

THE CONGO CLAWLESS OTTER: STATE OF KNOWLEDGE AND NEEDS FOR FURTHER RESEARCH

Helene JACQUES, 13 Place de Verdun 38320 Eybens, France.

Nicole DUPLAIX, 12 rue Michael Winburn 92400 Courbevoie, France.

Guillaume CHAPRON, Laboratoire d'Ecologie CNRS UMR 7625, Ecole Normale Supérieure, 46 rue d'Ulm 75005 Paris, France.

ABSTRACT: Among the 4 African otter species, the Congo clawless otter (*Aonyx congicus*) is the least known because of the remoteness of its Central African equatorial rainforest range. Its distribution, status, and biology in the field are now being investigated and preliminary results are introduced. Two missions in Gabon, followed by one in Congo, allowed us to gather local information, to find tracks and to identify otters in their habitat. Further, we were able to start developing a network to gather more information about the 2 otter species present in this region. The current distribution of the Congo clawless otter (Gabon, Congo, Republic Democratic of Congo, south of Cameroon and RCA, north of Angola, and probably west of Uganda, Rwanda and Burundi) was mapped from this information network as well as from the locality data of museum specimens. Data about its biology and current status were gathered from local sources and from field biologists working in Gabon and Congo. Threats seem mainly to be deforestation, hunting for bush meat and use for witchcraft materials. Four visits to the collections of natural history museums of London, New York, Paris, and Tervueren (Belgium), provided useful criteria to differentiate Congo clawless otter from Cape clawless otter (*Aonyx capensis*). A possible sympatric overlap zone may occur between these species and might imply hybridization. However, this needs to be studied further.

KEY WORDS: African otters, *Aonyx capensis*, *Aonyx congicus*, Cape clawless otter, Congo clawless otter.

According to Nowak (1991), Wozencraft (1993) and Kingdon (1997), four species of otters are known to exist in Africa. The distribution of the Eurasian otter (*Lutra lutra*) is limited to Morocco, Algeria and Tunisia. The spotted-necked otter (*Lutra maculicollis*) occurs in the wetlands of sub-Saharan Africa, along with the Cape clawless otter (*Aonyx capensis*), except in the Congo River basin, which is occupied by the Congo clawless otter (*Aonyx congicus*). Because of the remoteness of the equatorial rainforest of Central Africa, and other difficulties in working there, the distribution, status, and biology of the Congo clawless otter is largely unknown. The IUCN Otter Specialist Group (OSG) has established that additional research, conservation activities, and dissemination of information are critically needed for all species of otters inhabiting Africa (Reuther 2001). In this paper we review: 1) physical characteristics useful for distinguishing between the Cape clawless otter and Congo clawless otter and the presumed distribution of the Congo clawless otter; 2) current knowledge about the basic biology of the Congo clawless otter; and 3) primary threats to otters in Central and West Africa.

METHODS

Bibliography and visits to museums

We reviewed literature and information from museums' websites, and conducted examination of skins and photos as well as observation of individuals to identify physical features useful in distinguishing between Cape clawless and Congo clawless otters. A total of

72 skins and 29 skulls of the Cape clawless otter, and 73 skins and 63 skulls of the Congo clawless otter were examined and measured in the Royal Museum for Central Africa (Tervuren, Belgium) (2004), Natural History Museum (London, UK) (2002), Muséum National d'Histoire Naturelle (Paris, France) (2002) and American Museum of Natural History (New York, USA) (2004) (Table 1). We recorded color patterns and markings of skins and measured 23 dimensions of each skull (Table 2). Complete specimens with skull and skin and from locations well inside the distribution area of each species were used to determine discriminating patterns between these 2 species. Some specimens showing intermediate skin patterns, coming from the edge of the distribution area and often mislabeled were attributed to Cape clawless or Congo clawless by assessing molar size.

Table 1. Sources and number of skins and skulls used in making morphological comparisons of Cape clawless otters and Congo clawless otters examined during 2002-2004.

