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**SUPPLEMENTARY ENVIRONMENTAL ASSESSMENT FOR LOCUST AND  
GRASSHOPPER CONTROL IN ETHIOPIA**

United States Agency for International Development  
Mission to Ethiopia

In Cooperation with the Government of Ethiopia

Addis Ababa, Ethiopia

June 1993

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## LIST OF ACRONYMS AND ABBREVIATIONS

AChE	Acetyl cholinesterase
AELGA	African Emergency Locust/Grasshopper Assistance Project - AID/Washington
AGRHYMET	Agro-Hydro-Meteorologie, in Niger.
A.I.D.	Agency for International Development
AID/W	Agency for International Development/Washington, D.C.
APHIS	Animal and Plant Health Inspection Service of USDA
CFR	US Code of Federal Regulations
CIDA	Canadian International Development Agency
CPD	Ethiopian Crop Protection Department
DLCO-EA	Desert Locust Control Organization for Eastern Africa
EA	Environmental Assessment
EEC	European Economic Commission
EPA	US Environmental Protection Agency
EWCO	Ethiopian Wildlife Conservation Organization
FAO	Food and Agriculture Organization of the UN
FAO/WFP	World Food Program, FAO
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit, German Development Agency
ha	hectare
IAR	Ethiopian Institute for Agricultural Research
IFAD	International Fund for Agricultural Development
IPM	Integrated pest management
km	kilometer
mg/kg	milligrams per kilogram
MOA	Ministry of Agriculture
MONR/EP	Ministry of Natural Resources and Environmental Protection
ODA	Overseas Development Agency, United Kingdom
OP	Organophosphate insecticide
PEA	Programmatic Environmental Assessment
ppm	parts per million (ambient concentration)
SEA	Supplemental Environmental Assessment
SIDA	Swedish International Development Agency
TDY	Temporary Duty
TGE	Transitional Government of Ethiopia
ULV	Ultra Low Volume (pesticide formulation)
USAID	United States Agency for International Development
USAID/Ethiopia	USAID Mission to Ethiopia
USG	United States Government

## PREFACE

This document is a supplement to the Programmatic Environmental Assessment (PFA) concerning USAID assistance in Locust control Programs. This Supplementary Environmental Assessment (SEA) was prepared by consultants from USAID/W, with support from the Government of Ethiopia. Contact persons are listed in Appendix A.

This document has been reviewed by USAID/Ethiopia, the Government of Ethiopia, DLCO-EA, and AID/W. It reflects the best current description of future options for the USAID assistance programs to the Ethiopian Ministries of Agriculture (MOA) and Natural Resources and Environmental Protection (MONR & EP) and to the Desert Locust Control Organization for Eastern Africa (DLCO-EA) for locust management. It contains the best estimates of environmental impact and possible mitigating strategies. This may include training programs covering improved health and environmental protection, as well as support for early survey and spot treatment programs. Alternatives to chemical pesticides are encouraged in this document. This document also supports prudent and environmentally sound use of pesticides when these materials are necessary. Any commitments for possible future programs are contingent on the future needs for locust control, the capabilities of the DLCO-EA and TGE, and on a decision by USAID to provide assistance.

## 1.0 EXECUTIVE SUMMARY

This assessment is a supplement to the Programmatic Environmental Assessment (PEA) for Locust and Grasshopper Control in Africa and Asia. It was developed to provide explicit, country-specific environmental details and guidance in Ethiopia in order to allow A.I.D. assistance in regard to locust management. The material in this document considers the locust species in Ethiopia and the potential environmental impact of control operations. This environmental assessment is an extension of the PEA and is, as such, an integral part of it. Ethiopia-specific PEA recommendations are included in Appendix B. An SEA was completed for Eritrea early in 1993, at the time that Eritrea was gaining independence from Ethiopia. There is some overlap in coverage between the two countries, and commonalities in locust/grasshopper control. Both SEAs, this one and the Eritrea SEA, along with the PEA, should be consulted during planning and operational stages of implementation.

The information contained in this document is intended for use by the USAID/Ethiopia Mission, the Ethiopian Ministry of Agriculture, and the Desert Locust Control Organization of Eastern Africa (DLCO-EA) to guide environmentally sound desert locust management in Ethiopia. Additional relevant information should be added to this SEA as needed in the form of appendices.

### INTEGRATED PEST MANAGEMENT

This document recommends that any U.S.-funded assistance concerning locust management should promote the development of an integrated pest management (IPM) program for pest control. An IPM program reduces pesticide usage by relying on a variety of locust control methods and using insecticides only when necessary. IPM also promotes monitoring, early warning, preventive measures, and threshold-based decision making when feasible. Non-chemical methods of locust control can include destroying locust eggs by turning the soil and, in the future, applying micro-organisms (that are pathogenic to locusts, but not humans) to locust breeding areas. In addition, continued research into the identification and use of natural chemicals that are species or insect-group specific should be supported. This SEA recommends that FAO take the lead in coordinating these alternate control measure efforts, since FAO has had considerable experience in Africa and because FAO already has an international coordinating role regarding locust control. The AELGA Project

could collaborate with CPD on egg pod destruction initiatives.

FAO and USAID support survey and immediate treatment operations to prevent locust outbreaks. Prevention reduces crop loss and operational costs. Early season intervention requires less pesticide than late season emergency operations, and therefore has less impact on the environment.

#### INVENTORY AND MAPPING PROCEDURES

This SEA recommends that inventory and mapping procedures be developed for determining and tracking environmentally fragile areas, pesticide stocks, manpower and equipment possessed by locust control groups. It follows with a breakdown of the activities by organization; the Transitional Government of Ethiopia (TGE) should be responsible for officially mapping and designating environmentally fragile areas where pesticide use should be banned or limited. The TGE should also provide updated lists of pesticide, equipment, and manpower inventories to FAO. DLCO should provide the same types of information on inventories to FAO. FAO should then be responsible for establishing a system of dynamic inventory for presentation to USAID/Ethiopia and other donors. USAID should take an active role, with DLCO and FAO in assisting in identifying alternate use or disposal of pesticide stocks.

#### ENVIRONMENTAL PROTECTION

Environmental awareness is emphasized in this SEA. The fragile ecosystems represented by rivers, lakes, and national parks merit special attention. Fragile ecological areas, as well as human settlements, need to be protected from chemical pesticides, as the impact can be both dramatic and long lasting. Buffer zones of 2.5 to 5 km surrounding established protected areas should be observed in any U.S.-funded locust control operation. Both chemicals that should and should not be used near these buffer zones are identified in Appendix F. Pesticides used should be those with the minimum impact on non-target species. Information on species of animals found in Ethiopia are included in Appendix I.

This SEA suggests that USAID should encourage Ethiopia to monitor environmental pesticide residues. Monitoring for pesticide effects on non-target species and the environment should be included as an integral part of any pesticide use program. The results from this, as well as treatment efficacy,

should be used in the planning and operational phases of future locust control programs to adjust or curtail environmentally damaging operations.

#### PESTICIDE MANAGEMENT

Proper pesticide management must be a priority in locust control operations. A list of the pesticides that can be provided with U.S. assistance is included in Appendix F. Misused pesticides have a negative effect on the environment, health, and crop production. When spraying is required, the minimum area should be sprayed, and small spray planes should be favored over medium to large two- or four-engine transport type planes. Pesticide storage, application, and disposal are important components of pesticide use. As recently as March of 1993, DLCO had pesticides at their Addis storage facility stored with fertilizer, old papers, broken electronics equipment, and used jet fuel containers. Many of the pesticides containers were unlabeled though the contents were known by the storeroom manager. Expired pesticides were not separated from useable pesticides. Upon being notified, the situation was immediately rectified by DLCO. USAID/Ethiopia should continue to monitor the storage situation, when possible.

Pesticides should only be stored with other pesticides and should never be stored with flammable or potentially explosive materials. Pesticide containers must be disposed of in a manner that will prevent food or water from being stored in them. This SEA encourages the Government of Ethiopia to enforce its regulations dealing with pesticides. Pesticide disposal is problematic at this time due to a paucity of viable options. At the very least, the outdated and banned (in the USA) pesticides should be stored under proper conditions until disposal options become available. These issues must be fully considered and monitored in a USAID-funded activity.

As of June 1, 1993 the DLCO-EA in Addis Ababa had 7,600 liters of fenitrothion and 14,600 liters of malathion. As of June 15, 1993 the storage facility in Addis contained 74 barrels of fenitrothion (14,800 liters). The fenitrothion barrels were dented and leaking and considered to be too unsafe to load onto trucks. To solve this problem it would be necessary to decant the pesticide into newer barrels or containers for shipment to areas of most urgent need, such as Dire Dawa and the Hararge region. As of June 22, 1993, the DLCO-EA storage facility in Dire Dawa contained no stocks of useable pesticide; however,

there were 14 barrels of fenitrothion 100% ULV (2,800 liters) stored at the airport runway for current use. Up to this point 12,000 liters of malathion 95% ULV had been applied from the DLCO storeroom in Dire Dawa during 1993, and it was emptied. USAID had authorized the donation of 40,000 liters of additional pesticide, as of June, 1993. There are also stocks of obsolete and banned (in the U.S.) pesticides being held by the DLCO at two locations in Ethiopia, Dire Dawa and Addis. These are being stored properly and should continue to be stored until methods for their disposal are planned. A list of these obsolete and banned pesticides is included in Appendix G.

#### PUBLIC HEALTH

In the past, USAID, through the AELGA project has produced an array of education materials dealing with pesticide safety and health issues; USAID should now support the reproduction, distribution, and presentation of such public education materials in Ethiopia. All health centers should be provided with posters describing diagnosis and treatment of pesticide poisonings, as well as medicines and antidotes required for treatment of poisoning cases. Analysis of blood acetylcholinesterase levels in handlers and applicators of organophosphate (OP) insecticides is recommended, and should be a part of any system using pesticides donated by the U.S.

#### TRAINING

Training must be part of any USAID pest control assistance program. Attention to public health, pesticide safety, and the environmental effects of pesticide use and misuse should be emphasized to Ethiopian Ministry of Agriculture and public health sector personnel, to DLCO-EA personnel, and to the general public through education and public awareness campaigns. Farmer training and village brigades can be an important and economical part of management operations, and their use should be stressed. Safe use of insecticides is encouraged and every shipment of pesticides from the U.S. is accompanied by safety equipment. A list of the safety equipment possessed by the DLCO is included in Appendix H.

#### RESEARCH

Research on forecasting, monitoring, alternate control techniques should be pursued in Ethiopia. Biological controls are being pursued in other parts of Africa by the AELGA project

in coordination with Montana State University and Mycotech Corporation. Several promising fungal species have now been identified as possible controls for locusts and grasshoppers. Research and testing of these species should be undertaken in Ethiopia, in cooperation with DLCO, the Ethiopian Crop Protection Department (CPD), and the University community. The use of greenness maps and rainfall data should be used in Ethiopia for monitoring and forecasting probable locations of locust breeding areas and outbreaks.

Research on locust control alternatives to pesticides has been carried out by the FAO in the past. This type of research should continue, and be transferred to Ethiopia, and other countries in the Horn and Red Sea area. Such research includes the use of insect growth regulators and other chemicals which may disrupt locust behaviors, such as mating and swarming. More research is needed on the efficacy of various pesticides and pesticide application. The results of research on techniques for assessing environmental impact of insecticides, which has been performed in West African countries, should be transferred to and tested in Ethiopia. As well, research on the use of plant extracts, such as sesame, should be pursued in Ethiopia and Eritrea.

#### IMPLEMENTATION

AID/W should continue to provide guidance in locust control to USAID/Ethiopia. The AELGA Project has already provided technical assistance, situation reports, and guidance regionally and to USAID/Ethiopia on appropriate actions to take in dealing with locust outbreaks, and in completing this SEA, and ones like it in surrounding countries. USAID has worked multilaterally in the Horn region, and should continue to be involved in regional multidonor efforts to control outbreaks.

The TGE's Crop Protection Division has scouts and agents at the regional, zonal and district levels. Agents at the district level are responsible for training farmer brigades, whereas those at the zonal level are most involved in control efforts. Agents provide farmers with motorized knapsack sprayers, fuel, and pesticides. The CPD is responsible for all research on migratory pests and expects the farmers to control pests that are not usually migratory, and will step in only when the pests begin to exceed the capabilities of the farmers.

The cooperation between the CPD and DLCO is considered

strong in the area of locust control, with CPD doing most of the scouting, dealing with farmers, and ground control, while DLCO primarily performs aerial survey and control efforts, using information provided by the CPD. Pesticides from both groups are being used in the control effort. The cooperation between CPD and FAO has been effective at coordinating donor's efforts, so as to avoid overlap in donations to Ministry of agriculture (MOA)/CPD. One area that could use improvement is in transparency and reporting of equipment inventories held by the MOA/CPD. USAID/Addis could use this information when making decisions on donations of equipment to accompany insecticide shipments. AELGA, USAID, and other high profile donors and regional coordination groups could explore the possibilities that DLCO be made into an associate International Agricultural Research Center with strong operational functions.

## 2.0 PURPOSE AND PROCEDURES

### 2.1 Background

Due to a plague of locusts in eastern and sahelian Africa in 1987, the Administrator of the U.S. Agency for International Development (USAID) declared an emergency waiver of the Agency's Environmental Procedures [22 CFR part 216] governing the provision of pesticides. The waiver permitted USAID to procure and use pesticides for locust control without full compliance with the Agency's environmental procedures. The waiver expired on 15 August 1989. Since then, all USAID assistance for procurement and use of pesticides must fully comply with the Agency's environmental procedures. The 1989 Programmatic Environmental Assessment (PEA) for Locust and Grasshopper Control in Africa/Asia and the country-specific Supplemental Environmental Assessments (SEAs) provide guidance on environmentally sound locust management procedures. SEAs have been completed and approved for most Sahelian countries, Eritrea, Morocco, Tunisia, and Madagascar. In 1991, A.I.D.'s African Emergency Locust and Grasshopper Assistance (AELGA) Project reviewed the PEA and SEAs in a Review of Environmental Concerns in A.I.D. Programs for Locust and Grasshopper Control, Publication Series No. 91-7.

Locust and grasshopper control involves preventive intervention as well as emergency response. Ideally, strategic locust management will negate the need for emergency response. An outbreak of locusts in Ethiopia requires rapid, coordinated preventive measures to avoid the development of a locust plague. Such a plague would certainly devastate large parts of Ethiopia's agricultural production base, and would threaten the crops of the Sahel, North Africa, and parts of Western Asia. The Red Sea coastal areas of Sudan and the Horn of Africa are critical areas where plagues often originate. The future AELGA project will begin to focus more attention on these regions.

Unfortunately the Desert Locust Control Organization for Eastern Africa (DLCO-EA) has been severely limited in its preventive capacity due to under-funding. An important task is to supply DLCO-EA with funding, equipment, and labor to prevent a massive upsurge of locusts that could develop into a full scale plague. The long range goal of U.S. assistance should be to help effect a sustainable preventive approach to locust management in desert locust outbreak areas. This SEA will describe both the

immediate and long term measures necessary to achieve environmentally sound locust management in Ethiopia.

Should USAID/Ethiopia choose to provide chemical pesticides, the Environmental Procedures in Regulation 16 (22 CFR 216) must be followed. The PEA and this document fulfill the requirements necessary to allow USAID to provide assistance to Ethiopia.

## 2.2 Drafting Procedure

AID Environmental Procedure 22 CFR 216.3 (a) (4) describes the process to be used in preparing an Environmental Assessment. The rationale and approach for country-specific SEAs are outlined in cables State 258416 (12 Aug. 1989) and State 275775 (28 Aug. 1989).

This SEA was completed in June 1993 by consultant and entomologist Dr. Alan C. Schroeder from a draft SEA document produced by consultant and entomologist Dr. Gary C. Jahn in March 1993. The USAID/Ethiopia Mission and AFR/ONI/TPPI (AELGA Project) in AID/W assisted in the preparation of this draft by providing logistical support, except local transportation in Ethiopia, for needed field work, reference documentation, and contacts within the Ethiopian government.

## 2.3. Previous Assessments

The previous assessment concerning this subject, and the primary supportive document is the Programmatic Environmental Assessment PEA for Locust and Grasshopper Control in Africa/Asia (TAMS/CICP, 1989). This SEA is a supplement to the PEA, and should be considered an integral part of the PEA. This document concerns the country-specific environmental issues not necessarily addressed in the PEA.

The following documents were used in preparing this assessment:

- (1) Review of Environmental Concerns in A.I.D. Programs for Locust and Grasshopper Control (U.S. Agency for International Development, Washington, D.C., September 1991);

- (2) Final Report on the Handling of Pesticide in Anglophone West Africa. (Youdeowei, 1989 FAO Conference report, Accra, Ghana);
- (3) Final Report on Pesticide Management in Francophone West Africa. (Alomenu, 1989 Report on the FAO Conference at Accra, Ghana);
- (4) Supplemental Environmental Assessments for Chad, Cameroon, Burkina Faso, Mali, Mauritania, Niger, Senegal, Sudan, Madagascar, and Eritrea;
- (5) The Africa Emergency Locust/Grasshopper Assistance Midterm Evaluation (with specific-country case studies for Chad, Mali, Niger, Mauritania, and Cape Verde) (Appleby, Settle & Showler, 1989).
- (6) Pesticide User's Guide: A Handbook for African Extension Workers. (Overholt and Castleton, 1989, USAID/AFR/TR/ANR/AELGA, Washington, DC).
- (7) Pest Management Guidelines of the Agency for International Development. (Overholt, Showler, Waite, and Larew, 1991, USAID, Washington, DC).
- (8) Locust/Grasshopper Management: Operations Handbook. (USAID, 1989, Washington, DC).
- (9) Supplemental Environmental Assessment of the Eritrean Locust Control Program. (Jahn, 1993, USAID, Washington, DC).

These documents and USAID/Ethiopia data were used in this SEA without citation. Other relevant documents are cited in section 5.0 and Appendix C.

#### 2.4. U.S. Environmental Regulations

It is USAID policy to ensure that any negative environmental consequences of an AID-financed activity be identified and mitigated to the fullest extent possible prior to a final funding and implementation decision. This document covers specific environmental consequences involved with chemical pesticide use, and necessary safeguards and mitigation for any future control programs. In addition, alternatives to chemical pesticides are

recommended when appropriate, and considered to be part of an overall integrated pest management (IPM) program.

According to Pest Management Guidelines of the Agency for International Development (1991):

"A.I.D.'s regulations require that the potential environmental consequences of A.I.D.-financed activities are identified and considered by A.I.D. and the host country prior to the final decision to proceed with an activity. The procedures that guide this regulation are set forth in 22 CFR Part 216. Section 117(c) of the Foreign Assistance Act and Section 533(g) of the 1991 Appropriation Act require that A.I.D. review its projects, programs, and activities in accordance with requirements of 22 CFR Part 216. A.I.D.'s policy is to approve for procurement or use only those pesticides that are critically needed and proven safe."

U.S. pesticide contributions are regulated by U.S. pesticide laws and procedures (as described in the PEA). Only those pesticides listed in the PEA (or amendments thereof) as being approved for use against locusts or grasshoppers are acceptable (see Appendix F). In a U.S.-funded operation, pesticides are to be used according to label instructions only. Used pesticide containers and any unwanted pesticide resulting from a U.S.-funded operation must be disposed of properly and safely. No U.S. funds shall be used to purchase, transport, or apply any pesticide that has been banned in the U.S. This includes the chlorinated hydrocarbons such as dieldrin.

## 2.5 Ethiopian Environmental Procedures

### 2.5.1 Ethiopian Pesticide Regulations

As far back as 1971 Ethiopia had a decree (1971, #56) to provide for plant protection under the Ministry of Agriculture. In this decree (written primarily for plant quarantine) was a section entitled "Powers of the Minister Relating to Pesticides" which allowed the Minister the power to prohibit, restrict, and regulate the importation into and the manufacture and sale of pesticides in Ethiopia. The problem with the decree is that it was not signed into law for implementation and enforcement. At the time of this assessment there were no existing regulations,

nor enforcement mechanisms.

In 1990 another decree (1990, #20) was written specifically to provide for the registration and control of pesticides, but again it was never signed into law. This decree was very detailed and did provide the foundation for a similar decree written and to be signed into law by the council of Ministers in June 1993 (described below).

**[USAID/Addis insert info here after receive copy from Haimanot Abebe, MOA/CPD]**

Implications of the decree are that Ethiopia will have laws very similar to those found in the USA and Great Britain concerning registration, manufacture, and use of pesticides. The laws of these two countries were referenced to produce the decree. The problem will likely come in implementation and enforcement. At present the TGE's resources are fully committed to resettle and rehabilitate drought and war victims. Thus, it is unlikely that enforcement of pesticide laws will take high priority in the near future. The AELGA project and other donors, in close cooperation with the MOA, will be challenged with providing appropriate training and oversight for pesticide use until Ethiopian laws and enforcement are implemented.

#### 2.5.2 Ethiopian Environmental Regulations

Environmental regulations have recently (1993) been drafted by the Environmental Regulations Department in the newly-formed Ministry of Natural Resources and Environmental Protection (MONR/EP). The draft document is extensive and covers the history of status of environmental management in Ethiopia (volume I) to all aspects of environmental protection, from theoretical foundation to implementation of legislation, and public awareness campaigns (volume II). Integrated Pest Management is not part of volume II, and should be included in any and all environmental program planning. The documents are still in the draft stage and are considered to be sufficiently sensitive such that no quotes or copies of them could, as of June 1993, leave the Ministry. USAID/Ethiopia should strive to receive copies of these documents once they are released (September 1993).

It was stated by the head of the Environmental Regulations Department that the real value of the Ethiopian Environmental Regulations document will be felt only if the document receives legal status and the regulations are implemented and enforced.

Volume II of the document lists a series of "Priority Needs," one of which is the environmentally sound management of hazardous wastes and toxic chemicals. When queried on the above decree on registration and control of pesticides drafted recently by the Ministry of Agriculture, the head of the Environmental Regulations Department was not aware of the document. Apparently there needs to be better collaboration and coordination between ministries, especially those as naturally linked as agriculture and natural resources. USAID should attempt to promote this interaction wherever and whenever possible.

The most urgent needs of the MONR/EP at present are those of capacity and institution building for long term development. MONR/EP would also like to receive copies of satellite imaging maps, both recent and those dating back several years, in order to begin to note the rate and state of environmental deterioration. Technical assistance in their interpretation would also be needed. This type of information is also useful, as "greenness maps", for predicting locust breeding and infestation areas; and there should be cooperation and sharing of information between the Ministries of Agriculture and Natural Resources/Environmental Protection. USAID should ensure that there is no duplication of effort (especially regarding the expense of satellite maps) between programs with the different ministries. It may be possible to obtain maps for Ethiopia from AGRHYMET (Agro-Hydro-Meteorologie) in Niger.

The Ethiopian Wildlife Conservation Organization (EWCO) performs some environmental monitoring, and reports on fish kills or death of game animals; this work is often done in collaboration with university specialists. In addition, courses in wildlife conservation are offered to agricultural scientists at Alemaya University (the main agricultural university). Past strong links, through wildlife conservation projects, have been formed between personnel at Montana State University and EWCO. Currently the USAID/Africa Bureau AELGA project funds important research on environmentally sound locust control through Montana State University/Mycotech Corporation. These links should be capitalized on by future USAID/Ethiopia locust control and environmental monitoring efforts.

### 3.0 LOCUST SITUATION IN THE HORN OF AFRICA AND ETHIOPIA

#### 3.1 Locust infestation of July 1992 to June 1993

Desert locusts breed opportunistically in the Tigray Administrative Region in northern Ethiopia, in the Ogaden, and in most of Eritrea. A map depicting the administrative regions of Ethiopia is given as Map 1 in Appendix D. If the weather is favorable and the locusts are not adequately controlled, they spread further into Ethiopia. The origins of the most recent Eritrean infestations are uncertain. Locust breeding occurred on the central Tihama of Saudi Arabia between April and June 1992. These locust were presumably controlled, but some swarms moved westward across the Red Sea to Eritrea and Sudan. In July 1992 a locust upsurge in the summer breeding season in Red Sea coastal areas of Eritrea, Sudan, Saudi Arabia, Yemen, and Egypt was reported. In late July there was widespread heavy rain on the Eritrean coast and on the Tihama of Yemen. There was also localized breeding in the interior of Sudan during the summer rains. Thus, the August 1992 infestation in Eritrea probably had multiple origins. This is typical of locust upsurges in the Red Sea area in winter and spring. These groups were, at the time, considered to be just extra-large populations of solitary phase locusts.

Above average rainfall in September and October of 1992 led to an upsurge of desert locust in the winter breeding areas along the Red Sea Coast of Yemen, Sudan, and Eritrea. Desert locusts started breeding and two generations were probably produced before the first swarms were observed in early November 1992. In November 1992 adults were found at an average density of 500 per hectare. DLCO-EA initiated spraying activities in the infested areas of Sudan and Eritrea to control the locust populations before they reached the adult stage, where they develop wings and start to swarm. Unfortunately, these efforts were not sufficient and the locusts produced a third generation of semi-gregarious hoppers.

During normal seasons locusts form partially gregarious populations that die without producing hopper bands. However, in seasons experiencing high amounts of rainfall and vegetation growth, outbreaks can occur whereby locusts become fully gregarised, breed successfully, and produce hopper bands and swarms. In February 1993, localized fully gregarious populations produced hopper bands in Eritrea and Sudan. There were over 1000

adult desert locusts per hectare, and more than 5000 hoppers per hectare in some infested areas. All of the locusts in a band were at the same stage of development. Desert locusts infested a total area of approximately 1180 km<sup>2</sup>. By late February 158 km<sup>2</sup> were treated: 608 hectares were sprayed from the ground and 15,200 hectares were sprayed from the air using 8,130 liters of fenitrothion ULV. At the early stages of this outbreak and during February/March, populations continued to be largely semi-gregarious.

The sprayed area included land mined areas from Massawa to Alg Ma'amas. The landmines prohibited survey and spraying by ground. Air surveys indicated that the conditions and vegetation in the mined areas were suitable for locust breeding. However, air surveys were not sufficient to indicate whether or not locusts were present. DLCO-EA assumed that locusts were in the mined areas and blanket sprayed ULV fenitrothion by air. While this decision made sense in terms of locust control, it may not have been the best environmental choice. Given that the spraying was done near the Red Sea coast, the potential for damage to wildlife, especially aquatic wildlife, was high. Under these conditions it might have been better to apply acephate or malathion to the mined areas. Acephate and malathion are less toxic than fenitrothion to fish, birds, and aquatic invertebrates. Bioaccumulation is also less of a problem with acephate and malathion than with fenitrothion. However, fenitrothion is one of the USAID-approved insecticides. A complete list of pesticides approved by USAID for locust control is given in Appendix F. Each of these pesticides can be used in a locust control operation that receives assistance from A.I.D., but only after consulting the labels for safety and usage information. More detailed information on each of the insecticides listed in Appendix F can be found in the PEA.

March 1993

As of 1 March 1993, 1022 km<sup>2</sup> of locust-infested desert remained to be treated. After assessing the pesticide inventory of DLCO-EA and MOA-Eritrea, USAID determined that 25,000 liters of 96% ULV malathion were needed to prevent a locust outbreak. The AID-supplied malathion, and MOA's own stocks of fenitrothion were used to treat the remaining locust-infested areas.

April 1993

Throughout April 1993 Ethiopian Crop Protection Department (CPD) and DLCO-EA continued to survey Eritrea for locusts, but no spraying was necessary. On 29 April 1993, African migratory locusts were reported by DLCO in Dire Dawa, Ethiopia. Of greater concern, however, weather conditions were favorable for locust breeding, and the CPD and DLCO-EA accelerated the implementation of preparedness measures for locust outbreaks.

May 1993

On 15 May 1993, DLCO-EA reported that the locust outbreak areas along the Red Sea coasts remained relatively calm during the first half of May, however substantial rains in Djibouti, northern Somalia, and eastern Ethiopia would likely enhance breeding conditions for migratory and desert locusts. Ground surveys along the coast of Sudan found very few locust adults. Scattered, high density adult and hopper groups were noted in Zulu, Foro, and Gela. In a mix of migratory and desert locusts, up to 1000 - 1500 adults/ha were recorded in areas around Badda. In northern Somalia, two unconfirmed swarms and many other smaller swarms were seen flying westward toward the Ethiopian border from areas west of Bulhar and from the northwest of Borama. Light infestations of migratory and desert locusts were observed everywhere in the Republic of Djibouti. In Eastern Ethiopia, swarms and infestations of migratory and desert locusts, probably coming from northern Somalia, were spotted coming from Dagahabur, Awareh, the railway line area between Erer and Aisia near the Djibouti border. A DLCO aircraft was positioned at Dire Dawa and aerial control operations covered 220 ha with 110 liters of Malathion ULV. Kenya, Tanzania and Uganda were reported by DLCO to be free of locusts.

By the end of May, the situation in Sudan and Djibouti remained relatively calm, but the situation in eastern Ethiopia was beginning to worsen. Swarms and hopper bands and dense infestations covered the entire railway line area of eastern Ethiopia, from Awash to Shinelle and east to Borama on the northwest border with Somalia. Control measures were undertaken against sizeable groups only. In all by the end of May, 5,980 liters of malathion 95% ULV and 400 liters of fenitrothion 95% ULV had been applied by air to locusts (mostly migratory) covering a total of 24,000 ha, half of which was covered by bands and the other half by swarms.

Eritrea became independent from Ethiopia in April, 1993 and an SEA for Eritrea was completed in the same month. By May, in the Foro area of Eritrea, 700 ha were found to be infested with adults at 1000/ha; and in the Arafale area, 150 ha were found to be infested with a mix of adult desert and migratory locusts at 1400 and 1500/ha, respectively. In addition, an FAO consultant reported sighting 9,000 locusts/ha in Gela and 23,000 locusts/ha in Wangebo on a total estimated area of 150 ha. On a large plain between Massawa and Wachiro, desert locust hoppers and fledglings were estimated at 60,000 - 100,000/ha covering an area of 1,500 ha.

As the swarms began to move northward toward Wello and Tigray, farmers in Tigray participated in control efforts. Crop loss (sorghum, finger millet, maize) damage in the Wello region was reported at 320 ha. Five aircraft were programmed for the control efforts, one for Mekele, one for Kombolcha, one to be sent to Dubti, and two on standby in Addis for mobilization when needed.

During the latter half of May, weather conditions, including heavy rainfalls, continued to make conditions conducive to further locust breeding throughout the entire infested area. It was reported that the DLCO and Ethiopian MOA together had 47,800 liters of pesticides remaining for locust control at this time.

June 1993

As of June 15, DLCO reported that "spectacular events" had occurred in the Hararghe region of eastern Ethiopia, in that large numbers of migratory locust hoppers were hatching as fast as DLCO could spray and eliminate them. DLCO aerial spray operations in the first half of June had applied 4,660 liters of 96% fenitrothion ULV, covering a total area of 10,615 ha; and 800 liters of malathion 95% ULV, covering 10 X 4 km. Only four hundred ha were treated against mature adults and the remainder was treated for hoppers, mostly in the 3rd instar. In addition, there were reports of worsening infestations in Wello and Tigray (two of the most food insecure regions of Ethiopia), as well as the Afar region of the Awash Basin.

In Eritrea and Djibouti the situation remained relatively calm, but in coastal Sudan and Yemen large desert locust swarms had been sighted. Swarms in Yemen were extensive and measured over ten thousand locusts per hectare, with over 2,312 km<sup>2</sup>

infested. Control efforts in Yemen were minimal due to lack of proper organization, sufficiently trained personnel, and control facilities. And the effect of this outbreak was beginning to be felt across the Red Sea in Sudan, where several swarms had been spotted. During this time conditions in the traditional winter and summer breeding areas remained prime for locust breeding due to unusually heavy rainfall and resulting vegetative growth; heavy infestations of desert locust were predicted.

Most of the migratory locusts present in the south and north Wollo regions in late June 1993 were second generation hoppers resulting from adult swarms that entered the area from the Afar region in late May and early June. As the locusts move from the lowlands regions of Afar and Haraghe to the highlands, and the long season crops begin to sprout, the percentage of pasture to crop lands affected will begin to shift. In early June, 91% of the land area affected was pasture, but by late June much of the control efforts in the highlands was on croplands. Map 2 in Appendix D (produced by the DLCO) depicts the locust situation for early July.

#### Outlook

The outlook was that migratory locust swarms would likely continue to enter eastern Ethiopia from northern Somalia, and that the locust bands present in northern Ethiopia would be controlled before breeding. It was expected that desert locusts would breed in Red Sea coastal areas during the winter breeding season, and then may move to other parts of the Horn, including Ethiopia.

### 3.2 Agricultural Resources

Most of the food crops grown in Ethiopia are subject to desert locust infestation, including: millet, sorghum, maize, wheat, barley, teff, pulses, oilseed, fruit trees, and vegetables. Map 3 in Appendix D shows major food crops production by administrative region. Coffee is not usually attacked, though locusts occasionally defoliate bushes. Locusts do most damage to coffee at the flowering stage or when they settle on bushes in such large numbers that branches break under their weight. Tea and tobacco are also grown in Ethiopia, but the effects of locust feeding on them are unknown. Map 4 in Appendix D shows major stimulant crops production by administrative region. Fiber crops such as cotton, kenaf, enset,

sisal, and dum palm are also grown but reports of locust damage are unknown. The production areas for these crops are given in Map 5 of Appendix D. In addition, the rangelands used for feeding livestock are vulnerable to the desert locust; this is especially true of the June 1993 infestation in Dire Dawa, as 91% of it was on pasture lands. Thus, a locust plague can have a major impact on the supply of meat and dairy products as well as grain, fruit, and vegetables. By destroying seeds, a locust plague can affect local crop production for years.

Even without a locust plague the Food and Agriculture Organization/World Food Program (FAO/WFP) forecasts a structural food aid import need of 530,000 metric tons of cereal and an emergency food need of 340,000 metric tons for Ethiopia for 1993 (Table 1 in Appendix E). These emergency requirements do not include the food needs of refugees and returnees. In 1991/92 Ethiopia produced approximately 7.1 million metric tons of cereals and pulses (Table 2 in Appendix E). Thus, the estimated need for imported food is at least 12.4% of last year's production, without including the needs of refugees and returnees. According to FAO/WFP, approximately 4.5 million people in Ethiopia are at risk of not having enough food in 1993. A locust plague in Ethiopia could place additional numbers of people at risk of starvation. A harvest assessment reference map, showing areas at risk and rainfall patterns, is included as Map 6 in Appendix D.

### 3.3 Desert Locusts

The following plague species of locust are found in Ethiopia: the desert locust (Schistocera gregaria), the African migratory locust (Locusta migratoria migratorioides), and the tree locusts (Anacridium melanorhodon and A. m. arabafrum).

The desert locust is potentially the most dangerous of the locust pests because of the ability of swarms to fly rapidly across great distances. It has two to five generations per year. The life span of the desert locust depends on when and where it emerges. The winter generation of desert locust in eastern Ethiopia will live about 127 days. In general, the more quickly the locust matures, the shorter its life.

The Eritrean highlands and the northern highlands of Ethiopia (Tigray) slow movement of desert locusts to the breeding areas of the Red Sea coast. This means that potential desert

locust plagues originating in East Africa can be prevented if action is taken during or before localized outbreaks in Eritrea and Sudan. Eritrea hosts the spring, summer, and winter breeding areas of the desert locust. Spring generations of the desert locust can also breed in Kenya, Uganda, and Tanzania. During plagues they migrate northward through the Great Rift of Ethiopia.

Between plagues, swarms and hopper bands are rare and the desert locust inhabits the central, drier part of its distribution area. Populations tend to be scattered and the locusts exhibit solitary behavior. They are not economically important pests while solitary. Such periods of time are called locust recessions.

### 3.4 Locust Management - Overview

#### 3.4.1 Past Locust Campaigns

The longest recorded desert locust plague began in 1941 and lasted, with one short lull, more than twenty years. This plague began in India. In 1940, the Indian Locust Warning Service reported locusts invading from the west. By the summer of 1941 the plague had spread to Egypt, Sudan, and Eritrea. Due to war, preventive actions could not be taken and the locusts could not be controlled in Eritrea. Within weeks the locusts invaded British Somaliland, Somalia and eastern Ethiopia. The British mounted a crop protection campaign against this plague with the assistance and cooperation of the World War II Allies. The description of the campaign that follows is summarized from The Desert Locust (1972) by Stanley Baron.

An Interdepartmental Committee on Locust Control was established in England, to ensure that every department of the government could be utilized as needed in the control operation. Control operations began in Sudan in 1941. The plague temporarily subsided in 1947. Applications of sodium arsenate and BHC were used for the first time against locusts. There is no record of the health and environmental effects of applying these two highly toxic chemicals. Only Eritrea and Sudan sustained major crop losses.

The locust situation in Eritrea, Sudan, and other Red Sea coastal areas was worsened by the system of cultivation dependent on seasonal rains and floods. This is still the case today (see

section 3.7 "Cultural and Biological Management").

In October 1948 renewed locust outbreaks were reported from Saudi Arabia. By 1949 the swarms had spread back to India, Pakistan, and Iran. Campaign plans by FAO could not be implemented due to a lack of funds. The estimated cost of the proposed campaign was \$1.5 million. According to Baron, it was the failure to take action in 1948 that led to the next ten years of locust disasters.

