

PANTANAL PECCARIES AND PIGS

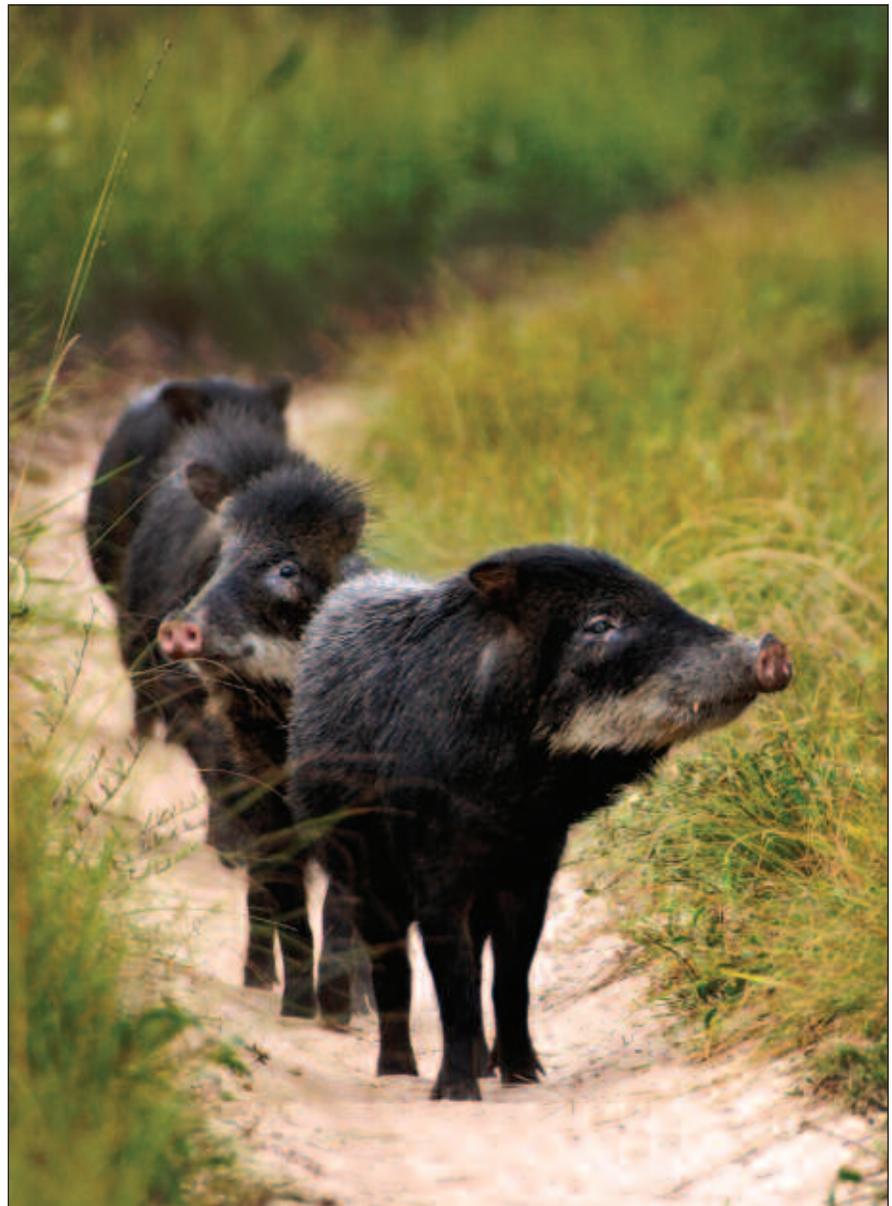
FOREST FRAGMENTATION AND FRUGIVORES

The white-lipped peccary (*Tayassu peccary*) is a small, pig-like animal. It weighs about 30 kilograms (15 pounds) and is covered in dark hair with a white band around its mouth. It is a social creature that travels in groups of 50 or more. Sometimes, as many as 300 form a herd. The white-lipped peccary and its smaller cousin, the collared peccary (*T. tajacu*) are common in the tropical rainforests of South and Central America. Both species forage for fruit and other food sources on the ground.

