

Conflict between Fishermen and African clawless otter (*Aonyx capensis*) in and around Lake Tana



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1. Introduction

HWC

- A major problem
- Humans encroach into wildlife habitats.
- Starts when wild animals cause damage to crops and livestock (Kissui, 2008).
- Large herbivores, carnivores and many primates are problem causing animals and considered responsible for most of the HWC (Parker *et al.*, 2007).
- However, small and medium sized animals can also set off HWC (Magige, 2012) and **otters are not exceptional.**

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- Otters are carnivorous mammals belonging to the Family Mustelidae and sub-family Lutrinae
- Unique among carnivores because of their adaptation of **semi-aquatic** mode of life in freshwaters and marine ecosystems (Kingdon, 1977; Wozencraft, 1993).
- Key stone species, good indicators of the status of wetland environments and top predators in aquatic habitats (Mason and Macdonald, 1986).
- There are 13 extant species of otters (Kruuk, 2006).

Table 1. Otter species of the world (Source: IUCN, 2015)

Scientific Name	Common Name	Distribution	Red List Category	Population Trend
<i>Aonyx capensis</i>	African clawless otter	Africa	NT	Decreasing
<i>Aonyx congicus</i>	Congo clawless otter	Africa	NT	Decreasing
<i>Lutra maculicollis</i>	Spotted-necked otter	Africa	NT	Decreasing
<i>Aonyx cinerea</i>	Asian small-clawed otter	Asia	V	Decreasing
<i>Enhydra lutris</i> *	Sea otter	Asia, North America	E	Decreasing
<i>Pteronura brassiliensis</i>	Giant otter	South America	E	Decreasing
<i>Lontra canadensis</i>	N. America River otter	North America	LC	Stable
<i>Lontra felina</i> *	Marine otter	South America	E	Decreasing
<i>Lontra longicaudis</i>	Neotropical otter	South America		
<i>Lontra provocax</i>	Southern River otter	South America	E	Decreasing
<i>Lutrogale perspicillata</i>	Smooth-coated otter	Asia	V	Decreasing
<i>Lutra sumatrana</i>	Hairy-nosed otter	Asia	E	Decreasing
<i>Lutra lutra</i>	Eurasian otter	Africa, Asia, Europe	NT	Decreasing

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African clawless otter (*Aonyx capensis*)

- The third largest among otters
- Solitary
- Mainly nocturnal
- Prefer shallow water bodies in fresh water habitats of Lake shore, rivers and streams
- Crustaceans, Fish, Amphibians, Insects, Birds, small mammals



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- Although the occurrence of fishermen–otter conflict is common, the level of its significance is considered minimal (Lariviere, 2001).
- Because, crabs are the dominant prey and fish as secondary importance (Rowe-Rowe, 1977; Somers & Nel, 2003).
- Some studies, however, revealed a fish-dominated diet in Batty's Bay (Verwoerd, 1987) and in the Cape Province (Somers, 2000).
- Conflict with fishermen were reported in Benin and Zimbabwe, which caused loss of income and damage to fishing equipment.

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- However, in Ethiopia the distribution, ecology, population and conservation status of otters are poorly known.
- There are no available documents on fishermen-otter conflict and their attitude towards *Aonyx capensis* in and around Lake Tana.

2. Objectives

- To explore the existing fishermen–otter conflict and the attitude of local people towards otter in and around Lake Tana.
- To call for research and conservation attention towards this neglected species in Ethiopia.

3. Materials and Methods

Lake Tana

- Located in the North-Western part of the Ethiopian Highlands between at 11°36'02.5" – 12°14'25.5"N latitude and 37°01'33.6" – 37°24'03"E longitude.
- It is a shallow, non-rift valley lake with a mean of 8 m and maximum of 14 m depth.
- The temperature ranges from 19°C to 23°C with an average of 21.7°C.
- The rainfall pattern is unimodal and the mean annual precipitation ranges between 800 and 2000 mm with peaks between July and September