The worst of these disasters was the 1958 plague that destroyed 167,000 metric tons of grain in Ethiopia, enough food to feed 1 million people for a year. The U.S. supplied Ethiopia with 20,000 metric tons of grain. Still, it was necessary for the Ethiopian government to make large scale tax remissions to afflicted farmers. As a consequence, Ethiopia's entire economy was set back. In 1963, the locust plague ended. It is not known if the control efforts contributed to the end of the plague, or if weather conditions were sufficient to stop the plague.

In November 1967, heavy rains initiated a new locust breeding season in Eritrea and Sudan. The situation worsened when locusts from southern Arabia flew into Eritrea. FAO issued a warning on 27 December 1967 that 30 countries were in danger of locust plagues if there was successful breeding in the spring of 1968. A coordinated control effort by DLCO and the Ministries of Agriculture in affected countries brought the plague to an end in 1969 using dieldrin and BHC. Dieldrin, BHC, and all other chlorinated hydrocarbon insecticides are no longer used for locust control, due to their persistence and the environmental hazards posed by these chemicals.

Twenty years passed as the locusts remained in remission, then in 1986, desert locust populations in Ethiopia (including Eritrea) and Sudan developed to plague status (Showler and Potter, 1991). Swarms reached Morocco and Algeria in 1987. By 1988, Tunisia was also invaded (Showler 1993). From 1986-89 DLCO coordinated a campaign against locust outbreaks in Eritrea and Ethiopia, using fenitrothion (also called sumithion, and folithion). The war between Eritrea and Ethiopia was responsible for the lack of proactive controls, and the unrest was a prime factor in allowing the outbreak to get out of control. Controls that occurred after the plague had started were not conducted at a level that would have any effect. Apparently weather conditions, and not crop protection tactics, caused the primary decline in desert locust activity in early 1989 (Potter and

Showler 1990, Showler and Potter 1991).

### 3.4.2 Crop Loss Assessment

All crops in the region, except coffee and prickly pear cactus, are at risk. Based on the history of grain loss in Ethiopia during locusts plagues, 150,000 to 170,000 metric tons of grain could be destroyed by locusts if the current outbreak becomes a plague. While this represents a loss of only 2-3% of the expected grain yield, it is enough grain to feed 1 million people for a year.

### 3.5 Locust Management Operations

#### 3.5.1 The Desert Locust Control Organization for Eastern Africa (DLCO-EA)

The Desert Locust Control Organization for Eastern Africa (DLCO-EA) was established by an international convention signed in Addis Ababa, Ethiopia on 22 August 1962. DLCO-EA headquarters were originally in Asmara, but were moved to Addis Ababa during the war. DLCO-EA has a branch office in each member nation, as well as an office in Asmara and Dire Dawa. Member nations are Ethiopia, Djibouti, Kenya, Somalia, Sudan, Tanzania, and Uganda (Eritrea has recently applied for membership).

The objectives of DLCO-EA are:

- 1) to promote the most effective control of the desert locust in the region;
- 2) to offer services in the coordination and reinforcement of national action against desert locust in the region;
- 3) to assist member governments in the control of other major pests provided that the locust situation so permits and that the member governments requiring such services avail chemicals and ground logistics for such operations. The other major pests are tsetse fly, quelea bird, and armyworm.

The DLCO-EA staff consisted of 60 professional and 290 general service staff who served under three specialized departments: Operations, Scientific Research, and Administration

and Finance. However, the staff was recently pared back to 150-160 skeleton staff due to financial constraints. Finances are obtained from annual contributions paid by member countries. Only Ethiopia has paid its fee in full. The lack of steady funding has made DLCO-EA difficult to operate. Salaries are often paid several months late (as of June 1993, 6-7 months late). As a result of financial constraints, DLCO activities have changed from those of strategic control to those of emergency control, just the opposite of what is hoped for locust control efforts. And the mandate of DLCO has expanded to add armyworm, quelea bird, and tsetse fly to appease governments not normally located in the path of the desert locust, further adding to the strain on finances (but also a necessary strategy to sustain the DLCO during the desert locust recession).

In addition to the contributions of member countries, DLCO-EA receives external assistance from a variety of donors including FAO, SIDA, ODA (UK), EEC, GTZ, CIDA, and IFAD. The external assistance is generally given during emergency locust outbreaks. External assistance takes the form of money, equipment, and technical assistance.

DLCO has more than 30 years of experience dealing with locusts; it is a valuable organization and if funded and managed properly, should continue. DLCO has suffered from lack of institutionalization due to local donor reluctance to finance them during locust recessions; funding only appears by the time situations have reached the emergency stage and are almost out of hand. Efforts need to be taken to strengthen these organizations. AELGA, USAID, and other high profile donors and regional coordination groups could explore the possibilities that DLCO and OCLALAV be made into associate International Agricultural Research Centers with strong operational functions.

In March 1993, USAID and DLCO-EA independently determined that there was an immediate need for 25,000 liters of ULV malathion in order to prevent a locust plague. The AELGA project (USAID/AFR/ONI/TPPI) and OFDA supplied the malathion, protective clothing (25 sets), and radios (5) to MOA-Eritrea (see 3.5.2). SIDA sent \$70,000 to DLCO-EA of Eritrea for operational costs such as fuel, transportation of insecticides, per diem for field staff, etc. FAO sent \$50,000 as emergency support for operational costs of DLCO-EA in Sudan (\$15,000) and Ethiopia, which, at that time included Eritrea (\$35,000). Helicopters for surveying and spraying were not an immediate priority, since the locusts were still in the lowlands where they are accessible by

aircraft. In the event that locusts move into the highlands, helicopters could be leased by USAID/Ethiopia. Locust breeding generally does not occur in the highlands until July.

Locust control by the DLCO in May-June 1993 included control of African migratory locusts, a species not normally included in its mandate for desert locust control. This was done to assist the Ethiopian Crop Protection Service, since they had little capacity for control of this species by air.

In June 1993 the DLCO had 5 spray aircraft available for control efforts in Ethiopia, if needed (these were continuously being moved from one place to another and from one country to another). Other equipment, such as ground transport, protective clothing, spray, communications, and camping equipment possessed by DLCO is listed in Appendix H. DLCO has cut back the use of village brigades, dusts, but assists ground control efforts of the CPD. They have also stopped doing acetylcholinesterase testing of pesticide handlers due to financial constraints. No training has occurred in the last 3 years either, again due to lack of funds.

### 3.5.2 The Ethiopian Ministry of Agriculture

At the beginning of 1993 the Ministry of Agriculture split into two Ministries, one for Agriculture and another for Natural Resources and Environmental Protection. Under the Ministry of Agriculture, the Ethiopian Crop Protection and Regulatory Department is assigned the task of control of all migratory pests, including locusts.

### 3.5.3 The Ethiopian Crop Protection Department

The Ethiopian Crop Protection and Regulatory Department is divided into 2 Divisions: Crop Protection and Plant Quarantine. The Plant Quarantine Division has units for handling policy and regulations on the import and export of plant materials, operations, and technical aspects of quarantine. Crop Protection is divided into 7 units as follows: Entomology, Plant Pathology, Weeds, Birds and Rodents, Pesticide Chemistry, Pesticide Application, and Storage Problems. Crop Protection has 7 plant health offices in different regions of the country as follows: Bahr Dar (NW), Kambolcha (NE), Jima (SW), Awassa (S), Ziway (S), Goba (S), and Harer (E).

Each Ethiopian province or administrative region is divided

into zones, which are further subdivided into "Woredas" or districts. CPD has scouts and agents at the regional, zonal and district levels. Agents at the district level are responsible for training farmer brigades, whereas those at the zonal level are most involved in control efforts. Agents provide farmers with motorized knapsack sprayers, fuel, and pesticides.

The Crop Protection Division (CPD) is responsible for all research on migratory pests, and the independent Ethiopian Institute for Agricultural Research (IAR) is responsible for research on non-migratory pests. There is little if any collaboration between the two groups. IAR does use agrochemicals in its routine activities, especially for seed production. They have a large chemical storehouse at Hollaita where they store insecticides, fungicides and herbicides separately. To dispose of empty barrels they either bury them 3 meters deep in pits lined with gravel and lime in remote areas with deep water tables or they wash them with hot soapy water and paint the inside with an oil based paint.

The CPD expects the farmers to control pests that are not usually migratory, and will step in only when the pests begin to exceed the capabilities of the farmers. An example of such pests are aphids and bush crickets which occasionally reach outbreak levels. Widespread rodent outbreaks are also controlled by CPD. In fact, in early 1993 zinc phosphide was used in the Sidamo area to control a rodent outbreak. CPD also has controlled outbreaks of armyworm and quelea birds.

The cooperation between the CPD and DLCO is considered strong in the area of locust control, with CPD doing most of the scouting, dealing with farmers, and ground control, while DLCO primarily performs aerial survey and control efforts, using information provided by the CPD. Pesticides from both groups are being used in the control effort. The cooperation between CPD and FAO has been effective at coordinating donor's efforts, so as to avoid overlap in donations to MOA/CPD. One area that could use improvement is in transparency and reporting of equipment inventories held by the MOA/CPD. USAID/Addis could use this information when making decisions on donations of equipment to accompany insecticide shipments.

Relations between the CPD and university communities are mostly informal, i.e. through professional societies and organizations meetings.

#### 3.5.4 Village Brigades

In the highlands regions of south and north Wollo and Tigray farmers are utilized for control efforts in their fields; the same is not generally true in the lowlands regions of Afar and Hararghe where farmers are nomads and pastoralists, and do not plant crops. Here the farmers are used mostly for information on the location of hopper bands and swarms. There is no information compiled on the number of training events held or the number of farmers and CPD agents trained.

Ethiopian farmers most often use emulsifiable concentrate formulations. Farmers are encouraged to spray early in the morning or late in the afternoon, when the locusts are more likely to be concentrated and less active. Spraying at midday should be avoided; excessive volatilization of the chemical can lead to increased risk of inhalation by the applicator and decreased exposure to the locusts, and locusts are often flying in during the day. During a field trip to north Wollo, farmers were observed applying ULV formulations at midday; it was noted that during emergency operations farmers are used whenever they are available, including the in middle of the day. None of the farmers were observed wearing safety equipment. Likewise, most of the CPD agents did not use safety equipment in the handling of pesticides. Adult locusts are generally controlled by CPD agents, while the hopper bands are controlled by CPD and farmers.

#### 3.5.5 Crop Protection vs. Strategic Control

The goal of crop protection is to destroy locusts near or in crops during plagues, while strategic control is an attempt to prevent plagues by managing sexually immature desert locusts in major breeding areas (Duranton et al. 1989, FAO 1989, Showler and Potter 1991). This SEA recommends that strategic control be implemented whenever possible. If strategic control is successful, then locust plagues will be prevented and there will be no need to implement crop protection. The USG should urge FAO to put in place a preventive control plan for the "central locust region," that is, the area surrounding the Red Sea and the Horn of Africa, where desert locust plagues generally start.

Integrated pest management (IPM) tactics will be important components of a strategic control program. An IPM program uses a variety of methods to keep locust populations below levels where crop loss is imminent. Pesticides should only be used when necessary, thereby reducing the environmental impact of locust

control operations, costs, and exposure to handlers.

To apply pesticides at the optimal time, it is necessary to survey for locusts early in the season with trained personnel and proper equipment. A successful locust survey program requires survey teams that:

- 1) know the physical and temporal distribution of locusts;
- 2) monitor environmental conditions which could lead to increased numbers of locust;
- 3) conduct vulnerability assessments of the crops threatened by locusts;
- 4) have access to pest management support resources that can be rapidly mobilized for control, such as: pesticides, safety equipment, and application equipment.

DLCO-EA should ensure that each of their stations is prepared to respond to a locust infestation. Adequate preparation includes: radio communication, vehicles, application equipment, clean protective clothing and safety equipment, and a sufficient amount of the proper pesticides carefully stored and ready for use. Strategic control can only be effective when accurate, up-to-date records of survey and spray operations are maintained. Such records should include:

#### A. Survey

- 1) Where the survey was conducted
  - 2) When the survey was conducted
  - 3) How the survey was conducted
  - 4) The density of locusts
  - 5) The relative numbers of different stages
  - 6) Crops affected, types of vegetation
  - 7) Climatic conditions
  - 8) Stage of locusts
  - 9) Magnitude (area & density) of infestation

#### B. Spray

- 1) Where the pesticide was applied
- 2) What kind of pesticide was applied
- 3) What was the application rate and how much area was covered

- 4) When was the area treated
- 5) Crops and vegetation treated
- 6) Results of follow-up survey to see the effect of spraying: the percent of locusts that were killed by the operation
- 7) Non-target effects

### 3.6 Pesticide Management

In March 1993 there were 14,600 liters of malathion and 7,600 liters of fenitrothion at the DLCO-EA headquarters in Addis Ababa. The pesticides in Addis were available for desert locust control in Eritrea or any member nation of DLCO-EA. These pesticides were held in a large, well-ventilated, concrete-floored building. The pesticides at the DLCO storage facility in Addis were stored with fertilizer, old papers, broken electronics equipment, and used jet fuel containers. Many of the pesticides containers were unlabeled though the contents were known by the storeroom manager. Expired pesticides were not separated from useable pesticides.

The problems with the pesticide storage facility were explained to Dr. Karrar, the director of DLCO-EA, by an AELGA-funded technical assistant on TDY to write the SEA for Eritrea. Within a week the facility was cleaned and organized properly. All flammable materials were removed, all pesticide containers were labeled, and all pesticides were stored in order of their expiration date (with oldest pesticides near the front and most accessible). Expired pesticides were kept separate from usable pesticides and clearly labeled. At the time that this SEA was written (June, 1993) the storage facility was in good order, the way in which it was left after the cleanup in March.

One potential problem with the storage facility is that it is not that remote from human habitation. There are people living within relatively close proximity (several hundred meters) to the storage facility and are thus at risk from exposure. There has been talk of moving DLCO headquarters from Addis back to Asmara, where it once was. If DLCO does, in the future, make plans to move, there should be a plan to build the pesticide storeroom outside of Asmara proper, in a remote, safe location. USAID/Asmara should be involved in the discussions on this.

The Ethiopian CPD has no resident expert in the area of pesticide disposal and has proposed that outside expertise be

sought for consultation and advice. When such expertise is found, the stores of outdated and environmentally persistent pesticides housed by DLCO should also be addressed. A list of these pesticides held by the DLCO is included in Appendix G.

Baits (a carrier such as wheat bran impregnated with pesticide) are not currently used in the locust control efforts against hopper bands in Ethiopia; their use could be encouraged by FAO and USAID. Dust formulations, such as bendiocarb 1%, have been used successfully by the CPD and farmer brigades against hopper bands in the current (1993) locust outbreak.

### 3.7 Cultural and Biological Control Tactics

The major locust habitats in Ethiopia are created by the practice of shifting cultivation, mainly within wadi areas (i.e., river beds, superficially dry except during floods). After wild plants are destroyed, millet is usually planted. The millet patches are a suitable habitat for locusts, particularly if the patches are not weeded. Abandoned fields invaded by certain weeds (e.g., Heliotropium pterocarpum, Dipterygium glaucum, and Aerva persica) are excellent locust habitats. The patchy nature of the vegetation cover leads to locust concentration which promotes gregarization. Among the cultural practices which discourage locust plagues are: use of irrigation to avoid dependence on seasonal rains and floods for growing crops, weed control, and destroying abandoned fields (e.g., by burning). To prevent erosion, or maintain the water table it may be desirable to have plant cover in an abandoned area. In such cases, plants which locusts do not favor should be planted in the area. Coffee and most types of cactus are examples of plants that locusts generally will not feed on.

IPM utilizes all available control methods to achieve the most economically and environmentally sound management program. A.I.D. supports the implementation of IPM programs whenever possible. IPM is not an alternative to chemical pesticides; instead it is an integration of methods which may reduce the use of pesticides by employing them more judiciously. Some examples of IPM techniques are: determination of rational intervention thresholds and correct timing of sprays based on these pest population dynamics, mechanical control and use of biological control agents. Among the biological control agents with the potential for use in locust management are: the bacteria Coccobacillus acridiorum d'Herelle; the fungal pathogens

Beauveria bassiana and Metarhizium; various microsporidia in the genus Nosema; and some nematodes. Biocontrol will be most useful in strategic control efforts and less useful during crop protection emergencies. These microbial biocontrol agents should be able to keep recession locust populations at acceptable levels so that they do not reach outbreak proportions.

An important research project that could be undertaken by the CPD would be a search for additional egg parasites of locusts. Until egg parasites are discovered, desert locust eggs can be destroyed by cultural control. Currently there exist no efforts by the CPD to survey for and dig up egg pod fields, due to lack of training and information. If egg-laying sites were discovered the soil could be turned to expose eggs to the sun and to predators. This practice is apparently quite effective for eliminating locust eggs, and is utilized by the crop protection services in several West African countries (Mali is one good example). The difficulty lies in finding the eggs and egg pod fields and training in doing this should be provided to the CPD. USAID/Ethiopia, CPD, FAO, and the AELGA Project should collaborate on accomplishing this.

Destruction of locust eggs could involve village brigades. Each village brigade could consist of 100 or more interested and enthusiastic villagers, farmers, or nomads. The participants would receive 3 days of intensive training (covering the identification and biology of local pests and beneficial insects, the fundamentals of good survey techniques, the safe handling and use of pesticides, and instructions on locating desert locust egg-laying sites and destroying the eggs).

Farmers often use mechanical control to destroy hoppers and adults. They wait until early morning or late afternoon, when the locusts are roosting and likely to be highly concentrated. The control consists of beating the locusts with tree branches and if the locusts are highly concentrated this can be reasonably effective. Occasionally hopper bands are trapped in trenches dug in their path, and at times are burned as well.

### 3.8 Safety and Human Health

#### 3.8.1 Public Awareness

It is important that the TGE monitor the effects of pesticides on human health and the environment. The medical

community and pesticide applicators need to have an understanding of the potential hazards of pesticides, of the precautions to prevent mishaps, and of the steps taken to solve problems associated with pesticide mishaps. Before applying pesticides in an inhabited area, pesticide handlers and the general public should be educated on pesticide safety. The Ethiopian public must be informed that pesticides are dangerous and that empty pesticide containers should not be used for food or water storage. The CPD and DLCO should ensure that used pesticide containers do not fall into the hands of the general public and should mark the used containers with the poison (skull and crossbones) symbols. People should also be warned against eating locusts in areas where insecticides are being sprayed. In Tunisia, public warnings against locust consumption discouraged people from eating locusts in treated areas (Potter and Showler 1990, Showler 1993b). A good public information program would include:

- 1) warnings against eating pesticide-treated locusts;
- 2) information on specific pesticides and labels;
- 3) safe methods of pesticide transport and storage;
- 4) measures in cases of container leakage;
- 5) conditions for pesticide use;
- 6) safe use of application equipment;
- 7) prevention of pesticide poisoning.
- 8) information on re-entry and residual intervals for pesticide-treated crops

This information can be spread through newspapers, posters, radio, television, and public lectures.

### 3.8.2 General Pesticide Safety Concerns

Pesticide misuse and improper storage present hazards to the health of the general public and to the environment. Pesticides should be stored away from humans and animals. Unwanted or leaking pesticides must be repackaged or disposed of as soon as possible. Ethiopian pesticide regulations should be enforced once they have been passed into law. Both the DLCO and CPD have

dealt with the problem of used pesticide containers by either storing them or by puncturing, crushing and burying them. It was noted, however, that in the past some of the containers have fallen into the hands of the general public. This type of incident should be entirely avoided in the future.

### 3.8.3 Handler & Applicator Safety

USAID supports pesticide safety training in Africa. Pesticide handlers and applicators working for DLCO-EA or the Ethiopian Ministry of Agriculture should be trained in pesticide safety. Every U.S.-funded pesticide donation should be accompanied by safety equipment for the following operators: 1) Workers and handlers responsible for shipping, storage, loading and mixing, 2) Applicators, for example, farmers, technical agricultural agents, crop protection agents, and public health agents engaged in treatment activities, 3) Pilots exposed in spite of protective measures. The handling of the pesticides from the point that they arrive in the country to the time they are formulated, loaded and used in the field should be overseen by properly trained pesticide handlers. DLCO and MOA staff have received training in handling and use of pesticides, but refresher courses will be needed.

Trained Ethiopian Ministry of Agriculture and DLCO-EA personnel are encouraged to work with farmers and village brigades in "Train the Trainer" programs. This type of training allows essential information on pesticide safety and application to reach everyone working with pesticides. USAID encourages this type of training.

During June 1993 visits to the Dire Dawa and Wollo regions, it was repeatedly noted that safety clothing (e.g., coveralls, rubber boots, rubber gloves, respirator as necessary according to label instructions) is not used, primarily because it is uncomfortable to wear at high temperatures, and also because much of the available equipment is old and unusable. All groups indicated the need for new safety equipment. There continues a need for safety equipment that is comfortable to wear.

Although farmers and CPD were not generally using safety equipment, the exposure to farmers is considered low since their fields are generally only sprayed once or twice a year in an outbreak; repeated exposure does not occur. Pesticides are supplied to farmers immediately prior to application and are not stored by the farmers. Chemical storehouse workers generally use

safety equipment consistently, thus reducing repeated exposure. Lists of equipment held by the DLCO are included in Appendix H.

#### 3.8.4 Monitoring of Human Exposure

DLCO-EA and the Ethiopian Ministry of Agriculture probably do not have the capability to monitor symptoms of pesticide poisoning to those operators listed in section 3.8.3 above. Symptoms include weakness, loss of muscle control, shallow breathing, nausea, dizziness, vomiting, and abdominal cramps. A diagnostic symptom for determining the level of exposure to organophosphate (OP) pesticides is acetylcholinesterase (AChE) inhibition. Testing all pesticide handlers for blood AChE inhibition should be a part of all U.S.-funded pesticide operations that use OP pesticides. This is a fairly simple and inexpensive test, and it can be performed by trained health workers in the field. The background AChE level for each person involved with OP insecticides must be determined before OP exposure. Then testing should be performed at intervals throughout the season to ensure that no worker is being overexposed to OPs.

If an operator is found to be overexposed to OP, it is recommended that the OP pesticide antidote atropine be administered immediately. The operator should then remove and wash his/her clothes and bathe with plenty of soap and water to remove pesticide residues. The operator's breathing and pulse should continue to be monitored for several hours following treatment.

#### 3.8.5 Disposal of Drums and Obsolete or Banned Pesticides

Locust pesticide containers are kept under the supervision of CPD agents and guards. Empty barrels are stored at plant health protection bases where they can be destroyed or recycled. Destruction generally includes neutralizing (triple rinsing with kerosene), puncturing, crushing and burying the empty barrels in uninhabited places where no high water table, aquifers or water supplies originate. The kerosene rinsate is disposed of in the same manner, away from habitation. Both the DLCO and CPD have dealt with the problem of used pesticide containers by puncturing, crushing and burying them. However, they both have stocks of used barrels that remain to be disposed of.

Recycling barrels usually involves rinsing and relining them for use in storing more pesticides. Otherwise they can be washed

and smelted down to produce other metal products. Barrels should not be cut up and used for other purposes such as construction materials. And they should never be used to store water, food, or animal feed.

Pesticide disposal is problematic at this time due to a paucity of viable options. At the very least, the outdated and banned (in the USA) pesticides should be stored under proper conditions until disposal options become available. Such conditions include a well ventilated, dry, shaded, cement-floored facility, with clear labelling of all pesticides. A list of obsolete and banned pesticides held by the DLCO in Addis and Dire Dawa is included in Appendix G. Most of the chemicals being held are known and labelled and stored properly, and were donated during the 1960s, 1970s and 1980s for locust control (there are a few chemicals present for bird and armyworm control). A closer examination of DLCO's records will be needed to determine the donor and source of all of the obsolete and banned pesticides.

The CPD also has stocks of obsolete pesticides, but getting precise information on quantities of each type was difficult. The Ethiopian CPD should attempt to provide this list to USAID/Addis and AELGA, so that proper disposal may be planned. Many of these chemicals, such as dieldrin observed at the CPD pesticide storeroom in Dire Dawa, should not be used due to the negative impact they have on the environment. A closer examination of CPD's records will be needed to determine the donor, if any, and source of all of the obsolete and banned pesticides.

The only environmentally acceptable options for pesticide disposal at this time are sending the pesticide back to the manufacturer or to a firm that safely disposes of chemicals through treatment or destruction. These options, however, can be very expensive. Countries with toxic wastes may need to wait until less expensive alternatives are found. In the meantime the chemicals should continue to be stored properly and re-drummed if present containers are leaking.

## 4.0 ENVIRONMENT

### 4.1 CLIMATE

Several weather convergence zones collide over Ethiopia. These are depicted in Map 7 in Appendix D. The Intertropic Convergence Zone (ITCZ), bringing systems from the Atlantic, and influencing the weather and locust situation across the Sahel, moves north from April to August. This movement brings a rain band north with it and into locust breeding areas. This ITCZ reaches to Eritrea, Tigray, and Gonder and affects the weather in these areas.

There are three basic rainfall regimes in Ethiopia. These are:

- 1) areas in the west of the country only affected by westerlies from the Atlantic with one long wet season;
- 2) areas in the center of the country (including most of the highlands) affected both by westerlies from the Atlantic and easterlies from the Indian Ocean with one long wet season;
- 3) areas in the east only affected by easterlies from the Indian Ocean, with two short wet seasons.

The three major regimes are indicated on Map 8 of Appendix D. In March and May rains from the Indian Ocean monsoon system come inland from the south-east, and again in October to November from the north-east. The effect of these systems is prolonged in the highlands from June to October. Atlantic Ocean cloud and rain effects reach all the way across Africa to the eastern-most highlands in Ethiopia.

Rainfall produces sufficient soil moisture for locust egg hatch. As of June 1993 rainfall was heavy in all of the locust breeding areas in Ethiopia and other parts of the Horn, with forecasts of more rain in all of the winter locust breeding areas. In addition, there has been a north to south flow of wind coming from the Saudi Arabian peninsula upon which desert locusts ride to colonize coastal areas of the Horn.

## 4.2 CRITICAL HABITATS

Ethiopia is fortunate to have a newly completed Compendium of Wildlife Conservation Information by Jesse C. Hillman, Ph.D (Hillman 1993). Much of the restricted habitats information found below is extracted from that document. Ethiopia has national parks, wildlife reserves, and bird sanctuaries where pesticide applications are not normally allowed. During locust emergencies however, the Ministry of Agriculture is allowed to apply pesticides anywhere.

Ethiopia's central highland area, bisected by the Rift Valley, is surrounded by low-lying desert. This has created the biological equivalent of an island, i.e. the organisms in the central highlands are effectively isolated by the surrounding desert. As a result, a rich variety of unique endemic wildlife has evolved in Ethiopia. There are 28 bird species and 31 terrestrial mammal species that are found nowhere in the world except Ethiopia. In addition, there are 28 amphibian species, 9 reptiles, 4 freshwater fish, and 7 butterfly species that are endemic to Ethiopia. Ethiopia is the greatest center of endemism in continental Africa. Appendix I contains lists of the mammals, birds, snakes, lizards, turtles, amphibians, butterflies, and fish of Ethiopia.

### 4.2.1 National Parks

This SEA identifies the following parks, which are shown on Map 9 in Appendix D, as critical habitats:

1) Simien National Park: Located at 1,900 - 4,430 meters above sea level and containing 179 km<sup>2</sup> in the northwest of the country, this park was established to protect the Waila ibex, an endemic subspecies closely related to the Nubian ibex found in Sudan and Eritrea. The waila ibex can only be found in the highland block of northwestern Ethiopia. The park contains 21 mammal species, 3 of which are endemic and 63 bird species, 7 of which are endemic. In addition to the waila ibex, other major wildlife species conserved include the Simien jackal, and the gelada baboon. Other animals found here include Klipspringer antelopes, grey duikers, anubis, hamadryas, and guereza.

2) Awash National Park: This park is at only 750 - 2,007 meters above sea level and contains 756 km<sup>2</sup> in the north of the Awash River in the Rift Valley. Three nomadic tribes (the Afar, Kereyu, and Etu) live in this park at certain times of the year. The Awash River forms the southern boundary of the park. Nomads and their domestic animals, such as camels, use the Awash for drinking water. Acacia and fig trees grow along the edge of the river. The park contains 46 mammal species, none of which are endemic and 392 bird species, 5 of which are endemic. The major wildlife species conserved include: the besia oryx, Soemmerring's gazelle, greater and lesser kudu, and Swayne's hartebeest. Other animals found here include: lions, ostrich, warthog, guereza, anubis, hamadryas, baboon, grivet, defassa waterbuck, and Salt's dik-dik, jackals, hyenas, crocodiles, and hippopotamus.

3) Bale Mountains National Park: Situated on the southeastern edge of the Rift Valley at 1,500 - 4,377 meters above sea level and containing 2,471 km<sup>2</sup>, the park was created to protect the endemic mountain nyala, Simien jackal, and giant molerat. The park contains 64 mammal species, 11 of which are endemic and 220 bird species, 16 of which are endemic. Other animals found in the Bale Mountains include: Menelik's bushbuck, grey duiker, bohor reedbuck, guereza, anubis baboon, warthog, bushpig, lion, Colobus monkeys, and African hunting dogs. In the plateaus rise to 4000 meters temperatures can range from -25°C to +26°C within 24 hours. The extreme conditions have selected for unusual plants such as the giant lobelia (*Lobelia rhynchopetalum*), gentians, and swertias. Heather and wildflowers are common at lower altitudes.

4) Abiatta-Shalla Lakes National Park: This park contains two Rift Valley lakes; Lake Abiatta and Lake Shalla, encompassing 482 km<sup>2</sup> of surface area. The land area of the park is 405 km<sup>2</sup> and ranges from 1,540 - 2,075 meters above sea level. Bird life is abundant in this area, including flamingos and pelicans. The park contains 31 mammal species, none of which are endemic and 299 bird species, 6 of which are endemic. Major wildlife species conserved include: great white pelican, lesser flamingo, white-necked cormorant, and Grant's gazelle. Other animal species include: greater kudu, warthog, anubis baboon, grivet, guereza, oribi, Klipspringer antelope, and jackal. Local

villagers come to the shores of Lake Shalla to enjoy the hot springs there.

5) Nechisar National Park: Situated at 1,108 - 1,650 meters above sea level between Lake Abaya and Lake Chamo in north Oromo, this park comprises 436 km<sup>2</sup> land area and 78 km<sup>2</sup> of water area. This park contains 37 mammal species, none of which are endemic and 188 bird species, 2 of which are endemic. The primary wildlife conserved include: Swayne's hartebeest and Burchell's zebra. It is also the home of the greater kudu, Guenther's dik dik, Grant's gazelle, crocodiles, hippopotamus, Anubis baboon, guereza, black-backed jackal, African hunting dog, warthog, and numerous bird species. There is also a forest in this park which contains bushbucks, bushpigs, and Vervet monkeys. Fig trees are common here. Fish eagles hunt over the lakes.

6) Mago National Park: Located in southern Omo on the Neri River, Mago was originally established for the conservation of elephants and giraffe. It has a total area of 2,162 km<sup>2</sup> and rests at 450 - 2,528 meters above sea level. The park contains cheetah, black rhinoceros, Lelwel hartebeest, topi and buffalo. Other animals in Mago include: guereza, de Brazza's monkey, lion, leopard, Burchell's zebra, hippopotamus, gurenuk, greater and lesser kudu, and oryx; for a total of 56 mammal species, none of which are endemic and 153 bird species, 3 of which are endemic. Tsetse flies inhabit the area, which may require pesticide applications at some point.

7) Omo National Park: Bordered by the west bank of the Omo River at 440 - 1,183 meters above sea level, this large park of 4,068 km<sup>2</sup> contains a varied habitat of savannah, hills, and woodland. Omo contains 57 mammal species, none of which are endemic and 306 bird species, 1 of which is endemic. Wildlife is abundant and includes: common eland, buffalo, giraffe, cheetah, elephant, black rhinoceros, and de Brazza's Monkey. Other animal species encountered include: Grant's gazelle, ostrich, Defassa waterbuck, anubis baboon, guereza, lion, leopard, Burchell's zebra, lesser kudu, Lewel hartebeest, topi, and oryx.

8) Gambella National Park: This area of swamp, savannah, and woodland is located in western Ethiopia between 400 - 786

meters above sea level. The park encompasses 5,061 km<sup>2</sup>. Many rare animals live here, such as white-eared kob, Nile lechwe, topi, Roan antelope, and elephant. There are a total of 41 mammal species and 154 bird species, none of which are endemic. Other animals include: whale-headed storks, giraffe, elephant, buffalo, lion, leopard, hippopotamus, warthog, Defassa waterbuck, and Lelwel hartebeest.

9) Yangudi-Rassa National Park: This park is a semi-desert area comprising 4,731 km<sup>2</sup> between Awash and Assab, and lies between 400 and 1,459 meters above sea level. Yangudi is home to the following conserved species: wild ass, gerenuk, hamadryas baboon, Soemmerring's gazelle, and cheetah. There are a total of 36 mammal species, none of which are endemic and 136 bird species, 2 of which are endemic. Other animals include: Grevy's zebra, lion, leopard, greater and lesser kudu, oryx and Salt's dik dik.

#### 4.2.2 Animal Sanctuaries

This SEA identifies the following sanctuaries as critical habitats:

1) Babelle Elephant Sanctuary: Located in south east Ethiopia, this park is 6,982 km<sup>2</sup>, and lies at 1,000 - 1,788 meters above sea level. Babelle Sanctuary is set

up to protect the endemic subspecies of elephant, Loxodonta africana orleansi.

2) Kuni-Muktar Mountain Nyala Sanctuary: This high altitude (1,800 - 3,030 m ASL) montane dry evergreen forest was established to protect the mountain nyala and Menelick's bushbuck. Other species in the park include: leopard, warthog, bushpig, giant forest hog, and guereza. This park contains 20 mammal species, one of which is endemic and 24 bird species, 4 of which are endemic.

3) Senkelle Swayne's Hartebeest Sanctuary: Situated at 2,020 - 2,120 meters above sea level in the Rift Valley, and containing approximately 54 km<sup>2</sup>, this sanctuary was established to protect the Swayne's hartebeest, as well as Bohor reedbuck, oribi, and

greater kudu. This park contains a total of 13 mammal species and 91 bird species, none of which are endemic.

4) Yabello Sanctuary: Positioned at 1,430 - 1,800 meters above sea level and containing 2,496 km<sup>2</sup>, this savanna bird sanctuary in Borena conserves Stresemann's bushcrow, white-tailed swallow, and Swayne's hartebeest. There are a total of 194 bird species, 3 of which are endemic. Other species found in this sanctuary include: ostrich, Burchell's zebra, Grevy's zebra, and greater and lesser kudu.

#### 4.2.3 Wetland Resources and Aquatic Habitats

This SEA identifies the following wetland resources as critical habitats:

1) Main river catchment basins: There are 9 major river catchment basins in Ethiopia. These are shown on Map 10 in Appendix D.

2) Lakes and swamps: There are 72 major lakes and 4 swamps in Ethiopia. These, and their coordinates, are listed in Table 3 in Appendix E.

#### 4.2.4 Other Critical Habitats

This SEA identifies the following additional resources as critical habitats:

In addition to those national parks and sanctuaries listed above, there are an additional 11 wildlife reserves and 18 controlled hunting areas in Ethiopia; these are shown on map 11. Spraying over these areas should be avoided, and if unavoidable, checks for wildlife poisonings should be undertaken shortly after spraying occurs. The vegetation types, including forest resources, are shown in Map 12 in Appendix D.

#### 4.2.5 Migratory Bird Flyways

Each year birds from Europe migrate south to parts of Africa for the winter. Three major bird migration flyways cross over Ethiopia (see Map 13 in Appendix D). Some of the birds stop over on their way further south to other East African countries, while others actually overwinter in parts of Ethiopia. While it would

be impossible to list all of the species involved and the general route that each takes, suffice it to say, birds do overwinter and large concentrations, and overwintering birds should be avoided while spraying. The CPD and USAID personnel and contractors involved with the locust control efforts should be in touch with the Ethiopian Wildlife Conservation Organization (EWCO) to learn of any major concentrations of overwintering birds, the times that they are likely to be present, and their primary feeding and roosting areas. Locations that are sprayed should also be monitored for bird kills and toxification.

None of the parks or sanctuaries listed above are breeding areas for locusts. This SEA recommends that the Ethiopian Government declare these parks and sanctuaries, and wetlands to be critical habitats where no pesticides can be applied for locust control or any other agricultural reasons. This SEA further recommends that 2.5 to 5 km buffer zones be established around the parks, where pesticide applications would be prohibited except in emergency situations. The CPD should consult with the EWCO frequently to determine where locust control activities may overlap with valuable natural resources such as wildlife and migratory birds. Pesticides should never be applied within the park itself unless there is a direct threat to human lives (e.g., for malarial mosquito control, or tsetse fly control).

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## APPENDIX B. ANALYSIS OF PEA RECOMMENDATIONS

### BASIC PRE-CONDITION OF PROGRAM

1. USAID should continue its involvement in locust control. Operationally, the approach to be adopted should evolve toward Integrated Pest Management (IPM).

