

# SYSTEMATIC CONSERVATION OF THE GIANT OTTER (*Pteronura brasiliensis*) IN THE COLOMBIAN AMAZON

By: WOMEN FOR BIODIVERSITY ORG

The giant otter (*Pteronura brasiliensis*) was a widely distributed species in South America from northern Argentina to Colombia and Venezuela. However, the intense hunting to which they were subjected to commercialize their skin in the 1950s and 1960s led to the collapse of this species and caused its geographic extinction in much of its original distribution range, generating local extinctions of populations living in the main rivers of the Amazon and Orinoquia (Donadio, 1978; Schenk and Staib, 1998; Velazco, 2004). These circumstances have led to it being categorized globally as "Endangered" (EN) both internationally (IUCN) and nationally. Threats such as the transformation of the habitat, the felling of forests, the contamination of rivers with mercury from gold mining, conflicts with fishermen and the use of young as pets, put the species on the brink of extinction.

During 2020, the WOMEN FOR BIODIVERSITY ORG led a research program in the easternmost extreme of the department of Amazonas in the zone of influence of the Ticuna indigenous territory. Thanks to these studies, the importance of this area for the conservation of giant otters was evidenced. The project presented here fits into the priority specific objective of the recently published "Management Plan for the Conservation of Otters in Colombia" of: Develop research projects and monitoring of otter populations in the different aquatic ecosystems where they are distributed in the country.

**Keywords:** Giant otter, extinction, Amazon basin, Ticuna indigenous community.





### Regulatory framework

This plan is framed within national and international environmental policies. It is articulated with the National Plan of Action for the Conservation of Aquatic Mammals of Colombia (2014), the National Plan for Migratory Species (2009) and is developed within the framework of the National Policy for the integral management of biodiversity and its ecosystem services (2014). Likewise, several of the proposals are articulated with some national policies and plans such as: National policy for the integral management of water resources (2009), National environmental education policy (2002), National plan for prevention, control of forest fires and

restoration of Affected areas (2002), National action plan to combat desertification and drought in Colombia (2004), Sustainable production and consumption policy (2010).

Additionally, it considers the decrees prior to the Political Constitution of Colombia of 1991, among which are, Decree 2811 of 1974, Code of Renewable Natural Resources in whose ninth part addresses aspects related to terrestrial, aquatic and fishing fauna, and Decree 1608 of 1978 in which the previous Code is regulated; as well as Law 17 of 1981, which approves the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and Law 84 of 1989, which establishes the National Statute for the Protection of Animals.

Once the 1991 Constitution is promulgated, the right to enjoy a healthy environment is incorporated and it



is established as a duty of the State to protect it (article 79 and 80) guaranteeing sustainable development, conservation and prevention and control of environmental deterioration (article 80 ). Based on this, government entities for environmental management are established through the creation of the Ministry of Environment and the National Environmental System (SINA) (Law 99 of 1993). Subsequently, the approval of Law 165 of 1994 which approves the Convention on Biological Diversity (CBD), Law 611 of 2000 in which provisions on the sustainable management of wildlife and aquatic fauna, Law 216 of 2003 later regulated in Decree 2372 of 2010 on protected areas, and Decree 1640 on watershed planning are equally

relevant to this national strategy for the conservation of otters in the country.

Finally, other support mechanisms are found in Law 1333 of 2009 which establishes the environmental sanction process (with specific regulations) and Decree 2041 of 2014 in which environmental licenses are regulated (which includes subsequent modifications), as well as resolution 192 of 2014 which stipulates the list of threatened species in the Colombian territory. Another associated regulation is Decree 1376 of 2013 which regulates permits for the collection of specimens of wild species for non-commercial purposes and Resolution 2064 of 2010 on the post-confiscation management of specimens of wild species of terrestrial and aquatic flora and fauna.

### Overall objective

Develop national strategies for the conservation, protection and sustainable management of otter populations and their associated ecosystems, in accordance with the main threats identified in the distribution area in Colombia.

### Specific objectives

- Develop research and monitoring projects for otter populations in the different aquatic ecosystems where they are distributed in the country.
- Generate participatory strategies for the reduction and mitigation of the main threats to the conservation of otters and their habitats.

- Design and implement activities for environmental awareness, education and information that promote knowledge and appropriation of otters and ecosystems

### **Aquatic where they live.**

- Build participatory scenarios for inter-institutional articulation between government authorities, private companies, academic and research institutions, associations and local communities to build an agenda that allows the conservation of rivers, forests and otters in the country in a comprehensive manner.

