

# Savanna Science

## Where are the Serengeti's Wild Dogs?

By CHERYL LYN DYBAS



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It was the year the music in Serengeti National Park—or at least one section in its symphony-of-the-wild—died. In 1991, the twitters and whines of African wild dogs went silent in Tanzania’s iconic protected area.

Scientists began closely monitoring the Serengeti’s wild dogs, also known as painted wolves (*Lycaon pictus*), in 1964. Over the next quarter-century, researchers watched as the wild dog population dwindled, then disappeared. Why did these canids become locally extinct in a land where gazelles and other prey were plentiful?

Could the biologists themselves be somehow responsible?

## The Blame Game

It’s anathema to researchers to think their actions might cause harm to an endangered species like the African wild dog. But in 1994, Roger Burrows of the University of Exeter unleashed the controversial idea that it was, indeed, scientists’ actions that led to the dogs’ demise.

Wild dogs became stressed, Burrows stated, when researchers immobilized and placed radio collars on them. The stress suppressed the wild dogs’ immune systems, he said, allowing diseases they already carried, such as rabies, to kill them.

Burrows’ hypothesis rattled biologists who had long depended on radio collars

to follow animals—especially endangered species. The implications went far beyond the Serengeti, say ecologists Craig Jackson of the Norwegian Institute for Nature Research (NINA), Eivin Roskaft of the Norwegian University of Science and Technology (NTNU), and colleagues at the Tanzania Wildlife Research Institute (TAWIRI) and the Carnegie Institution for Science.

“Not only was immobilization of wildlife periodically suspended in certain countries,” says Jackson, “but the notion of researcher-induced extinction has continued in the scientific literature.”

Last December, Jackson’s team published a paper in the journal *Ecology and Evolution* that debunked Burrows’ thinking. Serengeti wild dogs, the researchers found, weren’t the victims of science.

The NINA, NTNU and TAWIRI scientists are now participating in a European Union-funded project called AfricanBioServices. They’re investigating how land-use changes, human population growth and climate change affect biodiversity in the Serengeti-Mara Ecosystem, which encompasses more than 30,000 square kilometers of what Roskaft and colleagues call “wildlife-dominated land” in northern Tanzania and southwestern Kenya.

Serengeti National Park in Tanzania and Masai Mara National Reserve in Kenya lie at the heart of the system.

They’re bordered by areas with varying land uses, including the 4,300-square-kilometer Loliondo Game Controlled Area (LGCA) and the 8,300-square-kilometer Ngorongoro Conservation Area (NCA).

## When Wild Dogs Roamed the Serengeti

A 1970 study in Serengeti National Park revealed an estimated 95 wild dogs living in 12 packs. The majority roamed the park’s open plains. Little research was conducted in the early 1980s, but began again in 1985, say Jackson, Roskaft and their co-authors. Between 1985 and 1990, five of the wild dog packs died or disappeared, and rabies was confirmed in one instance.

In an attempt to protect the remaining packs, scientists started a rabies vaccination program in 1990. Despite that effort, the other seven packs weren’t seen again, and the Serengeti wild dog population was declared extinct. However, according to Roskaft, there is no evidence that rabies caused these wild dogs to disappear.

Some biologists suggested that canine distemper might be to blame; the virus emerged in the ecosystem at about the same time. If that’s true, the researchers state in their *Ecology and Evolution* paper, it “would account for why rabies



Per Harald Olsen

vaccinations failed to protect the remaining wild dogs against a disease outbreak.”

More concerning, say the researchers, was “the assumption that all wild dog individuals and packs had died.” Few data on the actual number of dead wild dogs and packs were presented, and a large number of reported deaths were circumstantial. For example, five months after they were vaccinated against rabies, two wild dog packs split into five. Dispersing packs sometimes cover hundreds of kilometers. Without satellite GPS telemetry, the wild dogs’ movements would likely have been undetected and the dogs not seen again.

