The image features a young boy in the lower-left foreground, looking directly at the camera with a serious expression. He is wearing a traditional woven basketry garment and a headband. He holds an assault rifle across his body. The background is a soft-focus field of tall, golden-brown grasses. The entire image is overlaid with a semi-transparent orange filter. The title text is positioned in the upper right quadrant, and the authors' names are below it. A dark orange banner at the bottom contains the text 'Biodiversity Support Program'.

Impacts of Conflict on Biodiversity and Protected Areas in Ethiopia

By Michael Jacobs and
Catherine Schloeder

Biodiversity Support Program

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Abstract

Ethiopia possesses considerable biodiversity and natural resources, as well as many endemic species. It has had, however, only limited success protecting some of these natural assets since establishing a conservation and protected-area program in 1965, due to the country's prolonged engagement in various armed conflicts. The result has been, in the last 25 years, an increase in the number of threatened and endangered species and deleterious habitat modifications. Also, much destruction of protected-area assets has occurred. Deforestation, farming, overgrazing, hunting, and soil erosion all were conflict-related factors that led to these changes and limited the success of Ethiopia's conservation and protected-area program. Government and non-government institutional politics, and adherence to an exclusionary protected area, also were key factors limiting successful conservation.

Despite these setbacks, however, hope remains for protecting what is left of Ethiopia's biodiversity and natural assets, as demonstrated by the survival of Awash National Park during a brief period of lawlessness in 1991. Awash's survival was attributed to community involvement in the development of a park-management plan, community and conservation authorities' concessions, and the initiation of community-based intervention measures prior to the lawless period. Of more importance, however, is that conflict ceases and economic growth, development, and conservation take its place. Conservation success is more likely if the government abandons its exclusionary protected-area policy and grants regions and local communities the authority to manage their own protected areas. Likewise, the capabilities of communities must be utilized in the management of all protected areas, and new policies must be adopted to further guarantee success.

Introduction

Ethiopia, located in the horn of Africa, has long been recognized for its wealth of natural resources, endemic species, and high biodiversity (Table 1). While Ethiopians have recognized the commercial value of their natural assets for some time, these assets remained largely unprotected until the mid-1960s, when the government instituted a conservation- and protected-area program. The primary intention of this program was to establish bylaws and areas for the conservation and protection of a range of species and habitats. The promotion of tourism and income generation were secondary priorities (Turton, 1987; Abraha Misginna, 1991).

Despite getting a late start on conservation, Ethiopia has accomplished a considerable amount and should be commended for its efforts. Most important has been its attempt to conserve the largest area of afro-alpine habitat on the continent (Bale Mountains National Park) and ensure the survival of several endangered species and endemics. These include the Ethiopian wolf (*Canis simensis*), African wild dog (*Lycaon pictus*), Mountain nyala (*Tragelaphus buxtoni*), Walia ibex (*Capra walie*), African elephant (*Loxodonta africana*), African wildass (*Equus africanus*), Soemmerring's gazelle (*Gazella soemmerringii*), Swayne's hartebeest (*Alcelaphus buselaphus swaynei*), and the genetic material of many other species.

Other notable activities include the establishment of numerous protected areas and the conservation of diverse native species within these areas. These initiatives were undertaken for the sake of education, research, and recreation, and because these areas provide such essential items as fuel wood, building materials, forage, traditional

Table 1. Statistics for groups of species recorded to date in Ethiopia (modified from Hillman, 1993a)

Group	Number of species	Number of endemics
Mammals	280	31
Birds	861	28
Reptiles	201	9
Amphibians	63	24
Freshwater Fish	150	4
Butterflies	324	7
Plants	~ 6,044	~ 1,150

medicines, and wild foods (Figure 1). Ethiopia's conservation- and protected-area program has provided varying levels of protection to certain watersheds and many essential natural processes and cycles (e.g., pollination, seed dispersal, soil hydrology). Furthermore, it has generated income both nationally and locally through tourism, hunting, and the sale of wildlife (e.g., primate exports) and wildlife products, i.e. crocodile (*Crocodylus niloticus*) skins, ostrich (*Struthio camelus*) skins, and civet (*Viverra civetta*) musk).

Despite these achievements, there have been many setbacks. To date, it has lost the black rhinoceros (*Diceros bicornis*), and several other species now face the threat of extinction (Hillman, 1993b; IUCN, 1996). Due to the lack of data, there also is cause for concern over how many other species may be at risk (Hillman, 1993a).

Additionally, several of Ethiopia's protected areas exist on paper only, while others have declined in size or quality (Hurni, 1986; Hillman, 1992, 1993a; Jacobs and Schloeder, 1993). Some of these setbacks are the result of Ethiopia's earliest conflicts and the reasons for them, including the predilection to expand empires and wealth, to control trade throughout the Horn of Africa, and ethno-religious differences (<http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). The majority of conservation problems, however, can be attributed to Ethiopia's adoption and implementation of an exclusionary protected-area policy—and to the causes and consequences of its prolonged engagement in two particular conflicts.

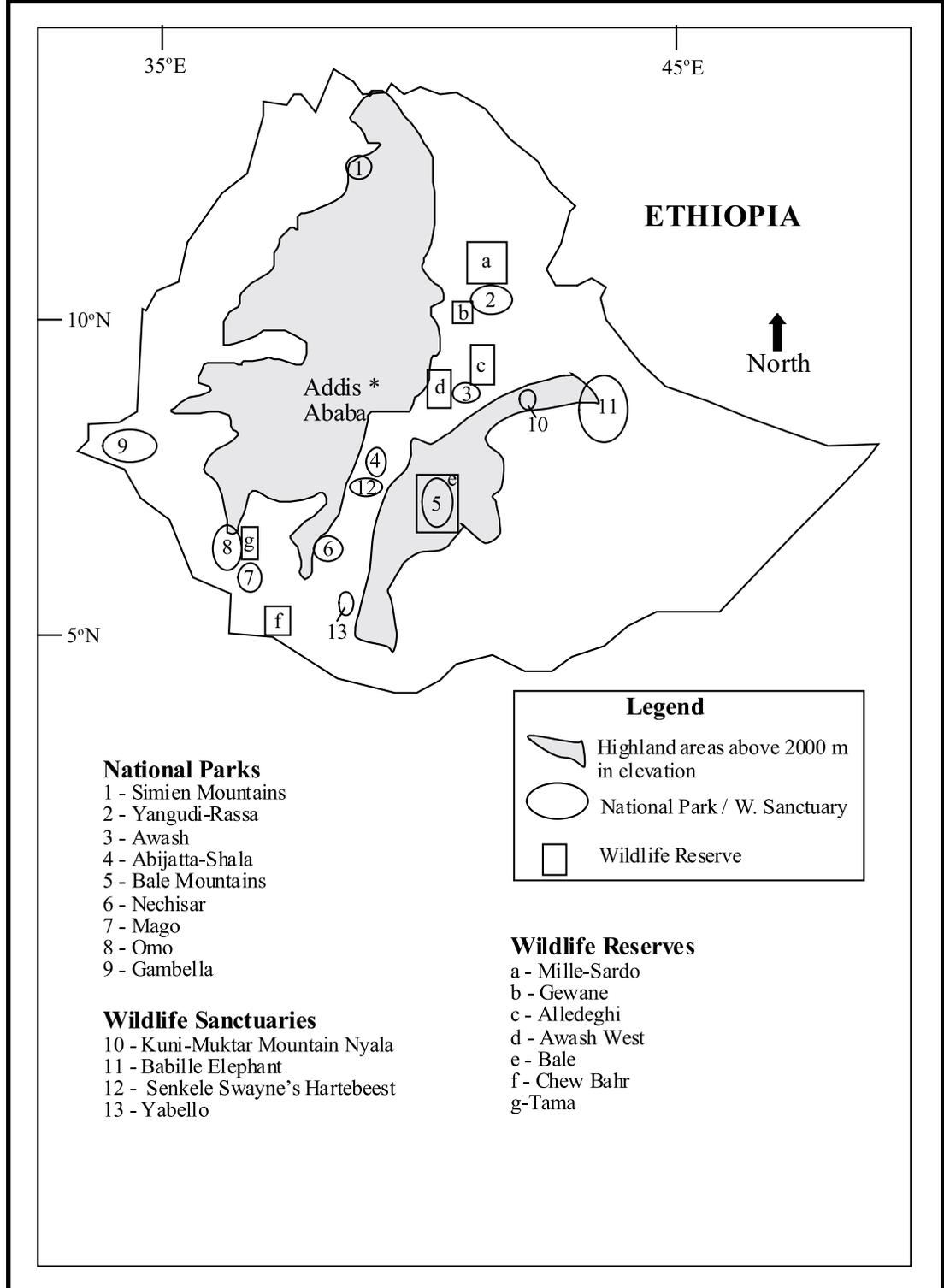
This chapter analyzes the issues that led to the Ethiopia-Eritrea civil war (1961–1991) and the 1974 Ethiopian Revolution. It also examines the impacts of these conflicts on the government's conservation- and protected-area program in the context of an exclusionary protected-area policy. Likewise, it provides a description of donor organizations working in Ethiopia during and after these conflicts, and their responses. While the discussion centers on the specific circumstances of Ethiopia, it should be applicable to other African countries that are experiencing similar conservation challenges caused by prolonged armed conflict.

