

Chapter 10

An Action Plan for the Ethiopian Wolf

Introduction

The previous chapters have described what action is needed to safeguard the Ethiopian wolf from extinction. The selection of priorities, and projects proposed to address them, has developed from those chapters. Here we suggest a programme which emphasises the need for immediate and pragmatic conservation action. At the core of our approach is the conviction that effective conservation must embrace four fields of endeavour. Referred to collectively as the Conservation Quartet, these are research, education, community involvement and implementation. Clearly, many conservation problems cannot be solved until they are understood, hence the need for research. The resulting understanding is the basis for education, and is unlikely to lead to effective use unless it involves the local community. Finally, the major task is to blend the results of research, and the enthusiasm cultivated by education and community involvement to produce effective implementation of a workable plan. Our suggestions are intended to create a framework for the operation of this Conservation Quartet to save the Ethiopian wolf.



Primary Objectives

The main goal of this action plan is to assist with the recovery of Ethiopian wolf populations and conserve their habitat in order to achieve the minimum population level required to ensure their long-term survival.

The objectives of this recovery plan for the Ethiopian wolf are:

- To secure the conservation of areas of afroalpine ecosystem, their biodiversity and ecological processes.
- To address, and counteract, the main threats to the survival of Ethiopian wolves, such as those arising from coexistence with domestic dogs, human persecution and fragmented populations.
- To preserve at least 90% of the existing genetic diversity of the species for 100 years.
- To establish a Nucleus I captive breeding population, preferably in Ethiopia, required to maintain genetic variability and supply individuals for meta-population management.

Primary Assumptions

Thanks to the studies carried out since 1988 we now know enough about this species to focus conservation efforts effectively. Several assertions concerning the Ethiopian wolf's conservation in the wild can be made with confidence:

1. The species will only survive if its needs, and those of the local people inhabiting the afroalpine ecosystem, are brought into harmony.
2. The Ethiopian wolf is widely accepted by the Ethiopian people as a symbol of the country's unique fauna. In recent years the conservation needs of the species have attracted a high level of public concern, both nationally and internationally. This should be capitalized on as a vehicle for comprehensive afroalpine conservation programmes. The conservation of the wolves and of their afroalpine habitats are inseparable.
3. The survival of the Ethiopian wolf is closely linked to the existence (or establishment) of well-managed, protected areas that have the support of the local

human populations. Such protected areas, both existing or proposed, should ideally be located so as to provide protection to other threatened/endemic mammals, such as the mountain nyala, giant molerat, walia ibex, numerous endemic birds (notably the northern wattled crane, white-collared pigeon and blue-winged goose) and rare plants like giant lobelias.

4. Public education campaigns will be needed in the regions where the Ethiopian wolf occurs, stressing the uniqueness of the species and its importance within the afroalpine ecosystem.
5. Due to small population sizes and the nature of the endangering factors (hybridization and disease) threatening the Ethiopian wolf it will be necessary to manage the species (both in the wild and captivity) in perpetuity.
6. A captive breeding population is a vital part of the population management approach. This will provide an additional wolf population free from domestic dog hybridization. It will serve as a backup in case wild populations become extinct, and eventually provide stock for metapopulation management and reintroduction programmes.

***In Situ* or *Ex Situ* Conservation?**

Saving the Ethiopian wolf means saving the species in its natural habitat, with a full range of genetic variation. This goal has two main components: saving the Ethiopian wolf's habitat and saving the species' gene pool. It might be possible to save the species by protecting it and its habitat together through the application of standard *in situ* conservation procedures, such as improvement of protected area management (Chapter 7), increased wolf range patrols, population monitoring and community education. Of particular importance for the Ethiopian wolf would be the control of sympatric domestic dogs to curtail the risk of hybridization and disease transmission (Chapters 4 and 5). However, in view of the very low number of wolves remaining, the small size and isolation of their populations and the lack of long-term security over much of the species' distribution, there is a strong possibility that the Ethiopian wolves cannot be afforded sufficient protection to allow their numbers to recover in the wild. *Ex situ* conservation in the form of a limited captive breeding population therefore may need to be contemplated as well (Chapter 8). In this context, the first preference is specialized *in situ* facilities in Ethiopia; if funding is not available sufficiently swiftly to implement this, then the second option would be *ex situ* facilities elsewhere. For

management purposes, all remaining populations, including the proposed captive one, should be treated as a single metapopulation (Chapter 9).

The Action Plan Summary

A conservation programme for Ethiopian wolf survival, or the Ethiopian Wolf Recovery Programme (EWRP), is presented in three sections, each dealt with in the previous chapters, namely: (1) ecosystem conservation; (2) population conservation; and (3) metapopulation conservation. A fourth (4) part deals with the organizational aspects of the programme. A step-down outline of action needed in each of these areas is listed below, followed by specific projects required to advance these goals.

1. Actions that Focus on Conserving the Afroalpine Ecosystem

1.1 Encourage Support and Assist with Management of Bale Mountains National Park.

- 1.1.1 Seek actively official ratification that BMNP is gazetted and request its listing as a UNESCO World Heritage Site.
- 1.1.2 Attract funding for development of BMNP infrastructure.
- 1.1.3 Extend management and staff presence to the afroalpine sectors of BMNP, including the construction of outposts in Sanetti Plateau and Web Valley.
- 1.1.4 Establish a system of staffed outposts and regular park patrols covering all afroalpine areas of BMNP.
- 1.1.5 Work with local communities and local government to foster coexistence between BMNP staff and park residents. Invite residents to participate in development of conservation programmes.
- 1.1.6 Consider the feasibility of a zoning system within BMNP, with a core area excluding all human settlement or activity, and buffer areas permitting limited human settlement and exploitation activities.

1.2 Encourage Support and Assist with Management of Simien Mountains National Park

- 1.2.1 Promote the expansion of SMNP boundaries or a buffer zone to include remaining afroalpine habitats in the Simien range.

- 1.2.2 Refurbish infrastructure and staff presence throughout SMNP.
- 1.2.3 Encourage resumption of park management including staffed outposts and regular park patrols.
- 1.2.4 Liaise with organizations currently involved with conservation and rural development programmes in SMNP.

1.3 Promote Conservation and Integrated Management of Afroalpine Habitats Elsewhere in Ethiopia

- 1.3.1 Establish a regional conservation area in Menz, northern Shoa.
- 1.3.2 Explore potential for the creation of regional conservation areas in Arsi, Gojjam and Wollo.