This recommendation should be applied in the context of the specific needs of Ethiopia. USAID/Ethiopia supports the use of IPM tactics in the management of locusts, as well as other insect pests. USAID should also encourage the Peace Corps to get involved in locust control in Ethiopia. Peace Corps Volunteers in Ethiopia could:

- 1) Teach pesticide safety
- 2) Conduct research on biological control of locusts
- 3) Teach agricultural techniques to nomads that would reduce the number of locust breeding habitats
- 4) Teach cultural locust control techniques
- 5) Teach the principles of IPM

### INVENTORY AND MAPPING PROCEDURES

2. An inventory and mapping program should be started to determine the extent and boundaries of environmentally fragile areas in Ethiopia.

USAID should encourage the TGE to establish areas where pesticide use is banned or limited, and to designate such areas on official maps (see section 4.0).

3. A system for dynamic inventory of pesticide chemical stocks should be developed.

Poor pesticide management in Ethiopia (by DLCO and CPD) has resulted in an accumulation of degraded pesticides. Pesticides are often transported, applied, and disposed of without proper caution. Improvements in the system for managing pesticide stocks must be implemented to protect human health and the environment. Proper storage will reduce pesticide degradation. DLCO and CPD should present updated lists of pesticides used and those on hand at each of the biweekly donor's meetings and locust situation reports. Most of the chemicals being held by DLCO are known and labelled and stored properly, and were donated during the 1960s, 1970s and 1980s for locust control (there are a few chemicals present for bird and armyworm control). A closer

examination of DLCO's and CPD's records will be needed to determine the donor and source of all of the obsolete and banned pesticides.

4. USAID should take an active role in assisting host countries in identifying alternate use or disposal of pesticide stocks.

A plan for disposal of obsolete pesticide stocks should be drafted by the DLCO-EA with the support of USAID and FAO. Additional activities should include the periodic testing of stored pesticides stocks to insure that the material is usable. The future accumulation of unwanted pesticides should be minimized. The only environmentally acceptable options for pesticide disposal at this time are sending the pesticide back to the manufacturer or to a firm that safely disposes of chemicals through treatment or destruction. These options, however, are very expensive. Countries with toxic wastes may need to wait until less expensive alternatives are found.

At the very least, the outdated and banned (in the USA) pesticides should be stored under proper conditions until disposal options become available. Such conditions include a well ventilated, dry, shaded, cement-floored facility, with clear labelling of all pesticides.

Chemicals that are still usable should be used on a "first in, first out" basis, i.e., the chemicals that have been in storage the longest should be used first, before those most recently stored, given that the chemicals are still viable and safe to use. Pesticides can be stored in a pesticide bank, such as one centralized place in Europe or possibly at a place designated by DLCO in East Africa. This minimizes the amount of inventory and oversight needed to control stocks of pesticides.

5. FAO should be requested to establish a system for the inventory of manpower, procedures and equipment.

USAID/Ethiopia and USAID/Washington support this recommendation. An inventory of the equipment possessed by DLCO is included in Appendix H. The CPD should be queried for a similar list of locust control equipment currently held by them, along with information on the state of the equipment. Types of equipment inventoried should include: vehicles and exhaust nozzle sprayers, backpack or knapsack sprayers, camping equipment,

radios, pumps, safety equipment, batteries, airplane spray equipment, and spare parts.

FAO needs to take the lead on requesting more precise information on equipment and manpower inventories, since they are the donor coordinating agency. They need to be able to provide this information to donors, so that needs can be determined sensibly.

#### MITIGATION OF NON-TARGET PESTICIDE EFFECTS

##### 6. There should be no pesticide applications in environmentally fragile areas and in human settlements.

Pesticides should only be donated to Ethiopia with the understanding that pesticides cannot be used in certain areas, such as designated wetlands, national parks, national forests, and other fragile areas.

##### 7. Pesticides should be those with the minimum impact on non-target species.

Pesticide recommendations in the PEA and USAID's Pest and Pesticide Management Guidelines should be followed until research indicates that safer pesticides are available. USAID/Ethiopia is strongly encouraged to investigate traditional and cultural locust control methods. This SEA contains a list of approved pesticides in Appendix F.

DLCO-EA, the Ethiopian Ministry of Agriculture, and the Ethiopian Crop Protection Department usually use fenitrothion for locust control. While fenitrothion is one of the pesticides approved for locust control in the PEA and in Appendix F, fenitrothion is not used for grasshopper control in the U.S. because other, safer pesticide options exist. Fenitrothion is highly toxic to birds and aquatic invertebrates, and moderately toxic to fish. Therefore, this SEA recommends that acephate, carbaryl, or malathion be used in preference to fenitrothion for locust control near aquatic habitats, and near large concentrations of birds in Ethiopia.

##### 8. Pre- and post-treatment monitoring and sampling of sentinel organisms, water, and soils should be carried out as an integral part of each control campaign.

This recommendation should be implemented to the extent that it is possible in Ethiopia. The expense of sampling will make it difficult to implement this recommendation. A program of research monitoring is important both as a basis for design of operational monitoring and as a means of establishing statistically verifiable baseline data. In addition, periodic sampling of target and non-target mortality, population numbers, and behavior should be made at locations where pesticides are used.

#### APPLICATION OF INSECTICIDES

##### 9. The minimum area should be sprayed.

To minimize the area to be sprayed:

- 1) Emphasis should be placed on an early and vigorous surveillance program. This allows early treatment applications on the earliest instar possible and reduces the amount of pesticide used.
- 2) Establish economic thresholds.
- 3) Identify non-treatment areas such national parks and minimum treatment areas such as game preserves and migratory bird concentrations.
- 4) Training of decision makers should emphasize restraint in pesticide use.
- 5) Include farmers and village brigades in pesticide training, survey, and application.
- 6) Better targeting of aerial operations to allow more precise spraying.
- 7) A better strategic control program to monitor locust breeding areas, and use appropriate controls to prevent their buildup to a gregarious phase.

##### 10. Helicopters should be used primarily for survey to support ground and air control units.

In the flat lowlands of Ethiopia, airplanes are sufficient

for surveying and spraying. But in the rugged highlands it may be necessary to use helicopters.

11. Whenever possible, small planes should be favored over medium to large two- or four-engine transport types (for application of pesticides). In all cases, experienced contractors will be used.

This SEA supports this recommendation. In Ethiopia, small aircraft, such as turbo thrushes and turbo beavers, are being used by the DLCO in the 1993 campaign. There were no medium or large size aircraft in DLCO's repertoire in Ethiopia at the time of this assessment.

12. Any USG-funded locust control actions which provide pesticides and other commodities, or aerial or ground application services, should include technical assistance and environmental assessment expertise as an integral component of the assistance package.

This SEA agrees with this recommendation. Training should be a part of USAID assistance. FAO should begin to move the focus of their locust monitoring and control efforts to the central region of locust activities, that is the Horn region of Africa, which includes Ethiopia. The USAID/AFR AELGA Project will begin to focus increasing attention to this region and training activities will follow.

13. All pesticide containers should be appropriately labeled.

This SEA agrees with this recommendation and urges the Ethiopian government to give high priority to pesticide legislation and implementation of laws requiring pesticide labels in the national language Amharic.

#### DISPOSAL OF PESTICIDES

14. USAID should provide assistance to host governments in disposing of empty pesticide containers and pesticides that are obsolete or no longer useable for the purpose intended.

USAID Washington and FAO have developed guidelines on disposal programs for unwanted pesticides and empty containers.

Several pilot disposal projects have been implemented by USAID and other donors. USAID/Ethiopia should explore disposal options as needed, and should continue to assist with pesticide management to minimize the problem. Disposing of empty pesticide barrels properly is especially important.

#### PUBLIC HEALTH AWARENESS

15. USAID should support the design, reproduction, and presentation of public education materials on pesticide safety.

USAID, DLCO-EA, and the Ethiopian Ministry of Agriculture should develop public and applicator education materials on pesticide safety, pesticide poisoning recognition, avoidance, and treatment. In addition, they should take advantage of the large amount of materials produced through the AELGA Project during the past 4 years, while locusts were in recession. These materials could be used in "Train the Trainer" programs, and in village brigade training courses. Many of the materials already prepared for West African countries should be readily transferable to Ethiopia and East Africa.

16. Training courses should be designed and developed for health personnel in areas where pesticides are used frequently.

This SEA supports this recommendation and advocates intergovernmental collaboration in training programs.

17. Each health center should be provided with posters describing diagnosis and treatment of pesticide poisonings, as well as medicines and antidotes required for treatment of poisoning cases.

This SEA supports this recommendation. Posters in Ethiopia should be written in the local language(s).

18. Presently available tests for monitoring human exposure to pesticides should be implemented in the field.

This SEA supports the need to monitor the health of pesticide applicators and handlers during control operations.

## PESTICIDE FORMULATION AND MANAGEMENT

### 19. Specifications for USAID purchase of locust insecticides should be adapted for all insecticides.

The PEA made this recommendation a high priority to be implemented as soon as resources can be allocated. This SEA supports that recommendation. USAID's pest management guidelines will help in the implementation of this recommendation.

### 20. Pesticide container specifications should be developed.

The PEA made this recommendation, and this SEA supports it. The agency pest management guidelines will help in the implementation of this recommendation. USAID has had a representative on the EPA's Pesticide Disposal Workgroup, and any changes in EPA's container regulations that are relevant to USAID will be incorporated into USAID policy. Recent attention has focused on the use of smaller, easier-to-handle barrels than the usual 50 gallon drums.

## BIOLOGICAL CONTROL

### 21. Beauveria and other biological control agents such as plant extracts should be field tested under African and Asian conditions in priority countries.

USAID/W is currently supporting research on biological control in Africa. USAID/Ethiopia should promote and support local research on parasites, pathogens, and predators of locusts.

## TRAINING

### 22. A comprehensive training program should be developed for USAID Mission personnel who have responsibility for control operations.

There are no personnel at USAID/Ethiopia that have responsibility for pest control operations. Such a position should be developed.

### 23. Local programs of training should be instituted for pesticide storage, management, environmental monitoring and

public health (see Recommendation 16).

This SEA supports this recommendation, and further recommends that high priority be given to teaching Ethiopians how to use pesticides safely and appropriately, especially in village brigade programs.

24. When technical assistance teams are provided, they should be given short-term intensive technical training (including language if necessary) and some background in the use and availability of training aids.

The AELGA Project has been very successful during its life in fielding well-briefed and prepared short-term technical assistance, who were fully aware of the training aids available and their use. In addition, most technical assistance provided has been fluent in local languages, so language training was not needed.

#### ECONOMICS

25. Field research should be carried out to generate badly needed economic data on a country-by-country basis.

This SEA supports this recommendation. Agricultural productivity analyses, combined with analyses of the losses sustained from locusts should be pursued by the agricultural economists in the Ethiopian CPD and IAR. Comparisons should be made among several options for control including the cost of not controlling and the costs of preventive and proactive controls versus emergency controls.

26. No pesticides should be applied unless the provisional economic threshold of locusts is exceeded.

Research should be conducted in Ethiopia to establish economic thresholds for the desert locust and the African migratory locust. Currently, no thresholds have been determined for locust damage. Work has been done on thresholds for other pests, including grasshoppers. The transfer of these findings to locust will take several years, due to all of the variables that will need to be taken into account, including crop type and phenology, and others.

27. USAID should provide assistance to host countries in drawing up regulations on registration and management of pesticides and in drafting environmental policy.

This SEA supports this recommendation. USAID/W and EPA have developed a program to assist LDCs with drafting pesticide regulations and policies.

#### PESTICIDE USE POLICY

28. A pesticide use inventory covering all treatments in both agricultural and health programs should be developed, on a country-by-country basis.

This SEA supports this recommendation. DLCO-EA and the Ethiopian Ministry of Agriculture should keep an up-to-date, accurate inventory of all of their pesticides. This inventory should be made available to any donor agency upon request.

#### PESTICIDE HANDBOOK

29. USAID should produce a regularly updated pesticide handbook for use by its staff.

USAID/W has produced two such handbooks, which are regularly up-dated: Pesticide Handler's Guidebook and the Pest Management Guidelines of the Agency for International Development. This SEA supports the continued up-dating of these handbooks.

#### SUPPORT AND TRAINING

30. Technical assistance, education and training, and equipment should be provided to crop protection services of host countries with a view to making the services eventually self-sustaining.

This SEA supports this recommendation, but the actual needs of DLCO-EA and the Ethiopian Ministry of Agriculture should be thoroughly assessed by USAID before providing assistance. USAID should support and encourage changes in DLCO-EA that promote the efficient use of donated equipment.

"Train the Trainer" programs for village brigades are a

potentially valuable contribution that A.I.D. can make in Ethiopia. The current village brigade program in Ethiopia should be evaluated by A.I.D..

#### STORAGE

31. More pesticide storage facilities should be built. Until that occurs, emergency supplies should be stored in the United States.

Establish a pesticide bank run by the United Nations, the EEC or another international organization to reduce the need for on-site storage and disposal of pesticides.

#### FORECASTING

32. USAID should make the decision whether to continue funding forecasting and remote sensing or to use FAO's early warning program.

This SEA is in favor of continuing and improving forecasting as a USAID/W or FAO activity. USAID should support thorough field research programs for studying the ecology of outbreaks in East Africa and the Arabian peninsula, so that plagues can be predicted with greater accuracy.

#### PUBLIC HEALTH MONITORING AND STUDY

33. A series of epidemiological case-control studies, within the countries involved in locust control, should be implemented in areas of heavy human exposure to pesticides.

While this is an appropriate activity for DLCO-EA, the organization lacks the necessary funds and expertise. Unless DLCO-EA is re-vitalized, FAO should carry out this activity.

#### RESEARCH

34. Applied research should be carried out on the efficacy of various pesticides and insect growth retardants, as well as pesticide application.

The main function of DLCO-EA is currently locust control, not research. An international locust research facility is needed. One option is to co-fund the DLCO with other donors and make it into an associate international research institute with heavy operational functions. Research should focus on the following areas:

- 1) Improved aerial spraying. Coverage and drift are major problems.
- 2) Identify pathogens and parasites of locusts for each stage of the locust life cycle and develop systems to deliver and apply these natural enemies. By targeting each stage of the locust life cycle, it is unlikely that sufficient numbers of locusts could reach adulthood for swarms to develop. When a pesticide is sprayed it serves only to kill locusts at that particular place and time. A pathogen would have the advantage of spreading and multiplying to kill future generations of locusts.
- 3) Determine the conditions which cause solitary grasshoppers to become gregarious and swarm. Determine the physiological response of grasshoppers to those conditions. Finally, investigate ways to interfere with that response (e.g., through applications of synthetic hormones).
- 4) Develop safer pesticides. This would include "pesticide cocktails" that mix pyrethroids (or other chemicals) with organophosphates to promote rapid knockdown.
- 5) Find a safe, biodegradable dye or odorous compound (for ULV formulations) to mix with the insecticides, so that it would be obvious to farmers, shepherds, and nomads which plants and locusts are sprayed. A colored pesticide would also aid pesticide applicators evaluate the effectiveness of coverage and existence of contamination. Ideally the dye or odorous compound should be added at the factory that is producing the insecticides so that leaks and contamination would be obvious throughout operations. The dye or odorous compound must not interfere with the efficacy of the pesticide.

35. Applied research should be carried out on the use of plant extracts as anti-feedants.

Small scale laboratory and field studies should be used to determine which botanical extracts are the most promising anti-feedants and repellents. A common error in research on repellents is to give the insect a choice of treated versus untreated food. If insects are seen to prefer the untreated food the repellent is declared effective. However, under field conditions, where an entire crop is treated, the insects may choose to consume the treated crop instead of starving. This is one of the reasons that neem tree extracts are so effective in laboratory choice tests, but frequently ineffective in field trials (Jahn 1992, N.R.C. 1992).

In 1993 the AELGA Technical Advisor discovered a tree in Eritrea on which the desert locust would not feed; further questioning led to the discovery that the tree was a variety of sesame. This discovery will be followed up on and extracts from these sesame trees will be tested for feeding repellency and toxicity to locusts. This is an excellent example of pioneering progress on the search for anti-feedant extracts being pursued by USAID and the AELGA Project.

36. Research should be carried out to determine the best techniques for assessing the environmental impact of organophosphates used for locust control.

Some of this research has been undertaken already and more is underway. The USAID Africa Bureau AELGA Project funded research through the Dynamac Corporation in 1987. The study was able to show that most of the chemicals being used break down rapidly in the environment well below those required the US EPA.

In 1989 FAO began a multi-donor pilot ecotoxicological study of locust control pesticides in Senegal. The first year's results were successful in identifying deleterious effects of some pesticides on birds, aquatic life, beneficial and non-target arthropods, and soil microbial processes; as well they learned the amount of time needed for species and environmental recovery to occur. FAO followed up with a project named LOCUSTOX to screen more insecticides, test other factors such as area treated, develop methodologies relevant to Africa, and train local scientists in their use. Other donors and groups are expanding similar research into Chad, Mali, Mauritania, Morocco, and Niger.

Since other donors are funding ecotoxicological studies across west Africa, it may be prudent for the AELGA Project to focus on funding similar studies in east Africa, primarily Ethiopia, Eritrea, and Sudan making full use of local the MOA/CPDs, Ministries of Natural Resources and Environmental Protection, and University personnel.

#### ENHANCING AND ACCELERATING IMPLEMENTATION

#### 37. USAID/W should provide guidance in locust control to missions in the field.

The AELGA Project has already provided technical assistance, situation reports, and guidance to field missions on appropriate actions to take in dealing with outbreaks. AELGA rapidly fielded technical assistance to complete this SEA and the Eritrean SEA in 1993. The project intends to focus increasing attention on the Horn region, including Ethiopia in the near future.

Guidance to Ethiopia will likely include a program for training village brigades, and will encourage the following agricultural practices:

- 1) Develop irrigation systems if possible so that crops are not entirely dependent on local rainfall. Growing crops in accordance with local rainfall insures that locust and crops will be in synchrony.
- 2) Nomadic farmers that shift agricultural sites should be encouraged to remove weeds from their fields.
- 3) After harvest, nomads should burn their old fields to destroy weeds and any remaining crop which could serve as locust habitat.
- 4) Locating and digging up egg fields.

38. Detailed guidelines should be developed for USAID to promote common approaches to locust control and safe pesticide use among UN agencies and donor nations. Coordination of efforts is becoming increasingly important because of the increasing number and magnitude of multilateral agreements and follow up efforts in subsequent years by various donors.

This SEA supports this recommendation. The guidelines should include information on forming and training village brigades.

International cooperation must continue and should be strengthened. Suggestions that each country should only be concerned with their own locust problems are short-sighted. Nations that host breeding areas should not be expected to bear the entire burden of plague prevention. It is in the best interest of all nations effected by plagues to pool their resources in the campaign against locusts as an insurance policy. It is also in the best interest of donor agencies to coordinate their efforts so that assistance is used as effectively as possible.

If there is evidence of poor management or mismanagement of DLCO-EA, donors should not hesitate to withhold funding. The director and staff of DLCO-EA should be held accountable by FAO and other donors for the management and condition of the facilities, including:

- 1) Locust survey and control
- 2) Keeping well-organized, accurate, accessible records of all locust survey and control operations
- 3) Keeping well-organized, accurate, accessible records of inventory of pesticides, pesticide application equipment, and pesticide safety equipment
- 3) Research
- 4) Pesticide storage
- 5) Pesticide disposal
- 6) Pesticide drum disposal
- 7) Maintenance and proper use of equipment
- 8) Following all safety procedures for pesticide handling and application

## APPENDIX C. RELEVANT DOCUMENTATION

### FAO Pesticide Management Documents:

- a) International Code of Conduct for Distribution and Utilization of Pesticides.
- b) Guidelines for safe pesticide distribution, storage, and handling.
- c) Guidelines for pesticide disposal and container disposal.
- d) List of FAO approved pesticides.
- e) Pesticide storage and packaging guidelines.
- f) Guidelines for pesticide approval and management.
- g) Ecotoxicological guidelines.
- h) Ground and aerial application guidelines.
- i) Insecticide poisoning: prevention, diagnosis, and treatment.
- j) Guidelines for effective labeling.
- k) Efficacy requirements for pesticide approval.

### Other Documents on Pesticides and Locust Control

- a) Guidelines for selection, procurement, and use of pesticides in World Bank-financed projects.
- b) Crop protection Service Organization (D.310) T. 1. PRIFAS. Dec. 1988.
- c) Effectiveness of localized pesticide treatment. (D.309) T. 2. PRIFAS - Dec. 1988.
- d) Effects of locust and control on the environment. (D. 308) T. 3. PRIFAS - Dec. 1988.

e) Locust and Control -- Interministerial Instruction No. 3 related to protection of man and environment. Algerian doc. - March 1989.

f) First aid in cases of poisoning by locust and control products. CIBA-GEIGY.

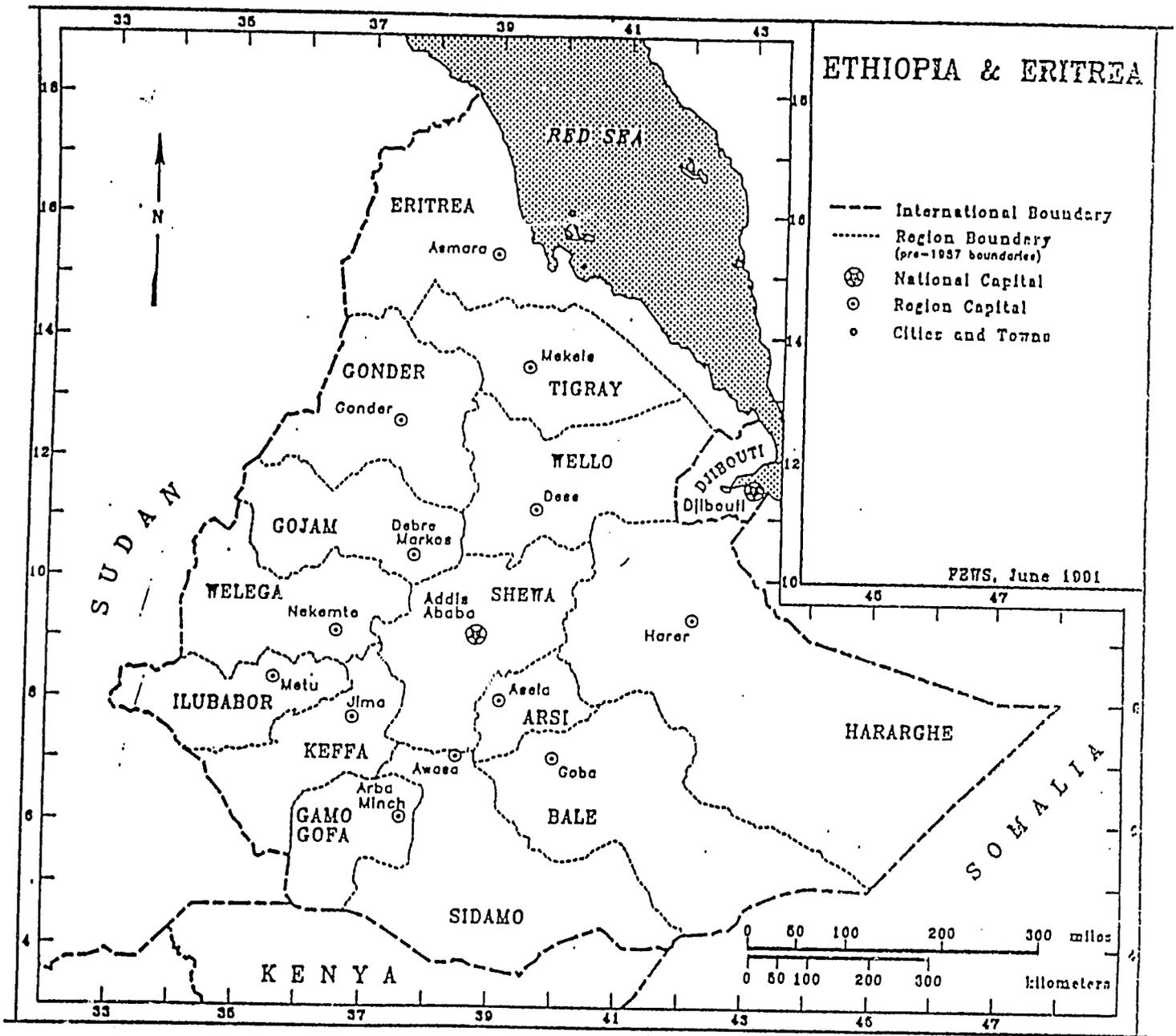
USEPA Pesticide Fact Sheets:

Acephate	# 140	October	1987
Bendiocarb	# 195	June	1987
Carbaryl	# 21	March	1984
Chlorpyrifos	# 37	September	1984
Diazinon	# 96.1	December	1988
Fenitrothion	# 142	July	1987
Malathion	# 152	January	1987
Lindane	# 73	September	1985

These are some of the many Pesticide Fact Sheets issued by the U.S. Environmental Protection Agency, selected for relevance to locust control. The Pesticide Fact Sheets summarize data, including information on acute and chronic toxicity to humans and other non-target organisms, handling precautions, and instructions for use. They are available from:

Office of Pesticide Programs  
US Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460 USA

APPENDIX D. MAPS



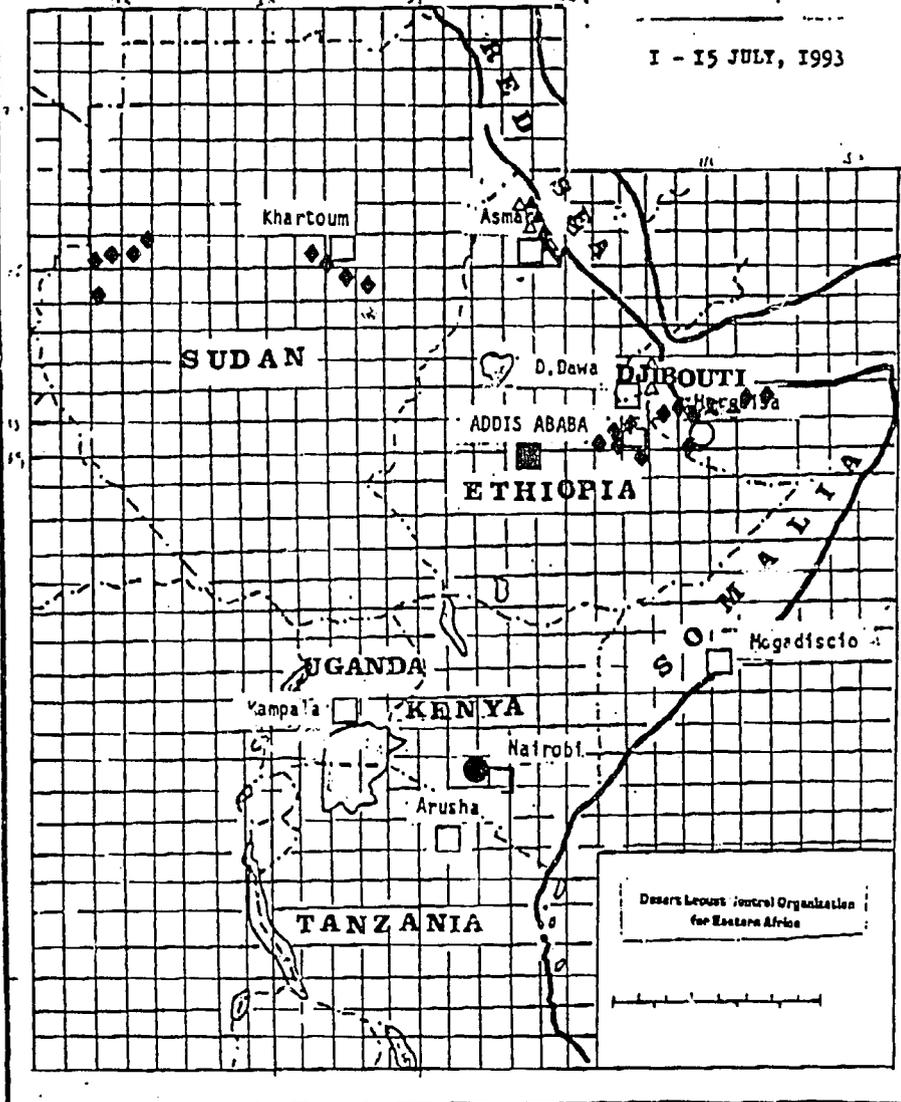
Map 1: Ethiopia & Eritrea, Pre-1987 Administrative Units



DLGO-EA

map 2: Locust situation in

I - 15 JULY, 1993

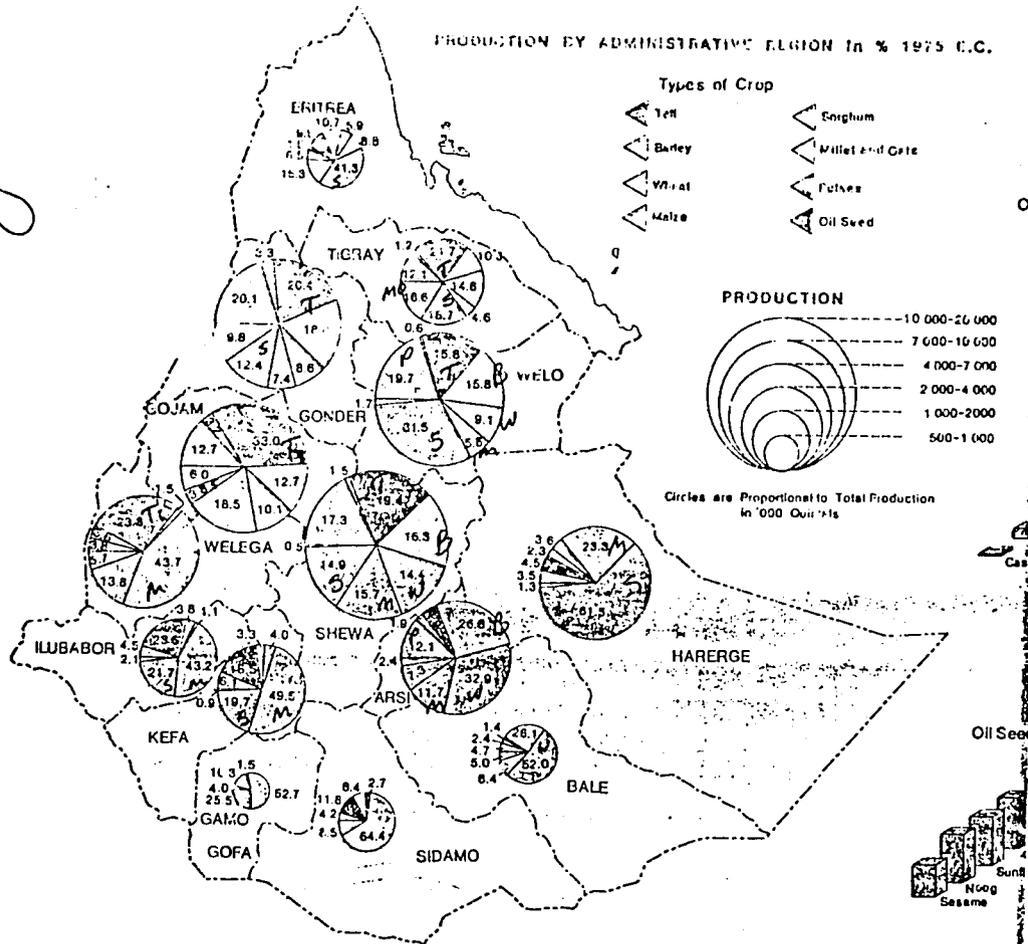


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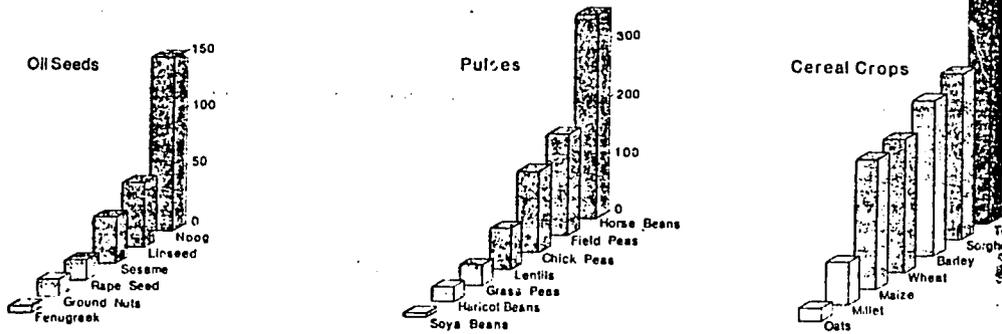
- |              |        |                      |        |
|--------------|--------|----------------------|--------|
| Swarm        | .....▲ | HQs                  | .....■ |
| Hopper Bands | .....◆ | CR Base              | .....□ |
| Adults       | .....△ | Main A/C maint. base | .....● |
| Nymphs       | .....◇ | M.O.R                | .....○ |

NATIONAL ATLAS OF ETHIOPIA

PRODUCTION BY ADMINISTRATIVE REGION In % 1975 E.C.