A history of conflict and conservation: 1961–1991

The conflicts

The Ethiopian-Eritrean civil war and the Ethiopian revolution took place for very different reasons. The civil war had its roots in World War II, when administration of the region then known as Eritrea was temporarily entrusted to British military rule—following Italy's surrender—until its fate could be decided by the United Nations

Figure 1. Ethiopia's protected areas



Source: Hillman, 1993a.

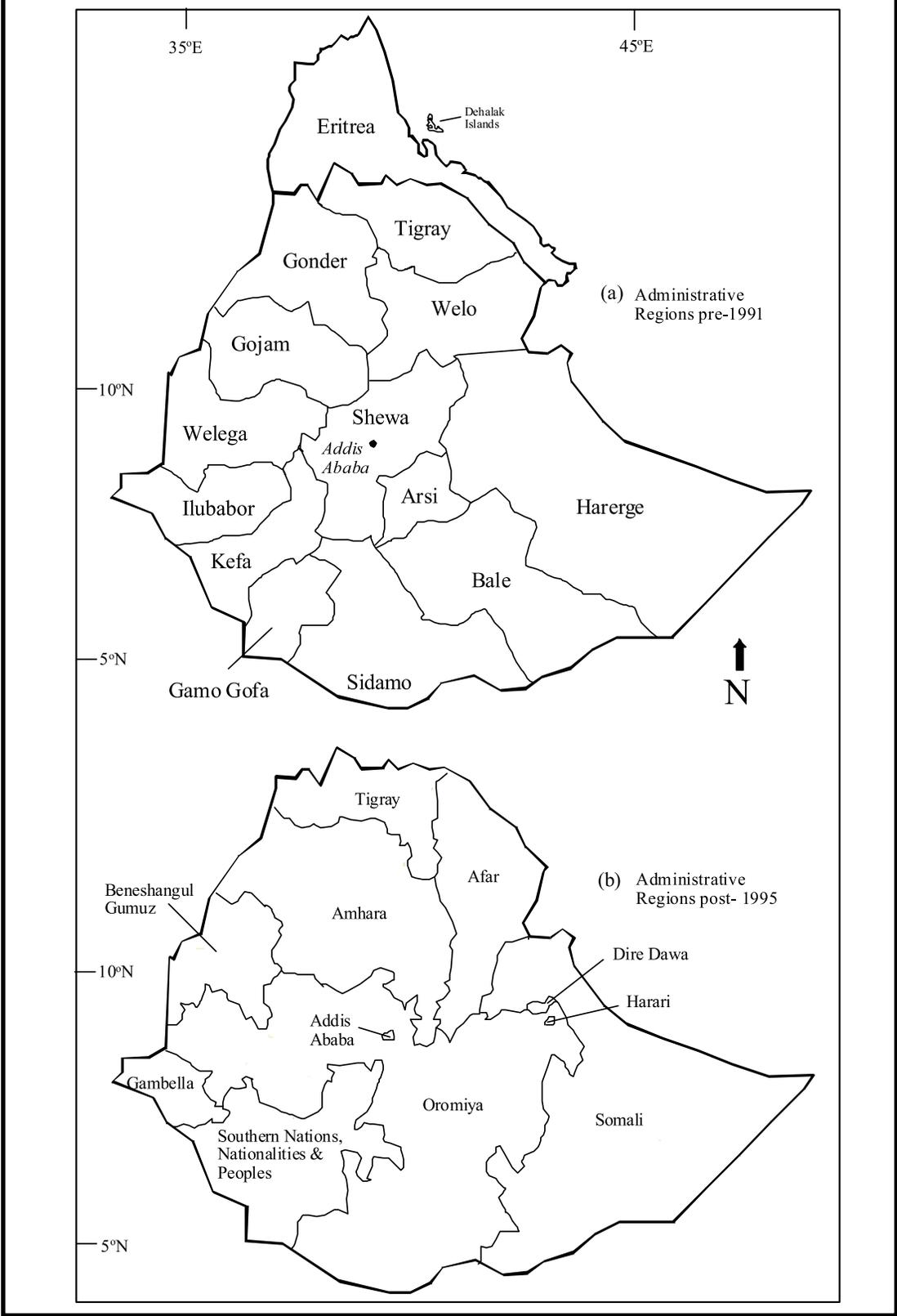
General Assembly (Figure 2a) (Kapusinski, 1989). At that time there were many bids for control of Eritrea, including one submitted by its residents, requesting independence, and one submitted by Ethiopia's emperor, Haile Selassie I, requesting its total appropriation. The UN elected to adopt a compromise resolution, however, stating that Eritrea was to establish its own form and organization of internal self-government while existing as a federated state of Ethiopia. Ethiopia was to be responsible for matters pertaining to foreign affairs, defense, foreign and interstate commerce, transportation, and finance (United Nations General Assembly Resolution, 15 September 1952; Testfatsion Medhanie, 1986; Kapuscinski, 1989). Neither Ethiopia nor Eritrea was particularly pleased, however, with this manner of alliance. The emperor's opposition eventually became the motivation for his abolishment of the federation and imposition of imperial rule throughout Eritrea (Kapusinski, 1989). These acts had the effect of consolidating Eritrea's opposition to any form of association with Ethiopia and became the catalyst for war.

Known as one of the longest-running civil wars in African history, the Ethiopia-Eritrea conflict lasted 30 years, primarily because both countries were struggling with a range of internal problems and civil discord. Eritrea's problems were ideological and religious in nature and caused a battle among its leading insurgent groups in 1974, at the end of which the Marxist-oriented Eritrean People's Liberation Front (EPLF) emerged as the victor (Testfatsion Medhanie, 1986; Mills, 1992). Ethiopia's problems, on the other hand, were related to the emperor's failure to effect any significant social, economic, or political reform, including transforming Ethiopia from a subsistence-based economy to an agro-industrial based economy (Kapusinski, 1989; Andargachew Tiruneh, 1993; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). By 1974, four-fifths of Ethiopia's population existed as poverty-stricken subsistence farmers, as the bulk of their production went to pay taxes, rents, debts, and bribes (Andargachew Tiruneh, 1993). The emperor's problems also stemmed from failure to combat famine and a growing trade deficit (Kapusinski, 1989; Andargachew Tiruneh, 1993). These issues became the incentive for an armed forces-led rebellion that ended with the emperor's deposition on September 12, 1974, and the establishment of the Provisional Military Government of Socialist Ethiopia (PMGSE) as the nation's ruling body (Kapusinski, 1989; Andargachew Tiruneh, 1993; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000).¹ Major Mengistu Haile Mariam eventually emerged as the leader of the PMGSE after three years of power struggles among the revolution's leaders.

The emperor was unable to effect any significant reform or economic growth, primarily because his government—despite an expansion of bureaucratic structure—lacked the administrative and technical capabilities for any large-scale development plans. Furthermore, the emperor's ideas met with resistance from Ethiopia's nobility and the church (Kapusinski, 1989; Andargachew Tiruneh, 1993; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). Finance also was an issue, particularly after 1960, as Ethiopia's annual defense budget consumed a large portion of funds available for all national

1. Referred to initially as the Provisional Military Council Administration, until 1978.

Figure 2. Administrative Regions within Ethiopia (a) during the conflict period and (b) after the boundaries were redrawn in 1995. The region and nation known as Eritrea is illustrated in 2(a).



Map: Authors. Source: <http://www.sas.upenn.edu/African_Studies/eue_web/menu4596.htm>

programs, leaving few resources available for development (19 to 24 percent of total annual appropriations went to the military during 1960–1974) (<http://lcweb2.loc.gov/cgi-bin> 2000).

