
Current Address:
Texas A&M University
College of Agriculture & Life Sciences
Dept. of Wildlife and Fisheries Sciences
210 Nagle Hall
College Station, Texas 77843-2258
Two species of tegu lizards of the genera *Tupinambis*, *T. teguixin*, and *T. rufescens* (fig. 21.1), are heavily exploited for their skins in Argentina. Each year, more than 1,250,000 skins are exported from Argentina to the United States, Canada, Mexico, Hong Kong, Japan, and several European countries. Some skins are reexported or made into exotic leather accessories, but the majority of the tegus are destined to become cowboy boots in Texas (Hemley 1984a). Surprisingly, the trade has continued at this level for at least 10 years (Hemley 1984a: Norman 1987). An internal Argentine market also exists for tegu skins, but it has not been quantified.

The large trade in *Tupinambis* has caused concern among some government and nongovernment organizations because the biology of the lizards is essentially undescribed, and the effects on the tegu populations and associated biotic communities of removing more than one million individuals annually are unknown. Although population declines have not been documented, it seems prudent to study *Tupinambis* biology and formulate long-term management and conservation plans if the ecological, economic, and cultural values of the resource are to be guaranteed.

The *Tupinambis* trade is important to the Argentine economy. The export value of the resource is worth millions of dollars annually, and for rural peoples in northern Argentina with low wages or intermittent employment, tegu hunting is a significant source of income. In the vicinity of Joaquin V. Gonzalez, Salta, where we concentrated field work in 1987–88, hundreds of people hunt tegus, and the sale of each skin (about U.S. $4) is equivalent to a day’s wages for a farm hand. Additionally, about half the families eat the meat, and tegu fat is highly valued for medicinal purposes (Donadio and Gallardo 1984).

This project was funded by the World Wildlife Fund-US (WWF-US), the Convention on International Trade of Endangered Species of Flora and Fauna (CITES), and the Camara de Industriales de Curtidores de Reptiles de Argentina (CICuR) with the aim of describing the population biology and ecology of...
Figure 21.1. A juvenile (approximately 280 mm SVL) *Tupinambis teguixin*, the common tegu (top) and an adult male (approximately 430 mm) *Tupinambis rufescens*, the red tegu (below). (Photo, Larry E. Naylor)

*Tupinambis* in Argentina. The project is unusual in that the reptile skin traders, who benefit the most from exploiting the lizards, finance the majority of the project. Hopefully, the *Tupinambis* project will serve as a model for funding other studies of natural resources in Latin America.

The long-term goals of the project are to determine the factors necessary to ensure the conservation and rational use of Argentine *Tupinambis* populations
and develop a workable management scheme. To achieve this goal, we have begun studies of *Tupinambis* reproductive biology, behavior, demography, habitat use, activity patterns, growth rates, diet, morphology, and hunting methods. In this chapter we elucidate the relationships between *Tupinambis* natural history and the present exploitation system and explore the implications of these relationships for *Tupinambis* management and conservation. We present results from the first 6 months of field work and finally we outline future research and potential management approaches.

**Distribution and Natural History of *Tupinambis* in Argentina**

*Tupinambis* systematics are unresolved, but at least three, and possibly other *Tupinambis* species occur throughout South America east of the Andes (Presch 1973; Gudynas 1985).

In Argentina, *T. teguixin*, the common tegu, occurs in the provinces of Misiones, Corrientes, eastern Formosa, Entre Ríos, eastern Chaco, Santa Fe, southeastern Córdoba, eastern La Pampa, and Buenos Aires (Presch 1973; Donadío 1984) (fig. 21.2). *T. rufescens*, the red tegu, occurs in the northwestern part of the country, in the provinces of Salta, Jujuy, western Chaco, western Formosa, Santiago del Estero, eastern Tucumán, San Juan, Mendoza, and as far south as northeastern Patagonia (Cei and Scolaro 1982) (fig. 21.2). The distribution of *T. rufescens* extends into the Paraguayan and Bolivian Chaco, some arid parts of eastern Paraguay, and southern and southeastern Brazil (Presch 1973; Norman 1986). Both species may occur sympatrically in eastern Paraguay (Presch 1973; Norman 1986) and in the provinces of Chaco, Formosa, and Santiago del Estero, Argentina.

