

Letter from the Desk of David Challinor
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Just before the turn of the last century European scientists were intrigued by reports of a mysterious donkey-sized animal living in the depth of Congo's Ituri forest. Pygmy hunters who inhabited the area described its stripes and experts felt sure it was some kind of forest dwelling zebra. Within a few years the mystery was gradually solved and the animal turned out to be a cud chewing ungulate, the okapi. This month's letter is about this incredible animal.

For those unfamiliar with an okapi, it is a forest-dwelling, close relative of the giraffe. Like the latter it has an extraordinary long bluish-grey tongue, long enough to reach its eyes. Further evidence of its giraffe relation is its lack of a gall bladder and the male's skin-covered horns. The coat is a dark shiny chocolate and so oily that your hand is stained brown if you rub its back.

Both fore and hind legs have narrow white horizontal stripes as shown in Mary Neel Green's drawing. The first sighting of an okapi was reported in the journal of a French army officer in 1889. He described a beautiful timid animal he saw on a river bank in central Africa's Congo. He found no description of the animal he had observed in the literature, but he thought it was some kind of antelope. The next published reference seems to be that of Henry Stanley, who spent years exploring the Congo basin after his successful search for Dr. Livingstone. Stanley's book, *In Darkest Africa* (1890), told of a donkey-like animal the pygmies called an atti that they caught in pit traps. Although Stanley had never seen one, Sir Harry Johnston, later to become governor of the Uganda Protectorate, read Stanley's book and eventually discussed the animal with him. Johnston was so inspired by Stanley's story that he vowed to acquire a skin.

The next year (1900) Belgian officials in the Congo asked Sir Harry (now Governor) to help return to their homes in the Ituri Forest a group of pygmies that had been kidnapped by a German entrepreneur for public display at the World's Fair in Paris. The abductor had fled to Uganda with his captives where Sir Harry fortunately found them and arranged for their safe keeping. He seized this unexpected opportunity to interview them and learned that the mysterious animal indeed resembled a striped donkey. They called it an o'api. Months later, Sir Harry accompanied the kidnapped hunters back to the Congo. On the way they stopped at a Belgian outpost fort where the commanding officer gave him a gunpowder container made by one of his native soldiers from the leg skin of an okapi. Sir Harry immediately organized a party to look for this "new" animal. Although they found numerous tracks, which confirmed that it was not a zebra because of its cloven hooves, they had to abandon the search before seeing one when most of his party contracted malaria. The skin samples, however, were sent to London where their exhibition gained global attention. It seemed unbelievable then that an animal this large could have remained unknown to Europeans.

Johnston waited in Uganda for further word from the officer who had given him the skin samples, but as was common at the time the Belgian had died of fever. Fortunately, his successor persevered and sent Sir Harry a complete skin and skull as well as a second smaller skull in February 1901. It took two months to reach him and he promptly noticed that the okapi skull closely resembled that of a giraffe. He sent the skin and skulls to London and in June 1901 arrived there in person to be honored by having the new discovery named *Okapia johnstonia*.

In May I was fortunate to see the breeding group of okapi at the White Oak Plantation in Yulee, Florida, a 40 minute drive north of Jacksonville. The plantation had belonged to Howard Gilman who, until his death last year, owned a large pulp and paper company. Among his other activities, however, was operating a beautifully equipped breeding facility for endangered species at White Oak. The large paddocks contain breeding aggregations of both species of African rhino, various antelope, banteng (a wild forest bovid from Indonesia) and eleven okapi. The latter are kept in wooded enclosures and are hard to see even from within ten yards as they stand so still in their beautifully camouflaged coats.