The PMGSE's solution to these challenges was to adopt myriad policies that led to the nationalization of rural and urban property, and to the nationalization and restructuring of Ethiopia's economy. It also formed an alliance with the Soviet Union to facilitate its restructuring efforts and its military campaign against Eritrea. The effect of restructuring, however, was to increase the size of Ethiopia's public bureaucracy by as much as 60 percent (<http://lcweb2.loc.gov/cgi-bin> 2000). This limited development opportunities even more than when under imperial rule, as did the escalation of the military campaign against Eritrea (Ethiopia's defense expenditures were consuming 40 percent of the total budget between 1977–1987).

The PMGSE's performance was affected by numerous other factors, including a series of natural catastrophes and civil unrest, and various ill-conceived development and movement policies. These included one involving the resettlement of people, another calling for the relocation of entire villages (termed *villagization*), and a third restricting free movement. These policies were implemented in the mid-1980s when Ethiopia was experiencing a series of devastating droughts and insect plagues that led to widespread crop failures and livestock losses. The measures involved the forcible uprooting of hundreds of people from the north and their resettlement to the south, the mandatory relocation of homesteads into structured villages, and the strict regulation of peoples' movements and transport (Cohen and Isaksson, 1987).

These policies were carried out under the pretext of security concerns—that land in the south was more productive, and that resettlement and villagization would facilitate efforts to provide much-needed social services and developments (Desmond, 1986; Cohen and Isaksson, 1987; Mills, 1992). The restriction on peoples' movements and transport, however, left people in many areas desperate for food and other commodities. Furthermore, many of the promised services never materialized because natural catastrophes and conflict with Eritrea had left the nation's economy in a state of collapse (Cohen and Isaksson, 1987; Clapham, 1988). These factors, in conjunction with famine, resulted in the displacements and deaths of hundreds of thousands of people within Ethiopia during the mid-1980s, and forced over 100,000 refugees into Somalia (Desmond, 1986; Bazylar, 1987; Cohen and Isaksson, 1987; Clapham, 1988; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). These same factors led many Ethiopians to join forces with Eritrea and contributed to the condemnation of Mengistu by the international community (Mills, 1992; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000).

Further adding to Ethiopia's problems was that its relationship with the Soviet Union was undergoing a fundamental change (due to a new direction in Soviet foreign policy); Meanwhile, Soviet leaders disapproved of Ethiopia's management of internal affairs and use of Moscow-sent aid (Patman, 1990). The implication of this change

was profound because military assistance from the Soviets was vital to the pursuit of Mengistu's military solution in Eritrea. Beginning in 1988, the Eritreans won a series of victories against the Ethiopian government, including the capture of an army division, all of its armaments, and the town of Afabet (<http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). Then, in 1990, Eritrea succeeded in capturing the city of Massawa; in 1991, it captured the city of Asmara (Mills, 1992; <http://lcweb2.loc.gov/frd/cs/ettoc.html> 2000). These last two victories ended Ethiopia's control of Eritrea and led to the defeat of the PMGSE in 1991.

Ethiopia's conservation- and protected-area program and exclusionary protected-area policy

The managing conservation and protected area authority during the period of conflict was the Ethiopian Wildlife Conservation Organization (EWCO). This institution was established in 1965 and formally recognized as an autonomous body in 1970 (Negarit Gazeta, 1970). The EWCO's responsibilities during that period included establishing nine national parks, four wildlife sanctuaries, seven wildlife reserves, and 18 controlled-hunting areas between 1965 and 1980.² It also was responsible for adopting and implementing a range of hunting and conservation policies, including the adoption (unpublished) of IUCN (the World Conservation Organization) protected-area descriptions and guidelines (UNESCO, 1964; Abraha Misginna, 1991). These included classification of all national parks as "Strict Conservation Areas."

Termed an *exclusionary protected-area policy*, the conditions of this category include the limitation of "... all kinds of human use of that area like settlement, exploitation of natural resources, grazing of livestock, mining, etc., ... except as required for the management of the wildlife and conservation" (Moore, 1982). The imperial government's adoption of this particular IUCN standard proved most controversial, however, as it imposed restrictions on the taking of previously unregulated species and natural resources and required involuntary resettlement of indigenous peoples (Moore, 1982; Turton, 1987). The controversy persisted into the next regime following the PMGSE's continued empowerment of the EWCO and public endorsement of the EWCO's conservation- and protected-area efforts (Negarit Gazeta, 1980).

Forceful and continual adherence to this exclusionary protected-area policy, in conjunction with a nationwide lack of basic development and a diversion of finances toward conflict, was the most significant factor contributing to the conservation program's lack of success. Other important factors were policies related to resettlement, villagization, movement, and commerce. These policies also were responsible for considerable damages to, and losses of, protected natural resources when a change in government occurred. Government transition periods were characterized by disorder and lawlessness.

2. Dehalak Marine National Park is now under the authority of the Ministry of Natural Resources in Eritrea.

The following discussion elaborates on these factors and the resultant negative impacts on conservation in, and management of, Ethiopia's protected areas. Where applicable, positive impacts are presented as well.

Summary of impacts

Figure 3 and Table 2 summarize and illustrate the more important factors and the resultant impacts. What will become evident are how many of these were intertwined and exacerbating of the other as a result.

Impacts related to the lack of development and finances

Deforestation and soil erosion

Little economic growth and development, and the diversion of finances towards conflict, led to a decline in the availability of food products and other commodities, a scarcity of petroleum products, high inflation, and rising unemployment. These, in turn, perpetuated a reliance on the land and its many natural resources. The most significant consequence of this reliance was to further deforest Ethiopia's landscapes for agriculture, livestock production, shelter wood, and fuel wood. Deforestation on lands adjacent to, and within, certain protected areas resulted in the loss of critical habitat, species isolations, and local species extinctions (e.g., Mountain Nyala) (Jacobs, unpublished data; Hillman, 1992). Farming on steep slopes increased as well, as land became increasingly scarce and important. Attempts to farm on steep slopes, however, increased the rate of soil erosion and gullying and decreased crop yields, and eventually forced many to seek new farming opportunities (on steep slopes at times), thereby exacerbating the deforestation protected-area issue.

Excessive soil erosion resulting from deforestation interfered with the operation of several of Ethiopia's hydro-power schemes (in the Wabi-Shabelle and Awash watersheds) and was the reason for repeated nationwide power outages during the rainy season. These factors reportedly reduced significantly the life expectancy of the Koka Dam (on the Awash River) by accelerating the rate of sedimentation in this reservoir (Halcrow et al., 1989; EVDSA, 1990). The decline in water quality throughout Ethiopia has been attributed to unregulated deforestation and soil erosion, as has been the decline in rainfall production and stream flow (Daniel Gamachu, 1974; Halcrow et al., 1989). These last impacts should be of particular concern in terms of conservation, in that they most likely have had an effect on Ethiopia's wetlands, fisheries, and overall natural biodiversity.³

3. Baseline wetland and fisheries data are lacking in Ethiopia making any analyses almost impossible.

Figure 3. Illustration of the effects of armed conflict on Ethiopia's conservation- and protected-area program from 1961 through 1991. Impacts are mapped through a variety of causal pathways, with causes displayed in white boxes and impacts displayed in shaded boxes.

