiency and conservation impact."

Stretching through Uganda, Rwanda, and the Democratic Republic of Congo, the Greater Virunga Landscape is one of the most biodiverse places on Earth and is home to all of the world's mountain gorilla populations. Much of the region's mountains, forests, lakes, and savannas

are contained in a total of 13 protected areas covering 13,800 square kilometers. The region also contains populations of chimpanzees, elephants, hippopotamus, lions, and many other species.

The authors of the study conducted their analysis by first determining the distribution of key species and habitats. Data on the distribution of threats was then added, followed by estimates of current patrol effort and the cost of patrolling parks, protected areas, and other wildlife-rich regions effectively. All data layers were then used to conduct a spatial prioritization to minimize the cost of patrols and maximize the protection of wildlife species.

What the authors found was that only 22 percent of the Greater Virunga Landscape is being effectively patrolled at present. "The key problem is trying to ascertain where to send patrols to make them effective," said Dr. James Watson, who holds a joint WCS-University of Queensland position. "Our research has shown that existing patrols are not frequent enough to be effective at deterring poaching and other [illegal activities](#) beyond 3 kilometers from a patrol post."

"We discovered that careful planning of patrol activity can increase its effectiveness while reducing costs by up to 63 percent," added Prof. Hugh Possingham, director of the ARC Centre of Excellence for Environmental Decisions.

In addition to helping wildlife managers and park authorities to redirect enforcement efforts into areas requiring protection, the method—the authors say—will also help reduce the cost of achieving conservation goals.

"Knowing where to put your enforcement efforts to make the most difference in protecting wildlife and natural resources is a huge advantage for conservationists," said Mr. Aggrey Rwetsiba, Senior

Coordinator Ecological Monitoring and Research at the Uganda Wildlife Authority. "The method offered here can improve patrol coverage and increase deterrence in this vital region of Africa."

Provided by Wildlife Conservation Society

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