

Management plan for the African Clawless Otter (*Aonyx capensis*) populations in South Africa
(2019-2059)

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(Male adult African Clawless Otter (*Aonyx capensis*))

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Executive Summary

The African Clawless Otter was first listed under the International Union for Conservation of Nature (IUCN) as least concern/lower risk in 1996. In 2014 the African Clawless Otter was listed as nearly threatened in South Africa. The African Clawless Otter are found everywhere in Africa except for the northern region. African Clawless Otters exist in most fresh water systems or near the coast. The otters are generally within 50 meters away from a source of water and their diet consists mainly of marine species such as fish, crabs, lobsters, and octopus. Primary conservation issue impacting the African Clawless Otter are the pollution of river systems in South Africa. Secondary conservation issue is that the otters are obtaining the fish that the fisherman catch so the fisherman are inclined to kill the otters so that the otters don't continually keep taking their fish. The goal of this management plan is to increase the population size for the African Clawless Otter to a sustainable population and aid in the delisting of the species from the IUCN red list. The objectives for this management plan are: to increase African Clawless Otter acceptance rate of 50% by the human population in 20 years; the primary action for this objective would be to survey the fisherman and the non-fisherman in all the provinces of South Africa. Identify 15% of anthropogenic threats impacting the African Clawless Otter; the Primary action for this objective would be to create more legal repercussions from breaking the NEMBA Act. Increase the survival rate in the post-weaning, juvenile, and adult stages of the African Clawless Otter by 10% over 40 years; the primary action for this objective is conduct 5 scientific studies into the population dynamics of the African Clawless Otter. By increasing public awareness, reducing human impacts, and increasing their survival rates, The Goal of increasing the African Clawless Otter populations to sustainable levels will be successful.

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Natural History

Species Identification

The African Clawless Otter is the third largest of all otters. Their body is massive, and the tail is stout. Upper lips, sides of face, neck, throat, belly, and edge of ears are white; eyes and ears are small and rounded.



Figure1. African Clawless otter male

Vibrissae are white to gray in coloration and occur on both upper and lower jaw; coat is dense and lustrous. Guard hairs reach 25mm in mid-back but are shorter on head and tail. The under fur is white to off-white in color. Toes are clawless except for digits 2, 3, and 4 of hind feet which bear grooming claws. Hind feet are partially webbed but front feet are not. Male African Clawless Otters have an average body mass of 13.4kg. Female African Clawless Otters have an average body mass of 12kg (Lariviere 2001).

Breeding

Copulation may occur during December, but births have been reported in most months, with a peak during the dry season south of the equator. Gestation is 63 days and a litter size are 1-3. Young are born with pale, smoky-gray, woolly fur. Between 8-16 weeks of age the African Clawless Otter pups gain weight at a rate of 33g per week.



Figure 2. African Clawless otter pup

Pups open their eyes after 16-30 days after which pups venture outside of the den. Weaning occurs at 45-60 days. Young become independent and reach sexual maturity after 1 year.

Males have a well-developed baculum (Lariviere 2001).

Figure 3. Life stages of the African Clawless Otter



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Diet

African Clawless Otter are considered a specialist for feeding on crabs. It's molars, powerful jaws, and lack of cutting teeth are well adapted for crushing crustacean carapaces and skull bones of large fish. The molars of the otters vary geographically with the size of mollusks and crustaceans (Lariviere 2001). In a study conducted in three areas in South Africa, Mkambati Nature Reserve (MK), Tsitsikamma National Park (TS), and the KwaZulu-Natal coast (KZN). Based on relative percentage of occurrence (RPO) lobster formed the dominant prey category in MK, while Crab was the dominant prey category in TS with no variance in dominance happening between the two sites. The KZN coast was dominated by two prey categories, crab and fish, with no variance in dominance. The otter's primary diet in South Africa is mollusks, lobster, fish, and crab (Bester et al. 2015). The otter has dexterous fore feet, which can detect prey by touch. Rough skin on palms and fingers enables the otters to grasp slippery fish securely (Lariviere 2001).

