

Conservation and Status of Raptors in Southern Brazil

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The alteration and destruction of habitats are a common phenomenon throughout the world, and have become an increasing threat to fauna and flora in the countries of the Southern Hemisphere. Today there are two main forested areas left in Southern Brazil: the Missiones forests on the border between Brazil, Argentina and Paraguay, where the Iguacu National Park and Turvo Forest Reserve are located, and the Serra do Mar along the Atlantic coast, where Aparados da Serra National Park, Sao Joaquim National Park and other small reserves are located. These two forested areas are separated by an open corridor created by extensive areas of agriculture which are now expanding.

The Missiones forest used to be an extensive body of subtropical rain forest along the Paraguay, Parana and Uruguay Rivers. Today agriculture, mostly soybean, is expanding and reducing this forest area to a number of islands. This expansion is more pronounced in Paraguay and Brazil, and less so in Argentina.

The Serra do Mar is a ridge covered with subtropical rain forest that runs along the coast of Southern Brazil. It crosses the most developed and populated regions of Sao Paulo, Parana, Santa Catarina and north-east Rio Grande do Sul, and harbours a number of species of Falconiformes ranging from 29 to 36 (Belton 1984, Scherer Neto 1980). The forests in these Brazilian states have decreased in area in proportion to human development, and in Rio Grande do Sul cover only 2% of the original area, in this probably differing little from other southern states.

The Missiones forest and the Serra do Mar are important because they are also the two southernmost centres of endemism in South America, with Amazonic elements (Cracraft 1985, Muller 1973). Besides harbouring endemic species of passerines, they are still inhabited by some rare species of raptors for which records have been scanty in the literature since the late 19th and early 20th centuries (Ihering 1898 & 1899). Virtually nothing is known about their life histories.

This report attempts to give an historical review of some selected species, based on regional reports by Pedro Scherer Neto (Parana), Walter Voss and Luiz F. Barbosa (Rio Grande do Sul), Dario Yzurieta (Argentina) and my own field notes. I have concentrated mostly on the rare and endangered species; for others, a good overview of the Falconiformes of Rio Grande do Sul has been provided by Belton (1984), and to a large extent his account also covers Santa Catarina and Parana.

SPECIES

Sarcoramphus papa: Rare. Recorded in October 1980 and November 1982 on

the slopes of the Aparados da Serra National Park (2909S 5005W), Rio Grande do Sul. Immature seen January 1982 (Voss in Belton 1984). Two individuals were recorded in the Argentine side of Iguacu National Park in January 1980 (Yzurietta pers. comm.). One individual recorded in 1982 in the Brazilian side of Iguacu National Park, Parana (Scherer Neto).

The species was recorded during Ihering's time south to 30°S in the proximity of Porto Alegre, Rio Grande do Sul. About one hundred years ago, it ranged from the slopes of the Serra do Mar, highlands of Rio Grande do Sul, Santa Catarina and Parana to Misiones in Argentina. Now it seems to be separated into two populations, one living on the slopes of the Serra do Mar (Aparados da Serra National Park) and the eastern highlands in Rio Grande do Sul and Catarina, the other living along the Parana River (Iguacu National Park) and in Misiones, Argentina. Extensive areas of soybean agriculture separate these two populations.

Elanoides forficatus: Uncommon migrant in Rio Grande do Sul (Belton 1984), and fairly common in Parana.

Elanus leucurus: Common. This is one species that has taken advantage of the new open areas. It may have invaded some areas NE of Rio Grande do Sul during the last 50 years (Belton 1984).

Leptodon cayanensis: Rare in Rio Grande do Sul, the only record is to be found in Ihering (1980). Uncommon in Parana, where it has been recorded in the proximity of Curitiba and in the west of the state. It is a species that frequents gallery forest in Central Brazil (Albuquerque, unpubl. notes), a type of forest declining in Southern Brazil because of the soybean agriculture.

Rostrhamus sociabilis: Common in Rio Grande do Sul and along the coast of Santa Catarina, decreasing in abundance from south to north. There are more swamps and marshes in Rio Grande do Sul. Extensive areas along the Rio Grande do Sul coast, formerly good Snail Kite habitat, are now being drained and used for reforestation by eucalyptus.