1.4 Promote the Ethiopian Wolf as a Flagship Species for Ethiopian Fauna and the Afroalpine Ecosystem

1.5 Contribute Towards the Advancement of a National Syllabus for Wildlife Conservation Education in Ethiopia's Primary and Secondary Schools, Assuring Appropriate Coverage of Afroalpine Conservation Issues.

2.Actions Needed for the Recovery of Ethiopian Wolf Populations *In Situ*

2.1 Change IUCN Category of Threatened to Critically Endangered

2.2 Confirm the Present Status and Distribution of Ethiopian wolf populations

- 2.2.1 Design a systematic approach for compiling data on population, habitat availability, prey abundance and human/livestock conflict on all wolf populations. Develop a quantitative wolf population evaluation technique (Appendix 3).
- 2.2.2 Designate EWCO personnel in SMNP to collate and forward wolf sighting reports from Simien.
- 2.2.3 Identify local government personnel in Shoa to collate and forward wolf sighting reports from Menz.
- 2.2.4 Conduct wolf surveys in other areas of consistent wolf reports to verify their relative abundance and status (*e.g.* Arsi Mountains, West Bale Mountains, Mount Guna).
- 2.2.5 Conduct wolf surveys in other areas of historical range (*e.g.* Wollo and Gojjam) to verify the

presence of wolf populations and determine habitat available.

- 2.2.6 Estimate habitat available, current wolf population and wolf carrying capacity for each area.
- 2.2.7 Determine the taxonomic status of Ethiopian wolf sub-species and the degree of genetic differentiation between populations.
- 2.2.8 Determine the degree of genetic variability within populations (inbreeding), and the extent of wolf hybridization with domestic dogs.

2.3 Initiate a Programme of Ethiopian Wolf Management in BMNP

- 2.3.1 Monitor BMNP wolf demography, reproductive success and population trends from observation of known wolf packs.
- 2.3.2 Monitor human activity within wolf range.
- 2.3.3 Determine degree of interaction and conflict between wolves, domestic dogs and wild carnivores.
- 2.3.4 Collect information on the health status and causes of wolf mortality.
- 2.3.5 Assess the prevalence of canid pathogens in the wolf population, particularly rabies and canine distemper, and the role of sympatric domestic dogs in their epidemiology.
- 2.3.6 Test the effectiveness, feasibility and acceptability of control and/or vaccination of domestic dogs as a management strategy.
- 2.3.7 Investigate the feasibility of preventing disease transmission through vaccination of wolves and other wild carnivores.
- 2.3.8 Quantify the extent of wolf-dog hybridization, and assess levels of population genetic variability and rate of variability loss.
- 2.3.9 Carry out a dog vaccination campaign in BMNP and surrounding areas.
- 2.3.10 Implement a programme of domestic dog control in BMNP.
- 2.3.11 Expand demographic and disease monitoring and management practices implemented in BMNP to other wolf populations.

2.4 Develop and Initiate Education and Development Programmes to Protect Ethiopian Wolves

- 2.4.1 Involve BMNP residents in the protection of afroalpine wildlife through a community education and extension programme.
- 2.4.2 Design, produce and deploy road-signs on roads and tracks crossing Ethiopian wolf range.
- 2.4.3 Produce and distribute educational materials on

afroalpine wildlife and its conservation.

- 2.4.4 Provide factual information on Ethiopian wolf biology and conservation requirements to government organizations and interested groups.
- 2.4.5 Publish data available in relevant technical journals, wildlife conservation magazines and other popular written media to promote the plight of the species.
- 2.4.6 Provide film, graphic and written information on Ethiopian wolves to television and broadcast media in Ethiopia.

3. Actions Required for Metapopulation Conservation for the Ethiopian Wolf

3.1 Devise a Long-term Programme for Metapopulation Conservation

- 3.1.1 Investigate the role of population genetics and small population sizes in the management of the Ethiopian wolf leading to a Population and Habitat Viability Analysis for the species.
- 3.1.2 Implement a plan of active metapopulation management.

3.2 Institute a Global Ethiopian Wolf Breeding Programme to Safeguard the Species' Genetic Integrity as well as Providing Animals for Eventual Reintroduction

- 3.2.1 Identify and contact reputable captive breeding institutions with an interest and know-how for breeding Ethiopian wolves.
- 3.2.2 Facilitate an agreement between the government of Ethiopia and breeding institutions to regulate future breeding and movement of animals between breeding partners.



- 3.2.3 Monitor the time-scales on which *in situ* and, if necessary, *ex situ* captive breeding can be initiated, to insure that no time is lost.

3.3 Create a Captive Breeding Facility in Ethiopia

- 3.3.1 Identify sponsors and collaboration with international breeding facilities.
- 3.3.2 Determine administrative and legal position of facility.
- 3.3.3 Select suitable site for facility and secure land and planning permission.
- 3.3.4 Contract construction of breeding centre.
- 3.3.5 Develop structure for managing the facility.

3.4 Develop and Maintain Captive-breeding Capability to Accommodate a Nucleus I Captive Programme

- 3.4.1 Determine source and number of initial founders required.
- 3.4.2 List captive facilities and space available and prepare the space for first breeding nucleus. Ideally the Ethiopian facility would be ready in time for this, otherwise overseas options will have to be explored.
- 3.4.3 Prepare a detailed plan for the capture, holding, transport and breeding of wolves.
- 3.4.4 Build holding pen in BMNP.

3.5 Plan and Carry Out Limited Restocking of Existing Populations to Boost Genetic Viability

- 3.5.1 Determine population for reintroduction and number and source (wild or captive) of reintroduced animals.
- 3.5.2 Construct necessary acclimation pens in selected area.
- 3.5.3 Monitor the survival, spatial use and interaction of released animals with resident wolves.
- 3.5.4 Assess success of reintroduction.

3.6 Evaluate Potential for Eventual Reintroduction to Areas within Historical Range where now Extirpated

- 3.6.1 Identify potential reintroduction sites.
- 3.6.2 Examine site for essential biological parameters (prey density, habitat types, competition) and socio-economic factors (human density, husbandry practices, domestic dogs, proximity to large settlements).
- 3.6.3 Measure potential public response to a wolf reintroduction.
- 3.6.4 Conduct public meetings and evaluate public concern about the project.

- 3.6.5 Decide nature of reintroduction (hard vs soft; captive-bred vs wild-bred), number, age and sex of founders.
- 3.6.6 Construct necessary acclimation pens.
- 3.6.7 Introduce and acclimatise wolves to pen for settling period and release.
- 3.6.8 Monitor the survival, spatial use and reproduction success of released wolves.
- 3.6.9 Assess success of reintroduction.