Source	Cape clawless otter		Congo clawless otter	
	Skins	Skulls	Skins	Skulls
Tervuren Museum (Belgium)	17	0-32	32	30
British Museum (London)	37	21-11	11	12
National Museum of Natural History (Paris)	1	1-5	5	3
American Museum of Natural History (New York)	17	7-25	25	18

Table 2. Measurements used in comparisons of skull and dental morphology of Cape clawless otters and Congo Clawless otters during 2002-2004.

Dental ^a	Morphometrical
P4supRlength	Total length
P4supRwidth	Zygomatic breadth
P4supLlength	Interorbital breadth
P4supLwidth	Post orbital breadth
M1supRlength	Mastoid breadth
M1supRwidth	Brain capsule breadth
M1supLlength	Total mandible length
M1supLwidth	
M1infRlength	
M1infRwidth	
M1infLlength	
M1infLwidth	
M2infRlength	
M2infRwidth	
M2infLlength	
M2infLwidth	

^a Abbreviations: P = premolar; M = molar; R = right; L = left; Sup = superior; Inf = inferior.

Field data collection

We made 2 field trips to Gabon (St Anne, Gamba Protected Area Complex, and then Lope Reserve, Langoue bai) and another to Congo (Mbeli bai in Nouabale Ndoki National Park) where we conducted semi-structured interviews (White and Edwards 2000) with local fishermen, forest users, and game wardens to obtain general information about the presence of Congo clawless otters (the only otter known to occupy these areas; Jacques 2002a, 2002b) and human impacts on their populations. We also recorded direct observations of otters and

their sign (tracks and spraints [droppings or scats]). Observations of otters and their sign are difficult in Central Africa because of dense vegetation and were only accomplished easily in rare areas named "bai" where the rainforest is absent naturally and marshy areas are common. The majority of tracks, spraints, and direct observation of otters occurred in Mbeli bai.

RESULTS

Taxonomy

The taxonomy of the Cape clawless and Congo clawless otters has generated considerable scientific discussion and undergone numerous revisions. Shinz (1821) first mentioned the Cape clawless otter as *Lutra capensis* and later Cuvier (1823) called it *Lutra inunguis*, which means in latin "the otter with no claw" (Rosevear 1974). The genus *Aonyx* was adopted from Lesson (1827) based on a Cape clawless otter specimen from Cape of Good Hope collected by a Mr. Delalande and subsequently was given the species name *Aonyx delalandii* (Rosevear 1974). The remains of this otter originally were housed at the Paris National Museum and are now in the collection of France's La Rochelle Museum (P. J. H. Van Bree, personal communication). Lönnberg (1910) first described the Congo clawless otter based on a specimen from the lower Congo, naming it as a subspecies of the Cape clawless otter (*Aonyx capensis congica*) based on similar overall appearance but having smaller molars. Pohle (1920) examined 7 specimens from Cameroon and classified them as a new species - *Aonyx microdon*. Hinton (1921) identified 2 otter specimens from Uganda as *Aonyx microdon*, and later reclassified them with a new genus, *Paraonyx*, which was intended to uniquely define the Congo clawless otter. However, Allen (1924) and Davis (1978) argued that the Cape clawless otter and Congo clawless otters were regional variations of the same species. Currently, and based on differences in tooth size and pelage characteristics, the Cape clawless otters and Congo clawless otters are defined as separate species (Van Zyll de Jong 1987, Rosevear 1974, Wozencraft 1993). The IUCN Red List of Endangered Species also accepts them as unique species (IUCN 2008).

The literature often cites the Cape clawless otter as *Aonyx congica*; however, *Aonyx congicus* is now considered the appropriate species name. The appropriateness of "congicus" is based on the Greek "onux," which is masculine - the species group name (a Latin adjective) must agree in gender with the generic name, which is the case with "congicus" (Van Bree et al 1999).