Harpagus diodon: Rare. Belton (1984) recorded it in 1971, '73, and '74 along the edges of forested escarpments NE of Rio Grande do Sul. No recent records from Parana.

Accipiter superciliosus: This species does not seem to occur in Rio Grande do Sul. Recorded at 400m elevation by Scherer Neto in February 1981 inside the forest, trying to capture birds caught in a mist net on the slopes of Serra do Mar in Parana. An adult was recorded in January 1978 in Iguacu National Park (Argentine side) by D. Yzurietta (pers. comm.).

Accipiter poliogaster: Not known to occur in Rio Grande do Sul since 1930 (Gliess 1930), but recorded in Parana by Scherer Neto in the 1980s. An immature was recorded by him in rain forest in the Guaricana Ecological Reserve in the Serra do Mar.

Leucopternis lacernulata: The only recent records are from Parana, where the population seems to be reduced to a few individuals. The records are from sectors of dense forest in the Serra do Mar. Its range seems to be restricted to areas with dense primary rain forest.

Leucopternis polionota: Rare in Rio Grande do Sul; unknown in Santa Catarina. Recorded by Voss in February 1978 in a cornfield surrounded by small patches of wood in the proximity of Porto Alegre (3002S 5247W), while Albuquerque reported the species in November 1982 in Bento Gonsalves (2909S 5131W), both localities in Rio Grande do Sul. The latter record was over a patch of secondary rain forest. Scherer Neto has reported it more frequently in the Serra do Mar, between April and November. He also recorded isolated individuals and pairs in the Guaricana Ecological Reserve, the maximum number of birds seen simultaneously being 5 individuals. The Guaricana Ecological Reserve covers 800 ha, and the birds were usually perched in the tree canopy. In Sao Jose dos Pinhais, on the west slope of the Serra do Mar, Scherer Neto recorded two individuals in 1981 (a third sighted by him at the same locality in 1980 was perhaps one of these two). Recorded feeding on birds and rodents.

Leucopternis polionota occupies a more extensive range than L. lacernulata, having been recorded in sectors far away from the rain forests in the Serra do Mar in Rio Grande do Sul. L. lacernulata is at present known only from Scherer Neto's records.

Harpyhaliaetus coronatus: Rare. Formerly occupied a more extensive range, with records from both sides of Patos Lagoon, on the coast of Rio Grande do Sul (Gliesh 1930, Ihering 1899). A dead specimen was found in March 1978 alongside a road in the highlands of NE Rio Grande do Sul (Belton 1984). Another dead specimen was found in 1982 on the border of Santa Catarina and Parana (Scherer Neto). These two recent records suggest that it still occurs in the highlands on the west slope of Serra do Mar, between NE Rio Grande do Sul and Parana. Nevertheless, the species is facing destruction of its hunting habitat in all its range along the 30S both in central Argentina (Yzurieta) and in the Serra do Mar Highlands, due to reforestation with exotic trees over grasslands and the expansion of agriculture.

Buteo leucorrhous: Rare. Belton (1984) recorded the species infrequently in the NE quarter of Rio Grande do Sul between 1975 and 1980 for January-March. In Parana it is rare, with scattered records from almost all over the state, the most frequent being from central Parana (Scherer Neto). Three to five individuals were recorded on the Argentina side of Iguacu National Park in September 1976 (Yzurieta pers. comm.).

Buteo brachyurus: Rare. In Rio Grande do Sul it occurs on the southern escarpments of the Serra do Mar. The species may be locally common in Rio Grande do Sul (Belton 1984). In Parana it has been recorded in dense rain forest on the slopes of the Serra do Mar.

