COMMENTARY

Anaconda Conservation: A Reply to Rivas

Tomás Waller and Patricio Alejandro Micucci

Fundación Biodiversidad, San Martín 945 piso 3 #23, Buenos Aires, Argentina C1003AAS

Since 2002, Fundación Biodiversidad (FB) has conducted a management program for Yellow Anacondas (*Eunectes notaeus*) in Formosa Province, Argentina. The main objective of the program has been to establish a sustainable-use model that ensures equity among users while promoting research and conservation of the resource. Recently, Rivas (2007. *Iguana* 14(2): 74–85) criticized the program in the context of his opinions regarding the impact of global economic development on the conservation of Green Anacondas (*Eunectes murinus*). Although we provided a detailed review of the Argentine program (Micucci and Waller. 2007. *Iguana* 14(3): 160–171), we believe a more specific response to his comments is appropriate and necessary.

TOMÁS WALLER

Yellow Anacondas (*Eunectes notaeus*) harvested as part of the Yellow Anaconda Management Program (YAMP) in Formosa Province, Argentina. Snakes are held alive for biological studies before being killed and skinned.

Rivas's views are based almost entirely on a brief visit he made during September 2002 to Formosa, at the end of the first experimental hunting season. He was seeking images of Yellow Anacondas for a National Geographic Channel (NGC) documentary. Two years later, FB was invited to review the "Objective Anaconda" script with a commitment of "… not putting on-air the documentary until all comments were taken into consideration" (V. Linares, in litt., NGC — Research, Standards, & Practices, 30 March 2004). Since the most questionable opinions were made by Rivas on-the-air, this apparent compromise was not adequately addressed, and the final product was, at least, controversial. In reviewing his recent article in *Iguana*, we quickly came to the conclusion that, in these subsequent years, he has chosen not to inform himself properly regarding the basics of the program, which would have allowed him to support his position with facts instead of errors and misconceptions.

Specifically, Rivas stated that the Argentine program promotes the hunting of specimens larger than 2.3 meters, not specifying if this size relates to skin size, snout-vent length (SVL), or total length. He also mentioned that hunting takes place "... at the beginning of the warm season...," when, in fact, the Program allows local people to harvest snakes above 2 m SVL during the local winter (June–August). Additionally, Rivas stated that the skin minimum size limit established (2 m SVL = 2.3 m skin length) responds to a commercial requirement for large skins. On the contrary, the current skin size limit was established as a control variable (Micucci et al. 2006). Historically, specimens over 1.3 m SVL were hunted with no additional considerations, affecting all size classes in the population; the 2-m limit reduced by half the snakes vulnerable to hunters. Logically, the international markets prefer large hides (this is true of all reptilian species in the skin trade); the coincidence between market preferences and program requirements is circumstantial but advantageous because it warrants economic sustainability.

Further, Rivas provided a simplistic analysis of the program's economics by referring to what he called "the lion's share" of the income going to the private sector. However, on the 'cost' side of his analysis, he only took into consideration the price of the skins paid to hunters (in 2002), but forgot to mention the other costs that are paid by the private sector (e.g., program research and running expenses, logistics, freight, state and national taxes). Rivas's logic falls apart if we apply the same criteria to other examples, such as comparing the price of a valued fish on a fancy restaurant menu to the cost of that fish paid at

acquisition from the fisherman. Rivas implied that the program failed to ensure resource (land and snakes) protection without providing any evidence — and based only on a weekend-trip during the first year of the program! He ignored the realities that the La Estrella marsh is an area protected by law since 2005 and that the anaconda harvest program is the only operation permitted in that wetland. Another misconception occurred when he proposed that "... the program was less of an effort to manage anacondas than an economic enterprise using anacondas as a capital commodity..." We see no contradiction in managing anaconda populations for selling skins to benefit local people and committed investors, similar, for example, to programs that ranch and harvest alligators in the United States, crocodiles in Cuba, or caimans in Venezuela.

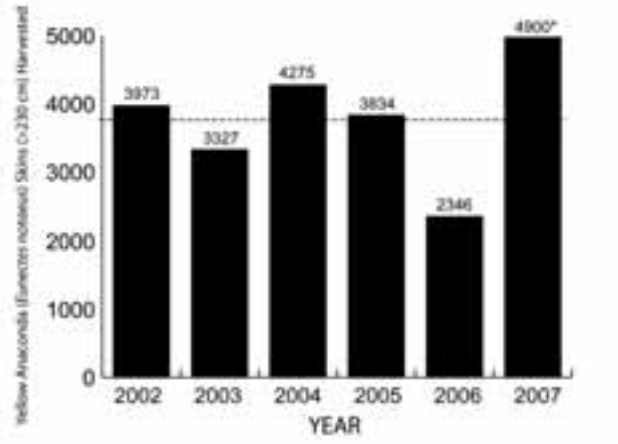
This author also stated that the program resulted solely from a proposal by the private sector in Formosa in response to the 2002 breakdown suffered by Argentina. This is, to say the least, false and absurd. FB conceived and proposed the Yellow Anaconda program as an alternative to the historical misuse of this living resource that had been exploited without restrictions for more than 60 years! Rivas chose to ignore decades of tradition of Argentina as a wildlife exporter (e.g., up to 1 million Tegu lizard hides/year and 300,000 fox hides/year) and demonstrated considerable naivety by suggesting that the impact of the harvest of 5,000 Yellow Anacondas per year would modify the course of the nation's or even the province's, economy! In addition, his interpretations of national or provincial competence at managing natural resources are simplistic. Since the Yellow Anaconda