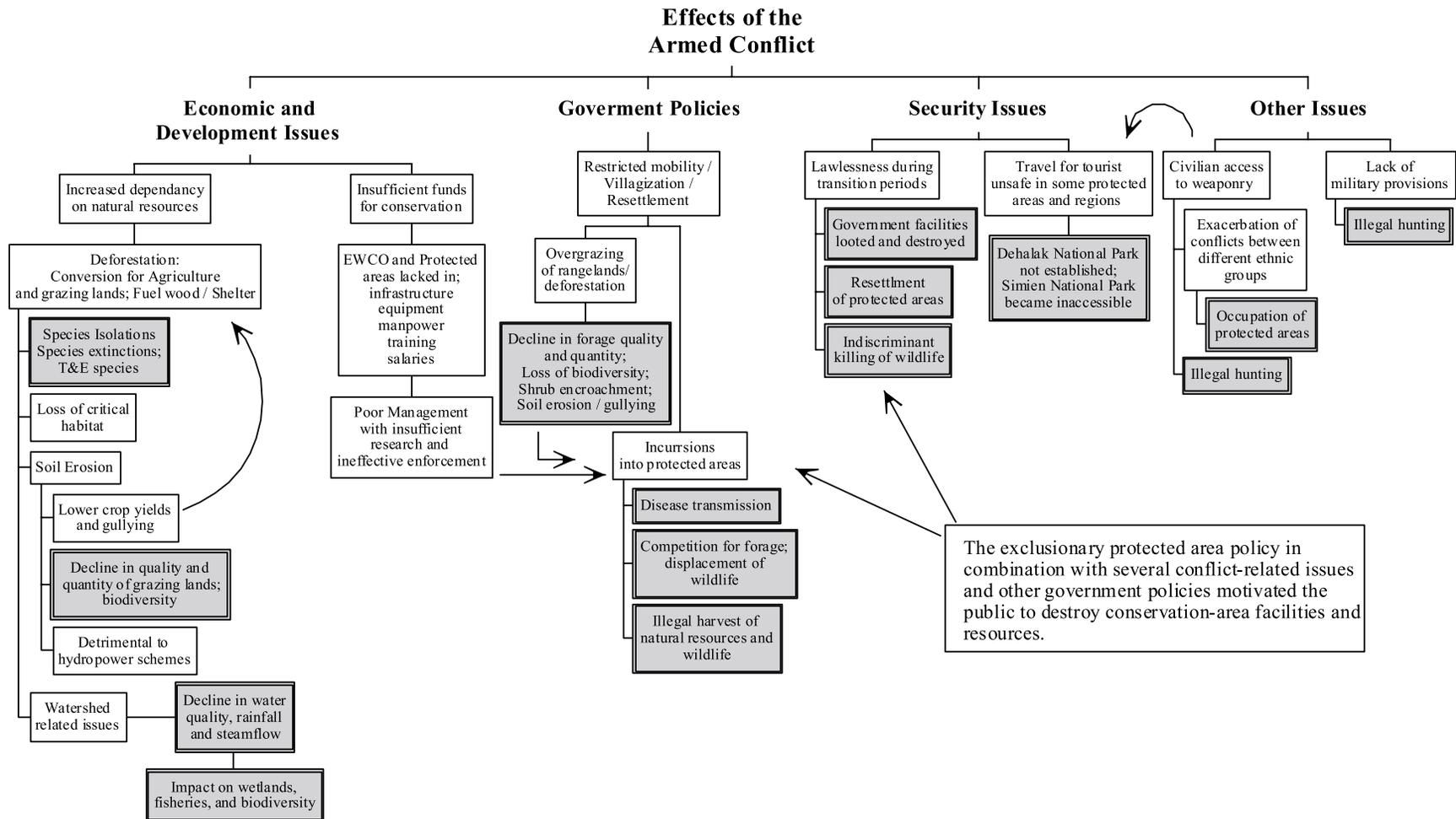


Table 2. Ethiopia's National Parks and Wildlife Sanctuaries, the reasons they were established, occurrence of conservation projects, the period of armed conflict, and a list of damages and losses during the 1991 transition period (Hillman, 1993a,b; Jacobs and Schloeder, 1993)

Protected area	Reason established	Ongoing projects	Damage
Abijatta-Shala National Park	Protects aquatic birds; two rift valley lakes	Biologist training project, WCS Infrastructure Improvements, UNDP and WCS	Infrastructure looted and destroyed, government vehicles burned
Awash National Park	Protects the Beisa Oryx, Soemmerring's Gazelle, and Swayne's Hartebeest	Development of a management plan, WCS	No damage and no reported poaching
Babille Elephant Sanctuary	Protects endemic sub-species of elephant		No infrastructure or staff; incursions of large numbers of refugees from Somali.
Bale Mountains National Park	Protects endemic Mountain nyala, Ethiopian wolf, and giant mole rat; also protects a rare Afro-alpine habitat and moist highland forest	Conservation research for the Ethiopian wolf, WCS and WWF Infrastructure development project, WWF	Livestock control fences were cut, all outposts were destroyed, Mountain nyala and wolves were shot.
Gambella National Park	Protects Nile Lechwe, white-eared kob, and whale-headed stork in extensive swamp habitat		Infrastructure and vehicles were destroyed
Kuni-Muktar Mountain Nyala Sanctuary	Protects Mountain nyala and remaining highland forest	Conservation project for the protection of Mountain Nyala, ZSL	Mountain nyala were shot, forestlands were cleared; no infrastructure existed.
Mago National Park	Primarily for protection of buffalo, giraffe, and elephant	Infrastructure improvements, WCS and WWF	Park was abandoned by staff and store and houses were looted
Nechisar National Park	Protects Swayne's hartebeest and Burchell's zebra; also portions of two rift valley lakes in the park that protect crocodile and hippopotamus		Outposts located far from the headquarters were damaged and looted; incursions into the main grassland plain by the Gugi agro-pastoralist.
Omo National Park	Protects an extensive grassland wilderness and numerous large mammal species; among the most important are common eland, buffalo, and elephant	Development of a management plan, EWCO Infrastructure improvements, WCS and WWF	No infrastructure damage but poaching increased
Senkele Swayne's Hartebeest Sanctuary	Protects Swayne's hartebeest namesake; most viable population in Ethiopia.		All infrastructure was destroyed and the herd was widely dispersed
Simien Mountain National Park	Protects the Walia ibex and Ethiopian wolf	Development of a management plan, UNDP UNESCO listed Simien Mountains as a World Heritage Site in 1978 (Hurni 1986)	Simien National Park was inaccessible between 1984 and 1991; all park infrastructure was destroyed
Yabello Sanctuary	Protect a population of Swayne's hartebeest, Stresemann's bushcrow, and white-tailed swallow	Conservation project: Swayne's Hartebeest, University of Oslo	Not developed, no infrastructure
Yangudi Rassa National Park	Primarily to protect the wild ass	None	Not developed, no infrastructure

Impoverishment of Ethiopia's conservation- and protected-area program

The diversion of finances and development energy toward conflict meant that Ethiopia's conservation organization, and all protected areas, received insufficient funding and lacked in infrastructure and equipment, to varying degrees (Hillman, 1993a; Jacobs and Schloeder, 1993). These in turn contributed to the loss of conservation-related income, because the general lack of facilities limited recreational and educational opportunities, and led to understaffing. Insufficient funding prevented any in-depth research as well, along with effective management, training, and maintenance, and was a contributing factor to the decline in morale of EWCO personnel. Management of Ethiopia's Wildlife Reserves and Controlled Hunting Areas was forced to determine hunting quotas without the benefit of sufficient data, for many of these same reasons.

This also meant that there were few incentives to leave or stay out of an area after it had been classified as a national park. This, in conjunction with insufficient funding of all conservation- and protected-area programs, contributed to resistance to, and mostly ineffective enforcement of, many conservation bylaws and the government's exclusionary protected-area policy. These dilemmas were dealt with by periodically calling in the military to assist in the removal of those deemed encroachers. Use of the military to remove people angered and alienated the once-legitimate residents to an even greater extent, particularly when they felt their very survival was at stake. Nevertheless, encroachers persisted in their attempts to enter and occupy parklands, despite knowing their attempts could end in injury or death. Need and survival eventually won out, as evidenced by a majority settlement of the Abijata-Shalla and Awash National Parks, and a partial settlement of many other national parks by 1991 (Hillman, 1993a; Jacobs and Schloeder, 1993).

Impacts related to government policies

Environmental degradation, encroachment, and the decline of wildlife as related to the restriction of peoples' movements

The restriction on people's movements (also referred to as *sedentarization*) exacerbated deforestation and soil-erosion issues and led to the overgrazing of rangelands throughout Ethiopia. Overgrazing occurred primarily because Ethiopia's transhumant and nomadic pastoralists were prohibited from traveling large distances in search of forage—even as their populations grew and forage declined—and during times of drought. Many significant and widespread environmental changes took place due to overgrazing, including shrub-land expansion, an increase in undesirable woody species, soil erosion, and gulying, and a decline in forage quality and quantity, and species biodiversity (Coppock, 1994; Jacobs and Schloeder, 1993). These changes, in turn, exacerbated the exclusionary protected-area policy's settlement-encroachment

issue, and were responsible for many similar habitat alterations within Ethiopia's protected areas.

In Awash National Park, encroachment and settlement led to the illegal harvest of fuel wood and shelter wood, increased competition between wildlife and livestock, and forced many species to forage elsewhere. There was an increase in illegal hunting and disease transmission as well, which contributed to the decline of much wildlife (Figure 3) (Jacobs and Schloeder, 1993). The exception to this was those species that favored shrub-land expansion (e.g., Salt's dikdik (*Madoquo saltiana*), lesser kudu (*Tragelaphus imberbis*), and common waterbuck (*Kobus ellipsiprymnus*), etc.). Reports for the Abijata-Shalla and Nechisar National Parks refer to similar setbacks from settlement and encroachment as well (Hillman, 1991; Tadessa, G/Michael et al., 1992).

