

The senior author with a Green Anaconda (*Eunectes murinus*).

Observations on the Natural History of the Green Anaconda (*Eunectes murinus* Linnaeus, 1758) in the Venezuelan Llanos: An Ecotourism Perspective

César L. Barrio Amorós¹ and Róger Manrique

Fundación AndígenA, Apartado Postal 210, 5101-A, Mérida, Venezuela (www.andigena.org)

¹Corresponding author: cesarlba@yahoo.com; atelopus@andigena.org

Photographs by the authors unless otherwise indicated.

“It is of unsightly body, the size of a pine beam. It can be as long as eight *varas* [6.4 m; each vara is 0.8 m]. Just seeing it is frightening. Knowing the range of its pestilent breath spurs one to flight. In response to a noise, the snake lifts its head one or two *varas* and fires a breath at tiger, lion, calf, deer, or man that stops cold, stuns, and turns immobile the animal that was poisoned. It then approaches and swallows it. I said that it swallows because it lacks teeth. It can open its mouth widely and may spend days consuming its prey...”

Father José Gumilla
El Orinoco Ilustrado. 1741

During the past seven and 12 years respectively, we have been accumulating data on the natural history of the Green Anaconda (*Eunectes murinus*) in the Venezuelan Llanos. We are wildlife guides who lead tours to this remarkable area called Los Llanos (flat lands), an extensive region of Venezuela and Colombia consisting of savannas north of the Orinoco River. Some of the most impressive rivers of South America flow through Los Llanos, leaving the plains flooded for half of the year. The landscape is mainly grassland with scattered trees and palms (more forested areas to the northwest are called *Llanos*

altos), but also dry gallery forest along rivers, many lagoons, and palm forests (*morichales*). We base our activity in the small village of San Vicente, on the shore of the Apure River, although both of us have had experience in other areas as well. Our tour groups are taken into the field in search of the typical fauna of the zone: Capybaras, Giant Anteaters, Giant Amazon Otters, Pink River Dolphins, hundreds of species of birds (raptors, egrets, herons, screamers, terns, skimmers, parrots, toucans, woodpeckers, ducks, storks, etc.), piranhas, Spectacled Caimans, Green Iguanas, Mata-Mata Turtles, and, of course, the indisputable star of Los Llanos, the giant serpent, the Green Anaconda. A tour in the dry season is not complete if we are unable to find at least one of these snakes.

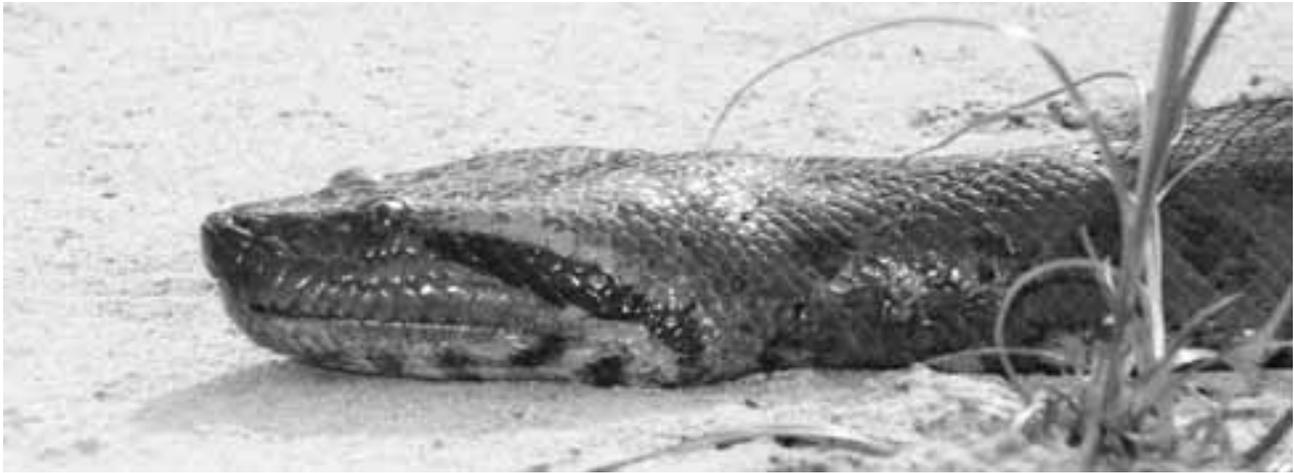
Among the stunning wildlife and the impressive landscapes of the region, anacondas are perhaps the most emblematic natural element and the most intriguing to foreign visitors. The reactions of tourists to this star of myriad tales range from fascination to fear. Herein we address the myth, the fantasy, the scientific reality, the natural history, interactions with humans, folklore within the local culture (indigenous people and descendants of Europeans), and the economic importance of this giant serpent.

