New observations on the Brazilian Merganser

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Introduction

The Brazilian Merganser *Mergus octocetaceus* is one of the world's rarest waterfowl. First described by Viellot in 1817 from specimens taken in Brazil, this Merganser remains a great rarity even in museum collections where, at most, a few dozen skins exist. Little behaviour has been documented, primarily due to the absence of specimens in captivity. It has never been held in North American or European collections, and a few taken captive in South America died within days. Endemic in south-eastern Brazil and the neighbouring regions of eastern Paraguay and north-eastern Argentina, the centre of its distribution is the Alto Parana basin (Delacour 1959). Small upper river tributaries interspersed with waterfalls and flowing through tropical forested valleys are the preferred habitat for isolated, sedentary populations of this remote duck. The main rivers are shunned. Because of its shy, secretive ways and inaccessible habitats it was even at one time considered extinct (Phillips 1929). More fortunate than its only austral counterpart, the Auckland Island Merganser *Mergus australis* now extinct, the Brazilian species, last taken in Brazil in 1922 (Sztolcman 1926), was rediscovered in 1947–48 in the Province of Misiones, Argentina (Giai 1951). The field studies there of Partridge (1956), who began his work in 1949 and first discovered a Brazilian Merganser nest, in a tree cavity, and collected three of the downy young in 1954, constitute about all the knowledge to date of the species.

Ornithological exploration in south-eastern Brazil after the last known bird was taken there in 1922, revealed no records in the extensive area supposed to be inhabited by the Brazilian Merganser. I therefore had little hope of an encounter, when in 1981 I went to conduct an anteater field study in the Serra da Canastra National Park in Minas Gerais (Figure 1). Nevertheless Professor Helmut Sick from the Rio de Janeiro National Museum had strictly advised me to keep an eye open for *octocetaceus* in that region. I quickly found how right he was, because my son Claus and I indeed discovered the curious duck in the Park during our fieldwork in 1981 and again 1983. My observations were augmented, when I paid especial attention to one breeding pair of Brazilian Mergansers during another stay in 1984.

Figure 1. Location of the Serra da Canastra National Park, Minas Gerais State, Brazil, South America.

Besides documenting the present status and distribution of the Brazilian Merganser in Brazil itself, the purpose of this paper is to report in more detail on parental care with some first photographic records of family life.

Study area and methods

The Serra da Canastra National Park (20°15′S, 46°40′W) is situated some 700 km north-west of Rio de Janeiro in south-eastern Minas Gerais State. The Park's 73,000 ha is a highland plateau, 900-1,400 m in elevation. The topography is characterised by rolling, rocky grassland with steep escarpments, and deep valleys. The climate is high mesothermal tropical, with dry winters and rainy, mild summers.

Prior to the foundation of the National Park in 1972 and subsequent expropriation, the dominant grasslands were privately owned as a single large ranch with low-density cattle grazing. Gallery forests persist on lowland and riparian sites too wet

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for periodic burning. The Park's ecological importance derives from its numerous watercourses, which form the headwaters of the rivers Paranaiba and Rio Grande running west to the Parana basin and those of the River Sao Francisco draining to the east and north.

My study area was in the north-east of the Park, where the Sao Francisco River originates and runs with mild gradient about 14 km through the uplands before ending in the spectacular 200 m waterfall Casca d'Anta. The pair of Merganser I mainly observed occupied this upriver stretch and a second pair was occasionally recorded downstream. A third pair existed about 50 km away along a rivercourse (Corregio dos Rolinhos) near a place named Retiro das Pedras. This pair was also observed by D.A. Scott (pers. comm.) in 1983. All river habitats frequented are characterised by clear, oxygenated water that flows over rocks, stones, gravel and limited areas of sand. Boulder strewn rapids and numerous exposed cliffs alternate with wider channels or pools with reduced currents which may be quite deep. The meandering mountain streams are in some areas bordered by high banks with overhanging vegetation of the luxuriant gallery forest. Much of the river below the Casca d'Anta fall contains large rounded cliffs and gravel banks up to the Park border. Changes in water level are frequent and irregular during heavy rains. Seasonal differences between lowest and highest water levels can be up to 5 m.