3.7 Develop a Strategy for the Cryogenic Preservation of Ethiopian Wolf Sperm and Embryo Banking

- 3.7.1 Develop protocols for collection of semen from wild male wolves.
- 3.7.2 Liaise with a research organization with capabilities to evaluate suitability of techniques and to carry out pilot project.

4. Coordination of the Ethiopian Wolf Recovery Programme

4.1 Full-time Recovery Programme Coordinator

4.2 Designate and Maintain an Ethiopian Wolf Recovery Team

4.3 Set up a Consortium of Donor Agencies

List of Conservation Projects Needed

A list of projects considered as priorities for Ethiopian wolf conservation over the coming decade are presented here in summary form. They serve simply as broad guidelines for eventual implementation of various components of the EWRP – we do not intend this list to be considered as a rigid structure for either funding or implementation. The different projects suggested here provide different levels of detail, that will almost certainly need to be adapted to the funds that become available. We offer our judgement of project priority, a category on the nature of the project, a link to one or various tasks in the Action Plan Summary, a categorization of approximate budget and a time frame:

A priority rank is assigned to each proposed project as follow:

P1. Priority 1. An action that must be taken to prevent extinction or to prevent irreversible decline (or

loss of variability) in the foreseeable future.

P2. Priority 2. An action that must be taken to prevent a significant decline in numbers or habitat quality or some other significant negative impact short of extinction.

P3. Priority 3. All other actions necessary to meet the recovery objective.

Proposed actions are categorized as:

- A** Administration
- C** Captive breeding
- E** Education
- F** Facilitation (liaison/agreements)
- L** Enforcement
- M** Management
- R** Research

Acronyms used in the list of proposed projects:

- EWRP** Ethiopian Wolf Recovery Programme
- EWCO** Ethiopian Wildlife Conservation Organization
- RA** Regional Authorities
- BMNP** Bale Mountains National Park
- CSG** IUCN/SSC Canid Specialist Group
- CBSG** IUCN/SSC Conservation Breeding Specialist Group
- VSG** IUCN/SSC Veterinary Specialist Group

Budgetary needs are considered, but the cost information provided here is for planning purposes only. This aspect of the action plan will be refined as funding or management constraints dictate. Separate funding efforts will address different projects, although central coordination will lie with the EWRP Coordinator in consultation with EWCO and the consortium of donors. Projects are categorized as follows in terms of approximate annual budget (all figures in 1996 US \$):

- I.** \$ 10,000 or less.
- II.** \$ 10,000 – \$ 20,000
- III.** \$ 20,000 – \$ 50,000
- IV.** Over \$ 50,000
- ?** Not known

Establishment and initiation of some projects is dependent on the completion and/or results of others. Negotiations and planning for captive breeding related projects, involving EWCO, breeding partners and the EWRP Team may involve considerable time and effort. Reintroduction projects remain a possibility for the future but their budget, implementation and tentative dates cannot be anticipated and are beyond the scope of this plan.

There are two categories of projects included in the Action Plan. The first consists of existing or proposed

projects which already have received varying proportions of their required funding. These projects are identified by an asterisk *. A contact address is provided. The second category of projects is those proposed by this Action Plan. These projects will need detailed proposals, funding, and workers. Donors and interested parties should contact the Canid Specialist Group directly for details, through the following personnel:

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Afroalpine Ecosystem Conservation

1. Promote Support and Funding for Established Afroalpine Conservation Areas

Objectives: Ensure long-term conservation of the afroalpine ecosystem in BMNP and SMNP; promote conservation and research projects; assist EWCO in obtaining additional funding to support protected areas infrastructure.

Background: The Ethiopian afroalpine range is a unique reservoir of biodiversity and endemism. It is also of climatological and water-cycle importance to human activities beyond the range. There are two existing protected areas: BMNP and SMNP, established with the priority of conserving biological processes, diversity of habitats and all species. Detailed management plans have been produced to guide their enforce-

ment (Hillman 1986, Hurni 1986). Overall, a large proportion of afroalpine habitats in Ethiopia have protected status. However, current management is insufficient and stops short of achieving minimum management objectives (Chapter 7). Current support includes a UNESCO emergency grant to SMNP for park rehabilitation, support from UNDCF and assistance from Pro-Simen Fund (Switzerland) and WWF-International.

Activities:

- Promote afroalpine habitat conservation by providing incentives for the development of conservation and research projects in both protected areas.
- Seek additional funding to implement management recommendations provided for each park by existing management plans.
- Liaise with other conservation and community projects to seek alternative sources of income for local people and reduce negative effects on protected areas.
- Lobby Ethiopian authorities and national and international organizations for the following causes: (a) official gazettement of BMNP; (b) listing of BMNP as a UNESCO World Heritage Site; (c) inclusion of additional afroalpine habitats in the Simien range (embracing Bwahit, Silki and Ras Dejen areas) into SMNP or adjoining protected zone.

Output: Assist EWCO by promoting afroalpine conservation activities and lobbying for the implementation of existing recommendations.

Use of output: Upgrade protected areas legal status; lobby and fund raising; improvement of management; increase local employment.

Priority: P1

Category: A & F

Links: 1.1.1, 1.1.2, 1.2.1, 1.2.2

Annual budget: IV

Time frame: long-term

2. Strengthen Management of Conservation Areas

Objectives: Improve wildlife conservation in SMNP and BMNP, including relationship with local communities and effective park surveillance.

Background: Both national parks have existed for a long time. However, current management is restricted to only a fraction of their total areas. Furthermore, past management practices in both parks have generated

conflicts between park staff and local villagers living in the park or using its resources (Chapter 7).

Activities:

- Encourage authorities to establish a system of regular patrolling by park scouts, covering all afroalpine areas in both parks. These patrols should monitor wildlife populations and enforce park regulations concerning resource use (e.g. firewood and thatch grass extraction, grazing).
- Increase the number of field staff, preferably recruiting scouts from the local community.
- Work with local communities and other conservation and development projects to evolve a pattern of coexistence between park staff and residents.
- Consider the feasibility of a zoning system within BMNP, with a core area excluding human habitation and/or activity and buffer areas permitting limited human activities (e.g. grazing, use of mineral springs, firewood and thatch grass collection).
- Similar approach in SMNP, incorporating additional mountain ranges under protection.

Output: Assist EWCO and regional governments with the management of protected afroalpine areas; encourage recovery of existing infrastructure and improvement of management practices.