The Family Boidae

The family Boidae includes some of the most beautiful and well-known of all snake species. The colorful Rainbow Boa (*Epicratis cenchria*), the elegant Emerald Boa (*Corallus caninus*), the slender tree boa (*Corallus rufescens*), the Red-tailed Boa (*Boa constrictor*), and the impressive Green Anaconda (*Eunectes murinus*) are all members of this family of non-venomous snakes. All boas (subfamily Boinae) are known for killing their prey by constriction. The subfamily is widely distributed in the Americas (where pythons are absent), ranging from the southern United States to the lowlands of Bolivia and northern Argentina. Real boas also occur in Madagascar and New Guinea, and the South Pacific. Boas are a complex family of snakes that includes terrestrial, aquatic, burrowing, and arboreal species and which consume a wide variety of prey. All boas are live-bearers. Most boas



A large female Green Anaconda with a total length of 5.6 m.



The Green Anaconda is the largest boa (Family Boidae, Subfamily Boinae) and the heaviest snake in the world.

are nocturnal, but some Neotropical species, including the Boa Constrictor and the famous anacondas, may hunt by day as well as during the night.

In addition to the Green Anaconda, three other anaconda species are currently recognized. Both are similar, albeit much smaller. The Yellow Anaconda (*Eunectes notaeus* Cope) reaches a maximum size of 4 m and lives in the Paraguay-Paraná River Basin (northern Argentina, Paraguay, Bolivia, southwestern Brazil). The Brazilian Anaconda (*Eunectes deschaunseei* Dunn and Conant) reaches a maximum length of only 2.5 m and is known from the mouth of the Amazon to French Guiana, where it is sympatric with *E. murinus*. Recently, a third species has been described from Bolivia as *E. beniensis* (Dirksen 2002; Dirksen and Böhme 2005). It also is small (maximum length 4 m). Another name applied to an anaconda, *E. barbouri*, was proven to be a synonym of *E. murinus* by Strimple et al. (1997) and Dirksen and Böhme (1998).

The Green Anaconda

Eunectes murinus, the Green Anaconda, is known as *serpiente de agua*, *culebra de agua*, *caribita*, *madre de agua*, *güio*, *petaca*, *mata-toro*, *sucurí*, *yacu mama*, *camudi*, and by many more names throughout its range, which extends from Trinidad and Venezuela to Bolivia. The species is the largest of the anacondas, and the heaviest serpent in the world, its weight surpassing that of other giants like the Reticulated Python. Green Anacondas can reach 200 kg (227 kg is the record taken from the *Guinness Book of World Records 2004*).

Which species of snake is the longest is a question that engenders an ongoing debate — but the Green Anaconda is indisputably in the mix. A maximum length of 8.3 m is widely accepted (Murphy 1997), and no documented voucher specimen of greater size is available (although the *Guinness Book of World Records 2004* lists a total length of 8.45 m, but fails to cite a source). People, especially in Los Llanos, commonly speak of anacondas measuring dozens of meters, but like many fishing stories, sizes tend to be exaggerated. A skin that was allegedly 12 m long proved to be only 6 m in length when accurately measured; most surprised (and disappointed!) was the owner of the skin, who had been quite certain that it was longer (Murphy and

Henderson 1997). Many of the historical cases (Murphy and Henderson 1997) of “scientists” reporting animals as long as 14 m and even 50–60 ft are considered unreliable as the claimants had been unable to measure the animals in question and estimates were entirely subjective. The most prominent case is that of Emmett Dunn, an important herpetologist in Colombia, who believed the seemingly accurate report from an oil geologist of an anaconda captured in the Río Meta that reportedly measured 11.5 m (35.5 ft). In any event, the Zoological Society of New York is still offering a prize of \$50,000 for an anaconda longer than 30 ft! Only females can reach the largest size; the longest males do not surpass 4 m (pers. obs.). Of interest, however, are reports of enormous anaconda skins, such as one allegedly 29 ft in length (Robertson 1998) or those reported in Murphy and Henderson (1997). Snakeskins, once separated from the flesh, salted, and stretched, can increase in length by as much as 30%, giving the impression that the snake was considerably longer than it actually was when alive.