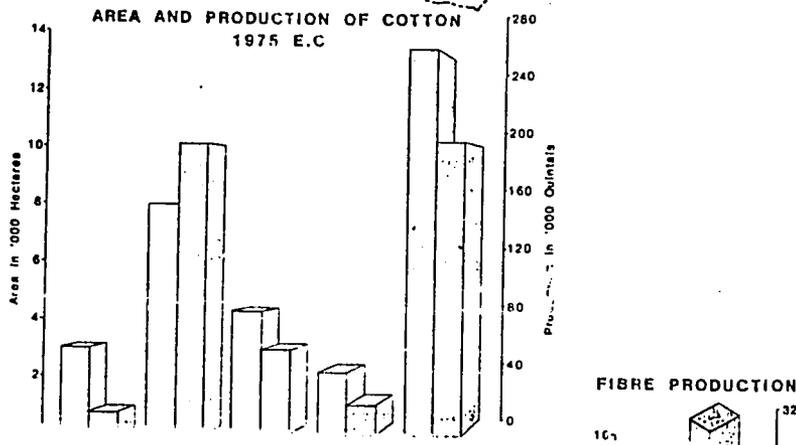
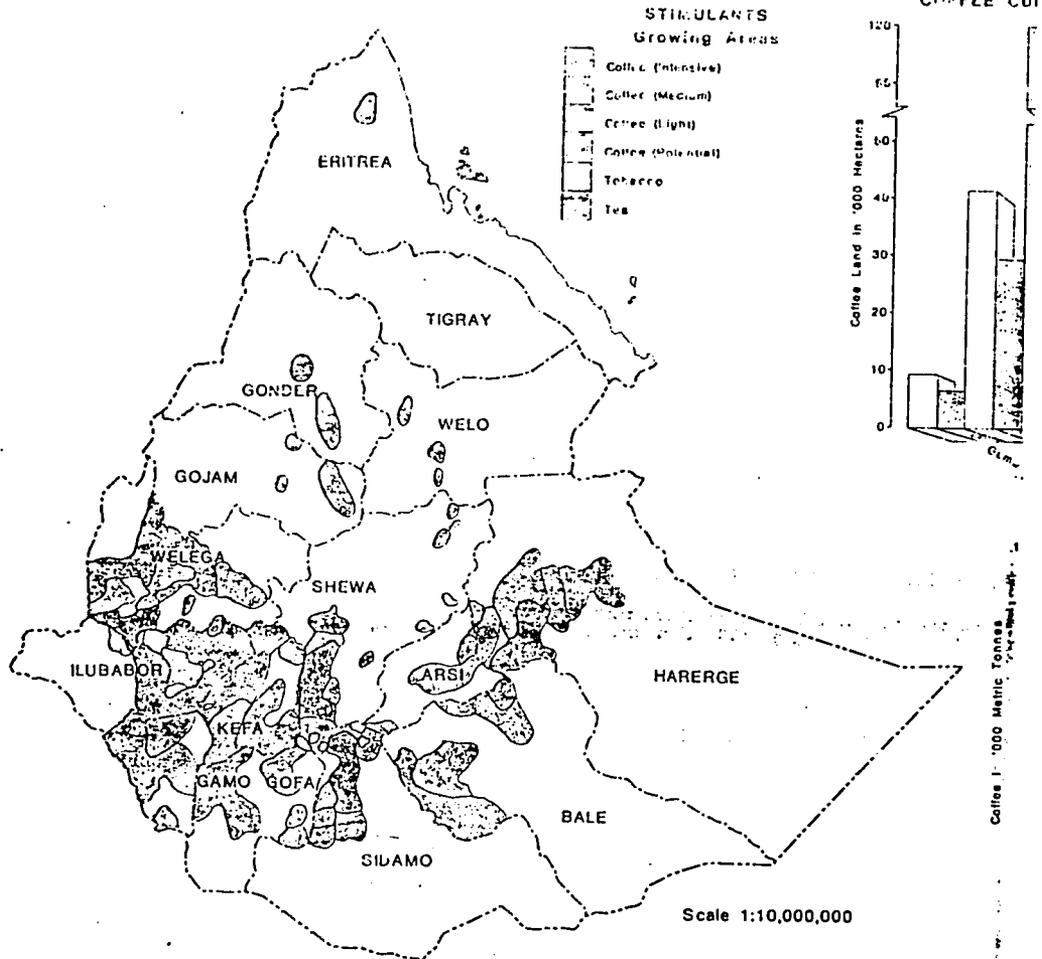


AREA UNDER CROPS 1974 E.C. (in '000 of Hectares)

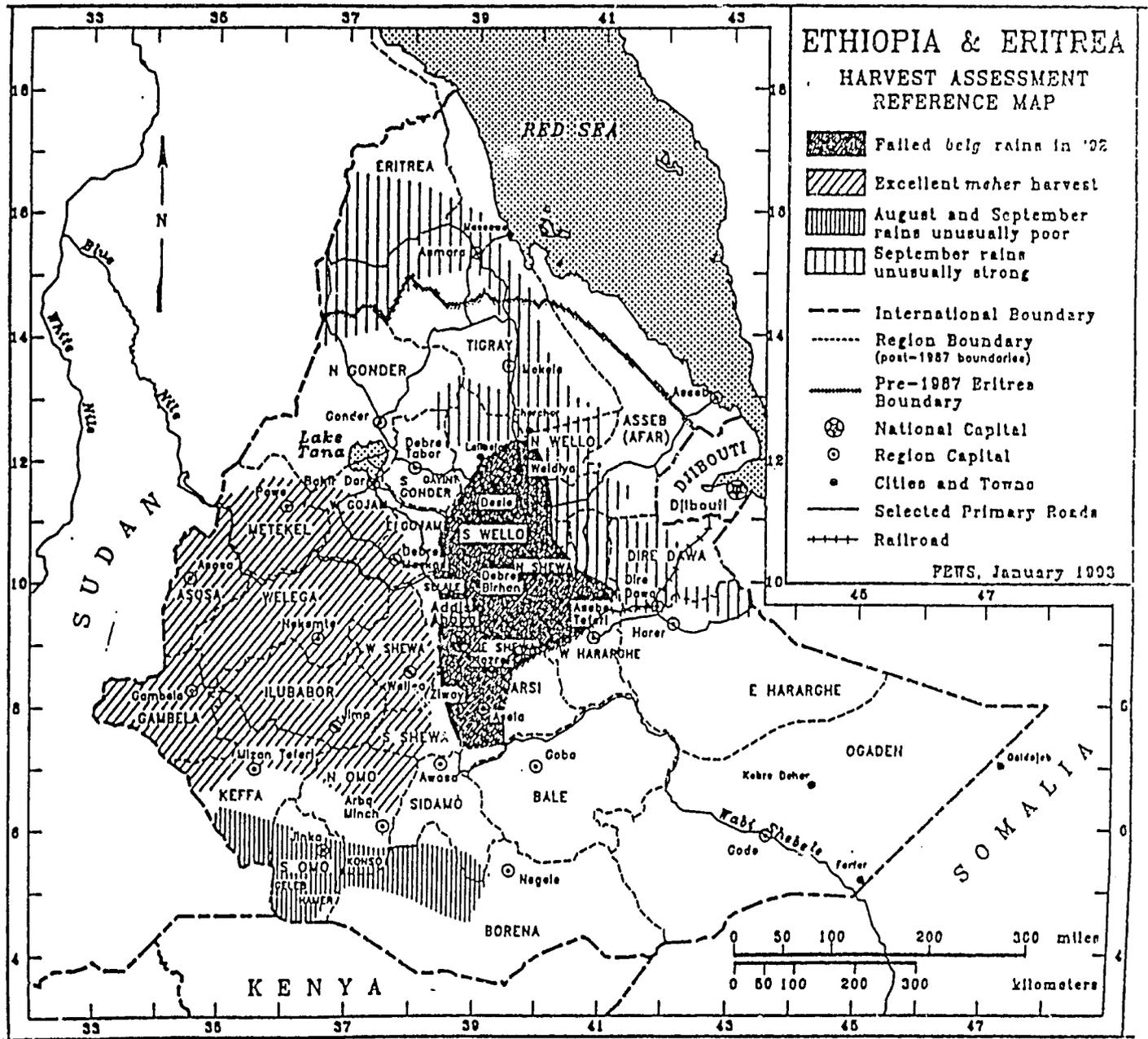


ANNUAL CROP PRODUCTION BY THE TYPE OF FARM (in '000 quintals)

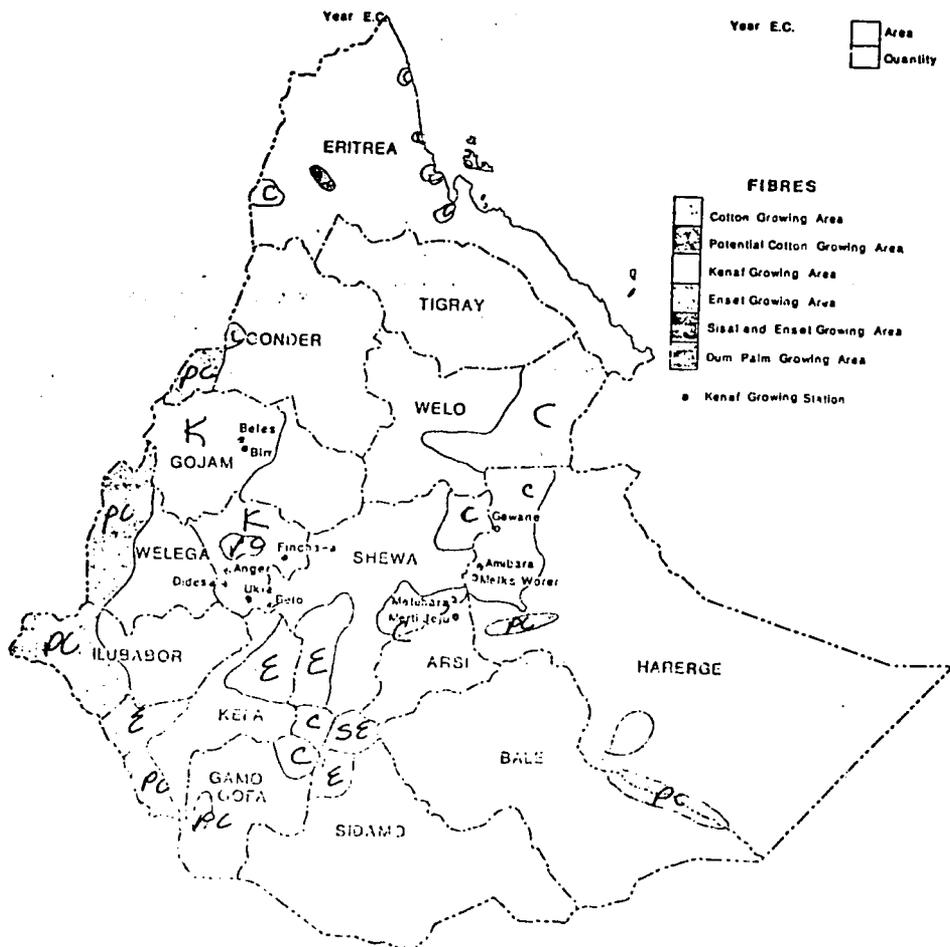
Map 3: Food Crops Production in Ethiopia



Map 4: Stimulant Crops Production in Ethiopia

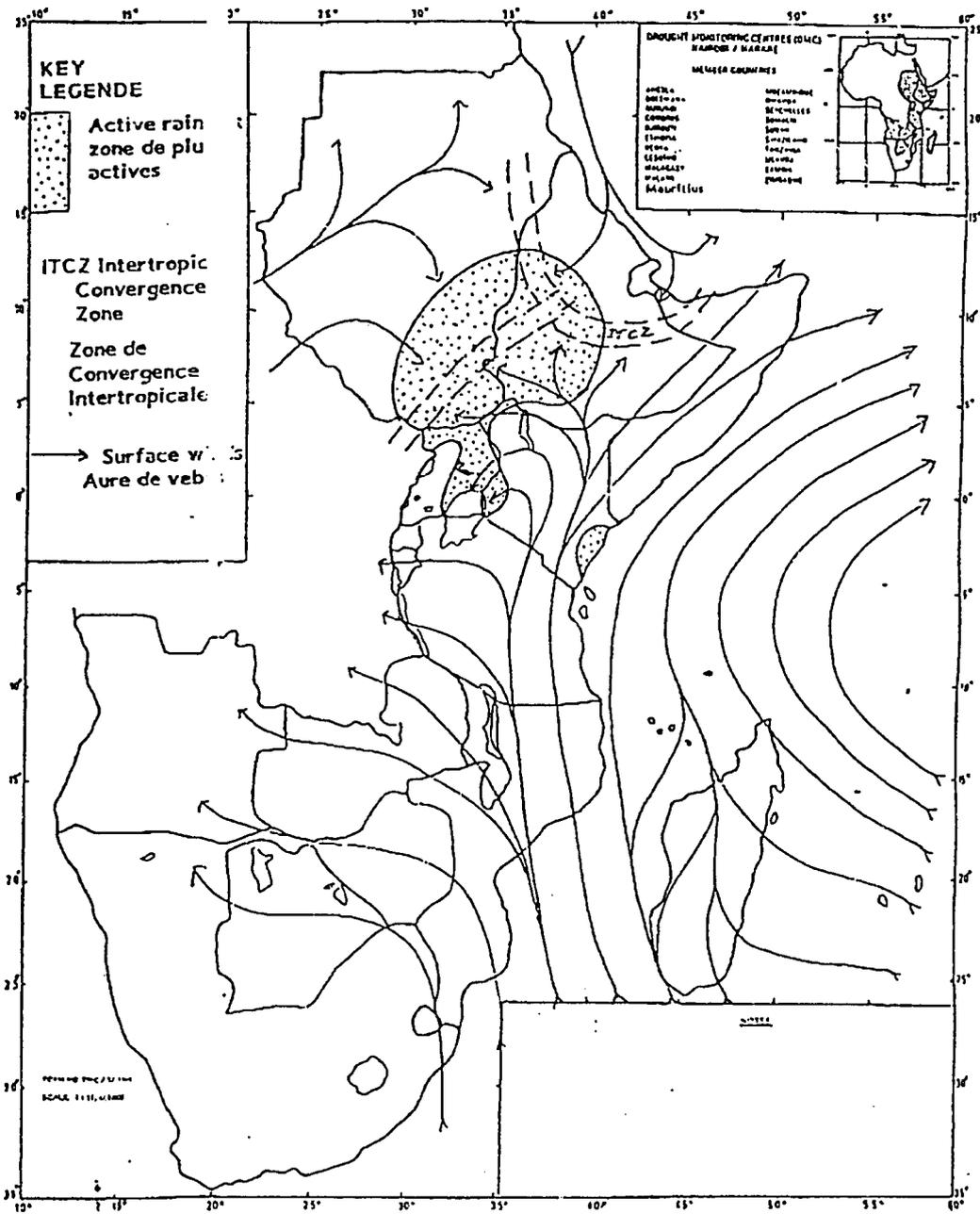


Map 5 : Ethiopia & Eritrea Reference Map, Harvest Assessment



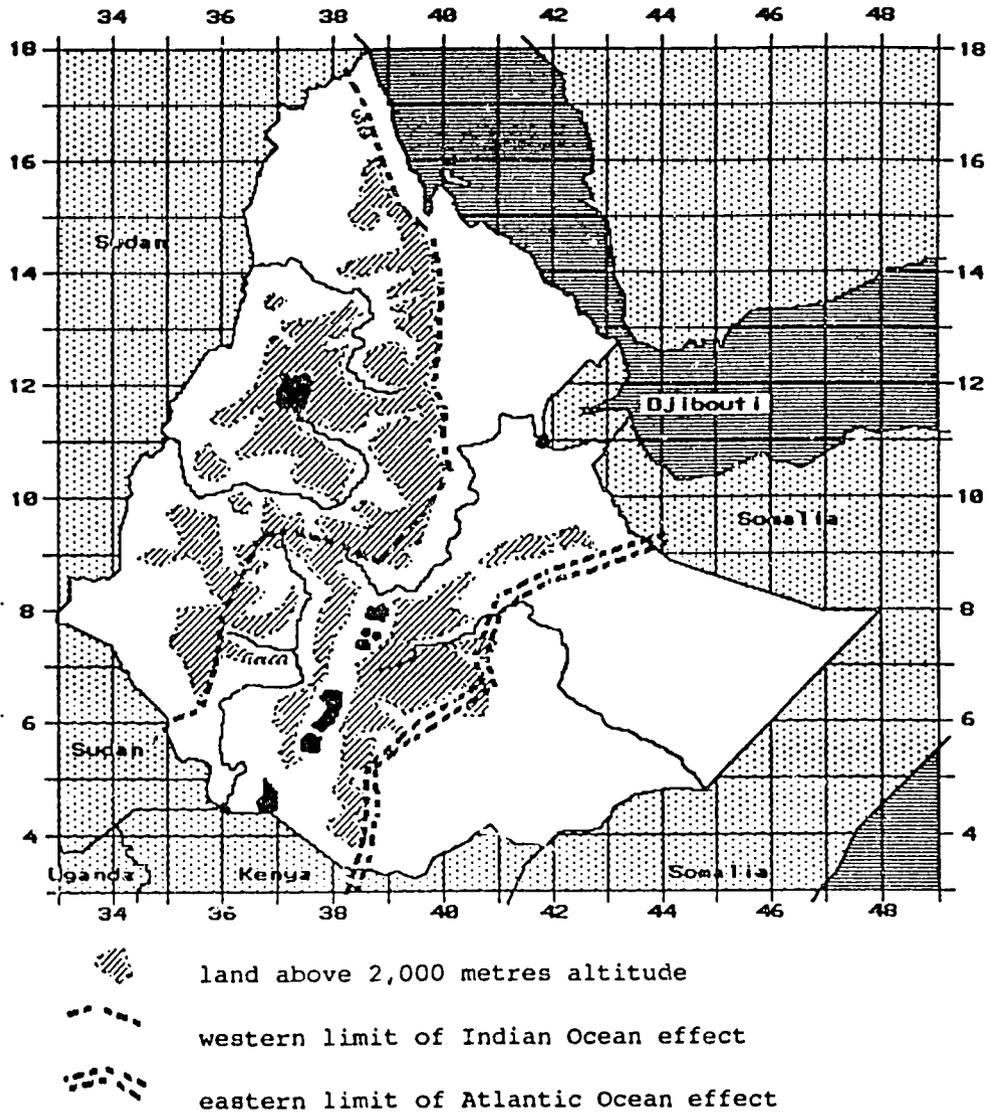
Source: Ministry of Agriculture and Rural Extension, Addis Ababa, Ethiopia, 1980. Data for the period 1975-1979. The map is based on the 1974 Census of Agriculture and the 1974 Agricultural Survey of Ethiopia.

Map 6: Fiber Crops Production in Ethiopia

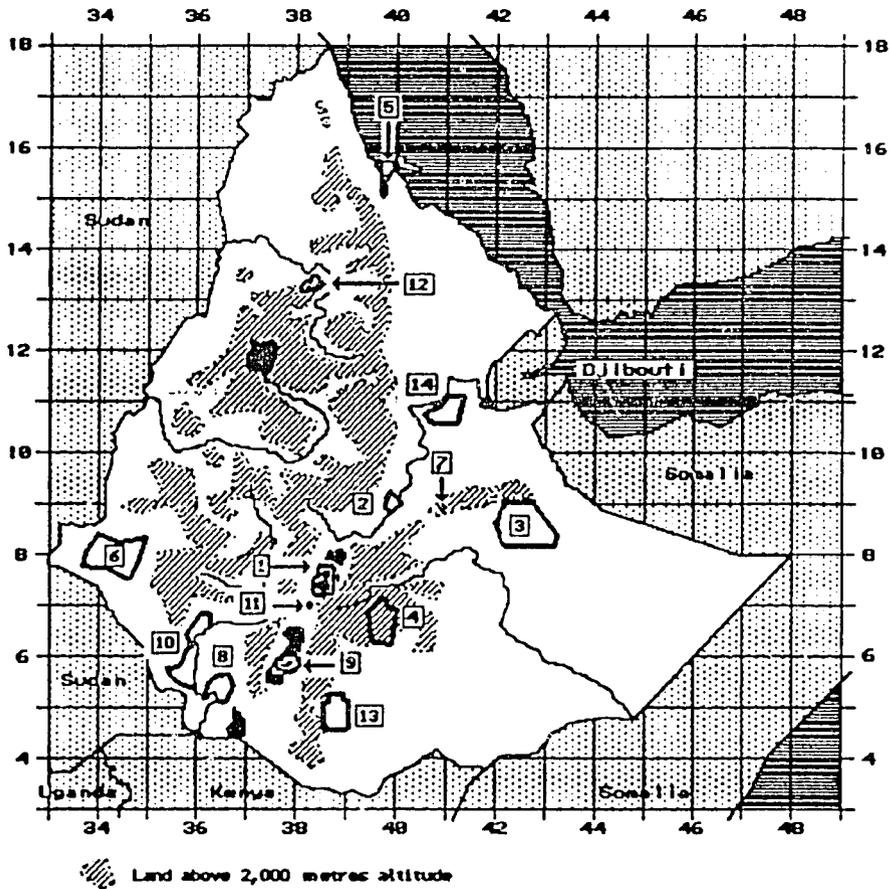


ACTIVE RAINBELT AND DOMINANT SYNOPTIC SYSTEMS IN JUNE 1993  
 ZONES DES PLUIES ACTIVES ET DES SYSTEMS SYNOPTIQUES DOMINANTS  
 AU COURS DU MOIS DE JUIN 1993

Map 7: weather map for East Africa for June 1993

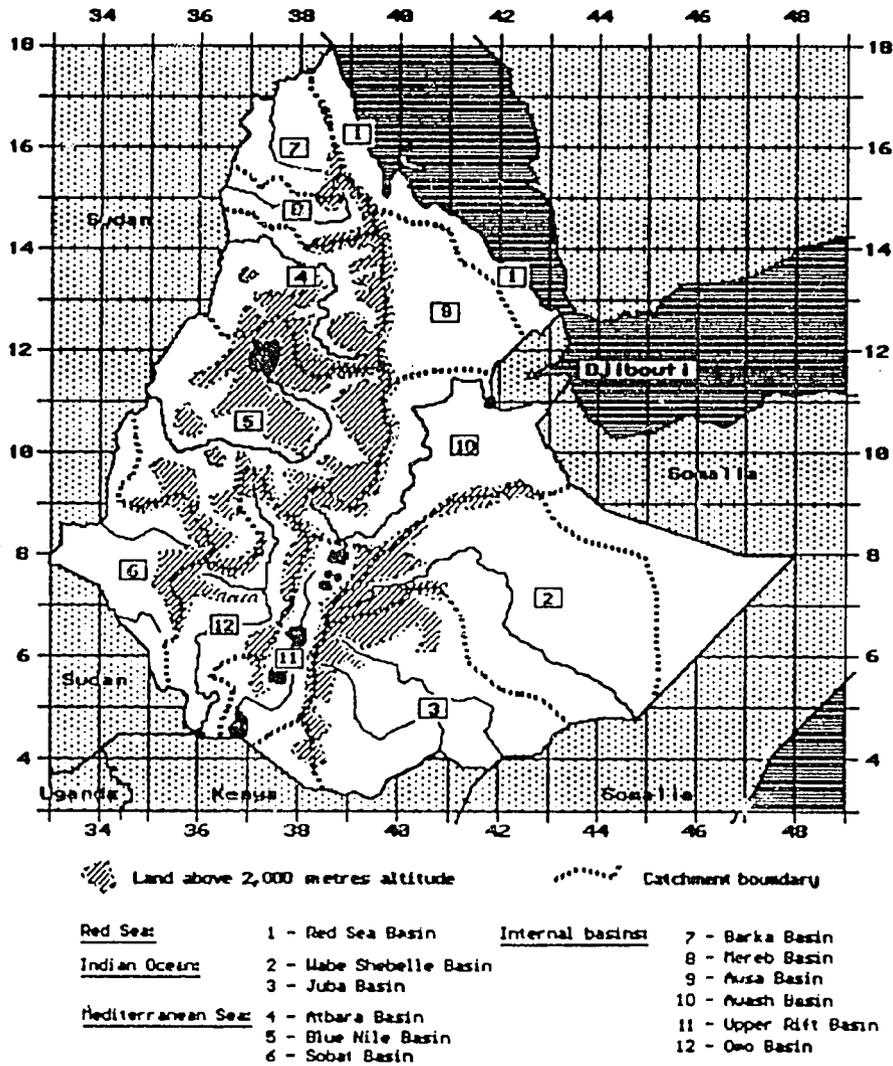


*map 8* The major climatic regimes of Ethiopia

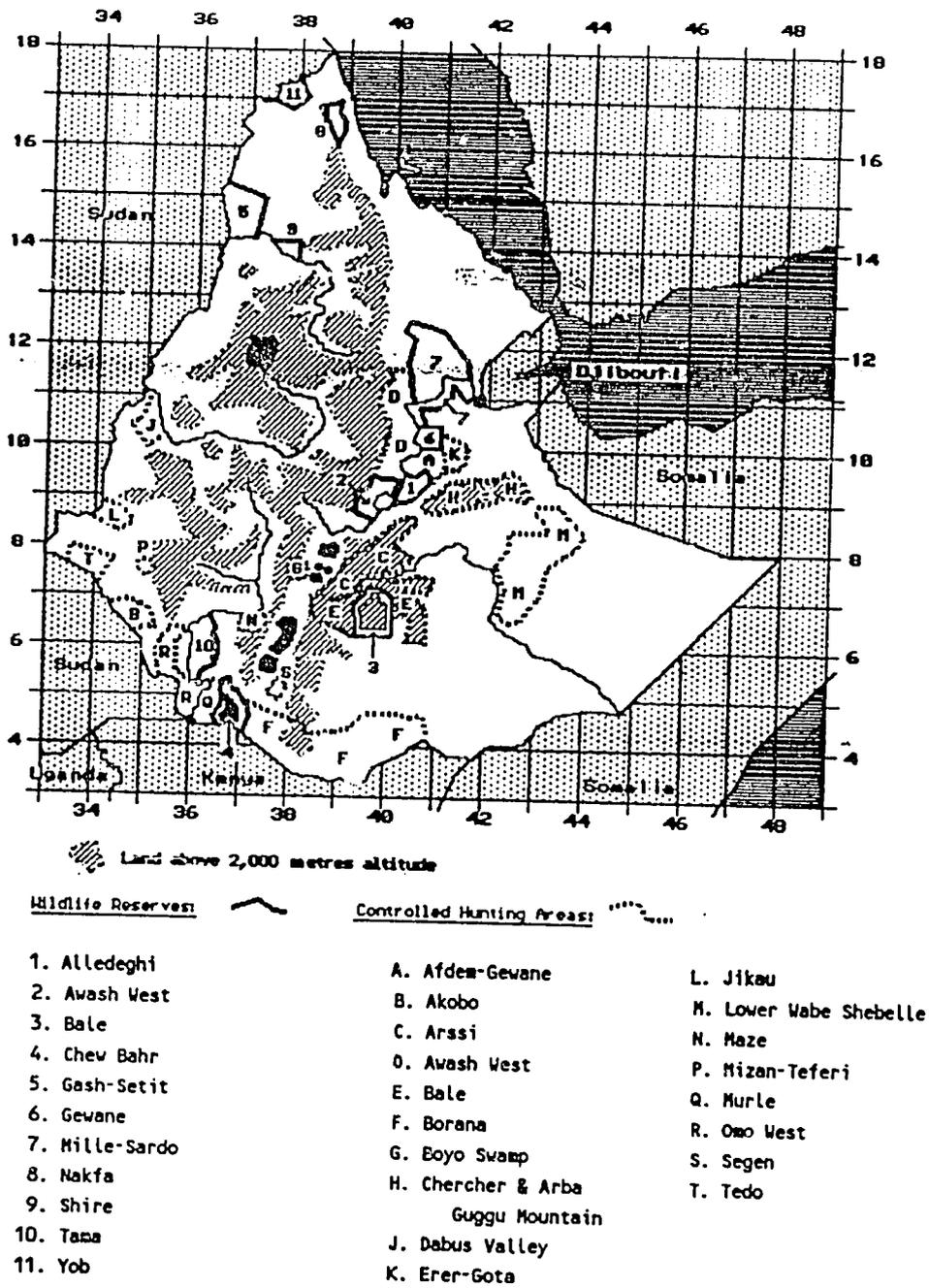


- |   |  |
|---|--|
| 1. Abijatta-Shalla Lakes NP             | 8. Mago NP                                 |
| 2. Awash NP                             | 9. Nechisar NP                             |
| 3. Babilie Elephant Sanctuary           | 10. Omo NP                                 |
| 4. Bale Mountains NP                    | 11. Senkelle Swayne's Hartebeest Sanctuary |
| 5. Dahlak Marine NP                     | 12. Simien Mountains NP                    |
| 6. Gambella NP                          | 13. Yabello Sanctuary                      |
| 7. Kuni-Muktar Mountain Nyala Sanctuary | 14. Yangudi-Rassa NP                       |

**Map.9 The principal Wildlife Conservation Areas of Ethiopia**



**Fig.10 The main river catchment basins of Ethiopia**



**Fig. II The Secondary Wildlife Conservation Areas of Ethiopia**

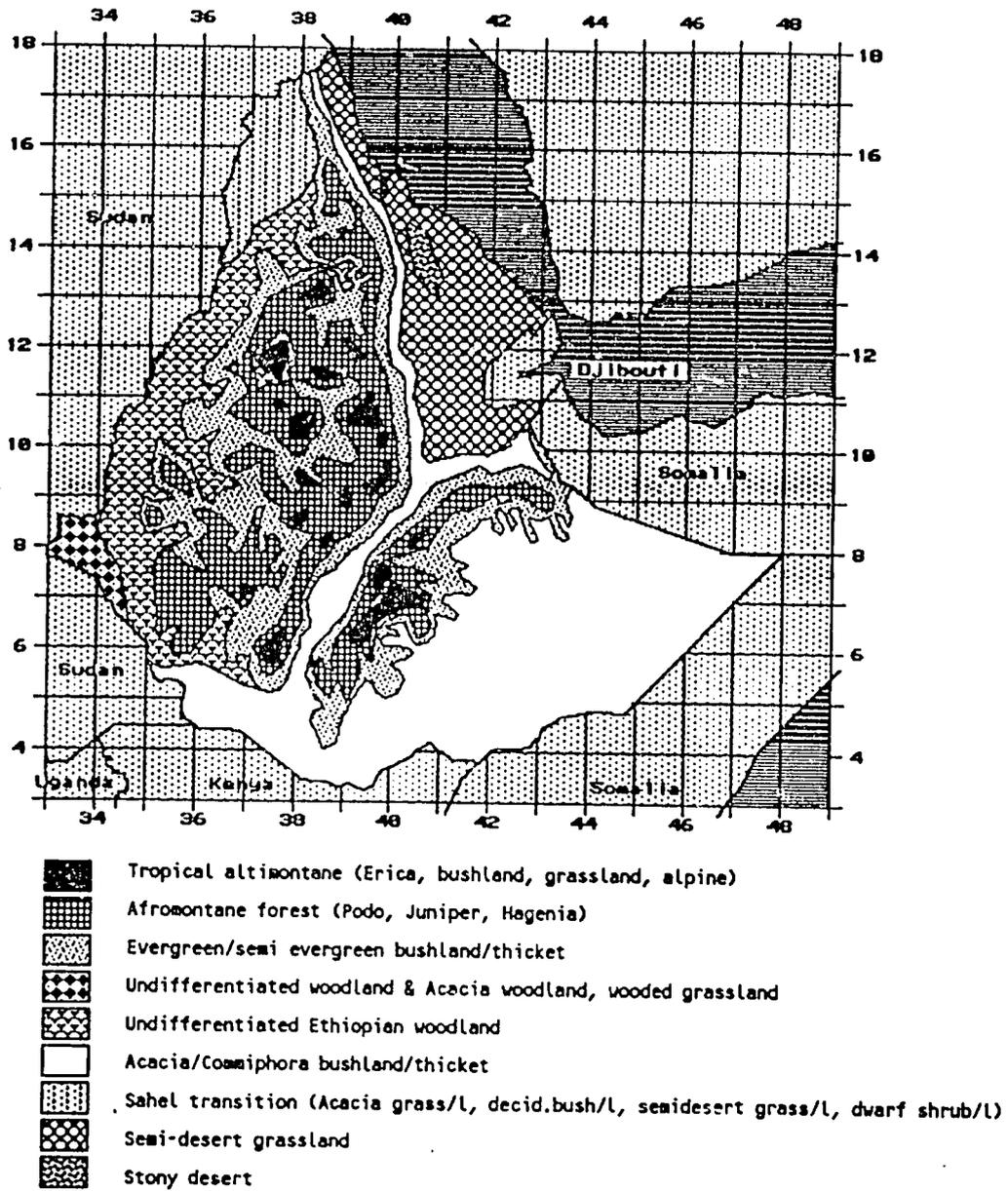
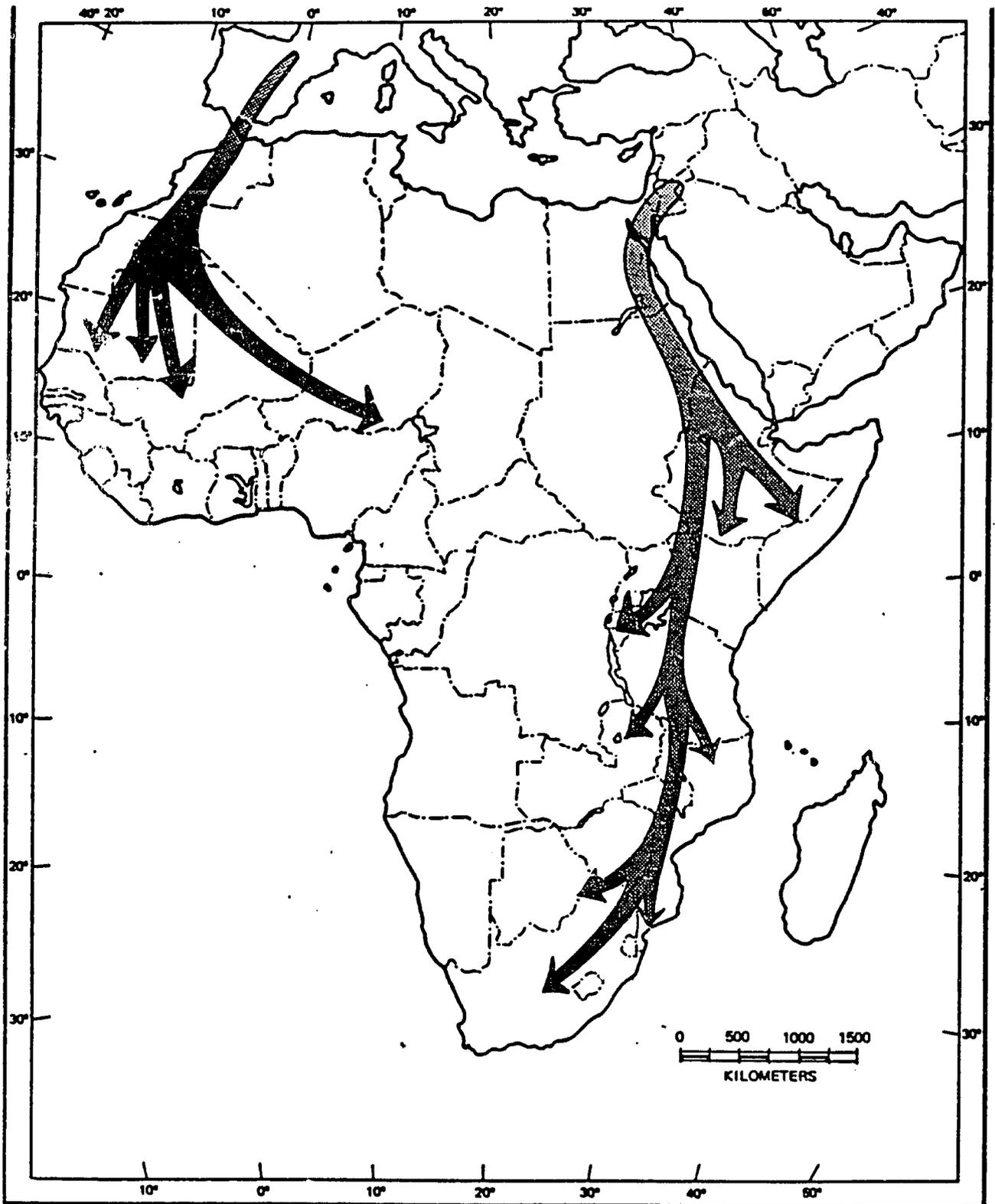


Fig.12 Climax natural vegetation types of Ethiopia



TAMS/CICP 1988

Figure 13 : Major bird migration flyways. Diagram shows typical flyways as drawn from many sources.

APPENDIX E. TABLES

Table 1 : 1993 Preliminary Emergency Food Requirements as Estimated by FAO/WFP Mission

Region	Affected by Natural Factors	Internally Displaced	Ex-soldiers Dependents	Total
Addis Ababa	0.0	7.0	23.7	30.7
Afar (Assab)	5.6	0.0	0.0	15.6
Arsi	0.0	18.6	0.0	18.6
Asosa	0.0	1.1	0.5	1.6
Bale	10.2	0.5	4.7	15.4
Borena	25.4	14.9	2.8	43.1
Dire Dawa	4.6	9.6	3.3	17.5
Gambela	0.0	2.9	0.5	3.4
Gojam	0.0	0.1	1.1	1.1
Gondar	32.0	1.1	6.1	39.2
E. Hararghe	29.6	10.2	5.6	45.4
W. Hararghe	10.5	2.4	1.3	14.3
Ilubabor	1.7	0.0	0.8	2.5
Keffa	0.0	0.0	2.7	2.7
Metekel	0.0	3.1	2.6	5.6
Ogaden	33.8	7.6	0.0	41.5
Omo (N&S)	14.7	0.0	1.7	16.4
Sidamo	0.0	5.4	4.0	9.4
Shewa	0.0	5.6	5.5	11.1
Tigray	126.9	24.7	7.2	158.8
Welega	2.9	0.1	4.0	6.9
Wello	12.9	34.9	14.0	1.8
<b>TOTAL</b>	<b>320.8</b>	<b>149.7</b>	<b>91.9</b>	<b>562.0</b>

*Calculation of Food requirements*

Food needs have been calculated on the following basis: i) Basic daily ration at 450 g cereal plus 20 g edible oil. ii) Affected populations (all categories) in Borena, Ogaden and Eastern Hararghe require 12 months assistance. iii) Affected populations in Gojam, Ilubabor, Welega and Keffa require assistance for six months. iv) Affected populations in all other regions require nine months assistance. v) Supplementary food ration of 150 g *saffal*/CSB is required for some 15 percent of all targeted beneficiaries for 12 months, with the exception of ex-soldiers and their dependants.

**Table 2 : Ethiopia Production of Cereals and Pulses (MT 000)**

Region	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93
Arsi	655	620	649	708	621	725
Bale	94	115	132	128	128	172
Gamo-Gofa/Sidamo	384	341	398	391	344	348
Gojam	928	713	774	940	959	1043
Gondar	396	364	319	360	365	354
Hararghe	358	502	381	400	333	293
Illubabor/Keffa	598	431	615	655	590	618
Shewa	1502	1675	1671	1943	1898	2041
Tigray	132	300	190	220	310	490
Welega	420	279	362	400	444	458
Wollo	301	484	361	350	390	407
<b>Sub-total</b>	<b>5766</b>	<b>5824</b>	<b>5852</b>	<b>6495</b>	<b>6387</b>	<b>6949</b>
Settlements	123	133	86	117	60	49
State farms	288	251	270	228	146	150
<b>Total (excl)</b>	<b>6177</b>	<b>6208</b>	<b>6208</b>	<b>6840</b>	<b>6588</b>	<b>7148</b>
Following belg	533	572	490	491	471	540
<b>Total production</b>	<b>6710</b>	<b>6780</b>	<b>6698</b>	<b>7331</b>	<b>7059</b>	<b>7688</b>
Less non-food uses	1007	1017	1005	1100	1059	1153
<b>Net production</b>	<b>5703</b>	<b>5763</b>	<b>5693</b>	<b>6231</b>	<b>6000</b>	<b>6535</b>
Add cereal equiv.						
Enset and roots	570	570	570	600	620	640
Milk	249	261	273	285	300	310
Meat	185	190	195	200	200	200
<b>TOTAL</b>	<b>6707</b>	<b>6784</b>	<b>6731</b>	<b>7316</b>	<b>7120</b>	<b>7685</b>

Notes: Regions have been grouped according to old, pre-1987 administrative boundaries for comparative purposes (see Map 10). Figures for 1987-90 are CSA official statistics.

Statistics for 1991/92 are CSA statistics; regional break-down as amended by FAO; MOA estimates, adjusted by FAO, provisional-1992/93. All figures are expressed in thousand MT.