There were some opportunistic encounters with mergansers in the years 1981 and 1983, but I concentrated in 1984 on day-long surveys on one pair with a brood. The ducks were daily located on foot or from hides and their movements and behaviour were recorded with the help of binoculars and tape recorder. I supplemented my field notes with tele-lens (640 mm Novoflex) photography and Super-8-mm films.

Male and female could only be distinguished by a slight variation in the greenish-black head and neck region, because they showed otherwise little external dimorphism in size and proportions. In particular the crests were of similar length, the female's not, like those observed by Partridge (1956) being shorter as a consequence of copulation grappling. A Brazilian Merganser appears rather dark on the water except for white patches on the wings. The duck is therefore not a very photogenic subject.

Observations

The Serra da Canastra National Park was visited and observations made on the Brazilian Merganser as follows:-

Year	Dates	Sightings	Observations (Hours)
1981	30 July – 25 Aug	5	14
1983	21 Mar – 12 Apr	4	9
	24 Oct – 4 Nov	2	3
1984	12 Aug – 22 Aug	9	47
1985	10 Aug – 22 Aug	3	5

In 1981 and 1983 not much time could be spent on duck observations because of our day-long fieldwork on the Giant Anteater *Myrmecophaga tridactyla* on the hillside. Our camp was near the Casca d'Anta waterfall and while going to bathe in the river pools in early morning or late afternoon we had good chances for opportunistic duck watching. In this way we first recorded the birds in flight close to the surface along the river, disappearing before we could even clearly identify them as mergansers. Having found early on that an open approach will frighten them and cause them to fly away from us, we usually stalked to the water in the shelter of vegetation and cliffs, carefully avoiding open ground. Hidden on the bank, we could then spend more time observing their movements, displays, feeding, diving and resting behaviour. Usually one pair was observed in an area and only on one occasion (22 March 1983) were three ducks recorded, staying together peacefully. The undisturbed mergansers were always very silent. When frightened and in flight a harsh *krack* was to be heard. As soon as they discovered us, the ducks became nervously alert, swimming or flying swiftly out of sight. The food of mergansers living in the National Park is primarily the fish known as Lambari *Astyanax fasciatus*, which is abundant, with sizes up to 15 cm, in all creeks, rivers and pools of the whole area. No other kind of fish could be found in the waters of the highland plateau. The mergansers preferred rapids and cataracts with fast flowing currents as feeding grounds, where their prey is apparently abundant and easy to obtain. We observed them feeding in the shallow water with their heads submerged, but also diving in deeper

Figure 2. General view of the upper Rio Sao Francisco, Serra da Canastra National Park. (Photos by the author, taken from colour transparencies.)

Figure 3. A pair of Brazilian Mergansers at midday in July 1981.

pools, remaining under water for periods from 9 to 27 seconds. During the day they were found resting on exposed stones in the river, not walking very much when ashore.

Breeding pair and young

In August 1984 I returned again to the Serra da Canastra National Park to concentrate my time strictly on the mergansers. During eleven days I focused on the particular pair I had already encounted on former occasions along the river above the Casca d'Anta waterfall. It was still the dry season when I arrived on 14 August and the water levels in the riverbed and pools were extremely low. After having again set up my tented camp near the waterfall I did a first survey on the Sao Francisco upstream, but found nothing except one Darter *Anhinga anhinga* and a pair of Pied-billed Grebes *Podilymbus podiceps*, on the water in that late afternoon. But next morning just after 06.00 hrs when daylight came and I walked up the river a few hundred metres, I suddenly became aware of duck vocalisations, a soft, quiet *rack* sound. I could not see the birds because of the thick vegetation. After rushing through the brush I was suddenly confronted with a pair of adult mergansers in close association with their brood of six downy young. The family was just passing some rapids and while the adults often swam with their heads submerged, the tiny ducklings drifted on the fast-flowing water surface like dancing corks. Judging by their size and activity they seemed to be no more than about three days old. The adults soon became aware of the intruder and raised the alarm with loud and intensive *krack-krack* calls, jerking head and tail rhythmically. This caused their young to immediately hurry up close to them. The whole family then swam quickly down the river and was soon out of sight behind the vegetation of the next bend. Although I caught one more glimpse on this day when walking along the river, I found that observing the ducks by following them on shore was a complicated, exhausting and inefficient method. The merganser family was too mobile, moving over 4 km that day, and therefore it was often difficult to locate and follow them through all the dense, overhanging vegetation, which made observations almost impossible. During the coming days it proved better to study the ducks from observation posts on the hillside far above the river and from blinds established near the water. In this way the mergansers could be observed either in the distance when overlooking several hundred metres of river or quite close in front of the hides. The consecutive all day watches were limited to daylight hours usually from 06.00–18.00 hrs. Sightings of the duck family were more common in the mornings and evenings than in the middle of the day. Movements and activities on the water decreased rapidly after 10.00 hrs, and later it was not easy to locate the immobile birds resting for hours on cliffs or gravel banks.