FOREST FRAGMENTS

In the Atlantic Forest, Keuroghlian assessed the availability of fruit and other resources in different seasons, and learned how peccaries used those resources. She also considered the issue of habitat **fragmentation**, as she was working in a patch of forest that remained after the surrounding land was cleared of trees. Fragmentation has caused problems for peccaries: in many places, local extinctions of *T. peccari* have occurred and populations of *T. tajacu* have declined. Keuroghlian wanted to know how the two species persisted in the isolated fragment where she collected data.

Dr. Alexine Keuroghlian discovered some new things about how they functioned in this environment. The white-collared peccaries in her study had much smaller home ranges than their cohorts elsewhere. Range estimates reported from the Amazon were usually five times as large. Another important finding stemmed from the fact that peccaries act as seed dispersers and seed predators when they eat forest fruits. Seeds that pass through their guts unharmed are deposited elsewhere, perhaps to grow, while other seeds are chewed up and digested. Peccaries thus influence the next crop of forest plants. Keuroghlian found



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her Atlantic Forest peccaries ate fruit from several palm species that many other animals also relied on. If these **keystone** palms were to lose the dispersal services of the peccaries, she speculated, their numbers would decrease and the fabric of life in the forest fragment could start to

unravel. Thus, both white-lipped and collared peccaries helped to maintain biodiversity in the fragment.

Keuroghlian was also the first to carry out a long-term study of white-lipped peccaries in the wild. She learned that those in the Atlantic Forest fragment made



The Pantanal is the world's largest wetland. Roughly the size of Kansas, it is dominated by the Paraguay River and extends into Paraguay, Bolivia, and Brazil. A haven for giant otters, jaguars, anacondas, and hyacinth macaws, the Pantanal is a real hotspot of biodiversity.

A PASSION FOR PECCARIES

As a child, Dr. Alexine Keuroghlian emigrated with her parents from the United States to Brazil. After returning to the US for a time, Keuroghlian went back to Brazil to study white-lipped and collared peccaries in the Atlantic Forest of southeastern Brazil. Keuroghlian received an Earthwatch grant, which helped support her research for five years, and supplied volunteer field assistants. She ultimately received a doctorate in ecology from the University of Nevada for her work. Keuroghlian's passion for peccaries thrives as she continues to study these animals in numerous areas within the Pantanal, the world's largest freshwater wetland. Often seen wearing a bushman's fedora, she has been called the "Indiana Jones" of the Pantanal.

heavy use of areas close to streams. Since they traveled in large herds, when they fed and drank at the water's edge they had a major impact on plants and soils there.

PECCARIES IN THE PANTANAL

The fact that no scientific studies of peccaries had been conducted in the Pantanal was reason enough for Keuroghlian to launch one. In addition, it seemed useful to compare Pantanal peccaries with their Atlantic Forest counterparts. Both live in areas with distinct wet and dry seasons and lots of rainfall (1,000 - 1,500 millimeters, or 400 - 600 inches, annually). But while the

Atlantic Forest is a severely fragmented area, the Pantanal includes large tracts of continuous wildlife habitat. Its peccaries dwell in a relatively pristine environment. Comparing results from the two regions should help Keuroghlian distinguish "normal" from "altered" peccary ecology. For example, she might learn that peccaries are packed into forest fragments at unusually high densities, or that herd size differs with habitat size.

The Pantanal can also help researchers understand the effects of habitat fragmentation because a different kind of fragmentation does occur there. From October through April, summer rains cause the Paraguay River to spill out over its flood plain. Areas once linked by dry land become separate islands where mammals seek refuge. Observing peccaries on these seasonal islands may help Keuroghlian learn how they adapt to habitat fragmentation.

Are peccaries important dispersers — or predators — of keystone fruits in the Pantanal? Do they help maintain biodiversity in the region? What do peccaries eat when fruit is scarce?

Keuroghlian's work in the Pantanal addresses these questions. It also investigates the relationship between peccaries and **feral** pigs, the now-wild descendants of domestic animals. Feral pigs may compete with peccaries for food or be important seed dispersers themselves, but research is needed to be sure.