Table 3: Ethiopian Wetlands

Name	Location	Length (km)	Width (km)	Area (km <sup>2</sup> )	Depth (metres)	Altitude (m ASL)	Remarks
1. Abay Lake	07°55'N 38°22'E					1,850	
2. Abaya Lake	06°15'N 37°55'E	60	20	1,160	13	1,169	46 km <sup>2</sup> in NNP (a)
3. Abbe Lake	11°10'N 41°45'E			450		243	Abhebid
4. Abijatta Lake	07°37'N 38°35'E	17	15	205	14	1,578	166 km <sup>2</sup> protected in ASLHP (b)
5. Adobed Lakes	11°22'N 41°36'E					340	5 Lakes (c)
6. Affambo Lake	11°25'N 41°42'E	13	2	18		800	
7. Afrera Lake	13°10'N 40°52'E			125	160 ?	- 102	
8. Alemaya Lake	09°24'N 42°01'E					2,100	(r)
9. Aloba Lake	10°14'N 39°39'E					1,800	
10. Ardibu Lake	11°10'N 39°46'E					1,900	"Hardibo"
11. Aruato Lake	09°42'N 41°14'E					900	
12. Asaita Lake	11°34'N 41°28'E					400	
13. Ashenge Lake	12°35'N 39°30'E	5	4	20	25	2,443	
14. Assab Islands	12°55'N 42°55'E					0	Sea bird breeding
15. Assale Lake	14°10'N 40°20'E			70		- 125	3 lakes
16. Awasa Lake	07°00'N 38°25'E	16	9	129	10	1,675	(d)
17. Awash Melkasa Lake	08°29'N 39°19'E					1,500	man-made
18. Bale Mountains Lakes	06°50'N 39°51'E					4,000	numerous, incl. Garba Guracha
19. Sarachet Lake	08°17'N 39°03'E					1,800	

**Ethiopian wetlands - 2**

Name	Location	Length (km)	Width (km)	Area (km <sup>2</sup> )	Depth (metres)	Altitude (m ASL)	Remarks
J. Basaka Lake	08°55'N 39°52'E			6		980	(e)
k. Beda Lake	09°55'N 40°23'E					609	
l. Billa'uli Lake	11°50'N 41°45'E					100	
m. Bishoftu Lakes	08°47'N 39°01'E					1,900	around Debre Zeit town (u)
n. Boyo Lake and Swamp	07°30'N 38°02'E					1,900	(v)
o. Budamada-Tido-Ameda Lakes	07°04'N 38°06'E					1,550	3 crater lakes
p. Chamo Lake	05°50'N 37°45'E	26	2	551	10	1,108	32 km <sup>2</sup> in NNP (f)
q. Chew Bahir Lake	04°45'N 36°50'E	45	30	1,125		520	(g)
r. Chitu Lake	07°24'N 38°25'E					1,540	
s. Chomen Lake	09°30'N 37°17'E					2,000	+ 700 km <sup>2</sup> swamps (h)
t. Coastal Wetlands	1,200 kms long					0	migrating/wintering shore birds
u. Dabashi Lake	07°11'N 38°33'E					1,680	and swamps
v. Dahlak Islands	16°00'N 40°00'E					0	> 120 islands
w. Dalay Lake	10°08'N 40°31'E					700	
x. Dsbhile Lake	09°20'N 40°06'E					800	
y. Dendy Lake	08°50'N 38°05'E					2,800	
z. Deneba Salt Lake	11°04'N 40°53'E					400	
aa. Diga'a Lake	05°11'N 36°16'E					400	
ab. Dukhani Lake	08°55'N 38°45'E					1,800	
ac. Dunkega Lake	09°40'N 40°15'E					1,000	
ad. Ellen Lake	08°23'N 38°59'E					1,700	(q)
ae. Etosha Lakes	07°55'N 39°19'E					3,200	
af. Fogara swamps	12°05'N 37°50'E				1,000	2,500	east of lake Tana

*Ethiopian wetlands - 3*

Name	Location	Length (km)	Width (km)	Area (km <sup>2</sup> )	Depth (metres)	Altitude (m ASL)	Remarks
Gamarri Lake	11°30'N 41°42'E	40	28	760		339	(i)
Gargori Lake	11°45'N 41°30'E					400	
Garner Lake	06°56'N 34°29'E					500	(a)
Gefu Lake	11°27'N 41°28'E					400	
Gesi Lake	07°34'N 34°11'E					440	
Gewane swamps	09°55'N 40°32'E					1,500	
Giulletti Lake	13°18'N 41°02'E					- 80	(p)
Hara Gebaya Lake	11°50'N 39°50'E					2,600	
Hayk Lake	11°20'N 39°43'E	7	5	23	23	1,900	
Hertale Lake	09°55'N 40°25'E					600	
Kaddabasa Lake	10°15'N 40°30'E					600	
Kemisse Swamps	10°42'N 39°50'E					1,400	
Koka Lake	08°26'N 39°10'E	20	15	258	9	1,589	man-made (j)
Langanu Lake	07°35'N 38°45'E	18	16	230	46	1,582	
Liddo-Debado Lakes	09°33'N 40°14'E					750	2 lakes (k)
Loma Lake	11°58'N 40°57'E					400	
Mago Lake	05°43'N 36°16'E					600	
Melka Wakana Lake	07°09'N 39°25'E					2,300	non-made
Mey Igir Lake	10°59'N 39°39'E					2,500	
Ota Lake	09°38'N 40°19'E					800	
Sawata Lake	11°30'N 41°40'E					700	
Shalla Lake	07°28'N 38°30'E	28	12	409	230	1,558	316 km <sup>2</sup> in ASLNP (l)
Tana Lake	12°00'N 37°20'E	70	60	3,600	9	1,785	+ Frgara/Dambia wetlands (m)

**Ethiopian wetlands - 4**

Name	Location	Length (km)	Width (km)	Area (km <sup>2</sup> )	Depth (metres)	Altitude (m ASL)	Remarks
16. Tefki swamps	08°50'N 38°35'E					2,700	
17. Tehyo Lake	11°39'N 41°30'E					250	
18. Temren Lake	07°57'N 38°04'E					2,900	
19. Turkana Lake	04°35'N 36°04'E	52		1,200		400	part within Ethiopia only (n)
20. Wagaan Lakes & swamps	08°00'N 34°00'E			2,860		400	Gambella swamps
21. Weyto Lake	05°25'N 36°53'E					520	
22. Wonchi Lake	08°53'N 37°54'E					3,387	
23. Yardi Lake	10°13'N 40°29'E			66		562	and swamps
24. Zangana Lake	10°55'N 37°01'E					2,700	(t)
25. Zula Lake	15°16'N 39°38'E					57	man-made, on Haddos River
26. Zuqala Lake	08°32'N 38°52'E					3,500	
27. Zwai Lake	08°00'N 38°50'E	25	20	434	4	1,636	(o)

Total water area in Table = 13,699 km<sup>2</sup>, or 1.14% of Ethiopia's land surface.

## Ethiopian wetlands - 5

### Notes:

- (a) also known as "Hora" Lake, "Hora Deka", "Afgaia", "Afjada".
- (b) also known as "Margherita".
- (c) also known as "Bario".
- (d) also known as "Auasa".
- (e) also known as "Metahara".
- (f) also known as "Ganjule", "Shamo".
- (g) also known as "Stephanie", "Chouwaha", "Chew Bahr".
- (h) also known as "Finchaa", enlarged as a dam from the original lake.
- (i) also known as "Gumare", "Gemer", "Adobarda".
- (j) previously known as "Airarobi", "Ararobi", "Horarobi", "Guirarobi", which lake was incorporated into the man-made Lake Koka.
- (k) also known as "Lihado", "Le Ado", "Lamina".
- (l) also known as "Chalo", "Tchalo", "Hora Schala".
- (m) also known as "Dembea".
- (n) also known as "Rudolph".
- (o) also known as "Dembel", "Zuai", "Zouai".
- (p) also known as "Julietta".
- (q) also known as "Ailan", "Helene".
- (r) also known as "Aramaio".
- (s) also known as "Ulut".
- (t) also known as "Zinguinea".
- (u) includes lakes Aranguade (also known as "Verde", "Horaro", "Green"); Bishoftu (also known as "Guda", "Hora", "Melca"); Bishoftu Guda (also known as "Babogaya", "Paulo", "Bishoftu"); Hora Arseddi (also known as "Biete Mengist", "Hora", "Hora Seddi"); and Kilole (also known as "Kilotes", "Hora Kilole", "Flamingo").
- (v) also known as "Bilate" lake.

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### Major Rivers:

Abay (Blue Nile)	800 km (length within Ethiopia)
Angereb	220
Awash	1,200
Baro(-Akobo)	227
Dawa	740
Genale	480
Mereb	440
Omo-Gibe	760
Tacazze	608
Wabe Shebelle	1,340

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APPENDIX F. USAID APPROVED PESTICIDES

APPR: ZH ( )  
 DRAFT: YB ( )  
 CLEAR: ( )

UNCLASSIFIED

AID/AFR/ONI/TPPI:YBELAYNEH:YB  
 04/08/93 (703) 235-5411  
 AID/AFR/ONI/TPPI:ZHANN

AID/AFR/ONI/TPPI:VDREYER{DRAFT}	AID/AFR/ONI/TPPI:ASHOWLER{DRAFT}
AID/NE:GJACKSON{DRAFT}	AID/POL:JHESTER{DRAFT}
AID/AFR/ARTS:JGAUDET{DRAFT}	AID/AFR/FHA/OFDA:GHUDEN{DRAFT}
AID/GC/AFR:ESPRIGGS{DRAFT}	AID/ASIA/DR/TR:MKUX{DRAFT}

ROUTINE AIDAF

AIDAC NAIROBI FOR REDSO/ESA; ABIDJAN FOR REDSO/WCA;  
 NE/ENA

E.O. 12356: N/A

TAGS:

SUBJECT: UPDATE ON A.I.D.-APPROVED LIST OF PESTICIDES FOR  
 LOCUST/GRASSHOPPER CONTROL

1. SUMMARY: AID/AFR/ONI IS IN THE PROCESS OF REFINING THE LIST OF PREFERRED PESTICIDES PRESENTED IN THE 1989 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA) FOR LOCUST AND GRASSHOPPER CONTROL IN AFRICA AND ASIA. THE INFORMATION IN THIS CABLE UPDATES SIMILAR TABULAR DATA IN THE PEA, AND SUPERCEDES SIMILAR DATA IN A.I.D.'S 'REVIEW OF ENVIRONMENTAL CONCERNS IN A.I.D. PROGRAMS FOR LOCUST AND GRASSHOPPER CONTROL, PUBL. SERIES NO. 91-7'. THE INFORMATION ON PESTICIDES IN THIS CABLE SHOULD BE CONSIDERED TO BE AN AMENDMENT TO THE PEA. THE TABLE LISTING PESTICIDES IN THE ENVIRONMENTAL CONCERNS DOCUMENT WAS ONLY MEANT TO INDICATE PESTICIDES THAT CAN BE PURCHASED WITH A.I.D. FUNDS, BUT IT SHOULD NOT BE CONSIDERED AS GUIDANCE FOR PESTICIDE SELECTION, END SUMMARY.

2. WITH MORE AND MORE INFORMATION ON PESTICIDES BEING GENERATED, AID/AFR FINDS IT NECESSARY TO REFINE ITS LIST OF A.I.D.-APPROVED ANTI-LOCUST/GRASSHOPPER PESTICIDES.

UNCLASSIFIED

UNCLASSIFIED

2

THE FOLLOWING IS AN ALPHABETICAL LISTING OF THE PESTICIDES APPROVED IN THE PEA. THE LIST INCLUDES RELEVANT INFORMATION ON TOXICITY, BIO-ACCUMULATION AND SIGNAL WORDS (TO INDICATE THE RELATIVE TOXICITY OF EACH INSECTICIDE). THIS INFORMATION PROVIDES A SKETCH OF PROPERTIES OF THE A.I.D.-APPROVED ANTI-LOCUST/GRASSHOPPER PESTICIDES. ALL OF THE CHEMICALS LISTED BELOW ARE CURRENTLY REGISTERED EITHER BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) OR ITS EQUIVALENT IN OTHER COUNTRIES FOR LOCUST AND GRASSHOPPER CONTROL.

==	==	TOXICITY TO						==
		FISH	INVER	BIRD	MAHML	BIOAC	PERS	
1.	ACEPHATE	L	L	L	M	L	L	C
2.	BENDIOCARB	M	M	M	M	M	M	W
3.	CARBARYL	L	L	L	L	L-M	L	C
4.	CHLORPYRIFOS	M	H	M	M	M	L	C-W
5.	DIAZINON	M	H	M-H	L	M	M	C-W
6.	FENITROTHION	L	H	H	L	M	L	W
7.	LAMBDA-CYHALOTHRIN	H	H	L	H	H	M	D
8.	MALATHION	L	L	M	L-M	L	L	C
9.	TRALOMETHRIN	H	H	L	L	H	M	D

LEGEND:

NON-TARGET ORGANISMS: FISH, INVERTEBRATES (INCLUDING HONEYBEES), BIRDS, MAHMLS

BIOAC = BIO-ACCUMULATION, PERS = PERSISTENCE,

L = LOW; M = MODERATE; H = HIGH (APPLY TO TOXICITY LEVELS TO NON-TARGET ORGANISMS, BIO-ACCUMULATION AND PERSISTENCE; RELATIVE TOXICITY IS ALSO A FUNCTION OF FORMULATION AND ACTIVE INGREDIENT CONCENTRATION)

SIGNW = SIGNAL WORD: C = CAUTION; W = WARNING; D = DANGER (POISON); (APPLIES TO THE RELATIVE TOXICITY OF PESTICIDES IN ASCENDING ORDER; RELATIVE TOXICITY IS ALSO A FUNCTION OF FORMULATION AND ACTIVE INGREDIENT CONCENTRATION)

SPECIFIC DOSAGES MUST BE WORKED OUT BY HIGHLY EXPERIENCED PERSONNEL FAMILIAR WITH THE APPLICATION EQUIPMENT, PESTICIDE FORMULATION, ETC., TO BE USED. FOR ELABORATION ON THE PROPERTIES OF A.I.D.-APPROVED ANTI-LOCUST/

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UNCLASSIFIED

3

GRASSHOPPER PESTICIDES, CONSULT THE PEA AND COUNTRY-SPECIFIC SUPPLEMENTARY ENVIRONMENTAL ASSESSMENTS (SEAS).

3. IT IS IMPORTANT THAT ALL PRECAUTIONS INDICATED ON THE PESTICIDE LABELS, E.G., APPLICATION DOSAGES, SAFETY MEASURES, INSTRUCTIONS ON HANDLING AND STORAGE PROCEDURES, DISPOSAL OPTIONS, ENTRY BY UNPROTECTED PERSONS INTO TREATED AREAS, EMERGENCY GUIDELINES, ETC., BE CAREFULLY OBSERVED, AS OUTLINED IN THE COUNTRY-SPECIFIC SEAS.

4. AID/W WILL KEEP MISSIONS INFORMED OF FUTURE UPDATES ON THE LIST OF A.I.D.-APPROVED ANTI-LOCUST/GRASSHOPPER PESTICIDES. ♡♀

UNCLASSIFIED

ADDITIONAL CLEARANCES:

AID/AFR/EA:PGUEDET{INFO}  
AID/AFR/CCWA:HGOLDEN{INFO}  
AID/AFR/SWA:JGILMORE{INFO}  
AID/AFR/SA:KBROWN{INFO}  
AID/AFR/ARTS/FARA:WKNAUSENBERGER{DRAFT}  
AID/RD/AGI:RHEDLUND{INFO}

APPENDIX G. QUANTITIES OF PESTICIDES HELD BY DLCO IN ETHIOPIA

LIST OF PESTICIDES STORED BY DLCO-EA IN DIRE DAWA

JUNE, 1993

Pesticide, formulation	# Containers x # Liters	Total Amount Present	Condition
BHC gamma isomer 15%	216 x 200	43,200 liters	Leaking
BHC gamma isomer 20%	202 x 200	40,400 liters	Leaking
BHC Mixed Dust 5%	50 x 50kgs	2,500 kilograms	?
Diaz'non 95%	20 x 12.5	2,250 liters	?
Ensidil 20% (D.20)	30 x 200	6,000 liters	?
Dieldrin 10% (D.10)	1 x 120, and 33 gal x 5	285 liters	?
Dieldrin ULV 200gr/l	107 x 25, and 2.5 big drums	3,175 liters	?
Dieldrin 20% ULV	45 x 200	9,000 liters	?
Malathion 50%	3.5 x 200	690 liters	?
Malathion 95%	7 x 200	1,400 liters	?
Sumithion	2.75 x 200	420 liters	?

\*Empty Barrels also stored in this facility

\*\*None of the barrels in this facility stored on palates

LIST OF PESTICIDES STORED BY DLCO-EA IN ADDIS ABABA\*

JUNE, 1993

Pesticide, formulation	# Containers x # Liters	Total Amount Present	Condition**
Dieldrin	28 x 200	5,600 liters	OK
Unknown*	14 x 200	2,800 liters	OK
Insidil	2 x 200	400 liters	OK
Malathion	42 x 200	8,400 liters	OK
Fenitrothion	54 x 200	10,800 liters	OK
Fenthion 640g/l 60%	2 x 200, and 17 sm. barrels	?	OK
DDT 25% Oil	4 x 22.5	90 liters	?
DDT WP	1 Tin	?	?

\*Many bags and containers of experimental research chemicals also stored here

\*\*Most of the barrels at this facility stored on palates

NB, Warehouse also contains wood for making palates, safety equipment, sprayers, spare auto parts.

APPENDIX H. INVENTORY OF EQUIPMENT POSSESSED BY DLCO

: KHARTOUM CRB  
 CODE : 6806-008  
 DUP : RADIOS AND ACCESSORIES

CURRENCY : UMI  
 FINANCIAL YEAR : ENI

Description (2)	Acquisition Date/Year (3)	C O S T			Rate % (7)	D E P R E C I A T I O N			NBV (12)	REMARKS (13)	
		As at 01-07-88 (4)	Additions (Disposals) 01-07-88 to 30-06-89 (5)	As at 30-06-89 (6)		As at 01-07-88 (8)	Additions (Disposals) (9)	Current (10)			Accumulated As at 30-06-89 (11)
Radio Pye SSB 130 H	13.7.79	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
Radio Intercontinental	24.6.79	8727.00		8727.00	10	7951.41		872.70	7924.11	802.89	
Radio Pye 130H SSB	1970	1078.00		1078.00	10	1077.00		-	1077.00	1.00	
<b>TOTAL</b>		<b>34598.30</b>		<b>34598.30</b>		<b>30442.38</b>		<b>3345.03</b>	<b>33787.41</b>	<b>810.89</b>	

STATION : NAIROBI CRB  
 ACCOUNT CODE : (807-005)  
 ASSET GROUP : PUMPS AND SPRAYING EQUIPMENT

CURRENCY  
 FINANCIAL YEAR

Asset Reg. No.	Description	Aquisition Date/Year	C O S T			D E P R E C I A T I O N					REMARKS	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01.07.88	Additions (Disposals)	Current	Accumulated As at 30-06-89		NBV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
P-2*	Pump, BSA/Gilker	1966	26.66		26.66	10	25.66					
P-10*	Pump, Tap Model 80	"	13.33		13.33	10	12.33			25.66	1.00	B.O.S.
P-101*	Sprayer Exhaust L/Rover	"	40.00		40.00	10	39.00			12.33	1.00	" TENDERS FROM STP
P-110*	"	"	40.00		40.00	10	39.00			39.00	1.00	"
P-111*	"	"	40.00		40.00	10	39.00			39.00	1.00	"
P-112*	"	"	173.33		173.33	10	172.33			39.00	1.00	"
P-115*	"	"	173.33		173.33	10	172.33			172.33	1.00	"
P-117	"	"	173.33		173.33	10	172.33			172.33	1.00	"
P-119*	"	"	173.33		173.33	10	172.33			172.33	1.00	"
P-120*	"	"	173.33		173.33	10	172.33			172.33	1.00	"
P-125	Sprayer, Micron	"	40.00		40.00	10	39.00			172.33	1.00	"
P-134*	Pump, Insecticide, Winsconsin	1961	586.66		586.66	10	585.66			39.00	1.00	"
P-137*	Pump, Refuelling, Finsbury	1965	533.33		533.33	10	532.33			585.66	1.00	" TENDERS FROM STAF
P-162	Sprayer Exhaust L/Rover	1969	113.33		113.33	10	112.33			532.33	1.00	"
P-163*	"	"	190.00		190.00	10	189.00			112.33	1.00	"
P-165*	"	"	190.00		190.00	10	189.00			189.00	1.00	"
P-173*	"	"	342.66		342.66	10	341.66			189.00	1.00	"
P-188*	Pump Refuelling, Finsbury	"	342.66		342.66	10	341.66			341.66	1.00	"
P-190	"	1972	173.33		173.33	10	172.33			341.66	1.00	"
P-208*	Exhaust Nozzle Sprayer II	1973	240.00		240.00	10	239.00			172.33	1.00	"
P-209*	"	1978	800.00		800.00	10	786.40			239.00	1.00	" MISSING
P-210*	"	"	800.00		800.00	10	786.40		12.60	799.00	1.00	"
P-211	"	"	800.00		800.00	10	786.40		12.60	799.00	1.00	"
P-212	"	"	800.00		800.00	10	786.40		12.60	799.00	1.00	"
P-213	"	"	800.00		800.00	10	786.40		12.60	799.00	1.00	"
P-214	"	"	800.00		800.00	10	786.40		12.60	799.00	1.00	"
P-230*	Pump Refuelling Finsbury	1980	766.66		766.66	10	766.40		12.60	799.00	1.00	"
P-226	Semi Rotary Pump	18.10.84	223.63		223.63	10	223.63		76.67	490.01	76.65	LOST
P-229*	Micronair Pod Spray System	25.5.87	23512.20		23512.20	10	2547.16		72.37	104.24	119.26	"
P-227*	"	"	18340.53		18340.53	10	152.84		2351.22	4898.38	18613.82	"
P-228*	"	07.6.88	18340.53		18340.53	10	152.84		1834.05	1986.89	16353.64	"
			18340.53		18340.53	10	152.84		1834.05	1986.89	16353.64	"
GRAND TOTAL			70388.88		70388.88		12639.28		6206.56	18045.84	51543.04	

BEST AVAILABLE COPY

84

STATION : KHARTOUM CRB  
 ACCOUNT CODE : 6806-008  
 ASSET GROUP : RADIOS AND ACCESSORIES

CURRENCY : UNIT  
 FINANCIAL YEAR : END

Asset Reg. No.	Description	Acquisition Date/Year	C O S T				D E P R E C I A T I O N				REMARKS	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current	Accumulated As at 30-06-89		NAV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
R-166	Radio Pye SSB 130 M	13.7.79	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-167	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-168	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-170	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-171	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-172	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-173	" " "	"	3541.90		3541.90	10	3187.71		353.19	3540.90	1.00	
R-174	Radio Intercontinental	24.6.79	8727.00		8727.00	10	7051.41		872.70	7924.11	802.89	
R-138	Radio Pye 130M SSB	1970	1078.00		1078.00	10	1077.00		-	1077.00	1.00	
TOTAL			34598.30		34598.30		30442.38		3345.03	33787.41	810.89	

BEST AVAILABLE COPY

STATION : NAIROBI CRB  
 ACCOUNT CODE : 6806-005  
 ASSET GROUP : RADIOS & ACCESSORIES

CURRENCY : UNITED  
 FINANCIAL YEAR : ENDING

Asset Reg. No.	Description	Acquisition Date/Year	C O S T			D E P R E C I A T I O N					REMARKS	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current	Accumulated As at 30-06-89		NBV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
TOTAL B/F			11742.40		11742.40		11703.40			11703.40	39.00	
R-159	Radio Ground AEL 3090/105/	150 1977	1160.00		1160.00	10	1159.00					
R-160	" " " "	" "	1265.33		1265.33	10	1259.33			1159.00	1.00	
R-178	" " SSB 130M	1979	3541.90		3541.90	10	3155.83			1264.33	1.00	
R-179	" " " "	" "	3541.90		3541.90	10	3155.83		354.19	3510.02	31.88	
R-180	" " " "	" "	3541.90		3541.90	10	3155.83		354.19	3510.02	31.88	
R-182	" " " "	" "	3541.90		3541.90	10	3155.83		354.19	3510.02	31.88	
R-183	" " " "	" "	3541.90		3541.90	10	3155.83		354.19	3510.02	31.88	
R-184	" " " "	" "	8727.00		8727.00	10	7854.30		871.70	8726.00	1.00	
R-50	Radio Ground Pye Air	1964	253.33		253.33	10	252.33			252.33	1.00	
R-55	" " Pye SSB 125	1963	928.00		928.00	10	927.00			927.00	1.00	
R-121	" " " "	1968	980.53		980.53	10	979.53			979.53	1.00	
R-121	" " " "	1969	1033.33		1033.33	10	1032.33			1032.33	1.00	
R-82	Transistor Radio, Philips	1966	13.33		13.33	10	12.33			12.33	1.00	
R-169	D.C. Power Supply for G/Radios Workshop	01.4.86	732.60		732.60	10	164.84		73.76	238.10	494.50	
GRAND TOTAL			44545.35		44545.35		41128.54		2715.91	43844.45	700.40	

BEST AVAILABLE COPY

STATION : NAIROBI CRB  
 ACCOUNT CODE: 6806-005  
 ASSET GROUP : RADIOS AND ACCESSORIES

CURRENCY : UNITED  
 FINANCIAL YEAR : ENDING

Asset Reg. No.	Description	Acquisition Date/Year	COST			DEPRECIATION				NBV	REMARKS	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current			Accumulated As at 30-06-89
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
R-31	Radio Ground AWA	1964	336.00		335.00	10	335.00					
R-32	Radio Ground AWA	"	336.00		336.00	10	335.00			335.00	1.00	
R-41	" " Marconi	1963	1165.33		1165.33	10	1164.33			335.00	1.00	
R-48	" " Pye Bantam	1964	253.33		253.33	10	262.33			1164.33	1.00	
R-59	" " Pye SSB 125	1963	928.00		928.00	10	927.00			262.33	1.00	
R-79	Transmitter, Marconi	1964	2640.00		2640.00	10	2635.00			927.00	1.00	
R-80	Receiver, National NC 190	1966	213.33		213.33	10	212.33			2639.00	1.00	
R-84	Amplifier Linear NC 12000	1966	530.67		530.67	10	529.67			212.33	1.00	
R-86	Generator Audio	1966	93.33		93.33	10	92.33			529.67	1.00	
R-87	" "	1966	93.33		93.33	10	92.33			92.33	1.00	
R-88	" VHF-UHF Marconi	"	253.33		253.33	10	252.33			92.33	1.00	
R-94	Meter, Frequency BC221	"	50.67		50.67	10	49.67			252.33	1.00	
R-95	Meter, Output Marconi	"	40.00		40.00	10	39.00			49.67	1.00	
R-96	Oscilloscope 058	"	48.00		48.00	10	47.00			39.00	1.00	
R-97	Power Unit AC/DC Westinghouse	"	80.00		80.00	10	79.00			47.00	1.00	
R-98	Power Unit Multi Output	"	40.00		40.00	10	39.00			79.00	1.00	
R-101	Transreceiver SOS	"	32.00		32.00	10	31.00			39.00	1.00	
R-102	" "	"	32.00		32.00	10	31.00			31.00	1.00	
R-103	" "	"	32.00		32.00	10	31.00			31.00	1.00	
R-104	Value Tester, AVO MKT	"	80.00		80.00	10	79.00			31.00	1.00	
R-105	VTVM AVD	1966	58.67		58.67	10	57.67			79.00	1.00	
R-111	Radio Ground Pye SSB 125	"	928.00		928.00	10	927.00			57.67	1.00	
R-113	Wattmeter	1967	248.00		248.00	10	247.00			927.00	1.00	
R-114	Resistor Coaxial Load	"	68.67		68.67	10	67.67			247.00	1.00	
R-119	Transreceiver SOS	1968	240.93		240.93	10	239.93			67.67	1.00	
R-125	Radio Ground Pye SSB125T	1969	1033.33		1033.33	10	1032.33			239.93	1.00	
R-132	Oscilloscope	"	347.47		347.47	10	346.47			1032.33	1.00	
R-133	Counter Timer	"	600.00		600.00	10	599.00			346.47	1.00	
R-134	Frequency Divider	1970	430.00		430.00	10	429.00			599.00	1.00	
R-141	Oscilloscope DART	1972	40.00		40.00	10	39.00			429.00	1.00	
R-142	VTNM Electrical Instrument	"	66.67		66.67	10	65.67			39.00	1.00	
R-143	" " Simpson	"	66.67		66.67	10	65.67			65.67	1.00	
R-144	Soladron Capacity	1971	80.00		80.00	10	79.00			65.67	1.00	
R-145	Relay Test r, Weston	"	26.67		26.67	10	25.67			79.00	1.00	
R-146	Wattmeter	"	20.00		20.00	10	19.00			25.67	1.00	
R-147	Valve Tester	"	40.00		40.00	10	39.00			19.00	1.00	
R-148	Sanwa-370E Multimeter	"	36.67		36.67	10	35.67			39.00	1.00	
R-149	GMP Dip Meter	1966	40.00		40.00	10	39.00			35.67	1.00	
R-150	Test Panel ADF	1973	93.33		93.33	10	92.33			39.00	1.00	
TOTAL C/F			11742.40		11742.40		11703.40			11703.40	39.00	

STATION : DJIBOUTI CRB  
 ACCOUNT CODE : 6807-004  
 ASSET GROUP : PUMPS AND SPRAYING EQUIPMENT

CURRENCY  
 FINANCIAL YEAR

Asset Reg. No.	Description	Acqui- sition Date/ Year	C O S T			D E P R E C I A T I O N					REMARKS	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current	Accumulated As at 30-06-89		NBV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
P-197*	Exhaust Nozzle Sprayer Tw'n	30.8.76	800.00		800.00	10	799.00					
P-198*	" " " "	27.7.77	800.00		800.00	10	799.00			799.00	1.00	B.O.S. IV/88-89 dd 30.6.8
P-221*	" " " "	"	40.00		40.00	10	39.00			799.00	1.00	" " "
P-222*	" " " "	"	40.00		40.00	10	39.00			39.00	1.00	" IV/88-89 dd 30.6.8
P-224	" " " single	1966	40.00		40.00	10	39.00			39.00	1.00	" " "
P-225	" " " "	"	40.00		40.00	10	39.00			39.00	1.00	" " "
										39.00	1.00	
GRAND TOTAL			1760.00		1760.00		1754.00			1754.00	6.00	

BEST AVAILABLE COPY

STATION : DJIBOUTI  
 ACCOUNT CODE : 6806-004  
 ASSET GROUP : RADIOS

CURRENCY : UNITED  
 FINANCIAL YEAR : ENDING

Asset Reg. No.	Description	Acquisition Date/ Year	C O S T				D E P R E C I A T I O N				REMARKS		
			As at 01-07-88 (4)	Additions (Disposals) 01-07-88 to 30-06-89 (5)	As at 30-06-89 (6)	Rate % (7)	As at 01-07-88 (8)	Additions (Disposals) (9)	Current (10)	Accumulated As at 30-06-89 (11)		NBV (12)	
R-124	Radio Ground Pye SSB 125T	Dec. '68	1136.66		1136.66	10		1135.66			1135.66	1.00	
R-177	Radio Ground Pye SSB 130M	13.7.79	3732.16		3732.16	10		3358.96	372.20		3731.16	1.00	
R-195	Radio Ground Pye SSB 130M	"	3732.16		3732.16	10		3358.96	372.20		3731.16	1.00	
R-197	Radio Intercontinental 1000	"	8727.00		8727.00	10		7784.48	872.70		8657.18	69.82	
TOTAL			17327.98		17327.98			15638.06	1617.10		17255.16	72.82	

BEST AVAILABLE COPY

93

STATION : DIRE DAM, CRB  
 ACCOUNT CODE : 0007-003  
 ASSET GROUP : PUMPS AND SPRAYING EQUIPMENT

CURRENCY UNIT:  
 FINANCIAL YEAR: ENDING

Asset Reg. No.	Description	Acquisition Date/Year	C.O.S.V.		Ratio	DEPRECIATION			NBV	REMARK		
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89		As at 30-06-89	As at 01-07-88	Provisions (Provisions)			Percent	Accumulated Depreciation 30-06-89
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
P-5	Pump Hathway Villers	1955	33.00		10							
P-34	Sprayer Exhaust L/R Single	"	40.00		10		79.00			79.00	1.00	
P-47	" " "	"	40.00		10		39.00			39.00	1.00	
P-40	" " "	"	40.00		10		39.00			39.00	1.00	
P-49	" " "	"	40.00		10		39.00			39.00	1.00	
P-50	" " "	"	40.00		10		39.00			39.00	1.00	
P-51	" " "	"	173.33		10		172.33			172.33	1.00	
P-52	" " "	"	173.33		10		172.33			172.33	1.00	
P-53	" " "	"	173.33		10		172.33			172.33	1.00	
P-54	" " "	"	173.33		10		172.33			172.33	1.00	
P-55	" " "	"	173.33		10		172.33			172.33	1.00	
P-56	" " "	"	173.33		10		172.33			172.33	1.00	
P-57	" " "	"	173.33		10		172.33			172.33	1.00	
P-58	" " "	"	173.33		10		172.33			172.33	1.00	
P-59	" " "	"	173.33		10		172.33			172.33	1.00	
P-121	" " "	"	40.00		10		39.00			39.00	1.00	
P-132	Pump Bernard/Rotos	"	291.40		10		290.40			290.40	1.00	
P-135	Pump Refuelling Finsbury	1952	113.33		10		112.33			112.33	1.00	
P-172	Sprayer Exhaust L/k Twin	May 1969	342.66		10		341.66			341.66	1.00	
P-175	" " "	"	342.66		10		341.66			341.66	1.00	
P-179	Pump Reggerini/Gusenti Dorkoly	1970	300.00		10		299.00			299.00	1.00	
P-168	Pump Refuelling Finsbury	17.10.72	173.33		10		172.33			172.33	1.00	
P-223	Pump Submersible Elect.	03.03.87	2940.58		10		392.08		293.00	686.14	2254.44	
GRAND TOTAL			5510.12	6510.12		3947.62		293.00		4241.68	2276.44	

BEST AVAILABLE COPY

x/bb

ACC : 0000-003  
 ASSET GROUP : RADIOS AND ACCESSORIES

CURRENCY  
 FINANCIAL YEAR : ENDING 30-06-89

Asset Reg. No.	Description	Acquisition Date/Year	COST				DEPRECIATION					REMARKS
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current	Accumulated As at 30-06-89	NBV	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
R-38	Radio Ground Marconi	1963	1165.33		1165.33	10	1165.33			1164.23	1.00	
R-53	Radio Ground Pye SBB 125	"	1266.66		1266.66	10	1265.66			1265.66	1.00	
F-54	" " " "	"	1266.66		1266.66	10	1265.66			1265.66	1.00	
R-57	" " " "	"	1266.66		1266.66	10	1265.66			1265.66	1.00	
R-66	Radio Redifon GR49	"	1266.66		1266.66	10	1265.66			1265.66	1.00	
R-67	Radio Redifon GR 49	"	1266.66		1266.66	10	1265.66			2165.66	1.00	
R-109	Radio Ground Pye SSB 125	"	928.00		928.00	10	927.00			927.00	1.00	
R-136	" " " "	1970	1078.80		1078.80	10	1077.80			1077.80	1.00	
R-139	" " " "	1979	1078.80		1078.80	10	970.00		106.88	1077.80	1.00	
R-164	" " " "	"	3732.16	(3732.16)		10	3358.96	(3358.96)			1.00	TO HQ TRANSFER)
R-51	Radio Ground Pye SSB 125	1963	1266.66		1266.66	10	1265.66			1265.66	1.00	
R-65	Radio Redifon GR 49	1966	1266.66		1266.66	10	1265.66			1265.66	1.00	
R-162	Radio Ground SSB 130 M	1979	3732.16		3732.16	10	3358.96		372.20	3731.16	1.00	
GRAND TOTAL			20581.87	(3732.16)	16849.71		19717.59	(3358.96)	479.08	16837.71	12.00	

BEST AVAILABLE COPY

95



STATION : AFDMA  
 ACCOUNT CODE : 6304-33  
 ASSET GROUP : RADIOS AND ACCESSORIES

CURRENT  
 FINANCIAL YEAR :

Asset No.	Description	Acquisition Date/Year	C O S T			D E P R E C I A T I O N					BBV	REMARKS		
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current	Accumulated As at 30-06-89				
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)			(12)	(13)
R-36	Radio Ground Mar. on. HSR21	1963	1165.33		1165.33	10	1164.33							
R-63	Radio Ground Radicon GR 49	1966	1266.67		1266.67	10	1265.67					1164.33	1.00	
R-64	Radio ground Radicon GR40	"	1266.67		1266.67	10	1265.67					1265.67	1.00	
R-112	Handset Radio Marconi	1965	58.67		58.67	10	57.67					1265.67	1.00	
R-140	Receiver Radio Facsimile	Mar.'69	1884.11		1884.11	10	1883.11					57.67	1.00	
R-147	Radio Pye SSB 130M	Aug'70	1078.80		1078.80	10	1077.80					1883.11	1.00	
R-161	Radio Pye SSB 130M	13.7.79	3732.16		3732.16	10	3358.96					1077.80	1.00	
R-165	Radio Pye SSB 130M	Mar'79	3732.16		3732.16	10	3482.12			372.04		3731.16	1.00	
R-121	Radio Ground Pye SSB 125	1968	980.53		980.53	10	979.53			249.04		3731.16	1.00	
GRAND TOTAL			15165.10		15165.10		14534.86			621.04		15156.10	9.00	
Additions - Unknown				4.00	15169.10		14534.86			621.04		15156.10	13.00	
R-115	Transceiver Czech	Unknown	-	1.00	1.00								1.00	
R-116	" "	"	-	1.00	1.00								1.00	
R-117	" "	"	-	1.00	1.00								1.00	
R-118	" "	"	-	1.00	1.00								1.00	
GRAND TOTAL			15165.10	4.00	15169.10		14534.86			621.04		15156.10	13.00	

EN  
 Items R-115-118 found due to stocktaking count on 30/6/89 but not listed in 1987/88 as the date of acquisition is not available and also their value, a nominal value of US\$1.00 is given for record purpose as the said radios are very old.

