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Annual Report

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Ethiopian Wolf Conservation Programme

Our Vision

Our vision is to secure Ethiopian wolf populations and habitats across their present distribution, and to extend the species range, stressing its role as a flagship for the conservation of the Afroalpine ecosystem on which present and future generations of Ethiopians also depend.



Executive Summary

2016 was marked by widespread unrest in Ethiopia affecting several EWCP sites, culminating with the declaration of a state of emergency in September. In spite of the many logistic and administrative complications that ensued, most of our activities were implemented in full and with positive results. Thanks to the hard work of our Wolf Monitors we can report that wolves in Bale Mountains are on their way to recovery from recent rabies and distemper epizootics, with a 30% growth. Many pups were born, and we are confident this will translate to successful recruitment into the population. Our monitoring teams continue to expand, with more Wolf Monitors and Wolf Ambassadors recruited across the Ethiopian highlands.

To ensure that threats to wolves are detected and reported efficiently, we are providing training to staff in the Arsi, South Wollo and Simien mountains. We have also trained veterinarians from local government agencies. As epitomised by recent disease outbreaks in Delanta (the smallest wolf population), where we now find only 2 or 3 survivors, disease remains our major concern. In Bale we vaccinated over 3,300 domestic dogs in and around the National Park to prevent disease transmission, and are focusing our energy on an integrated disease management approach that will involve many actors and political support at various levels. Implementing preventive vaccination of Ethiopian wolves (rather than responding to an epizootic) remains a key objective. We also took the first steps towards promoting conservation translocations as a necessary complementary approach to ensure that no more wolf populations become extinct.

Central to our work is raising awareness for the need to protect the wolves and the Afroalpine ecosystem across Ethiopia. We worked with 35 schools and many local communities, developing and distributing information materials and holding special events (such as Wolf Day and World Rabies Day), and promoting more sustainable use of natural resources to prevent further habitat degradation. We remain highly committed to building the capacity of protected area staff, our own staff and that of partner organizations, through practical training, scholarships and supervision for Master and PhD students, and supporting research projects on the most pressing issues for wolf conservation. We are grateful to all our supporters for making implementation of our core activities possible and to develop new ones. We are delighted to be able to bring to you so many good news. As the key pressures upon the wolves are not diminishing, your help is needed as much as ever.

A letter from our Founder & Director



► Claudio with wolf. ©Eric Bedin

In contrast to other canids Ethiopian wolves are highly specialized to life on the meadows of the roof of Africa. Only a handful of mountain enclaves now harbour the right conditions to support viable populations of Ethiopian wolves. They are Africa's rarest, and most threatened carnivore, and most of their populations are tiny.

Ethiopia is the cradle of humanity, and farming has been modifying its surface for millennia. The need for arable land brings about an incessant pressure on natural habitats. Barley crops and potato fields are slowly encroaching the last relicts of Afroalpine diversity, and other endemics such as the walia ibex, the mountain nyala, the wattle crane, down to the giant molerat, are seeing their habitat shrink and bringing local extinction a step closer.

By and large people in the Ethiopian highlands are relatively tolerant of wildlife, but their priority is one of survival. Unless their livelihoods can be brought into line with sustainable practices, the meadows and moors they need to graze their stock, gather firewood and tend their crops will soon be all degraded to bare rock. And while many highland wildlife can coexist with shepherds and their livestock, domestic dogs bring in an additional challenge, posing the most real and immediate threat to the wolves. Coming from many surrounding villages and towns dogs not only compete for food and chase wolves. They are inexorably drawn to each other and interact, inevitably transmitting rabies and distemper to their wild cousins, and even hybridising. Disease ultimately determines the dynamics of

the last remaining wolf havens, with three out of four wolves typically dying in populations hit by outbreaks, their numbers a rollercoaster. The Bale Mountains plateau harbour the largest number of wolves; in the last three years they have endured back-to-back rabies and distemper outbreaks. Smaller populations are at even greater risk; last year disease decimated Delanta in Wollo, the smallest wolf population.

In a way these wolves are victims of their own success as Afroalpine specialists. But because of the warming continent, and the pressure of humans, livestock and dogs, now they are restricted to tiny mountain pockets and pushed ever up the slopes. There are reasons to be optimistic about their future though. In Bale we have vaccinated in excess of 80,000 dogs to prevent rabies getting across to wolves. And when the deadly virus strikes, swift wolf vaccinations have taken place. In a shift from reactive vaccination to a preventive approach an oral vaccine has been trialled that will offer protection from future rabies epizootics.

There are signs that the wolves in Bale are bouncing back. By the end of January, nearly all packs monitored (and recently vaccinated) had bred successfully and some of the larger packs had split, increasing the number of breeding families. With as many as seven pups born to a dominant female, the potential for numeric recovery is high, with over 80 pups located in the Bale Mountains alone.

Rare, ecological specialists such as these wolves will continue to be threatened and require intervention to secure their survival. Climate shifts in mountain ranges tend to impact on specialists, and there are few mitigation approaches available to protect small populations that get caught in this habitat vortex. So we can expect local extinctions for several montane specialists, although for the wolves a metapopulation management paradigm will become part of the solution, with conservation translocations enabling recovery and genetic flux. We expect to see more of these interventions in the next decade.

EWCP and its Ethiopian partners continue to put all their strength to fight the threats through awareness, education, and science-led approaches to managing disease. It is a long-term game, and only through committed efforts and dedication the necessary trust and common ground between the needs of people and wildlife can be found.

Prof Claudio Sillero
Founder and Director

Invited contribution

Working to control infectious diseases of wildlife: perspective from an international reference laboratory. By Tony Fooks

I have been collaborating with the EWCP since 2006, when Claudio Sillero approached us with samples of sick wolves and asked for help. I immediately felt curious and willing to get involved in EWCP's work. Since then, my team have learnt much about this unique and threatened species and I can say that we feel proud to contribute, from our laboratories in the United Kingdom, to help saving the species from extinction and in reducing the incidence of canine distemper virus and rabies in wildlife.

My research group is part of the Animal and Plant Health Agency (APHA), an agency of the UK Department for Environment, Food and Rural Affairs (Defra) that delivers a wide range of animal and public health and welfare policies for the UK. Our laboratory facilities allow the characterisation of rabies and rabies-related viruses and it is designated an OIE Reference Laboratory for Rabies. Our past research includes studies on the pathogenesis and immune response to lyssavirus infection and epidemiology. In order to support EWCP our group have expanded its testing remit for other canid-related pathogens, including canine distemper virus. Full genome sequence analysis undertaken at APHA on positive samples has enabled comparisons with other isolates described in the literature and may help identify mechanisms of virus incursion either through local domestic dogs that come into contact with wolves or through dogs harbouring virus moving into wolf territories thus representing a threat to the wolves.

Due to devastating wolf die-offs to rabies and distemper there is an urgent need to implement an integrated disease management approach to promote the survival and recovery of such endangered species. The high density and social nature of the wolves result in viruses transmitted rapidly between packs, and the last wolf populations are highly threatened in each outbreak. Disease undermines

decades of conservation efforts, as seen in the large-scale population declines in the 1992, 2003, 2009, 2014 and 2015-6 outbreaks, which resulted in reductions of up to two thirds in the local populations affected, including extinctions of entire packs. Outbreaks in the wolves are prompted by introduction of the viruses from dogs. Vaccination of dogs is often incomplete because of the many dogs living near wolves inside protected areas, their quick population turnover and seasonal movements. To eradicate disease appears impossible without proactive vaccination of Ethiopian wolves. This would be best achieved as a preventive conservation measure using a combination of oral and parenteral vaccination.

Dr Tony Fooks is the leader of the Wildlife Zoonoses and Vector-Borne Diseases Research Group at APHA, the National Reference Laboratory for rabies in UK. Expert on viral diseases and emerging viral zoonoses, Tony works with the public and private sectors. He is designated OIE Reference Expert for Rabies since 2006 and holds honorary positions at the University of Liverpool, University of London, Zoological Society of London, and Fogarty International.

► Dr Fooks (on the left) catching and sampling straw-coloured fruit bats in Accra, Ghana.