*Tupinambis rufescens* is a more arid land species than *T. teguixin*, but within their ranges both species use a variety of habitats, including primary forest, disturbed and regenerating forest, fence rows, and shelter belts between plowed fields. They are capable of excavating their own burrows, but commonly take refuge in burrows made by other animals or in natural cavities. Tegus are omnivorous, including carrion and fruit in their diets as well as snails, insects, and small vertebrates (Gudynas 1981; Dessem 1985).

*Tupinambis* are the largest members of the Teiidae; males of both species can exceed 500 mm snout-vent length (SVL) (1300 mm total length) and weigh up to 4.7 kg (unpubl. data). *Tupinambis* exhibit sexual dimorphism in that adult males are longer and heavier than females on average, with wider heads and enlarged jaw musculature. Male tegus also possess two “buttons” of enlarged scales in the postanal region.

With preliminary data from wild and captive populations, we have assembled a fairly clear picture of tegu breeding chronology in Argentina. Both species overwinter in burrows and emerge during the first hot days in September and October. *Tupinambis teguixin* mates from September through early Jan-
Figure 21.2. Estimated distributions of *Tupinambis teguixin* and *T. rufescens* in Argentina. The provinces where commercial tegu harvests were authorized at the time of writing are numbered: 1 = Salta; 2 = Formosa; 3 = Chaco; 4 = Santiago del Estero.

January, and in the dry chaco *T. rufescens* starts breeding a few weeks later, probably depending on the start of the rainy season (fig. 21.3). In captivity at Guaycolec Reserve, Formosa, of thirty male and thirty female *T. teguixin* that had opportunities to mate, only large individuals did so. Small males were rejected by breeding females, and small females would not copulate. Five successfully breeding males averaged 438 mm SVL, with an average weight of
3,759 g, whereas the five breeding females averaged 382 mm SVL and weighed 2,263 g.

Nesting begins in mid-November and peaks in December, but occasionally gravid females can be found as late as February. Females of both species construct nests out of moist grass, small sticks, and miscellaneous litter in burrows. *Tupinambis teguixin* laid twenty-nine to thirty-nine ($n = 5; \bar{x} = 33.75$) eggs at Guaycolec, and clutch sizes of twenty to fifty-four were reported by Donadío and Gallardo (1984). Two nests of *T. rufescens* from the wild contained twenty-five and twenty-four eggs, but clutch sizes greater than thirty are known (pers. obs.). After the incubation period of 45 to 75 days, young hatch from late December through March (fig. 21.3).

Interestingly, females remain with their nests throughout the incubation period, possibly to provide protection. Hunters claim that females attend nests, and this has been the case with nests we have excavated. At the Guaycolec facility, females remained near their nesting burrows once nests were constructed, and nesting females were noticeably aggressive towards intruders. Hatchlings remain for at least a few weeks in the nesting burrow with the fe-
male. Whether parental care is involved in this relationship, whether the mother and young overwinter together, and the effects of maternal presence on offspring survival are topics of current and future research.

Observations at El Palmar National Park indicate that during the courting period, tegus roam over relatively large home ranges, and much fighting ensues between males. Males frequently mark along trails and around the burrows they visit by rubbing their thighs, tails, and cloacas along the ground, presumably leaving behind secretions from the femoral pores and cloaca. Females also leave marks but much less frequently than males. We observed such marking behaviors both in captivity and in the wild at El Palmar National Park. After the mating season, both sexes apparently mark less frequently, and their home range size decreases.

Dominance in *Tupinambis* clearly depends on size (Chani and Fitzgerald, pers. obs.). Displacement aggression can occur between individuals of all sizes and either sex and usually results in the largest individual displacing the smallest. In captivity during the breeding season, these aggressions result in dominance hierarchies between males and the formation of temporary pseudoterritories.