“Failure to observe individuals or packs in their former range cannot be equated with pack mortality,” Jackson and his co-authors stated.

## Life on the Periphery

Although Serengeti National Park itself was without wild dogs, the dogs did survive in the park’s outskirts. These “outlier” wild dogs have been studied since 2005. Many are outfitted with GPS collars; data show that they sometimes briefly cross the boundaries of the park. “Therefore, wild dogs could reside there,” says Roskaft.

But they don’t.

“Locals in the [nearby] LGCA and NCA saw wild dogs regularly for several decades before and after their disappearance from the Serengeti National Park’s plains,” the scientists state in their

paper. These wild dogs are genetically similar to the ones that formerly lived in Serengeti National Park. That evidence, the researchers say, confirms that the Serengeti wild dog population didn’t in fact go extinct; it survived in part of the ecosystem.

There are now some 120 wild dogs in 10 packs just outside the park in the NCA and LGCA. Between 2006 and 2016, Roskaft and colleagues report, 121 wild dogs from these locations were handled by researchers; 45 of the dogs were radio-collared.

How many of the 121 survived for a year or more afterward? Some 87.6 percent, or 106 wild dogs. Scientists’ “interventions did not evoke disease outbreaks, and the high survival rate does not support Burrows’ hypothesis,” the biologists write.

Ecologist Craig Packer, director of the University of Minnesota Lion Research Center, has studied lions in the Serengeti for more than three decades. Packer, who was not involved in the study, agrees with its conclusions. “This paper,” he says, “nails the coffin on the whole debate.”

## In: Hyenas and Lions. Out: Wild dogs.

More than 25 years after wild dogs vanished from Serengeti National Park, not one roams its grasslands. The reason, ecologists now believe, is also the reason the dogs first faded away: hyenas and lions.

Roskaft says the wild dogs disappeared due to increasing numbers of hyenas and lions, which often drive wild dogs away from their food. The result was a reduction in the wild dogs’ range. The dogs moved out to the “far suburbs”—the hillsides east of the park, which may offer safe places for them to den and raise their young.

With wild dogs out of the way, hyena and lion populations boomed, and any wild dogs brave enough to stay were left with slim pickings.

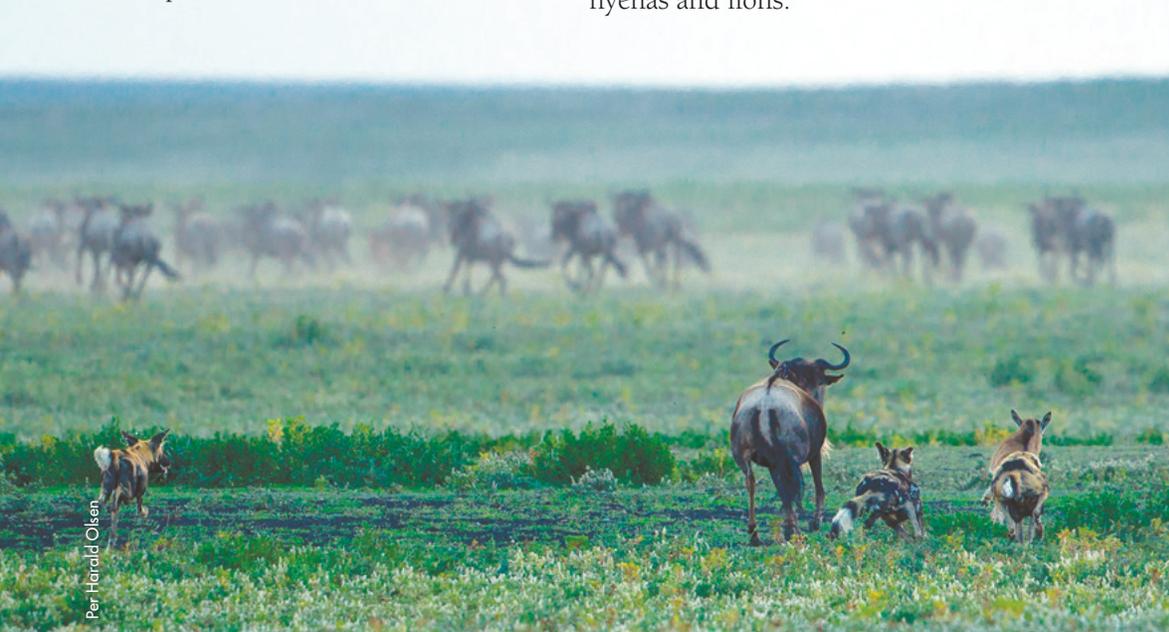
The evidence is clear, says Roskaft. “Increasing competition from hyenas and lions likely led to the downfall of the Serengeti National Park wild dog population.”