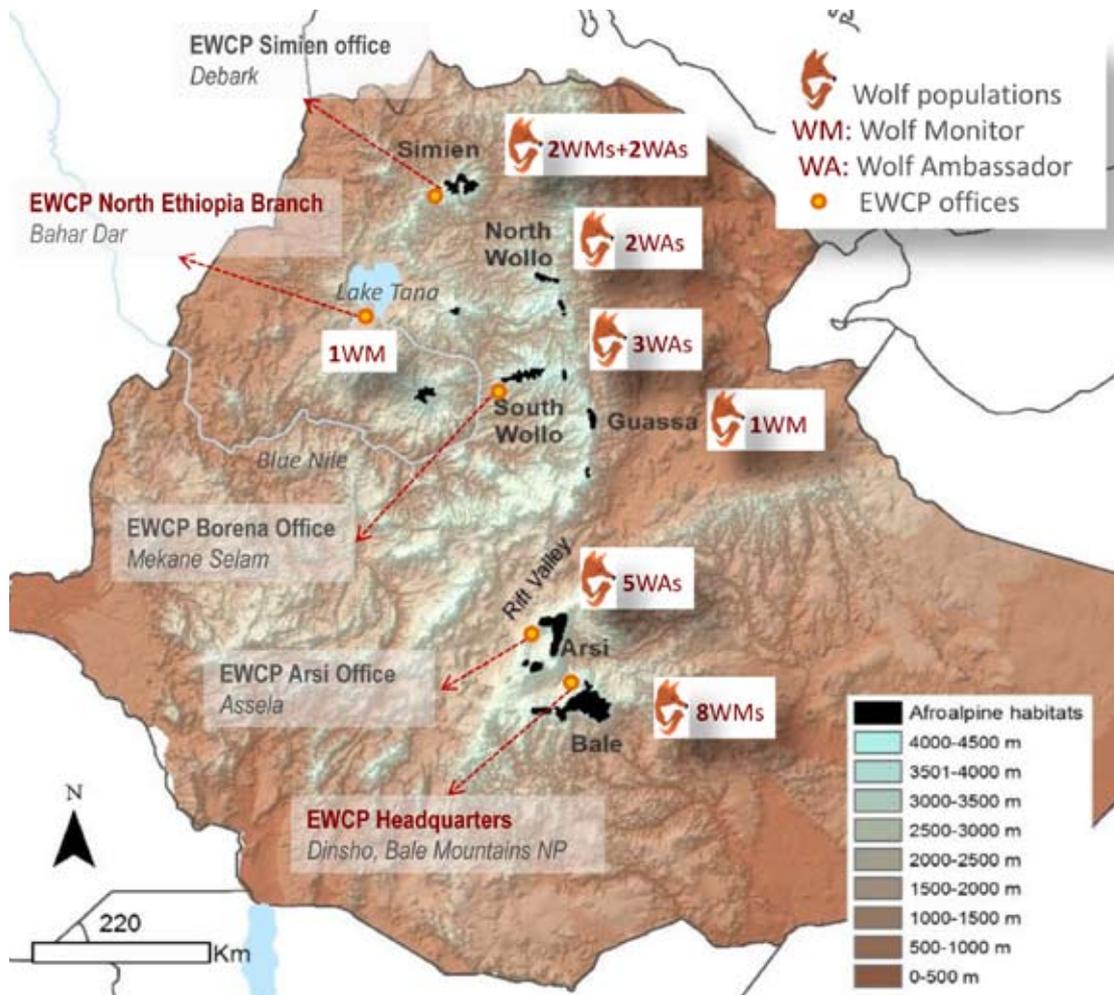


Monitoring wolves & threats

Close monitoring of wolf families is key to understand how wolves cope with disease and disturbance, to alerts us of imminent threats, and to assess the outcome of conservation actions.

Facing up to the task: more and better monitoring

With contributions from Edriss Ebu



Monitoring has always been at the core of our efforts to save the Ethiopian wolf. It remains our main tool to identify and assess the threats to wolves and their habitats, and to build and maintain strong links with local communities, government agencies, and protected area managers. Indeed, in many places EWCP Wolf Monitors and Wolf Ambassadors are the visible face of conservation, caring for the wolves and nurturing tolerance for wildlife and conservation.

This task is vast and complex, as the handful of surviving wolf populations are spread across thousands of kilometres, in fragmented landscapes exposed

to diverse threats. Facing up to the task, this year saw further recruitment of new staff and intensified training, including training protected area staff. We also opened local offices in the vicinity of wolf habitat in Arsi, Simien and South Wollo (see map).

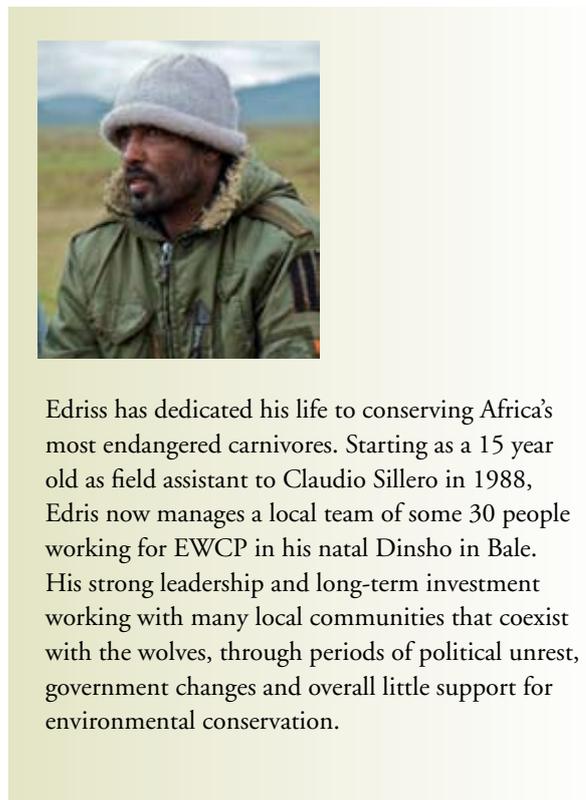
Wolf Monitors work tirelessly, following wolf packs day after day, tracking every event in the life of these close-knit families. This year in the Bale Mountains a team of eight monitors, under the experienced leadership of Alo Hussein, tracked 21 focal packs after the devastating distemper epizootic of 2016. Their work is so thorough that monitors can tell the fate



► Wolf monitoring in the Simien Mountains, December 2016; from left to right: Edriss Ebu (EWCP Project Manager, Getachew Assefa (Simien Project Leader), Jorgelina Marino (EWCP Science Director), Andualem Ambachew and Jejaw Mequanenent (Wolf Monitors); by Eric Bedin

of each litter and when packs shift territory, receive immigrants or split up. We continue to expand this model northward, and have incorporated a new Wolf Monitor in Guassa-Menz in the Central highlands, adding to two recruited in Simien in early 2016. Under the leadership of Gebeyehu Rskay, the new monitors are getting familiarized with the wolves and the field monitoring techniques and are currently monitoring eight focal packs.

Reaching remote, inaccessible places, is one of the challenges we overcome with the special help of our Wolf Ambassadors, members of local communities appointed in strategically selected areas, who are our eyes and ears and passionate spokesmen of our conservation message. This year the Wolf Ambassador network expanded to 18, with the incorporation of four new people in Arsi and South Wollo. They immediately felt welcome into the EWCP family and were readily accepted by their own communities and beyond. In Delanta they were instrumental in detecting a dreadful viral outbreak and the subsequent intervention to vaccinate the few surviving animals.



Edriss has dedicated his life to conserving Africa's most endangered carnivores. Starting as a 15 year old as field assistant to Claudio Sillero in 1988, Edriss now manages a local team of some 30 people working for EWCP in his natal Dinsho in Bale. His strong leadership and long-term investment working with many local communities that coexist with the wolves, through periods of political unrest, government changes and overall little support for environmental conservation.

The eventful lives of wolf packs: news are good!

With contributions from Alo Hussein

When the monitors came back from the field, on a sunny November day, one could see in their eyes that the news were good. They had located numerous pregnant females, and already a few were lactating! Between the time of mating (around September) and the end of the rainy season (in March) the Bale monitoring team closely watches over 20 wolf family packs, some known to us for up to 30 years (the BBC pack has been monitored since 1987). These “focal” packs live in three core wolf areas: Sanetti Plateau, Web Valley and Morebawa, and are good indicators of the status of the entire Bale population, by far the largest with some 300 adult wolves in good years.

The monitors were surprised that the packs on Sanetti Plateau, a moon-like landscape above 4,000m asl, had bred earlier than in other areas, as this was unusual and possibly the sign of demographic readjustments after the severe die out of the previous season when more than half of the known wolves in Sanetti died from canine distemper virus (CDV).

By the end of January they had recorded 59 pups in 19 packs across Web Valley, Sanetti and Morebawa. This turned up to be an exceptionally good breeding season, with pups born to nearly all the packs monitored (80%). Good breeding will boost up the prospect of recovery in Sanetti, stricken by consecutive outbreaks of rabies and CDV since 2014. In the Web Valley, meanwhile, another form of population expansion was occurring, with three large packs splitting up, each originating

an additional new social group. The formation of new packs is crucial to the process of population growth, because new packs equate to new breeding units, as only the dominant female in a group breeds, independently of how many subordinate females are in the family (up to 3 in large social groups).

One of the packs that split was Tarura, who had notably resisted the past CDV outbreak, most likely due to the protection provided by the trial of a CDV vaccine in 2014. In December the monitors realized that a subordinate female, clearly lactating at the time, had left the family luring with her two males, and settling in their own territory nearby. Simultaneously, the alpha female in the original Tarura pack was rearing her own five pups! The McKenna pack also split and both original and new packs bred successfully. The new settlers now inhabit a territory laying between the Web River and the scenic Saddle Hill. Even more astounding news came from Meggity: the budding pack had reared a litter of seven pups (something recorded only twice before) and the alpha in the “mother” pack had herself six.

This prolific breeding season brings hopes of a speedy recovery for wolves in Bale, after three years marked by disease and rain shortages, putting a smile on the Wolf Monitors’ faces after another tough field season. We hope that these waves of optimism reach all EWCP partners and supporters, bringing the warm feeling of knowing that our efforts are not in vain. Thank you.

►©ThierryGrobet



“I know these wolves so well I can tell you off the top of my head the story of each one of the many packs we have in Bale. Nothing makes me happier than riding our horses with Claudio and my team of wolf monitors.” Alo Hussein



Before joining EWCP as its first Wolf Monitor 20 years ago Alo was a park scout. Born and raised in Dinsho, Alo has spent more days trekking and following wolves in the mountains of Bale than anyone else. He has been instrumental in training EWCP Wolf Monitors and Wolf Ambassadors throughout the country. He has an eagle eye when it comes to spotting wildlife.

A year in the Bale Mountains: wolves on their way to recovery

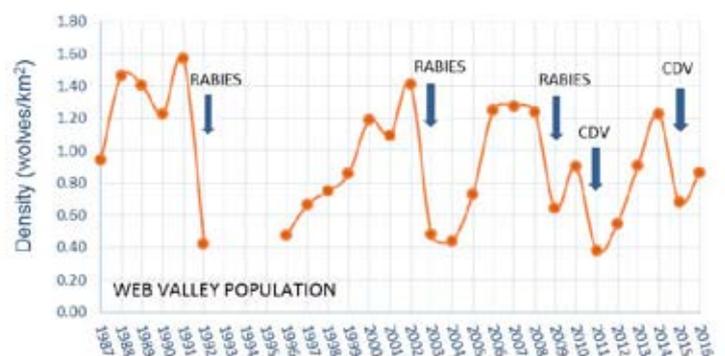
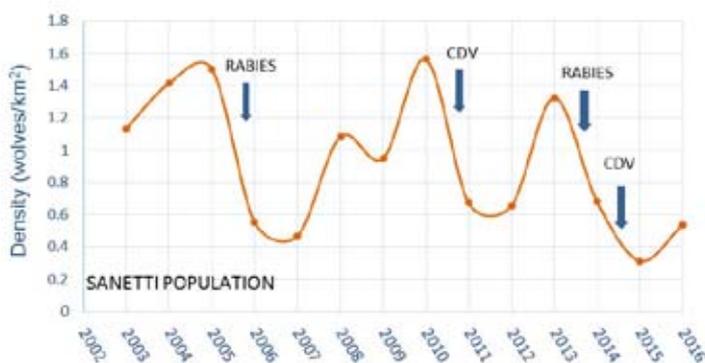
Last year many Bale Mountains wolves died from distemper and thus this was a crucial breeding season; another bad year and the wolves would have been in real trouble. Eight Wolf Monitors closely observed 19 focal packs across three core populations: Sanetti Plateau, Web Valley and Morabawa –and other 10 packs in peripheral areas. The focal packs accounted for 88 adults and sub-adult wolves (animals 1 year old and over), returning a 33% overall increase from last year (highest recovery was in Sanetti at 41%). The monitors also counted 57 pups in 15 litters. If this prolific breeding were to be followed by good recruitment in the next breeding season, this incipient recovering trend will be maintained. Given the rate of increase observed across the three core populations this year, we estimate that there are currently 170 adult and sub-adult wolves in the Bale Mountains. It remains the largest wolf population in the world, but still below its carrying capacity.