The ground color of Green Anacondas typically is olive-green, with round black spots and yellow ocelli surrounded by black on the flanks. The belly is yellow with black checks. One red and one black stripe immediately behind the eyes are distinguishing features that help differentiate species of anacondas.

Taxonomy

The Northern Green Anaconda was long known as *Eunectes murinus gigas* (Latreille), the largest of all anacondas. Differences



The ground color of Green Anacondas typically is olive-green, with round black spots and yellow ocelli bordered by black on the flanks.

distinguishing this race included a lighter postocular region and slight differences in scale counts. However, as Dirksen and Böhme (1998) indicated, this color pattern is widespread throughout the range of *E. murinus*, and scale counts do not differ consistently. Consequently, *Eunectes murinus* (Linnaeus 1758) is now recognized as a single monotypic species.

Distribution

The Green Anaconda has a continuous distribution from northeastern Venezuela and Trinidad to Bolivia, through the Orinoco and Amazon basins. It is currently unknown west of the Andes (but see below). In Venezuela, it is found throughout the lowlands in the states of Sucre, Monagas, Anzoátegui, Bolívar, Amazonas, Apure, Barinas, Guárico, Cojedes, Portuguesa, and probably the southern parts of Aragua and Carabobo.

Lake Maracaibo is a large brackish Venezuelan lake connected to the Gulf of Venezuela by a 55-km strait. The presence of Green Anacondas in Lake Maracaibo has not been confirmed, although local people are familiar with a “Madre de Agua” living in the deep pools of associated rivers and lagoons. They fear the animal, but respect it because they believe that these giants protect the rivers. Two guides who have worked with us report

road-killed anacondas. Although these men are not trained herpetologists, they lead wildlife tours to Los Llanos and are capable of identifying the species. No vouchers exist, however, and so we cannot confirm the presence of these snakes until we have more solid evidence.

Habitat

Anacondas are aquatic snakes. They prefer to keep the entire body under water, with only the eyes and nares above the water line. When basking, they rarely range more than one meter from water. Anacondas living in rivers have continuous water access, but those living in swamps are subjected to the risk of drought during the dry season. They sometimes remain burrowed in mud for months until the swamp refills in the rainy season. However, we have observed dead anacondas in dried swamps far from any permanent water.

Coiled anacondas are commonly seen basking in the sun on riverbanks or even in the shadow of overhanging vegetation. They may seek refuge in burrows and natural holes, where they are easy to find along rivers during the dry season. In the rainy season, they move throughout the flooded savannas, and are almost impossible to find.



Green Anacondas have a continuous distribution from northeastern Venezuela and Trinidad to Bolivia, through the Orinoco and Amazon basins. In Venezuela, the species is known from throughout the llanos.



Despite their large size, Green Anacondas may be hard to locate. For example, the presence of the species in Lake Maracaibo has not been confirmed despite reports from reliable sources, and no voucher specimens have been taken.



Anacondas are aquatic. Typically, the entire body is under water, with only the eyes and nares emergent.

Anacondas are not arboreal, but we have on occasion found individuals resting in trees as high as 4 m above the ground. These are likely to be subadult females or adult males rather than heavy adult females.

Abundance

Although snakes in the tropics are never as common as they are depicted in the movies, given the proper conditions and habitat, anacondas can be quite numerous. In the rainy season, when the plains are flooded, anacondas, like many animals, are widely distributed throughout the savannas and difficult to locate. In the dry season, however, when the water evaporates from the lagoons and the rivers are at minimal flow, animals cluster around the remaining rivers and lagoons. At this time, Los Llanos provides spectacular views of thousands of Spectacled Caimans, birds, turtles, and Capybaras together on the shore of a single body of water. In these conditions, anacondas, although not as visible as other animals, can be extraordinarily abundant. Along one five-km stretch of the Apure River, our record is 16 anaconda sightings in three days. The average is always lower, from one to four. In swampy areas, they can be even more concentrated. The summer dry season also coincides with the breeding season, and females may be accompanied by several males.