Use of output: Enhance wildlife conservation inside protected areas; mitigate the conflict existing between the parks and the local people; create local employment.

Priority: P

Category: E, F, L & M

Links: 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.2.3, 1.2.4

Annual budget: III–IV

Time frame: long-term

3. Promote Conservation of Afroalpine Habitats Outside Existing Conservation Areas *

Objectives: Help to develop and manage an additional afroalpine conservation area in Menz, North Shoa, incorporating land use practices compatible with wildlife conservation.

Background: The afroalpine range in Ethiopia is fragmented, resembling small islands with little or no biotic exchange between them. While two national parks protect this ecosystem additional areas are required to safeguard afroalpine biodiversity. These areas could be multi-purpose protected areas, involving controlled ex-

tractive practices, such as harvesting thatch grass, collection of firewood and grazing. A system of this kind already operates in the Gwassa community management scheme in Menz. The Gwassa Biodiversity Project, funded by Darwin Initiative, started in 1996 and will facilitate a system of sustain-able resource utilization, including regulated grazing, collection of grass, wood fuel and building materials and eco-tourism.

Activities:

- Gwassa Biodiversity Project in Menz working with the local community to manage the afroalpine range sustainably. Realize potential for local weekend tourism.
- Explore potential for the creation of additional regional conservation areas in Arsi, Gojjam and Wollo.
- Encourage Regional governments to establish those small conservation areas.
- Work with local communities and other conservation and community development projects to achieve coexistence between wildlife and local resident interests.

Output: Assistance with wildlife surveys and protected area planning; lobby regional governments to set up new protected areas for afroalpine habitats and implement simple management practices.

Use of output: Improve conservation of afroalpine habitats and wildlife outside protected areas; facilitate sustainable use of natural resources.

Priority: P2

Category: F, M & R

Links: 1.3.1, 1.3.2

Annual budget: IV

Time frame: ongoing, 3 years

Contact: Claire Bensham, Conservation and Consultancy, Zoological Society of London, Regent's Park, London, NW1 4RY, UK.

4. Reconciling Local Needs and Biodiversity Conservation

Objectives: To understand better the mechanisms of Ethiopia's montane ecosystems and to develop sustainable strategies for the management of threatened resources; to reconcile human needs and conservation of biological resources.

Background: The need to manage ecosystems rather than individual populations of endangered species is widely accepted. However, not enough is known of

African montane ecosystems to manage them appropriately. There is a need for research on ecosystem processes as well as the socio-political and economic factors which influence exploitation and conservation of natural resources. Resulting recommendations would make the economic value of the area more evident to local people and policy-makers.

Activities:

- Interdisciplinary practical research in the Bale Mountains needed to identify critical ecological features of the system, involving biologists, modellers, economists and social scientists.
- Identify mechanisms that could enhance the sustainability of the Bale Mountains through an Integrated Protected Area system.

Output: A multifaceted appraisal of the ecosystem and human ecology of the area; recommendations on how local people and conservation areas can benefit and be supported *in situ*; development of a model to enhance sustainable management and development in Bale Mountains.

Use of output: Resolution of conflicts which arise out of uncertainty about the functioning of fragile ecosystems and their use as resources; sustainable management of Bale Mountains montane ecosystems; generate among the people an interest in the protection and conservation of the protected area through a community approach; potential application of model elsewhere.

Priority: P3

Category: E, M & R

Links: 1.1.1, 1.1.2

Annual budget: IV

Time frame: 3–5 years

Contact: Project proposed by a consortium of academic institutions coordinated by Professor Nils Chr. Stenseth, Department of Biology, Faculty of Maths and Natural Sciences, University of Oslo, P.O.Box 1050 Blindern, N-0316 Oslo, Norway

5. Establish Ethiopian Wolves as Flagship Species for the Afroalpine Ecosystem

Objectives: Use the Ethiopian wolf as a flagship to develop interest in, and improve upon, wildlife conservation practices throughout the afroalpine ecosystem.

Background: The term ‘flagship species’ is used to describe an animal that stands for or promotes conservation in a general or regional sense. The Ethiopian wolf has tremendous potential as a species around

which to stimulate conservation interest and action in Ethiopia. It fulfils the three proposed criteria for a flagship: geographical location, ecological role and the potential for attracting local support. A high profile for wolf conservation will help conserve the afroalpine habitats with the wolves and other endangered wildlife benefiting from it.

Activities:

- Conservation projects should focus attention on this species by the production of posters, booklets and other materials for distribution in Ethiopia; these should detail a description of the species, its behaviour, and its habitat, accompanied by attractive pictures of the species and its habitat.
- Write popular articles and promote production of films on the plight of Ethiopian wolves.

Output: Publicize the predicament of the Ethiopian wolf and its habitat.

Use of output: In school and community education programmes; boost appeal for fund raising.

Priority: P2

Category: E & F

Links: 1.1, 1.2, 1.3, 1.4, 1.5, 2.4

Annual budget: I

Time frame: 3–5 years

6. Contribute to Wildlife Conservation Education at all Levels

Objectives: Contribute towards the advancement of wildlife conservation education for Ethiopian public; assure appropriate coverage of wildlife conservation issues in the State’s educational syllabus for primary and secondary schools.

Background: The school system has long been recognized as the best vehicle for educational campaigns. Children are the most receptive component of society in this respect, and targeting elementary grades can be particularly effective. Instructional documents should be written in user-friendly language and describe the afroalpine ecosystem, its wildlife and interactions between human and wildlife interests. Text should be accompanied by attractive and clear pictures of wildlife. Production of wildlife films should be encouraged and shown in national television.

Activities:

- Develop and prepare educational packages centred on Ethiopian wolf conservation for national, regional

and community education programmes.

- Educational programmes in schools near Ethiopian wolf range should coincide with a responsible pet ownership campaign.
- Provide film, graphic and written material on Ethiopian wolves to television and radio broadcast media in Ethiopia.

Output: Agreement with Ethiopian authorities to include wildlife conservation in their education syllabuses; education materials; expanded coverage of conservation issues by Ethiopian media.

Use of output: Environmental and wildlife conservation education at all primary and secondary schools.

Priority: P3

Category: E & F

Links: 1.4, 1.5, 2.4.3, 2.4.6

Annual budget: III

Time frame: 3–5 years

In Situ Conservation of Ethiopian Wolf Populations

7. Transfer Ethiopian wolf to Highest IUCN Category of Threat *

Objectives: Classify the Ethiopian wolf as *Critically Endangered*.