### Captive Rearing Projects

At least five captive rearing efforts of both species of *Tupinambis* are ongoing in Argentina; we have information on three of the facilities. The captive breeding program at Guaycolec Reserve, Formosa, is supported by the Province of Formosa, WWF-US, and the Curtiembre Formosa tannery. The main objective of this program is to contribute to *T. teguixin* conservation by transferring captive rearing technology to indigenous communities and colonists in northeastern Argentina. The hope is that small-scale captive operations may be operated by families as a source of meat and skins. At Guaycolec, *T. teguixin* has successfully reproduced, and approximately 160 young hatched in 1987–88. Another facility in the city of Presidente Roque Saenz Peña, Chaco, supported by the province of Chaco and financed by the Curtiembre Chaco tannery, shares objectives and information with Guaycolec. Saenz Peña is located in a zone where both *T. teguixin* and *T. rufescens* occur, and both species are used there. A large facility in Rosario de la Frontera, Salta, forms part of the “Programa Iguana Colorado,” which is operated and financed by S. y F. Trachter e Hijos S. R. L. and Cueros Salta S. R. L. This facility is commercially oriented, operating on the idea that it might be economical to raise *T. rufescens* in large quantities as a skin source. More than 600 animals are in captivity there, and capacity exists to incubate more than 3,000 eggs. Reproduction in captivity was achieved in 1987–88. All three facilities have allowed us to use their captive animals for our research and are valuable resources for a variety of research questions.
The Traditional System of Exploitation

The tegu harvest system could be described as "a million hunters for a million skins." Of course, fewer people really hunt, but in the areas of regular exploitation, almost anyone will catch a tegu if the opportunity arises. The hunting season corresponds with the activity of the lizards, beginning in September and lasting through March. Most hunters in Argentina use one to three trained dogs to track the lizards to their burrows, where they are dug out and captured alive. Occasionally the dogs jump an active lizard and chase it to a temporary refuge such as a hollow log, underneath a thicket, into a hole, or up a tree. Along rivers in eastern Argentina, baited hooks left near burrows are a common capture method.

Hunters can be classified as professional or occasional. There are many, many occasional hunters, and they typically hunt on weekends or during time off from their jobs. Professional hunters use superior dogs and spend much more time hunting than occasional hunters. A professional can bag fifteen tegus on a good day. In ten outings near Joaquin V. Gonzalez, Salta, hunters covered an average of 16.23 (SD = 7.89) ha/day and averaged 3.6 (SD = 3.07) captures.

Once killed, the lizards are skinned from the dorsal side, leaving the ventral plates intact. Skins can be sold directly to the tanneries, but more often the skins pass through middlemen. Hunters in remote areas sell skins or trade for goods to mobile acopiadores, who resell the skins to tanners or to another level of middlemen, barraqueros (Donadio and Gallardo 1984) (fig. 21.4). The skins' market value depends on their width when dry, so a strong incentive exists to stretch them as much as possible. Acoipadores and barraqueros even restretch skins in order to sell them as a larger size. Skins are traded according to three size classes: in the vicinity of Joaquin V. González during 1987–88, class I skins (more than 300 mm wide) fetched about US$4; class II skins (250 to 299 mm wide) brought US$2, and class III skins (less than 250 mm wide) were worth less than US$1. Skins may be devalued if they are scarred or poorly prepared. The tanneries need class I and II skins and actually prefer not to buy smaller skins. Paying low prices for class III is a way the tanneries put economic pressure on hunters not to collect small skins, and over time, this pressure may have resulted in fewer small skins circulating. The tanneries deal with many middlemen who will sell class I only on the condition their entire stock is purchased, so some class II and III skins always enter the trade (Casado Sastre, pers. comm.).

Four provinces in northern Argentina traditionally authorized Tupinambis harvests: Santiago del Estero, Formosa, Chaco, and Salta (fig. 21.2). Each year, these provinces formulated legal decrees that set harvest quotas for tegus based on the needs of the industry and the province.