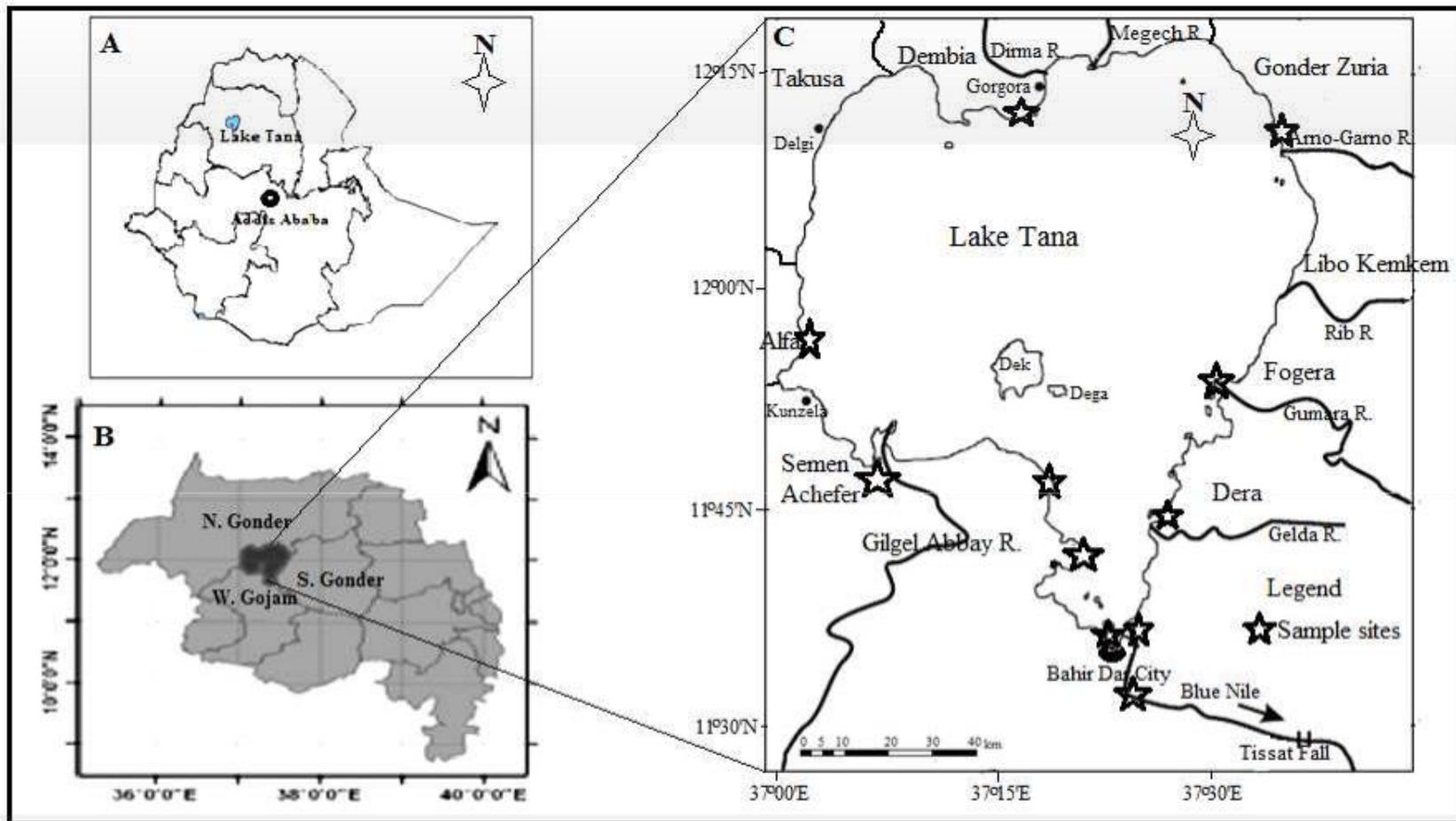


Figure 2. Map of (A) Ethiopia showing Lake Tana (B) Amhara National Regional State and the study area with administrative district and sample villages around Lake Tana

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- Carried out between September, 2014–June, 2015.
- A preliminary face to face discussion was conducted by interviewing 3–4 respondents per fishing sites to validate the questionnaire contents and design.
- A **total of 204 fishermen**, from eleven villages adjacent to Lake Tana were selected randomly.
- The questionnaire survey method was used to obtain the desired data on fishermen–otter conflict and some aspects of the ecology of *A. capensis*, following the methods of Torkar *et al.* (2010).

Village-wise distribution of participants

Village	District	Zone	N	Percentage
Dengel Ber	Alfa	North Gonder	12	5.9
Debre Mariam	Bahir Dar Zuria	West Gojam	22	10.8
Woreb Kola Tsion	Bahir Dar Zuria	West Gojam	23	11.3
Yeganda-wonjeta	Bahir Dar Zuria	West Gojam	16	7.8
Zegie Peninsula	Bahir Dar Zuria	West Gojam	18	8.8
Bahir Dar Liyu	Bahir Dar Liyu	Bahir Dar Liyu	24	11.8
Gorgora	Dembia	North Gonder	22	10.8
Koratafisena	Dera	South Gonder	18	8.8
Wagetera	Fogera	South Gonder	17	8.3
Mitreha Abaworka	Gonder Zuria	North Gonder	14	6.9
Esetumite	Semen Achefer	West Gojam	18	8.8

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- The questionnaire was presented in the local language (Amharic) containing 53 questions on the socio-economic background of the respondents, distribution, population trend, and feeding behavior of otters, fishermen–otter conflict, and the attitude of fishermen towards otters.
- Face to face interview were conducted and recorded the response on the questionnaire data sheet.
- Each participant took 30 – 45 minutes to complete the interview.
- The non-parametric chi-square test was used to test the differences in the number of respondents belong to different response categories for each question. Analysis was conducted on SPSS ver. 20 software.

