Conservation of the elusive African golden cats in Uganda: A review

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Abstract

The African Golden Cats are one of the three medium-sized African wild cats. They occupy Uvariopsis forest patches in Uganda: Kibale NP, Bwindi Impenetrable N/P, Kibale Forest N/P, Kikonda CFR, Mityana, Mpigi, and Kasohya-Katomi CFR, Echuya FR, and Mpaga FR. The aim of the review was to appraise the roles of conservation-based NGOs in the conservation of the African Golden Cats in Uganda. These forest-dependent cats are highly threatened by forest clearing, illegal wildlife trade, human-African Golden Cat interactions and conflicts, zoonosis, and bushmeat hunting in African forests. The cat-human conflict is often negligible; less than 10% of all predator depredations were caused by golden cats around Bwindi NP in the past 12 months. However, a distressing revelation was made by a researcher after a year of studying snares across the park's forests: 81 cats had perished in unlawful traps set for antelope and other game in 16 square miles of the national park. This implies that the lack of alternative sources of protein was the reason why the local communities indulged in the hunting of wildlife species. NGOs have played an important role in the conservation of African golden cats; the Kikonda CFR is one of many Ugandan forests where varied animal species, including the African Golden Cat, have begun to thrive as NGOs and local communities work together to implement sustainable forestry practices.

Keywords: Felis aurata, Profelis aurata, meta-data, camera trap, bias, data mining, citizen science, data archives.

1. INTRODUCTION:

African Golden Cats are members of the Felidae, or cats, family of animals in the order Carnivora (Werdelin *et al*, 2010; Beadle, 2020). The smallest wild cat, the 0.9 kg rusty spotted cat, is one of the 41 extant Felidae species that have the most diverse fur patterns of any terrestrial carnivore; the largest member is the tiger (ISEC, 2021).

All of them are carnivores, and the majority of them hunt alone in solitary packs, ambushing or stalking their victim. They are found in Africa, Europe, Asia, and the Americas. They live in a variety of conditions to which they have evolved, including savanna and woodland habitats, desert areas, marshes, and mountainous terrain.

Their patterns of activity vary from diurnal and cathemeral to nocturnal and crepuscular.

Plate 1: Full body photo of an African golden cat in Gabon.

Trail camera photo taken by Laila Bahaa-el-din/Panthera image source (modified) CC BY NC-SA 2.0

The African Golden Cat (*Caracal aurata*) (Fig. 1) occupies the central and East African forests. These forest-dependent cats are highly threatened by forest clearing, illegal wildlife trade, human-wildlife interactions and or conflicts, zoonosis, and bush meat hunting in African forests (WCF, 2018). However, deforestation and/or forest degradation account for the majority of risks they encounter in the wild (Goodall, 2020), followed by illicit wildlife trafficking and bush meat hunting, which continue to occur at alarming rates and contribute considerably to the continuous loss of biodiversity.

Although the rate of deforestation has reduced over the previous three decades, it is estimated that 420 million hectares of forest have been lost since 1990 due to conversion to other land uses. The rate of deforestation decreased from 16 million hectares per year in the 1990s to an expected 10 million hectares annually between 2015 and 2020 (FAO, 2020). This is a broad overview; however, the rate of deforestation in some of the range states, like Uganda, Kenya, Angola, the Democratic Republic of the Congo, and the Ivory Coast, is still alarming, necessitating a coordinated and integrated approach to reverse the trend of the ecosystems of African Golden Cats been destroyed. Subsequently, several mitigation measures need to be implemented these range from African Golden Cats inventory, ecosystem assessments and restorations, assessment of the genetic viability and variability of African Golden Cats, policy and institutional reformation, participatory planning approaches, and harnessing the livelihoods of the communities adjacent to African Golden Cats ecosystems.

In light of political issues and other pressing issues such as civil unrests, industrialization, and infectious disease outbreaks in Uganda, the conservation of the African Golden Cats have not been accorded principled priority to call for their immediate conservation. Additionally, their socioeconomic benefits are not discernable as other large wildlife species such as the Giraffe, lions, Gorillas, Chimpanzees, and others. Therefore, this phenomenon underscores the relevancy of NGOs towards the conservation of African Golden Cats.

The term "non-governmental organizations (NGOs)," was first used in Article 71 of the 1945 United Nations Charter to refer to a wide range of development activities (Thomas, 2022). These activities include, but are not limited to, raising public awareness, offering technological tools and technical support, conducting research projects, influencing the creation of policy, and advocacy, among other things.