During all my observations the young were seen only with both parents present. Without doubt the male took an active part in the parental duties after the female had reached the water with the newly hatched brood. Indeed, (Partridge) 1956 noted that the male remained in close attendance while the female was incubating and when she came off the nest, once a day, to feed. My birds remained paired and spent all the time in close association, attended by the ducklings. In search for food the latter occasionally spread some distance over the water surface, but quickly returned towards their parents when alarmed. A contact call like a softer *rak-rak-rak* was sometimes heard from the leading adults and the chicks answered with a high-pitched *ik-ik-ik*. Similar vocalisations, but harsher and louder, were used by both young and adult birds when frightened. Although normally so wary and ready to fly off, the adults remained with the brood even when threatened by my approach and the entire family escaped by swimming off, uttering loud warning calls. Only on one occasion did both adults fly up and leave the scattered ducklings behind. However, they landed 40 m away on the water, and immediately began calling and searching for their young. The chicks showed great ability for passing rapids when pursued and hurried directly to the parents.

On 18 August one of the ducklings was missing and I never counted more than five young again. Besides the resident birds of prey, including the Black-and-White Crested Eagle *Spizastur melanoleucus*, as enemies from the air, Otters *Lutra platensis* were observed in that river territory, and they must be presumed to be a predator on young mergansers. During resting periods one of the adults at least was cautiously alert, while the other slept or brooded the

Figure 4. Apparently the same pair as in Figure 3, with 5 young. The female, leading, had less extensive dark feathering on the neck.

Figure 5. Guided by the adults, the young often fed on insects in the shallows close to the bank.

young. Disturbed mergansers entered the water quickly and sought shelter under overhanging vegetation or gathered together, swimming towards the centre of open water. While swimming the ducklings sometimes tried to mount their parents back and when successful, they were carried clear of the water, as is known from other merganser species (Bauer and Glutz 1969).

The adults with the chicks were observed foraging mainly during the early morning and late afternoon hours either in the shallow waters of rapids and along banks or occasionally in the deeper pools. The young showed much agility when pursuing insects above or on the water surface. They paid much attention to the parents when these dived for fish. As soon as one parent surfaced all the chicks sped towards it hardly touching the water surface with their feet and flapping their downy wings, desperate to pick the prey from their parent's bill. I never recorded ducklings diving, perhaps because these downies were still too young. In the shallow water they fed primarily by sight, with their heads submerged, probably consuming aquatic invertebrates such as insect larva (*Trichoptera, Plecoptera, Diptera*) at first and fish as soon as they were able. Fish seemed rapidly to replace invertebrate food in the growing ducklings.

During my observation period the resident pair never encountered other mergansers in their territory and therefore no aggressive display was recorded. They occupied a river stretch about 7 km in length, as far as could be estimated from all the locations and sightings. Daily movements over at least half this distance were quite common for this family. Unfortunately I had to leave the area on 22 August and no further reports on that family are available except for one personal communication I received on 28 December 1984 from Sr Luiz Artur Castanheira, former Park Director. He wrote: ". . . a familia do Pato Mergulhao (= Merganser) foi observada no mesmo local e havia 5 filhotes bem grandes junto do casal. Sao provavalmente os mesmos que voce fotografou . . .". I am indeed quite sure those ducks were the family I had observed some months before.