Habitat

The otters do not hunt in deep water and are therefore restricted by steep stretches of coastline. Holts are occupied by more than one otter mostly by females bearing pups with another adult. Holts are where the otter's bed. Large variation in the area used may result in the otters not using large surface areas for foraging, but mostly the edges of dams and rivers. Increased prey density would be expected to affect group size but not home range size. Males had longer home-ranges than females. Since males are 50% heavier than females they have a higher energetic need which could explain the difference in the home range sizes between the two sexes (Somers and Nel 2004).

Food availability, freshwater and ample cover are three factors that determine where a holt is situated (Verwoerd 1987). Stretches of river characterized by emerging rocks, either covered or

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uncovered by vegetation (Carugati et al. 1995). Holes of the otters consist of shallow scrape invariably located in dense vegetation. Sprainting locations are within dense vegetation cover. Majority of the holt were less than 15 meters to a perennial supply of freshwater. Holes were always close to the sea or freshwater, underneath the first suitable vegetation cover. Otters tended to use the same sleeping scrape for a few days and then moved a few meters to a new one. This results in a holt consisting of a series of saucer shaped depressions 30-40 cm in diameter and 2-3 cm deep, all underneath the same bushy vegetation cover and connected to each other through tangled underbrush by a network of tunnels. Holes were put into categories based on utilization and the category is divided into two, main and subsidiary (Arden-Clarke 1985). In a study conducted in Betty's Bay South Africa they found 27 holt and of the 27 found they deemed 12 to be the main holt and the rest showed no sign of occupation (Verwoerd 1987).

Distribution

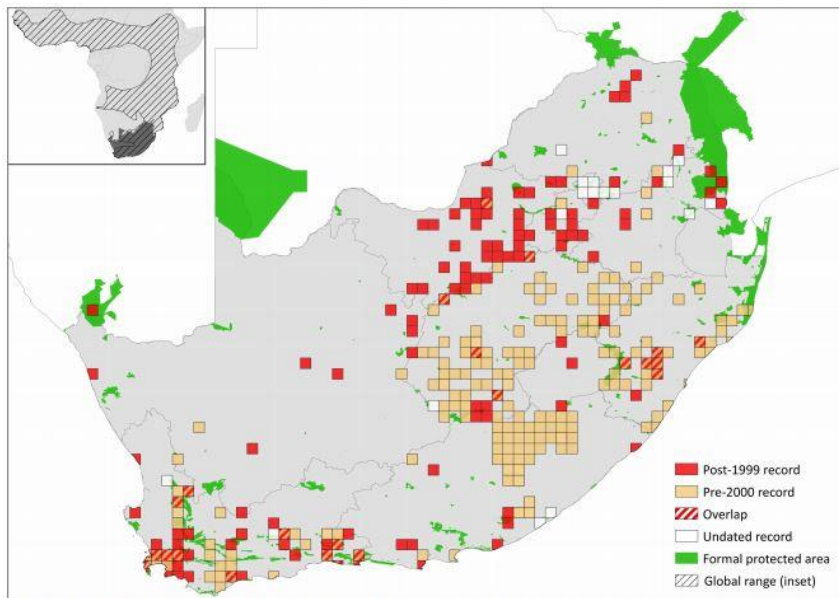


Figure 1. Distribution records for Cape Clawless Otter (*Aonyx capensis*) within the assessment region

(Figure 4. Historical Distribution of the African Clawless Otter (*Aonyx capensis*) in South Africa)