BEST AVAILABLE COPY

97

STATION : ADDL. LABS. (HC)  
 ACCOUNT CODE: 6807-001  
 ASSET GROUP: PUMPS AND SPRAYING EQUIPMENT

GENERAL FUND BALANCE  
 FISCAL YEAR - FUNDING YEAR

Asset No.	Description	Acquisition Date/Year	C.G.S.		Rate %	As at 01.07.68	As at 01.07.68 (Depreciated)	Current	Estimated as at 30.06.69	NB	
			As at 01.07.68	As at 30.06.69							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
P-133	Exhaust Precision	1967	453.33		10						
P 134	Sprayer Exhaust (L/W)	1958	150.00		10		135.00		952.33	1	
P 150	Sprayer Exhaust	"	150.00		10		135.00		185.00	1	
P 151	Sprayer Exhaust	1966	50.00		10		45.00		189.00	1	
P 156	Pump, Kato 11mg, Finsbury	1972	173.33		10		156.00		40.00	1	
P 159	Exhaust Nozzle Sprayer T/Tank	30.08.70	800.00		10		720.00		172.00	1	
P 199	" " " "	"	800.00		10		720.00		799.00	1	
P 200	" " " "	"	800.00		10		720.00		799.00	1	
P 201	" " " "	27.07.71	800.00		10		720.00		799.00	1	
P 202	" " " "	02.07.77	800.00		10		720.00		799.00	1	
P 203	" " " "	"	800.00		10		720.00		799.00	1	
P 204	" " " "	"	800.00		10		720.00		799.00	1	
P 205	" " " "	"	800.00		10		720.00		799.00	1	
P 206	" " " "	"	800.00		10		720.00		799.00	1	
P 207	" " " "	"	800.00		10		720.00		799.00	1	
P 180	Sprayer Exhaust, L/W	1968	150.00		10		135.00		149.00	1	
P 190	Exhaust Nozzle Sprayer	1977	800.00		10		720.00		151.00	1	
P 191	Pump Submersible Motors 3 phase	1973	650.00		10		585.00		839.00	1	
P 229	" " " "	1980	3200.00		10		2880.00		839.00	1	
<b>TOTAL</b>			<b>15911.66</b>			<b>14371.66</b>	<b>14295.00</b>	<b>328.50</b>	<b>14624.16</b>	<b>307.7</b>	

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STATION : ADDIS ABABA(HQ)  
 ACCOUNT CODE : 6806-001  
 ASSET GROUP : RADIOS AND ACCESSORIES

CURRENCY  
 FINANCIAL YEAR

Asset Reg. No.	Description	Acquisition Date/Year	C O S T			D E P R E C I A T I O N				RRV	
			As at 01-07-88	Additions (Disposals) 01-07-88 to 30-06-89	As at 30-06-89	Rate %	As at 01-07-88	Additions (Disposals)	Current		Accumulated As at 30-06-89
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
R-40	Radio Ground Marconi	1963	1165.33		1165.33	10	1165.33				
R-53	Receiver, Radio, Facsimile	1965	6933.33		6933.33	10	6932.33			1164.33	1.00
R-91	Hand Set Radio, Marconi	"	58.66		58.66	10	57.66			6932.33	1.00
R-92	Hand Set Radio, Marconi	"	58.66		58.66	10	57.66			57.66	1.00
R-93	Hand Set Radio, Marconi	"	58.66		58.66	10	57.66			57.66	1.00
R-120	Radio Ground Eye SSB 125	1968	980.53		980.53	10	979.53			57.66	1.00
R-127	Radio Ground Eye SSB 125	"	1033.33		1033.33	10	1032.33			53	1.00
R-163	Radio Ground Eye SSB 130M	1979	3732.16		3732.16	10	3359.86			1622.33	1.00
R-175	Radio Intercontinental	"	8726.80		8726.80	10	7854.22		372.30	2732.16	1.00
R-87	Generator, Signal MKIII	1966	928.00		928.00	10	927.00		871.58	8725.80	1.00
R-99	Tester, Electronic	"	40.00		40.00	10	39.00			927.00	1.00
	Adjustment-Transfer									39.00	1.00
R-164	Radio Ground Eye SSB 125	1979	-	3732.16	3732.16		-	3358.96	372.30	3141.16	1.00
TOTAL			23716.46	3732.16	27448.62		22461.58	3358.96	1616.08	27436.62	12.00

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# Protective Clothing & Camping Equipment

DESERT LOCUST CONTROL ORGANIZATION FOR EASTERN AFRICA

## CAMP EQUIPMENT ANNUAL STOCK RETURN

AS AT 30TH JUNE, 1962

STATION: HQS

Account: \_\_\_\_\_

Description	Qty. In Stock	Unit Price In US\$	Total Cost In US\$
Lamp Pressure	5	35.00	175.00
Camp Chair	14	1.76	<del>24.64</del> 24.64
Kalamazoo Ledger	5	25.00	125.00
Matal Camp Table	10	19.00	190.00
Camp Table Wooden	2	20.00	40.00
Tent With Varanda	13	579.71	7536.23
Jerican Matal	7	7.00	49.00
Overals	77	10.59	815.43
Cartridge	131	1.08	141.48
Sickle	2	2.50	5.00
Gloves (Set)	11	2.55	28.05
Basins Plastic Canvas	10	2.50	25.00
Net Mosquito	7	17.10	119.70
Water Filter	13	18.46	239.98
Helmet	27	1.00	<del>27.00</del> 27.00
Visors	30	5.50	165.00
Mask	7	5.27	36.89
Stove Primus	7	20.00	140.00
Camp Kit	7	62.50	437.50
Thermosi Flask	7	7.00	49.00
Basins Canvas Stand	11	5.00	55.00
Apron	132	1.24	163.68
Strecher	10	63.33	633.30
Fitting M/Net	7	5.00	35.00
Candel Witer/Filter	12	9.00	108.00
Cash Box	2	10.00	20.00
Camp Bed	2	16.91	33.82
<b>Total</b>			<b>11,418.70</b>

TABLE 15

ALLOCATION OF VEHICLES AND EXHAUST NOZZLE SPRAYER AS AT 30TH JUNE, 1992

Station	Pick-up 4x4	S/Wagon 4x4	Crew Cab 4x4	Buses	Saloon	Motor Truck	Cycle	Total	Exhaust Nozzle Sprayer		
									Serviceable	Unserviceable	Total
Addis Ababa	9	1	3	3**	4	5	-	25	8	5	13
Nairobi	8	-	-	2	4	3	1	18	4	15	19
Asmara	4	1*	-	1	1	3	-	10	5	5	10
Djibouti	5	-	1	1	1	2	-	10	-	2	2
Dire Dawa	7*****	1	-	1	-	3	-	12	10	7	17
Arusha	3	-	-	1	1	2	-	7	-	-	-
Kampala	3	-	-	1	1	1	-	6	-	2	2
Khartoum	7	-	3	1	1	6	-	18	-	10	10
Hargeisa	4+	-	-	-	-	-	-	4	-	-	-
Mogadiscio	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>50</b>	<b>3</b>	<b>7</b>	<b>11</b>	<b>13</b>	<b>25</b>	<b>1</b>	<b>110</b>	<b>27</b>	<b>46</b>	<b>73</b>

**N.B.:**

- |    |   |                     |       |   |                        |
|----|---|---------------------|-------|---|------------------------|
| +  | - | Stored in Djibouti  | ***   | - | Three vehicles boarded |
| *  | - | One vehicle boarded | ****  | - | Four vehicles boarded  |
| ** | - | Two vehicle boarded | ***** | - | Five vehicles boarded  |

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**TABLE 16**  
**STOCK OF INSECTICIDES AS AT 30TH JUNE, 1992**

Description	S T A T I O N S										Total
	Addis Ababa	Asmara	Dire Dawa	Djibouti	Hargeisa	Mog.	Nairobi	Arusha	Kampala	Khartoum	
Fenitrothion (ULV)95%	5,400	-	2,600	-	-	-	-	-	-	-	8,8000
Fenitrothion 100%	26,000	12,000	-	-	-	-	-	-	-	-	38,000
Sumithion	7,200	-	420	-	-	-	-	-	-	-	7,620
Malathion (ULV)	-	-	-	-	-	-	-	-	-	-	-
Malathion 95%	13,000	-	12,000	21,600	-	-	-	-	-	-	46,600
Malathion 50%	-	4,700	1,420	-	-	-	-	-	-	-	6,180
Diazinon 95%	-	575	2,250	-	-	-	-	-	-	-	2,825
BHC (ULV)	-	-	-	-	-	-	-	-	-	-	-
BHC 20%	4,400	-	40,400	-	-	-	-	-	-	-	44,800
BHC 11%	-	4,500	-	-	-	-	-	-	-	-	4,500
BHC 15%	-	6,800	43,200	-	-	-	-	-	-	-	50,000
BHC 16%	-	1,400	-	-	-	-	-	-	-	-	1,400
Dieldrin	475	-	-	-	-	-	-	-	-	-	475
Dieldrin 20%	-	5,070	18,185	-	-	-	-	-	-	-	23,255
D.D.T. 25% in oil	-	6,785	-	-	-	-	-	-	-	-	6,785
<b>Grand Total</b>											<b>241,130</b>

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# Appendix I: Animals of Ethiopia

## The Mammals of Ethiopia

Scientific Name	Determinator	English Name	Status
Order Chiroptera - Bats			
Family Pteropidae			
<i>Hypsignathus monstrosus</i>	H. Allen 1861	Hammer-headed Bat	
<i>Epomophorus murinus</i>	Clackson & De Vree 1991 (Temminck 1837)	Little Epauletted Fruit Bat	
<i>Epomophorus labialis</i>	(Ogilby 1835)	Gambian Epauletted Fruit Bat	
<i>Epomophorus gambianus</i>	(Peters 1865)	Dwarf Epauletted Fruit Bat	
<i>Micropteropus pusillus</i>	(Kerr 1792)	Straw-coloured Fruit Bat	
<i>Eidolon helvum</i>	(E. Geoffroy 1810)	Egyptian Fruit Bat	
<i>Rousettus aegyptiacus</i>	(Bocage 1898)	Bocage's Fruit Bat	
<i>Rousettus angolensis</i>	Thomas 1906	Long-haired Fruit Bat	
Family Rhinopustulidae			
<i>Rhinopoma hardwickii</i>	Gray 1831	Lesser Mouse-tailed Bat	
<i>Rhinopoma maculatum</i>	Thomas 1903		
Family Emballonuridae			
<i>Ta phonurus parvifacies</i>	E. Geoffroy 1818	Egyptian Tomb Bat	
<i>Ta phonurus nudiventris</i>	Cretzschmar 1830	Naked-rump Tomb Bat	
<i>Ta phonurus mauritanicus</i>	E. Geoffroy 1818	Mauritian Tomb Bat	
<i>Colura afro</i>	(Peters 1852)	Sheath-tailed Bat	
Family Nycteridae			
<i>Nycterus thebaica</i>	E. Geoffroy 1813	Common Slit-faced Bat	
<i>Nycterus hispida</i>	(Schreber 1775)	Hairy Slit-faced Bat	
<i>Nycterus woodi</i>	Andersen 1914		
<i>Nycterus macrois</i>	Dobson 1876	Ethiopian Slit-faced Bat	
Family Megadermatidae			
<i>Lawa frons</i>	(E. Geoffroy 1810)	Heart-nosed Big-eared Rat	
<i>Cardioderma cor</i>	(Peters 1872)	Yellow-winged Bat	
Family Rhinolophidae			
<i>Rhinolophus chinensis</i>	Cretzschmar 1828	Geoffroy's Horseshoe Bat	
<i>Rhinolophus landeri</i>	Martin 1838	Lander's Horseshoe Bat	
<i>Rhinolophus hipposideros</i>	(Bechstein 1800)	Lesser Horseshoe Bat	
<i>Rhinolophus simulatrix</i>	K. Andersen 1904	Bush Horseshoe Bat	
<i>Rhinolophus blasii</i>	Peters 1867	Peak-saddle Horseshoe Bat	
<i>Rhinolophus sumipetens</i>	Rüppell 1842	Rüppell's Horseshoe Bat	
<i>Rhinolophus hildebrandtii</i>	Peters 1878	Hildebrandt's Horseshoe Bat	
<i>Rhinolophus eloquens</i>	K. Andersen 1905		
Family Hipposideridae			
<i>Hipposideros caffer</i>	(Sundevall 1846)	Sundevall's African Leaf-nosed Bat	
<i>Hipposideros ruber</i>	(Noack 1893)	Noack's African Leaf-nosed Bat	
<i>Hipposideros commersoni</i>	(E. Geoffroy 1813)	Commerson's Leaf-nosed Bat	
<i>Hipposideros fuliginosus</i>	(Temminck 1853)	Sooty Leaf-nosed Bat	
<i>Hipposideros megalotis</i>	(Heuglin 1861)	Large-eared Leaf-nosed Bat	
<i>Traenops persicus</i>	Dobson 1871	Persian Leaf-nosed Bat	
<i>Asellia anders</i>	(E. Geoffroy 1831)	Trident Leaf-nosed Bat	
<i>Asellia parva</i>	De Beaux 1931		

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Scientific Name	Determinator	English Name	Status
Family Vespertilionidae			
<i>Pipistrellus tenuis</i> <i>pinus</i>	(Peters 1872)		
<i>Pipistrellus nanalicus</i>	(Thomas 1901)	Somali Serotine Bat	
<i>Pipistrellus capensis</i>	(A. Smith 1829)	Cape Serotine Bat	
<i>Pipistrellus guineensis</i>	(Docage 1849)		
<i>Pipistrellus nanus</i>	(Peters 1852)	Banana Bat	
<i>Pipistrellus kuhlii</i>	(Natterer 1819)	Kuhl's Pipistrelle Bat	
<i>Pipistrellus rusticus</i>	(Tomes 1861)	Rusty Bat	
<i>Pipistrellus rufipennis</i>	(J.B. Fischer 1829)	Röppell's Bat	
<i>Mimetillus moloneyi</i>	(Thomas 1891)	Moloney's Flat-beaded Bat	
<i>Glauconycteris variegata</i>	(Tomes 1861)	Butterfly Bat	
<i>Laephotis wintoni</i>	Thomas 1901	Winton's Long-eared Bat	
<i>Plecotus austriacus</i>	(J.B. Fischer 1829)	Grey Long-eared Bat	
<i>Barbastella leucomelas</i>	(Cretzschmar 1836)	Common Barbastelle	
<i>Miniopterus inflatus</i>	Thomas 1901	Greater Long-fingered Bat	
<i>Miniopterus schreibersii</i>	(Kuhl 1819)	Schreiber's Long-fingered Bat	
<i>Nyctinomus pschis</i> <i>officinalis</i>	(Peters 1859)	Schlieffen's Bat	
<i>Scotoecus lindii</i>	Thomas 1901		
<i>Scotoecus hurundo</i>	(De Winton 1899)	Dark-winged Lesser House Bat	
<i>Myotis bocagii</i>	(Peters 1870)		
<i>Myotis tricolor</i>	(Temminck 1832)	Temminck's Hairy Bat	
<i>Myotis scoti</i>	Thomas 1927	Scott's Hairy Bat	E
<i>Myotis morrisi</i>	Hill 1971	Morris' Hairy Bat	
<i>Myotis webstersii</i>	(Gray 1866)	Webster's Hairy Bat	
<i>Scotophilus dinganii</i>	(A. Smith 1833)	Giant Yellow House Bat	
<i>Scotophilus leucogaster</i>	(Cretzschmar 1830)	Lesser Yellow House Bat	
<i>Kerivoula lanata</i>	(A. Smith 1847)	Woolly Bat	
<i>Kerivoula erioptera</i>	(Heuglin 1877)		E
Family Molossidae			
<i>Otomops muriei</i>	(Matschie 1897)	Large-eared Free-tailed Bat	
<i>Platyrops senegalensis</i>	(Peters 1878)	Peters' Flat-beaded Bat	
<i>Tadarida pumila</i>	(Cretzschmar 1830)	Little Free-tailed Bat	
<i>Tadarida chapmani</i>	(J.A. Allen 1917)		
<i>Tadarida nigeriensis</i>	(Thomas 1913)	Nigerian Free-tailed Bat	
<i>Tadarida bivitata</i>	(Heuglin 1861)	Spotted Free-tailed Bat	
<i>Tadarida midas</i>	(Sundevall 1843)	Midas Free-tailed Bat	
<i>Tadarida condyura</i>	(A. Smith 1833)	Angola Free-tailed Bat	
<i>Tadarida namata</i>	(J.A. Allen 1917)	Dwarf Free-tailed Bat	
<i>Tadarida ussorgbei</i>	(Thomas 1913)	Amorge's Free-tailed Bat	
<i>Tadarida aegyptiaca</i>	(E. Geoffroy 1818)	Egyptian Free-tailed Bat	
<i>Tadarida ventralis</i>	(Heuglin 1861)	Transvaal Free-tailed Bat	
<i>Mormopterus acetabulosus</i>	(Hermann 1804)	Natal Free-tailed Bat	

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Scientific Name	Determinator	English Name	Status
Order Insectivora - Hedgehogs and Shrews			
Family Erinaceidae			
<i>Atheris albiventris</i>	(Wagner 1841)	White-bellied Hedgehog	
<i>Paraechinus aethiopicus</i>	(Hemprich & Ehrenberg 1833)	Ethiopian Hedgehog	
Family Soricidae			
<i>Crocidura baileyi</i>	Osgood 1936		E
<i>Crocidura bottegi</i>	Thomas 1898		
<i>Crocidura bottegoides</i>	Hutterer & Yalden 1990		E
<i>Crocidura fulvastra</i>	(Sundevall 1843)		
<i>Crocidura fuscomurina</i>	(Heuglin 1965)		
<i>Crocidura glava</i>	Heim de Balsac 1966		E
<i>Crocidura ivrensis</i>	Hutterer & Yalden 1990		E
<i>Crocidura cf. hildegardens</i>	Thomas 1894		
<i>Crocidura lucina</i>	Dippenaar 1980		E
<i>Crocidura cf. lusitana</i>	Dollman 1915		
<i>Crocidura macmillani</i>	Dollman 1915		E
<i>Crocidura nama</i>	Dobson 1889		
<i>Crocidura cf. nigrofusca</i>	Matschie 1895		
<i>Crocidura niobe</i>	Thomas 1906		
<i>Crocidura oliveri</i>	(Lesson 1827)		
<i>Crocidura parvipes</i>	Osgood 1910		
<i>Crocidura patha</i>	Dollman 1915		
<i>Crocidura phaeura</i>	Osgood 1936		E
<i>Crocidura planiceps</i>	Heller 1910		
<i>Crocidura smithii</i>	Thomas 1895		
<i>Crocidura somalica</i>	Thomas 1895		
<i>Crocidura thalia</i>	Dippenaar 1980		E
<i>Crocidura varia</i>	(L. Geoffroy 1834)		
<i>Crocidura voi</i>	Osgood 1910		
<i>Crocidura yankariensis</i>	Hutterer & Jenkins 1980		
<i>Crocidura zapfen</i>	Dollman 1915		E?
<i>Suncus etruscus</i>	(Savi 1822)	Dwarf Shrew	
<i>Suncus murinus</i>	(Linn 1766)	House Shrew	
<i>Sylvaorex megalura</i>	(Jentink 1888)	Climbing Shrew	
Family Macroscelididae			
<i>Elephantulus rufescens</i>	(Peters 1878)	Rufous Elephant Shrew	
Order Rodentia - Rodents			
Family Scuriidae - Squirrels			
<i>Heliosciurus gambianus</i>	(Ogilby 1835)	Gambian Sun-squirrel	
<i>Xerus erythropus</i>	(E. Geoffroy 1803)	Geoffroy's Ground Squirrel	
<i>Xerus rutilus</i>	(Cretzschmar 1878)	Unstriped Ground Squirrel	
<i>Paraxerus ochraceus</i>	(Hue, 1880)	Huet's Bush Squirrel	
Family Gliridae - Dormouse			
<i>Graphiurus parvus</i>	(True 1893)	Small Dormouse	
<i>Graphiurus murinus</i>	(Desmarest 1822)	African Dormouse	

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Scientific Name	Determinator	English Name	Status
Family Muridae - Rats and Mice			
<i>Loxomys imhausi</i>	Milne-Edwards 1867	Crested Rat	
<i>Tatera robusta</i>	(Cretzschmar 1830)	Large Gerbil	
<i>Tatera valida</i>	(Bocage 1890)	Bocage's Gerbil	
<i>Tatera phyllipsi</i>	(De Winton 1898)	Gerbil	
<i>Tatera nigricauda</i>	(Peters 1878)	Black-tailed Gerbil	
<i>Taterillus harringtoni</i>	(Thomas 1906)		
<i>Taterillus emini</i>	(Thomas 1892)	Emini's Gerbil	
<i>Ammodillus imbelis</i>	(De Winton 1898)		
<i>Gerbillus pufinus</i>	Rhoads 1896		
<i>Gerbillus gerbilus</i>	(Olivier 1800)		
<i>Gerbillus pusillus</i>	Peters 1878		
<i>Gerbillus nanus</i>	Blaiford 1875		
<i>Saccostomus mearnsi</i>	Heller 1910	Pouched Mouse	
<i>Dendromus mesomelas</i>	(Brants 1827)	Brant's Mouse	
<i>Dendromus mysacalis</i>	Heuglin 1863	Banana Mouse	
<i>Dendromys melanogis</i>	A. Smith 1834	Grey Mouse	
<i>Dendromys lewis</i>	De Winton 1899	Lovell's Mouse	
<i>Megadendromys nikolausi</i>	Dieterlen & Rupp 1978	Nikolaus' Mouse	E
<i>Sitomys parvus</i>	Rhoads 1896	Fat Mouse	
<i>Sitomys pratensis</i>	Peters 1846		
<i>Otomys typus</i>	(Heuglin 1877)	Swamp Rat	
<i>Mus domesticus</i>	Rurty 1772	House Mouse	
<i>Mus tenellus</i>	(Thomas 1903)	Pigmy Mouse	
<i>Mus proconodon</i>	Rhoads 1896		
<i>Mus mahomet</i>	Rhoads 1896	Mahomet's Mouse	E
<i>Mus triton</i>	(Thomas 1909)		
<i>Muriculus imberbis</i>	(Rüppell 1842)	Simion's Mouse	E
<i>Rattus rattus</i>	(Linn. 1758)	House Rat	
<i>Rattus norvegicus</i>	(Berkenhout 1769)	Brown Rat	
<i>Praomys fumatus</i>	(Peters 1878)	African Meadow Rat	
<i>Praomys albus</i>	(Rüppell 1842)	White-footed Rat	E
<i>Praomys erythrolauscus</i>	(Temminck 1833)	Multicolored Mouse	
<i>Praomys huberti</i>	(Wroughton 1908)		
<i>Praomys rufus</i>	Van der Straeten & Dieterlen 1984	Rupp's Rat	E
<i>Stenocephalemys albicaudata</i>	Frick 1914	White-tailed Rat	E
<i>Stenocephalemys griseicauda</i>	Petter 1972	Grey-tailed Rat	E
<i>Oenomys hypoxanthus</i>	(Pucheran 1855)	Rusty-nosed Rat	
<i>Grammomys macmillani</i>	(Wroughton 1907)	Tree Rat	
<i>Grammomys nunnce</i>	Huterea & Dieterlen 1984	Mrs. Nikolaus' Mouse	E
<i>Thalpomys pseduleus</i>	(Sundevall 1847)	Tree Mouse	
<i>Aethomys hindsi</i>	(Thomas 1907)		
<i>Acomys wilsoni</i>	Thomas 1892	Wilson's Spiny Mouse	
<i>Acomys calurus</i>	(Desmarest 1819)	Spiny Mouse	
<i>Uranomys ruddi</i>	Dollman 1909		
<i>Arvicanthus abyssinicus</i>	(Rüppell 1842)	Ethiopian Grass Rat	E
<i>Arvicanthus ruboticus</i>	(Desmarest 1822)	Lowland Grass Rat	
<i>Arvicanthus blacki</i>	Frick 1914	Black's Grass Rat	E
<i>Arvicanthus somalicus</i>	Thomas 1903	Somali Grass Rat	
<i>Pelomys harringtoni</i>	Thomas 1903	Harrington's Scrub Rat	E
<i>Pelomys rex</i>	(Thomas 1906)	King Scrub Rat	E
<i>Lemniscomys striatus</i>	(Linn. 1758)	Punctated Grass-mouse	
<i>Lemniscomys barbarus</i>	(Linn. 1767)	Striped Grass-mouse	
<i>Lemniscomys macculus</i>	(Thomas & Wroughton 1910)		
<i>Loxomys flavo punctatus</i>	Thomas 1888	Harsh-furred Mouse	
<i>Loxomys melanonyx</i>	Petter 1972	Black-clawed Mouse	E
<i>Dasyomys incomtus</i>	(Sundevall 1847)	Shaggy Swamp-rat	
<i>Colomys postingi</i>	Thomas & Wroughton 1907	White-bellied Forest-rat	

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Scientific Name	Determinator	English Name	Status
Family Rhizomyidae - Molerats			
<i>Tachyorvices splendens</i>	(Rüppell 1836)	Common Molerat	
<i>Tachyorvices macrocephalus</i>	(Rüppell 1842)	Giant Molerat	E
Family Dipodidae			
<i>Jaculus jaculus</i>	(Linn. 1758)	Lesser Egyptian Gerboa	
Family Bathyergidae			
<i>Heteroce piulius glaber</i>	Rüppell 1842	Naked Molerat	
Family Ctenodactylidae			
<i>Pectinator spekei</i>	Blyth 1856	Speke's Pectinator	
Family Thyronomyidae			
<i>Thyronomys gregorianus</i>	(Thomas 1894)	Lesser Canerat	
Family Hystricidae - Porcupines			
<i>Hystrix cristata</i>	Linn. 1758	Crested Porcupine	
Order Primates - Bushbabies and Monkeys			
Family Lorinidae - Bushbabies			
<i>Galago gallarum</i>	Thomas 1901		
<i>Galago senegalensis</i>	E. Geoffroy 1796	Senegal Bushbaby	
Family Cercopithecidae - Monkeys			
<i>Erythrocebus patas</i>	(Schreber 1776)	Patas Monkey	
<i>Cercopithecus mitis</i>	Wolf 1822	Blue Monkey	
<i>Cercopithecus neglectus</i>	Schlegel 1876	De Brazza's Monkey	
<i>Cercopithecus aethiops</i>	(Linn. 1758)	Griquet Monkey	
<i>Cercopithecus pygerythrus</i>	(Cuvier: 1821)	Vervet Monkey	
<i>Cercopithecus albo-gularis</i>	(Sykes 1831)	Syke's Monkey	
<i>Theropithecus gelada</i>	(Rüppell 1835)	Gelada	E
<i>Papio anubis</i>	(Lesson 1827)	Anubis Baboon	
<i>Papio cynocephalus</i>	(Linn. 1766)	Yellow Baboon	
<i>Papio hamadryas</i>	(Linn. 1758)	Hamadryas Baboon	
Family Colobidae - Colobus Monkeys			
<i>Colobus guereza</i>	Rüppell 1835	Guereza	
Order Carnivora - Carnivores			
Family Mustelidae			
<i>Ictonyx striatus</i>	(Perry 1810)	Zorilla, Striped Polecat	
<i>Poecilictis fbyon</i>	(Hemprich & Ehrenberg 1833)	Libyan Striped Weasel	
<i>Mellivora capensis</i>	(Schreber 1776)	Ratel	
<i>Aonyx capensis</i>	(Schinz 1821)	Clawless Otter	
<i>Lutra maculicollis</i>	Lichtenstein 1835	Spotted-necked Otter	
Family Canidae - Dogs			
<i>Lycanopsis pictus</i>	(Tammack 1820)	African Hunting Dog	
<i>Otocyon megalotis</i>	(Desmarest 1822)	Bat-eared Fox	
<i>Canis simensis</i>	Rüppell 1838	Ethiopian Wolf	E T
<i>Canis adustus</i>	Sundevall 1846	Side-striped Jackal	
<i>Canis aureus</i>	Linn. 1758	Golden Jackal	
<i>Canis mesomelas</i>	Schreber 1775	Black-backed Jackal	
<i>Vulpes rueppellii</i>	(Schinz 1825)	Rüppell's Sandfox	
<i>Vulpes pallida</i>	(Cretzschmar 1827)	Pale Sandfox	
Family Viverridae			
<i>Viverra civetta</i>	Schreber 1776	Civet	
<i>Genetta abyssinica</i>	(Rüppell 1836)	Abyssinian Genet	
<i>Genetta felina</i>	(Thunberg 1811)	Common Genet	
<i>Genetta maculata</i>	(Gray 1830)	Rusty-spotted Genet	
<i>Atlas paludinosus</i>	(G. Cuvier 1829)	Marsh Mongoose	
<i>Helogale hurtula</i>	Thomas 1904	Somali Dwarf Mongoose	
<i>Helogale parvula</i>	(Sundevall 1846)	Southern Dwarf Mongoose	
<i>Herpestes sanguineus</i>	Rüppell 1835	Lion-tailed Mongoose	
<i>Herpestes ichneumon</i>	(Linn. 1758)	Egyptian Mongoose	
<i>Ichneumia albicauda</i>	(G. Cuvier 1829)	White-tailed Mongoose	
<i>Mungos mungo</i>	(Gmelin 1788)	Banded Mongoose	

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Scientific Name	Determinator	English Name	Status
Family Proteleidae <i>Proteles crassus</i>	(Sparrman 1783)	Aardwolf	
Family Hyænidæ - Hyænas <i>Hyæna hyæna</i> <i>Crocuta crocuta</i>	(Linn. 1758) (Erlicben 1777)	Striped Hyæna Spotted Hyæna	
Family Felidæ - Cats <i>Acinonyx jubatus</i> <i>Felis silvestris</i> <i>Felis serval</i> <i>Felis caracal</i> <i>Panthera pardus</i> <i>Panthera leo</i>	(Schreber 1775) Schreber 1777 Schreber 1776 Schreber 1776 (Linn. 1758) (Linn. 1758)	Cheetah Wildcat Serval Caracal Leopard Lion	
Order Artiodactyla - Even-toed Ungulates Family Hippopotamidæ - Hippopotamids <i>Hippopotamus amphibius</i>	Linn. 1758	Hippopotamus	
Family Suidæ - Pigs <del><i>Hydrochoerus assimertzei</i></del> <del><i>Potamochoerus larvatus</i></del> <i>Phacochoerus africanus</i> <i>Phacochoerus aethiopicus</i>	Thomas 1904 <del>(Saville 1833)</del> (Gmelin 1788) (Pallas 1767)	<del>Giant Forest Hog</del> <del>Emagly Klipbuck</del> Common Warthog Somali Warthog	
Family Giraffidæ - Giraffe <i>Giraffa camelopardalis</i>	(Linn. 1758)	Giraffe	
Family Bovidae - Bovids <i>Alcelaphus buselaphus</i> <i>Damaliscus lunatus</i> <i>Sylvaca prasinus</i> <i>Cephalophus natalensis</i> <i>Cephalophus weynsi</i> <i>Oreotragus oreotragus</i> <i>Ourebia ourebi</i> <i>Dorcacrus megalotis</i> <i>Madoqua soliana</i> <i>Madoqua guentheri</i> <i>Kobus kob</i> <i>Kobus megaceros</i> <i>Kobus ellipsiprymnus</i> <i>Redunca redunca</i> <i>Redunca fulvorufa</i> <i>Ammodorcas clarkei</i> <i>Gazella rufifrons</i> <i>Gazella dorcas</i> <i>Gazella spekei</i> <i>Gazella soemmerringi</i> <i>Gazella granti</i> <i>Gazella thomsoni</i> <i>Liotragus walleri</i> <i>Hippotragus equinus</i> <i>Oryx gazella</i> <i>Tragelaphus imberbis</i> <i>Tragelaphus streperos</i> <i>Tragelaphus buxtoni</i> <i>Tragelaphus scripsum</i> <i>Tragelaphus oryx</i> <i>Capra ibex</i> <i>Capra walie</i> <i>Syncerus caffer</i>	(Pallas 1766) (Burchell 1823) (Linn. 1758) A. Smith 1834 Thomas 1901 (Zimmermann 1783) (Zimmermann 1783) (Menges 1894) (De Blainville 1816) Thomas 1894 (Erlicben 1777) (Fitzinger 1835) (Ogilby 1833) (Pallas 1767) (Almelius 1815) (Thomas 1891) Gray 1846 (Linn. 1758) Blyth 1863 (Cretschmar 1828) Brooke 1872 Günther 1884 (Brooke 1879) (Desmarest 1804) (Linn. 1758) (Blyth 1869) (Pallas 1766) (Lydekker 1910) (Pallas 1766) (Pallas 1766) Linn. 1758 Rüppell 1835 (Sparrman 1779)	Hartebeest Tiang Bush Duiker Red Duiker Weyla's Duiker Klipspringer Oribi Beza Salt's Dikdik Guenther's Dikdik Kob (White-eared) Nile Lechwe Waterbuck Bobor Reebuck Mountain Reedbuck Lobatog Red-fronted Gazelle Dorcas Gazelle Speke's Gazelle Soemmerring's Gazelle Grant's Gazelle Thomson's Gazelle (Mongalla) Gerenuk Roan Oryx Lesser Kudu Greater Kudu Mountain Nyala Bushbuck Common Eland Ibex (Nubian) Walia Ibex Buffalo	

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Scientific Name	Determinator	English Name	Status
Order Perissodactyla - Odd-toed Ungulates			
Family Equidae - Asses and Zebras			
<i>Equus africanus</i>	(Fitzinger 1857)	African Wildass	T
<i>Equus grevyi</i>	Oustalet 1882	Grevy's Zebra	T
<i>Equus burchelli</i>	(Gray 1824)	Burchell's Zebra	
Family Rhinocerotidae - Rhinoceros			
<i>Diceros bicornis</i>	(Linn. 1758)	Black Rhinoceros	T
Order Proboscidea - Elephant			
Family Elephantidae - Elephant			
<i>Loxodonta africana</i>	(Blumenbach 1797)	African Elephant	
Order Hyracoidea - Hyraxes			
Family Procaviidae - Hyraxes			
<i>Procavia capensis</i>	(Pallas 1766)	Rock Hyrax	
<i>Heterohyrax brucei</i>	(Gray 1868)	Yellow-spotted Hyrax	
Order Lagomorpha - Hares			
Family Leporidae - Hares			
<i>Lepus habessinicus</i>	Hemprich & Ehrenberg 1833	Abyssinian Hare	
<i>Lepus sylvaticus</i>	Thomas 1903	Fagan's Hare	E
<i>Lepus starcki</i>	Petter 1963	Starck's Hare	
<i>Lepus crowstani</i>	De Winton 1899	Crowstani's Hare	
Order Tubulidentata - Aardvark			
Family Orycteropodidae - Aardvark			
<i>Orycteropus afer</i>	(Pallas 1766)	Aardvark	
Order Pholidota - Pangolin			
Family Manidae - Pangolin			
<i>Phataginus tetradactyla</i>	Smuts 1832	Ground Pangolin	
Order Sirenia - Dugong and Manatee			
Family Dugongidae - Dugong			
<i>Dugong dugon</i>	(P.L.S. Müller 1776)	Dugong	
Order Cetacea - Whales and Dolphins			
Family Balaenopteridae - Baleen Whales			
<i>Balaenoptera borealis</i>	Lesson 1828	Sei Whale	
<i>Balaenoptera edeni</i>	Anderson 1879	Bryde's Whale	
<i>Balaenoptera acutorostrata</i>	Lacépède 1804	Minke Whale	
<i>Megaptera novaeangliae</i>	(Borowski 1781)	Humpback Whale	
Family Ziphiidae			
<i>Ziphius cavirostris</i>	G. Cuvier 1823	Cuvier's Beaked Whale	
Family Physcteridae			
<i>Physcter calodon</i>	Linn. 1758	Sperm Whale	
Family Delphinidae - Dolphins			
<i>Grampus griseus</i>	(G. Cuvier 1812)	Risso's Dolphin	
<i>Globicephala macrorhynchus</i>	Gray 1846	Short-finned Pilot Whale	
<i>Steno bredanensis</i>	(Lesson 1828)	Rough-toothed Dolphin	
<i>Stenella attenuata</i>	(Gray 1846)	Spotted Dolphin	
<i>Stenella longirostris</i>	(Gray 1828)	Long-snouted Dolphin	
<i>Delphinus delphis</i>	Linn. 1758	Common Dolphin	
<i>Delphinus tropicalis</i>	Van Bree 1971	Tropical Dolphin	
<i>Sousa plumbea</i>	(G. Cuvier 1829)	Humpback Dolphin	
<i>Tursiops aduncus</i>	(Ehrenberg 1833)	Indian Ocean Bottlenosed Dolphin	
<i>Orcinus orca</i>	(Linn. 1758)	Killer Whale	
<i>Pseudorca crassidens</i>	(Owen 1846)	False Killer Whale	