Reproduction

One legendary aspect of anacondas is their size... No *llanero* will admit that anacondas can only reach 8, perhaps 9 m in length. All of them have seen at least once in their lives anacondas of 15, 20, or even 40 m. And it is impossible to claim otherwise! They are right, and you are a “gringo” who does not know anything! On one occasion, a *llanero* came to us, and said that he had seen



Coiled anacondas are commonly seen basking in the sun on riverbanks or even in the shadow of overhanging vegetation. They may seek refuge in burrows and natural holes, where they are easy to find along rivers during the dry season. In the rainy season, they move throughout the flooded savannas, and are almost impossible to find.



A Green Anaconda resting by day in vegetation along a riverbank.



Anacondas are not arboreal, but smaller, lighter individuals may bask in trees to heights of 4 m.



CEGAR L. BARRIO AMOROS

The Green Anaconda (*Eunectes murinus*) is one of the longest and certainly the heaviest snake in the world.



CEGAR L. BARRIO AMOROS



CEGAR L. BARRIO AMOROS



CEGAR L. BARRIO AMOROS

As one of the remaining top predators of the Venezuelan Llanos, effective conservation of Green Anacondas may depend on education and the benefits provided through ecotourism. See article on p. 92.

a huge anaconda of at least 20 m, and that he knew where it was. So we ran to the site and, after some hours in the swamps, we actually saw an amazing ball of anacondas — probably 20 m long — but not one, instead 14 anacondas — 13 males trying to mate with one huge female!

This is representative of anaconda mating. In the dry season, large females release pheromones that attract males from many kilometers. The first male to find the female is likely to remain for days (or even weeks) coiled around her. Inevitably, other males are attracted as well, all of them surrounding the female and competing to introduce one of their hemipenes into the female's cloaca. This orgy is essentially a patient battle among the males who are not aggressive toward each other (Rivas et al. 2007).

An interesting feature of anacondas, and many other boids, is the presence of small "spurs" adjacent to the cloaca, with those of males larger than those of females. The spurs are mobile, and may assist in mating by stimulating the female's cloaca for reception (Rivas et al. 2007).

After 6–7 months of pregnancy, the female gives birth to 8–82 baby anacondas (usually 20–40). Newborn anacondas usually are 60–80 cm in length, lighter in color (bright yellow) than the adults, and very aggressive.

Prey

One of the most fascinating aspects of large serpents is their feeding habits. What do huge snakes eat? A Green Anaconda may wait for hours, sometimes days or weeks, hidden underwater, with only nostrils and eyes above the surface. When prey approaches, it will attack at close quarters with lightning speed, wrapping its coils around the prey animal and killing it.

Prey items vary according to the size of the snake. Juveniles prey on small mammals, frogs, and large invertebrates, gradually taking larger items as they grow. A giant female of 6 m can swallow a Capybara or a pig. Although stories abound of anacondas swallowing cows and bulls, no such instances have been documented in Venezuela.

Enemies

Adult anacondas are at the top of the feeding pyramid, but the young are eaten by many birds (e.g., storks, raptors, herons), Spectacled Caimans (*Caiman crocodilus*), and a wide variety of carnivorous mammals. The notion of a fight between a giant anaconda and a jaguar is purely a Hollywood fantasy. We can-



After 6–8 months of pregnancy, females give birth to 8–82 (usually 20–40) baby anacondas.



Newborn anacondas are 60–80 cm long, lighter in color than adults, and very aggressive.

not imagine that any jaguar would be stupid enough to attack a giant serpent, but smaller anacondas make easy prey for experienced big cats.

One of the most striking features of many anacondas of all sizes is the number of wounds, old and recent, on their bodies. Many are attributable to piranhas (*Serrasalmus* sp. or *Pygocentron* sp.), which apparently bite and release, leaving a nasty wound. Others are from Spectacled Caimans, powerful predators that can put up a good fight when the tables are turned. Anacondas usually heal well, and most show old scars in the form of a half-moon or a complete circle from piranha bites or parallel linear wounds from caimans. Some snakes, however, can die of such bites. Other common injuries include incomplete tails. Some of these short-tailed anacondas are easy to recognize even when recaptured years later. One unusual wound observed in an adult female was the absence of the left eye, with the area almost completely covered with scales.