Differentiating Cape clawless otters from Congo clawless otters

We have identified several physical characteristics useful for distinguishing between the two species of clawless otters (Table 3). The silvery tips on the guard hairs on the head and shoulder gives the Congo clawless otter a "frosted" appearance, a characteristic useful in distinguishing between skins of this species and the Cape clawless otter. However, this characteristic is not easily discernable at a distance in the field. Also, the "frosted" appearance is less obvious when the fur is wet. In the field, the quadrangular black patch between the eye and the nose is the more useful criteria in distinguishing the two species - the patch of the Congo clawless otter is circled by white, unlike the patch of the Cape clawless otter, in which case the black patch merges with the surrounding brown fur.

Some otter skins from Democratic Republic of Congo (formerly Zaïre) may not strictly conform to the above criteria for distinguishing the 2 otter species. Skins of the Cape clawless otter may show a patch between the eyes and nose more conspicuous than typically expected for the species, and this appears to be more likely the case in areas where the species' range overlaps with that of Congo clawless otter. The existence of morphologically "intermediate" forms where the species are sympatric requires more investigation. De Barros Machado (1967) also thought there was potential for "intermediate" forms to occur in

Northern Angola. Such "intermediate" forms have been described for savannah and forest elephants in Garamba National Park North of Democratic Republic of Congo (Roca et al. 2001). Areas where the 2 species are sympatric reasonably could be suspected in Garamba National Park (skins of both species are labeled from areas near the park in Tervuren Museum, Belgium), as well in Cameroon, which also has transitional areas between savannah and forest biomes.

Table 3. External morphological criteria for distinguishing between Cape clawless otters and Congo clawless otters (from Hinton 1921, Rosevear 1974, Kingdon 1977, N. Duplaix [unpublished data])

Criteria of identification	Cape clawless	Congo clawless
General appearance	Large and bulky	
Weight	15 to 25 kg	
Length ^a	75 – 90 cm + 40 – 60 cm	
Fur	Upperparts from dark brown to pale tan. Underparts lighter, cheeks, chin, throat and upper chest white	
Front toes	Naked, clawless, no webbing	
Hind toes	Webbed to the base of the second phalange, rudiments of claws on the 2 nd , 3 rd , 4 th toes only	
Appearance of pelage on head and shoulders	Lightly "frosted"	Conspicuously "frosted"
Coloration margins of ears	Light white to brown	Conspicuously white
Coloration underfur of cheeks	Beige	White
Rhinarium	Rounded or slightly V-shaped	Straight
Perimeter of dark patch between nostrils and eyes	Gradual transition to surrounding brown fur	Prominently surrounded by white

^aHead and body + tail

Measurements of skulls

Morphometrical measurements of the skull showed no discernable difference between the 2 otter species (Table 4). Cheek tooth size (P^4 , M^1 , and M_2) is classically mentioned as representing a good criterion to distinguish the Cape Clawless otter (large sized cheek teeth, linked to a diet including crabs; Rowe-Rowe, 1977) from the Congo clawless otter (slender and less robust cheek teeth, linked to a diet of softer prey; Rosevear 1974). Among the preliminary assessments of length and width measurements of P^4 , M^1 , and M_2 , most notable were the dimensions of M_1 , which were 30 to 50% larger for the Cape clawless otter (\bar{x} = 17.76 mm and \bar{x} = 14.24 mm, respectively) than those of the Congo clawless otter (\bar{x} = 12.95 mm and \bar{x} = 10.02, respectively) (Table 5).