Harvest quotes have had little or no biological basis in that tegu population
Figure 21.4. (above) The flow of tegu skins in Argentina. Hunters sell skins directly to tanneries or to either level of middlemen, who then resell to the tanneries. The internal market in Argentina has not been quantified.

Figure 21.5. (above, right) Semitanned tegu skins, or “crusts,” being sorted at a tannery. Skins in this stage of the tanning process may be legally exported from Argentina or may be further processed into finished leather. (Photo, Ginette Hemley/WWF-US)

size and structure have never been estimated. Not all tegu skins derive from the four provinces where hunting is legal, but we have no estimates of what proportion of the total annual harvest originates in other provinces. Skins collected in other areas may pass into one of the four harvesting provinces and figure as part of that province’s quota. Additionally, skins cross the borders from Paraguay and Bolivia into Argentina and enter the Argentine trade (Norman 1987). Thus it is likely that the quotas of the harvesting provinces do not reflect well the level of exploitation there.
But the provinces’ approach to tegu commercialization is rapidly changing, and a new system controlling tegu commerce is already being implemented. A group called the Comisión Tupinambis was formed in 1988 and consists of directors of provincial wildlife agencies, skin traders, and others interested in tegu management and exploitation. Ten provinces participate in the Comisión Tupinambis: Salta, Formosa, Chaco, Santiago del Estero, Jujuy, La Rioja, Santa Fe, Corrientes, Entre Ríos, and Catamarca. All of these provinces except Corrientes, Catamarca, and Entre Ríos had legalized tegu harvests for the 1988–89 season at the time of this writing. The main thrust of the Comisión Tupinambis is to stabilize tegu commerce within the provinces through tax incentives. Fewer taxes are levied on tanned and semitanned skins leaving the province of origin than for raw skins. Taxes on transport permits for raw skins in 1989 were $1 per skin, $0.16 per semitanned skin, and only $0.08 per finished skin. Because of the tax breaks, it is hoped that skins originating in a province remain there throughout the tanning process. In this way, the provinces hope that the tanning industry will build more tanneries in the provinces where tegus are harvested, resulting in industrial development and creating jobs.

The Comisión Tupinambis plan has important implications for management. Once a legal harvest and control system is in place, wildlife managers will know the number of skins harvested in each province and will be able to monitor the effects of management practices.

Argentina is signatory to CITES, and Tupinambis skins leave the country with CITES export permits according to appendix II rules. Skins must be tanned or semitanned before export, which facilitates monitoring the trade and also means that more of the industry is a national endeavor than if raw skins were exported (fig. 21.5).

Impacts of Hunting on Tegu Populations

Seasonal differences in activity among males, females, and juveniles may play an important role in which sizes and sexes of tegus are most vulnerable to hunters at a given time. Hunters’ dogs track tegus by their scent, and if males are indeed more active and leave marks over larger areas than females, a logical prediction is that males should be especially vulnerable to hunters during the breeding season. Conversely, fewer females should be hunted if they occupy smaller home ranges and remain near their nesting burrows. If territoriality in tegus is strictly related to the mating process, then one would not expect juveniles of either sex to be heavily hunted. If males reduce their activity after the mating season, then at this time, they may be no more vulnerable than females.

These predictions were supported with data from 118 adult Tupinambis rufescens purchased from hunters in 1987–88. Seventy-eight percent of adults collected in the breeding season month of November were males (chi-
Figure 21.6. The percentage of males by sample month in a collection of *Tupinambis rufescens* purchased from hunters in 1987–88 near Joaquin V. Gonzalez, Salta, Argentina.

square = 4.500; \( p < 0.05 \), compared to 47% to 60% males in other months (fig. 21.6). The association between the number of each sex collected and month was not significant (chi-square = 4.128; \( p > 0.25 \)), but the trend suggests that males were more active during the breeding season and that there was little difference in activity levels between the sexes at other times of the year.