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Conservation Needs

Historical and Ecological factors affecting this species

The African Clawless Otter was first listed under the IUCN as at least concern in 1996. In 2014 the otters have been listed as nearly threatened. In South Africa 84% of the river ecosystems are threatened, including 54% being critically endangered, 18% endangered and 12 percent vulnerable. For the otters, most sprainting spots were less than 50 meters from a fresh water source both in the summer and the winter. Spraints are piles of otter fecal matter. Fresh water is necessary for drinking and for cleaning of the salts so that the otters can protect their insulative properties in their fur. Of the holts found, 82.4% occurred within 50 meters of a freshwater source. With both the holts and the spraints being less than 50 meters away from the fresh water sources shows that water is a necessity for the otters. Holts are where the otter's bed. There is also poor legal protection where only small parts of South Africa coast and catchment areas have conservation status. In parts of their habitat have either been drastically changed or lost, following bush clearing, overgrazing, expansion of human settlements, draining wetlands, deforestation, siltation, water extraction or denudation of riparian vegetation. A study compared otter sign surveys in 1972-1974, 1993-1994, and in 2012 and they found that the signs of otters along the study site had largely been reduced since earlier surveys (75 percent for the African Clawless Otter). Its speculated that human population growth and increased riparian activity was having a negative impact on otter presence in the location of the study. Rapidly increasing human population is the primary threat which results in adverse alteration of catchments, riverine vegetation and freshwater habitats. There has been a continuing expansion in both urban and rural settlements having increased from 0.8 percent to 38 percent across all provinces between 2000-2013 (Child et al 2016).

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Economic

Fish farmers eradicate this species because it is perceived that the African claw-less otter is a competitor for fish stocks. They are believed to be responsible for poultry losses. In parts of their range they can be harvested for their skins and other body parts. With the consistency of the otters stealing the fish and killing the poultry these otters are costing the farmers greatly (Child et al. 2016). A report was conducted in the Dwesa Nature Reserve looking at the compliance of people to pay to see cape clawless otters. In the report they assessed if tourists at the nature reserve would be interested in seeing otters and if they are willing to pay a trained guide to show them otters. Six percent of the total people surveyed said they were not interested in paying a trained guide. All the surveyors that were initially indifferent in paying said that they would reevaluate and pay if it meant job recruitment of constituents of the Dwesa community. The respondents were willing to pay either less than \$3.50 or between \$3.50-\$7.00 to view otters regardless of the chances of seeing them. The number of respondents that would pay less than \$8 to view otters increased as percentage chance of seeing otters decreased. Guiding offers opportunities to expand the community involvement, through employment of game guides and environmental education at the nature reserve. These two components of ecotourism could significantly improve quality of wildlife viewing in the nature reserve. The ease of finding these otters should be investigated and appropriate arrangements made to train guides to observe the otters present at the nature reserve (Dumalisie 2005).

Sociocultural

There are reports that the Cape Clawless otters are commonly used for traditional medicine, clothes, hats, and as food (Child et al. 2016). There is no international or national trade for this species. In a report that was conducted they surveyed fishermen around Lake Tana in Ethiopia on their view points on the African Clawless Otters. 9 percent considered otters as important for food, fur, and tourist

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attraction, whereas 91 percent felt that otters had no economic profit and considered them as a nuisance. The otters are believed to cause problems around the study area and they predate netted fish and damage fishing equipment. 68% of the respondents believed that killing otters is allowed while 32 percent thought it was illegal. 85% of the respondents held adverse demeanors towards otters and asserted an ambition for otter eradication, whereas 15 percent had productive and compassionate demeanors towards the otters (Ergete 2017)

Legal, regulatory, policy

They are listed on the Appendix II of the convention on the international trade in the endangered species of wild fauna and flora due to their similarity to sister species *Aonyx congicus* (Congo clawless otter) (Child et al. 2016). Within the framework of the National Environmental Management Act to provide for the management and conservation of biological diversity within the Republic of South Africa and the components of such biological diversity; the use of indigenous biological resources in a sustainable manner; and the fair and equitable sharing among stakeholders of benefits arising from bio respecting involving indigenous biological resources (NEMBA Act Chapter 1 section 2). This Act applies to human activity affecting South Africa's biodiversity and its components. (NEMBA Chapter 1 section 4).

Statement of Need

The need for the African Clawless Otter to be managed stems from sociocultural, economic and ecological issues, as outlined above. The African Clawless Otter has a potential to be a flagship species in South Africa. This will not be accomplished if the populations are not managed. The African Clawless Otter is currently declining will continue to do so until something is done (figure?). Issues include fisherman killing the otters intentionally to reduce competition, and human pollution of river systems. African Clawless Otters also cause damage to the fisherman's nets and fishing equipment. This species

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of Otter needs managing in South Africa before these populations decline to the point of extinction (Child et al. 2016).