Anacondas can be cannibalistic. Rivas and Owens (2000) documented three cases, two of them females eating smaller males at the end of the breeding season. They speculated that the females ate the males immediately after mating.

The primary enemy of anacondas is humans. In almost any encounter between the two, snakes are systematically killed. We see them dead on the road (cars never stop or go around), killed by *campesinos* when encountered in the field, and, on one sad occasion when it was too late to intervene, we saw a fisherman pouring fuel and setting fire to a complete ball of breeding anacondas. Attitudes, at least in areas with a strong tourist presence,



ALAN HIGHTON

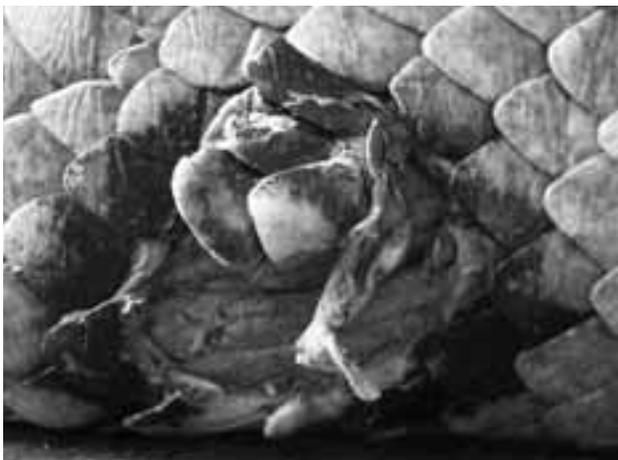
Green Anacondas select prey according to size. Juveniles prey on small mammals, frogs, and large invertebrates, gradually taking larger items as they grow. A giant female 6 m in length can swallow a Capybara or a pig. This juvenile killed a small Common Caiman (*Caiman crocodilus*); note the wounds inflicted during an earlier battle with another prospective meal.

show signs of change, but fear of snakes is very deep-rooted in the human psyche and rational appeals proceed at a limited pace.

Do Anacondas Attack Humans?

Like any other animal in the world, anacondas do not like to be bothered by annoying guides who want to show them to tourists. Predictably enough, anacondas will defend themselves energetically, biting and voiding their bowels when handled. An anaconda bite is not venomous, and, depending on the size of the snake, can be like a cat scratch or a Rottweiler bite. Since the snakes are aquatic, their mouths contain bacteria that can infect a wound. In some cases, anaconda teeth can break off and become embedded in a wound, only to surface months later.

Anacondas longer than 5 m can cause severe injuries, and the long teeth can penetrate to the bones of a hand, for example. An infected bite can also be quite serious and require hospital care. A few cases reported in the literature describe appar-



One of the most striking features of many anacondas of all sizes is the number of wounds, old and recent, on their bodies. Many are attributable to piranhas (*Serrasalmus* sp. or *Pygocentron* sp.).



The principal enemy of anacondas is humans. In almost any encounter between the two, snakes are systematically killed. We see them dead on the road (cars never stop or go around) and killed by *campesinos* when encountered in the field.

ent attacks by anacondas. One in Murphy (1997) involved a young girl caught by her bathing suit and saved by her sisters. The size of the snake is not mentioned. Rivas (1998) mentioned two attacks on his helpers during field surveys in swamps. One of the anacondas measured 5.04 m and the other 4.45 m, and Rivas indicated that both attacks appeared to be predation attempts. An anaconda of 6 m could easily swallow a child or a small adult, and an animal of 8 m could swallow an adult of any size. To be caught, a person would have to be exceedingly careless, asleep, or drunk. As with prey of a similar size, the snake would take several hours to swallow its meal and weeks or even months to digest it.

Sensational stories of anacondas attacking humans have cropped up in popular literature for centuries. Some of these epic and not very realistic accounts were addressed by Murphy and Henderson (1997). Fortunately, no reports of such incidents exist from Venezuela, although rumors of missing persons suspected of having run afoul of anacondas can be heard from local *llaneros*.