Despite the threats that the African Golden Cats face across the forests in Uganda, several attempts have been undertaken by the NGOS to conserve them. Consequently, researchers have spotted the African Golden Cats in various forest pockets using camera traps intended to capture other wild animal species. This is largely attributed to NGOs working with the communities through community-based organizations (CBOs). However there is no sufficient data to ascertain the welfare status and population of the species, in as much as some literature reveals that there are over 10,000 African Golden Cats left in the wild (A-Z, 2023).

All wildlife species in Uganda, both in protected areas and unprotected areas, are protected by the National Constitution of 1995, the Wildlife Act of 2019, and other enabling legislation and institutional frameworks such as wildlife policies, the National Forest and Tree Planting Act of 2003, and the NEMA Act of 2019. The African Golden Cat population is unknown, and their genetic pool is compromised. This is attributed to their ecological and social behavior, insufficient data regarding them, habitat destruction, Human-African Golden Cat interactions, and failure to discern and appreciate their ecological and socioeconomic roles. Reminiscing on the requirements of IUCN red-list and CITES criteria for categorization of the species of interest in her appendices is always enabled by sufficient and substantive data regarding the species in question. In as much as the African Golden Cats continue to face the afore-stated challenges, they are yet to be accorded principle conservation status and protection like other species such as the Mountain Gorillas, Rhinoceros, Pangolins, Chimpanzees, Grey Crowned Cranes, African

Lions, or large carnivores. This therefore underscores the role and relevancy of the conservation-based NGOs they play in the conservation of the elusive African Golden Cats. Thus, the need to appraise the roles and relevancy of conservation-based NGOs to the conservation of the elusive African Golden Cats. The review also focused on the genetic variability of the African Golden Cats in relation to their ecological role in an ecosystem, their geographical range and habitat preferences, threats and the the efforts geared towards the conservation of African golden cats by the conservation-based NGOs.

This review is fundamental because of the failure to appreciate the efforts that conservation-based NGOs contribute towards the conservation of the elusive African Golden Cats and to recognize the ecological and socioeconomic roles of the species in question.

2. RESEARCH METHODOLOGY :

2.1 Alignment with SDG 15: "halt and reverse land degradation and biodiversity loss; protect, restore, and promote sustainable use of terrestrial ecosystems; sustainably manage forests; and combat desertification." The study serves as an impulse to mobilize conservation efforts for the endangered African Golden Cat and guarantee sustainable ecosystem management.

2.2 The Legislation and Institutional Framework: this calls for protection of all Uganda's biodiversity to ensure that the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and their critical role in maintaining ecosystems are beneficial to the present generation and the future generation.

2.3 Tourism: The main draw for visitors to Uganda is its wildlife; in 2012 and 2016, Lonely Planet and CNN, respectively, listed Uganda as one of the top 16 global travel destinations. Consequently, with a relative growth rate of 7.7% over time, tourism is identified as one of the main drivers of the country's GDP. The Uganda Tourism Satellite Assessment (2023) states that domestic tourists spent about UGX 2.97 trillion on tourism services in Uganda in 2019, while inbound visitors spent over UGX 4.580 trillion. In light of this, the assessment is essential in order to offer guidance on how to take advantage of additional tourism resources, such African Golden Cats.

2.4 Genetic Variability and the Phylogenetic Relationship of the African Golden Cats:

African golden cats and caracals (Caracal caracal) are closely related, according to phylogenetic analysis of cat samples. One of the eight lineages of the Felidae family,

the Caracal lineage is made up of these two species and the serval (Leptailurus serval). The African golden cat has been assigned to the genus Caracal due to the close relationship they share (Avgan, 2016).

2.5 Geographical Range and Habitat Preferences: As a species that depends on forests, the African Golden Cat is closely linked to habitats that are damp in forests. Up to an altitude of 3,000 meters (9,800 feet), it lives in tropical forests. Although it also inhabits cloud forests, bamboo forests, and high moorland areas with little human disturbance, it favors dense, damp woods with thick undergrowth near rivers. As well as secondary forests, montane forests, bamboo forests, forested savannahs, and coastal forest environments, it appears to be highly adaptable. There have been discovery of an African Golden Cats in a Uvariopsis forest patch in Uganda's Kibale National Park; other locations where they have been seen include Bwindi Impenetrable N/P, Kibale Forest N/P, Kikonda CFR, Mityana, Mpigi, and Kasohya-Katomi CFR, Echuya FR, and Mpaga FR (CFA, 2023)

The extensive secondary undergrowth that results from sustainable logging may help explain the African golden cat's apparent aptitude for adapting to sustainably logged regions and its high rodent abundance. The fringes of the African golden cat's range extend into savannah areas that are adjacent to river-drained forests. According to SSC (2023), records of the golden cat date from approximately 3,600 meters above sea level in Uganda.