Web Valley						
pack	group size	adult males	adult females	subadult males	subadult females	pups
Alando	4	2	2			1
Bowman	7	2	1	3	1	4
Mckenna	7	3	2	1	1	3
Mckenna 2	3	2	1			4
Megity	5	3	2	0	0	5
Megity 3	5	1	2	1	1	7
Tarura	11	4	2	3	2	4
Total	42					28

Sanetti Plateau						
Pack	group size	adult males	adult females	subadult males	subadult females	pups
Bagadasa	7	2	1	2	2	4
Garba Gurracha	4	3	1			4
Batu	8	2	2	2	2	4
BBC	8	2	2	2	2	4
BBC2	2	1	1			3
Total	29					15

East Morabawa						
pack	group size	adult males	adult females	subadult males	subadult females	pups
Genale	3	1	2			3
Genale 2	4	1	1	1	1	3
Osole	2	1	1			4
Huke	3	1	2			
Weshema	2	1	1			4
Fulbana	3	2	1			
Total	17					14

► Table Pack composition



► “Sanetti trends” and “Web trends”

How many wolves are in the Simien Mountains? A fresh collaboration to answer a difficult question

With contributions from Getachew Assefa and Gebeyehu Rskay



► Experts from the Simien Mountains National Park and EWCP staff, near Ras Dejen, the tallest peak in Ethiopia at 4,550m. The team celebrates finishing a milestone: completing the 18 survey block in the Ras Dejen area!

The Simien Mountains is the northernmost population of Ethiopian wolves and the second in importance after Bale's. All the habitat suitable for wolves there is contained within the Simien Mountains National Park, a World Heritage site and one of the most visited protected areas in Ethiopia. Ethiopian wolves were first described for science by German explorer Eduard Rüppell in Simien in 1835.

Park staff conducts annual censuses to estimate the size of this wolf population. Recently the park sought help from EWCP to finance the wolf census and to critically assess their counting method. In March 10 members of the EWCP team joined 12 park experts to count wolves together, with funding from the African Wildlife Foundation and Born Free. For seven days the team worked tenaciously, walking long distances in difficult terrain and cold weather (we faced a hail storm at 4,400m near Ras Dejen peak). We were assisted by three vehicles (one generously provided by the Simien Lodge) and by numerous mules to reach the most remote locations. This was an enriching experience for everybody, with a strong spirit of camaraderie.

The census consists of teams of at least two people covering each of 43 blocks of wolf habitat on foot, counting wolves as they are encountered. Rather than running a simultaneous census across the massif (as it was traditionally implemented, with a high demand on logistics and human resources), this time we counted blocks in three stages, within each of three main

Afroalpine areas in Simien. In this way fewer teams were needed, and each would have at least one EWCP expert, and also removed the need to engage local people with no technical know-how. With the adequate expertise, field equipment and improved data protocols, this census provided more robust and informative data.

Together we surveyed 33 blocks (10 blocks in the remote Silki mountains were not visited this time). We encountered wolves in 12 of them, totalling 31 animals (4 of them juveniles), compared with 113 (including 8 juveniles) recorded in the same 33 blocks during the 2015 census. Because this year's data were more reliable, and no catastrophic event could explain a potential reduction in wolf numbers, we concluded that previous wolf counts were untrustworthy and possibly returning an overestimate of the population. The most likely explanation for this is that local people involved in past counts might have felt pressured to report more wolves than what they actually saw. We know from experience that it is virtually impossible to encounter all the wolves inhabiting a block after 2 to 4 hours of searching effort. Therefore, the 31 wolves encountered this year were clearly only a portion of all the animals present. Indeed, after close observation of 16 "focal" packs over several months in Simien, EWCP Monitors and Wolf ambassadors detected 67 wolves and 6 juveniles in these packs. Assuming the existence of another 4 packs in Simien, with an average of five animals per pack, we estimate the total Simien wolf population at 87 adults and sub-adults (1 year and older).

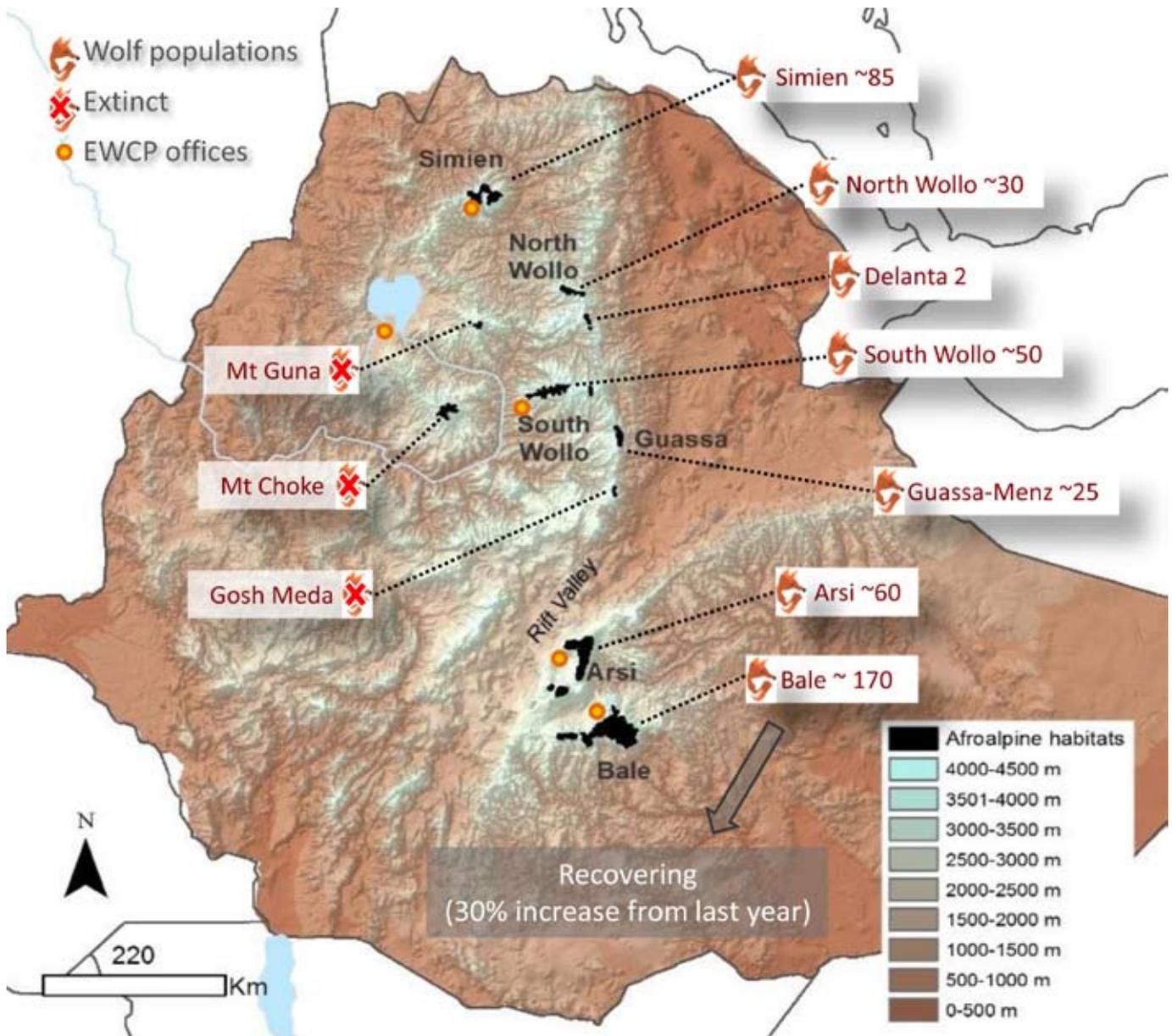


Getachew, also known as the "wolf man", was born in Debarq, on the outskirts of the Simien Mountains National Park. He has been working for conservation organizations there for the last 10 years and is a long-term good friend of EWCP team. He was trained on wolf monitoring by our Bale team in 2002 and in 2016 he became EWCP's Project Leader in Simien.

We are working together to find alternative ways to census Ethiopian wolves in Simien, as methodological issues, rather than lack of funding or enthusiasm, are the main obstacles to obtain reliable annual estimates. EWCP will continue monitoring focal packs, learning always something new about the wolves of Simien.

How endangered is the Ethiopian wolf?

With contributions from Gebeyehu Rskay



In 1992 an outbreak of rabies killed three quarters of all the wolves in the Web Valley, a core wolf population in the Bale Mountains. On the basis of this catastrophic decline, their Red List status was downgraded from *Endangered* to *Critically Endangered* following the IUCN Red List criteria. Ten years later, when wolf numbers recovered to pre-epizootic levels, and prompted by extensive field conservation efforts, a re-assessment downlisted them back to *Endangered*. Many things have happened since then, including recurrent viral epizootics affecting the Bale wolf population and an increased understanding of the

status of other extant populations. In the light of these new information, what can we say today about the current status of the species and its conservation needs?

