

# US-Mexico border wall could threaten wildlife species

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A 700-mile security wall under construction along the United States' border with Mexico could significantly alter the movement and "connectivity" of wildlife, biologists say, and the animals' potential isolation is a threat to populations of some species.

However, technology and alterations to the design could dramatically improve the potential for animals to move more freely between the two countries, the scientists added.

Results of their study are being published in the journal [Conservation Biology](#).

"The biggest concern is that this barrier will break small populations of animals into even smaller pieces that will result in fewer animals interacting," said Clinton Epps, a wildlife biologist at Oregon State University and co-author on the study. "A major barrier such as this could lead to significant degradation of connectivity for many different species, ultimately threatening their populations."

In their study, the authors looked at the potential effects of the security wall on two species - the pygmy owl and bighorn sheep - primarily because they already had studied those animals in that region. They found that the low-flying pygmy owl made three-fourths of its flights below the height of the security wall, which is approximately four meters high, and that juvenile owls had lower colonization in areas of disturbance or areas with less vegetation.

"Some of the potential damage to pygmy owls could be mitigated with a few tweaks to the system," Epps added. "Putting in poles near the fence could allow the owls to swoop down from a perch, and planting brush to provide better cover could help them avoid predation by larger avian species and improve their chances for colonization."

Maintaining or augmenting trees that are taller than the fence, and that are associated with patches of dense, low vegetation should not only promote permeability, agreed lead author Aaron D. Flesch, a biologist from the University of Arizona - they may be critical.

"Movement of pygmy owls from Mexico to Arizona may be necessary for the persistence of the Arizona population," Flesch pointed out.

The security wall could have a bigger impact on the movement of bighorn sheep, which range widely among the hilly terrain. The scientists' study estimated that at least nine populations of sheep in northwestern Sonora, Mexico, are linked genetically with animals in neighboring Arizona and an interruption of that connectivity could threaten populations on both sides of the fence.

An impermeable barrier would isolate sheep populations and potentially reduce their genetic diversity, but the scientists say slight adaptations in the design of the fence could improve the animals' potential for connectivity while maintaining the desired security goals along the border.

"The key is to have gaps in the fence that are sufficient to allow passage of animals, while at the same time meeting security needs," Epps said. "A 'virtual' fence could be an alternative to a solid wall in some places, especially in steep terrain that is ideally suited for bighorn sheep. The use of cameras, radar, satellite monitoring and vehicle barriers could provide security and be great alternatives for wildlife."

Though their study focused on pygmy owls and bighorn sheep, the scientists also recognized other animals that could be affected by the security wall. Flesch said black bears, jaguars, pronghorn antelope, desert tortoises and ground-dwelling birds including wild turkeys and quail could be affected by restricted movement.

"Ultimately, the effects of the fence will vary among species," Flesch said. "Populations that are relegated to patches of habitat that are small and naturally fragmented are most likely to be affected by the fence, especially species that have low rates of movement among habitat patches."

Epps, who is an assistant professor in the Department of Fisheries and Wildlife at Oregon State, did his doctoral dissertation on bighorn sheep, including populations in the northern Sonora desert. He says mountain ranges act like habitat islands and thus bighorn populations are geographically fragmented. Adding an impenetrable fence through those ranges, without a strategy promoting the passage of wildlife, could be harmful.

"Bighorns in places like the Sonoran desert will form small populations - sometimes with only 10, 15 or 20 animals," Epps said. "Yet they will occasionally move back and forth and mix with other groups. That connectivity is critical to their survival. Without it, they can still sometimes re-colonize, but often that small group will go extinct.

"Isolating populations not only reduces genetic diversity," he added, "it makes the animals more susceptible to disease, drought and other weather extremes, and predation. We've seen one or two mountain lions knock down populations of sheep once they get a taste for mutton."

The scientists say the wall along the U.S.-Mexican border is not the only issue for wildlife. Human activity, vehicular traffic, amplified noise and

artificial lighting associated with the barrier can all affect how animals behave.

"There is a political reality and a biological reality to the border wall," Epps said. "We've talked to people who work along the border and the sheer number of people moving across the landscape is stunning. The crackdown on urban crossings has forced people into wild areas and the amount of human activity - both people crossing and the border patrols seeking them - has to have an effect on wildlife.

"Gaps in the fence could help, but that might channel more people to use those open areas for crossing, negating the benefit for wildlife and the purpose for constructing the wall in the first place," he added. "It may be time to re-examine the structure of the wall and do more research on potential outcomes."

Source: Oregon State University ([news](#) : [web](#))

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