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Article *in* Sociobiology · January 2009

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Parental and Alloparental Care of Giant Otters (*Pteronura brasiliensis*) (Carnivora, Mustelidae) in Balbina Hydroelectric Lake, Amazonas, Brazil

by

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ABSTRACT

Data collected during 6 years showed that alloparental care, despite not being mandatory, plays an important role in the reproductive success of *Pteronura brasiliensis* when major threats are present. Threats can also trigger cubs to be transferred from one den to another, inducing the species to leave a babysitter in the new den.

RESUMO

Dados coletados durante 6 anos revelaram que o cuidado aloparental, apesar de não ser obrigatório, desempenha uma função importante no sucesso reprodutivo de *Pteronura brasiliensis* quando grandes ameaças estão presentes. Perigo eminente também pode servir como gatilho para a transferência de filhotes de uma toca para a outra, induzindo a presença de uma babá na nova toca.

Key words: Mustelidae; behavior; babysitter; Brazilian Amazon.

Parental care can be defined as any behavior dedicated by the parents toward the offspring that increases the probability of their survival (Trivers 1978). This is very common in most animal groups, but it is in the vertebrates, especially in birds and mammals, that this behavior is quite elaborated. When the care dedicated to the offspring comes from another individual, who is not one of the parents, it is called alloparental care (Riedman 1982). Alloparental care, in some cases, can even characterize an adoption (Riedman 1982). In cooperative breeding species, which are characterized by alloparental care, breeders

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usually reduce contributions to offspring rearing and maximize contributions to offspring production (Gilchrist & Russell 2007).

It is well known that the highly social giant otters (*Pteronura brasiliensis*) may leave one or more individuals of the group, usually neither of the parents, inside the dens where the cubs are born to look after them during the daytime while the group disperses searching for food in their territories. The presence of an adult individual (which is not one of the parents) in the den with cubs during the day characterizes a typical example of alloparental care in giant otters (Carter & Rosas 1997; Rosas & de Mattos 2003; Staib 2005). This individual, that can be a male or female, is called a babysitter or helper (Carter & Rosas 1997; Clutton-Brock et al. 2000; Rosas & de Mattos 2003; Staib 2005; Gilchrist & Russell 2007).

Duplaix (1980) mentions that giant otter parents in Suriname spend the night with their cubs in the den and that the cubs remain inside the den for at least the first three weeks. Observations of giant otter behavior during the last 6 years in Balbina lake (01°55'17.3"S; 59°29'09.7"W), seem to corroborate this information. Groups with newborn cubs may sub-divide during the night, with older siblings sleeping in another den nearby the parents' and cubs' den. Nevertheless, all adults and sub adults get together during the day to fish in the vicinity (Rosas & de Mattos 2003). Even though babysitters have been recorded in giant otter dens, this does not seem to be a strict rule. From a total of 27 observations, in 51.8% of the cases (n=14) the cubs were left alone, while in the other 48.2% (n=13) the cubs were attended by at least one adult in the den. In this last case, in 77% of the observations there was only a babysitter with the cubs (alloparental care), and in the remaining 23% of the records, cubs were attended by one of the parents together with one or more members of the group (parental and alloparental care together). Exclusively parental care was not recorded in any of the cases.

Although in some of the cases recorded in Balbina lake the cubs were not seen (only heard), it is possible that babysitters are left in the dens usually when cubs have more coordination, open eyes and can move out of the den, consequently running more risks. In this situation it is quite common that babysitters remain all day long in the den. However, babysitters probably can also be left in a den with newborn cubs in case of any threat, like potential predators nearby.

According to Staib (2005) there can be a turnover rate among different members of the group, alternating the alloparental care in giant otters. The author states that the babysitter in charge in the morning can be substituted for another one in the afternoon. This situation, however, was never seen in Balbina lake. Nevertheless, we cannot discard that this can also happen, since to avoid severe disturbance to reproductive groups, we only monitored those dens with cubs for a maximum of two days. According to the observations in Balbina, when any imminent threat is present, it is usual that babysitters also avoid leaving the den as much as possible. On three occasions we recorded babysitters leaving the den just to drink water, returning immediately back to the den with the cubs.