Bale remains a stronghold for Ethiopian wolves, but recurrent epizootics highlight its persistent vulnerability, as even on a good year the mountains can sustain no more than 300 wolves (its carrying capacity); and human encroachment into wolf habitat is creeping up, bringing with them domestic dogs, reservoir for rabies and distemper. Sadly dogs are at their most numerous ever in and around wolf range

“Efforts to protect the last surviving wolf populations needs to gather momentum now more than before.” Gebeyehu Rskay

in Bale, with an ominous threat of a major epizootic ever present. Due to demographic effects on survival each time wolf numbers drop due to disease the population becomes more susceptible to the negative effects of additional threats, including disturbance by dogs and people and climatic anomalies. After many years of extensive dog vaccination failing to protect the wolves fully (since new unvaccinated dogs move in all the time), it becomes evident that only preventive vaccination of the wolves can safely control the disease threat. The Bale population is not safe.

Extinction risks associated to small wolf numbers loom on the horizon of all the other wolf populations. Since 2000, when exhaustive surveys by EWCP confirmed the existence of wolves in six remnant Afroalpine areas, wolves have gone extinct in Mt Guna, the smallest population at the time, and now the currently smallest population in Delanta might be functionally extinct after severe epizootics in the last few months (see Box). Lack of formal protection, combined with a small Afroalpine area and high demand for arable land, have proven a fatal combination. If habitat loss is not contained, Delanta wolves will be the next candidates to extinction.

But there are good omens for the conservation of Ethiopian wolf habitats, as governments and local communities alike become increasingly interested in the conservation of critical Afroalpine ecosystems in Ethiopia. As of today, 80 % of all Ethiopian wolf habitat is under some form of protection within traditional and community-based protected areas. Among the latter, Menz-Guassa Conservation Area sets a gold standard, with promising similar initiatives in Abuna Yosef and Aboi Gara in North Wollo. In addition to Bale and Simien Mountains National



Gebeyehu grew up at the foothills of the Simien Mountains and was always fascinated by the wildlife surrounding him. He is being involved in the conservation of natural resources and Ethiopian wolves for the last 10 years, after obtaining his BSc in Biology at Addis Ababa University. He joined EWP in 2010 as the Wolf Monitor for Simien and today his is the Monitoring Officer for North Ethiopia. In 2016 he completed an international Diploma in conservation at the University of Oxford and a Master in Zoology at Bahir Dar University, with a thesis on Ethiopian wolf behaviour.

Parks, regional governments have recently created National Parks in the highlands of Arsi and South Wollo (Borena-Sayint). Their existence is making a difference but they depend to some degree on external support to fill their financial and technical gaps.

Our main challenge has been to monitor all Ethiopian wolf populations and to rapidly detect and react to the main threats affecting their survival. Over the past five years EWCP was present in all Afroalpine areas to fulfil this monitoring target, while creating awareness among all stakeholders with the wolves as a flagship for Afroalpine conservation. From information collected from 43 packs known to Wolf Monitors and Ambassadors across six populations, and estimates of the additional ‘peripheral’ packs present there, we currently estimate the total number of wolves outside Bale Mountains at around 252 adults and sub-adults (animals 1 year and older).

Ethiopian wolves remain the rarest, and the most threatened, of all African carnivores. As we learn more about these wolves and adopt new tools and approaches to protect them, our options for successful conservation will continue to expand. To save them from extinction will require the continuation of a long-term struggle in multiple fronts.

Back-to-back outbreaks push smallest wolf population to the brink of extinction

"Delanta receives no formal protection and faces numerous threats. Sadly, with no more than 20 wolves, this is the next candidate Ethiopian wolf population to become extinct." (EWCP annual report 2016).

Soon after this statement was written, a rabies outbreak, followed soon after by a distemper outbreak, hit this small population. Very few, probably no more than three wolves, survived. Sadly, our premonition turned out to be true.

This is the series of unfortunate events that unveiled, and the emergency responses that ensued:

1. In June 2016 our Wolf Ambassador in Delanta reported a dead wolf. By early September a total of seven carcasses were found. Samples collected from three of them tested positive for rabies (as did a dead dog from a nearby household).

2. When permissions were granted, EWCP and the Amhara regional government led a vaccination intervention in September 2016, when only three wolves were known to be alive. One adult male and one sub-adult female were trapped and vaccinated against rabies.

3. In December 2016 the female was found dead and samples tested positive for CDV (as did those from a local dog).

4. The vaccinated male was still alive in late May 2017 and observed with an unknown adult female since April. There are rumours of a third wolf in the area, yet to be confirmed.

This account is powerful proof that more proactive actions are needed to safeguard small wolf populations from extinction. We are working hard to win the heart and minds of our partners to gain institutional support for an integrated disease management plan that will cover all wolf populations. We are also promoting the protection of these beautiful Afroalpine relicts and contemplating a future where conservation translocations of some wolves may come to the rescue of a population after severe disturbance. We are fully committed to save the Delanta wolves at any cost!



► EWCP team with regional and local partners vaccinating a young female wolf against rabies. Sadly, she was later found dead due to CDV infection. In the future, pending permission, we can vaccinate wolves against the two diseases simultaneously. © Eric Bedin

Living on the edge: metapopulation management to the rescue



► ©ThierryGrobet

The loss and fragmentation of habitat for wildlife is threatening biodiversity worldwide, as species that once roamed widely are now restricted to small and increasingly isolated fragments. This is the case of the Ethiopian wolf, a canid specialized to life in the highlands of Ethiopia, now trapped in islands of Afroalpine habitats in a sea of agriculture fields. The last remaining Ethiopian wolves are restricted to six small populations, isolated from each other in terms of dispersal. As a result, areas from where wolves went extinct are not being naturally recolonized, and all remnant populations remain small and at high risk of extinction.

To ensure the long-term survival of threatened carnivores, conservation agencies adapt to these challenges by managing animals as part of a metapopulation, implementing translocations and

reintroductions within the species historical range, aiming to boost numbers, establish new populations and/or ensure genetic viability. African carnivores populations actively managed include those of lions and African wild dogs. The National Action Plan for Ethiopian Wolf Conservation, with backing from governments, experts and international organizations including IUCN, also identified the need for metapopulation management for the species in 2011. When last year wolves in Delanta were reduced to just two or three survivors (see Box above), there is a sense of urgency to move forward along this conservation road.

As wolf numbers and their habitats continue to shrink, and in the absence of captive populations either in-country or abroad, conservation translocations provide a promising opportunity to rescue small populations following disease outbreaks and to increase the range and number of populations. This can be achieved without resorting to captive breeding, and with the advantage of bringing extra protection to Afroalpine enclaves where translocations will occur.

EWCP is taking the lead to implement the first necessary steps stated in the National Action Plan. We are seeking to raise awareness, institutional support and funding to achieve three main objectives: a) a long-term vision for wolf survival through conservation translocations; b) readiness to rescue confiscated or injured wolves and c) agreed plan to recover the range of the Bale wolf population in Gaysay grasslands via translocation. By adding to current conservation efforts a metapopulation management approach we can increase demographic resilience and move a step or two away from the perilous edge of extinction.

“The last Ethiopian wolves survive in six isolated mountain ranges, with no captive wolves anywhere on earth. Conservation translocations might be the only way to ensure their long-term survival.” Jorgelina Marino

Disease control and prevention

Protecting Ethiopian wolves from viral diseases requires coordinate efforts in many fronts: monitoring outbreaks, controlling diseases in domestic dogs, keeping them away from wolves, and investigating alternative vaccination schemes.

Vaccinating domestic dogs is good not just for wolves

With contributions from Muktar Abute and Mustafa Dule



“Recognizing the benefits of domestic dog vaccinations more widely will increase people’s willingness to participate and attract more and more diverse funding for this cause.” Muktar Abute

For over 20 years EWCP has been vaccinating domestic dogs in and around Bale Mountains National Park to reduce the risk of rabies spreading to the Ethiopian wolves (3,322 dogs were vaccinated between April 2016 and March 2017). If prevalence of the virus in the dog population is reduced, the chances of an outbreak will be also minimized. This One Health approach will benefit not only the wolves and other wild carnivores, but also dog owners and their livestock, for whom rabies is also fatal.

► Our camera trap captured this domestic dog in close vicinity to an Ethiopian wolf in the Bale Mountains, during a study to learn how quickly, and what species, take meat baits that will be used to deliver oral rabies vaccines in the future.

Ethiopia has a higher rabies incidence than most African countries, most likely due to the high predominance of domestic animals as a source of zoonosis. We are increasingly interested in the wider impacts of our dog vaccination campaign, including in human health, and other cascading effects across Bale. One very useful source of information to investigate this issue are the reports from people bitten by infected dogs in their local Health Centres. Data from across six *Kebeles* (peasant associations) surrounding the Bale Mountains showed that in the villages reached by our dog vaccination campaigns there were no reports of human mortality to rabies and the reported numbers of livestock affected were negligible.



► Raising awareness among children shepherds about diseases affecting wildlife and domestic animals, with Delanta Wolf Ambassador Tilahun Wendmenhe. ©Eric Bedin



Born in Zela Ababa village near Dinsho, Mustafa is one of the most passionate members of the EWCP team. He joined in 1999 as Research Building Guard and, trained by Alo Hussein, then became a Wolf Monitor. His passion and wide community involvement lead him eventually to become Community and Outreach officer 10 years later.



Muktar was born in Hora Soba, near Dinsho, and joined EWCP in 2010 as dog vaccination Officer. In 2016 he graduated from the veterinary Department of Debre Zeit, Addis Ababa University. Every year Muktar vaccinates an average of 4,000 dogs against rabies and never forgets to come back to his village to educate people about rabies and its danger.

Our vaccination campaigns, born out of desperation after witnessing wolves dying by the dozens over a few weeks in the early 1990s, has grown into a much larger and multi-pronged initiative, where the conservation benefits of vaccination take many forms. These include the local communities' willingness to get involved in conservation, the popularity and acceptance of EWCP's work in Bale, and the direct impacts on people's health and livelihoods.

The "One Health" approach promoted by organizations worldwide seeks to perceive the combined benefits of the fight against diseases and the need and importance of involving stakeholders and experts from different fields and government departments. This is the way forward for controlling diseases in the Bale landscape, and elsewhere, and one that we are passionately embracing. To achieve it, we need to work all together.

