Severe decline of the only remaining population of walia ibex in Ethiopia: proposed actions and recommended recategorization as Critically Endangered

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Abstract The walia ibex *Capra walie* is endemic to the Simien Mountains, Ethiopia, and is a national symbol. The Simien Mountains National Park was established in 1966 to protect the last 200 walia ibexes from extinction. We coordinated a population census across their c. 100 km² range in 2015 and annually during 2019–2024. We counted 865 walia ibexes of all age and sex classes in 2015; this dropped to 650 in 2019–2021, reducing further to 306 in 2024. We investigated this decline through interviews with representatives from neighbouring communities including park personnel, village elders, farmers, local authority staff and militia. More than 70% of those interviewed attributed the drop in walia ibex numbers to poaching, both for food and medicinal purposes. Instability as a result of the Covid-19 crisis and the 2021–2022 war was seen as the fundamental cause. A species action plan is in preparation to mobilize local community ambassadors and increase protection. A database of individually recognized walia ibexes would increase our understanding of population dynamics and distribution to complement the annual counts. We recommend a change of the species' IUCN Red List status from Vulnerable to Critically Endangered based on the recent, severe population decline and limited extent of occurrence. This status update would accurately reflect the high extinction risk of the walia and help to mobilize resources for urgent conservation actions.

Keywords Census, endemic species, interviews, IUCN Red List status, species action plan, total count, World Heritage Site

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The walia ibex *Capra walie* (hereafter walia) is a medium-sized ungulate, endemic to the Simien Mountains, northern Ethiopia. The species has wide public appeal and a high profile in the country, appearing on currency and as the emblem of the Ethiopian Wildlife Conservation Authority, the national football team and popular consumer products. In 1969, the Simien Mountains National Park was established to protect the c. 200 remaining walia from extinction (Nievergelt, 2013). The Park was designated as a UNESCO-World Heritage Site in 1978 because of its outstanding biodiversity, but in 1996 it was listed as a World Heritage Site In Danger following the decline of the walia population as a result of human encroachment into the Park, including settlement, livestock grazing and crop cultivation (Nievergelt, 2013). This status was lifted in 2017 after enhanced protection measures led to a steady increase in walia numbers (Ejigu et al., 2017). However, there have been dramatic changes in the region since 2020, including the Covid-19 crisis (March 2020–May 2023), war immediately north of the Simien escarpment (November 2020–2022) and political instability in Amhara Regional State, where the Simien Mountains are located (April 2023–present). Here, we report the results from recent walia population censuses (2015–2024) showing a severe decline. We present the results of interview surveys of local communities and stakeholders, assess the possible causes and recommend a conservation response.

Walia are distributed over < 100 km² along the Simien Mountains escarpment and its northern flanks, at an altitude of 2,200–4,400 m. Between 1960 and the 1990s they were most frequently observed in the western and central parts of the Park but in recent decades they have become more common in eastern areas (Nievergelt, 2013; Ejigu et al., 2017). In 2007, the Park was enlarged to 412 km² to encompass the entire walia distribution (Ejigu, 2020). To monitor trends in walia numbers, we coordinated a population census in 2015 and annually during 2019–2024, including wet (May–November) and dry (December–April) seasons. The census followed an