Morphnus guianensis: Rare. Not recorded in Rio Grande do Sul since Ihering (1899). No recent records in Parana (Scherer Neto). Belton (1984) considered the possibility that it occurs in Turvo Forest Reserve, on the border between Santa Catarina and Argentina (Misiones). One individual recorded on the Argentina side of Iguacu National Park in September 1980 (Yzurieta pers. comm.). Albuquerque (notes) recorded the species on the eastern slopes of the Serra do Mar in Santa Catarina west to Creciuma in December 1977. The bird was seen flying over secondary forest at an altitude of 260m. Coal-mining is widespread in nearby areas, and this constitutes the major disturbance to the species, since it exposes the soil and destroys the forest. There are some deep valleys covered with dense

rain forest on slopes difficult of access, where possibly the species still occurs.

Harpya harpya: Rare. Seems to have been present in the proximity of Porto Alegre, Rio Grande do Sul until over 40 years ago (Belton 1978). No present records for Rio Grande do Sul. Belton (1984) says "...if not extinct in the state, it would likely be found in Turvo Forest Reserve". Endangered in Parana, mostly because of habitat destruction and hunting. An adult female in the zoo of Curitiba came from Leonidas Marques, SW of the state. Several individuals at present in zoos in Parana (Brazil) and Misiones (Argentina) came from both the Argentina and Brazilian sides of the Misiones forests (Scherer Neto and Yzurieta pers. comm.).

The Harpy Eagle, besides occurring on the dense forested slopes of Serra do Mar, the edge of Rio Uruguai on the border of Rio Grande do Sul, Santa Catarina and Argentina, used to occur in the araucaria stands in the highlands of Rio Grande do Sul, Santa Catarina and Parana. These were large islands of forest surrounded by the extensive "campos de cima da serra" (a combination of araucaria forest and grassland).

Spizastur melanoleucus: Rare. Used to range further south to Sao Lourenso (3122S 5158W), Rio Grande do Sul 1880s (Berlephs & Ihering 1885). Belton (1984) recorded one individual soaring high over forest and campo of Aparados da Serra National Park (2909S 5005W) at an altitude of 950m. Voss (in Belton 1984) saw a pair there in July 1978. It is possible that the species could occur further north, along the slopes of Serra do Mar and araucaria stands in Santa Catarina. No recent records from Parana (Scherer Neto).

Spizaetus tyrannus: Rare. Formerly occurred in the forests of Taquara (2939S 5047W) at an altitude of 80m (Ihering 1899), Rio Grande do Sul. Belton (1984) saw one in August 1974 soaring high over forests broken by clearings near Sete Leguas (2922S 5224W). Voss (in Belton 1984) saw a pair in September 1979 soaring at Aparados da Serra National Park. There is still a moderate amount of habitat in Sete Leguas similar to that existing when Ihering (1899) and Gliess (1930) collected specimens (Belton 1984). In Parana there is one specimen collected in Serra do Mar in September 1946. No recent records for this state (Scherer Neto).

Spizaetus ornatus: Rare. No recent records in Rio Grande do Sul (Belton 1984), Santa Catarina (Sick et al. 1981) and Parana (Scherer Neto). In Rio Grande do Sul the species used to nest in Taquara in the 1880s (Berlephs & Ihering 1885). The last published record was from Panambi (2818S 5330W) in 1915 (Pinto 1938). In Parana there is one specimen collected in August 1941 in the Serra do Mar (Scherer Neto).

Herpetotheres cachinnans: Rare in Rio Grande do Sul, where was recorded in August 1973 near Garruchos (2811S 5538W). No other record for the state (Belton 1984). Uncommon in Parana, where it has been recorded in disturbed areas in most of the state (Scherer Neto).

Micrastur ruficollis: Uncommon forest resident, found at scattered points in northern highlands, with one record for SE hills in Rio Grande do Sul (Belton 1984). Individuals heard at dawn in October, January and May of 1981 at one small reserve in Antonina county, in the eastern lowlands of Serra do Mar in Parana (Scherer Neto).

Micrastur semitorquatus: Rare in Rio Grande do Sul (Belton 1984). E. Willis (in Belton 1984) heard one calling in February 1976 at Fazenda das Amoreiras (2920S 5041W) at 840m. A male was found dead by the wall of a church near Sao Leopoldo (2947S 5110W) in April 1981 (Belton 1984). Individuals heard at the Guaricana Ecological Reserve on the slopes of Serra do Mar, Parana (Scherer Neto) in May 1981.