Management

Goals and Objectives

Goal: The goal for this management plan is to increase the current population of the cape clawless otters to a sustainable population size in South Africa and to aid in their delisting from the IUCN from 2019-2059

Objectives

1. *Have an African Clawless Otter acceptance rate of 50% by the human population in South Africa by 20 years.*
2. *Identify 15% of anthropogenic threats impacting the populations of the African Clawless Otter over 20 years*
3. *Increase the survival rate in Post-Weaning, Juvenile and Adult stages of the African Clawless Otter by 10% over 40 years.*

Objective 1. 1. Have an African Clawless Otter acceptance rate of 50% by the human population in South Africa by 20 years.

Action 1.1 A study was conducted in Ethiopia and they were surveying the fisherman population in lake Tana, Ethiopia about their view points on the African Clawless Otter. Surveys should be conducted in South Africa, where no survey has been done on the local fisherman and non-fisherman. We will be surveying the South African human population about their knowledge of the conservation issues of the African Clawless Otter. Surveys will be sent to 400 people in each of the nine provinces in South Africa yielding a sample size of 3,600. Surveys will be sent via mail, electronically and in person.

Action 1.2 Decreasing prices at nature reserves could bring more tourist to see the African Clawless Otter and learn about the natural history of the otters and the conservation issues impacting them. A study was conducted examining the amount tourists are willing to pay to see otters. The willingness of tourists to pay less than \$3.50 to view otter increased as the chance of viewing these otters decreases. Tourists that would pay \$3.50-\$7.00 decreased as the chance to view otters decreased as well (Dumalisile et al. 2005).

Guiding offer opportunities to expand community involvement and environmental education. By increasing the quality of the guides there will be an increase in otter sightings for the ecotourists (Dumalisile et al. 2005). Otters have the potential to increase ecotourism in the area and contribute financially to the poverty stricken Dwesa community and other communities (Dumalisile et al 2005). If guides were to be employed, the members of the communities near the nature preserves should be considered. The ease of viewing otter should be investigated, and the proper training should be put into place to improve the African Clawless Otter viewings.

No Action 1.3 If we take no action into making the public aware of the conservation issues impacting the African Clawless Otter then the issues affecting the African Clawless Otter will go unnoticed. There will be a lack of information that is needed to better understand the conflicts between the African Clawless Otter and the humans. If there is no resolution for the conflict, then fisherman will continue to have negative viewpoints toward the African Clawless Otter (Ergete et al. 2017).

Final Course of Action 1.4 The courses of action to choose would be Actions 1.1, and 1.2. By surveying the commercial fisherman and outdoorsman we will get a better understanding of the viewpoints of the two groups on the conservation concerns of the African Clawless Otter. We can also get a closer look into the conflicts between the African Clawless Otter and the commercial fisherman.

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This information will help to create resolutions that will balance the needs of the people and the needs of the species.

Assessment protocol: Having an African Clawless Otter acceptance rate of 50% by human populations in thirty years will be considered successful in completing objective 1 if there are less than 15 negative otter encounters per year per province. This will be quantified by reviewing the survey's sent out every year to the residents of South Africa. Objective 1 will be considered successful if in twenty years, 50% of the residents of South Africa support the population of the African Clawless Otter (Ergete et al. 2018)

The surveys will have to be sent to commercial fisherman and outdoorsman of South Africa every year for ten years. Surveys will be created and will be based off surveys conducted in previous years. Surveys will be sent by mail, electronically, and in person. For the fisherman who don't have access to either we will conduct the survey orally. Question will consist of Province and city that the individual lives in, knowledge of the conservation issues impacting the African Clawless Otter, extent of otter conflicts, what damage the otters have caused, valuation of the damages done by the otters to the fishing equipment, and the attitude towards otters. Also, in that same survey they surveyed 204 fisherman that were older than 18 but I want to yield a higher sample size so, I will be surveying 400 fisherman and non-fisherman in the nine provinces of South Africa yielding a sample size of 3,600. (Ergete et al. 2018)

If this objective is not met within the twenty-year timeline the next steps should be mailing out, emailing and giving the surveys in person to residents of South Africa, as described by Conover (1997). Conover received an average of 52% response rate to his mailed surveys, the response rate was higher

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when the species in question was a species the public encountered frequently (i.e. squirrels and mice; Conover 1997).