### **Lines of action**

This management plan was conceived through four lines of action framed within the wildlife management policy (table No. 7):

- I. Research and monitoring
- II. Sustainable management
- III. Environmental awareness and education
- IV. Regulations and institutional strengthening

Each line of action includes: objectives, goal, indicators, actors involved and prioritization.

### **I. Research and monitoring**

It includes actions that allow to expand knowledge about populations of otter species through the monitoring of habitats and species, genetic research (phylogeography, taxonomy), genetics, deepening the investigation into threats to know the pressure levels in each of the distribution areas and behavioral patterns in relation to the use of aquatic ecosystems, by local communities, visitors and tourists.

### **II. Sustainable management**

Identify the areas of greatest incidence in which projects can be developed that reduce soil erosion,

(sustainable and with good practices), cultural and educational, that allow joining efforts for the conservation of acoustic ecosystems and otter species in Colombia.

soil and water pollution, reduce the demand for water for productive activities, provide dietary protein alterations and minimize negative interactions resulting from recreation and tourism. It aims to develop actions that consolidate protected areas at regional and national levels, in order to maintain the ecosystems that can support otter populations and maintain the provision of ecosystem goods and services for local communities.

### **III. Environmental awareness and education**

Strengthens the awareness and environmental education of the general community, through school environmental projects (PRAE) articulated with citizen and community environmental education projects (PROCEDA), to train in values, disseminate and generate appropriation on the knowledge of local species, its ecosystems and the sustainable management of its territories, while the otter is positioned as an emblematic species in conservation. This component is articulated with the strengthening of traditional knowledge, by the different indigenous, Afro-descendant and peasant communities in the national territory.

The information and dissemination line is part of the environmental awareness strategy for the general community.

### **IV. Regulations and institutional strengthening**

It focuses its projects and activities on the strengthening of existing tools, such as the implementation of environmental regulations at the business level, river basin management plans, fire risk management plans, tsunamis and campaigns against the commercialization of species wild.

Similarly, it proposes an interinstitutional agenda for the conservation of rivers and forests in which it is socialized with other dependencies and institutions of the State, the need to support productive projects



Tabla N° 7. Líneas estratégicas del Plan de manejo para la conservación de las nutrias (*Lontra longicaudis* y *Pteronura brasiliensis*) en Colombia.

**Priority projects sheet Line: research and monitoring**

**1. Project: distribution of the neotropical otter in Colombia**

**Objective:** to identify the presence of the species in the aquatic ecosystems of the Pacific, Amazon and Orinoquia regions.

Description of the project: conduct tours through rivers, pipes and streams previously selected according to secondary (bibliographic review) and primary information (information from local residents and key informants) to identify the presence through direct records (observation of individuals) and indirect registration (latrines, feeders and footprints). Additionally, threat indicators are recorded. Semi-structured interviews are conducted with the community about the species (observations, biological and ecological information,

uses and threats) and the conservation status of water bodies and forests.

Products: technical reports with information on the study of the neotropical otter in the study area that includes description of the biological and social results (with format support for records, interviews, photographs and cartography), threats found (description, weighting and cartography ) and analysis of results. Informative document.

Estimated value of the project: US \$9,000

**Line: research and monitoring**

**2. Project: evaluation of the intensity of threats to the conservation of rivers and forests associated with otters in the country**

**Objective:** to evaluate the intensity of current and future threats to the conservation of aquatic ecosystems and forests, associated with otters in the country.

Project description: the project consists of three components. The first focused on the physicochemical quality of water in which parameters are evaluated as organochlorines resulting from pesticide fishing in some rivers, and agrochemicals (fungicides, insecticides and herbicides), total mercury (Hg) since these compounds bioaccumulate in the Trophic networks affecting both the otter by the consumption of shrimp reported in these aquatic ecosystems and possibly the humans who consume them.

The second, directed towards the establishment of the ecological flow in the different hydroclimatic periods taking into account the susceptibility of the study areas to climate change, for which the collection of hydrological data and the modeling of them are required.

The third aimed at the identification of parasites (with zoonotic characteristics) present in the species,

which can increase the morbidity and mortality of individuals and in turn be transmitted to humans.

Products: technical report on the physicochemical quality of water including organochlorines, total mercury (Hg) and agrochemicals in prioritized aquatic ecosystems. Technical report on the establishment of the ecological flow in prioritized water bodies. Technical report on the identification of parasites. A compiled final report and informative document.