Lion researcher Packer and his colleagues came to a similar conclusion: Apex predators can dramatically affect populations of smaller guild members. Interference competition, as it’s known, involves direct, aggressive interactions and behavioral avoidance by smaller predators to minimize encounters with top predators.

Packer’s carnivore study area was located in the center of Serengeti National Park, at the intersection of open plains and savanna woodlands. The woodlands in the northwest section receive more rainfall than the drier shortgrass plains to the southeast. An annual migration of some 1.6 million wildebeest and zebras that follow the rains is a driving force of the ecosystem.

Between the mid-1960s and late 1990s, numbers of the park’s lions nearly tripled, and wild dogs disappeared. Wild dogs had occupied park areas with low numbers of lions, which the dogs abandoned as lions “saturated” the region.

With the further growth of the lion population and the continued absence of wild dogs—despite the successful control of rabies in the Serengeti—the “stressful handling” hypothesis seemed highly unlikely, according to Packer. “It’s clear that the dogs were already restricted



Per Harold Olsen

to areas that were largely unoccupied by lions.”

The effect of top predators on their smaller competitors may result not from direct killing, but by triggering avoidance behavior. So it has been with Serengeti National Park’s wild dogs.

## A Seesawing Serengeti

The picture was once very different. In the 1960s, Serengeti National Park was recovering from the effects of rinderpest, a cattle disease that infected ungulates such as wildebeest and buffaloes—lions’ prey. The park’s lion population declined, and wild dog numbers increased.

As rinderpest was brought under control and ungulates returned, lions followed. Soon wild dogs were edged out.

“A large number of wildebeest and lions, however, is a more ‘natural’ state for the Serengeti than the conditions that once allowed wild dogs to occupy its plains,” says Packer.

The big puzzle, he says, “is why wild dogs are able to co-exist with lions in places like the Selous Game Reserve in Tanzania and Okavango Delta in Botswana. We suspect there’s something about the habitat that provides dogs with ‘safe spaces.’”

Wild dogs manage to share space with lions in certain wooded ecosystems, Packer says. “Future research should focus on the interaction between habitat characteristics and avoidance behavior to better predict patterns of predator co-existence.”

Roskaft is happy to put an end to the conjecture about radio collars. “Tools that help us understand wild dogs and other endangered species are important to protecting these animals,” he says, “especially in a world where carnivores are struggling in the face of a growing human population.”

Today, no wild dog twitters and whines waft across Serengeti National Park. But, says Packer, “effective conservation requires multiple locations, since species cannot always co-exist in all circumstances.”