Let's have an integrated plan to protect the wolves from diseases

"If we don't work together to stop diseases from infecting Ethiopian wolves, we will not save them from extinction." Eric Bedin

Thirteen years since Ethiopia wolves were for the first time vaccinated against rabies, and four epizootics later, and after over 85,000 dog vaccinations, the extinction risk posed by viral diseases persists, fueled by fast growing human populations. Addressing the risk resulting from recurrent epizootics is a priority to protect the remaining wolf populations, with concomitant benefits for human health and livelihoods.

Building on the various priority actions listed in the National Action Plan, EWCP drafted in December 2016 a document that delineates a holistic approach to manage diseases, involving various partners with relevant authority and competence, and put this document forward to promote further discussions and involvement (see BOX).

The activities in the suggested plan are complementary and should be implemented jointly, as none of them in isolation will be sufficient to stop disease from infecting the wolves. A successful strategy will ultimately depend on maintaining high political support and the involvement of various partners with the required levels of expertise throughout. That is the challenge ahead.

Draft plan of an integrated disease management to protect Ethiopian wolves

The plan identifies four main areas of action:

- Controlling diseases in reservoir dogs,
- Reducing dog-wolf contact,
- Vaccinating wolves as a preventative measure and,
- (as a last resort) Emergency vaccination of wolves in response to a confirmed epizootic.

The main partners are:

Ethiopian Wildlife Conservation Authority, Ethiopian Wolf Conservation Programme, Bale Mountains National Park, Frankfurt Zoological Society, Bureau of Agriculture, Ministry of Agriculture and Research development, Oromia Forestry and Wildlife Enterprise, Amhara's Environment, Forests & Wildlife Protection Authority, Simien Mountains, Arsi Mountains and Borena Sayint National Parks.

The following evidence supports the complementary approaches of the plan:

- Alternatives for parenteral vaccination of wolves are gaining strength after successful trials of an oral rabies vaccine.
- In 2016 tests of a distemper vaccine in Ethiopian wolves proved this to be safe; more extensive trials are ongoing.
- Vaccination of domestic dogs is in itself insufficient to stop outbreaks in wolves, because the required coverage level is virtually unattainable due to large numbers of dogs, quick turnover and their seasonal movements into the mountains.
- A collaborative effort in the Bale Mountains by Woredas, communities and EWCP moved forward policies to keep dogs near owners' households in order to reduce dog-wolf contact; subsequently the National Park adopted the regulation, bringing hope of more efficient law enforcement within the Park.
- EWCP's efforts to increase local capacity to detect outbreaks in dogs, swift laboratory testing, and rapid dissemination of news of outbreaks, are starting to bear fruits.

Ethiopian wolves and distemper: what do we know?

By Ashley Banyard and Tony Fooks

Outbreaks of infectious disease continue to be a major threat to the Ethiopian wolf population. Historically rabies has been the primary concern but more recently, in collaboration with Animal and Plant Health Agency (APHA), UK, canine distemper virus (CDV) has been demonstrated as a significant further cause of wolf mortality with outbreaks in 2006, 2010 and 2015, and mortality rates reaching over 50% of the affected populations.

Distemper attacks the white blood cells of the host following infection, essentially almost completely removing one arm of the host's immune system, and as such weaker animals often succumb. The reduction in white blood cell count within the infected animal enables pre-existing infections to thrive, which can then become life threatening. So called opportunistic infections causes the majority of mortalities following CDV infection. However, CDV can also cause a mild, almost asymptomatic disease, and as such can circulate in the absence of clinical signs. With this, the movement of dogs can readily translocate infection.

Genetic typing of viruses enables to establish relationships between viruses circulating within different areas. This in turn can indicate areas where vaccination can reduce the threat from CDV. APHA assessed historical samples that tested positive for CDV, suggesting a more widespread presence of this virus. The paucity of data for CDV isolates across Africa precludes interrogation of the virus origin, and with CDV able to cause a spectrum of clinical disease it is a difficult pathogen to predict. A lot of work is still required.



► Blood samples taken from wolves vaccinated against canine distemper for the first time ever are showing that they develop good immunological responses. The trail is ongoing.

©Will Burrard-Lucas

Habitat protection

No other effort might be sufficient to protect Ethiopian wolves in the long run if we don't safeguard Afroalpine areas from conversion to agriculture and overgrazing.

Challenges and opportunities to protect wolf habitat in national parks

With contributions from Girma Eshete and Umer Ibrahim

“Afroalpine biodiversity is unlikely to survive without effective protection. Protected areas are performing well in averting serious threats to wolves and their habitat, but they are challenged by a lack of skilled ecologists, field equipment and logistics.” Girma Eshete

Protected areas give hope of holding back the loss of natural habitats in the highlands of Ethiopia. Their success, however, still hinges on international support. In 2016 EWCP secured funding from Fondation Segré to support two new national parks, realizing the paradigm of Ethiopian wolves as flagship for the conservation of Afroalpine ecosystems.

Here the Project Leaders share challenges and opportunities they encountered on their first year of work.

Borena Sayint National Park

The situation in Borena is particular, in that the majority of wolf habitat lies not in the park, but within a recently proposed extension not yet formally protected. Until now the work of park experts and scouts were largely focused on the montane forests that dominate the original area. They lacked equipment and skills to monitor Afroalpine wildlife, making it hard for the park to protect the wolves and their habitat. A year later, park biologists, scouts, and Wolf Ambassadors are trained and equipped with GPSs, binoculars, sleeping bag and tents, and are beginning to collect standard wildlife sightings data and events data on illegal harvesting, encroachment and livestock predation by wild carnivores.



► Girma Eshete, Project Leader in Borena Sayint National Park, training park experts and scouts on wildlife monitoring techniques. Some of them were rewarded with their first ever sighting of Ethiopian wolf pups!

Opportunities to further effect conservation of these habitats are emerging with our participation in the Woreda-Park Council, where local communities, “kebeles” and “woredas” (the equivalents of peasant associations and districts) discuss their roles and responsibilities for the conservation of the extended park, even if gazetting is still pending. Local governments will become directly involved in patrolling and enforcement, and the park requested EWCP support with the training of community guards. These are members of the local community already engaged in the protection of their communal resources, a common approach across Afroalpine areas without formal protection. So we will be training selected community guards from 30 kebeles and continue to influence the conservation agenda in this wonderful park.

Arsi Mountains National Park

The main challenge in this recently created national park stems from conflicts of interest between conservation and the needs of local communities, exerting intense pressure on the Afroalpine habitats with new settlements and agricultural encroachment. Also from the dissimilar commitment shown by government officers at the different administration levels. During the first year of the project our work focused on increasing conservation awareness across the board, and bringing these partners closer to promote dialogue. Development and conservation activities in Arsi Mountains should be planned jointly so as to minimize conflict, rooted on the understanding that the environmental degradation from forest clearing, overgrazing and bush fires will preclude sustainable livelihoods for local communities.

We are benefiting from the legacy of a recent community-based project implemented by GIZ, a German organization. In its area of influence the local communities have witnessed the positive impacts of sustainable livelihood alternatives and, organized as local associations, are now challenging recent illegal encroachment in their district. Their example creates opportunities for our project to showcase a successful story more widely across the Arsi Mountains.

► Arsi traditional dancing with EWCP education officer.
By Chris Gordon



Born and raised in Arsi, Girma was never too far away from an Ethiopian wolf, as he later moved to the highlands of Wollo in the north to work for the wildlife zonal office. He completed his Masters and now a PhD in collaboration with EWCP and is our Project Leader in Borena.



Another Dinsho boy, Umer graduated from Addis Ababa University with a study of natural resource uses in Gofingera, at the edge of the Bale Mountains National Park. His expertise led him to work in the lowlands south of BMNP, eventually joining EWCP in Arsi as Project Leader.



Outreach and education

In many places EWCP is the visible face of conservation, nurturing tolerance for wildlife and conservation, among students, local people and government officials.

Sustainable livelihoods making a difference for people and wolves

With contributions from Fekadu Lema

Afroalpine areas are communal land where neighbouring communities gather natural products such as firewood and grasses, and graze their livestock. Since 2014, with support from the Critical Ecosystem Partnership Fund, we are working to minimize people's dependence upon natural resources in three Afroalpine ranges in North Ethiopia (Delanta, Mt. Guna and Mt. Choke), which in turn helps protecting habitats for Ethiopian wolves.

Homestead "guassa" gardens

The local tussock grass known as "guassa" grows in Afroalpine areas and plays an important role in the local economy. It is used as fodder for dairy cattle, for thatching 'tukul' houses, make baskets and ropes, and as cash crop. Growing the plant is not difficult and, by helping create additional sources of guassa (in areas where owners can protect them), we are seeking to reduce the damage brought about by uncontrolled harvesting in wolf habitat. Some 40 homesteads benefited from receiving seed, plants and training, and some effects are already evident. People report that the guassa planted along fields is helping preserve soil moisture, and some have already been harvested, generating additional household income. As those that benefited from the project showcase the advantages of growing guassa, we hope that many others will follow.

Fuel saving stoves and solar lanterns

EWCP is introducing fuel saving strategies among local communities such as the use of improved cooking stoves and solar lanterns. The 'mirt injera', an adaption of the famous Mirt stove to cook "injera" (sourdough-risen flatbread with a unique spongy texture that is an Ethiopian staple), can save up to 50% of firewood compared with traditional open fires. The remaining Afroalpine habitats are the sole source of firewood for communities residing up in the mountains, which use fire for cooking, lighting and heating.

To date EWCP have trained four groups of local entrepreneurs to produce and sell the stoves, and provided start up materials for the shed and to produce the first batch. EWCP advertises the stoves at local



► Fekadu Lema in "guassa" plantation near homesteads on the margins of Ethiopia wolf habitat. Guassa plants grow fast, providing habitat for rodents, the wolves' favourite food, and benefits for the people that use it for thatching, ropes, baskets and as fodder.

markets, schools, and community meetings. The women association in Delanta has produced and locally sold 200 stoves and have orders for another 150.

We are also facilitating sales of solar lanterns via farmers' cooperatives, with a subsidy system by which they save the revenues to buy more lanterns, and so on. Each lantern has capacity to light a rural home and charge mobile phones.