Estimated value of the project: US \$ 4,000

#### **Line: sustainable management**

### **3. Project: promotion of good ecotourism and recreation practices in the different aquatic ecosystems of the country**

Objective: to promote tourism and sustainable recreation in the rivers in order to reduce the impact generated by this activity on the otter populations in Colombia.

Project description: in the selected rivers, conduct a study on the river as a resource commonly used in tourism (identifying users, characterization of activities developed, impacts, service providers, organization, formal and informal rules and regulations), conduct workshops on good service practices in river activities, establish agreements with service providers. Develop a campaign to promote responsible recreation in rivers (radio and print interventions). Develop workshops with the general community and educational community to perform responsible recreation in the rivers, generating agreements.

Products: report and booklet on the study of the use of aquatic ecosystems as a resource commonly used in tourism, including agreements on good service practices in river activities with providers and photographic record. Report on the campaign and responsible recreation agreements in rivers, including workshops with general and educational community, the informative material generated, agreements and photographic record.

Estimated value of the project: US \$ 7,000

#### **Line: sensitization, environmental education and dissemination**

### **4. Project: strengthening of environmental school projects**

Project objective: to strengthen school environmental projects in order to understand the environmental potentials and problems with the otters as the articulating axis in the country.

Project description: design workshops and activities for collective construction of knowledge with teachers using printed support material which includes socio-environmental information with local relevance and tools for the implementation of school environmental projects (PRAE), incorporating the otter as an articulating axis between terrestrial and aquatic ecosystems. The workshops, in addition to socializing information, focus on remembering the need to generate common spaces for reflection on the potential and problems of socio-ecosystems, seeking to create a sense of belonging, scientific thinking and self-management that lead to an improvement in the quality of the life, through playful learning exercises.

Products: support booklet for the implementation of PRAE (including activities for students), report with the design and reports of the workshops implemented including attendance formats and photographic record.

#### **Line: regulations and institutional strengthening**

### **5. Project: interinstitutional agenda for the conservation of aquatic ecosystems, forests and otters in the country**

Objectives: to establish a joint work program between institutions and their dependencies in order to reduce the threats of conservation of aquatic ecosystems, forests and otters in the country.

Project description: a collaboration model is established that allows the construction of capacities together, as a fundamental element of social construction of the territory where the linking of all the actors allows planning and managing the conservation of ecosystems in an integrated and coordinated manner. For this, meetings are held to

socialize the problem and establish commitments (entities, responsible agencies, resources and monitoring).

Products: agenda document (include the reference and contextual framework, objectives, agenda development process, agenda program, photographic record).

Estimated value of the project: US \$ 3,000

## BIBLIOGRAPHIC REFERENCE

1. Cabral, MMM, Zuanon, JAS, de Mattos, GE y Rosas, FCW 2010. Hábitos alimentarios de nutrias gigantes *Pteronura brasiliensis* (Carnivora: Mustelidae) en el embalse hidroeléctrico Balbina, Amazonia central brasileña. *Zoologia* 27 (1): 47-53.
2. Carter, SK y Rosas, FCW 1997. Biología y conservación de la nutria gigante *Pteronura brasiliensis*. *Mammal Review* 27: 1-26.
3. Chehebar, C. 1991. Noticias de Argentina. *Boletín 6 del Grupo de Especialistas en Nutrias de la UICN* : 17-18.
4. Duplaix, N. 1980. Observaciones de la ecología y el comportamiento de la nutria gigante de río *Pteronura brasiliensis* en Surinam. *Revue d'Ecologie (La Terre et La Vie)* 34: 495-620.
5. Finer, M. y Jenkins, CN 2012. Proliferación de represas hidroeléctricas en la Amazonía andina e implicaciones para la conectividad Andes-Amazonía. *PLoS ONE* 7 (4): e35126. doi: 10.1371 / journal.pone.0035126.
6. García, DM, Marmontel, M., Rosas, FW y Santos, FR 2007. Genética de conservación de la nutria gigante ( *Pteronura brasiliensis* (Zimmerman, 1780)) (Carnivora,

Mustelidae). *Revista Brasileña de Biología* 67 (4): 819-827.