In the middle and lower Awash Valley, the problem of forced sedentarization was aggravated further after the conversion of traditional dry-season grazing areas to government-run irrigation schemes, and by immigrants (Jacobs and Schloeder, 1993). The immigrants arrived whenever the Harerge region experienced a drought, and whenever there were escalations in conflict in Somalia or the Sudan. The conflict in Somalia was of particular import, in that it created what can be referred to as the *tribal domino effect*. This is a situation where one ethnic group after another, in an effort to find suitable livestock forage or escape conflict, forcibly displaces a neighboring ethnic group. In the middle Awash, this effect ultimately affected the Kereyu by limiting their grazing and settlement opportunities. It involved three different ethnic groups (the Afar, Ittu, and three Issa clans from Western, Central, and Eastern Harerge region) with the initial displacement originating across the border in Somalia. The Afar also experienced displacement by the Issa in the lower Awash Basin.

Forced sedentarization disrupted many socioeconomic ties as well. These included ones the Kereyu and Afar had with their highland neighbors in order to survive a variable environment. Their relationship involved the moving of livestock into the highland areas during periods of drought, and the purchase of highland calves following herd deaths. In exchange, the highlanders moved their livestock into the lowland areas when rainfall was adequate, and earned income from livestock sales. Arranged marriages also were of importance to this relationship. Widespread famine and massive livestock deaths during the 1980s droughts, environmental degradation, and an almost complete breakdown of many important relationships characterized the disruption of these socioeconomic ties.

Environmental degradation, encroachment, and the decline of wildlife as related to resettlement and villagization

The government's resettlement and villagization policies were similar to the one restricting peoples' movements, in terms of impact on the environment and Ethiopia's

protected areas. These two policies, as well as several ill-conceived agricultural schemes, also were responsible for the decline of wildlife in the Gambella National Park, and the conversion of some areas within the park to agriculture (Hillman, 1991). The wildlife decline in Gambella also occurred due to hunting by Sudanese opposition forces and refugees, as these groups sought food in times of need. The 1978 relocation of almost 1,500 people from seven villages in Gonder, however, led to a 20 percent reduction in occupation of the Simien Mountains National Park (from 53 percent) and a 7 percent decline in agriculture (from 18 percent) (Hurni, 1986). A villagization scheme in the Bale Mountains, along with agricultural developments, had a similar effect in that people were drawn out of the park. Unfortunately, the agricultural developments in Bale made extensive areas unavailable for grazing during the wet season, which forced many to let their livestock graze on parklands when it was most detrimental to the high-altitude grasslands (Hillman, pers comm). As was the case in the Awash National Park, encroachment in Bale also led to competition between wildlife and livestock, the displacement of wildlife, and illegal hunting (Hillman, 1991). Encroachment, too, was reported to facilitate rabies transmissions to Ethiopian Wolves (Gottelli and Sillero-Zubiri, 1992) and the hybridization between wolves and domestic dogs (Gottelli et al., 1994).

Impacts related to other issues

The utilization of wildlife and occupation of protected areas

Many types of modern weaponry (primarily machine guns) were readily available through Ethiopia's black market during the period of conflict. Unfortunately, easy access to machine guns increased the frequency and intensity of conflict between ethnic groups. Death and injuries increased as a consequence, as did the displacement of entire ethnic groups from disputed lands. The displaced, in turn, sometimes tried to occupy nearby protected areas. Nechisar National Park was occupied for such reasons on several occasions as the Gugi retreated from attack by the Boran. Similarly, the Mursi retreated to Mago National Park a few times following attacks by the Bume (EWCO internal reports). The Gugi and the Mursi reportedly engaged in hunting and agriculture during these periods of occupation. The Gugi also were known for using their new guns to resist removal by park authorities, according to EWCO internal reports.

Because of the easy access to machine guns, hunting increased throughout Ethiopia, in addition to that which took place in most of the country's protected areas. Food, leather, and medicinal products were the primary reasons cited by those caught in the act, in addition to income generation from the sale of ivory, the EWCO reported.⁴ Defense-of-livestock arguments also were a common excuse for the taking of various predators. Species most vulnerable to hunting during the period of conflict included

4. Afar believe that the flesh of the Grevy Zebra is medicinal.

the Lesser and Greater Kudu (*Tragelaphus strepsiceros*), Common Eland (*Tragelaphus oryx*), Buffalo (*Synercus caffer*), Beisa Oryx (*Oryx gazella*), Soemmerring's Gazelle, Swayne's Hartebeest, Grevy's Zebra, Mountain Nyala, Elephant, Giraffe (*Giraffa camelopardalis*), Hippopotamus (*Hippopotamus amphibius*), Cheetah (*Acinonyx jubatus*), Lion (*Panthera leo*), Spotted Hyena (*Crocuta crocuta*), and jackals (*Canis sp.*).

The military's utilization of wildlife

The diversion of finances toward areas of conflict occasionally resulted in a lack of military provisions elsewhere. This forced the Ethiopian military to hunt for food whenever there was a shortage. Reports from several of Ethiopia's protected areas revealed that hunting of this nature occurred, particularly when the protected area was located near a training camp, according to unpublished EWCO reports. Furthermore, reports and data from Awash National Park substantiated the hypothesis that hunting by the military was a factor in the decline of several species (Figure 3) (Jacobs and Schloeder, 1993).

The creation of secure zones

What could be construed as a positive effect from conflict between ethnic groups, with respect to conservation only, was the creation and maintenance of resource- and biodiversity-secure zones along the interface of warring ethnic groups. Wildlife was more commonly observed within these zones, and in some circumstances their populations were considered relatively stable (Jacobs and Schloeder, 1993). Unfortunately, the same was not the case for those attempting to occupy or use these areas. Instead, they risked their lives when entering interface areas, even for short periods of time. Conservation areas with conflict-created resource- and biodiversity-secure zones included Awash National Park (Kereyu-Afar interface), Alledoghi Wildlife Reserve (Afar-Issa interface), Omo National Park (Surma-Bume-Mursi interface), Mago National Park, and Tama Wildlife Reserve (Bume-Mursi-Karo-Hamar interface).

Impacts related to security concerns

The lack of regular enforcement in most protected areas affected tourism as well, as the EWCO was unable to ensure the safety of tourists within many protected areas (Hillman, 1993a; Jacobs and Schloeder, 1993). The threat of being robbed while visiting or traveling to and from protected areas reduced tourism by nationals and foreign visitors alike. Tourism also was hampered by war-related security concerns, thereby limiting opportunities to generate income—both locally and nationally—to an even greater extent (Hillman, 1992, 1993a). War-related security concerns, in addition to insufficient funding, prevented Ethiopia's establishment of the Dehalak Marine

National Park and led to the EWCO losing control over the Simien Mountains National Park in 1983 following occupation by Eritrean forces (Hillman, 1993a,b).

Impacts related to transition-period insecurity

The lack of local-level support for the government's policies was most evident during the transition from imperial rule to social rule (1974-1978), and during the shift from social rule to democratic rule (a few weeks in 1991). The imperial-social rule transition period spelled a loss of funding, the resettlement of most protected-areas, the indiscriminate taking of wildlife- and protected-area resources, and a challenge to the EWCO's authority. These impacts were short-lived, however. In 1978 the PMGSE ruled in favor of keeping the EWCO and publicly adopted the policy that, in part, proclaimed: "Wildlife have the right to exist and our wildlife resources are a national heritage to be conserved and developed for the continued benefit of the present generation and the generations to come" (FaWCaDA, 1978). The EWCO's budget was reinstated following this proclamation, and together with military support, the EWCO was able to regain control of Ethiopia's protected areas. The EWCO adopted a new Wildlife Management Policy (WMP) shortly thereafter, in addition to a new forest- and wildlife-conservation plan (PMGSE, 1979; Negarit Gazeta, 1980; with revisions: PMGSE, 1979; PMGSE, 1985). Despite public opinion to the contrary, however, the government retained the exclusionary protected-area clause within the new WMP.

Prior to the arrival of Eritrea's troops in the capital of Addis Ababa and the establishment of democratic rule, there was rampant looting and destruction nationally during a three-week transition period in 1991. The primary targets were government structures, including office and housing facilities, aid centers, dispensaries, water provisions, and conservation and educational facilities. Regarding Ethiopia's protected areas, six in particular were the focus of much violence (Table 2). Hillman (1993a) reported that post-war damages to these six areas amounted to U.S. \$495,169, while damages to the Simien Mountains National Park between 1983 and 1991 amounted to U.S. \$677,536. Some damages were attributed to the abandonment of protected-area facilities, others to retreating government soldiers as they moved south (Hillman, 1991; Tadessa G/Michael et al., 1992). Much wildlife was shot during this period of lawlessness as well. The shootings clearly were acts of violence aimed at the government, as evidenced by the number and type of animals left to decompose in areas like the Kuni-Muktar Wildlife Sanctuary and Bale Mountains National Park. Kuni-Muktar, and the surrounding government-owned tree nurseries and plantations, also experienced widespread tree destruction. This was most surprising, however, because such projects employed many locals and supposedly were for their benefit.