SHORT-TERM RESEARCH OBJECTIVES

- Provide population estimates in several areas of the Pantanal
- Document the seasonal patterns of resource availability and resource use
- Document the ecological role as seed dispersers and predators of keystone fruits, and evaluate the impact of these activities on habitat biodiversity

TRANSECTS AND TELEMETRY

Meeting these objectives requires hours in the field. One thing Keuroghlian must do is take a census to learn how many pigs and peccaries occur in each study area. She and the team of colleagues and volunteers who work with her use the repeat **transect** method to do this. They open trails through different habitats in the region, mark them every 20 meters, and map them. Then, they walk along these transect trails and look for pigs and peccaries. Any animals seen are counted, and information about their behavior and travels is recorded. This must be done repeatedly for a reliable estimate to be made. Trails must be maintained, too: fast-growing tropical vegetation quickly

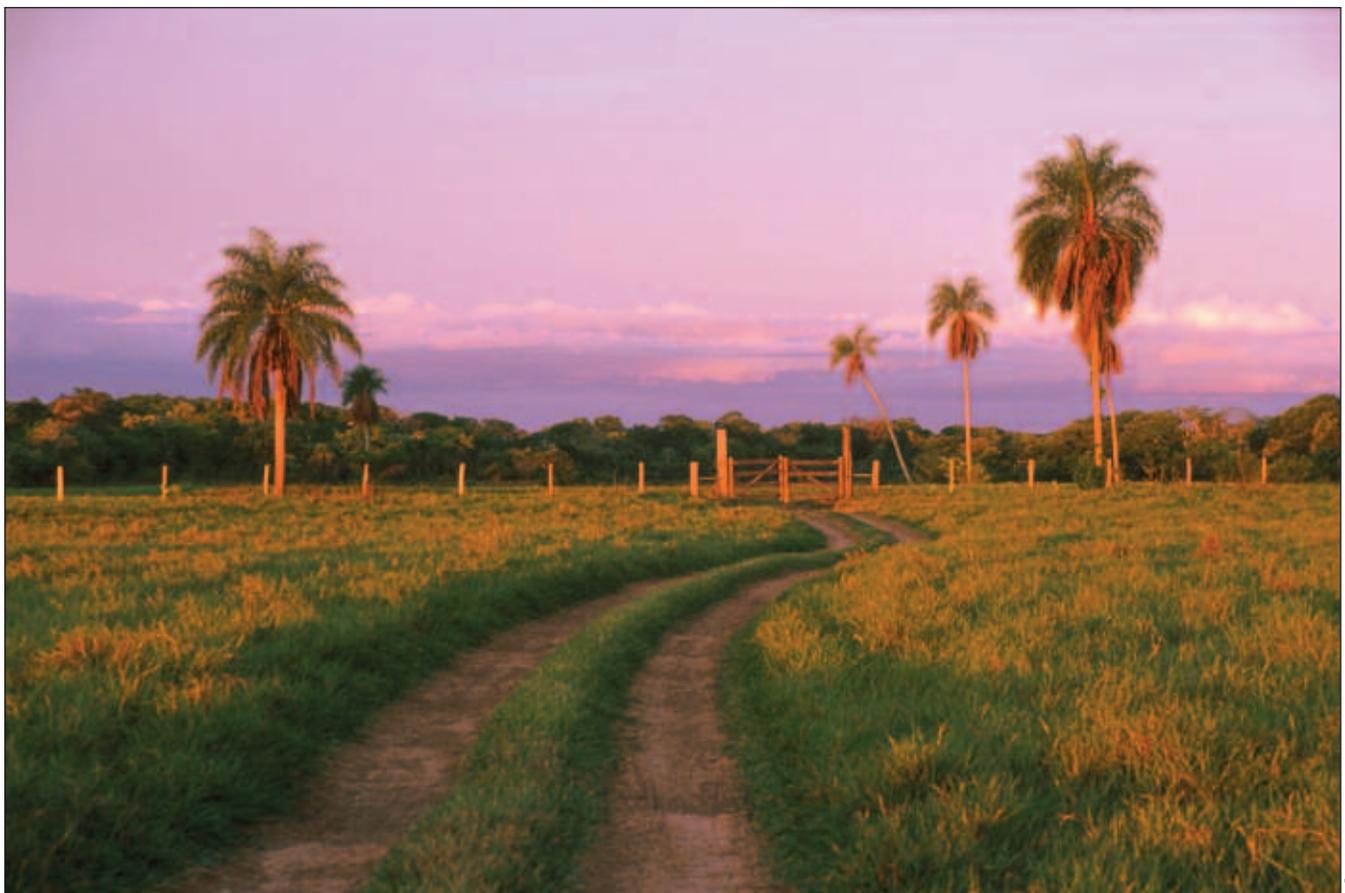


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overtakes them and must be cleared away with a machete.