7. Gómez, JR y Jorgenson, JP 1999. Una visión general del problema de la nutria gigante-pescador en la cuenca del Orinoco de Colombia. *Boletín 16 (2) del Grupo de Especialistas en Nutrias de la UICN* : 90-96.
8. Groenendijk, J. 1998. Una revisión del estado de distribución y conservación de la nutria gigante ( *Pteronura brasiliensis* ), con énfasis especial en la región del escudo de Guayana. Comisionado por el Fondo Internacional para el Bienestar Animal, producido por el Comité de los Países Bajos para la UICN.
9. Groenendijk, J. y Hajek, F. 2006. Gigantes de la Madre de Dios . Ayuda para Vida Silvestre Amenazada, Sociedad Zoológica de Francfort, Perú.
10. Groenendijk, J., Hajek, F., Duplaix, N., Reuther, C., Van Damme, P., Schenck, C., Staib, E., Wallace, R., Waldemarin, H., Notin, R. , Marmontel, M., Rosas, F., de Mattos, GE, Evangelista, E., Utreras, V., Lasso, G., Jacques, H., Matos, K., Roopsind, I., Botello, JC 2005 . Topografía y seguimiento de la distribución de la población y las tendencias de la nutria gigante ( *Pteronura brasiliensis* ) - Directrices para una estandarización de los métodos de la encuesta según lo recomendado por la sección de la nutria gigante de la nutria SSC Grupo Especialista / UICN . *Hábitat* 16.
11. Gutleb, A., Schenck, C. y Staib, E. 1997. Nutria gigante ( *Pteronura brasiliensis* ) en riesgo? Niveles totales de mercurio y metilmercurio en escamas de pescado y nutria, Perú. *Ambio* 26 (8): 511-514.

12. UICN 2015. La Lista Roja de especies amenazadas de la UICN. Versión 2015.2. Disponible en: [www.iucnredlist.org](http://www.iucnredlist.org) . (Acceso: 23 de junio de 2015).
13. Kruuk, H. 2006. Nutrias: ecología, comportamiento y conservación . Oxford University Press, Oxford.
14. Oliveira, GC, Barcellos, JFM, Lazzarini, SM y Rosas, FCW 2011. Anatomía macroscópica e histología de testículos de nutria gigante ( *Pteronura brasiliensis* ) y de nutria neotropical ( *Lontra longicaudis* ). *Animal Biology* 61: 175-183.
15. Pacifici, M., Santini, L., Di Marco, M., Baisero, D., Francucci, L., Grotto Marasini, G., Visconti, P. y Rondinini, C. 2013. Longitud de generación para mamíferos. *Nature Conservation* 5: 87-94.
16. Pickles, RSA, Groombridge, JJ, Zambrana Rojas, VD, Van Damme, P., Gottelli, D., Ariani, CV y Jordan, WC 2012. Diversidad genética y estructura de la población en la nutria gigante en peligro de extinción. *Conservation Genetics* 13: 235-245.
17. Pickles, RSA, Groombridge, JJ, Zambrana Rojas, VD, van Damme, P., Gottelli, D., Kundu, S., Bodmer, R., Ariani, CV, Iyengar, A y Jordan, WC 2011. Filogeografía e identificación de unidades evolutivas significativas en la nutria gigante. *Molecular Phylogenetics and Evolution* 61: 616-627.
18. Pickles, RSA, McCann, NP y Holland, AP 2011. Diversidad de mamíferos y aves de Rewa Head, Rupununi, sur de Guyana. *Biota Neotropica* 11 (3): 237-251.
19. Recharte, M. y Bodmer, R. 2009. Recuperación de la nutria gigante en peligro de extinción *Pteronura brasiliensis* en los ríos Yavarí-Mirín y Yavarí: una historia de éxito para CITES. *Oryx* 44: 83-88.
20. Recharte, M., Bowler, M. y Bodmer, R. 2008. Potencial conflicto entre los pescadores y las poblaciones de nutrias gigantes ( *Pteronura brasiliensis* ) por parte de los pescadores en respuesta a la disminución de las poblaciones de peces arowana ( *Osteoglossum bicirrhosum* ) en el noreste de Perú. *Boletín 25 del Grupo de Especialistas en Nutrias de la UICN* : 89-93.
21. Ribas, C. 2012. Grau de parentesco y relações sociais em ariranhas ( *Pteronura brasiliensis* ). Tesis doctoral. Instituto Nacional de Pesquisas de la Amazonia (INPA). Manaus, Brasil.
22. Ribas, C., Damasceno, G., Magnusson, W., Leuchtenberger, C. y Mourão, G. 2012. Nutrias gigantes que se alimentan de caimanes: evidencia de un nicho trófico expandido de poblaciones en recuperación. *Estudios sobre Fauna Neotropical y Medio Ambiente* 47 (1): 19-23.
23. Rosas, FCW, de Mattos, GE y Cabral, MMM 2007. El uso de lagos hidroeléctricos por nutrias gigantes ( *Pteronura brasiliensis* ): el caso de la presa Balbina en la Amazonía central, Brasil. *Oryx* 41 (4): 520-524.
24. Rosas, FCW, Waldemarin, H. y de Mattos, GE 2008. Ariranha, *Pteronura brasiliensis* (Zimmermann, 1780). En: ABM Machado, GM Drummond y AP Paglia (eds), *Livro Vermelho da Fauna Brasileira Ameaçada de Extinção* , pp. 800-801. Fundação Biodiversitas, Belo Horizonte, Minas Gerais, Brasil.