Status:

E - endemic to Ethiopia

T - threatened status in the world

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## The Endemic Mammals of Ethiopia

Group & Species	Determinator & date	Vernacular name
<b>Order Chiroptera - Bats</b>		
<i>Myotis scottii</i>	Thomas 1927	Scott's Hairy Bat
<i>Konyoula enphora</i>	(Heuglin 1877)	
<b>Order Insectivora - Shrews</b>		
<i>Crocidura baileyi</i>	Osgood 1936	
<i>Crocidura boettgeroides</i>	Hutterer & Yalden 1990	
<i>Crocidura glassi</i>	Heim de Balsac 1966	
<i>Crocidura harenna</i>	Hutterer & Yalden 1990	
<i>Crocidura lucina</i>	Dippenaar 1980	
<i>Crocidura macmillani</i>	Dollman 1915	
<i>Crocidura phaeura</i>	Osgood 1936	
<i>Crocidura thalia</i>	Dippenaar 1980	
<i>Crocidura tschiburi</i>	Dollman 1915	
<b>Order Rodentia - Rodents</b>		
<i>Mus mahomeri</i>	Rhoads 1896	Mahomet's Mouse
<i>Muriculus imberbis</i>	(Rüppell 1842)	Simien Mouse
<i>Praomys albigipes</i>	(Rüppell 1842)	White-footed Rat
<i>Praomys ruppi</i>	Van der Straeten & Dieterlen 1983	Rupp's Rat
<i>Stenocephalemys albocaudata</i>	Frick 1914	White-tailed Rat
<i>Stenocephalemys griseicauda</i>	Petter 1972	Grey-tailed Rat
<i>Grammomys minnae</i>	Hutterer & Dieterlen 1984	Mrs. Nikolaus' Mouse
<i>Arvicantis abyssinicus</i>	Rüppell 1842	Ethiopian Grass Rat
<i>Arvicantis blicki</i>	Frick 1914	Blick's Grass Rat
<i>Pelomys harringtoni</i>	Thomas 1903	Harrington's Scrub Rat
<i>Pelomys rex</i>	(Thomas 1906)	King Scrub Rat
<i>Lophuromys melanonyx</i>	Petter 1972	Black-clawed Mouse
<i>Dendromys lovatii</i>	De Winton 1899	Lovat's Mouse
<i>Megadendromus nikolausi</i>	Dieterlen & Rupp 1978	Nikolaus' Mouse
<i>Tachyoryctes macrocephalus</i>	(Rüppell 1842)	Giant Molerat
<b>Order Primata - Monkeys</b>		
<i>Theropithecus gelada</i>	(Rüppell 1835)	Gelada
<b>Order Carnivora - Carnivores</b>		
<i>Canis simensis</i>	Rüppell 1838	Ethiopian Wolf
<b>Order Artiodactyla - Even-toed Ungulates</b>		
<i>Tragelaphus buxtoni</i>	(Lydekker 1910)	Mountain Nyala
<i>Capra walie</i>	Rüppell 1835	Walie Ibex
<b>Order Lagomorpha - Hares</b>		
<i>Lepus starcki</i>	Petter 1963	Starck's Hare

Source: Yalden & Largen (1992)

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## Summary

Group	Total species	Endemic species	% Endemic
<i>Order Chiroptera - Bats</i>			
Family Pteropidae	9	0	0
Family Rhinopomatidae	2	0	0
Family Emballonuridae	4	0	0
Family Nyctenidae	4	0	0
Family Megadermatidae	2	0	0
Family Rhinolophidae	8	0	0
Family Hipposideridae	8	0	0
Family Vespertilionidae	27	2	7.41
Family Molossidae	13	0	0
Total	77	2	2.60
<i>Order Insectivora - Hedgehogs and Shrews</i>			
Family Erinaceidae	2	0	0
Family Soricidae	29	9	31.03
Family Macroscelidea	1	0	0
Total	32	9	28.13
<i>Order Rodentia - Rodents</i>			
Family Sciuridae - Squirrels	4	0	0
Family Gliridae - Dormouse	2	0	0
Family Muridae - Rats and Mice	57	14	24.56
Family Rhizomyidae - Mole rats	2	1	50.00
Family Dipodidae	1	0	0
Family Bathyergidae	1	0	0
Family Ctenodactylidae	1	0	0
Family Thyronomyidae	1	0	0
Family Hystricidae - Porcupines	1	0	0
Total	70	15	21.43
<i>Order Primates - Bushbabies and Monkeys</i>			
Family Loridae - Bushbabies	2	0	0
Family Cercopithecidae - Monkeys	10	1	10.00
Family Colobidae - Colobus Monkeys	1	0	0
Total	13	1	7.69
<i>Order Carnivora - Carnivores</i>			
Family Mustelidae	5	0	0
Family Canidae - Dogs	8	1	12.50
Family Viverridae	11	0	0
Family Proteridae	1	0	0
Family Hyaenidae - Hyaenas	2	0	0
Family Felidae - Cats	6	0	0
Total	33	1	3.03

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Group	Total species	Endemic species	% Endemic
<i>Order Artiodactyla - Even-toed Ungulates</i>			
Family Hippopotamidae - Hippopotamus	1	0	0
Family Suidae - Pigs	4	0	0
Family Giraffidae - Giraffe	1	0	0
Family Bovidae - Bovids	33	2	6.06
Total	39	2	5.13
<i>Order Perissodactyla - Odd-toed Ungulates</i>			
Family Equidae - Asses and Zebras	3	0	0
Family Rhinocerotidae - Rhinoceros	1	0	0
Total	4	0	0
<i>Order Proboscidea - Elephants</i>			
Family Elephantidae - Elephant	1	0	0
Total	1	0	0
<i>Order Hyracoidea - Hyraxes</i>			
Family Procaviidae - Hyraxes	2	0	0
Total	2	0	0
<i>Order Lagomorpha - Hares</i>			
Family Leporidae - Hares	4	1	25.00
Total	4	1	25.00
<i>Order Tubulidentata - Aardvark</i>			
Family Orycteropodidae - Aardvark	1	0	0
Total	1	0	0
<i>Order Pholidota - Pangolin</i>			
Family Manidae - Pangolin	1	0	0
Total	1	0	0
<b>Total terrestrial mammals</b>	<b>277</b>	<b>31</b>	<b>11.19</b>

### Marine Mammals

<i>Order Sirenia - Dugong and Manatee</i>			
Family Dugongidae - Dugong	1	0	0
Total	1	0	0
<i>Order Cetacea - Whales and Dolphins</i>			
Family Balaeoptendae - Baleen Whales	4	0	0
Family Ziphiidae	1	0	0
Family Physeteridae	1	0	0
Family Delphinidae - Dolphins	11	0	0
Total	17	0	0
Total marine mammals	18	0	0
<b>Overall Total</b>	<b>295</b>	<b>31</b>	<b>10.51</b>

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**Mammal Occurrence - 1**

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**Note:** to accompany table of Mammal occurrence in Wildlife Conservation Areas

**Sources of names:**

The scientific names used here are based on those used in the Catalogue of the Mammals of Ethiopia, volumes 1-6 (Yalden, Largen & Kock 1974-1986), and updated from: Hutterer & Yalden (1990), Yalden & Largen (1992), Yalden & Largen (in press, Sterling History of Mammalogy), Bates (1988) and other recent references (Dieterlen & Rupp 1978).

The vernacular names are taken from other available sources of information on the Mammals of Eastern Africa (Delany 1975, Dorst & Dandelot 1986, Haltenorth & Diller 1980, Neester & Setzer 1971, Smithers 1983).

**Sources of information:**

The original source of information was the species lists maintained by Ato Tesfaye Hundessa, presently Head of Conservation in the Ethiopian Wildlife Conservation Organisation (the "EWCO records" below, and "a" in the table). These had been gleaned from reports coming into EWCO from the field staff based in the various Wildlife Conservation Areas of over the years up to about 1987. No lists were available for the Mammals of the Babilie (Harerghe) Elephant Sanctuary, the Dahlac Marine National Park, the Yabello Sanctuary, and the recent Kuni-Muktar Mountain Nyala Sanctuary.

This information is only as good and varied as the people in the field that have compiled the reports. Often their knowledge and experience has been limited at best, thus the reliability of reports on easily confused species cannot be ascertained. These species have been listed below.

This data has been supplemented and corroborated where possible from other more scientific sources.

The distribution data in the Catalogue of the Mammals of Ethiopia (Yalden, Largen & Kock 1974-1986) has been extracted for those quarter degree squares relevant to the position of the various Wildlife Conservation Areas. This has been used to corroborate the information from EWCO records where this was necessary, or to supplement it where new information has emerged ("b" in the Table).

Where further specialised research has been carried out in an area, the available data has also been added up to three different recorders, denoted by the letter used in the Table:

- "a" - EWCO records;
- "b" - Catalogue records;
- "c" - J.C. Hillman, personal records, 1983-1992;
- "d" - Bale Mountains National Park Management Plan (Hillman 1986a);
- "e" - Hareenna Forest Expedition Preliminary report (Hillman 1986b);
- "f" - Borana report (Syvertsen 1991);
- "g" - Simien Mountains National Park Management Plan (Hurni 1986);
- "h" - Dieterlen & Rupp (1978);
- "j" - Hutterer & Yalden (1990);

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- "k" - Scientific Exploration Society (1970); in addition to the records given, a Spiny Mouse (*Acomys* sp.) and two bat species ("Sheath-tailed" and a "Trident" bat) were seen but not fully identified;
- "l" - Roche 1979;
- "m" - Abdirahiman Kubsa (1990);
- "n" - Abdu Mahammued, EWCO (pers. com.);
- "p" - Yalden (1988);
- "q" - Nechisar National Park Expedition (1992);
- "r" - S. Stephenson (1978);
- "s" - Lanza (1972);
- "t" - Michael Jacobs and Catherine Schloeder (pers. com.);
- "u" - Lavrenchenko et al. (1989).

Questionable species:

Most Mammal species smaller than the size of a Jackal, provide problems of identification, especially when there are other similar and/or better-known species that could cause confusion. For that reason, records of these species have been cross-checked as far as is possible (compared with distribution given in the Catalogue), modified if necessary, or excluded if too questionable.

The main groups and/or species concerned are:

- All bats and shrews.
- All smaller rodents, except Porcupine, and the squirrels; however the 4 recorded squirrel species are easily confused by many observers.
- Hedgehogs - 2 species.
- Hares - 4 species. Despite the wide occurrence in Ethiopia of some of the other Hare species (Yalden, Largen & Kock 1986), no EWCO records cite any other than the Abyssinian Hare *Lepus habbessinicus*. This suggests the automatic assumption that all Hares are of one species.
- Mongooses - 7 species.
- Genets - 3 species.
- Jackals - 3 species.
- Reedbuck - 2 species.
- Pigs - 3 species.
- Hyraxes - 2 species. Despite the very wide occurrence of the Yellow-spotted Hyrax *Heterohyrax brucei* in Ethiopia (Yalden, Largen & Kock 1986), no EWCO records cite this species. This suggests that all records are automatically assigned to the "Rock Hyrax" as *Procavia capensis*.

Further, I have experienced in Ethiopia that many people have difficulties in differentiating between the Serval (*Felis serval*) and the Leopard (*Felis pardus*) when the animal is seen at a distance, in poor light and they are afraid of it. While this may sound ridiculous to experienced observers, I have seen very small Leopard in Ethiopia, and few people have seen the two species together in order to compare them.

Additional notes in detail:

Awash National Park: A Hedgehog is recorded by EWCO for this Park as *Erinaceus frontalis*. This species is now called *Erinaceus albiventris*, but by distribution, the species *Paraechinus aethiopicus* is most likely (Yalden, Largen & Kock 1976).

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An arboreal "forest squirrel" named as *Heliosciurus punctatus* is recorded by EWCO for the Park. This species is unknown in Ethiopia, while the related *H. gambianus* is recorded from Ethiopia, but only from much farther west than in Awash (Yalden, Largen & Kock 1976).

Grevy's Zebra *Equus grevyi* was present in this Park (Robertson 1970; Yalden, Largen & Kock 1986). Now however, the nearest animals are in the Alledeghi plains 40 km to the north east. One individual was released in the north of the Park in the mid 1980's, and survived for about 18 months before disappearing (Abbaye Tadesse, pers. com.).

Swayne's Hartebeest *Alcelaphus buselaphus swaynei* occurred in Awash in the past (Yalden, Largen & Kock 1984), but died out in the early 1960s. There was an attempt at re-introduction in the 1970s (Lealem Berhanu 1974), the remainder of which barely survives today (<20 animals).

**Abijatta-Shalla Lakes National Park:** The EWCO records indicate the Abyssinian Hare *Lepus habessinicus* recorded for this Park. This is unlikely, but Fagan's Hare *L. fagani* is recorded in the Catalogue (Yalden, Largen & Kock 1986).

A record of Guenther's Dikdik *Madoqua guentheri* in the EWCO records seems very unlikely since there are no other indications of any Dikdik near this area in the Catalogue (Yalden, Largen & Kock 1984).

**Bale Mountains National Park:** A very dark, arboreal squirrel has been seen on several occasions in the Hareenna Forest (and also farther west at Wondo Genet). This is possibly *Paraxerus ochraceus* (Yalden, Largen & Kock 1976), but no specimen has been obtained for confirmation.

The Bushbuck in the Bale Mountains are of the endemic subspecies *Tragelaphus scriptus meneliki*, with almost black-coloured adult males (Hillman 1986).

The EWCO records indicate *Lepus habessinicus* in the Bale Mountains. This most unlikely, however the endemic species of Starck's Hare *L. starcki* is confirmed from the mountains.

The EWCO record of the Grivet Monkey *Cercopithecus aethiops* is more likely to be the Vervet Monkey *C. pygerythrus* according to the distribution given in the Catalogue (Yalden, Largen & Kock 1977). The taxonomy of this group is exceedingly difficult to determine.

The mention of the possibility of a "Red Duiker" *Cephalophus* sp. in the Hareenna Forest (Hillman 1986) is of interest, since despite there being no records for any Cephalophine Duikers in Ethiopia in the Catalogue (Yalden, Largen & Kock 1984), a Red Duiker (*Cephalophus natalensis*) is recorded for lower down the Genale/Jubba valley in Somalia (Varty 1988), whose upper headwaters are in the Bale Mountains.

**Gambella National Park:** The EWCO record for the Cane Rat *Thryonomys gambianus* is unlikely. The Lesser Cane Rat *T. gregorianus* is known from neighbouring Sudan, and from the Gambella area in the Catalogue.

The Southern Dwarf Mongoose *Helogale parvula* occurs in the EWCO records

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for Gambella. This species is easily confused with the Somali Dwarf Mongoose *H. hirtula*, and even the Banded Mongoose *Mungos mungo*, but none of the three species is recorded for the area in the Catalogue (Yalden, Largen & Kock 1980).

The Abyssinian Hare *Lepus habessinicus* occurs for Gambella in the EWCO records, but the distribution in the Catalogue (Yalden, Largen & Kock 1986) suggests that Fagan's Hare *L. fagani* is more likely.

The subspecies of Hartebeest occurring in the this area is the Lelwel Hartebeest *Alcelaphus buselaphus lelwel*. (N.B. The vernacular name is derived from "Alelwel" - the name for the animal given by the Dinka tribe in neighbouring Sudan; it should thus not be written as "Lelwel's Hartebeest".)

**Mago National Park:** The records for the Grivet *Cercopithecus aethiops* in EWCO records almost certainly should be the Vervet *C. pygerythrus* by the distribution given in the Catalogue (Yalden, Largen & Kock 1977).

The subspecies of Hartebeest occurring in the this area is the Lelwel Hartebeest *Alcelaphus buselaphus lelwel*.

While the Black Rhinoceros *Diceros bicornis* used to occur in Mago in the last two decades, its continued existence there is now very questionable.

The Ground or Temminck's Pangolin *Manis temmincki* exists in the EWCO records for the Mago National Park. No Pangolin records occur in the Catalogue (Yalden, Largen & Kock 1986), and the authors stress that there is no evidence as yet for its occurrence in Ethiopia. The animal is unmistakable, and together with the persistent reports of its occurrence in Gambella and southern Ethiopia, and its existence in neighbouring Sudan, it is concluded that the species must occur here.

**Nechisar National Park:** The arboreal squirrel *Heliosciurus punctatus* in EWCO records for Nechisar, does not occur in Ethiopia, and is more likely to be *H. gambianus* according to information in the Catalogue (Yalden, Largen & Kock 1976).

The Grivet Monkey *Cercopithecus aethiops* occurs in EWCO records for Nechisar, but the Vervet *C. pygerythrus* is as likely since both types occur in this area according to the Catalogue (Yalden, Largen & Kock 1977).

The subspecies of Hartebeest occurring in the this area is Swayne's *Alcelaphus buselaphus swaynei*.

The Buffalo *Syncerus caffer* used to occur in this Park, but were all killed by the 1970s. A skull and horn boss still exist in the Park Information/Museum room.

**Omo National Park:** A Hedgehog skin exists at the office of the Park; presumably this is *Erinaceus albiventris* from the distribution shown in the Catalogue (Yalden, Largen & Kock 1976).

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The subspecies of Hartebeest occurring in the this area is the Lelwel Hartebeest *Alcelaphus buselaphus lelwel*.

The mention of the Red Duiker *Cephalophus natalensis* in EWCO records is of interest, since despite there being no records for any Cephalophine Duikers in Ethiopia in the Catalogue (Yalden, Largen & Kock 1984), the south western forests could easily harbour the species.

While the Black Rhinoceros *Diceros bicornis* used to occur in Omo in the last two decades, its continued existence there is now very questionable.

The Ground or Temminck's Pangolin *Phataginus temmincki* exists in the EWCO records for the Omo National Park. No Pangolin records occur in the Catalogue (Yalden, Largen & Kock 1986), and the authors stress that there is no evidence yet for its occurrence in Ethiopia. The animal is unmistakable, and together with the persistent reports of its occurrence in Gambella and southern Ethiopia, and its existence in neighbouring Sudan, it is concluded that the species must occur here.

**Senkelle Swayne's Hartebeest Sanctuary:** The EWCO record of the Hamadryas Baboon *Papio hamadryas* in Senkelle seems most unlikely given its location, altitude and the habitat according to the Catalogue (Yalden, Largen & Kock 1977). The Anubis Baboon *P. anubis* does occur nearby.

The subspecies of Hartebeest occurring in the this area is Swayne's *Alcelaphus buselaphus swaynei*.

The Abyssinian Hare *Lepus habessinicus* is recorded by EWCO, but although possible, Fagan's Hare *L. fagani* is also likely according to the Catalogue (Yalden, Largen & Kock 1986).

**Simien Mountains National Park:** The Abyssinian Hare *Lepus habessinicus* in EWCO records for Simien is very unlikely. Hares at such an altitude would most likely be the endemic Starck's Hare *L. starcki*.

**Yabello Sanctuary:** The subspecies of Hartebeest occurring in the this area is Swayne's *Alcelaphus buselaphus swaynei*.

**Yangudi Rassa National Park:** The Abyssinian Genet *Genetta abyssinica* in EWCO records for Yangudi Rassa requires confirmation since it is distant from other records of this little-known species (Yalden, Largen & Kock 1980). Its probable habitat in arid lowlands (Yalden, Largen & Kock 1980), as opposed to the perceived habitat in the highlands make this record more plausible however.

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Nov 1992

(jch ws7 a:mammoccr; 23 Mar 1993)

## Ethiopian Mammals : Occurrence in Wildlife Conservation Areas

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Code	Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GU	MG	NC	OR	SM	VA	BB	KM	SS	YE	Total
Order 01. Chiroptera - Bats																			
Family 01.01. Pteroptidae																			
01 01 01	<i>Hypsignathus monstrosus</i>	H. Allen 1861	Hammer-headed Bat																0
01 01 02	<i>Epomophorus minimus</i>	Claessen & De Vree 1991				b													1
01 01 03	<i>Epomophorus labiatus</i>	(Temminck 1837)	Little Epauletted Fruit Bat			b					bq		b				b		4
01 01 04	<i>Epomophorus gambianus</i>	(Ogilby 1835)	Gambian Epauletted Fruit Bat			b											b		2
01 01 05	<i>Micropteropus pusillus</i>	(Peters 1868)	Dwarf Epauletted Fruit Bat																0
01 01 06	<i>Eidolon helvum</i>	(Kerr 1792)	Straw-coloured Fruit Bat																0
01 01 07	<i>Rousettus aegyptiacus</i>	(E. Geoffroy 1810)	Egyptian Fruit Bat			b					bq								2
01 01 08	<i>Rousettus angolensis</i>	(Bocage 1898)	Bocage's Fruit Bat					p											1
01 01 09	<i>Rousettus lanosus</i>	Thomas 1906	Long haired Fruit Bat																0
Family 01.02. Rhinopomatidae																			
01 02 01	<i>Rhinopoma hardwickii</i>	Gray 1831	Lesser Mouse-tailed Bat			b													1
01 02 02	<i>Rhinopoma muscatellum</i>	Thomas 1903																	0
Family 01.03. Emballonuridae																			
01 03 01	<i>Taphozous perforatus</i>	E. Geoffroy 1818	Egyptian Tomb Bat			b	b			b		b							4
01 03 02	<i>Taphozous nudiventris</i>	Cretschmar 1830	Naked-rump Tomb Bat							b		b							2
01 03 03	<i>Taphozous mauritanus</i>	E. Geoffroy 1818	Mauritan Tomb Bat																0
01 03 04	<i>Coleura alba</i>	(Peters 1852)	Sheath-tailed Bat			e				b	b	b							4
Family 01.04. Nycteridae																			
01 04 01	<i>Nycteris thebaica</i>	E. Geoffroy 1813	Common Silt-faced Bat			b	b	b		b									4
01 04 02	<i>Nycteris hispida</i>	(Schreber 1775)	Hairy Silt-faced Bat			b													2
01 04 03	<i>Nycteris macrotis</i>	Dobson 1878	Ethiopian Silt-faced Bat																0
01 04 04	<i>Nycteris woodi</i>	Andersen 1914																	0
Family 01.05. Megadermatidae																			
01 05 01	<i>Leviafrons</i>	(E. Geoffroy 1810)	Heart-nosed Big-eared Bat								bl	bq							2
01 05 02	<i>Cardioda macror</i>	(Peters 1872)	Yellow-winged Bat			b						bq							2
Family 01.06. Rhinolophidae																			
01 06 01	<i>Rhinolophus cilirostris</i>	Cretschmar 1828	Geoffroy's Horseshoe Bat			b		bdp								b			3
01 06 02	<i>Rhinolophus landeri</i>	Martin 1838	Lander's Horseshoe Bat																1
01 06 03	<i>Rhinolophus hipposideros</i>	(Bechstein 1800)	Lesser Horseshoe Bat			b		p											1
01 06 04	<i>Rhinolophus simulatrix</i>	K. Andersen 1904	Bush Horseshoe Bat																2
01 06 05	<i>Rhinolophus blasii</i>	Peters 1867	Peak-saddle Horseshoe Bat					b	bd										2
01 06 06	<i>Rhinolophus fumigatus</i>	Ruppell 1842	Ruppell's Horseshoe Bat					b	e								b		2
01 06 07	<i>Rhinolophus hidebrandti</i>	Peters 1878	Hidebrandt's Horseshoe Bat																2
01 06 08	<i>Rhinolophus aloquens</i>	K. Andersen 1905						b	p										2
Family 01.07. Hipposideridae																			
01 07 01	<i>Hipposideros calfer</i>	(Sundevall 1846)	Sundevall's African Leaf-nosed Bat			b	b		b		b								4
01 07 02	<i>Hipposideros ruber</i>	(Noack 1883)	Noack's African Leaf-nosed Bat																1
01 07 03	<i>Hipposideros commersoni</i>	(E. Geoffroy 1813)	Commerçon's Leaf-nosed Bat			b													1
01 07 04	<i>Hipposideros fuliginosus</i>	(Temminck 1853)	Sooty Leaf-nosed Bat																0
01 07 05	<i>Hipposideros megalotis</i>	(Hauglin 1861)	Large-eared Leaf-nosed Bat															b	2
01 07 06	<i>Trinepops perdicus</i>	Dobson 1871	Perian Leaf-nosed Bat			b					q								2

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Code	Scientific Name	Determinator	English Name	Status	AW	AB	BM	DM	GM	MG	NC	OE	SM	YH	BB	KM	SS	YS	Total
01.07.07	<i>Asellia tridens</i>	(E. Geoffroy 1831)	Trident Leaf-nosed Bat		b														1
01.07.08	<i>Asellia patrizii</i>	De Beaux 1931	Leaf-nosed Bat		b			b											2
Family 01.08. Vespertilionidae																			
01.08.01	<i>Pipistrellus tenuipinna</i>	(Peters 1872)									q								1
01.08.02	<i>Pipistrellus somalicus</i>	(Thomas 1901)	Somali Serotine Bat			b					b								2
01.08.03	<i>Pipistrellus capensis</i>	(A. Smith 1829)	Cape Serotine Bat			b											d		2
01.08.04	<i>Pipistrellus guineensis</i>	(Bocage 1880)	Guinea Serotine Bat																0
01.08.05	<i>Pipistrellus nanus</i>	(Peters 1852)	Banana Bat				ep				bq								2
01.08.06	<i>Pipistrellus kuhlii</i>	(Natterer 1819)	Kuhl's Pipistrelle Bat																0
01.08.07	<i>Pipistrellus rusticus</i>	(Tomes 1861)	Rusty Bat																0
01.08.08	<i>Pipistrellus ruppelli</i>	(J. B. Fischer 1829)	Ruppell's Bat																0
01.08.09	<i>Mimotillus molonyi</i>	(Thomas 1901)	Molony's Bat-headed Bat																0
01.08.10	<i>Glauconycteris variegata</i>	(Tomes 1861)	Bulwer's Bat																0
01.08.11	<i>Leopoldina wintoni</i>	Thomas 1901	Winton's Long-eared Bat																0
01.08.12	<i>Plecotus auricularis</i>	(J. B. Fischer 1829)	Grey Long-eared Bat				ep												1
01.08.13	<i>Barbastella leucomelas</i>	(Cretzschmar 1826)	Common Barbastelle																0
01.08.14	<i>Minkopterus inflatus</i>	Thomas 1901	Greater Long-fingered Bat		b		bde												2
01.08.15	<i>Minkopterus schreibersi</i>	(Kuhl 1819)	Schreiber's Long-fingered Bat							t	b	b							3
01.08.16	<i>Nycticeinops schlieffeni</i>	(Peters 1859)	Schlieffen's Bat		b														1
01.08.17	<i>Scotoecus hindii</i>	Thomas 1901	Hind's Bat								q								1
01.08.18	<i>Scotoecus hirundo</i>	(De Winton 1899)	Dark-winged Lesser House Bat																0
01.08.19	<i>Myotis tricolor</i>	(Temminck 1832)	Temminck's Hairy Bat			b													1
01.08.20	<i>Myotis scotti</i>	Thomas 1927	Scott's Hairy Bat	E		b	e				b								3
01.08.21	<i>Myotis morrisi</i>	Hill 1971	Morris' Hairy Bat																0
01.08.22	<i>Myotis walpurgis</i>	(Gray 1866)	Walpurgis's Hairy Bat																0
01.08.23	<i>Myotis bocagii</i>	(Peters 1870)	Bocage's Hairy Bat																0
01.08.24	<i>Scotophilus dinganii</i>	(Schreiber 1774)	Giant Yellow House Bat			b					bq						b	b	4
01.08.25	<i>Scotophilus leucogaster</i>	(Cretzschmar 1830)	Lesser Yellow House Bat																0
01.08.26	<i>Kerivoula lanosa</i>	(A. Smith 1847)	Woolly Bat								b								1
01.08.27	<i>Kerivoula erliphora</i>	(Heuglin 1877)		E															0
Family 01.09. Molossidae																			
01.09.01	<i>Otomops martienseni</i>	(Matschie 1897)	Large-eared Free-tailed Bat																0
01.09.02	<i>Platyropsis setiger</i>	(Peters 1878)	Peters' Flat-headed Bat																1
01.09.03	<i>Tadarida pumila</i>	(Cretzschmar 1830)	Little Free-tailed Bat		b	b				b	bq	b					b		6
01.09.04	<i>Tadarida chepini</i>	(J.A. Allen 1917)																	0
01.09.05	<i>Tadarida nigeriae</i>	(Thomas 1913)	Nigerian Free-tailed Bat		b														1
01.09.06	<i>Tadarida blythi</i>	(Heuglin 1901)	Spotted Free-tailed Bat																0
01.09.07	<i>Tadarida midas</i>	(Sundevall 1843)	Midas Free-tailed Bat																0
01.09.08	<i>Tadarida condylura</i>	(A. Smith 1833)	Angola Free-tailed Bat			b													1
01.09.09	<i>Tadarida nanus</i>	(J.A. Allen 1917)	Dwarf Free-tailed Bat																0
01.09.10	<i>Tadarida ansorgei</i>	(Thomas 1913)	Ansorge's Free-tailed Bat			b				b		b							3
01.09.11	<i>Tadarida aegyptiaca</i>	(E. Geoffroy 1818)	Egyptian Free-tailed Bat																0
01.09.12	<i>Tadarida ventralis</i>	(Heuglin 1861)	Transvaal Free-tailed Bat																0
01.09.13	<i>Mormopterus acetabulosus</i>	(Hermann 1804)	Natal Free-tailed Bat																0

## Ethiopian Mammals : Occurrence in Wildlife Conservation Areas

Code	Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	ES	KM	SS	YS	Total
Order 02. Insectivora - Hedgehogs, Shrews																			
Family 02.01. Erinaceidae																			
02 01 01	<i>Aelerix albiventris</i>	(Wagner 1841)	White-bellied Hedgehog							a	l		a						3
02 01 02	<i>Paraechinus aethiopicus</i>	(Hampnch & Ehrenberg 1833)	Ethiopian Hedgehog			ab													1
Family 02.02. Crocididae																			
02 02 01	<i>Crocidura baileyi</i>	Osgood 1936		E			bd							b					2
02 02 02	<i>Crocidura bottegii</i>	Thomas 1898																	0
02 02 03	<i>Crocidura bottegoides</i>	Hutterer & Yalden 1990		E			l												1
02 02 04	<i>Crocidura fulvestra</i>	(Sundevall 1843)																	0
02 02 05	<i>Crocidura luscomaria</i>	(Heuglin 1865)			b	b				bq							b		4
02 02 06	<i>Crocidura glassi</i>	Hern de Balsac 1966		E															0
02 02 07	<i>Crocidura harems</i>	Hutterer & Yalden 1990		E															1
02 02 08	<i>Crocidura cf. hildegardae</i>	Thomas 1904																	0
02 02 09	<i>Crocidura lucina</i>	Dippenaar 1960		E															0
02 02 10	<i>Crocidura cf. iustarini</i>	Dollman 1915																	0
02 02 11	<i>Crocidura macmillani</i>	Dollman 1915		E															0
02 02 12	<i>Crocidura nana</i>	Dobson 1890																	0
02 02 13	<i>Crocidura cf. nigrofusca</i>	Matschie 1895																	0
02 02 14	<i>Crocidura robe</i>	Thomas 1906																	0
02 02 15	<i>Crocidura olivieri</i>	(Lesson 1827)			b	b	e			q									4
02 02 16	<i>Crocidura parvipes</i>	Osgood 1910																	0
02 02 17	<i>Crocidura pashe</i>	Dollman 1915				b													0
02 02 18	<i>Crocidura pheura</i>	Osgood 1936		E															2
02 02 19	<i>Crocidura planiceps</i>	Heller 1910																	0
02 02 20	<i>Crocidura somalica</i>	Thomas 1895			b														1
02 02 21	<i>Crocidura smithi</i>	Thomas 1895																	0
02 02 22	<i>Crocidura thalla</i>	Dippenaar 1960		E			bde												1
02 02 23	<i>Crocidura vleria</i>	(I. Geoffroy 1834)																	0
02 02 24	<i>Crocidura vol</i>	Osgood 1910																	0
02 02 25	<i>Crocidura yankariensis</i>	Hutterer & Jenkins 1980		E7															0
02 02 26	<i>Crocidura zephiri</i>	Dollman 1915																	0
02 02 27	<i>Suncus etruscus</i>	(Savi 1822)	Dwarf Shrew																1
02 02 28	<i>Suncus murinus</i>	(Linn 1766)	House Shrew						b										0
02 02 29	<i>Sylvaorex megalura</i>	(Jentink 1888)	Climbing Shrew																0
Family 02.03. Macroscelidae																			
02 03 01	<i>Elephantulus rufescens</i>	(Peters 1878)	Rufous Elephant Shrew									bq	r						1
Order 03. Rodentia - Rodents																			
Family 03.01. Scuridae - Squirrels																			
03 01 01	<i>Helliochirus gambianus</i>	(Ogilby 1835)	Gambian Sun-squirrel				b				b	aq	b					b	5
03 01 02	<i>Xerus erythropus</i>	(E. Geoffroy 1803)	Geoffroy's Ground Squirrel				b			a	ab	abq	a					b	7
03 01 03	<i>Xerus rutilus</i>	(Cretzschmar 1828)	Unstriped Ground Squirrel			a					bl	b			a			bl	5
03 01 04	<i>Paraxerus ochraceus</i>	(Huet 1860)	Huet's Bush Squirrel																0
Family 03.02. Muridae - Dormouse																			
03 02 01	<i>Graphurus murinus</i>	(Deemarest 1822)	African Dormouse				c	e											2
03 02 02	<i>Graphurus parvus</i>	(True 1893)	Small Dormouse																1

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Code	Scientific Name	Determinator	English Name	Value	AW	AS	EM	DM	GM	AG	NC	CM	EM	YH	SS	KW	SS	YS	Total
Family 03.03. Muridae - Rats, Mice																			
03.03.01	<i>Lophomys imhausi</i>	Mine-Edwards 1867	Crested Rat			bt		bd											2
03.03.02	<i>Tatera robusta</i>	(Cretzschmar 1830)	Large Gerbil			b		b											4
03.03.03	<i>Tatera valda</i>	(Bocage 1890)	Bocage's Gerbil																0
03.03.04	<i>Tatera philippi</i>	(De Winton 1896)	Gerbil																2
03.03.05	<i>Tatera nigricauda</i>	(Peters 1878)	Black-tailed Gerbil																1
03.03.06	<i>Taterillus harringtoni</i>	(Thomas 1906)																	0
03.03.07	<i>Taterillus emini</i>	(Thomas 1892)	Emin's Gerbil			b													2
03.03.08	<i>Ammodillus imbellis</i>	(De Winton 1898)																	0
03.03.09	<i>Gerbillus puvlinatus</i>	Rhoads 1896																	1
03.03.10	<i>Gerbillus gerbillus</i>	(Olivier 1800)																	0
03.03.11	<i>Gerbillus pusillus</i>	Peters 1878																	1
03.03.12	<i>Gerbillus nanus</i>	Blanford 1875																	0
03.03.13	<i>Saccotomus mernei</i>	Heller 1910	Pouched Mouse																2
03.03.14	<i>Dendromys mesomelas</i>	(Brants 1827)	Brant's Mouse																0
03.03.15	<i>Dendromys mystacalis</i>	Heuglin 1863	Banana Mouse																2
03.03.16	<i>Dendromys melanotis</i>	A. Smith 1834	Grey Mouse																2
03.03.17	<i>Dendromys lovati</i>	De Winton 1899	Lovati's Mouse	E															2
03.03.18	<i>Megadendromys nikolaevi</i>	Dieterlen & Rupp 1978	Nikolaus' Mouse	E															1
03.03.19	<i>Stenomys parvus</i>	Rhoads 1898	Fat Mouse																0
03.03.20	<i>Stenomys pratensis</i>	Peters 1848																	0
03.03.21	<i>Otomys typus</i>	(Heuglin 1877)	Swamp Rat																3
03.03.22	<i>Mus domesticus</i>	Rutty 1772	House Mouse																1
03.03.23	<i>Mus tenellus</i>	(Thomas 1903)	Pigmy Mouse																3
03.03.24	<i>Mus proconodon</i>	Rhoads 1896																	1
03.03.25	<i>Mus mahomet</i>	Rhoads 1899	Mahomet's Mouse	E															4
03.03.26	<i>Mus triton</i>	(Thomas 1909)																	1
03.03.27	<i>Muriculus imberbis</i>	(Ruppell 1842)	Sirien Mouse	E															1
03.03.28	<i>Rattus rattus</i>	(Linn 1758)	House Rat																1
03.03.29	<i>Rattus norvegicus</i>	(Berkenhout 1769)	Brown Rat																0
03.03.30	<i>Praomys lumatus</i>	(Peters 1878)	African Meadow Rat																3
03.03.31	<i>Praomys albipes</i>	(Ruppell 1842)	White-footed Rat	E															4
03.03.32	<i>Praomys erythroleucus</i>	(Temminck 1853)	Multimammate Mouse																6
03.03.33	<i>Praomys huberti</i>	(Wroughton 1906)																	0
03.03.34	<i>Praomys ruppelli</i>	V.d.Streeten & Dieterlen 1984	Rupp's Rat	E															0
03.03.35	<i>Stenocephalemys albicaudata</i>	Frick 1914	White-tailed Rat	E															1
03.03.36	<i>Stenocephalemys griseicauda</i>	Petter 1972	Grey-tailed Rat	E															2
03.03.37	<i>Oenomys hypoxanthus</i>	(Pucheran 1855)	Rusty-nosed Rat																0
03.03.38	<i>Grammomys macmillani</i>	(Wroughton 1907)	Tree Rat																2
03.03.39	<i>Grammomys minnee</i>	Hutterer & Dieterlen 1984	Mrs Nikolaus' Mouse	E															0
03.03.40	<i>Thalomys pooducius</i>	(Sundevall 1847)	Tree Mouse																1
03.03.41	<i>Aethomys hindel</i>	(Thomas 1902)																	0
03.03.42	<i>Acomys wilsoni</i>	Thomas 1892	Wilson's Spiny Mouse																2
03.03.43	<i>Acomys cahirinus</i>	(Deemareest 1819)	Spiny Mouse																5
03.03.44	<i>Uranomys ruddi</i>	Dollman 1909																	0
03.03.45	<i>Arvicantia abyssinicus</i>	(Ruppell 1842)	Ethiopian Grass Rat	E															3
03.03.46	<i>Arvicantia niloticus</i>	(Deemareest 1822)	Lowland Grass Rat																7