As more people uses the stoves and lanterns, the firewood saved can have significant impacts on the conservation of natural resources in the communal land. In turn, the workload for women and children will be reduced, releasing the time otherwise used to collect firewood for other activities. The improved stoves

also prevent respiratory and eye conditions caused by the irritating smoke coming from open fires, and solar lanterns help protect people from the pollution of kerosene lamps and to cut costs.

Bee-keeping

In collaboration with agriculture officers, EWCP has provided training on bee-keeping to members of six communities living next to wolf habitat. The beneficiaries, 22 local people selected via a participatory approach, have received equipment and beehives, and are expecting to install them up and transfer the bees at the onset of the rain season. The honey from the flowers of Erica trees and bushes is highly valued locally as an additional nutritious food and as a mean for alternative income. With renewed interest among local communities to protect the Erica forests and moorlands, deforestation rates in these highlands will be reduced.



Fekadu (also known as Abiot) was born and raised in the small village of Dinsho in Bale, since early age he was interested in the EWCP. A close friend of Claudio and his son Max, he joined the team in 1990 as a field assistant, then became field officer, and education and outreach officer. He is North Ethiopia Project Manager since 2016.

Conservation messages travel to more places, in new ways

With contributions from Zerayehu Endalew, Habtamu Mulugeta and Mengistu Birhan

Environmental education is crucial to create awareness in local communities in close contact with, and direct impacts upon, the natural environment where wolves live. EWCP reaches many communities throughout the Ethiopian highlands, disseminating information and involving people in conservation activities. We are very proud of our work but, as when earlier this year we found a wolf den blocked with stones, we are aware that there is still a long way to go and that we cannot relax. These are news from the recent work of the education team:

The Education Team

We welcomed new Education Officers Zerayehu Endalew and Mengistu Birhan into the Bale and Borena teams respectively. In a meeting at EWCP headquarter in Bale,

they met Habtamu Mulugeta, Arsi Education Officer, and Mustafa Dule, Community Outreach Officer in Bale to share experiences and to introduce the newcomers to the EWCP work and to other stakeholders. With renewed energy and ideas, the team has worked tirelessly to pass on the conservation message to many more communities using innovative approaches.

Nature Clubs

Targeting young people in the proximity of wolf populations, EWCP worked in 35 schools across Ethiopia in the last 12 months, teaching and engaging students with lectures, videos and conversations with EWCP staff. The little ones were given drawing kits and produced colourful pictures depicting Ethiopian wildlife, which were displayed in the school compound as flagship species for the country. Working with the schools' Nature Club teachers, children participated of activities that enhanced their knowledge of the environment and its problems, and made them more aware of possible solutions. Some planted trees or "guassa" grasses inside the school compound, useful alternatives to natural sources of firewood and grasses. The guassa only grows in Afroalpine areas and can be used for rope making and handicrafts or to sell in the local markets for the benefit of the Nature Club.

Special events

World Rabies Day is an important occasion to discuss the impact of diseases transmitted from domestic animals to wolves. This year the celebration was in Washa Primary School, one of the communities adjacent to Bale Mountains National Park. Some 700 people gathered for the event, creating opportunities to reach key audiences with our message: *'disease prevention starts with the dog owner, and by vaccinating dogs we also prevent people and livestock from becoming infected, as well as Ethiopian wolves. Let's stop rabies!'*

The annual **Wolf Day** has long been a EWCP traditional celebration that has expanded from Bale to other areas. This year it was celebrated in the Lemuu Galema school in the Arsi Mountains, with sports, poems, quizzes and drama, and the participation of eleven schools. Guests from local government were invited to talk about Ethiopian wolf conservation.

Another way to bring the conservation experience closer to young people are field visits organized by EWCP to the Bale Mountains. This year children from the nearby Arsi Mountains visited EWCP headquarters in Dinsho and the Sanetti Plateau to gain a better understanding of what is going on the ground. We believe this experience will help build their vision for the future of



► Students admire pictures of Ethiopian wolves on this beautiful book, earned as one of the prizes in our traditional Wolf Day.

the natural environment in their homes. Most of them saw Ethiopian wolves for the first time in their life. Unforgettable memories!

Reaching communities, local governments and beyond

Our Outreach Officer Mustafa works tirelessly. This year he focused on communities from 16 kebeles around Bale Mountains to address important threats to the wolves whose solution would require a change in people’s attitudes or behaviours, such as keeping their dogs close to their households (so that they don’t venture into wolf areas) and to vaccinate them. This year, important progress was made in engaging support from local authorities, elders and women to implement a “200 metre rule” to prevent dogs moving away from households. This is an important steps, as the problem of free roaming dogs is persistent and has a high negative impact in their wild relatives.

Another important step this year was a large gathering of people from two local districts with EWCP and Frankfurt Zoological Society (a EWCP partner and active in Bale for many years) to discuss the many serious threats affecting the Bale Mountains National Park, such as wild fires, encroachment and wildlife disease. As a result of the meeting, responsibilities for each stakeholders were discussed and agreed.

Also in cities young people are becoming involved with Ethiopian wolf conservation. This year the students from the International Community School in Addis Ababa organized a charity race to help EWCP, which was represented with a stand distributing leaflets, T-shirts and caps, and talking to the students and their families.

When wolves kill sheep: Evaluating emerging conflicts and solutions

With contributions from Getachew Assefa, Gebeyehu Rskay and Girma Eshete

The coexistence between humans and wild carnivores is not easy. Even Ethiopian wolves, formidable rodent hunters that pose no threat to people, are starting to conflict with pastoralists. As more and more livestock graze in the highland pastures, the wolves’ food resource suffers from the intensive grazing, and cases of wolves killing sheep or goats are on the raise in some places.

We have conducted surveys among local people to learn about the extent of livestock predation and its wider effects in recent years. We found out that, even when still rare, these predation events can be financially costly to the households affected, creating conditions for emerging conflict, as some people, particularly among those directly affected, now have a negative perception of the wolves. Identifying effective and viable mitigation strategies for particular areas has been our aim this year.



Zerayehu and Mengistu joined the education team recently. Zerayehu grew up in Wolega, West Ethiopia, and seven years ago moved to Dinsho, working as Tourism Expert for the district office and later for the Bale Mountains National Park. After his experiences as research assistant studying geladas and the Bale monkey, Mengistu jumped to the opportunity to join the EWCP in Borena this year. Habtamu works with EWCP in Arsi since 2011; he was born locally, close to the wolves and shares his passion for nature with thousands of school children.



A black cow is grazing in a rocky, grassy field. The field is covered with small, grey rocks and patches of green grass. The cow is standing and looking down at the ground.

We detected a conflict hotspot in areas of Simien Mountains National Park, where we are collecting information on actual predation events (in contrast with reports of past predation gathered from interviews) and visited many communities to discuss this issue. We learnt that wolves attack herds grazing in the mountains at day time, and also when they are left unattended at night time in caves (for example during religious holidays).

From the people we also learnt that when wolves attack sheep or goats they focus on the animals that are easier to kill, and that when livestock is grazing in rugged terrain and with dense grass or bushes, it is harder for the shepherds to spot the wolves and protect their herds. In some places the shepherds are getting frustrated and there are rumours, which we could not yet confirm, of people killing wolves.

We decided to hold a meeting in Debarq, at the park headquarters, to address the root cause of livestock depredation with community representatives and park staff. The benefits and limitations of different approaches to mitigate human-wolf conflict were discussed in the light of the information gathered previously. Some ideas emerged that were incorporated as guidelines for livestock owners and the children in charge of guarding the herds. We are producing a simple leaflet in Amharic to help us reach out more communities to reduce livestock losses and to raise awareness of the need to protect the wolves and their livestock.

► When rodent prey is abundant, wolves coexist with livestock peacefully. This however is not the case everywhere and conflicts are emerging. ©ThierryGrobet

Research and capacity building

We build scientific and technical expertise from within the programme and through collaborations, thus contributing to increase capacity for wildlife conservation in Ethiopia.

Students supported by EWCP

New students

Derbe Derksios, from the Ethiopian Wildlife Conservation Authority started this an MSc degree in Zoology in Addis Ababa University, sponsored by EWCP. He completed the first field season for his research project in the Simien Mountains National Park, where he investigates how the wolves' prey is responding to various management interventions in the park, including areas where livestock has been removed.

James Foley started his DPhil at University of Oxford's WildCRU this year. He will use high performance modelling to simulate disease management strategies for Ethiopian wolves and domestic dogs. He will be collecting data on domestic dogs using GPS collars and combining it with historical wolf data to create a large model which can test different vaccination thresholds or strategies.

Students that completed degrees this year -Congratulations!

Girma Eshete, now EWCP Project Leader in Borena, completed his doctoral thesis with Leiden University, in collaboration with the University of Oxford, and supported by EWCP, People's Trust for Endangered Species and a Sydney Byers Scholarship from WCN. His study explored interactions between Ethiopian wolves and people, including livestock predation conflicts and cascading effects of unsustainable resources uses, particularly on the rodent prey. Over the past year he submitted three of his thesis chapters to scientific journals and he will defend his thesis later this year in Leiden.

Gebeyehu Rskay, EWCP Senior Monitoring Officer, completed his Master in 2016 at Bahir Dar University, with support from EWCP and People's Trust for Endangered Species. His study revealed that wolves adapt their behaviour to avoid humans and livestock in Delanta (the smallest wolf population) but when they kill livestock, there is a negative impact on people's perceptions. He also attended the Postgraduate Diploma in International Wildlife Conservation

Practice at the University of Oxford, and presented his wolf research at a student's conference in Cambridge.

Anteneh Tesfaye, from the Forest and Wildlife Development and Protection Authority in Amhara Region, also completed his Master at Bahir Dar University this year. He described and compared the natural resource management systems currently operating within the Borena-Sayint National Park and the proposed extension zone, including the condition of these resources from the user's point of view and with respect to the rodent prey. Anteneh received a EWCP scholarship.

Muktar Abute, EWCP Vet Officer, obtained his BsC from Addis Ababa University, Faculty of Veterinary in Bishoftu this year. For his research project he analysed data from EWCP's vaccination campaigns and from Local Health Centres around the Bale Mountains National Park to assess the impacts that domestic dog vaccinations are having on people, livestock and their dogs.