Discussion

According to Sick (1984), who reviewed the past and present distributions of the Brazilian Merganser, the species was found in Brazil itself during recent times only in the states Goias (alto Rio Tocantins 1953, 1960, 1972) and Minas Gerais (Serra da Canastra 1979). Dietz (1980) noted the occurrence of the Merganser in that National Park and estimated the population in the Park and the surrounding areas to be about 50 birds, which I believe is much less. My surveys and study, 1981–84, confirmed their presence and resulted in a first breeding record for the area. Furthermore, while visiting in 1987 the Serra do Cipo National Park near Belo Horizonte, I found another suitable merganser habitat in Minas Gerais along the clear headwater of the Rio Cipo. Despite the fact that no other records are available, the species may exist in some other protected and remote areas of southeastern Brazil, where human pressures and developments have not destroyed the pristine river ecosystem. The Brazilian Merganser is a river specialist, extremely dependant on fast, clear mountain streams. These have become quite rare, outside national parks and nature reserves, as a result of agricultural development, watershed degradation and soil erosion. Within the Serra da Canastra National Park the protection to date is excellent and the scarce merganser population can remain undisturbed except for increasing nature tourism. This is concentrated on a limited area mainly below, and, to a lesser extent, above the scenic Casca d'Anta waterfall. But it seems to me by observations in 1985–87, that the ducks formerly resident here are now avoiding such tourist frequented locations.

The strong long-term pair bond and territoriality were a conspicuous aspect of the Brazilian Merganser's behaviour. The pair I observed in particular obviously remained on the same stretch of river throughout the year, never being migratory. The territory maintained in the non-breeding season is tied to the food resource and will probably be defended by both pair members against intruders. Territory size may be correlated to variation in the number of rapids, falls, pools, current velocity and other factors determining territory quality. Presumably merganser density in a certain area will be related to these factors.

Our impression of the breeding season of the Brazilian Merganser in the Serra da Canastra accords with that of Partridge (1956) for an area a thousand kilometres to the south-west. It begins in June, with

Figure 6. The family also frequently foraged in the rapids.

Figure 7. The family rested at midday, but the adults remained alert.

incubation in July/August. Downy young were found in August. Despite careful search, I was never able to spot a nest, and the incubation period and the full range of clutch sizes remain uncertain. But Partridge observed a brood of four and had a report of another of five, while my observation indicates that at least six eggs are possible. The active role of the male in brood rearing is clearly shown and verified as a form of pair bond maintenance.

What of the Brazilian Merganser's future? Its limited range and specific habitat requirement suggest a small population. Like most small, specialised populations, this duck is highly vulnerable to habitat alteration and human pressure. Survival is only guaranteed in strictly protected areas of its reduced historical range.

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Summary

Preliminary observations in 1981–83 revealed and confirmed the occurrence of the Brazilian Merganser *Mergus octocetaceus* endemic in the area of Serra da Canastra National Park in Minas Gerais, south-eastern Brazil. In 1984 a breeding pair rearing six chicks was found here and observed closely during the middle of August. The adult pair remained strongly bonded and the male took part in parental care. Day-time activities and behaviour are described. The species is a year-round resident and territorial in that area. The species should be secure here, as long as the appropriate habitat is not violated.

References

Bauer, K.U. and Glutz, U.N. v. Blotzheim. 1969. *Handbuch der Vogel Mitteleuropas.* Vol. 3,2. 407 pp.

Delacour, J. 1959. *The Waterfowl of the World.* 3:200–207. London.

Dietz, J.M. 1980. Ecological studies of the Maned Wolf in the Serra da Canastra National Park, Minas Gerais State, Brazil, South America. IUCN/WWF Project 1584.

Giai, A.G. 1951. Notas sobre la avifauna de Salta y Misione. *Hornero* 9:247–276.

Partridge, W.H. 1956. Notes on the Brazilian Merganser in Argentina. *Auk* 73:473–488.

Phillips, J.C. 1929. An attempt to list the extinct and vanishing birds of the Western Hemisphere with some notes on recent status, location of specimens, etc. *Verh. VI Intern. Ornith. Kongresss Kopenhagen 1926*: 503–534.

Sick, H. 1984. *Ornithologica Brasiliera.* 1:195.

Sztolcman, J. 1926. Etudes des collections ornithologiques de Parana (D'apres les resultata scientifiques de L'Expedition Zoologique Polonaise au Bresil, 1921–1924). *Ann. Zool. Mus. Polonia, Warszawa* 5:107–196.

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