Background: Data on population trends reported for the Bale Mountains show clearly that the Ethiopian wolf is declining, its largest and best known population having plummeted to half in the last five years, while little is known of the population trends of other smaller populations. Extinction is probable if not certain, unless efforts to reverse this decline are continued and expanded. Trade is not a threat to the species and for this reason it is not listed by CITES.

Action:

- Application of the IUCN new criteria for the listing of threatened species supports the transfer of the species to the category of Critically Endangered.
- No CITES listing is required.

Output: Upgrade of the species' IUCN category.

Use of output: The upgraded listing will highlight the Ethiopian wolves' risk of extinction and focus attention on conservation measures designed to protect them; in-

crease the likelihood of proposals for the species' conservation to access limited conservation funds available for endangered species, thus improving fund raising.

Priority: P3

Category: A, F & L

Links: 2.1

Annual budget: none

Time frame: ongoing

8. Determine the Distribution, Numbers and Status of All Ethiopian Wolf Populations *

Objectives: Determine distribution, numbers and current status of all Ethiopian wolf populations.

Background: All known Ethiopian wolves are found in only five or six relatively small areas of afroalpine habitat. However, much of the potential habitat of the species, including four of those populations, has not been adequately surveyed. The viability of all known populations depend critically on their number and potential level of exchange between adjacent populations. Detailed information on the habitat available to the species, population numbers and status is essential for future conservation action, including area conservation and eventual meta-population management.

Activities:

- Develop standard methodology for estimating abundance of wolves, and provide baseline data for population monitoring (Appendix 3).
- Conduct field surveys to determine wolf abundance and status in all known populations; assess other factors relevant to wolf survival, including habitat availability, prey abundance and conflict with human interests.
- Set up a system for regular reporting of wolf sightings for those populations within protected areas.
- Carry out field surveys to determine wolf presence and habitat available of other areas of afroalpine habitats within wolf historical range.
- Collate and compile all data available in a central database; estimate potential wolf carrying capacity for all areas.

Output: Information on the status and trends of wolf populations; centralized reports of observed data; demographic data for population and habitat viability analysis and metapopulation management.

Use of output: Estimate overall population size; provide basis for assessing priority sites for conservation

measures, habitat protection and population management.

Priority: P2

Category: F & R

Links: 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 3.1.1, 3.1.2

Annual budget: II (partially funded)

Time frame: Ongoing, 3 years

Contact: CSG

9. Taxonomy and Inter-population Variability of Ethiopian Wolves *

Objectives: Determine whether wolf populations on both sides of the Rift Valley deserve subspecific status and quantify variation across populations.

Background: All remaining wolf populations are effectively isolated from each other, but it is not known whether this separation is a consequence of relatively recent habitat degradation factors or a natural biogeographical process. It is important to define taxa for conservation decisions. For instance, when determining whether wild populations need to be managed as independent units; which wild populations should contribute founders for a captive breeding program; and whether distinct subspecies require separate captive programs (Chapter 5).

Using canine microsatellite markers already developed and adapted for use in Ethiopian wolves, samples from different locations can be compared to determine genetic distinctiveness between populations. In addition to tissue and blood, it may be possible to obtain DNA from faecal samples, allowing for a broad collection of samples. Furthermore, the methodology is now available to extract DNA samples from museum skins collected during the last 100 years, potentially allowing comparison with other extinct populations and determining rates of genetic change.

Activities:

- Collect tissue or blood samples from different wild populations, as well as from skin specimens kept in various museums.
- Analyse microsatellite DNA from samples using single-locus probes and determine the degree of genetic differentiation between putative sub-species and between populations.

Output: Report; scientific papers.

Use of output: Further understanding of evolutionary history of the species; provide input into the assessment of suitable captive breeding founders.

Priority: P3

Category: C, R & M

Links: 2.2.7, 2.3.8, 3.1.2

Annual budget: I–II (funding pending)

Time frame: 3 years

Contact: Dada Gottelli and Michael Bruford, Institute of Zoology, Regent's Park, London, NW1 4RY, UK.

10. Study Dog/Wolf Hybridization and Genetic Variability in the BMNP Ethiopian Wolf Population *

Objectives: To quantify the degree of wolf-dog hybridization; determine levels of genetic variability within populations; quantify rate of genetic loss.

Background: Most Ethiopian wolf populations are now reduced to very low numbers and as a result may have reduced genetic variability and may therefore have limited ability to adapt to environmental change. Information on genetic variability within populations is therefore essential to determine genetic variability loss rates (Chapter 5). Together with demographic data, information on genetic diversity available will allow for the formulation of a Population and Habitat Viability Analysis (PHVA) for the Ethiopian wolf (Chapter 6). Analysis of paternity within known packs are needed to assess the importance of extra-pack mating as a mechanism to maintain intra-population genetic variability and minimise inbreeding. Since there is data available for BMNP wolf's genetic variability from before 1992 a direct comparison will assess quantitatively the rate at which variability is being lost.

In some parts of BMNP wolves have bred with do-



mestic dogs and produced fertile offspring. The degree of interspecific hybridization and its overall effect on population dynamics need to be established. Furthermore, screening of hybrid individuals is required to identify them for management decisions.

Activities:

- Collect blood and tissue samples from wolves in BMNP.
- Using single-locus microsatellite DNA techniques analyse samples and quantify changes in the levels of genetic variation within the BMNP population (degree of inbreeding).
- Determine the rate of genetic variability loss through population bottlenecks; compare this with variation present in other remaining populations.
- Assess extent of hybridization between wolves and domestic dogs in BMNP; identify hybrid individuals; determine occurrence of hybridization in other populations.
- Investigate the importance of extra-pack mating and multiple paternity in the social organisation and mating system of the species.

Output: Report on prevalence of dog/wolf hybrids; quantify intra-population genetic variability levels.

Use of output: Assessment and improved understanding of the impact small population sizes and hybridization have on inbreeding and survival; implications for future management of wild and captive wolf populations; potential tool for selection of suitable captive breeding founders.

Priority: P2

Category: C, M & R

Links: 2.2.8, 2.3.8, 3.4.1

Annual budget: III (funding pending)

Time frame: 3 years

Contact: Dada Gottelli and Michael Bruford, Institute of Zoology, Regent's Park, London, NW1 4RY, UK.

11. Monitor Demography and Dynamics of BMNP Ethiopian Wolf Population *

Objectives: To monitor the demographic trends of the wolf population in BMNP.