4. Results and Discussion

Item/Variables	Characteristics Category	Number	Percentage
Status in the family	Head	144	70.6
	Member	60	29.4
	Total	204	100%
Age of the respondent	<20	6	2.9
	20-30	85	41.7
	31-40	43	21.1
	41-50	47	23
	>50	23	11.3
	Total	204	100%
Educational level	Illiterate	93	45.6

	Primary	77	37.7
	Secondary	23	11.3
	Beyond Secondary	11	5.4
	Total	204	100%
Marital status	Married	143	70.1
	Single	55	27
	Widowed	6	2.9
	Total	204	100%
Source of income	Fishing	81	39.7
	Fishing, animal rearing and selling	99	48.5
	Others	24	11.8
	Total	204	100%

Number of years lived in the locality	Born and brought up	174	85.3
	<10 years	6	2.9
	10 years and above	24	11.8
	Total	204	100%

Knowledge of the Respondents

- All participants reported that they have seen otters in and around Lake Tana.
- 52% (n = 106) sighted otters around the lake shore, while 20.6% (n = 42), 12.7% (n = 26) and 14.7% (n = 30) saw them in rivers, marshy areas, and rivers, marshy areas and lake shore, respectively.
- The present study revealed that *A. capensis* inhabits the lake shore, marshes and river banks in the study area.
- Similar habitat association has been reported in most of its distribution ranges (Kruuk, 2006; Nel & Somers, 2007).

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- The majority of the respondents (59.3%, n =121) observed otters both at dawn and dusk, while 28.9% (n = 59), 8.8% (n = 18) and 2.9% (n =6) observed them at night, dawn and dusk, respectively. None of the respondents reported sighting of otters during daytime ($\chi^2 = 158.39$, df= 3, P < 0.001).
- The species exhibited a crepuscular activity pattern as indicated by the restricted sightings on dusk and dawn. This is consistent with its nocturnal habit reported by Lariviere (2001)
- According to 79% (n = 162) of the respondents, the African clawless otter fed on fish, while the rest (21%, n = 42) indicated that it had a mixed diet of fish, crab and other items ($\chi^2 = 70.59$, df = 1, P < 0.001).

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- Only 8.8% (n = 18) of the respondents considered otters as important for food, pelt, and tourist attraction, whereas 91.2% (n = 186) felt that otters had no economic value and considered them as pests ($\chi^2 = 476.471$, df = 3, P < 0.001).

Fishermen–Otter Conflict

- All of the respondents in all localities considered otters **caused problems** in and around Lake Tana. Among the problems, all of the respondents agreed that they **depredate netted fish**
- The majority **94.1% (n = 192)** of the respondents indicated that otter's damaged **fishing equipment**, while the rest 5.9% (n = 12) do not caused damage on fishing nets ($\chi^2 = 158.824$, df = 1, $P < 0.001$).
- Some respondents (5.9%, n = 12) used scarecrows on both ends of the fishnet to deter otters from predating netted fish.



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- All of the respondents indicated the presence of depredation of netted fish and damage of fishing equipment by otters suggests prevalence of serious fishermen-otter conflict.
- This is supported by a recent study on the [Spraint analysis](#) revealed that 85% of fish remains as opposed to 33% of crab in the scat of *A. capensis*.
- Fishermen-otter conflicts are also reported elsewhere in Africa. In Zimbabwe, fisheries manager's revealed reduced fish stoke in commercial and subsistence fisheries due to otter predation of netted fish (Butler, 1994).

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In fishing areas, this species could easily adapt to forage on netted fish, which is more profitable than searching and capturing crabs or other prey that would incur energetic costs.

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- The majority of the respondents (94.1%, n = 192) indicated that that otters did not depredate on poultry, whereas 5.9% (n = 12) stated the opposite ($\chi^2 = 158.80$, df = 1, P < 0.05).
- All respondents indicated the absence of depredation of sheep and goat by otters and killing of otters by dogs in and around Lake Tana.
- The presence of depredation on poultry was also shown in previous studies. Rowe-Rowe (1990, 1995) reported that otters were responsible for poultry losses in South Africa.
- In Zimbabwe, households near Kairezi River Protected Areas have blamed otters for losses of domestic poultry (Butler, 1994).