Capturing Anacondas:

Defensive Behavior, Bites, and Other Annoyances

When observed along the river during the day, anacondas usually are resting, basking in the sun on the shore completely exposed, or, more commonly, concealed to some extent in tall grass, in *paleras* (floating mats of logs and branches), or submerged with only the nares and eyes exposed. They are more active at night, when they move along shorelines or swim in the shallow water near the riverbank. Capturing an anaconda is never easy. We first try to catch a glimpse of the neck. If the animal is resting and the neck exposed, our task is much simpler.



When handled, anacondas will defend themselves energetically, biting and voiding their bowels. An anaconda bite is not venomous; however, the snakes are aquatic and their mouths contain bacteria that can infect a wound. In some cases, anaconda teeth can break off and become embedded in a wound, only to surface months later. Note also the round “hole,” the opening of the glottis, which can be extended between the lower jaws, allowing the snake to breathe when swallowing large food.

The snake will allow a close approach, and usually the catch is successful. If the head is hidden, we must touch the animal until it starts to move. Once we see the head, we can catch it. If the animal is in the water and the head submerged, we usually grasp the body, and risk being bitten. Especially the smaller, more agile, and aggressive males will turn quickly and strike — but generally we manage to restrain the animal. Some guides use gloves, which are useful to avoid bites, but we tend to be somewhat masochistic and always try to capture the animals by hand. Anacondas can bite underwater, and, on occasion, we have been surprised by an angry male biting our feet.

We have received dozens of bites, some severe. A bite is inevitably painful and bloody. Teeth of large individuals can penetrate to the bone. Only rarely have we decided to leave the anaconda catching for another day due to the severity of injuries. Females are bigger but also calmer and quieter than males, and easier to catch. Once one of us has the neck, we can move or lift the animal depending on its weight. Males are lighter, and we can deal with adults to 3 m in length without too much difficulty. An adult male of 3 m can weigh 5–7 kg. Females are a different question. A subadult female of the same size can weigh twice as much, depending on its girth and whether it has prey in the stomach. Usually females of more than 4 m are difficult or impossible for a single person to lift. The senior author recently captured an impressive female of 5.5 m, so thick that it was impossible for three people to move it! We estimate that it weighed more than 100 kg! An animal of more than 6 m requires at least four people to move it out of the water, and at least 10 people are necessary to lift it.

Other than striking, an anaconda, when secured by the neck, releases a horribly offensive musk from its cloaca. If it splatters skin or clothing, the odor can persist for hours! The stench is truly vile. We quickly wash the cloacal region of any recently captured anaconda, until it releases all the musk into the water.

Once an individual has been shown and photographed by all interested parties, it is released in the same spot where it was captured. After handling, some anacondas become very calm and will remain for a while in the same position in which we leave them. Others disappear quickly. A few adopt a balling defensive posture (Dirksen et al. 1998), in which the snake coils into a ball to protect the head.

Myths

Anacondas are said to produce a powerful and poisonous vapor (Gumilla 1741) capable of stunning victims. Similar beliefs are common to several cultures throughout the world, and especially strongly ingrained in Spain and all of Latin America. Many *llaneros* are particularly fervent believers.

Another common legend tells of a giant anaconda (invariably much more than 6 m in length) coiled in a tree overhanging a pool of water with its tail securely wrapped around a branch, waiting patiently until a cow or bull arrives to drink at the pool. Once the snake catches the snout of the ruminant, the anaconda will firmly grip it while stretching out elastically to an incredible length. When the prey is exhausted, it is killed and the snake will release its tail and proceed to swallow the animal.

Another myth refers to finding an immense anaconda resting and digesting with the horns of a prey animal (either a White-tailed Deer or a cow) sticking out of its mouth. According to *llaneros*, the anaconda will wait until the horns drop naturally as the rest of the animal is digested. Murphy and Henderson (1997) gave little credence to these tales (although horns of prey are known to have survived digestion by pythons in Africa).

Conservation

Little is known about the roles of the top predators in Los Llanos. In addition to the anacondas, top predators include Jaguars, Pumas, Orinoco Crocodiles (*Crocodylus intermedius*),



Capturing large anacondas is a risky proposition.