Background: The largest Ethiopian wolf population is that in BMNP and previous research there has provided baseline data for population monitoring. The BMNP population has been declining steadily in the last decade and has now reached its lowest recorded level. On the other hand, BMNP harbours the largest range of suit-

able habitat for the species, providing the greatest chance of a population recovery. Continued monitoring of the BMNP wolf population dynamics and habitat quality are required to decide conservation priorities and measure recovery. Furthermore, variation in pack size, home range size and position influences the risk contact rates and disease transmission rates between wolves and other carnivores and might determine the levels of disease threat to individuals. In addition, behavioural and demographic correlates will help to examine rates of hybridization and changes in genetic variation.

Activities:

- Determine wolf population numbers, pack number, size and structure, breeding success, mortality rate and dispersal patterns; locate dens and determine pup survival and reproductive success (Appendix 3).
- Based on these parameters calculate population trends over time and the population growth rate.
- Determine interactions with other carnivores and their effects on wolf reproduction and survival.
- Monitor prey abundance, assess changes in the availability of food resources.
- Determine the influence of humans on habitat quality and species' survival and whether there is a relationship between wolf abundance and human activity.
- Field work will combine the input of at least one full-time field assistant and regular visits by a senior researcher.

Output: Demographic trends and dynamics of the wolf population and its habitat; determine primary population parameters and calculate the population growth rate.

Use of output: Provide early warning of further population decline to allow immediate intervention if required; contribute to model contact rates and the risk of disease transmission; provide demographic correlates to rates of hybridization and changes in genetic variation.

Priority: P1

Category: M & R

Links: 2.3.1, 2.3.2, 2.3.3

Annual budget: II

Time frame: 3–5 years

Contact: CSG

12. Monitor the Prevalence of Disease in Domestic Dog and Wolf Populations *

Objectives: Determine and monitor the incidence of diseases in Ethiopian wolves and sympatric domestic dogs; obtain information on the health status, diseases and causes of mortality on wolves to assess the prevalence and threat of canid pathogens to the population.

Background: Populations of wild carnivores often fluctuate, and numbers increase or decrease widely. Disease is often suggested as a possible factor in such declines, and may have been responsible for local extinctions in several carnivore species. Disease vectors and evidence of exposure to disease are often reported, but their influence is sometimes unclear, as are the interspecific pathogen dynamics involving both domestic and wild carnivore species (Chapter 4).

An epidemiological study in Ethiopian wolves will establish the role of rabies, canine distemper and other pathogens in the conflict between domestic dogs and wolves in BMNP. The demographic characteristics of the domestic dog population and the spatial and temporal dynamics of these canine diseases needs to be studied both inside the protected area and in surrounding rural and urban areas.

Activities:

- Obtain blood samples from domestic and wild carnivores for serological analysis.
- Establish the incidence of canid disease and patterns of spread by vertical and cross-sectional serological analysis of domestic dogs and wolves.
- Investigate the epidemiology of canine pathogens, particularly rabies and canine distemper, both in BMNP and in surrounding rural areas.
- Examine dog demographics, establishing current population size, reproductive and mortality rates, turnover rate, movement patterns of dogs in rural areas within and outside the BMNP and nearby urban areas.
- Determine the distribution and density of wild carnivores and the frequency of interactions between domestic and wild carnivores and other behavioural correlates of disease transmission.
- Survey other wolf populations for prevalence of disease.

Output: Information on prevalence of disease and vectors in BMNP; determine which species are affected by which pathogens, the prevalence and incidence of infection, geographical and seasonal patterns of infection and host population dynamics and behaviour.

Use of output: Target local disease control programmes effectively.

Priority: P1

Category: R

Links: 2.3.3, 2.3.4, 2.3.5

Annual budget: II

Time frame: 2–3 years

Contact: Karen Laurenson, Institute of Zoology, Regent's Park, London, NW1 4RY, UK

13. Test Methods to Prevent Disease Transmission in Domestic and Wild Carnivores *

Objectives: Investigate the feasibility, effectiveness and sustainability of a vaccination scheme to protect Ethiopian wolves in BMNP from disease transmission. Improve disease monitoring practices in Ethiopia.

Background: Management practices need to be established in order to reduce the impact of infectious diseases on the survival of Ethiopian wolves. The vaccination of dogs and/or wild carnivores is a possibility that needs to be explored (Chapter 4). Training of Ethiopian veterinarians must also be carried out so that local personnel are able to sustain the required management solutions.

Activities:

- Survey local community attitude towards plans to vaccinate/control domestic dogs
- Test and select a method of delivering vaccine.
- Determine vaccine and administration to be used (mass oral, individual oral or parenteral).
- Implement a trial vaccination programme.
- Test effectiveness.
- Establish a veterinary surveillance committee and reporting structure.
- Train local personnel on vaccination practices.
- Establish improved laboratory diagnostic techniques in Ethiopia.

Output: Evaluation of vaccination as a management alternative.

Use of output: Vaccination of domestic and/or wild carnivores.

Priority: P1

Category: M & R

Links: 2.3.6, 2.3.7, 2.3.9, 2.3.10

Annual budget: II–III

Time frame: ongoing, 3 years

Contact: Karen Laurenson, Institute of Zoology, Regent's Park, London, NW1 4RY, UK.

14. Test Methods to Control Domestic Dog Populations

Objectives: Investigate the feasibility, acceptability, effectiveness and sustainability of limiting the growth of the domestic dog population in wolf range to prevent dog-wolf hybridization and disease transmission.

Background: Conservation management strategies practices need to be established in BMNP in order to reduce the impact of domestic dogs on the survival of Ethiopian wolves. Alternative management strategies in addition to vaccination, including reproductive control of domestic dogs or selective culling, need to be tested. However, strategies must be devised and tested locally to be acceptable and feasible given economic importance for dogs and local cultural practices.

Activities:

- Set up a register of all dogs found in BMNP.
- Selective culling of unowned dogs.
- Devise non-lethal control methods by chemical, surgical or immunological means.
- Implementation of a trial sterilization campaign.
- Education on responsible pet ownership.
- Consider zonation of dog removal/control to protect core area.

Output: Recommendations and protocol for a dog control campaign.

Use of output: Control of domestic dog populations within protected areas.

Priority: P2

Category: M & R

Links: 2.3.6, 2.3.7, 2.3.9, 2.3.10

Annual budget: II

Time frame: 2 years

Contact: Karen Laurenson, Institute of Zoology, Regent's Park, London, NW1 4RY, UK.