Objective 2. Reduce anthropogenic threats impacting the African Clawless Otter by 15% in 20 years

Action 1. To identify the anthropogenic threats affecting the otters use current home range data to locate areas of known otter activity. Obtaining the water chemistry data from all nine provinces in South Africa from the past 15 years would give ample data to identify certain particulates in the water that's affecting the African Clawless Otter. Quantifying the disturbance level would be based off a scale of 1-5; 1-no disturbance, 2-limited recreational use, 3-moderate recreational, 4-frequent recreational use and vegetation cleared. The scale is based off a study that was conducted in the Cape Town peninsula (Okes and O'Riain 2015).

Action 2.2 increasing repercussions on humans affecting the biodiversity in South Africa. Currently stated in the NEMB Act a person convicted of an offense is liable to a fine or imprisonment for a period not exceeding five years or both a fine and imprisonment (NEMB Act Chapter 9 section 102). Fines are up to \$11,500 but don't exceed that amount (Goitom 2005).

No Action 2.3. Failure to adequately identify anthropogenic threats impacting the otters results in a lack of information to rectify these issues (Okes and O'riain 2015). Not identifying and reducing the anthropogenic threats on the African Clawless otter could lead to extinction of the species (Figure

Final action 2.4. The recommended course of action would be Action 2.1 and 2.2. By identifying the anthropogenic impacts that are affecting African Clawless Otters to increase survival of the species.

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The African Clawless Otter is an apex predator and re indirectly impacted along the food chain (Okes and O’Riain 2015). If we fix the problems now, then we won’t have to fix more problems later.

Assessment protocol: For this objective to considered successful. Increase repercussions on people who are affecting the biodiversity. By increasing the fine amount and the period of imprisonment humans will be deterred to break the Rules in the act. Obtaining the water chemistry reports from each province allows for highlighting of certain compounds in the water that have adverse effects on the populations of the African Clawless Otter. Knowing what compounds are in the water can lead to future restoration of polluted waters systems in South Africa (Child et al.2016)

Objective 3. Increase survival rates of the post-weaning, juvenile, and Adult life stages of the African Clawless Otter life cycle by 10% over 40 years

Action 3.1. Little knowledge is known of the population dynamics of the African Clawless Otter. Survey the populations of the African clawless otter through mark and recapture methods. The otter would be captured in cages that fit the African Clawless Otter. The otter would then be weighed, sexed, and aged. Population surveys can also be done by observation of otters on strips of rivers. For 26,000km of river and 2,000km coastline the density estimate was 1 individual/2km (Child et al. 2016). Observation surveys only give you the location of the otter whereas the mark recapture surveys give more information into the demographics with in the population. By furthering the ecological knowledge

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of this species, we could better understand the dynamic with in the populations of the African clawless otter.

Action 3.2. Increase habitat quality. The African Clawless Otter is found in a multitude of cover types but rocky with vegetation and without vegetation is ideal for this species (Carugati et al 1995). The holts of the African Clawless Otter consist of shallow scrape located in dense vegetation (Arden-Clarke 1985). Holts were < 15m to a perennial supply of freshwater. The Ideal habitat to create would be an area that's <15m to a water source, area is covered in thick rocky vegetation

No Action 3.3. If no action is taken place, the population of the African Clawless Otter will keep continuing to decrease. And with no action taken place my goal of this management plan won't be accomplished. Not doing anything we are actively and knowingly letting this species be wiped from the planet and if nothing is done then we are then responsible for the possible extinction of this species. (Appendix B).

Final Action: Actions 3.1 and 3.2 would be the recommended courses of action.

Assessment Protocol: For objective 3 to be successful we will be to conduct a habitat suitable index (Carugati et al. 1995). This habitat index $PI = OUPi/HAPi$. The OUPi is the proportion of use of each habitat. HAPi is the proportion of availability of each habitat. When PI is less than one then the habitat is avoided, when the PI equals one the habitat is used in proportion to its availability, and when the PI is greater than one the habitat is selected. If the object is a failure during the set timeframe then we might have to increase the timeframe. We also would want to investigate other means of increasing survival for these otters (Caugati et al. 1995). Also, by conducting population dynamic research we will have a better understanding of demographics that make up the populations of the African Clawless Otter.