Spectacled Caimans, Pink River Dolphins, and Giant Amazon Otters. The two biggest predators, the Jaguar and the Orinoco Crocodile, have almost totally disappeared, and Pumas and Giant Otters have become very rare, leaving anacondas and Spectacled Caimans as the principal top predators. The vast llanos ecosystem depends mostly on these two predators and the scavengers (piranhas, vultures, and other raptors) to keep the environment clean and healthy. Of course, alterations by humans have changed the natural interactions between prey and predators by introducing cattle, hunting deer and Capybaras, and over-fishing. Some almost untouched llanos ecosystems remain in national parks, but most private preserves have been substantially altered, although no hunting is allowed. To protect cattle, large predators are exterminated, and then natural prey, such as Capybaras and deer, increase in numbers well beyond the natural carrying capacity. Anacondas thus fulfill a very important role — if they are not killed.

Advocating protection for snakes is always difficult, but attitudes show signs of changing. We see fewer anacondas killed now than we did years ago. People use them less for natural medicine (although some still believe that the fat is miraculous for rheumatism). On one occasion, we rescued a huge anaconda of 4.5 m that was kept by a local fisherman who wanted to extract the fat and sell it for a high price.

Anacondas remain quite common in some areas. Endless swamps are not amenable to humans, yet provide ideal habitat for giant serpents. Also, big rivers and small tributaries offer many opportunities for anacondas to live and hide with little disturbance. The most important aspect of conservation is to convince *llaneros* to value and protect their natural heritage. Educational campaigns, posters, lectures in local schools, and demonstrations show that anacondas are not dangerous and can be economically important as an attraction for tourists.

Can Ecotourism Protect Anacondas?

In the past ten years, we have shown hundreds of anacondas to tourists from all over the world. We believe that personal contact with anacondas is necessary to convey the conservation message. We generally capture one specimen per group (and usually show many more), and make everyone feel the power of its muscles, feel its skin, see the colors, and even experience the terrible smell. When a tourist is faced with an anaconda, even if held by one of us, reactions are diverse, ranging from excitement, fascination, and admiration to abject fear. Even many who are scared at first will eventually agree to touch or even to hold one of these animals and, in the process, perhaps reconsider the idea that all serpents are evil. Having at hand one of nature's most powerful predators and seeing it in its own habitat is a unique experience, which we hope will give visitors an idea of the importance of preservation. When these people return to their cold homes in Sweden, England, or Canada, and tell incredible stories to their friends, some of them in turn want to see the show live! This as much as any other single factor has led to an increase in ecotourism in Los Llanos — with the primary objective of seeing, among the other spectacular animals, anacondas. Eco- or bio-tourism operators (at least the most serious) offer work to many people in Los Llanos, boatmen, local guides, cooks, etc. They and the people around them



The two largest predators of the Venezuelan Llanos, the Jaguar and the Orinoco Crocodile, have almost totally disappeared, and Pumas and Giant Otters have become very rare, leaving anacondas and Spectacled Caimans as the principal top predators.

(family, friends, neighbors), all fishermen, and other potential enemies of anacondas and other animals in time will see the value of protecting these animals, recognizing that they attract tourists and thus, money for the village.

What are the Negatives?

During the rainy season, when Los Llanos are flooded, the huge concentrations of birds and caimans, turtles and piranhas disperse into the flooded savannas and become difficult to see. In Venezuela, the rainy season extends from mid-May to mid-November. Anacondas also are much harder to locate and, although we advertise this fact, tourists may be disappointed. Inevitably, entrepreneurial *llaneros* will capture any anaconda they can find (and keep it in a bag for weeks or until it dies or is too weak or thin to be interesting) and offer to show it for a price. Others tie a rope around the neck of a big snake and keep the animal in a swamp until the tourists arrive with a local guide, at which time the giant suddenly appears (always with neck injuries) to the delight of tourists unaware of the fraud. Such dishonest practices can penalize “honest” guides, but is this truly negative? The impact is not pronounced; only a few anacondas serve as bait, and the educational aspect for the tourists can be more positive than if they do not see any snakes. Nevertheless, it presents a false image of nature, and we do not engage in or approve of such dishonesty.



We believe that personal contact with anacondas is necessary to convey the conservation message. We generally capture one specimen per group and let everyone feel the power of its muscles, feel its skin, see the colors, and even experience the terrible smell.