25. Rosas-Ribeiro, PF, Rosas, FCW y Zuanon, J. 2011. Conflicto entre pescadores y nutrias gigantes ( *Pteronura brasiliensis* ) en la Amazonía occidental de Brasil. *Biotropica* 44 (3): 437-444.
26. Schenck, C. 1999. Lobo de Río ( *Pteronura brasiliensis* ) - Presencia, uso del hábitat y protección en el Perú. Tesis doctoral. GTZ / INRENA. Lima, Perú; 176 pp
27. Schenck, C. y Staib, E. 2000. El turismo de la nutria gigante en el Perú: ¿bendición o busto para la conservación? . En: M. Shackley (ed.), *Flagship Species; estudios de caso en la gestión del turismo de vida silvestre* , pp. 200. Ecotourism Society, Vermont.
28. Schenck, C., Groenendijk, J., Hajek, F., Staib, E. y Frank, K. 2003. Nutrias gigantes en la selva peruana: vinculación de las condiciones de las áreas protegidas con las necesidades de las especies. En: JA Bissonette e I. Storch, (eds), *Ecología del paisaje y gestión de recursos: vinculación de la teoría con la práctica* , págs. 341-357. Island Press, Covelo, Londres.
29. Schenck, C., Staib, E. y Storch I. 1997. Riesgos de enfermedades de animales domésticos para nutrias gigantes peruanas ( *Pteronura brasiliensis* ). *Boletín del Grupo de Especialistas Veterinarios de la UICN* 14: 7-8.
30. Spracklen, DV, Arnold, SR y Taylor, CM 2012. Las observaciones del aumento de las precipitaciones tropicales preceden por el paso del aire sobre los bosques. *Nature* 489: 282-285.
31. Staib, E. 2005. Eco-Etología del Lobo de Río ( *Pteronura brasiliensis* ) en el Sureste del Perú . *Ayuda para Vida Silvestre Amenazada - Sociedad Zoológica de Francfort Perú*.
32. Swenson, JJ, Carter, CE, Dome, J.-C. y Delgado, CI 2011. Minería de oro en la Amazonía peruana: precios globales, deforestación e importaciones de mercurio. *PLoS ONE* 6 (4): e18875.
33. Sykes-Gatz, S. 2005. *International Studiant Otter Studbook Husbandry and Management Information and Guidelines. Cría y manejo de la nutria gigante ( Pteronura brasiliensis )* . 2a edición, Dortmund. 276pp.
34. Utreras, V. y Araya, I. 2002. Estado de distribución y conservación de la nutria neotropical ( *Lutra longicaudis* ) y la nutria gigante ( *Pteronura brasiliensis* ) en Ecuador. *Actas VII Coloquio Internacional de Nutrias, Trebon. Boletín 19A del Grupo de Especialistas en Nutrias de la UICN* : 365-369.
35. Utreras, V. y Tirira, DG 2011. Nutria gigante ( *Pteronura brasiliensis* ). En: D. Tirira (ed.), *Libro Rojo de los Mamíferos del Ecuador* , pp. 96-97. Fundación Mamíferos y Conservación / Pontificia Universidad Católica del Ecuador / Ministerio del Ambiente del Ecuador, Quito.
36. Utreras, V., Suárez, ER, Zapata-Rios, G, Lasso, G. y Pinos, L. 2005. Estimaciones de la estación seca y lluviosa de nutria gigante, *Pteronura brasiliensis* , rango de hogar en el Parque Nacional Yasuní, Ecuador. *Revista Latinoamericana de Mamíferos Acuáticos* 4 (2): 191-194.

37. Wozencraft, WC 2005. Orden Carnivora. En: DE Wilson y DM Reeder (eds), *Mammal Species of the World: A Taxonomic and Geographic Reference*. Tercera edición , pp. 532-628. Johns Hopkins University Press, Baltimore.

## ANNEXES

Management plan for the conservation of otters (*Pteronura brasiliensis*), in the Amazon, Colombia.