15. Community Education and Extension in the Bale Mountains *

Objectives: Involve BMNP settlers in the protection of afroalpine wildlife; develop a conservation education and extension campaign at community level.

Background: Most people living in close contact with wildlife have an utilitarian perception of wildlife, animals are seen as either beneficial or harmful to them; often they find themselves in conflict with wildlife conservation managers. It is imperative that this perception changes where local people's interests conflict with those



of wildlife such as in BMNP. A public outreach campaign targeted at educating those people on the value of wildlife and potential benefits accrued to the local community may help to reconcile the interests of conservationists and others. If the decline of wildlife is to be prevented, the community needs to be informed of the causes and solutions, and local people should be involved in the recovery operations. Community education should concentrate on developing an attitude of responsible dog ownership among residents in and adjacent to Ethiopian wolf range.

Activities:

- Production of educational packages to target adults and children, that include simple educational leaflets in Orominia language, posters and educational toys.
- Develop an extension team to reach all communities living inside Ethiopian wolf range.
- Set up a programme of regular visits to all local settlements within BMNP.
- Set up a system of responsible dog ownership. Distribute veterinary medicines and dog chains/leashes to assist them with better management of their dogs.

Output: Develop trust of local communities towards extension work; community education packages; curb detrimental effect of domestic dogs on wildlife.

Use of output: Develop residents' tolerance of wildlife conservation practices; reduce dog/wolf contact.

Priority: P2

Category: E & M

Links: 2.4.1

Annual budget: II (partially funded)

Time frame: 3–5 years

Contact: CSG

16. Produce and Install Signs on Roads Across Ethiopian Wolf Range *

Objectives: To design, produce and install road signs warning drivers of the presence of wolves and other wildlife and their responsibility to avoid traffic accidents.

Background: Road kills are a recurrent cause of wolf mortality in BMNP and perhaps elsewhere. Additionally wolves and other wildlife are occasionally shot from vehicles. Wildlife exposure to road accidents is likely to increase with development and construction of new roads and increasing volume and speed of traffic.

Activities:

- Produce and install road signs along roads across wolf range in BMNP, Arsi, Menz and Simien.

Output: Road signs.

Use of output: Prevent road kills; education of general public.

Priority: P3

Category: A, E & M

Links: 2.4.2

Annual budget: I

Time frame: 1 year

Contact: CSG

17. Explore Role of Population Genetics and Devise a Programme for Ethiopian Wolf Population Management

Objectives: Carry out a Population and Habitat Viability Analysis; plan conservation techniques such as genetic population management and captive breeding needed to ensure Ethiopian wolf long-term survival.

Background: Small isolated populations such as those of the Ethiopian wolf generally require active management to ensure survival and maintenance of genetic variability in the long term (Chapter 5 and 9). As a rule small populations stand a higher risk of extinction, and lose variability at a higher rate, than do larger ones. But all wild and captive populations may be treated as a metapopulation with some genetic flow among them. Genetic variability may be boosted through the translocation of a small number of animals among different populations.

Activities:

- Using demographic data, model the probability of survival of different wolf populations in varying circumstances.
- Devise a management plan for limited translocation

of breeding animals between different populations.

Output: PHVA; metapopulation management guidelines.

Use of output: Manage all remaining wolf populations as a single metapopulation.

Priority: P2

Category: M & R

Links: 2.5.1, 2.5.2, 2.5.3

Annual budget: I–II

Time frame: 1 year

Captive Breeding and Reintroduction of Ethiopian wolves

18. Institute a Global Ethiopian Wolf Captive Breeding Programme

Objectives: Establish, develop and fund a global effort to breed Ethiopian wolves in captivity through an internationally concerted effort.

Background: Currently there are no Ethiopian wolves in captivity. The development of an Ethiopian wolf breeding population is required for protection from genetic introgression (hybridization) and conservation of genetic variability. Such a captive population will be supplementary to those in the wild and will provide additional protection from local extinctions (Chapter 8). Captive breeding will require the support and cooperation of the international captive breeding community and the Ethiopian government.

Activities:

- Identify institutions interested in participating and funding the programme and form a consortium of breeding facilities.
- Set up a steering committee with biological, veterinarian and legal expertise.
- Formalize an agreement with the Ethiopian authorities regarding supply and ownership of founder animals.
- Establish a captive breeding plan.
- Ensure that participating zoos and facilities adhere strictly to established regulations and protocols.
- Develop and maintain an Ethiopian wolf studbook.

Output: Establishment of a captive breeding programme for the species.

Use of output: Outline facility and funding require-

ments to establish breeding programme in existing breeding facilities and eventually in Ethiopia.

Priority: P1

Category: F & M

Links: 3.1.1, 3.1.2

Annual budget: II

Time frame: one year

19. Establish a Global Captive Breeding Population of Ethiopian Wolves

Objectives: Establish a Nucleus I captive wolf population as an insurance programme for the endangered Ethiopian wolf regardless of crises in its natural habitat.

Background: A level Nucleus I captive population requires a captive nucleus to represent always a minimum of 98% of the wild gene pool. This type of programme requires periodic, but in most cases modest, immigration of individuals from the wild population to maintain the high level of genetic diversity, and may be started with a modest founder population. Closely related canid species such as red and grey wolves have a good record of captive breeding and existing husbandry and reproductive techniques should be easily adapted to the Ethiopian wolf. While Ethiopia should remain the sole owner of all Ethiopian wolves born in captivity, a consortium of breeding partners will ensure the capability and funding required to attain and maintain population levels required for a Nucleus I captive programme (50–100 individuals).

Activities: Capture, transport and housing of founder animals. Achieve reproduction and establish breeding nucleus. Rapidly build up captive population to required levels.

Output: Creation of a captive breeding nucleus.

Use of output: Captive population to supplement wild populations; additional animals for population management and/or eventual reintroduction.

Priority: P2

Category: F & M

Links: 3.2

Annual budget: ? (Expensive to start, moderate to maintain)

Time frame: long-term

20. Establishment of a Captive Breeding Facility in Ethiopia

Objectives: To participate in global breeding effort; act as holding facility in a population management and re-introduction programme.

Background: *In situ* captive breeding (*i.e.* within the species' natural range) would have the benefits of access to appropriate habitat and environmental conditions, and reduced exposure to exotic diseases. Such a local breeding facility would accommodate animals in large (0.2–0.5 hectare), semi-natural enclosures, and could use natural prey to supplement the wolves' diet. Operating within the framework of a global captive breeding programme this local facility would be instrumental in supplying animals for eventual reintroduction, serve as an education centre and provide training to Ethiopian nationals.