Ongoing research

Ryan Burke continues progressing with his DPhil at the University of Oxford, in collaboration with EWCP. His research explores how the Afroalpine mammalian community, particularly geladas and rodents, affect the structure of plant communities and ecosystem processes such as nutrient cycling. With Ethiopian collaborators he completed this year a thorough survey of geladas across the northern and central highland of Ethiopia.

Tariku Mekonnen is a PhD student at University of Oslo's Centre for Ecological and Evolutionary Synthesis, is working in Ethiopia in collaboration with the University of Oxford and EWCP. Using radio collars, this year he completed a study of the spatial ecology of African wolves *Canis anthus lupaster*, previously mistaken as golden jackals, living in the vicinity of Ethiopian wolves. He has two papers under review at the moment, one about capture and immobilization of African wolves and the other about African wolf diet, predation on livestock and conflict in the Guassa Mountains of Ethiopia.



Duplicate samples are also shipped to the *Animal & Plant Health Agency* (APHA) in the UK. APHA carries out research on various animal and wildlife diseases including bovine TB, zoonotic and wildlife viruses such as rabies and vector-borne diseases. APHA also acts as an international reference laboratory for a wide range of animal diseases including rabies and canine distemper virus, providing veterinary and scientific consultancy to countries across the world offering confirmatory testing, technical training and standardisation of diagnostic methods. EWCP works closely with Dr Tony Fooks' team at APHA, who assist us with rabies and CDV diagnostics and collaborate in related research.

Climate study in Bale Mountains

Colleagues from the Department of Plant Biology and Biodiversity Management at Addis Ababa University and the Faculty of Geography at the Philipps-Universität Marburg in Germany have started an exciting new initiative as part of their Bale Mountains Research Project. A key scientist in the project is botanist Georg Miehe, who worked in Bale and collaborated with Claudio Sillero and his team in the late 1980's. Their Mountains Exile Hypothesis looks at how humans benefited from and re-shaped African high altitude ecosystems during quaternary climatic changes. In order to achieve this and with support from EWCP staff, several state-of-the-art weather stations have been installed in Bale. Two are located in EWCP field camps, who guarantee their safety. We are looking forward to a strong collaboration and greater insight into high altitude climate resulting from the data collected by these stations.



- ▶ Last year Gebeyehu presented his Ethiopian wolf research during the Student Conference on Conservation Science at the University of Cambridge.
- ▶ Girma will defend his thesis in Leiden in September, entitled: "Ecology of Ethiopian wolf in a changing landscape".

Collaborations

Diagnosis and prevention of diseases

In order to react swiftly to reports of disease in wild and domestic animals in Ethiopian wolf range the EWCP relies wholeheartedly in two partner organizations that have provided amazing support to date. We are extremely grateful for their technical support and provision of diagnostic services at no cost.

The Ethiopian Public Health Institute (EPHI) conducts research on nutrition, traditional medicines, and medical practices as well as on the causes and spread of diseases. Taking over the responsibility from the former Pasteur Institute, EPHI provides referral medical laboratory services relating to the causes, prevention and diagnosis of rabies and other major diseases of public health importance. Dr Asefa Deressa, Senior Researcher at EPHI, and his team test all samples collected by EWCP for rabies in their modern facilities.



▶ weather station.

Recent Publications (2016 - 2017)

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Atickem A, Simeneh G, Bekele A, Mekonnen T, Sillero-Zubiri C, Hill RA and Stenseth NChr. 2017. African wolf diet, predation on livestock and conflict in the Guassa mountains of Ethiopia. *African Journal of Ecology*. doi:10.1111/aje.12399

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Nibret B, Yihune M and Takele B. 2017. Human-wildlife conflict in Choke Mountains, Ethiopia. *International Journal of Biodiversity and Conservation* 9:1-8.

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Šklíba J, Vlasatá T, Lövy M, Hrouzková E, Meheretu Y, Sillero Zubiri C and Šumbera R. 2016. The ecological role of the giant root rat (*Tachyoryctes macrocephalus*) in the Afroalpine ecosystem. *Integrative Zoology*. doi:10.1111/1749-4877.12241

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Theses

Anteneh Tesfaye Mengesha. 2017. Implementation and effectiveness of different management systems upon Afroalpine natural resources: case study in Borena Sayint National Park, South Wollo, Ethiopia. MSc Thesis, Bahir Dar University, Ethiopia.

Gebeyehu Rskay Kassa. 2016. Challenges of carnivore conservation: perception and diet analysis of livestock predation by the Ethiopian wolf (*Canis simensis*) in Delanta, North Wollo. MSc Thesis, Bahir Dar University, Ethiopia.

Gebyehu Rsaky. 2016. Challenges of carnivore conservation: perception of livestock predation versus scat analysis on Ethiopian wolf (*Canis simensis*). Post-Graduate Diploma in International Conservation Practice, University of Oxford, UK.

Girma Eshete Genbere. 2017. Ecology of the Ethiopian wolf (*Canis simensis* Rüppell 1835) in a changing landscape: Human-carnivore interactions in Afroalpine ecosystems of Ethiopia. PhD Thesis, University of Leiden, the Netherlands.

Popular Articles

Biology News, University of Oxford. Issue 6 2016. A wolf in fox's clothing. Written by Claudio Sillero

The Conversation. Battling to save the Ethiopian wolf – Africa's rarest carnivore. Written by Claudio Sillero.

National Geographic. September 2016. Vaccines may save Africa's rarest wolves from extinction. Written by Carrie Arnold.

Wildlife World (PTES). Spring 2016. Issue 9. Ethiopia update. Pp 12-15. Written by Jorgelina Marino.

Wolf Print (UKWCT). Issue 60 Spring 2017. Guardians of the Roof of Africa. Pp 15-17. Written by Jorgelina Marino & Claudio Sillero.

Wolf Print (UKWCT). Issue 57 Spring/Summer 2016. The Ethiopian Wolf Conservation Programme. Pp 20-23. Written by Lara and Jonathan Palmer.

For a complete list of publications see www.ethiopianwolf.org/publications.shtml

News

EWCP supports expedition to survey lions living in remote corner of Ethiopia

Gebeyehu Rskay, EWCP Senior Monitoring Officer in North Ethiopia, was part of an expedition to the remote Alatash National Park that confirmed the presence of lions on the Ethiopia-Sudan border. Alatash, and its counterpart Dinder National Park in the Sudan border, are a huge remote region that few people visit. Though lions are thought to have been present there for centuries, and locals knew of their existence in the area, the IUCN only considered Alatash as possible lion range. Dr Hans Bauer, a lion conservationist at Oxford University's Wildlife Conservation Research Unit (WildCRU) working in Ethiopia, and his team obtained camera trap images of lions and identified lion tracks. With support from the Born Free Foundation Hans has recently returned to Alatash-Dinder to run a more extensive survey there.

New vehicle for the North Ethiopia Team

Traveling in rough tracks and off road imposes a heavy toll on EWCP vehicles. Having road-worthy vehicles remains one of our greatest challenges. Thanks to a grant from Fondation Segré we recently purchased a truck to work in North Ethiopia. Based at our office in Bahir Dar, and driven by Yehune Adugna, it will provide support to field teams in Borena Saynt and Simien.



Truck demolishes EWCP store in Dinsho

In December 2015 a freak accident resulted in extensive material damage to EWCP. A loaded truck took a wrong turn and ended going fast along the steep driveway to the EWCP HQ. The driver lost control and the truck came off the track flattening one of our largest stores, destroying it completely. Fortunately no one got hurt. But the incident caused extensive damage to saddles, horse tackle, camping and veterinary equipment. The insurance settlement finally came through late March 2017 and we started immediately to rebuild the store.



UK Wolf Conservation Trust

Founded in 1995 by Roger Palmer the UKWCT www.ukwct.org.uk has been supporting our work in Ethiopia for over a decade. Trustees Lara and Jonathan Palmer visited the project last year. Read more in the features published in Wolf Print, their magazine.

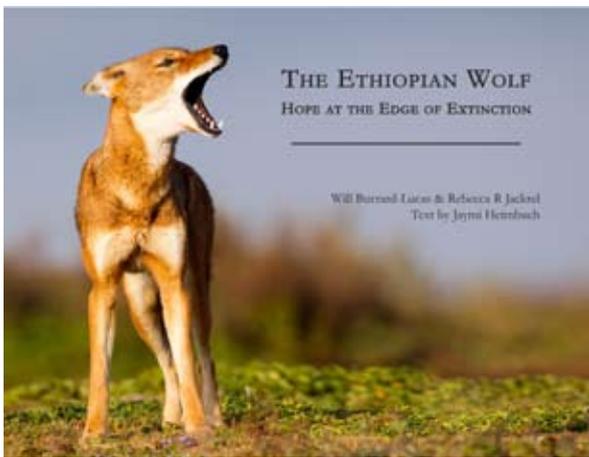
The Ethiopian wolf: Hope at the edge of extinction

By Will Burrard-Lucas and Rebecca R Jackrel,
text by Jaymi Heimbuch

This collection of stunning photographs accompanied by an insightful text is a suitable tribute from the late Rebecca Jackrel to the animals and landscape she so loved.

Published by Lobelia Press it is a partnership between the photographers and the Ethiopian Wolf Conservation Programme, with all profits from every book sold donated to EWCP. Lobelia Press has also donated several dozen books to be distributed in Ethiopia among supporters, schools, senior government officers and tourist lodges to promote our work.

Order now! www.ethiopianwolfproject.com/book



The Ethiopian Wolf: Hope at the Edge of Extinction
(Lobelia Press. Hardcover, 152 pages).

“One Health” initiative

The One Health Initiative www.onehealthinitiative.com is a global effort that explores efforts to address the links between animal health, human health, and our environment. The work that EWCP does to combat rabies through dog vaccination is a good example of this holistic approach to health.

EWCP is part of the One Health Partnership established to combat rabies in Ethiopia. Led by Dr Wondwossen A. Gebreyes at College of Veterinary Medicine at Ohio State University the RIGHT Partnership (Rabies and Infections of Global Health in the Tropics) brings together the Ethiopian Public Health Institute (EPHI), the University of Gondar and the US Center for Disease Control and Prevention (CDC). RIGHT is currently implementing a One Health model project for the prevention and control of rabies in North Gondar.