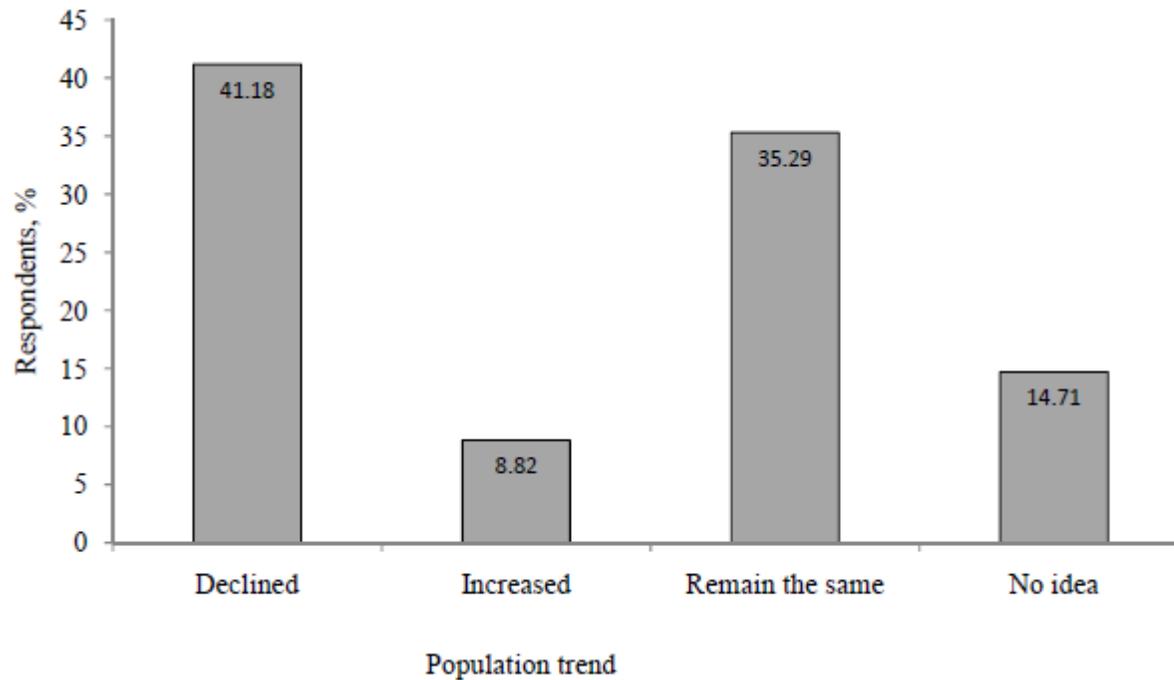
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- Similarly, the absence of hunting of otters by dogs is consistent with Butler (1994), who indicated otters were not hunted by dogs because they were difficult to capture.
- On the other hand, dogs are used by humans to hunt otters for meat and fur in India (IOSF, 2014).

Threats to Otter

- The majority (52.9%, n = 108) of the respondents believed that **habitat loss** is the major threat to the survival of otter, whereas 47.1% (n = 96) thought habitat destruction and killing ($\chi^2 = 0.71$, df = 1, P > 0.05).
- Two third (67.6%, n = 138) of the respondents believed that killing of otter is not illegal, while 32.4% (n = 66) considered it as illegal ($\chi^2 = 25.40$, df = 1, P < 0.001).
- The results suggest that the otter population in and around Lake Tana is threatened and in decline due to killing and habitat loss.
- *A. capensis* faces similar threats in different parts of its ranges (Baranga, 1995; Jacques et al., 2015).

Population Trend and Conservation



- 97% (n = 198) of the respondents considered no any other conservation program in the study area.

Attitude towards Otter

- 85.3%, n = 174 held negative attitude,
- Whereas only 14.7% (n = 30) had positive attitude ($\chi^2 = 101.65$, df = 1, $P < 0.001$).
- The negative attitude of the majority of the fishermen may predominantly be due to damage of fishing equipment and their wish for extermination of otter.

5. Conclusion and Recommendation

- The present study provided baseline data on fishermen-otter conflict, some aspects of otter ecology and conservation status in and around Lake Tana.
- The study suggests the occurrence of considerable conflict due to competition for commercial fish that can result in the killing and decline of the local otter population.
- Further studies on the quantitative estimation of fish loss and otter density are recommended to fill the gap on the limitations of the present study.
- Wildlife education and awareness creation programs could help to increase the understanding of the local people on nature conservation and the right of animals to exist.

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- Establishment of ecotourism programs that generate alternative

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Thank you