Activities:

- Develop with Ethiopian authorities necessary permission and support to establish facility.
- Secure international expertise and identify funding sources.
- Identify suitable site.
- Design facility.
- Build installations.
- Acquire and establish a breeding nucleus.
- Train Ethiopian nationals to run facility.

Output: A captive breeding centre in Ethiopia; a captive population of Ethiopian wolves.

Use of output: Provide animals for eventual population management and reintroduction purposes; education; facilities and technology available to breed other endangered Ethiopian fauna.

Priority: P2

Category: A, C, E & M

Links: 3.1, 3.3, 3.5

Annual budget: ? (Very expensive to start, quite expensive to maintain)

Time frame: long term.

21. Restocking and Reintroduction of Ethiopian Wolf Populations

Objectives: Implementation of metapopulation management; regular restocking of existing populations to preserve genetic variability; eventual reintroduction to areas within historical range where now extinct. Reestablish, secure and maintain a minimum of five breeding pairs for a minimum of three successive years.

Background: Reintroductions are a future conservation option, but subject to successful conservation of afroalpine habitat and positive public opinion in the area. Balance with economic advantages to the area in terms of tourism or employment of local people as wildlife scouts.

Activities:

- Implement metapopulation management strategy.
- Identify and prioritize potential reintroduction sites.
- Evaluate potential sites for essential biological parameters (prey abundance, habitat types, competition with other carnivores) and socio-economic factors (human density, land use, livestock husbandry practices, domestic dogs, proximity to large settlements).
- Measure potential public response to a wolf reintroduction through contacts at local government and community levels.
- Conduct public meetings and listen to public concerns about the project.
- Develop reintroduction plan.
- Secure funding.
- Construct necessary acclimation pens.
- Introduce and acclimatise wolves to pen for approximately 6 months and release. Monitor the survival, spatial use and reproduction success of released wolves.
- Reintroduce additional animals to achieve minimum population desired.
- Assess success of reintroduction.

Output: Produce a detailed reintroduction technical proposal and carry out operation.

Use of output: Increases global population and genetic variability. Creates additional populations.

Priority: P2

Category: M

Links: 3.1, 3.4, 3.5, 3.6.

Annual budget: ? (Relatively expensive)

Time frame: long-term

22. Develop a Strategy for the Cryogenic Preservation of Ethiopian Wolf Sperm and Embryo Banking

Objectives: Investigate suitability of reproductive techniques such as long-term storage of sperm and embryos for application to Ethiopian wolves.

Background: Significant advances have been accomplished in recent years for the storage of sperm and embryos in felids and bovids. Existing techniques could be

adopted and refined to ensure the preservation of critical Ethiopian wolf genetic variability.

Activities: Develop a collaboration with a reproduction research institution and investigate suitability of these techniques for use with Ethiopian wolves.

Output: Protocol for field collection of wolf sperm, in-vitro fertilization and long-term storage of sperm and embryos.

Use of output: Useful in an eventual population genetic management aimed at increasing levels of genetic variability. In captivity possible application for (surrogate mother) reproduction.

Priority: P3

Category: R, F & M

Links: 3.6

Annual budget: ?

Time frame: 2–3 years?

Coordination and Administration of Recovery Programme

23. Coordination of the Ethiopian Wolf Recovery Programme *

Objectives: To support a full-time coordinator for the EWRP.

Background: A coordinator is essential to oversee progress of the different tasks in the EWRP and to assure continuity of various objectives.

Activities: The coordinator will be responsible for implementing different tasks of the EWRP, liaise between different institutions and personnel involved, seek sources of funding and promote the conservation needs of the Ethiopian wolf and the afroalpine eco-system. Also will provide leadership, establish annual objectives and goals, develop budgets, administrate programme funds, present annual reports to the EWRP Team, publish technical and popular accounts and serve as the spokesperson for the programme.

Priority: P3

Category: A & F

Links: 4.1

Annual budget: III

Time frame: ongoing, 5 years or more

Contact: CSG

24. Establishment of an Ethiopian Wolf Recovery Team

Objectives: To organize a coordinating committee, the EWRP Team. The Recovery Team will be a multi-disciplinary group to review the EWRP progress in regular meetings and address special biological and logistic needs.

Background: An important feature of research and management of endangered species is the high level of cooperation between different organizations and individuals involved. The Recovery Team should be composed by individuals with special skills and expertise applicable to the various objectives of the programme, and include representatives of the relevant Ethiopian wildlife agencies (EWCO and RA), conservation area managers and EWRP scientific personnel, as well as IUCN/SSC Specialist Groups (CSG, CBSG, VSG). Donor agencies should also be represented in the Recovery Team.

Activities: The Recovery Team should meet annually to review progress on the implementation of the programme, recommend increased efforts where necessary and deal with logistical problems and/or special circumstances. By inviting relevant field managers to the Recovery Team meetings, those responsible for implementation of the plan at the local level can have input and be advised, encouraged and stimulated to greater efforts. Technical advisers on different topic may also be invited to address the Recovery Team on relevant technical issues.

Priority: P3

Category: A

Links: 4.2

Annual budget: II

Time frame: 5 or more years

25. Foster Establishment of a Consortium of Donor Agencies

Objectives: Coordinate the funds and facilities made available to the EWRP in order to optimize its output.

Background: Close cooperation and flow of information between various donors is vital to plan long-term

funding requirements, and to avoid misunderstandings and/or duplication of efforts.

Activities: Periodic contact between agencies to coordinate current and future funding to the EWRP. Attendance to EWRP Team meetings.

Priority: P3

Category: A

Links: 4.3

Annual budget: none

Time frame: long-term

26. Produce and Disseminate Information on the EWRP

Objectives: Provide accurate information on all programme conservation efforts to all government officers and entities involved with the programme.

Background: Education of the general public and government officers involved is of extreme importance for the success of any conservation effort. It is important to ensure that consistent information is provided to all of the involved agencies, having identified the direct relevance on each sector of the readership of that information.

Activities:

- Produce regular reports of programme progress.
- Publish data available in relevant technical journals, wildlife conservation magazines and other popular written media to promote the plight of the species.

Output: Written and graphic information. Channelled through the CSG Actioner.

Use of output: Conservation education; keep all players in this conservation effort informed of programme progress and shortfalls.

Priority: P3

Category: A

Links: 2.4.3, 2.4.4, 2.4.5, 2.4.6

Annual budget: I

Time frame: long term