Table 4. Mean morphometric measurements (mm) taken from skulls of museum specimens of the Congo clawless otter and Cape clawless otter during 2002-2004

	Total length	Zygomatic breadth	Interorbital breadth	Post orbital breadth	Mastoid breadth	Brain capsule breadth
Congo clawless	129.15	90.32	29.90	33.46	88.49	73.02
Cape clawless	132.67	86.60	28.41	28.70	86.27	71.88

Table 5. Dental measurements (mm) taken from skulls of museum specimens of Cape clawless otters and Congo clawless otters during 2002-2004

	P4supRlength	P4supRwidth	P4supLlength	P4supLwidth
Congo clawless	10.04	10.72	9.96	10.66
Cape clawless	12.89	14.10	12.85	13.89
	M1supRlength	M1supRwidth	M1supLlength	M1supLwidth
Congo clawless	12.98	10.03	12.92	10.02
Cape clawless	17.77	14.21	17.74	14.27

	M1infRlength	M1infRwidth	M1infLlength	M1infLwidth
Congo clawless	13.48	7.65	13.33	7.61
Cape clawless	17.70	10.70	17.1	10.68
	M2infRlength	M2infRwidth	M2infLlength	M2infLwidth
Congo clawless	4.21	5.58	4.25	5.79
Cape clawless	6.24	8.28	6.42	8.31

Distribution

The Congo clawless otter occurs in the rainforests of the Congo basin, including mainly Equatorial Guinea, Gabon, Congo (Brazzaville), Congo (formerly Zaïre), as well as southern Cameroon, southern Central African Republic, northern Angola, extending eastward to the forests and the wetlands of Rwanda, Burundi, and Uganda (Rowe-Rowe 1995). However, no recent records have been gathered on the distribution of this species in these Rwanda, Burundi, and Uganda.

The exact limits for the distribution of Congo clawless otters are unclear and confounded by the challenges of properly distinguishing between this species and the Cape clawless otter in the field. There are recent records of its occurrence from Cameroon: Abong Mbang (W. Bergman, personal communication), Dja Reserve (F. Alary, personal communication), and North of Dja Reserve (H. Planton, personal communication); Central African Republic: Dzanga-Sangha National Park (A. Turkalo, J. Ray, personal communication); Gabon: Lopé Reserve (L. White, personal communication), Langoué bai (S. Latour, personal communication), Liboumba, Louayé and Lodié Rivers (S. Lahm Personal communication), Makokou (P. de Watcher, personal communication), and Lekori (O. Bourry, personal communication); Congo (Brazzaville): Nouabalé-Ndoki (R. Parnell, F. Alary [personal communication]; H. Jaques, [personal observation]) and Odzala (J.M. Froment, personal communication) National Parks, Lac Télé (C. Clark, personal communication), and Kouilou basin (B. Guillon, personal communication); and Congo (Zaïre): Sankuru River (J. Thompson, personal communication). The 32 skins of the Congo clawless otter examined in the Tervuren Royal Museum came mainly from northern and

Both species of clawless otters are well adapted to foraging with their front toes. The lack of webbing between the digits of their forepaws allows for considerable dexterity when feeling for prey in mud and murky water. Unlike other otter species, clawless otters use their forepaws, instead of their mouths to catch prey (Duplaix 1982). The smaller molars of Congo clawless otters may reflect its tendency to select softer prey items than the Cape clawless otter. Foods include earthworms, molluscs, fishes, frogs, crabs, and other small invertebrates and vertebrates. At Mbeli bai, almost all observed feeding is on worms, though fish sometimes are caught. Worms are located by pushing the forepaws deep into soft mud banks, and feeling through the mud with the toes, while the gaze is averted. After a brief time (usually several seconds) the forepaws are withdrawn and the worm transferred from the toes to the mouth. We have observed Congo clawless otters obtaining an average of about the worms per minute using this hunting strategy. Parent otters have been observed feeding their young worms, which were passed mouth to mouth (R. Parnell, personal communication). western Congo (Zaire). Hunting appears to have caused extirpation of the species in eastern portions of the country (J.P. Van de Weghe, personal communication). In Angola, the species occurs only in the northern part of the Lunda district, north of the 10th parallel (De Barros Machado 1967).

Rowe Rowe (1995) claims that Congo clawless otters are present in Nigeria, but the species' occurrence is not mentioned in the works of Happold (1987) and Van Rompaey and Powell (1999). Originally, this species was reported from Nigeria, but the reports were from former regions of the country that now are part of Cameroon because of a re-delineation of the boundary between the 2 nations in 1963.