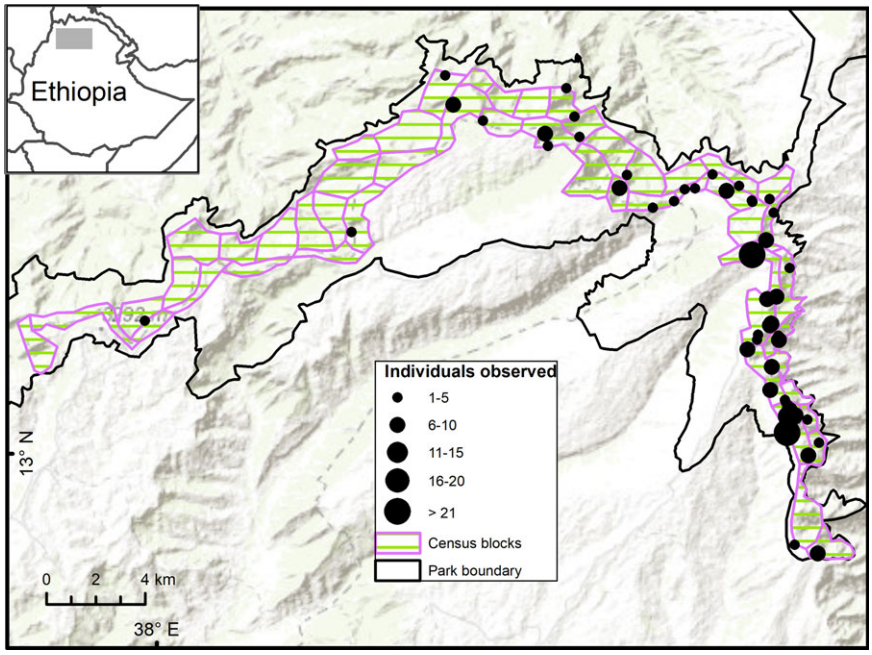

FIG. 1 Census blocks and number of walia ibex *Capra walie* observed during the April/May 2024 count in Simien Mountains National Park, Ethiopia.

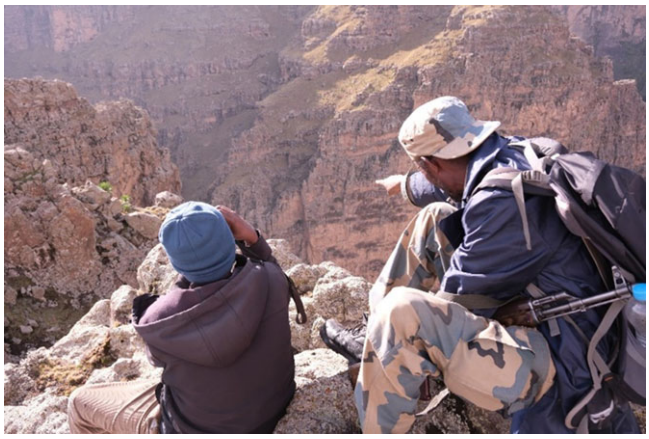

PLATE 1 Counting walia ibex *Capra walie* from an observation point with a wide view of the escarpment in the Simien Mountains National Park, Ethiopia, May 2024. Photo: P. Scholte.

established methodology, which centred on 11–16 strategically located observation points along the escarpment (Nievergelt et al., 1998; Largo et al., 2008). We identified the age and sex of walia based on morphological features (Nievergelt, 1981, 2013; Supplementary Material 1).

We divided the Simien escarpment into 52 blocks (Fig. 1), which we surveyed in two stages over 7 days with 26 teams of two observers (ranger and local guide/park expert; see Supplementary Material 2 for details). The teams scanned the walia range systematically from the 16 original observation points (Nievergelt et al., 1998) and other strategic points with wide views over the cliffs and slopes (Plate 1), allowing them to spot walia at distances of 100–600 m. They also counted walia opportunistically whilst moving through the census block. We could only survey 32 blocks in 2022 because of security concerns so we used the mean estimate from previous counts (2019–2021) for those blocks that we could not observe directly.

We used generalized additive models to model the change in walia numbers over time (Scholte et al., 2022; see Supplementary Material 3 for details). In 2012, 800–850 walia were thought to survive in the Simien Mountains National Park (Ejigu, 2020). We counted 865 walia (all age and sex classes) in 2015. This dropped to c. 650 in 2019–2021 and 306 in 2024 ($\chi^2 = 51.9$, estimated df = 2, $P < 0.001$, deviance explained = 91%; Fig. 2). The survey season (wet vs dry) did not affect the number of walia counted ($\chi^2 = 0.028$, estimated df = 1, $P = 0.868$). We did not detect any change in sex ratio over time, considering all adult and subadult individuals ($\chi^2 = 0.025$, estimated df = 1, $P = 0.874$) or adults only ($\chi^2 = 0.006$, estimated df = 1, $P = 0.939$; Fig. 3). We counted 185 adults and 63 subadults in 2023, and 194 adults and 51 subadults in 2024 (Supplementary Table 1), falling below the threshold of 250 mature individuals, which is a Red List criterion for Critically Endangered (IUCN, 2012).

In May 2024, we used a structured questionnaire (Supplementary Material 4) to interview 186 people from the 10 nearest villages about changes in the Park. Interviewees comprised village militia and guards (18%), farmers (17%), local authority staff (17%), Park personnel (16%), village elders (8%), religious leaders (7%) and others (18%). In addition, we held a group discussion with 15 Park staff.