Not only were more males hunted in November, but interestingly, they were significantly longer than males taken in other months (d.f. = 4,92 F-ratio = 3.217; \( p < 0.02 \)). Female SVL did not differ among sample months (d.f. = 4,79 F-ratio = 0.540; \( p > 0.50 \)).

We also searched for evidence of differential vulnerability of male and female tegus to hunters by examining trends in harvested skins. We measured and sexed thousands of skins in Curtiembre Formosa tannery in December, January, March, and April and tested for deviations from equal sex ratios among the three skin size classes (table 21.1). We predicted that more male than female class I skins should appear early in the season because those skins belonged to large adult lizards. Most of the skins in classes II and III probably came from immature individuals, thus sexes in those size classes should have been equally represented.

Male and female *T. teguixin* sampled in December were represented equally in classes I and II, and significantly more females were tallied in class III (table 21.1). In the January sample, however, significantly more males of both species occurred in class I, and there was no difference in class II for either species. Significantly more females occurred in class III *T. rufescens*, but there was no difference in class III *T. teguixin*. Significantly more males occurred in the March sample of class I *T. teguixin*, but there was no difference in class I *T. rufescens*. Sexes were equally represented in classes II and III *T. teguixin* in March, but significantly more females occurred in class II and III *T. rufescens*. Class I males of both species were equally represented in the April sample, but again, significantly more females were tallied in the smaller size classes. It is curious that more females often occurred in classes II and III (table 21.1). We
TABLE 21.1
Percent Male Tegus (total n) in Samples of Each Skin Size Class
Measured in Curtiembre Formosa Tannery

<table>
<thead>
<tr>
<th>Skin Size Class</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tupinambis teguixin (T. teguixin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>53.9 (306)</td>
<td>40.9 (110)</td>
<td>40.5 (190)</td>
</tr>
<tr>
<td>p &gt; 0.1</td>
<td></td>
<td>p &lt; 0.1</td>
<td>p &lt; 0.01</td>
</tr>
<tr>
<td>January</td>
<td>66.3 (725)</td>
<td>51.7 (594)</td>
<td>51.5 (301)</td>
</tr>
<tr>
<td>p &lt; 0.001</td>
<td></td>
<td>p &gt; 0.50</td>
<td>p &gt; 0.50</td>
</tr>
<tr>
<td>March</td>
<td>58.6 (1421)</td>
<td>50.9 (678)</td>
<td>45.2 (416)</td>
</tr>
<tr>
<td>p &lt; 0.001</td>
<td></td>
<td>p &gt; 0.75</td>
<td>p = 0.05</td>
</tr>
<tr>
<td>April</td>
<td>59.3 (86)</td>
<td>67.3 (150)</td>
<td>46.0 (150)</td>
</tr>
<tr>
<td>p &gt; 0.25</td>
<td></td>
<td>p &lt; 0.001</td>
<td>p &gt; 0.25</td>
</tr>
</tbody>
</table>

| Tupinambis rufescens (T. rufescens) |           |            |             |
| January         | 57.4 (584) | 44.2 (163) | 32.7 (202)  |
| p < 0.001       |            | p > 0.1    | p < 0.001   |
| March           | 51.2 (704) | 33.4 (411) | 29.6 (584)  |
| p > 0.75        |            | p < 0.001  | p < 0.001   |
| April           | 50.9 (214) | 27.3 (150) | 28.0 (150)  |
| p > 0.75        |            | p < 0.001  | p < 0.001   |

Note: values were calculated from goodness-of-fit tests to show deviations from equal sex ratios.

could have made sexing errors, or the secondary sexual characteristics of males may not be readily evident in classes II and III.

To summarize, the results indicated differential harvests of male and female tegus, but the pattern differed from that obtained in the analyses of collections. Adults (class I skins) were equally represented in December and April, but significantly more males appeared in January and March. Perhaps males were more vulnerable than females throughout the season, or geographical variation in tegu activity was responsible for the observed pattern. It is also likely that middlemen held large skins while waiting for better prices late in the season, thus influencing the data.