International support of Ethiopia's conservation- and protected-area program

The impacts just described would have been greater if the Ethiopian government had not been successful in obtaining various types of international support from the inception of its conservation- and protected-area program. It was able to do so because the battle for Eritrea was being fought in the north and there was little threat of it moving south (Table 3). Initially, Ethiopia's supporters contributed a provision of expatriates to act as advisors, wardens, and, to a limited extent, researchers. Other help took the form of funds for development, equipment, in-situ training, education, and enforcement (Blower, 1966, 1968; Bolton, 1969, 1972; Brown, 1969; Beur, 1969; Fujioka, 1976; Hurni, 1975; Huxley et al., 1963; Lilyestrom, 1972 a, b; Mizuno, 1977; Petrides, 1961; Robertson, 1970; Stephenson, 1975). As time passed, however, the donors found themselves in the position of providing funds, almost exclusively, for maintenance, equipment renewals, improvements, ex-situ training, and the development of management plans (Hillman, 1986 a, b, 1993a; Hurni, 1986; Jacobs and Schloeder, 1993). Hillman (1993a) estimated that the cost of these later contributions averaged approximately U.S. \$750,000 per annum between 1983 and 1990.

While the achievements of the EWCO and its supporters were evident by the war's end, it was clear that more could have been accomplished had there been mitigation or flexibility when enforcing the exclusionary protected-area policy, particularly during times of famine. More, too, could have been done if the EWCO and other organizations had managed donations better. These factors contributed to concerns about instability and led to donor frustration and fatigue as the war progressed, and to the steady withdrawal of foreign support. Many conservation opportunities were lost as

Table 3. List of international supporters

IUCN - The World Conservation Union
WCS - The Wildlife Conservation Society
ODA - British Overseas Development Agency
United States Peace Corps
WWF - World Wide Fund for Nature-UK
AWF - African Wildlife Foundation
ZSL - Zoological Society of London
University of Missouri/Earthwatch
University of Oslo, Norway
UNESCO - World Heritage Commission
Swiss Federal Institute
EU - The European Union (EU)
University of Japan

well, including the offer to purchase a new aerial survey plane (Frankfurt Zoological Society) and the loss of GTZ (German Technical Assistance Service) funds for infrastructure improvements in Awash National Park and other protected areas. Additionally, some conservation organizations decided to limit their support to ex-situ assistance (e.g., provision of training opportunities at Mweka College in Tanzania).

Resilience of projects following the collapse of socialism

Towards the end of the civil war, the World Wide Fund for Nature (UK) (WWF), Wildlife Conservation Society (WCS), Zoological Society of London (ZSL), European Union (EU), and the University of Oslo were the only remaining institutions with EWCO-related projects in Ethiopia. In addition, the WCS was the only one with ongoing field projects and foreign principal investigators. When it became clear to these investigators that the government was about to collapse, some chose to leave, others to remain. All were able to resume their work within a short period of time, however, because the transition period after the civil war was so brief. Unfortunately, not all projects survived this particular transition period unchanged.

WCS's Ethiopian Wolf Project in the Bale Mountains National Park experienced a setback when several wolves were shot and the researchers' hut was looted and destroyed (Gottelli and Sillero-Zubiri, 1992; Hillman, 1992). WCS and WWF's conservation-education project was not affected, however, because it was near completion and involved training in the public schools. The WCS Awash National Park Project was not badly affected by lawlessness, either. It survived this period because several measures were in place prior to the completion of a management plan that changed the local community's attitude towards the protected area (see Box 1).

Post-conflict projects and support

Because of the quick return to stability, Ethiopia's remaining donors found themselves in the unique position of being able to begin new projects while resuming unfinished ones.⁵ The Awash National Park Project (WCS) was one of those, as it was able to continue as before and completed a five-year management plan for the EWCO. Funds and assistance with this plan were difficult to obtain, however, because of concerns over the Oromo Liberation Front's activities in the Awash area. There also was doubt about working with the latest general manager of the EWCO because he was unwilling

5. There only were a few projects that had to be canceled because of persistent instability in some regions and a real threat of armed combat. These included the cancellation of an outpost in the Kuni-Muktar Mountain Nyala Wildlife Sanctuary (ZSL: Harerge region – the renewal of warfare was of concern); the cancellation of a proposed captive breeding program for the Ethiopian Wolf (ZSL: Amhara region – the threat of continual instability); and the cancellation of a Swayne's Hartebeest study and infrastructure improvements in the Yabello Wildlife Sanctuary (Univ. of Oslo, Sidamo Region – the threat of an armed insurgent uprising).

Box 1. Ethiopia's Awash National Park Project

The Awash National Park Project (1990-1993) was undertaken at the request of the Ethiopian Wildlife Conservation Organization (EWCO) to research and develop a new park management plan. EWCO's request for this project followed its acknowledgment that its exclusionary protected-area policy had been ineffective to date, and that it lacked data and ideas to understand how this protected area should be managed. Researchers working on the management plan quickly realized that immediate intervention measures had to be taken if the park was to survive until the project completion date—and if further human injuries and loss of life were to be avoided. Park authorities, it was learned, regularly engaged in armed battles with the Kereyu and Ittu communities while attempting to enforce Ethiopia's exclusionary protected-area policy.

The new measures implemented prior to the completion of the management plan included:

- Organization of meetings between park staff, the Kereyu, and the Ittu to discuss the concerns and issues of each group;
- Negotiation of concessions on the part of all concerned parties (e.g., EWCO, resident pastoralist groups, private and government land owners, and other users);
- Raising awareness in the health, education, and relief sectors regarding local issues and needs;
- Campaigning for the provision of immediate intervention measures from government organizations and other NGO sectors;
- Education of EWCO and protected-area staff in community-based conservation- and protected-area programs;
- Abandoning the practice of using the military to enforce exclusionary protected-area policies; and
- Implementation of a local conservation-education program.

The discussions led to a temporary cease-fire agreement that reduced immediate tensions. This was followed by important concessions allowing the Kereyu and Ittu access to the park's grasslands during drought, under the condition that they were responsible for self-policing. The early recruiting of several government organizations and NGOs (Water Resources Development Institute, OXFAM, GOAL-Ireland, CARE) to provide various services (health, veterinary, technical) also was key, in that it served to illustrate a commitment to resolving the problems of the Kereyu and Ittu. This signaled that EWCO was willing to acknowledge that Ethiopia's protected areas would survive only if they adopted a long-term, community-based approach to conservation. This endorsement led the Kereyu and Ittu to believe that their needs would have as much priority as the park's, and to agree to a cease-fire and self-policing.

Source: Authors.

to consider a community-based approach to conservation—despite his predecessor's approval of this approach.⁶

The extent of the EWCO's plan implementation was the completion of an in-situ graduate student's research project. This involved the investigation of herbivore-plant species dynamics in Awash National Park (conducted by Almaz Tadessa, a biologist

6. The Awash National Park Project experienced three different general managers during its tenure. The first retired, then passed away before it was completed (Teshome Ashine) – it was he who requested the management plan; the second retired by the time implementation became a priority (Tadessa G/Michael); and the third chose to adhere to Ethiopia's exclusionary protected-area policy, despite overwhelming evidence that this approach was counterproductive (Leykun Abunie).

in Awash National Park) and the provision of management recommendations. The Awash Conservation and Development Project, however, came about as a result of CARE's interest in the conservation-community development aspect of the management plan (CARE, 1994). At its inception, CARE's project aimed at increasing the household security of 45,000 pastoralists through improved and sustainable natural-resource management and community-created developments (CARE, 1994). The project experienced a variety of difficulties (e.g., unreasonable demands and the EWCO's unwillingness to work with local communities), however. The focus of the project eventually shifted as a result, from a sustainable natural-resource management/community-oriented project to a community-development project solely.