Note to wild dogs traversing the Serengeti: At least for now, your melody is perhaps better sung in the savanna next door. ■

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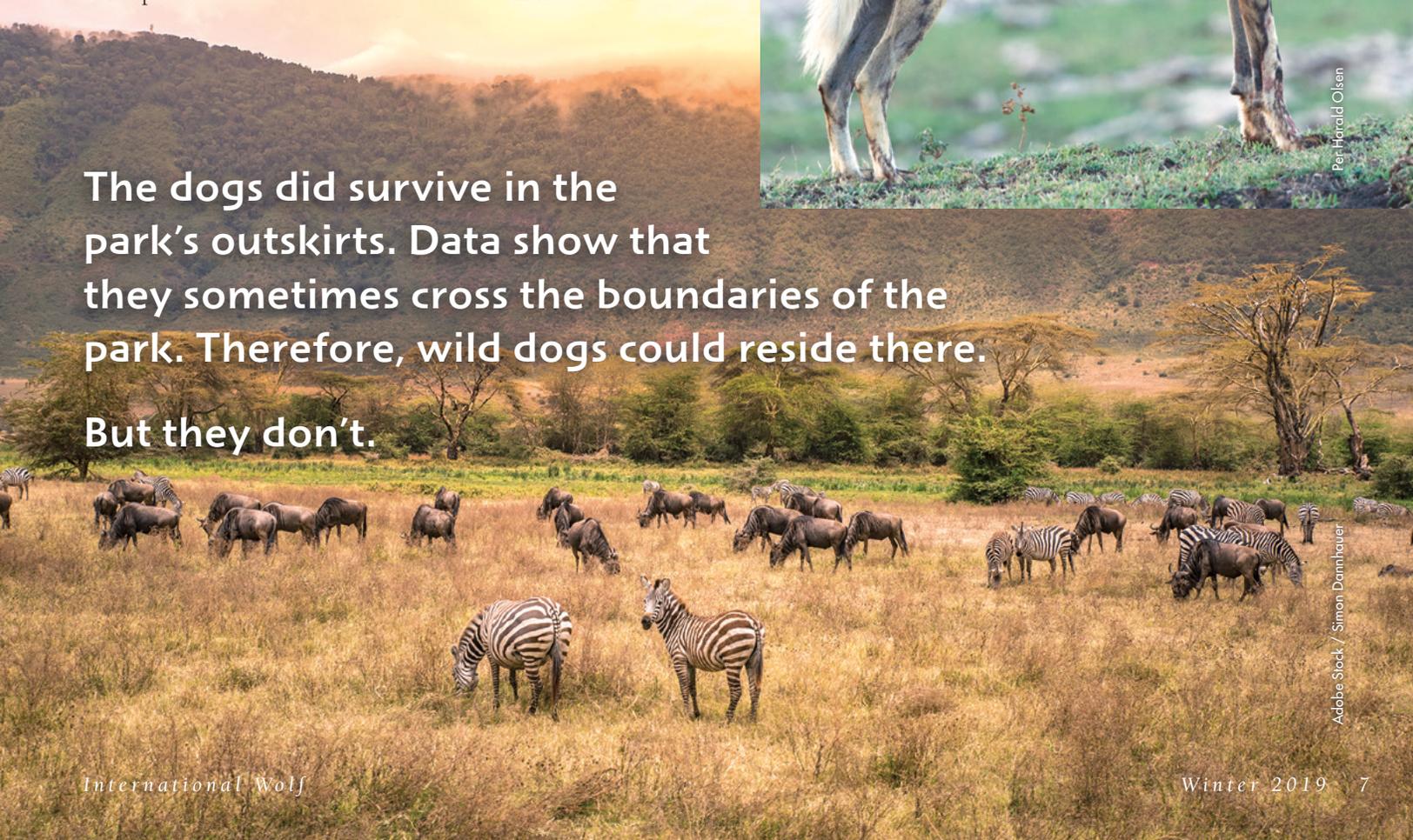
Award-winning science journalist and ecologist Cheryl Lyn Dybas, a Fellow of the International League of Conservation Writers, writes on conservation biology for *International Wolf*, as well as *National Geographic*, *Ocean Geographic*, *National Wildlife*, *BBC Wildlife* and many other publications. *National Geographic* ran an earlier version of this article.



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