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Conclusion: The current decreasing population size of the African Clawless Otter needs our attention. By increasing public awareness, reducing human impacts, and increasing their survival rates, the goal of increasing the African Clawless Otter populations to sustainable levels will be successful.

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Appendix A

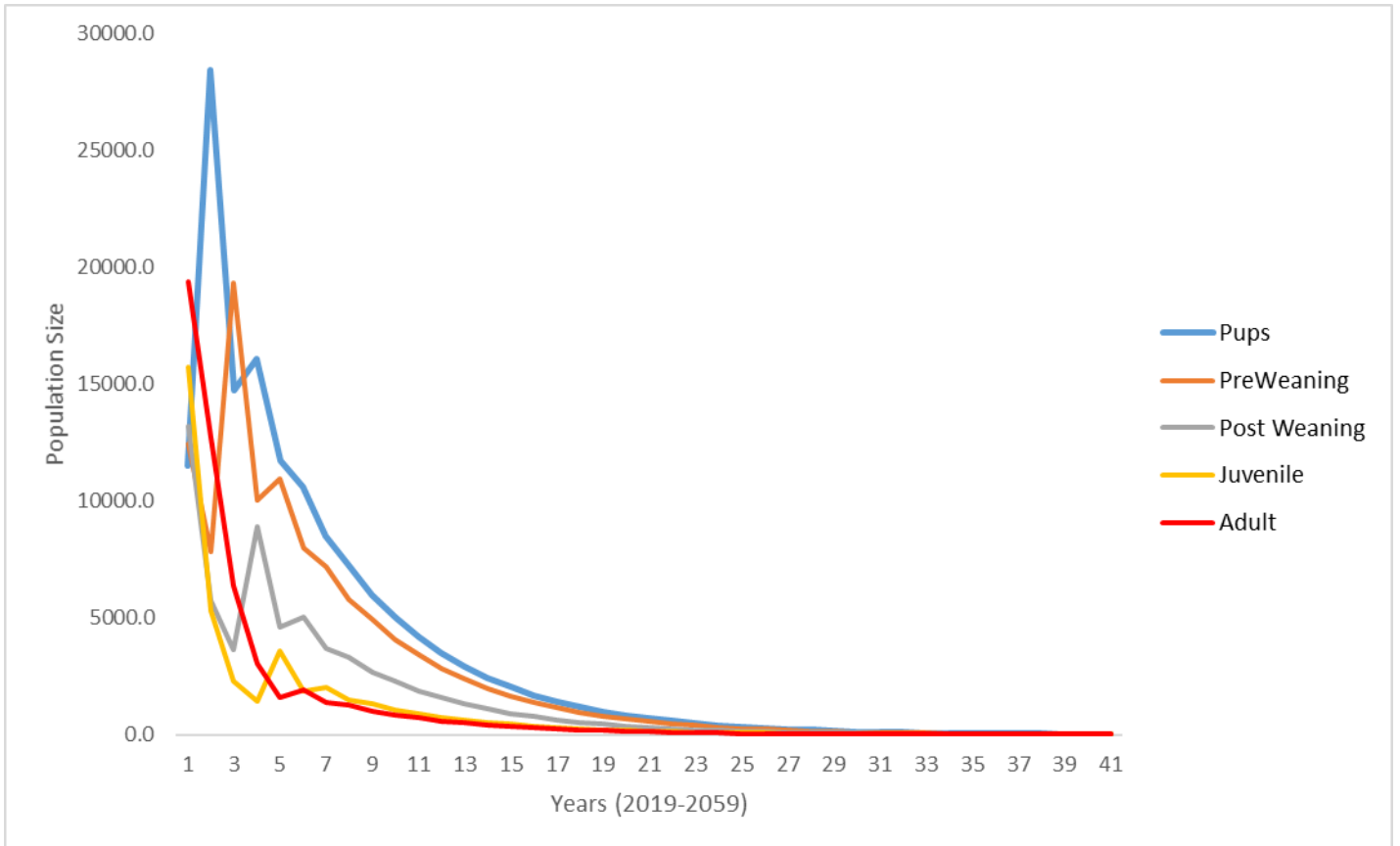
African Clawless Otter (*Aonyx capensis*)

There is a proposed management plan in South Africa to increase the populations of the African Clawless otter.