Two other projects begun in the years after the socialism's collapse were the EU's National Parks Rehabilitation in Southern Ethiopia Project and WCS's Omo National Park Project. The EU project (1993-1998), which aimed at strengthening the EWCO and assisting in the development of all protected areas within the southern regions (e.g., North and South Omo regions; Nechisar, Omo, and the Mago National Park, and associated Wildlife Reserves and Controlled Hunting Areas), however, had limited success (EU Feasibility Study for Wildlife Conservation in southern Ethiopia, Final Report, 1993). Government decentralization of Ethiopia's conservation- and protected-area program in 1995 (see Box 2), in addition to logistical constraints, unreasonable expectations, the failure to collaborate with other conservation nongovernment organizations (NGO) and sectors, and the mismanagement of funds, all were factors that limited the success of this particular project (EU National Parks Rehabilitation in Southern Ethiopia Project, Final Report, 1998).

The Omo National Park project (1993-1996) was able to achieve its objectives, however, despite having to face some of the same challenges as the EU project (Jacobs, 1999; Schloeder, 1999). This success was attributed to having a goal perceived by the local community as improving relations with the conservation authority, and one more realistic and attainable in light of the government's institutional limitations.

Box 2. A brief note on post-conflict conservation and protected area policy changes

There were no significant differences in how the EWCO operated between 1991 and 1995, with the exception that it briefly was placed under the authority of the newly created Ministry of Natural Resources Development and Environmental Protection (MoNRDEP). In 1995, Ethiopia's new democratic-oriented government elected to create several new administrative regions and to re-draw the boundaries of others (Figure 2b). The government then decentralized some of its authority and assets in 1996. The effect of these changes was that, thereafter, all protected-area assets and management responsibilities were transferred to the regions in which they were located, with the exception of the Awash National Park. The responsibility for the Awash was retained by the EWCO because this park was divided between two regions and it was felt that regional politics would not bode well for its management. The transfer of responsibility was mostly ineffective as of 1999, however, because there never was significant allocation of funds to the regions for their newly-acquired responsibilities, and because there was some debate as to their exact responsibilities (EU, 1998).

Collaboration between the conservation NGO and various sectors also was a key factor for success: It facilitated a better understanding of the problems and issues. It also helped in the sharing of important data, which went a long way toward preventing redundancy and freeing up funds for other efforts (MoA, 1993; CARE, 1994; MoNRDEP, 1995).

Emergency assistance

Emergency assistance from the United Nations Development Program (UNDP) became available to Ethiopia because of the quick return to stability. The UNDP-Emergency Support to Conservation plan included the repair of infrastructures in the Abijata-Shalla National Park, the Bale Mountains National Park, the Simien National Park, and the Senkelle Wildlife Sanctuary. It also involved the provision of an advisor within the EWCO and the contracting of a “National Fund for Conservation” mechanism, at a cost of close to U.S. \$1million. The UNDP advisor overseeing these activities experienced nearly identical problems, and for the same reasons, as Ethiopia’s previous donors, however, when attempting to deliver this emergency assistance.

Collaboration among and between the different sectors

Problems with collaboration

Collaboration among and between the different sectors working in Ethiopia was not common. Moreover, it was made difficult because of the complex nature of Ethiopia’s social, economic, and development problems. Additionally, the extent of Ethiopia’s various problems and government impediments frequently resulted in a crisis-oriented mode of assistance rather than one of disaster-preparedness. This left little time for collaborating or, at the least, networking. Other factors that prevented collaboration were people’s lack of knowledge and experience in dealing with issues thought unrelated to one’s sector of expertise, or an unwillingness to consider the community aspect of conservation.⁷

Because of these problems, sectors frequently worked independently, which meant they often were at odds despite having similar goals. As an example, GOAL, an Irish

7. The conservation sector traditionally has had little experience in dealing with socioeconomic issues, and has had little desire to do so until recently; the relief and development sectors traditionally have had little experience with environmental or conservation issues. The relief and development sectors within Ethiopia, however, were quick to realize the need to address environmental issues along with socioeconomic ones.

relief organization, was attempting to provide alternative watering sites to the Kereyu in the Awash area due to livestock access problems related to the government's irrigation schemes. GOAL's impression was that limited access to water was facilitating a dependency on aid by way of limiting grazing opportunities. The organization proposed drilling water wells in places where the increase in localized livestock grazing (i.e., near the wells) would eventually have reduced the quality and availability of forage, as well as contribute to environmental degradation. Furthermore, several of the sites were located within the boundaries of the Awash National Park. When first confronted by park authorities, GOAL accused them of not caring about the Kereyu. After some discussion, however, organization members realized that park authorities' concerns were related more to the issue of environmental degradation, and the long-term effect of this degradation on the Kereyu, than to the issue of park bylaws.

Collaboration also was highly dependent on the personalities of those involved. Some government organizations, NGOs, and project leaders seemed to think that collaboration among or between different sectors somehow weakened their position in a given area; as a consequence, these individuals acted in a territorial manner. Other organizations simply were reluctant to associate with one another, concerned about the others' practices or the amount of effort and time it took to collaborate. The latter often was a legitimate excuse, particularly during times of crisis-oriented mode. Lack of collaboration among and between several NGO's over the years, however, resulted in a duplication of effort on more than one occasion, and interpretations that frequently conflicted. For those that did take the time to collaborate, success more often than not was the case.

Solutions for improving collaboration

There are numerous ways to improve collaboration among and between different sectors at the various institutional levels (e.g., international, national, regional, local, etc.). Foremost among these is the decision by institution leaders to insist upon collaboration, particularly when collaboration 1) prevents redundancy, saves funds, or allows for their reallocation; 2) facilitates a greater understanding of the problems and issues; 3) prevents the misuse of funds; and 4) avoids undermining the efforts of others. Once the decision to collaborate is made, it could be improved by accomplishing the following:

- *Prioritize networking between the various sectors to keep abreast of each others' efforts, ideas, and difficulties*

When a particular NGO is operating in a country, it is always beneficial for said NGO to have a representative in the capital. This person would be responsible for networking with other NGOs and government agencies to keep abreast of what each is doing. Some specific suggestions for networking follow.

- Regularly scheduled informal and/or formal meetings*

When operating in crisis mode, regularly scheduled meetings often are viewed as a waste of time. The true nature of the situation, however, is that regularly scheduled meetings are very important during crises, particularly when brief, and the alternative is irregular and long meetings. The reasons are that briefer and more frequent meetings keep people up to date on the situation, and the information presented often is more easily understood and assimilated.
- Formulation of sectoral project-review committees between different sectors*

Sectoral committees designed to review project proposals from different sectors would be extremely beneficial. Each sector may have ideas and information that would facilitate the success of a project, by identifying potential problems and strengths. A review of project proposals also would reduce the likelihood of any duplication of effort, thereby freeing money for other projects. Finally, a review committee would be more likely to identify projects that would not correspond with ongoing projects.
- Adoption of an integrated approach to resolving issues*

Although most would agree that this is an approach making intuitive sense, few projects use an integrated approach for the reasons presented above. In addition, such approaches require much planning. Because planning takes time, an integrated approach often is rejected and a quick, short-term fix instead becomes the norm.
- Workshops and conferences in which all sectors are involved*

To create the awareness necessary for improving collaboration among and between the different sectors, workshop developers must consider a more diverse group of donors and advisors as potential guests. We sometimes seem to forget that representatives from many other sectors—including health, social, cultural, agricultural, energy, and animal husbandry—also should be included in workshops oriented toward a conservation or protected-area theme. Educating the non-conservation-based sectors about conservation goals is the first step toward broad strategic planning that could incorporate multi-sectoral mandates into a unified plan.
- Unification among and between the different sectors*

The last means of collaboration is important because unification among and between different sectors makes it clear to the recipient that they cannot shop around or play one donor against another until finding one that will give in to their demands.

Future needs for improving Ethiopia's conservation and protected-area program

There are numerous ways in which the Ethiopian government can improve its conservation- and protected-area program. Some of the more important solutions include abandoning its exclusionary protected-area policy and adopting a community-based protection-area strategy (Jacobs and Schloeder, 1993; MoA, 1993). Training at all institutional levels, and the recruitment of qualified and experienced personnel, are important as well. The need for in-depth research to understand the extent of Ethiopia's wildlife and plant resources, and the issues that concern them (e.g., quality, quantity, distribution, and habitat requirements), cannot be overstated (Ståhl and Wood, 1989; IUCN, 1990; EFAP, 1991; SIDA, 1991; Ethiopian Government, 1992; Hillman, 1993a; Jacobs and Schloeder, 1993; MoA, 1993; MoNRDEP, 1995; EU, 1998). Hillman (1993a) also has suggested revising existing conservation- and wildlife-legislation policies and bylaws and promoting public awareness of Ethiopia's conservation challenges. The following highlights some of the more essential solutions.