Some tourists do not want to touch snakes, only observe them, not out of fear, but because they claim that we stress the animals. Yes, this is likely true. However, reptiles do not stress like birds or mammals, due to their slower metabolism. Usually, big snakes like anacondas, but also smaller boids, iguanas, and caimans, fight for a short period when captured and then cease to move, as if in a trance... This is the perfect moment to show them to people, to take pictures, and in a few minutes, the animal is free again, at the same location. Only a few animals are caught and used as live teaching material, always with concern for the well-being of both captor and captive. They always are released quickly, and often become wary of being captured again (minimizing any potential stress). Some anacondas, however, have been recaptured several times, and they always seem to be in perfect shape.

Future Perspectives

Much remains to be learned about the natural history of anacondas and we would like to do our part. We have the ability to follow populations of anacondas at little cost. We can mark, photograph, measure, and release anacondas whenever we take tourists to Los Llanos. Attaching radio transmitters to some of these animals and tracking them, especially during the rainy season when the savanna is flooded and the anacondas disappear from the river shores, would surely provide much insight into the lives of these intriguing serpents.

Acknowledgements

We are indebted to Arassari Trek (www.arassari.com), the company for which we have been working for many years. They have made it possible for us to develop our interest in nature directly in Los Llanos. We also are grateful to the many *llaneros* who have worked with us for more than 10 years: Azael, Carlos Andrés, Dixon Güiza, Luison, Asdrúbal, and many others. Robert Henderson and Lutz Dirksen provided valuable information and helped correct our English, improving the manuscript dramatically.

Literature Cited

Dirksen L. 2002. *Anakondas: Monographische Revision der Gattung Eunectes Wagler, 1830 (Serpentes, Boidae)*. Natur und Tier Verlag, Münster.

- Dirksen, L. and W. Böhme. 1998. Studien an Anakondas II: Zum taxonomischen Status von *Eunectes murinus gigas* (Latreille, 1801) (Serpentes: Boidae), mit neuen Ergebnissen zur Gattung *Eunectes* Wagler, 1830. *Salamandra* 34: 1–16.
- Dirksen, L. and W. Böhme. 2005. Studies on anacondas III: A reappraisal of *Eunectes beniensis* Dirksen 2002, from Bolivia, and a key to the species of the genus *Eunectes* Wagler, 1830 (Serpentes, Boidae). *Russian Journal of Herpetology* 12: 223–229.
- Dirksen, L., E. Buongermini, C. Strüssmann, and T. Waller. 1998. Protective balling-posture behavior in the genus *Eunectes* Wagler, 1830 (Serpentes: Boidae). *Herpetological Natural History* 6: 151–155.
- Gumilla, J. 1741 (1999). *El Orinoco Ilustrado*. Los Libros de El Nacional, Colección Ares, Caracas, Venezuela.
- Robertson, M.M.K. 1998. Cõro de Sucurí (Anaconda snake skin). *Reptiles* 6(9): 36–39.
- Murphy, J.C., 1997. *Amphibians and Reptiles of Trinidad and Tobago*. Krieger Publishing Co., Malabar, Florida.
- Murphy, J.C. and R.W. Henderson. 1997. *Tales of Giant Snakes: A Historical Natural History of Anacondas and Pythons*. Krieger Publishing Co., Malabar, Florida.
- Rivas, J. A. 1998. Predatory attacks of Green anacondas (*Eunectes murinus*) on adult human beings. *Herpetological Natural History* 6: 157–159.
- Rivas, J. A., M. C. Muñoz, G. M. Burghardt, and J. B. Thorbjarnarson. 2007. Sexual size dimorphism and the mating system of the Green Anaconda (*Eunectes murinus*), pp. 313–325. In: R. W. Henderson and R. Powell (eds.), *Biology of the Boas and Pythons*. Eagle Mountain, UT: Eagle Mountain Press.
- Strimple, P.D. 1993. Overview of the natural history of the Green Anaconda (*Eunectes murinus*). *Herpetological Natural History* 1(1): 25–35.
- Strimple, P.D., G. Puerto, W.F. Holstrom, R.W. Henderson, and R. Conant. 1997. On the status of the Anaconda *Eunectes barbouri* Dunn and Conant. *Journal of Herpetology* 31: 607–609.



When a tourist is faced with an anaconda, even if held by one of us, reactions are diverse, ranging from excitement, fascination, and admiration to abject fear.