Unlike the Cape clawless otter, there is no current evidence indicating that Congo clawless otters use marine shorelines. However, the species has been reported to use coastal freshwater lagoons and mangrove swamps in Gabon and Congo. The rainforest of the interior is the favored habitat of the Congo clawless otter, and there the species occurs in large and small rivers, not only in swamps as one of its common names (swamp otter) suggests.

Biological considerations

Relatively little is known about the social behavior, reproduction, or development of Congo clawless otters. At Mbeli bai, up to 4 individuals have been seen together, although most are seen alone or in pairs (frequently mother with offspring) (R. Parnell, personal communication). One cub is known to have been born in August (1995) in Congo (J. Thompson, personal communication) and three cubs are known to have been born in the beginning of January (2003) in southeast Gabon (O. Bourry, personal communication) At Mbeli bai, sub-adults have been seen in most months of the year and cubs have been seen in February. Because of the warm and stable warm climate reproduction may occur throughout the year.

Threats

The Congo clawless otter does not appear to be currently endangered or threatened in the center of its distribution in Gabon and Congo, where the forest is still relatively well preserved (World Resources Institute 2000, B. Curran, personal communication). However, the rate of deforestation is high in Cameroon and will probably be a bigger problem in the coming years. Otters also are commonly hunted for bush meat, but have the reputation as being very difficult for hunters to catch. In Central and West Africa, otters have the reputation to be an aphrodisiac and in some areas, the otter is said to possess magical powers: by wearing a piece of fur one can become invisible to an opponent, or escape an enemy - just as otters escape fish traps. The skin of the Congo clawless otter is used in Cameroon to make drums (Alary et al. 2002).

At present, we consider the Cape clawless otter to be of more conservation concern in West and Central Africa than the Congo clawless otter. The Cape clawless otter probably has disappeared from North Cameroon, Togo, and likely is very rare in Niger and Benin.

CONCLUSION

In general, little is known about the status, distribution and basic biology of Cape clawless and Congo clawless otters - although the Cape clawless has received considerable research attention in portions of southern Africa (Kruuk 2006). The vast distances and other logistical difficulties associated with conducting research in Africa present considerable challenge to studying both Cape and Congo clawless otters. Clearly, additional basic research is needed for these species; with a particular need for defining methodology for more thoroughly and efficiently assess their status and distribution.

ACKNOWLEDGMENTS - We wish to thank the IUCN Otter Specialist Group and especially its late Chairman Claus Reuther and the previous African coordinator Jan Nel, who gave me the idea to follow the tracks of the Congo clawless otter, the Van Tienhoven Foundation for its financial support, the Fauna and Hunting Direction in Gabon for the field work authorizations, the Wildlife Conservation Society, WWF Gabon and the International Centre for Medical Research (CIRMF) of Franceville for helping to organize field trips, Tervuren Royal Museum, National Museum of Natural History of Paris, the British Museum of London and the American Natural History Museum for the access to their collections, and the French Mammal Society (SFEPM) for documentary support.