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Project Administration

The Ethiopian Wolf Conservation Programme (EWCP) is a partnership between the University of Oxford's Wildlife Conservation Research Unit (WildCRU) and the Born Free Foundation, which provides an ideal platform from which to address wildlife conservation. The EWCP operates under the auspices of the IUCN SSC Canid Specialist Group, and collaborates with the University of Addis Ababa, Bahir Dar, Debre Zeit, Gonder, and Wondo Genet in Ethiopia, and Universities of Glasgow, Leiden, South Bohemia and the Zoological Society of London, among others.

EWCP operates in Ethiopia under Memoranda of Understanding agreements between the WildCRU and the Ethiopian Wildlife Conservation Authority (EWCA) at a federal level, and the Oromia Forest and Wildlife Enterprise (OFWE) and Amhara Culture, Tourism and Parks Development Bureau at a regional level. In addition, EWCP works closely with the Frankfurt Zoological Society (FZS) and the Born Free Foundation Ethiopia (BFFE). EWCP has long established and excellent working relationships with all these organisations. In addition, the Programme seeks the support and cooperation of local authorities for all field activities in all areas.

EWCP has been chiefly funded by the Born Free Foundation since its inception in 1995, with generous donations from the Wildlife Conservation Network (WCN) since 2002 and ongoing support from FZS.

Lifetime Donations

Our Donors

EWCP is deeply grateful for the support it has received over the programme's life time. We are thankful for every gift, since each contributes to the future of the Ethiopian wolf.

Here we list our major donors since the Programme began:

Lifetime donations - Founder's Circle: \$100,000 and above

Founder's

The Born Free Foundation	Fondation Segré
Wildlife Conservation Network	Richard Arthur
The Tapeats Fund	African Wildlife Foundation
CGMK Foundation	The Critical Ecosystem Partnership Fund

Lifetime donations - Founder's Circle: \$50,000 - \$100,000

Born Free USA	Kris and Peter Norvig
Disney Worldwide Conservation Fund	The Lawrence Bowman Family Foundation
Frankfurt Zoological Society	UK Wolf Conservation Trust
J.R.S. Biodiversity Foundation	US Fish & Wildlife Service

Lifetime donations - Conservation Visionaries - \$20,000 - \$49,999

Visionaries

Anonymous	Peter Diethelm
Akiko Yamazaki and Jerry Yang	Peter Kistler and Rebekka Blumer
The Beagle Charitable Foundation	Richard Scheller and Susan McConnell
Environmental Systems Research (ESRI)	Saint Louis Zoo
Giant Steps Foundation	Silverback Films
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Rebecca Jackrel	Viking Films (Germany)
Kent and Gloria Marshall	Win-K Corporation (Japan)
Merck MSD Animal Health	Whitley Fund for Nature
Nancy Denison	Zoological Society London
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Donations 2014-2017

The following individuals and organizations contributed financially to the mission of EWCP in the last three years to 31st March 2017

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Benefactors

Charlotte and Tim Shipton
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Sue Rooks
University of South Bohemia
Utah's Hogle Zoo
Wolf Watchers

We thank all our anonymous donors, and those that gave less than \$500 over the last three years.

Other donors that have given generously in the past include:

BBC Wildlife Conservation Fund, Bern Thies Foundation, Bosack & Kruger Foundation, CEPA - Conservation des Espèces et des Populations Animales, Conservation International, Ethiopian Wildlife & Natural History Society, IBREAM, IDEA WILD, IFMP-GTZ project in Adaba-Dodola, International Fund for Animal Welfare, John Aspinall Foundation, Journeys by Design, Kuoni Travel, Morris Animal Foundation, National Geographic Film & Television, Rock & Blues, Stiftung Artenschutz, Stephen Gold, The Wellcome Trust, Wildlife Conservation Society, World Society for the Protection of Animals, Zoologische Gesellschaft für Arten- und Population.

The EWCP Team

Leadership & Coordination

Claudio Sillero, Founder & Director
 Eric Bedin, Field Director
 Jorgelina Marino, Science Director
 Edriss Ebu, Programme Manager South
 Fekadu Lema, Programme Manager North
 Girma Eshete, Borena Project Leader
 Getachew Assefa, Simien Project Leader
 Umer Ibrahim Junda, Arsi project Leader

Outreach & Education

Mustafa Dule, Community Liaison Officer, Bale
 Zerayehu Endalew, Education Officer, Bale
 Habtamu Mulugeta, Education Officer, Arsi
 Asheber Anbesa, Community Liaison Officer, Arsi
 Mengistu Birhan Education Officer, South Wollo

Animal Health

Muktar Abute, Veterinary Officer, Bale
 Kebede Wolde, Veterinary Assistant, Bale
 Abubakkir Hussein, Veterinary Assistant, Bale
 Kassim Biftu, Stable Manager, Bale

Monitors & Ambassadors

Alo Hussein, Senior Monitoring Officer, Bale
 Gebeyehu Rskay, Senior Monitoring Officer, North Ethiopia
 Sultan Washo, Wolf Monitor, Bale

Ibrahim Muhammed, Wolf Monitor, Bale
 Sultan Kedir, Wolf Monitor, Bale
 Antennah Girma, Wolf Monitor, Bale
 Seid Naasiroo, Wolf Monitor, Bale
 Hamza Mama, Wolf monitor, Bale
 Kedir Samune, Wolf Monitor, Bale
 Andualem Ambachew, Wolf Monitor, Simien
 Jejaw Mequanenent, Wolf Monitor, Simien
 Talageta Woldeeslassie, Menz

Support

Fikre Getachew, Administration Assistant
 Wegayehu Wakayo, Research Building Keeper
 Yehune Adugna, Logistics North Ethiopia
 Umer Kassim, Research Building Guard
 Nuru Burka, Research Building Guard
 Hussein Wakayo, Sodota Guard
 Adishu Sheyemo, Sodota Guard
 Hussein Abdulmanan, Sanetti Guard
 Gobe Ahhamed, Sanetti Guard
 Ibrahim Nure, Sanetti Guard
 Bahmud Haji Tamam, Sanetti Guard
 Abubakkir Hassan, Horse Guard
 Aklilu Getahun, Horse Guard
 Umer Wally, Sports/Horse Guard
 Awol Abubakkir, Sports Guard
 Umer Dalu, Sports Guard

Wolf Ambassadors

Mebrat Mulu, *Beyeda Woreda, Matba, Simien*
 Melkamu Signa, *Beyeda Woreda, Adilemlem, Simien*
 Ayele Adino, *Gidan Woreda, Yibar, North Wollo*
 Esubalew Milashu, *Gubalaftu Woreda, North Wollo*
 Tesfa Milashu, *Gidan Woreda, Aboi Gara, North Wollo*
 Zewdo Agazu, *Gubalaftu Woreda, North Wollo*
 Abebaw Abiya, *Belechuma Woreda, South Wollo*
 Limenew Arega, *Legambo Woreda, South Wollo*
 Tilahun Wendmenhe, *Delanta/Wogeltena Woreda, South Wollo*
 Wubye Deresse, *Mehal Sayint Woreda, South Wollo*
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 Dejene Hirpa, *Bilbilo Woreda, Arsi*
 Fayisa Gudata, *Lemu Woreda, Arsi*
 Abdul Jeber, *Hetosa Woreda, Arsi*



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Board of Advisors

Ato Kumara Wakjira, Director General, EWCA

Ato Kahsay Gebretensae, Wildlife Research & Monitoring Directorate, EWCA

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Prof David Macdonald, Director, WildCRU, University of Oxford

Dr Zelealem Tefera, Country Representative, Born Free Foundation Ethiopia

Mr Will Travers, President, Born Free Foundation

Prof Rosie Woodroffe, IUCN SSC Canid Specialist Group

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www.ethiopianwolf.org

Why Choose EWCP

The Ethiopian Wolf Conservation Programme is a WildCRU (University of Oxford) endeavour to help protect these endangered wolves and the Afroalpine habitats they inhabit. It works under an agreement with Ethiopia's Wildlife Conservation Authority and Regional Governments, with the aegis of the IUCN SSC Canid Specialist Group and Wildlife Health Working Group.

Ethiopian wolves are only found in a handful of scattered mountains in Ethiopia are threatened by loss of highland habitats, disease and persecution. The most threatened carnivore in Africa, and the world's rarest canid, these long-legged charismatic animals need your help.

Informed by sound research, the Ethiopian Wolf Conservation Programme targets the greatest threats to the survival of Ethiopian wolves and their Afroalpine habitat. We promote this charismatic species as a flagship, thereby protecting many of the Ethiopia's highland endemics and natural resources.

If you or your organisation is interested in helping to fund our activities contact us. You can donate to EWCP specifically through the following organisations:

Contact Us

Ethiopian Wolf Conservation Programme

PO Box 215, Robe, Bale, Ethiopia

Tel: +251 221 190923

info@ethiopianwolf.org

www.ethiopianwolf.org

 @Kykebero

 www.facebook.com/ewolves

Wildlife Conservation Research Unit

Tubney House, Tubney OX13 5QL, UK

Tel: +44 1865 611113

www.wildcru.org

How to Donate

In the United States

Online or cheque donations (tax deductible) may be sent via:
www.wildnet.org/donate?id=12

Wildlife Conservation Network / EWCP

209 Mississippi Street

San Francisco, CA 94107 USA

Tel: +1 415 202 6380

donate@wildnet.org

Tax Exempt ID #30-0108469

Please specify the donation is for 'Ethiopian wolves' in the 'Designation' field.

In the United Kingdom

Online or cheque donations may be sent via:
<http://www.bornfree.org.uk/give/>

The Born Free Foundation

Broadlands Business Campus

Langhurstwood Road

Horsham RH12 4QP, UK

Tel: +44 1403 240170

www.bornfree.org.uk/give/

Reg. Charity No 1070906. If you give through the Gift Aid Scheme we receive an extra amount deducted from your taxes at no extra cost to you (UK tax payers only).

We can also receive donations via Paypal

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No donation is too small!



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We work to save Ethiopian wolves from extinction and to protect the highlands that are their home. By protecting the Ethiopian wolf we protect many endemic species and natural resources from which millions of Ethiopians benefit.



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