EMILIO WHITE

Emergent logs and logs covered by climbing plants, locally known as "champas," are preferred basking sites of *Eunectes notaeus* in La Estrella marshes in northeastern Argentina. Snakes seek these microhabitats during the winter, when water temperatures drop to 15 °C or lower. Both males and females need warmer temperatures to complete gonadal cycles before the onset of the mating season in spring.

EMILIO WHITE

Yellow Anacondas (*Eunectes notaeus*) are most vulnerable to collection during the winter when they are cold and leave the water to bask.



Yellow Anaconda (*Eunectes notaeus*) skins (>230 cm) harvested between 2002 and 2007. Average: 3,800 (dotted line). *Definitive value pending.

is a CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendix-II species, the government's only responsibility is to assure compliance with Article IV (non-detriment finding) of the Convention.

Rivas affirmed that the program harvests mainly female snakes. Although 75% of the animals harvested are females, the rationale for this practice does not correspond to his unsophisticated deductions. Instead, this proportion results from the interplay of a minimum size limit, the species' natural size distribution, and a pronounced female-biased sexual size dimorphism (Micucci and Waller 2007). If the minimum size were reduced in an effort to reduce the *proportion* of females versus males taken (presumably because more males would be hunted), the actual result would be an increase in the *absolute* numbers of females harvested, since allowing smaller animals to be taken would inevitably entail the sacrifice of young and small adults of both sexes that currently are protected by the program. Ultimately, what matters is the actual proportion of females taken from the population, which we estimate to be less than 5%. Rivas also erroneously stated that *pregnant* females are differentially affected by the harvest, on the assumption that gravid females are most visible when basking. However, at our latitude the harvest occurs during the cool winter months, exactly when the species is not reproducing, a fact that he as an anaconda specialist should not ignore. At the end of his article, he affirmed that local hunters "... anticipated a sharp decline in anacondas..." This comment, aside from a lack of scientific rigor, is far from reality, since, five years after his visit, the 2007 harvest season generated record results — without significant changes in skin size or sex structure of the population.

We consider that Rivas' article was fostered by an exaggerated concern for anacondas. According to CITES statistics, current volume in trade is null or negligible compared to historical records and aquatic habitat destruction has been slight on a global scale, especially when compared to the fate of terrestrial ecosystems. Consequently, we believe that Rivas exploited these "TV-fashionable" animals in order to express his personal views on the world economy and his prejudices against wildlife-utilization policies that he rejects for subjective reasons. For example, his statements that management under sustained yield models (i.e., Yellow Anacondas in Argentina, most fisheries) demands a previous assessment of a species' population size and intrinsic rate of increase and that obtaining basic biological data is a prerequisite for management are both readily disputable. Sustained-yield models were devised to manage non-easily assessable populations (like most fisheries) and, due to the feedback that management provides, estimates of basic demographic parameters like abundance and rates of increase are then possible (Caughley and Sinclair 1994). In fact, management decisions rarely result from pure research (Webb 2002), and the "adaptive management" concept (Hollings 1978) evolved to overcome the usual insurmountable difficulties that represent acquisition of basic demographic parameters as a prerequisite for wildlife management.

Rivas opined that some practical conservation initiatives are *laudable,* but that conservationists would be more *effective* in achieving conservation goals by subscribing to anti-globalization movements is non-realistic. Predicting the outcome of changing economic policies that are not expected to be realized for 25–50 years is impossible (Wallerstein 1999). Moreover, opposition to economic changes does not provide solutions for wildlife conservation, as the main concerns of such movements are socio-economic in nature, and have little to do with human population growth and its effects on wildlife and habitats. Although we totally agree that the world's emphasis on development at all costs fails to address many crucial issues, we are simultaneously convinced that practitioners of conservation should address actual problems with available tools and technologies in order to be effective. Boycotting current conservation strategies in favor of ideological utopias is both ineffective and discouraging. If I suffer from a smoking-related illness, even though I believe it would be laudable for my physician to support anti-tobacco movements, I still need his medical expertise right now in order to preserve my life. In conclusion, we emphasize that "care must be taken to assure that subjective criteria about *what the natural world should look like* are not confused with objective management goals" (Sinclair 1997).

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