LITERATURE CITED

- Alary, F., F. Moutou, and H. Jacques. 2002. Still on the tracks of the Congo clawless otter (*Aonyx congicus*): first mission in Cameroon. IUCN Otter Specialist Group Bulletin 19:51-55.
- Allen, J. A. 1924. Carnivora collected by the American Congo expedition. Bulletin American Museum Natural History 47:1922-1925.
- Davis, J. A. 1978. A classification of the otters. Pages 14-33 in N. Duplaix, editor. Otters. IUCN Otter Specialist Group, Gland, Switzerland.
- De Barros Machado, A. 1967. Mamíferos de Angola ainda não citados ou pouco conhecidos. Museo do Dundo, Lisboa, Portugal.
- Duplaix, N. 1982. Contribution à l'écologie et à l'éthologie de *Pteronura brasiliensis* (Carnivora, Lutrinae): implications évolutives. Thèse pour l'obtention du titre de Docteur d'Université. Université Paris Sud, Centre d'Orsay.
- Happold, D. C. D. 1987. The Mammals of Nigeria. Oxford University Press, Oxford, England.
- Harris, C. J. 1968. Otters: a study of the recent Lutrinae. Weidenfeld and Nicolson, London, England.
- Hinton, M. A. C. 1921. *Paraonyx*, a new genus of Clawless Otter discovered by Capt. J. E. Philipps, M. C. in Central Africa. Annals and Magazine of Natural History 7:196-200.
- IUCN. 2004. 2008 IUCN Red List of Threatened Species. <www.iucnredlist.org>. Downloaded on 16 December 2004.
- Jacques, H. 2002a. *Aonyx congicus*, Mission Gabon. Unpublished Report, IUCN Otter Specialist Group, Grenoble, France.
- Jacques, H. 2002b. *Aonyx congicus*, Mission Congo. Unpublished Report, IUCN Otter Specialist Group Grenoble, France.

- Lönnerberg, E. 1910. A new species of clawless otter (*Aonyx capensis congica*) from Lower Congo. *Arkiv för Zoologi* 7:1-8.
- Kingdon, J. 1997. *The Kingdon field guide to African mammals*. Academic Press, San Diego, California, USA.
- Kruuk, H. 2006. *Otters: ecology, behaviour and conservation*. Oxford University Press, Inc. New York, USA.
- Nowak, R. M. 1991. *Walker's Mammals of the World*. The Johns Hopkins University Press, Baltimore, USA.
- Pohle, H. 1920. Die Unterfamilie der Lutrinae (Eine systematisch-tiergeographische Studie an dem Material der Berliner Museen) *Archiv Naturgeschichte* for 1919, sect.A, pt. 9, 85:145-147.
- Roca, A.L., N. Georgiadis, J. Pecon-Slattey, S. J. O'Brien. 2001. Genetic evidence for two species of elephant in Africa. *Science* 293:1473-1477.
- Rosevear, D. R. 1974. *The carnivores of West Africa*. Trustees of the British Museum, London, England.
- Rowe-Rowe, D. T. 1977. Food ecology of otters in Natal, South Africa. *Oikos* 28:210-219.
- Rowe-Rowe, D. T. 1993. Distribution and status of African otters. Pages 8-10 in C. Reuther and D. Rowe-Rowe, editors. *Habitat 11 - Proceedings VI. International Otter Colloquium, Pietermaritzburg 1993*. Gruppe Naturschutz GmbH, Hankensbüttel, Germany.
- Stuart, C, and T. Stuart. 1998. *A field guide to the Tracks and Signs of Southern and East African Wildlife*. Southern Book Publishers, Cape Town, South Africa.
- Van Bree, P. J. H., Bosscha Erdbrink D. P., and Roescher F. J. 1999. A second find of *Aonyx antiquus* in the Netherlands, and some remarks on *Aonyx* and allied forms in forms in: *Elephants have a snorkel! Papers in honour of Paul Y. Sondaar*. Eds. Reumer and De Vos, *Deinsea* 7:313-323.
- Van Rompaey, H., C. B. Powell. 1999. Carnivores of the Niger Delta, Nigeria. *Small Carnivore Conservation* 21:19-22.
- Van Zyll de Jong, C.G. 1987. A phylogenetic study of the *Lutrinae* using morphological data. *Canadian Journal of Zoology*, 65:2536-2544.
- White, L., and A. Edwards, editors. 2000. *Conservation research in the African rainforests: a technical handbook*. Wildlife Conservation Society, New York, USA.
- Wozencraft, W. C. 1993. Order Carnivora. Pages 279-348 in D. E. Wilson and D. M. Reeder, editors. *Mammal Species of the World: a taxonomic and geographic reference*. Smithsonian Institution Press, Washington, D.C., USA.
- World Resources Institute. 2000. Un premier regard sur l'exploitation forestière au Gabon. Global Forest Watch. Washington D.C., USA. <www.wri.org>.