The staff at White Oak has observed and studied okapi long enough now to gain knowledge that would be virtually impossible to obtain in the wild. What they have learned is incredible. For example, okapi can communicate with each other at low frequencies of 9 to 70 hertz (sound cycles per second) thus beyond the range of most humans who cannot hear below 20 hertz. Okapi thus join four rhino species, giraffes, elephants and whales, in communicating by infrasound. The precise internal source of this vocalization is still not known in all these animals. The lower the frequency, the farther such sound can travel and be less distorted by physical barriers such as trees, rock piles, etc., than higher frequencies. Finally, the exact location of an infrasound source is hard to locate. All these qualities are helpful in maintaining contact in a dense forest; a calf, for example, could call its mother without giving away its location to a predator.

By recording and analyzing this infrasound communication while observing the behavior of mother and calf, scientists learned that both calves and their dams seem more relaxed when given long periods of time visually separated. The pair maintain almost constant contact, however, by low frequency calls. Furthermore, when the calf is ready to nurse, its calls increase in number and the mother seeks out the calf. Being relatively solitary animals such long distance communication ability may also help males delineate territory, although under captive conditions they do not seem to be very territorial. However, as these possible "territorial" calls become better understood, they could be used to help census males in the almost impenetrable forest.

The okapi's skull is proportionately longer than a giraffe's and therefore allows it to have an exceptional 18 inch long bluish-grey tongue, with which they can groom their own eyes, ears and nostrils. They also have a Jacobson's organ on the roof of their mouth similar to that found in snakes and lizards. This organ analyzes odors and the okapi is believed to test new and unexpected stimuli by touching its tongue to it. The strong flexible tongue is used like that of giraffes in browsing foliage. Rather than biting off leaves with their teeth, they use their tongue to strip the leaves between a thick pad at the front of their upper jaw, which replaces their incisors and their regular teeth on their lower jaw. Once in their mouths, they chew the leaves with their back molars, swallow and regurgitate cuds like a cow.

Another interesting anomaly of the okapi is the variation in chromosome numbers between individuals. Most animals have a constant number; humans, for example, have 23 pairs of chromosomes, half from each parent or a diploid number expressed as $2n=46$. When occasional individuals differ from this number, death or severe mental or physical damage results. When scientists first counted the okapis' chromosomes they thought the diploid number was $2n=46$. However, further testing showed some okapis as $2n=45$ and they appeared perfectly normal. Thus one copy of a chromosome pair is lacking, but despite this lack, which would normally be a big problem in other animals, okapis with either number produce healthy calves. All okapis in the United States have now been tested and as of 1996, 40 were $2n=46$ and 46 were $2n=45$. Surprisingly, two animals were found with $2n=44$. Scientists still do not understand why there is this chromosomal variation and how the okapis adapt to it.

Okapis are indeed endangered. There are less than 100 now in North America with a smaller number in Europe. Another 100 or so are maintained in a large compound in Epulu, deep in the Ituri forest. The facility there has so far been spared from the fighting that has devastated central Africa, but operating supplies are almost impossible to get through the battle zones. The wild population of this elusive ungulate is hard to estimate, but is thought to be around 15,000 plus or minus 5,000. Captive animals are all descended from about two dozen animals so it is important to find ways of mixing "new blood" into this population. Only four wild animals have been introduced to the zoo population since 1984 and their progeny are carefully monitored to help maintain a healthy genetic variability.

We can rejoice in the recently acquired knowledge of okapis for it helps us to breed and maintain them in zoos and research facilities. Their forest home in central Africa is still relatively intact, but like all such areas is under constant threat from human incursion. No captive bred okapi, I believe, has yet been released to the wild.

Much further work will need to be done in this area, but before reintroductions can occur political stability will be necessary. There is reason for optimism in the progress made in okapi husbandry and I am confident we can maintain and protect this interesting mammal for future generations.

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Much of the material for this letter has come from:

1. Lindsey, S.L., M.N. Green, C.L. Bennett, *The Okapi*, University of Texas Press, Austin 1999
2. White Oak Conservation Center Newsletter - *Karatasi*
3. Information on the Epulu Project in the Ituri forest of the Democratic Republic of Congo can be gained from Karl or Rosie Ruf (project managers) by email: karlr@wogilman.com