2.6 Ecology:
Since almost all verified sightings of these cats involved ground-based animals, it seems likely that they are mostly terrestrial. The stalk-and-rush method of hunting is used by golden cats. Although small mammals, birds, and primates are occasionally consumed, rats are typically the most common prey species. The Golden Cat eats significantly larger prey, primarily small ungulates, although it also occasionally consumes rodents, birds, eggs, monkeys, and bushpigs in places where the Leopards has gone extinct (ISEC, 2021).

3. RESULTS AND DISCUSSION:

3.1 The Main Threats to African Golden Cats
The African golden cat is listed as vulnerable on the IUCN Red List. The National Red List of Uganda lists the species as endangered. It is seldom recognized and hardly ever observed in the wild. This is partially because of its secluded nature and moist forest habitat, which have made it challenging to study. Its biology and ecology are poorly understood, making it challenging to assess its conservation status. A small number of dietary studies

and artifacts from museums provide the majority of the data. The threats to the African Golden Cats vary from anthropogenic-induced to non-anthropogenic-induced: illegal wildlife trade, poaching, human-wildlife interaction, infectious diseases, and habitat destruction (SSC, 2023).

3.2 Habitat destruction and fragmentation

Uganda has a forest cover and woodland area of 24%, or 49000 km2, which makes Uganda a hub for most of the forest dwelling species because of the ideal and functional ecosystems exclusively in Kibale National Park and Bwindi Impenetrable National Park. However, each year, Uganda loses 2.6% of its vegetation cover, and it is estimated that in the next 25 years, Uganda will have lost its vegetation cover (NEMA, 2020). Of the total area of forests, 30% are in protected areas (forest reserves, national parks, and wildlife reserves), while 70% are found on private and customary land. Uganda is estimated to be losing its forest cover at a rate of 200,000 hectares per year, implying a loss in forestry biodiversity as well. The size of forests and woodlands has significantly declined from 45% to 20% of the total land surface between 1890 and 1990 (NFA, 2011). The majority of the forest loss has occurred outside of protected areas, largely due to the conversion of forest lands into agriculture and over-harvesting of wood for energy supply in the form of firewood and charcoal (NFA, 2011).

3.3 Human activities (Poaching and Human- African Golden Cat Interactions)

Human activities, particularly poaching, habitat deterioration, and conflict between humans and wildlife, pose a threat to the African golden cat. For example, due to the species' elusiveness, no data on population estimates or ecology exist at Uganda's Bwindi Impenetrable National Park (henceforth referred to as "Bwindi"). Moreover, no assessment of the effects of poaching and conflict between Humans and African Golden Cats has been conducted. But human activity had a negative impact on the golden cat's abundance, usage of its habitat, and patterns of diel activity at Bwindi. In comparison to areas free of poaching, the abundance of golden cats was around 50% lower in poaching areas. Additionally, golden cats avoided locations with the highest levels of human activity and were less active during the time of the day when humans were most active." The African golden cats are usually caught in snares/traps intended for other animals such as antelopes, bush pigs, and others, without discrimination (Lindner, 2023; Zayed 2024).

Additionally, "the African Golden Cat-Human Conflict is often negligible; for example, in the study conducted by Zayed, (2024), less than 10% of all predator depredations

were caused by golden cats, and less than 5% of the respondents reported losing livestock or poultry to golden cats in the 12 months prior to this study." Even though there is very little human- Africa Golden Cat Conflict, this is because local populations are unaware that golden cats should be conserved and because they think they pose a threat to cattle and poultry. Education level has the biggest impact on views toward African Golden Cat conservation, indicating a widespread belief that carnivores in human-dominated areas represent a serious threat to livestock and poultry depredation.

In Uganda's Bwindi Impenetrable National Park, a significant camera trap network was installed in 2012 and 2013, "which revealed that the solitary cats tend to stick to the national park and rarely, venture into communities to prey on livestock." The species ambushes tiny mammals in order to feed on them. However, a distressing revelation was made by a researcher after a year of studying snares across the park's forests: eighty-one (81) cats had perished in unlawful traps set for antelope and other game in 16 square miles of the national park (Dell'Amore, 2023). This is particularly important because the populations of the species in question are declining as a result of widespread deforestation and accidental snaring for bush meat. The causes for laying snares in the park is to get protein and the income for homesteads that are adjacent to the national park. In Africa, there are two primary drives for illegal bush meat hunting: obtaining food and making money. While the enforcement of laws is crucial in protecting wildlife from illicit poaching, factors like homelessness, crop and livestock loss to wild animals, and the lucrative bush meat trade propel the practice of bush meat hunting.