Most interviewees (n = 121, 65%) reported a decline in the walia population. Poaching was thought to be the main cause (40%), followed by a combination of poaching and

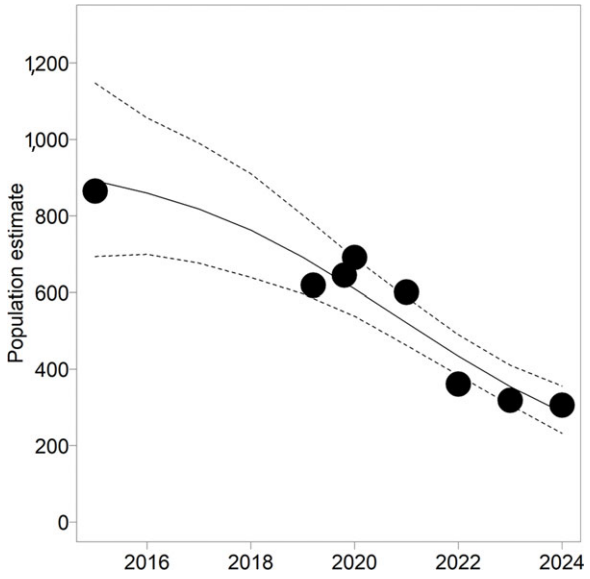

FIG. 2 Population estimates of walia ibex based on annual total counts of adults, subadults, yearlings and juveniles in Simien Mountains National Park, Ethiopia (2015–2024), see also Supplementary Table 1.

habitat degradation (17%), human encroachment into the Park and habitat degradation (16%), predation (16%) and other causes (11%). However, 39 interviewees (21%) suggested that walia numbers were increasing because of enhanced protection and improved habitat, whereas 17 interviewees (14%) thought the walia population was stable. Interviewees reported that poachers used guns and snares (60%), only guns (33%), or only snares (7%). Poachers were often described as bandits (34%; i.e. criminals hiding in the Park from the authorities and using bushmeat for subsistence), or a combination of bandits and local community members (29%). Some interviewees (17%) reported poachers to comprise only local community members, and some (15%) said poaching was done by all categories of people; members of the security forces (2%) and traditional healers (1%) were occasionally mentioned; 2% had no opinion. Walia were reportedly killed to obtain body parts (e.g. horns) for traditional medicine (60%), and for food (34%) or other uses (6%). Many interviewees (61%) saw political instability as a fundamental cause of recent increases in illegal hunting, human encroachment in the Park, reduced ranger patrols and declining tourism, whereas 29% cited Covid-19 as a factor. The group discussion with Park staff concurred that walia, amongst other wildlife, have become scarcer. Participants commented, for example, that 'The war opened the door for poaching during this time of lawlessness' and 'Covid-19 has obstructed tourist flows, decreased revenues and halted patrolling activities and awareness.'