Falco deiroleucus: Rare: Belton (1984) only mentions a female collected by Ihering near Nova Petropolis (2922S 5108W) in August 1882. L. Oliveira (pers. comm.) has recorded this species near the Passo do Ivai River (2905S 5351W) several times during February-July 1977. He saw one individual stooping at a *Pseudoleistes virescens*. L. Oliveira (pers. comm) has also recorded the species at the following localities along the border between Rio Grande do Sul and Uruguay: Acegua (3152S 5410W) 265m near the Cerro dos Quietos in August 1978; Artiguas, Uruguay, along the road between Tranqueras and Artigas (3030S 5630W) at 310m in January 1979. All these locations are in the pampas area, with gallery forest along streams and cliffs.

DISCUSSION AND CONCLUSIONS

Southern Brazil is in an advanced stage of what is happening generally in terms of fragmentation of the Amazonian forest. Agriculture, coal-mining and urban development have transformed large areas of forest into a gradient mosaic of islands. In some areas of Rio Grande do Sul (Albuquerque unpubl. notes, Ihering 1899), the original number of raptor species has dropped from approximately 20 to near 10. The Harpy Eagle, Crested Eagle, Black and Ornate Hawk Eagles and the Black-and-White Hawk Eagle, used to nest in the proximity of Porto Alegre, Rio Grande do Sul, until the 1920s (Belton 1984, Gliesh 1930, Berlepsch & Ihering 1885). Now it seems that the ranges of some of these eagles have shrunk to the slopes of Serra do Mar and Misiones. It is not known whether the Ornate Hawk Eagle still occurs in the three southern states of Brazil. Recent records of rare raptors (this report) suggest that there is still good habitat remaining in sectors of both Serra do Mar and the Misiones forests. An intensive study and periodic surveys in those areas would result in a better picture of the status of endangered raptors, as well as appropriate management procedures.

Use of organochlorine biocides for agricultural purposes was prohibited in Rio Grande do Sul in 1983, but these compounds are still used by farmers with low incomes. This is the case on most small farms on the eastern slopes and lowlands of the Serra do Mar in NE Rio Grande do Sul, Santa Catarina and Parana.

The effect of these biocides on the forest raptors is not known. Logging, coal-mining and hunting are the main threats in the eastern part of the Serra do Mar. In the highlands of the same region, the use of natural campos for reforestation with exotic trees may threaten species such as *Harpyhaliaetus coronatus*, because of hunting habitat destruction.

There is in Brazil a law concerning land use which requires that farmers preserve 20% of the forest on their property, but this is not obeyed, nor does the government enforce it.

We recommend as conservation measures the following points:

1. Organise and support an education programme aiming to educate people to conserve wildlife resources in southern Brazil.
2. Support a long-term study in Missões forests in Iguacu National Park and its periphery, and along the slopes of Serra do Mar, aiming to evaluate the predator-prey situation. I noted that in areas where tinamous, curassows, primates and large rodents were heavily hunted, large eagles have disappeared (also Thiollay 1984). It is important to estimate the densities of potential prey in these areas, in order to select the best as future conservation areas.
3. Start to captive breed neotropical eagles, hawk eagles and forest falcons in parallel with captive breeding of major prey species (tinamous, curassows, primates and large rodents), planning a future "step by step" reintroduction programme.
4. Investigate the status of Falco deiroleucus in the pampas of Rio Grande do Sul and Uruguay.
5. Develop co-operation between Northern Hemisphere countries with the goal of stopping the trade in wildlife. The number of trappers operating in Bolivia, Paraguay and the Brazilian Amazon is considerable. A significant number of large eagles, hawk eagles and forest falcons, as well as their prey basis, leave South America for Europe and the United States for medical purposes (mostly primates), to be exhibited in zoos or used for falconry. Better enforcement of the law prohibiting export of wildlife from Southern Hemisphere countries and an educational programme in the developed countries informing the public of the situation of forest species would probably reduce the trade in wildlife.

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