Obligate cooperative breeding species are characterized by the presence of non-reproductive individuals, which help to raise the offspring of a few breeding members of the group. Consequently, reproductive success and/or survival increase with the group size. In fact, Courchamp *et al.* (1999) demonstrated that obligate cooperator species are more sensitive to stochastic mortality. Notwithstanding, giant otters seem to remain between obligate cooperators and non-cooperative breeding species, since despite being common, babysitters are not obligatory. Moreover, we do not know yet the precise function of babysitters in giant otter groups and their implications on reproductive success. Although some individuals seem to remain for long periods in the groups in which they were born, and are potentially lifelong babysitters, others disperse when they reach sexual maturity (about 2-3 years old) (Duplaix 1980).

On six occasions in Balbina lake the transferring of cubs to other dens was recorded. This was observed in groups of 2 to 8 adult and sub-adult individuals and it seems to have no correlation with the group size, but to the imminent danger to the den where the cubs are. In four of these observations the otters transferred the cubs due to our presence near the cubs' den, once due to the proximity of a jaguar (*Panthera onca*), and another time due to the threat imposed by a black caiman (*Melanosuchus niger*) in the vicinity of the den. While a giant otter mother was transferring one of her two cubs we managed to measure, weigh, and check the sex and teeth condition of the other cub. This was only possible because when giant otters decide to transfer their cubs, they usually move them from the deeper end to the entrance of the

den (Fig. 1). Therefore, it was possible to reach the cub, which was a female, with very short brown fur, still blind, with no teeth emerged from the gums, measuring and weighing 39cm and 0.42kg, respectively. About 15 minutes later, the mother returned and started looking for her second cub, which we immediately placed back into the den where it was found. As soon as we moved away from the den, the mother entered it and left with the cub held crosswise in her mouth, in the same position as described by Duplaix (1980), swimming in the same direction she did when transferring the first cub. According to Duplaix (1980) males were never seen carrying cubs. However, on at least one occasion an adult male was observed carrying a cub in Balbina lake holding it crosswise in his mouth as the female did.

There are very few measurement records of newborn cubs of giant otters and all of them are from captive animals (Autuori & Deutsch 1977; Duplaix

Fig. 1. Newborn (8-15 days) giant otter cubs inside a den in Balbina hydroelectric lake, Amazonas, Brazil.

1980). According to Duplaix (1980) neonates are furred and blind, and based on the data presented by Autuori and Deutsch (1977) they are 33cm long and weigh 0.2kg on average (n=5). The body mass of giant otter cubs and juveniles are also presented by McTurk and Spelman (2005), who, however, presented the estimated weight of individuals without calibrating the data with a scale. According to McTurk and Spelman (2005), neonates are 1-3 week-old individuals and weigh between 0.5-2.0kg (n=4). The weight and length of the giant otter cubs of Balbina lake are much more in accordance with the data presented by Autuori and Deutsch (1977) than with those presented by McTurk and Spelman (2005). Despite not knowing when the cubs observed in Balbina (Fig. 1) were actually born, it is important to stress that cub squeaks were heard in that den 8 days before we managed to measure it, and thus the cub was at least one week old when weighed and measured. Compared with the data presented by Autuori and Deutsch (1977) it is probable that those two cubs observed in Balbina lake were approximately 10-15 days old when one of them was measured.

Although our data reveal that babysitters are not mandatory in *P. brasiliensis*, the observations here reported show that much more fieldwork is needed to monitor not only the identity of the babysitters, but also to establish their exact role in the reproductive success of giant otters.

ACKNOWLEDGMENTS

We thank Fundação O Boticário de Proteção à Natureza, Miami Metro Zoo, Philadelphia Zoo, Reserva Biológica Uatumã (ReBio Uatumã/IBAMA), Manaus Energia S.A., Fundação de Amparo à Pesquisa do Estado do Amazonas and CNPq (Processo N°305892/2006-1), for financial support. We also thank Kesä K. Lehti who kindly revised the English version of the manuscript.

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