Implications for Management and Research Priorities

Understanding the biological and socioeconomic factors that have allowed tegu populations to endure harvests greater than 1,250,000 every year for at least 10 years might enable us to design management practices that operate within the traditional exploitation system, as well as assess the security of *Tupinambis* in Argentina. Tegu populations may have endured high harvest rates because there simply were a lot of tegus and habitat available. New areas may be hunted as populations decline in other areas, or alternatively, populations
may persist in spite of hunting pressure. As wildlands are developed and roads built, previously unexploited regions become hunting grounds, but it is also certain that the same areas where tegus have been hunted for years, such as the province of Santiago del Estero, continue to produce skins. Other than plowed fields and urban centers, we know of no historical locality where tegus cannot still be found today. Thus it seems promising that *Tupinambis* populations in traditionally harvested areas tolerate hunting without obvious extirpations. Still, it is dangerous to assume that a sustainable harvest level has been reached merely because large numbers of skins can be gathered year after year. An alternative hypothesis is that traditionally exploited populations might not produce many large skins even though they still tolerate hunting. The international market for tegus requires large skins, so in this case new hunting areas would continually be required. Development and wildlife exploitation in northern Argentina are both increasing (Bucher 1986; Ojeda and Mares 1984), and the extent of new hunting grounds for tegus is finite. Clearly, the relative contributions of traditional and new hunting grounds to the annual tegu harvest has far reaching ramifications for the long-term stability of *Tupinambis* populations and the tanning industry that depends on them.

In many areas that have historically been hunted, tegu populations might have been maintained due to the difficulty of hunting tegus in certain habitats and the proximity of refugia. If an exploited area adjoins an adequate refugium, such as a dense forest inaccessible to hunters, then the lizards that are removed could be replenished by recruitment and immigration. Many areas are not frequented by hunters because they are either remote or terrain makes hunting difficult. In the dry chaco, expanses of dense thorn forest are ignored, whereas roadsides, fence rows, and shelter belts are favored hunting sites. Hunters rarely venture more than 25 km from their homes and usually return the same day. Roadsides constitute potential hunting areas, as does any primary or secondary forest surrounding pastures, plowed fields, and ranchers' line camps.

Hunters are also limited by the number of hours they can hunt per day, by weather that inhibits tegu activity, and the entire hunting season lasting about 7 months. We observed that tegus sometimes escape into inaccessible holes and burrows, notably viscacha (*Lagostomus maximus*) warrens or abandoned leaf-cutter ant (*Atta*) mounds, but need to quantify hunter efficiency before we can evaluate if a meaningful number escape. Additionally, it is likely that hunting pressure drops in localities where fewer and smaller tegus are hunted per unit time, and such a respite could reduce impacts on populations, especially if reproductive individuals are left. To test the hypothesis that it is difficult to reduce populations to nonrecoverable levels, we need to work with hunters who will repeatedly visit established hunting plots until, after repeated attempts, they cannot find any tegus.

Growth rates and the reproductive output of females of different sizes are undescribed *Tupinambis* life history parameters that influence population
growth rates and, hence, their recoverability. Newborn *T. rufescens* from the "Programa Iguana Colorada" captive rearing facility near Rosario de La Frontera, Salta, measured 82 mm SVL on average (*n* = 20; SD = 4.90) and captive yearlings 274 mm SVL (*n* = 20; SD = 35.58). Assuming slower growth rates in the wild of about 100 mm/yr during the first 3 years, a tegu in its third year would measure more than 350 mm SVL and be within the size range of known breeding females. We are determining size at first reproduction by analyses of reproductive tracts and quantifying growth rates from skeletal characteristics and by mark and recapture of *Tupinambis teguixin* in El Palmar National Park. Establishing size-specific growth rates and fecundity (clutch size) will allow estimation of the reproductive output of females that are harvested as different size classes.