If you consider yourself either a commercial fisherman or an outdoorsman, then you should complete this survey. The point of this survey is to gather information on commercial fisherman and people who enjoy the outdoors and their knowledge and interactions with the African Clawless otter.

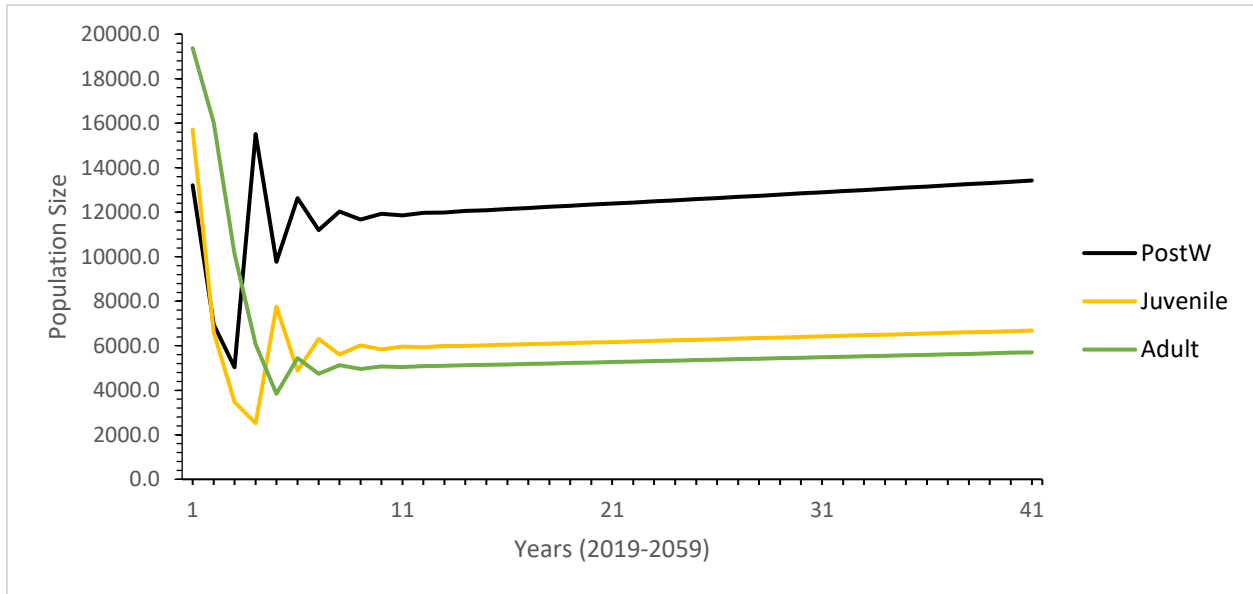
1. Province _____ City _____
2. Do you consider yourself a commercial fisherman?
 - a. Yes
 - b. No
3. If you answered no to the above question, then do you consider yourself and outdoorsman?
 - a. Yes
 - b. No
4. What is the yearly estimate of valuation of the damages caused by the African Clawless otter to Fisherman equipment (Applies to only commercial fisherman)?
5. How much knowledge of the ecology of the African Clawless otter do you understand? (Choose one that applies)
 - a. Little
 - b. Somewhat
 - c. Expert level
6. How much Knowledge of the conservation issues impacting the African Clawless otter
 - a. Little
 - b. Somewhat
 - c. Expert level
7. With in the past year how would you rate the interactions between yourself and the African Clawless Otter?
 - a. Positive
 - b. Slightly positive
 - c. Neutral
 - d. Slightly negative
 - e. Negative

Appendix B



(Population trend of African Clawless otter with no management.)

Appendix C



(Population trend of Post weaning, Juvenile, and Adult stages with and increase survival rate of 10% in each stage)