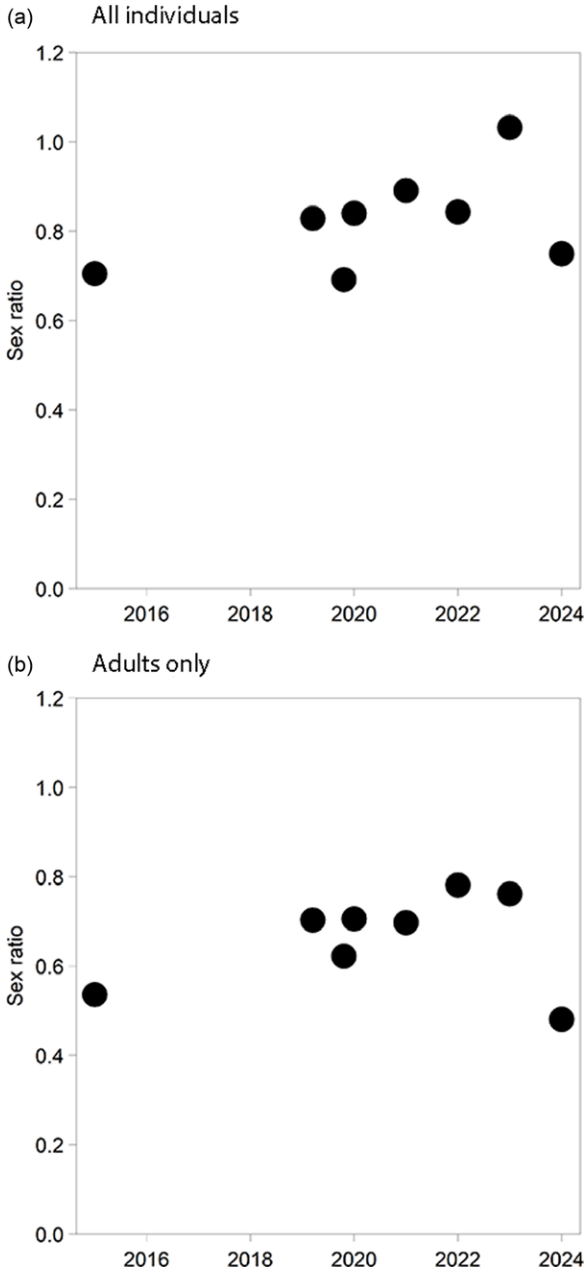

FIG. 3 Sex ratio of walia ibex observed during annual total counts in Simien Mountains National Park, Ethiopia (2015–2024; Supplementary Table 1): (a) all individuals including adults, and subadults, (b) adults only. Generalized additive models did not detect any variation in the sex ratios with time for either group.

In 2023 and early 2024, Park rangers found clear evidence of poaching including snares and animal carcasses. During the population censuses (2021–2024) observers noted that walia flight distances increased from c. 50 m to 200–300 m, similar to those observed during previous periods of persecution (Nievergelt, 2013), although walia could still be approached to c. 20 m from vehicles in

PLATE 2 Young adult male walia ibex, May 2024. Photo: P. Scholte.

2024 (Plate 2). We suggest that poaching by people on foot has caused walia to become more wary, and is the main cause of the population decline.

Historically, local communities valued walia for their ecological role and as a tourist attraction. During periods of relative stability, poaching was infrequent and communities reported any incidents to Park rangers (Girmay et al., 2023). During 2019–2023, however, the annual number of visitors dropped from 32,000 to 4,300; the resulting decrease in income from tourism may have eroded the previously positive relationship between communities and Park authorities, leading to an increase in poaching.

We are preparing a species action plan for the walia, with the aim to mobilize local community ambassadors who will promote walia conservation, improve communication amongst stakeholders and enhance trust between local people and Park staff. Building trust-based relationships is crucial for the success of conservation actions; for example, local people should be able to report human–wildlife conflicts and poaching incidents to Park authorities without fear of repercussions. To achieve this, the ambassadors will need to engage with local communities to identify and address socio-economic factors that contribute to changes in behaviour towards the Park and its wildlife. In addition, much-needed involvement of the military will require high-level political attention. Walia ambassadors will also assist Park staff with monitoring the walia population and its distribution. Once walia numbers are recovering, a previously proposed reintroduction and translocation programme should be reconsidered (Gebremedhin et al., 2021).

We recommend continuing annual population censuses and building a database of individually recognized walia using photographic and other data. Photographs can be taken opportunistically, during the annual counts and using camera traps according to established methodology (Sandfort, 2015; Attum et al., 2022). These data would improve our understanding of walia population size, structure, dynamics and individual movements, allowing a more systematic analysis of changes, including variation in sex ratio and birth rates. We caution that military restrictions in the region limit the use of more advanced technology such as thermal imagers and drones.

The walia was categorized as Endangered on the IUCN Red List in 1986, recategorized as Critically Endangered in 1996, and then recategorized as Endangered in 2008. In 2020, the species was recategorized as Vulnerable based on population growth projections, although the assessment states that weakened protection could rapidly drive the species towards being Critically Endangered or Extinct (Ejigu, 2020). According to our annual population counts, numbers have dropped for three consecutive years, with fewer than 250 mature adults now remaining, making the walia one of the most threatened mammals (Nievergelt et al., 1998) in a region with continued instability. Based on our findings, we recommend that the species is recategorized as Critically Endangered based on IUCN criteria B1ab(v), i.e. extent of occurrence < 100 km² (B1), limited to one location (a) and a continuing decline (b) in the number of mature individuals (v); and C1, i.e. < 250 mature individuals with a projected continuing decline $\geq 25\%$ within one generation (7 years; Figs 1, 2; IUCN, 2012). This update would accurately reflect the serious extinction risk faced by the walia and help to mobilize resources for urgent conservation actions.

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Conflicts of interest None.

Ethical standards This research abided by the *Oryx* guidelines on ethical standards.

Data availability The data that support this study are available from the corresponding author upon reasonable request.

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