3.4 Conservation Efforts Towards the Restoration of the African Golden Cats

Despite the threats that the African Golden Cats continue to face, various measures have been undertaken that aim at restoring the African Golden Cat population in various forest ecosystems. These measures entail ecosystem restorations, collaborative management (through concessions), participatory planning, captive breeding, and the legal formulation and implementation of CITES recommendations.

One of the many Ugandan forests where "diverse animal species, including the elusive African Golden Cat, were returning to the forests as both businesses and local communities put their commitment to sustainable forestry into action" is Kikonda Central Forest Reserve, located in the Hoima district, about 200 km from the country's capital, Kampala. It is one of the primary forests guarding the enormous, shallow Lake Kyoga's environment. With wetlands and a mixture of date palms

(*Phoenix reclinata*), bushwillows (*Combretum collinum*), bread grass (*Brachiaria brizantha*), and cogon grass (*Imperata cylindrica*), the reserve occupies 12,186 hectares. Additionally, there are areas of natural forests together with some pine (*Pinus caribaea*) and eucalyptus (*Eucalyptus grandis*) plantations, there are also areas of undeveloped woodland. A few minutes into the thicket, one might frequently spot wild creatures like antelope, buffalo, and even elephants, as Hoima's vast forest cover once supported a thriving biodiversity (FSC 2023).

In 2020, Embaka, a CBO named after "the African Golden Cat," conducted a survey and found that "the lack of alternative sources of proteins (meat) was the reason why the local communities indulged in the hunting of wildlife species." As a result, the group started an initiative called "the Piglets for Bush meat Program," which offers domestic pigs as a substitute for illegal hunting. Pig seeding operates as follows: Embaka offers a family a pregnant pig, provided that the family promises not to lay snares for bush meat and that, once the pig gives birth, part of the piglets would be donated to the neighbours. Since 2020, the organization has donated 53 animals, which has now doubled to 102 animals across 62 families. Pigs generate income and serve as a food supply. They are prolific breeders, producing six to fifteen, piglets per litter, and are valued up to $25 locally—a respectable sum of money in Uganda. A poacher who agrees to cease poaching can receive a female pig through Embaka's pig bank program. The ex-poacher can keep all the piglets that the mother pig gives birth to, with the exception of one, which he must give to his nearest neighbour, who must then go through the same procedure. The entire community is connected by this chain. Everyone has a stake in the pig bank's success, which breeds watchdogs in the community and increases social pressure to refrain from poaching. Because of the program's success, reformed poachers now serve as ambassadors, assisting some of their neighbours in quitting poaching and joining community anti-poaching watch groups. Embaka has now mobilised 11 of these watch groups, which include 534 rehabilitated poachers from Bwindi (Carnow, 2020).

4. CONCLUSION & RECOMMENDATION:

4.1 Conservation:

NGOs play a fundamental role in the conservation of species that seem to be of least concern to government agencies that have been assigned similar roles. All wildlife species should be protected and accorded a conservation status in accordance with the prevailing threats and their social behavior. Most importantly, there is a need to harness participatory planning and collaborative management of wildlife resources. To ensure effective and continuous monitoring of rare and endemic species such as African Golden Cat in specific ecosystems, there is a need for advanced technological tools (such as cameras, unmanned vehicles, or drones), sufficient funding to facilitate research, wildlife inventory, and enhance community livelihoods initiatives. However, some of these resources cannot be readily made available by government agencies but can be bailed out by NGOs.

4.2 Recommendations:

i. There is a need to urgently carry out the African Golden Cat inventory so as to ascertain the current population.
ii. There is a need to recognize, enhance and support the efforts conservation NGOs geared towards the conservation of unique species.
iii. There is a need to forefront the community participation in the conservation programs; this can be encouraged through participatory planning approaches, establishing alternative sources of livelihoods and protein.
iv. There is need to raise awareness and conduct species based conservation education pertaining the species in question.
v. There is a need to harmonize government conservation agencies roles and mandates; for example National Forestry Authority and Uganda Wildlife Authority have cross-cutting mandates and roles.

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