Legislation and institutional solutions

Legislative and institutional solutions include (Hillman, 1993a; Jacobs and Schloeder, 1993):

- *Review existing conservation- and protected-area legislation*
For the purpose of establishing a clear definition of wildlife, the managing authorities' responsibilities, and to ensure legal protection of all wildlife, protected areas, and their assets.
- *Establish and update the policy and strategy for wildlife conservation*
The policy and strategy currently are outdated, inadequate, and not legally recognized. The mandates of conservation authorities are vague and lacking, and do not enforce legislation.
- *Revise organizational structure and financing, job descriptions, staffing, benefits, and system of promotion*
- *Establish a research division to prioritize, design, manage, formulate, collate, analyze, publish, and disseminate wildlife, vegetation, and landscape-scaled research*

- *Develop management plans for all protected areas that include a strong community-based/participatory component*
- *Strengthen existing laws and enforcement for protected areas and wildlife through funding, logistical support, and legislation*
- *Conduct habitat and species surveys; promote national and international research projects; continue monitoring and inventoring in protected- and controlled-hunting areas*
The current lack of research limits the development of thorough protected-area and species-management plans.
- *Encourage the establishment of wildlife farms and ranches, and promote licensed hunting*
- *Seek agreements with neighboring countries to check the illegal trade and movement of wildlife and wildlife products*
- *Review the use and value of traditional strategies to achieve conservation objectives (e.g., controlled burns and livestock grazing)*
- *As much as possible, use a landscape-scale, multi-faceted approach when investigating conservation and protected-area issues*
This was of particular importance with respect to the Awash National Park, as it facilitated an understanding of the challenges facing this protected area, in addition to the specific social, economic, and political problems plaguing the Kereyu and Ittu. The means of gaining this understanding came as a variety of quantitative and qualitative data were being analyzed in the context of the larger cultural, social, economic, political, and environmental landscape. The data were derived from numerous investigations, including social surveys, wildlife and vegetation surveys, grazing experiments, aerial photography, and satellite imagery. The results then were supplemented with information obtained during meetings with government organizations and NGOs, and from documents (published and unpublished) and interviews with park staff and local people.

Decentralization of conservation and protected-authority and assets

Hillman (1993a) proposed decentralization of Ethiopia's conservation-and protected-area program as an important management solutions. Furthermore, he suggested that Ethiopia employ indigenous people, when appropriate, to work in the country's protected areas. While decentralization already has taken place (see Box 2), most of the personnel working in the regions are not necessarily indigenous to the place where

they work or the protected areas for which they are responsible.⁸ Additionally, current regional personnel are former EWCO employees, which does not necessarily endear them to the local populace any more than when they worked for the EWCO.

Development, finance, and training

No solution presented here will be viable over the long run without significant and sustainable economic growth and development throughout the country. Furthermore, the provision of adequate funding of all conservation- and protected-area programs is imperative to the success of any program in Ethiopia, as is the retention of earnings by a protected area, the region, and the EWCO (e.g., wildlife farming, tourism, etc.). Adequate funding, whether it comes from the government or the donor community, would enable an increase in manpower and salaries, provide for repairs, improvements, new developments, and training.

Training particularly is essential to improve personnel skills at all government levels, in administration, supervision, management, technical fields, research, and conservation. Likewise, it is key to increase Ethiopia's participatory organization capacity. This could be accomplished somewhat by the adoption of a wildlife curriculum at Addis Ababa University, and, to a greater extent, by training overseas. In the interim, the recruitment of qualified and experienced personnel serves as a short-term solution and a means of providing on-site training.

Increasing tourism and education

Increasing tourism also is of importance to in-situ conservation in that it brings revenue to the community and area while establishing an interest in resources. This would require developments and improvements in infrastructure throughout Ethiopia, in addition to what is needed in Ethiopia's protected areas. Additionally, conservation education is of utmost importance because without it, many will remain naive to its benefits and ways in which they can participate. Both of these measures would require a substantial investment of funds and expertise in order to succeed, however, in addition to community involvement.

Specific protected-area solutions

Another essential solution to successful conservation of Ethiopia's protected areas is the adoption of legislation that would enable local communities to participate in the development of protected area management strategies and their implementation

8. There are over 100 different ethnic groups in Ethiopia, residing within nine different regions.

(Hillman, 1993a; MoNRDEP, 1995). Community participation not only would facilitate an understanding of the residents' needs, but also would involve them in obtaining solutions by recognizing their capabilities. It also would guarantee the provision of tangible benefits, both directly and indirectly. Community involvement in conservation will not be possible in Ethiopia, however, without the transfer of land rights and security of tenure (MoA, 1993). Without these, the indigenous and resident peoples of Ethiopia have no way of controlling access or use of their land, little negotiating power, and no security.

Acknowledgment of indigenous peoples' rights also requires recognition and acceptance of IUCN conservation-area descriptions and guidelines as being impractical for countries like Ethiopia, given the current level of resource dependency. Along these same lines, national and expatriate conservationists in Ethiopia must be willing to accept community involvement in the management of Ethiopia's protected areas, be adaptive when required, and be supportive of bans on forced resettlement. This last solution is important as it recognizes that forced resettlement of indigenous people is a violation of their rights (Turton, 1987). It also serves to recognize the role that indigenous people play in the conservation and maintenance of biodiversity (Western, 1982; Sandford, 1983; Enghoff, 1990; Jacobs and Schloeder, 1993).

In the event that indigenous people do obtain land rights and security, and the right to participate in the development of protected-area management strategies, the following would be required to ensure the success of any protected area program:

- *Adopt new protected-area boundaries and descriptions*
In recognition of indigenous rights and to differentiate core protection areas from controlled multiple-use areas.
- *Establish multiple-use zones*
Based on a legal partnership agreement between the conservation authority and the local people. This also would facilitate establishment of guidelines regarding control and limits on sustainable-use of multiple-use zones.
- *Establish conservation-area management committees*
A committee (including representatives from the local community, park staff, and townspeople) would be responsible for the development, approval, and implementation of management plans.
- *Establish a legal framework under which committees must operate*
For the purpose of establishing a clear definition of partnership, rights, and responsibilities.

- *Establish locally-controlled community committee*
For the purpose of regulating settlements, livestock holdings, agricultural practices, market opportunities, natural-resource use, development (private and public), and immigration.
- *Share protected-area revenue when appropriate*

Conclusions

This case study differs from the others presented in that the impacts experienced by Ethiopia were a result of the country's engagement in different types of armed conflict that were long in duration. The constraints to conservation- and protected-area management under these conditions were: A continual lack of economic and social development on a countrywide basis, the adoption and enforcement of inappropriate government policies, and widespread hunting due to increased access to weaponry.

The complexity of the conservation situation, however, does not prevent us from deriving some solutions like those derived for the other case studies presented here. These are: 1) Areas that experienced the fewest losses were those where the local communities were involved in protected-area management; 2) Receiving some form of relief or assistance; and 3) Working with various sectors to seek solutions to improve their situation.

Given that conflict may be a recurring theme in parts of Africa, the solutions presented here point to the need for an integrated approach to conservation and management. This is true not only for Ethiopia's protected areas and natural assets, but for those of other African countries. Furthermore, without addressing issues outside the boundaries of most protected areas, there is little hope of successful conservation or management within them. The long-term success of conservation—using the solutions presented here and in other case studies—also depends on a long-term commitment by all government organizations, NGOs, and their representatives with regard to the projects and people with whom they work. In this way people can learn to trust and respect each other, and share rights and responsibilities at all levels. Foregoing engagement in armed conflict and a real commitment to economic growth, development, and conservation also is essential. African countries otherwise can expect to lose much in terms of their many natural and human resources.

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List of Acronyms

ALF	Afar Liberation Front
EU	European Union
EPLF	Eritrean People's Liberation Front
EWCO	Ethiopian Wildlife Conservation Organization
GFDRE	Government of the Federal Democratic Republic of Ethiopia
GO	Government Organization
IUCN	International Union for the Conservation of Nature
MoA	Ministry of Agriculture
MoNRDEP	Ministry of Natural Resources, Development, and Environmental Protection
NGO	Non-government organization
OLF	Oromo Liberation Front
OXFAM	Oxford Famine Relief Fund
UNDP	United Nations Development Program
UNESCO	United Nations Environment and Secretariat Council Organization
WCS	Wildlife Conservation Society
WMP	Wildlife Management Policy
WSLF	Western Somali Liberation Front
WWF	World Wide Fund for Nature (UK)
ZSL	Zoological Society of London