Our preliminary results indicated male and female tegus were not equally vulnerable to hunters at all times; more and larger males were hunted during the breeding season. The effects of removing a disproportionate number of large breeding males from a *Tupinambis* population have not been determined. Tegus are polygynous, so some males could be removed without reducing female reproduction. On the other hand, if hunting pressure is strong and tegu population densities are low, then breeding males could become a limiting resource to females. Additionally, there is no evidence that females are hunted less during the period when males are apparently more vulnerable; it is possible that an increase in male vulnerability merely results in a higher total of tegus hunted. Future research should be aimed at understanding tegu activity and patterns, and armed with this knowledge, we can then work to modify hunting patterns to theoretically maximize female survivorship and reproduction.

Our experiences and those of Norman (1986) in Paraguay indicate that when there is no immediate outlet to whom hunters can sell skins, they hunt less. Assuming differences exist in activity patterns among sexes and sizes, buying skins early would cause hunters to take more large males. Similarly, halting skin purchases in December, for example, could enhance survivorship of nesting females. Perhaps it is feasible, if industry and government were in agreement, the economic pressures already in action could be extended to further reduce the number of small skins entering the trade. The purchase of class III skins could be banned, but the plan would collapse if some buyers did not participate. Middlemen could continue to manipulate buyers into purchasing mixed lots of skins.

It is essential to monitor management practices that are supposed to result in the harvest of specific *Tupinambis* population segments. But *Tupinambis* are difficult to census by trapping or by sight due to the effects of weather on daily activity complicated by variable observability according to habitat. In over 400 trap-days with lines of 20 to 35 live traps, we captured two tegus, and in 3 months of continuous trapping with a system of drift fences and 103 pitfall traps we caught only four. Censuses conducted while walking or driving were
equally problematic. We saw fewer than one individual per 40 km of road while driving in localities where large numbers of tegus were hunted. Based on these experiences, it is doubtful that biologists would be able to meaningfully estimate *Tupinambis* population sizes on a regional basis by sampling populations in the field using these methods. Instead of a system where population information originates from estimating the number of living individuals, we envision a system that depends on monitoring demographic changes in the yearly harvest in the tanneries. Species, sex, SVL, and total number of skins of each size class are data potentially available in tanneries, thus a fairly complete demographic picture of the harvested population could be obtained on a regional basis. Operationally, large-scale data collection for management purposes could be rapid and inexpensive. Authorized observers or agency personnel could sample skins of each size class several times yearly to quantify sex ratios and size distributions and confirm the total number of skins of each size class and species. With this information, national or provincial wildlife agencies could then compare the characteristics of harvested populations over time.

The preliminary skin harvest analyses did not include data from most of the breeding season; thus it is difficult to conclude whether the results indicated real differences in tegu activity patterns and vulnerability. We hope to add rigor to the monitoring experiments by measuring skins throughout the entire season and by taking into account the zone of origin and approximate collecting dates of the harvested tegus. Future research should identify the sources of variation in these sorts of analyses in order to determine how accurately *Tupinambis* population trends are represented.

**Acknowledgments**

We especially thank Felix Cruz, Marcelo Del Hoyo, Cinthia Karlsson, and Gabriela Perotti for their unflagging assistance and good humor throughout the entire season. Patricia Silva and Silvina Chauvin also assisted in National Park El Palmar and in the Guaycolec Reserve breeding facility. Ing. Carlos Saravia Toledo of Campos del Norte S. A. opened the doors of Campos del Norte to our research in the Chaco and housed our entire crew. Sebastian Casado Castre, president of the Curtiembre Chaco and Curtiembre Formosa tanneries, enthusiastically supported the harvest monitoring experiments. We also thank Sergio Trachter, President of CICuR, for solving many of our logistical needs and providing access to the captive breeding facility of the “Programa Iguana Colo- rada,” Cueros Salta, S. R. L. We gratefully acknowledge the support of the provincial wildlife agencies of Buenos Aires, Chaco, Corrientes, Entre Rios, Formosa, Salta, and Santiago del Estero as well as the Dirección Nacional de Fauna Silvestre, the Administración de Parques Nacionales, and Salta Forestal S. A. Thomas H. Fritts, Ginette Hemley, Norman J. Scott, and Dagmar Werner kindly reviewed the manuscript.