Sighting animals along a transect path yields some information about where they go and what they eat. Keuroghlian analyzes radio tracking and recapture data to develop a more complete picture. To get this information, she and her research

team must first get their hands on some animals. They set and bait box traps in places used by the pigs and peccaries. Once an animal is trapped, it is anaesthetized with a drug injected by a blow dart. After the drug takes effect, researchers have about half an hour to determine its sex, measure it, and weigh it. They also check its



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teeth to estimate its age; The more worn the teeth, the older the animal. Finally, the animal is injected with a tiny microchip that contains a unique code. If it is ever captured again, a scanning device can read the chip and identify the individual. This allows researchers to track and monitor it over long periods of time.

Some animals are also fitted with radio-collars so their movements can be followed closely. Each collar emits a signal that can be picked up by a receiving device. To determine an animal's position at a given time, several "fixes" are obtained from known locations. The intersection of these compass bearings, taken within a few minutes of each other, can pinpoint the animal's location.

Collared animals are tracked for four to six weeks each season. So far, radio-telemetry has yielded some interesting preliminary results. It seems that white-lipped peccaries in the Pantanal use areas similar in size to the home ranges of their Atlantic Forest counterparts. These home ranges are much larger than those of feral pigs. Furthermore, white-lipped peccaries consistently used the same areas. Pigs stayed in one area a long time, then suddenly moved as far as ten kilometers away. More data will enable Keuroghlian to see whether these preliminary results can be generalized.

FRUIT MONITORING AND FORAGE TRAILS

To learn more about what food is available to peccaries and what they actually eat, Keuroghlian and her team use several methods. They collect monthly samples of fresh fruit from ten different study plots.

FIND OUT MORE

A peccary is NOT a pig! However, peccaries and pigs are both even-toed ungulates. Check out <http://montereybay.com/creagrus/etungulates.html> to meet some other cousins of the peccary. Some may surprise you! Up-to-date facts about peccaries can also be found at <http://www.ecology.info/ecology-peccaries.htm>.

Fruits are identified, counted, dried, and weighed. In general, fruit is more plentiful between November and March, the rainy season. Just because fruit is present does not mean it is consumed. Scientists and volunteers figure out what pigs and peccaries eat by following their foraging trails. It isn't hard to spot these routes, since they are trampled by many animals searching for food together. Once a fresh trail is picked up, researchers look for pieces of uneaten fruit on the ground, tracks concentrated near fruiting trees, diggings in soil or leaf litter, and other signs of feeding. Additional information about diet comes from chance observations of foraging animals and from scats. Scats contain traces of undigested food. When they are collected and washed, some traces can be identified.

What do peccaries and feral pigs eat when fruit is scarce? Keuroghlian and her team think that aquatic plants may be an important resource during these times, since they have observed peccaries using areas near streams. Aquatic organisms such as snails, crabs and stranded fish might also provide food.

CONSERVING PECCARIES AND JAGUAR

Peccaries do not simply consume food in the Pantanal—they are food. They are central in the diet of the region's largest predator, the jaguar (*Panthera onca*). Keuroghlian herself has evidence to support this. In one year, 11 of her radio-collared animals died. Nine of these were killed by large cats. The peccary's role as prey that sustains the endangered jaguar and other animals is another mark of its importance in the ecosystem.

Volunteers have joined this project through Earthwatch Institute. Read more about this study and other scientific field research at www.earthwatch.org.

GLOSSARY

feral – having returned to an untamed state from domestication

fragmentation – the act or process of breaking into incomplete or isolated portions

keystone – the central supporting element of a whole

scats – excrement, especially of an animal; dung

transect – a crosswise division

Keuroghlian works in cooperation with a large group of scientists in the Pantanal. She shares her data with colleagues who use it to inform their own research. Leandro Silveira, President of the Jaguar Conservation Fund, is one of her colleagues. Silveira is studying jaguar ecology in the Pantanal, and the abundance of prey in the area is a crucial aspect. Keuroghlian's data is one source of information for his research.

Ultimately, Keuroghlian will develop a general conservation plan for peccaries in the Pantanal and Atlantic Forest regions. While peccaries are still considered common in tropical forests, overhunting by people and habitat fragmentation have caused declines and local extinctions in many places. Further declines will be echoed by other species: jaguars, keystone palms, and more. Given their role in maintaining biodiversity, it is important to conserve peccaries.



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