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THE USE OF A NATURAL CAVE FOR BREEDING BY GIANT OTTERS IN THE BRAZILIAN PANTANAL: OBSERVATIONS AND NEW INSIGHTS ON GIANT OTTER BEHAVIOR

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Abstract: It has long been known that giant otters excavate dens for breeding and resting. One family of giant otters which we have observed on the Brazilian Pantanal, also use a long cave in a rocky cliff, particularly when raising cubs. The cave is not above the highest flood level, but does not usually flood, unlike excavated dens, which are very susceptible to flooding. Nearby caves were used by Neotropical Otters (*Lontra longicaudis*) and Capybaras (*Hydrochoerus hydrochaeris*).

Giant otters occur widely through the main rivers of the Brazilian Pantanal. They have been amply reported to use dens both for resting and as shelter (SCHWEIZER, 1992; CARTER and ROSAS, 1997; TOMAS et al., 2000; RIBAS, 2004). Dens consist of tunnels excavated into the riverbanks. There appears to be no particular choice of soils in den excavation (DUPLAIX, 1980). Giant otters also rest in cleared areas, which they make along the riverbank margins, called campsites (DUPLAIX, 1980; CARTER and ROSAS, 1997; ROOPSIND, 2002; RIBAS, 2004).

On the Papagaio River a family of giant-otters has been observed for several years. The Papagaio River is a branch of the Paraguay River from which it separates and re-joins again between Corumba and Porto Morrinho. It is limited on the west side by the Urucum Mountains and it overflows into grasslands on its east side during the flood season (May to July). In the territory of this giant otters' family group there are limestone cliffs and riverbanks with dark sandy soils. This river is usually more than 3 meters deep near the rocky cliffs and the visibility of its dark waters averages 1.3 meters deep.
In August 2001, we observed several giant otters leaving from a hole in a rocky cliff at the edge of the river (S19°15.069' W057°26.246'). Upon closer examination we discovered that the hole is in fact a long cave. This is the first report of giant otters using a natural cave rather than an excavated den. Indeed for the last three years we have been observing this family of giant otters using a natural cave in the cliff in this section of their territory instead of an excavated den.

The cave entrance is 5 meters away from the river. During the peak of the flood season river water may flow inside the cave. Access to the cave is only possible through the river or through the east margin of the cliff, since the cliff extends to the river on the other side. The entrance of the cave is 1.5 meters high and 3 meters wide. Inside the cave there is a large and tall corridor with several lateral corridors and resembles a labyrinth. A person can walk in an upward position for about 150 meters after which the roof lowers abruptly, although the corridor continues. Bats occupy the cave. They can be observed leaving their roosts inside the cave each evening; however no footprints from other mammals except of

giant-otters have been observed inside the cave. In fact, from the cave entrance we can observe 20 meters of giant-otter footprints going through all the corridors. We also collected a giant otter adult skull in front of the cave in August 2001.

During 2002, 2003 and 2004 we regularly observed the group of giant-otters using the cave. Most interestingly, observations were most frequent when the group was raising giant otter pups. This family raised four to five pups each year. In fact it appeared as though the cave was mostly used to raise pups. During the same period the group used a latrine in front of the cave and a campsite with a latrine 60 meters east of the cave.

It was not possible to explore the total home range of this giant otter family to find eventual dens, latrines or other campsites since part of the river is covered with aquatic plants. Another seven caves found on the edge of the river were explored but there was no evidence (sightings, tracks or latrines) that they were used by giant-otters. Interestingly these caves show evidence of being used by river otters (*Lontra longicaudis*) and even capybaras (*Hydrochoerus hydrochaeris*).

On 7 km of the Papagaio River there are riverbanks, which are easily accessible, with no aquatic plants or rocky cliffs extending to the river. Here we only saw the giant otters twice and we did not find any den, campsites or latrines on these riverbanks. The next 3 km of the river have rocky cliffs and most part of the river edge is covered with floating vegetation mats, preventing further access to locate evidences from giant otters. The rest of the river is all covered with aquatic plants and has a long cliff on one side. We often observed giant otters using the section of the river where there are cliffs and aquatic plants.

We think that it is possible for giant otters to build dens at the margins of the Papagaio River, as they build dens in similar soils along Paraguay River basin. Indeed, we found a small den, probably made by the river otter. Shelters like dens and this cave probably provide protection from ambient disturbances such as variations in temperature and humidity as well as protection from predators due to inaccessibility. There may be other reasons why giant otters use this cave. We suggest that giant otters are using the cave since the probability of flooding is lower than dens on the riverbanks. River water flows inside the cave only during floods higher than 4.5 meters while riverbanks are underwater during a 3.5 meters flood. Therefore, the cave is flooded for a shorter period or is not flooded at all. Indeed, the cave was submerged during 2002 and 2003 when the flood peak was 5.11 meters and 5.18 meters respectively (GALDINO and CLARKE, 2004). During 2004 the flood peak was 4.26 meters and the cave was not submerged.

Surprisingly the giant otter family did not migrate in 2004 during the flood season and continued using the cave. This is surprising since giant otters are reported to abandon temporarily their dens and migrate to unknown areas during the flood season possibly following fish migration as suggested by DUPLAIX (1980). However, giant otters from the Papagaio River did not migrate during 2004 and 2005. In 2005 there was no flood so maybe there were no changes in resources due to the flood. However in 2004 the Paraguay River overflowed and therefore there was most probably a change in resources. We certainly do not have sufficient data, and are basing our discussions on observations from only one giant otter family and therefore cannot draw any conclusions or meaningful interpretations. However we would like to suggest that changes in resources might not be the only factor influencing giant otter migrations during the flood season. In 2004 when the cave was not submerged the giant otter family remained even though changes in resources due to the flood probably did occur. Therefore other factors such as availability of dens and flood peaks may be influencing animal movements.

Effective conservation measures for this endangered specie (GROENENDIJK et al., 2004) demand a better understanding of their basic requirements in terms of shelter, and resources as well as a better understanding of their behavior. Why and where giant otters go during the flooded season in the Pantanal still remains a mystery.

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RESUME

UTILISATION D'UNE GROTTE NATURELLE COMME CATICHE, PAR DES LOUTRES GÉANTES, DANS LE PANTANAL BRÉSILIEN: OBSERVATIONS ET NOUVELLES DONNÉES SUR LE COMPORTEMENT DE LA LOUTRE GÉANTE

Dans le Pantanal brésilien, une famille de loutres géantes a été observée utilisant régulièrement une grotte naturelle comme abris. La fréquentation de cette grotte par les loutres a été observée durant trois années consécutives et s'est avérée être plus importante durant la période d'élevage des jeunes.

RESUMEN

USO DE UNA CUEVA NATURAL PARA REPRODUCCION POR LA NUTRIA GIGANTE EN EL PANTANAL BRASILEÑO: OBSERVACIONES Y NUEVAS EVIDENCIAS EN EL COMPORTAMIENTO DE LA NUTRIA GIGANTE

Este es el primer reporte de nutria gigante usando una cueva natural en lugar de una excavada por ellas mismas. La entrada de la cueva está a 5 m del río, y tiene 1.5 m de alto y 3 m de ancho. La cueva se bifurca en laberintos donde una persona puede caminar erguida por casi 150m. La cueva fue más frecuentemente usada cuando las nutrias tenían crías, pero muestra evidencias de haber sido usada también por nutria de río (*Lontra longicaudis*) y capybaras (*Hydrochoerus hydrochaeris*).