

Study in Tanzania finds fishery improvements outweigh fuelwood losses

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When the government of Tanzania established Saadani National Park in 2005, it enhanced protection of the coastal mangrove ecosystem from further degradation. A study by a team of University of Rhode Island researchers found that the new park caused a short-term negative effect on the livelihood of those who harvest mangrove trees for fuelwood but a long-term benefit to their local communities from increased fishing opportunities.

The study was published in the [Proceedings of the National Academy of Sciences](#) on August 22.

"There is international concern for protecting precious tropical mangrove ecosystems that sustain an abundance of wildlife and fisheries habitat," said Catherine McNally, a URI doctoral student studying natural resources science. "A basic issue, however, is whether the protection afforded by national parks cause the local people's livelihoods to decline so much that they find themselves unable to climb out of poverty. It's a question that people are confronting all over the developing world."

McNally, along with Emi Uchida, assistant professor of [natural resource economics](#), and Art Gold, professor of natural resources science, say that the rural poor are highly dependent on natural resources for their livelihoods. In the area where the park was established, McNally analyzed [satellite imagery](#) to document that mangrove cover declined by 27 percent from 1990 to 2005 as a result of the trees being harvested for

fuelwood and charcoal production. From 2005 to 2009, when the park was established and harvesting was restricted, mangrove cover declined by just one percent.

Mangroves are a highly important nursery ecosystem for fish and shrimp, and it is used by birds and other wildlife that attract tourists as well.

"If the park hadn't been established and harvesting of the mangroves continued, then eventually the shrimp and fishery harvest would decline because of the rapid degradation of the habitat," Gold said. "It's likely that the livelihood of the fishermen would also decline."

Using advanced econometric techniques, Uchida combined data obtained from a survey of 150 residents living near the park with changes in mangrove cover near their communities. The analyses demonstrated that the number of people who reported shrimping as a livelihood increased from 16 percent to 23 percent after the park opened, and fishing increased from 27 percent to 43 percent. Many of the households entering these fields had previously harvested the mangroves for fuelwood and charcoal.

"Globally, environmental degradation tends to happen in places where there is extreme poverty. In such cases, we cannot solve environmental problems without addressing poverty at the same time," Uchida said. "What this study found is promising: the protected area in Tanzania has been able to slow down the degradation of mangroves and at the same time provide new income opportunities for the poor."

According to the researchers, although some individuals fared poorly as a result of the more restrictive land use in the new park, protection of the [mangroves](#) improved the livelihoods of many community members. McNally noted that local residents receive additional benefits of

improved roads and better availability of water and educational opportunities because of the infrastructure that came with the establishment of the park.

"One concern, however, is that the big shift of people into the fisheries sector could harm the fishery unless proper fishery management practices are implemented," said McNally.

Provided by University of Rhode Island

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