1/1/1

Code	Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OM	EM	YH	EB	KM	SS	YS	Total	
03 03 47	<i>Arvicanthus blicki</i>	Frnk 1914	Blick's Grass Rat	E			bd												1	
03 03 48	<i>Arvicanthus somalicus</i>	Thomas 1903	Somali Grass Rat		b					l									2	
03 03 49	<i>Pelomys harringtoni</i>	Thomas 1903	Harrington's Scrub Rat	E		b													1	
03 03 50	<i>Pelomys rex</i>	(Thomas 1906)	King Scrub Rat	E															0	
03 03 51	<i>Lemniscomys striatus</i>	(Linn : 1758)	Punctated Grass-mouse								bq								1	
03 03 52	<i>Lemniscomys barbarus</i>	(Linn. 1767)	Striped Grass-mouse								b								1	
03 03 53	<i>Lemniscomys macculusi</i>	(Thomas & Wroughton 1910)																	0	
03 03 54	<i>Lophuromys flavopunctatus</i>	Thomas 1868	Harsh-tined Mouse			b	bd				b		bg			b	b		6	
03 03 55	<i>Lophuromys melanonyx</i>	Petter 1972	Black-clawed Mouse	E			bd												1	
03 03 56	<i>Desymys Incomtus</i>	(Sundevall 1847)	Shaggy Swamp-rat																0	
03 03 57	<i>Colomys goslingi</i>	Thomas & Wroughton 1907	White-bellied Forest-rat																0	
Family 03.04. Rhizomyidae - Molerats																				
03 04 01	<i>Tachyoryctes splendens</i>	(Ruppell 1836)	Common Molerat			b	bd				b	b	b			m	b		7	
03 04 02	<i>Tachyoryctes macrocephalus</i>	(Ruppell 1842)	Giant Molerat	E			abd												1	
Family 03.05. Dipodidae																				
03 05 01	<i>Jaculus jaculus</i>	(Linn 1758)	Lesser Egyptian Jerboa																0	
Family 03.06. Bathyergidae																				
03 06 01	<i>Heterocephalus glaber</i>	Ruppell 1842	Naked Molerat		b													f	2	
Family 03.07. Ctenodactylidae																				
03 07 01	<i>Pectinator spekei</i>	Blyth 1856	Speke's Pectinator													b			1	
Family 03.08. Thryonomyidae																				
03 08 01	<i>Thryonomys gregorianus</i>	(Thomas 1894)	Lesser Cane rat						a										1	
Family 03.09. Hystricidae - Porcupine																				
03 09 01	<i>Hystrix cristata</i>	Linn 1758	Crested Porcupine		ab	ab	cb		a	ab	abq	a	abg	a		bm		f	11	
Order 04. Primates - Bushbabies, Monkeys																				
Family 04.01. Loridae - Bushbabies																				
04 01 01	<i>Galago senegalensis</i>	E. Geoffroy 1796	Senegal Bushbaby			ab	c			ab	b							b	f	6
04 01 02	<i>Galago gallarum</i>	Thomas 1901	Lesser Galago																0	
Family 04.02. Cercopithecoidea - Monkeys																				
04 02 01	<i>Erythrocebus palas</i>	(Schreber 1774)	Palas Monkey						ab	ac		ar							3	
04 02 02	<i>Cercopithecus mitis</i>	Wolf 1822	Blue Monkey						a	ab		ab							3	
04 02 03	<i>Cercopithecus neglectus</i>	Schlegel 1876	De Brazza's Monkey							abl		a							2	
04 02 04	<i>Cercopithecus aethiops</i>	(Linn. 1758)	Vervet Monkey		ab	ab			ab		ab	ab	ag	a	b	bm	b		10	
04 02 05	<i>Cercopithecus pygerythrus</i>	(Cuvier 1821)	Vervet Monkey				d			ab	b							f	4	
04 02 06	<i>Cercopithecus albogularis</i>	(Sykes 1831)	Syke's Monkey				e												1	
04 02 07	<i>Theropithecus gelada</i>	(Ruppell 1835)	Gelada	E									abg						1	
04 02 08	<i>Papio anubis</i>	(Lesson 1827)	Anubis Baboon		ab	ab	ab		ab	abl	abq	ab	ag			m	b	f	11	
04 02 09	<i>Papio cynocephalus</i>	(Linn. 1760)	Yellow Baboon																0	
04 02 10	<i>Papio hamadryas</i>	(Linn 1758)	Hamadryas Baboon		ab								abg	ab	b				4	
Family 04.03. Colobidae - Colobus Monkeys																				
04 03 01	<i>Colobus guereza</i>	Ruppell 1835	Guereza		ab	ab	ab		ab	abl	abq	ab	abg			bm			9	

Code	Scientific Name	Determinator	English Name	BL	AS	AW	AB	BM	DM	GM	MG	NC	OM	SM	YH	BB	AM	BS	YS	Total
Order 05. Carnivora - Carnivores																				
Family 05.01. Mustelidae																				
05.01.01	<i>Ictonyx striatus</i>	(Perry 1810)	Zorilla, Striped Polecat			ab	ab	ad			a		a							5
05.01.02	<i>Poecilictia libyca</i>	(Hemprich & Ehrenberg 1833)	Libyan Striped Weasel																	0
05.01.03	<i>Mellivora capensis</i>	(Schreber 1778)	Ratel			ab	b	ad		a	r		a	ab		b			f	9
05.01.04	<i>Aonyx capensis</i>	(Schinz 1821)	Clawless Otter																	0
05.01.05	<i>Lutra maculicollis</i>	Lichtenstein 1835	Spotted-necked Otter			ab														1
Family 05.02. Canidae - Dogs																				
05.02.01	<i>Lycan pictus</i>	(Temminck 1820)	African Hunting Dog							a	a	ng	ab							8
05.02.02	<i>Otocyon megalotis</i>	(Deemarest 1822)	Bel-eared Fox			ab	eb				abl	ab	ab		a				f	7
05.02.03	<i>Canis simensis</i>	Ruppell 1836	Ethiopian Wolf	E	T			abc						ab						2
05.02.04	<i>Canis adustus</i>	Sundevall 1846	Side-striped Jackal				b					q	b							3
05.02.05	<i>Canis aureus</i>	Linn 1758	Golden Jackal			ab	ab	ab			abl	a	a	ab			m	ab	f	11
05.02.06	<i>Canis mesomelas</i>	Schreber 1775	Black-backed Jackal			ab	ab				abl	abq	ab		a	b		b	bf	9
05.02.07	<i>Vulpes ruppellii</i>	(Schinz 1825)	Ruppell's Sandfox																	0
05.02.08	<i>Vulpes pallida</i>	(Cretzschmar 1827)	Pale Sandfox																	0
Family 05.03. Viverridae																				
05.03.01	<i>Viverra civetta</i>	Schreber 1778	Civet			a	ab	acd		a	a	abq	a		a		m		f	10
05.03.02	<i>Genetta abyssinica</i>	(Ruppell 1836)	Abyssinian Genet			ab														1
05.03.03	<i>Genetta felina</i>	(Thunberg 1811)	Common Genet				b			b	ab	aq	a				b			6
05.03.04	<i>Genetta maculata</i>	(Gray 1830)	Rusty-spotted Genet			b	b	c				bq				b				5
05.03.05	<i>Alliur peludinosus</i>	(G. Cuvier 1829)	Marsh Mongoose				b	c		a										3
05.03.06	<i>Hologale hirtula</i>	Thomas 1904	Somali Dwarf Mongoose																	0
05.03.07	<i>Hologale parvula</i>	(Sundevall 1846)	Southern Dwarf Mongoose			ab	ab			a	ab	a	a						bf	7
05.03.08	<i>Herpestes sanguineus</i>	Ruppell 1835	Lion-tailed Mongoose			ab	abq			a	ab	abq	a					b	f	8
05.03.09	<i>Herpestes ichnusa</i>	(Linn. 1758)	Egyptian Mongoose			ab		ad			b	aq							f	5
05.03.10	<i>Ichneumia albicauda</i>	(G. Cuvier 1829)	White-tailed Mongoose			ab	ab	ab			a	abq	a		a	b	m	b	f	11
05.03.11	<i>Mungos mungo</i>	(Gmelin 1788)	Banded Mongoose																	0
Family 05.04. Proteridae																				
05.04.01	<i>Proteles cristatus</i>	(Sparrman 1783)	Aardwolf			ab				a	a		a		a				f	8
Family 05.05. Hyaenidae - Hyenas																				
05.05.01	<i>Hyaena hyaena</i>	(Linn. 1758)	Striped Hyena			ab					ab		a						f	5
05.05.02	<i>Crocuta crocuta</i>	(Erzleben 1777)	Spotted Hyena			ab	ab	acd		a	ab	abq	ab	abq	a	b	m	ab	f	13
Family 05.06. Felidae - Cats																				
05.06.01	<i>Acinonyx jubatus</i>	(Schreber 1775)	Cheetah			ab					ab		ab		a	b		a	f	7
05.06.02	<i>Felis silvestris</i>	Schreber 1777	Wildcat			ab	b	ab		a	abl	abq	ab	ab	a			b		10
05.06.03	<i>Felis serval</i>	Schreber 1778	Serval			ab	ab	ab		ab	ab	abq	a	ab	a		m		f	11
05.06.04	<i>Felis caracal</i>	Schreber 1778	Caracal			ab	a	ab		a	abl	a	a	abq	a		bm			10
05.06.05	<i>Panthera pardus</i>	(Linn. 1758)	Leopard			ab	ab	ab		ab	ab	abc	ab	abq	a	b	m	a	f	13
05.06.06	<i>Panthera leo</i>	(Linn. 1758)	Lion			ab		ab		ab	ab	abq	ab	b	a	b		a	f	11

Code	Scientific Name	Determinator	English Name	Status	AW	AS	BN	DM	GN	MG	NC	OM	SM	YH	BB	KM	SB	YS	Total
Order 06. Artiodactyla - Even-toed Ungulates																			
Family 06.01. Hippopotamidae - Hippopotamus																			
06 01 01	<i>Hippopotamus amphibius</i>	Linn 1758	Hippopotamus			a	b			ab	ab	abq	ab		a				7
Family 06.02. Suidae - Pigs																			
06 02 01	<i>Hylchoerus meinertzhageni</i>	Thomas 1904	Giant Forest Hog				ec			a							m		3
06 02 02	<i>Potamochoerus larvatus</i>	(Smuts 1832)	Bushpig				ab			ab	a	abq	ab	aq			bm		7
06 02 03	<i>Phacochoerus africanus</i>	(Gmelin 1788)	Common Warthog			ab	ab	acd		abr	abl	abq	ab		a	b	bm	a	1
06 02 04	<i>Phacochoerus aethiopicus</i>	(Pallas 1767)	Somali Warthog																0
Family 06.03. Giraffidae - Giraffes																			
06 03 01	<i>Giraffe camelopardalis</i>	(Linn 1758)	Giraffe							ab	ab		ab					b	4
Family 06.04. Bovidae																			
06 04 01	<i>Acelaphus buselaphus</i>	(Pallas 1768)	Hartebeest			ab				ab	ab	abq	ab					ab	bf
06 04 02	<i>Dama discolor</i>	(Burchell 1823)	Tiang							ab	ab		ab						3
06 04 03	<i>Sylvicapra grimmia</i>	(Linn 1758)	Bush Duiker			ab	ab	ab		a	ab	abq	ab	aq	a		bm	b	bf
06 04 04	<i>Cephalophus weynai</i>	Thomas 1901	Weyn's Duiker																0
06 04 05	<i>Cephalophus natalensis</i>	A Smith 1834	Red Duiker				e												1
06 04 06	<i>Oreotragus oreotragus</i>	(Zimmermann 1783)	Klipspringer			ab	ab	ab			a	aq	ab	abq	a	b			b
06 04 07	<i>Ourebia ourebi</i>	(Zimmermann 1783)	Onbi							ab	ab	b	ab					ab	0
06 04 08	<i>Dorcotragus megalotis</i>	(Menges 1894)	Beira																0
06 04 09	<i>Medoaga saltiana</i>	(De Blainville 1816)	Salt's Odkdik			ab								a	b				3
06 04 10	<i>Medoaga guentheri</i>	Thomas 1894	Guenther's Dikdik								abl	acq	ab		b				bf
06 04 11	<i>Kobus kob</i>	(Erleben 1777)	Kob (White-eared)							abc									5
06 04 12	<i>Kobus megaceros</i>	(Fitzinger 1855)	Nile Lechwe							abc									1
06 04 13	<i>Kobus ellipsiprymnus</i>	(Ogilby 1833)	Waterbuck			ab				ab	ab	abq	ab		ab				6
06 04 14	<i>Redunca redunca</i>	(Pallas 1767)	Bohor Reedbuck				ab	ab		ah	b	b					ab		6
06 04 15	<i>Redunca fulvorufula</i>	(Atzelius 1815)	Mountain Reedbuck			ab	ab				a	abc	ab						5
06 04 16	<i>Ammodorcas clarkei</i>	(Thomas 1891)	Dibalag																0
06 04 17	<i>Gazella rufifrons</i>	Gray 1846	Red-fronted Gazelle																0
06 04 18	<i>Gazella dorcas</i>	(Linn. 1758)	Dorcas Gazelle											b					1
06 04 19	<i>Gazella spekei</i>	Blyth 1843	Speke's Gazelle																0
06 04 20	<i>Gazella soemmerringii</i>	(Cretzschmar 1828)	Soemmerring's Gazelle			ab			k					ab	b				4
06 04 21	<i>Gazella granti</i>	Brooke 1872	Grant's Gazelle				ab				abl	ahc	ab						bf
06 04 22	<i>Gazella thomsoni</i>	Gunther 1864	Thomson's (Mongalla) Gazelle																0
06 04 23	<i>Litocranius walleri</i>	(Brooke 1879)	Gerenuk								ab			ab	b				bf
06 04 24	<i>Hippotragus equinus</i>	(Desmarest 1804)	Roan							ab									1
06 04 25	<i>Oryx gazella</i>	(Linn. 1758)	Oryx			ab					ab		ab		ab	b			1
06 04 26	<i>Tragelaphus imberbis</i>	(Blyth 1859)	Lesser Kudu			ab	ab				abl	ab		a	b				bf
06 04 27	<i>Tragelaphus strepsiceros</i>	(Pallas 1768)	Greater Kudu			ab	ab				ab	abc	ab		a	b		ab	1
06 04 28	<i>Tragelaphus burtoni</i>	(Lydekker 1910)	Mountain Nyala	E			abd										bm		2
06 04 29	<i>Tragelaphus scriptus</i>	(Pallas 1768)	Bushbuck			ab	ab	abd		ab	ab	abc	ab	aq	a		bm	a	1
06 04 30	<i>Tragelaphus oryx</i>	(Pallas 1768)	Common Eland										abc						12
06 04 31	<i>Capra ibex</i>	Linn 1758	Ibex (Nubian)																0
06 04 32	<i>Capra walia</i>	Ruppell 1835	Walia Ibex	E	T									abq					1
06 04 33	<i>Syncerus caffer</i>	(Sparrman 1779)	Buffalo							ab	ab		ab						3

Code	Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	BB	KM	SB	YS	Total
<b>Order 07. Perissodactyla - Odd-toed Ungulates</b>																			
<b>Family 07.01 Equidae - Asses and Zebras</b>																			
07 01 01	<i>Equus africanus</i>	(Fitzinger 1857)	African Wildass	T											ab				1
07 01 02	<i>Equus grevyi</i>	Oustalet 1862	Grevy's Zebra	T						b					ab			b	3
07 01 03	<i>Equus burchelli</i>	(Gray 1824)	Burchell's Zebra							ab	abq	ab						bf	4
<b>Family 07.02. Rhinocerotidae - Rhinoceros</b>																			
07 02 01	<i>Diceros bicornis</i>	(Linn 1758)	Black Rhinoceros	T															0
<b>Order 08. Proboscidea - Elephant</b>																			
<b>Family 08.01. Elephantidae - Elephants</b>																			
08 01 01	<i>Loxodonta africana</i>	(Blumenbach 1797)	African Elephant						ab	ab		ab			b				4
<b>Order 09. Hyracoidea - Hyraxes</b>																			
<b>Family 09.01. Procaviidae - Hyraxes</b>																			
09 01 01	<i>Procavia capensis</i>	(Pallas 1766)	Rock Hyrax		a	ab	abd		a	a	a	a	abg	a		m		b	11
09 01 02	<i>Heterohyrax brucei</i>	(Gray 1866)	Yellow-spotted Hyrax		b		b				b								3
<b>Order 10. Lagomorpha - Hares</b>																			
<b>Family 10.01. Leporidae - Hares</b>																			
10 01 01	<i>Lepus habessinicus</i>	Hemprich & Ehrenberg 1833	Abyssinian Hare		ab				abi	a	a		ii				a	i	7
10 01 02	<i>Lepus lagart</i>	Thomas 1903	Fagan's Hare				b												1
10 01 03	<i>Lepus starcki</i>	Petter 1963	Sterck's Hare	E			bc												1
10 01 04	<i>Lepus crawshayi</i>	De Winton 1899	Crawshay's Hare																0
<b>Order 11. Tubulidentata - Aardvark</b>																			
<b>Family 11.01. Oryzopteroidae - Aardvark</b>																			
11 01 01	<i>Oryzomys azer</i>	(Pallas 1766)	Aardvark		ab	a	ad		a	ab	eq	ab		o		m		i	10
<b>Order 12. Pholidota - Pangolins</b>																			
<b>Family 12.01. Manidae - Pangolins</b>																			
12 01 01	<i>Phataginus temminckii</i>	Smuts 1832	Ground Pangolin							a		a							2
<b>Order 13. Sirenia - Dugong, Manatee</b>																			
<b>Family 13.01. Dugongidae - Dugong</b>																			
13 01 01	<i>Dugong dugon</i>	(P.L.E. Müller 1776)	Dugong					b											1
<b>Order 14. Cetacea - Whales, Dolphins</b>																			
<b>Family 14.01. Baleenopteridae - Baleen Whales</b>																			
14 01 01	<i>Balaenoptera borealis</i>	Lesson 1826	Sea Whale																0
14 01 02	<i>Balaenoptera edeni</i>	Anderson 1879	Bryde's Whale																0
14 01 03	<i>Balaenoptera acutorostrata</i>	Lacépède 1804	Minke Whale																0
14 01 04	<i>Megaptera novaeangliae</i>	(Borowski 1781)	Humpback Whale																0
<b>Family 14.02. Ziphiidae</b>																			
14 02 01	<i>Ziphius cavirostris</i>	G. Cuvier 1823	Cuvier's Beaked Whale																0
<b>Family 14.03. Physeteridae</b>																			
14 03 01	<i>Physeter catodon</i>	Linn 1758	Sperm Whale					b											1

Ethiopian Mammals : Occurrence in Wildlife Conservation Areas

Code	Scientific Name	Determinator	English Name	Status	AW	AB	JM	DM	GM	MG	NC	OK	SM	YR	BB	KM	SS	YS	Total
<b>Family 14.04. Delphinidae - Dolphins</b>																			
14 04 01	<i>Orampus griseus</i>	(G Cuvier 1812)	Huso Dolphin					b											0
14 04 02	<i>Globicephala macrorhynchus</i>	Gray 1846	Short finned Pilot Whale																1
14 04 03	<i>Steno bredanensis</i>	(Lesson 1826)	Rough toothed Dolphin																0
14 04 04	<i>Stenella attenuata</i>	(Gray 1846)	Spotted Dolphin																0
14 04 05	<i>Stenella longirostris</i>	(Gray 1828)	Long snouted Dolphin																0
14 04 06	<i>Delphinus delphis</i>	Linn 1758	Common Dolphin					b											1
14 04 07	<i>Delphinus tropicalis</i>	Van Bree 1971	Tropical Dolphin																0
14 04 08	<i>Sousa plumbea</i>	(G Cuvier 1829)	Humpback Dolphin																0
14 04 09	<i>Tursiops aduncus</i>	(Ehrenberg 1833)	Indian Ocean Bottlenosed Dolphin																0
14 04 10	<i>Orcinus orca</i>	(Linn 1758)	Killer Whale																0
14 04 11	<i>Pseudorca crassidens</i>	(Owen 1846)	False Killer Whale																0
<b>Total species</b>				<b>31</b>	<b>5</b>	<b>76</b>	<b>76</b>	<b>87</b>	<b>9</b>	<b>43</b>	<b>81</b>	<b>84</b>	<b>69</b>	<b>33</b>	<b>36</b>	<b>22</b>	<b>23</b>	<b>37</b>	<b>43</b>

**Status:**

- E - species endemic to Ethiopia
- T - species of threatened status in the world

**Wildlife Conservation Area codes:**

- |  |  |
|--|--|
| AW - Awash National Park                 | OM - Omo National Park                     |
| AB - Abijatta-Shalla Lakes National Park | SM - Simien Mountains National Park        |
| BM - Bale Mountains National Park        | YR - Yangudi-Rassa National Park           |
| DM - Dahalo Marine National Park         | BB - Babilie Elephant Sanctuary            |
| GM - Gambella National Park              | KM - Kuni-Muktar Mountain Nysia Sanctuary  |
| MG - Mago National Park                  | SS - Senkelle Swayne's Hartbeest Sanctuary |
| NC - Nechisar National Park              | YS - Yabello Sanctuary                     |

Jesse C. Hillman  
 NYZS The Wildlife Conservation Society - International

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Ethiopian Mammals not recorded in any Wildlife Conservation Area  
(National Parks & Sanctuaries)

Scientific Name	Determinator	English Name	Status	Number
Order Chiroptera - Bats				
Family Pteropidae				
<i>Hypsignathus monstrosus</i>	H. Allen 1861	Hammer-beaded Bat		
<i>Micropteropus pusillus</i>	(Peters 1868)	Dwarf Epauletted Fruit Bat		
<i>Eidolon helvum</i>	(Kerr 1792)	Straw-coloured Fruit Bat		
<i>Rousettus lanosus</i>	Thomas 1906	Long-haired Fruit Bat		4
Family Rhinopomatidae				
<i>Rhinopoma muscatellum</i>	Thomas 1903			1
Family Emballonuridae				
<i>Taphozous mauritanicus</i>	E. Geoffroy 1818	Mauritian Tomb Bat		1
Family Nycteridae				
<i>Nycteris woodi</i>	Andersen 1914			
<i>Nycteris macrotis</i>	Dobson 1876	Ethiopian Slit-faced Bat		2
Family Rhinolophidae				
<i>Rhinolophus eloquens</i>	K. Andersen 1905			1
Family Hipposideridae				
<i>Hipposideros fuliginosus</i>	(Temminck 1853)	Sooty Leaf-nosed Bat		1
Family Vespertilionidae				
<i>Pipistrellus guineensis</i>	(Bocage 1849)			
<i>Pipistrellus kuhlii</i>	(Natterer 1819)	Kuhl's Pipistrelle Bat		
<i>Pipistrellus rusticus</i>	(Tomes 1861)	Rusty Bat		
<i>Pipistrellus rueppellii</i>	(J.B. Fischer 1829)	Rüppell's Bat		
<i>Mimrozillus moloneyi</i>	(Thomas 1891)	Moloney's Flat-beaded Bat		
<i>Glauconycteris variegata</i>	(Tomes 1861)	Butterfly Bat		
<i>Lasiptotis vixens</i>	Thomas 1901	Winton's Long-eared Bat		
<i>Barbastella leucomelas</i>	(Cretzschmar 1826)	Common Barbastelle		
<i>Scotoecus hirundo</i>	(De Winton 1899)	Dark-winged Lesser House Bat		
<i>Myotis bocagii</i>	(Peters 1870)			
<i>Myotis morrisi</i>	Hill 1971	Morris' Hairy Bat		
<i>Myotis websteri</i>	(Cory 1866)	Webster's Hairy Bat		
<i>Scotophilus leucogaster</i>	(Cretzschmar 1830)	Lesser Yellow House Bat		
<i>Kerivoula encephala</i>	(Heuglin 1877)		E	14
Family Molossidae				
<i>Otomops merriami</i>	(Matchie 1897)	Large-eared Free-tailed Bat		
<i>Tadarida chrysirostris</i>	(J.A. Allen 1917)			
<i>Tadarida brachyotis</i>	(Heuglin 1861)	Spotted Free-tailed Bat		
<i>Tadarida midas</i>	(Sundevall 1843)	Midas Free-tailed Bat		
<i>Tadarida nanula</i>	(J.A. Allen 1917)	Dwarf Free-tailed Bat		
<i>Tadarida aegyptiaca</i>	(E. Geoffroy 1818)	Egyptian Free-tailed Bat		
<i>Tadarida ventralis</i>	(Heuglin 1861)	Transvaal Free-tailed Bat		
<i>Mormoops acetabulosus</i>	(Hermann 1804)	Natal Free-tailed Bat		8

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Scientific Name	Determinator	English Name	Status	Number
Order Insectivora - Hedgehogs and Shrews				
Family Soricidae				
<i>Crocidura bottegii</i>	Thomas 1898			
<i>Crocidura fulvatra</i>	(Sundevall 1843)			
<i>Crocidura glasa</i>	Heum de Balzac 1966		E	
<i>Crocidura cf. hildegardeae</i>	Thomas 1904			
<i>Crocidura lucina</i>	Dippenaar 1980		E	
<i>Crocidura cf. lusitana</i>	Dollman 1915			
<i>Crocidura macmillani</i>	Dollman 1915		E	
<i>Crocidura nana</i>	Dobson 1890			
<i>Crocidura cf. nigrofusca</i>	Mitschke 1895			
<i>Crocidura nobbe</i>	Thomas 1906			
<i>Crocidura parvi pes</i>	Osgood 1910			
<i>Crocidura pasha</i>	Dollman 1915			
<i>Crocidura pumilio</i>	Heller 1975			
<i>Crocidura smithii</i>	Thomas 1895			
<i>Crocidura viania</i>	(L. Geoffroy 1854)			
<i>Crocidura voi</i>	Osgood 1910			
<i>Crocidura yankariensis</i>	Hutterer & Jenkins 1980			
<i>Crocidura za phiri</i>	Dollman 1915		E?	
<i>Suncus etruscus</i>	(Savi 1822)	Dwarf Shrew		
<i>Sylvisorex megalura</i>	(Jentink 1888)	Climbing Shrew		20
Order Rodentia - Rodents				
Family Sciuridae - Squirrels				
<i>Pterocarpus ochraceus</i>	(Huet 1880)	Hoer's Bush Squirrel		1
Family Muridae - Rats and Mice				
<i>Tatera valida</i>	(Bocage 1890)	Bocage's Gerbil		
<i>Taterillus harringtoni</i>	(Thomas 1906)			
<i>Armodillus imbellis</i>	(De Winton 1898)			
<i>Gerbillus gerbillus</i>	(Olivier 1800)			
<i>Gerbillus nasasi</i>	Ellenford 1875			
<i>Dendromys mesomelas</i>	(Brants 1827)	Brant's Mouse		
<i>Steatomys parvus</i>	Rhoads 1896	Fat Mouse		
<i>Steatomys pratensis</i>	Peters 1846			
<i>Rattus norvegicus</i>	(Berkenhout 1769)	Brown Rat		
<i>Proomys huberti</i>	(Wroughton 1906)			
<i>Proomys rupestris</i>	Van der Straeten & Dieterlen 1984	Rupp's Rat		
<i>Oenomys hypoxanthus</i>	(Pucheran 1855)	Rusty-nosed Rat		
<i>Grammomys murinae</i>	Hutterer & Dieterlen 1984	Mrs. Nikolaus' Mouse	E	
<i>Aethomys hindsi</i>	(Thomas 1902)			
<i>Uranomys ruddi</i>	Dollman 1909			
<i>Pelomys rex</i>	(Thomas 1906)	King Scrub Rat	E	
<i>Lemnicomys macculus</i>	(Thomas & Wroughton 1910)			
<i>Daromys incomtus</i>	(Sundevall 1847)	Shaggy Swamp-rat		
<i>Colomys goslingi</i>	Thomas & Wroughton 1907	White-bellied Forest-rat		19
Family Dipodidae				
<i>Jaculus jaculus</i>	(Linn. 1758)	Lesser Egyptian Gerboa		1
Order Primates - Bushbabies and Monkeys				
Family Loroidae - Bushbabies				
<i>Galago gallarum</i>	Thomas 1901			1
Family Cercopithecidae - Monkeys				
<i>Papio cynocephalus</i>	(Linn. 1766)	Yellow Baboon		1
Order Carnivora - Carnivores				
Family Mustelidae				
<i>Poecilicus libyca</i>	(Hemprich & Ehrenberg 1833)	Libyan Striped Weasel		
<i>Aonyx capensis</i>	(Schinz 1821)	Clawless Otter		2
Family Canidae - Dogs				
<i>Vulpes rueppellii</i>	(Schinz 1825)	Rüppell's Sandfox		
<i>Vulpes pallida</i>	(Cretzschmar 1827)	Pale Sandfox		2

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Scientific Name	Determinator	English Name	Status	Number
Family Viverridae <i>Helogale lutula</i> <i>Mungos mungo</i>	Thomas 1904 (Gmelin 1788)	Somali Dwarf Mongoose Banded Mongoose		2
Order Artiodactyla - Even-toed Ungulates Family Suidae - Pigs <i>Phacochoerus aethiopicus</i>	(Pallas 1767)	Somali Warthog		1
Family Bovidae - Bovids <i>Cephalopus weynsi</i> <i>Dorcacrus megalois</i> <i>Ammodorcas clarkii</i> <i>Gazella rufifrons</i> <i>Gazella spekei</i> <i>Gazella thomsonii</i> <i>Capra linex</i>	Thomas 1901 (Menges 1894) (Thomas 1891) Gray 1846 Blyth 1863 Günther 1854 Linn. 1758	Weyla's Duiker Beira Dibstag Red-fronted Gazelle Speke's Gazelle Thomson's Gazelle (Mongalla) Ibex (Nubian)		7
Order Perissodactyla - Odd-toed Ungulates Family Rhinocerotidae - Rhinoceros <i>Diceros bicornis</i>	(Linn. 1758)	Black Rhinoceros	T	1
Order Lagomorpha - Hares Family Leporidae - Hares <i>Lepus crowthorpi</i>	De Winton 1899	Crowthorpe's Hare		1

Total terrestrial species **91**

% terrestrial species (n = 277) **32.9**

Order Cetacea - Whales and Dolphins Family Balaenopteridae - Baleen Whales <i>Balaenoptera borealis</i> <i>Balaenoptera edeni</i> <i>Balaenoptera acutorostrata</i> <i>Megaptera novaeangliae</i>	Lesson 1828 Anderson 1879 Lacépède 1804 (Borowski 1781)	Sci Whale Bryde's Whale Finke Whale Humpback Whale		4
Family Ziphiidae <i>Ziphius cavirostris</i>	G. Cuvier 1823	Cuvier's Beaked Whale		1
Family Delphinidae - Dolphins <i>Grampus griseus</i> <i>Sterno bredarenis</i> <i>Stenella attenuata</i> <i>Stenella longirostris</i> <i>Delphinus tropicalis</i> <i>Sousa plumbea</i> <i>Tursiops aduncus</i> <i>Orcinus orca</i> <i>Pseudorca crassidens</i>	(G. Cuvier 1822) (Lesson 1828) (Gray 1846) (Gray 1828) Van Bree 1971 (G. Cuvier 1829) (Ehrenberg 1833) (Linn. 1758) (Owen 1846)	Risso's Dolphin Rough-toothed Dolphin Spotted Dolphin Long-snouted Dolphin Tropical Dolphin Humpback Dolphin Indian Ocean Bottle-nosed Dolphin Killer Whale False Killer Whale		9

Total marine species **14**

% marine species (n = 18) **77.8**

Status

E - endemic to Ethiopia

T - threatened status in the world

Total unrepresented species **105**

Jesse C. Hillman

NYZS The Wildlife Conservation Society - International

(job qpro a nonrepr.wq1, Jan 1993)

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## The Birds of Ethiopia

Scientific Name	Determinator	English Name	Status
Order Struthioniformes			
Family Struthionidae - Ostrich			
<i>Struthio camelus</i>	Linn.	Ostrich	
Order Podicipediformes			
Family Podicipedidae - Grebes			
<i>Tachybaptus ruficollis</i>	(Pallas). Linn.	Little Grebe	
<i>Podiceps cristatus</i>	Linn.	Great-crested Grebe	
<i>Podiceps nigricollis</i>	Brehm.	Black-necked Grebe	
Order Procellariiformes			
Family Procellariidae - Shearwaters			
<i>Puffinus thersites</i>	Lesson	Perian Gulf Shearwater	
Order Pelecaniformes			
Family Phaethonidae - Tropicbirds			
<i>Phaethon aethereus</i>	Linn.	Red-billed Tropicbird	
Family Sulidae - Boobies			
<i>Sula dactylatra</i>	Lesson.	Masked Booby	
<i>Sula leucogaster</i>	(Boddaert).	Brown Booby	
Family Phalacrocoracidae - Cormorants			
<i>Phalacrocorax carbo</i>	(Linn.).	Cormorant	
<i>Phalacrocorax nigrogularis</i>	Ogilvie-Grant & Forbes.	Socotran Cormorant	
<i>Phalacrocorax africanus</i>	Gmelin.	Long-tailed Cormorant	
Family Anhingidae - Darters			
<i>Anhinga rufa</i>	(Daudin).	African Darter	
Family Pelecanidae - Pelicans			
<i>Pelecanus onocrotalus</i>	Linn.	Great White Pelican	
<i>Pelecanus rufescens</i>	Gmelin.	Pink-backed Pelican	
Family Fregatidae - Frigate-birds			
<i>Fregata ariel</i>	(Gray)	Lesser Frigate-bird	
Order Ciconiiformes			
Family Ardeidae - Herons, Bitterns, Egrets			
<i>Botaurus stellaris</i>	(Linn.).	Bittern	
<i>Izobrychus mimasus</i>	(Linn.).	Little Bittern	
<i>Izobrychus miumii</i>	(Wagler).	African Dwarf Bittern	
<i>Nycticorax nycticorax</i>	(Linn.).	Night Heron	
<i>Nycticorax leuconotus</i>	(Wagler).	White-backed Night Heron	
<i>Butorides striatus</i>	(Linn.).	Green-backed Heron	
<i>Ardeola ralloides</i>	(Scopoli).	Squacco Heron	
<i>Bubulcus ibis</i>	(Linn.).	Cattle Egret	
<i>Egretta ardensiaca</i>	(Wagler).	Black Heron	
<i>Egretta gularis</i>	(Boac).	Reef Heron	
<i>Egretta garzetta</i>	(Linn.).	Little Egret	
<i>Egretta intermedia</i>	(Wagler).	Yellow-billed Egret	
<i>Egretta alba</i>	(Linn.).	Great White Egret	
<i>Ardea cinerea</i>	Linn.	Grey Heron	
<i>Ardea melanocephala</i>	Vigors & Children.	Black-beaded Heron	
<i>Ardea goliath</i>	Cretschmar.	Goliath Heron	
<i>Ardea purpurea</i>	Linn.	Purple Heron	
Family Balaenicipitidae - Whale-headed Stork			
<i>Balaeniceps rex</i>	Gould.	Whale-headed Stork	T
Family Scopidae - Hammerkop			
<i>Scopus umbretta</i>	Gmelin.	Hammerkop	

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Scientific Name	Determinator	English Name	Status
<b>Family Ciconiidae - Storks</b>			
<i>Mysticivora ibis</i>	(Linn.)	Yellow-billed Stork	
<i>Ciconia nigra</i>	(Linn.)	Black Stork	
<i>Ciconia abdimii</i>	(Lichtenstein)	Abdim's Stork	
<i>Ciconia epirochilus</i>	(Boddaert)	Woolly-necked Stork	
<i>Ciconia ciconia</i>	(Linn.)	White Stork	
<i>Ephippiorhynchus senegalensis</i>	(Shaw)	Saddle-billed Stork	
<i>Anasomus lamelliferus</i>	Temminck	Open-bill Stork	
<i>Leptopilos erumeniferus</i>	(Lesson)	Marabou	
<b>Family Threskiornithidae - Ibises, Spoonbills</b>			
<i>Plegadis falcinellus</i>	(Linn.)	Glossy Ibis	
<i>Boutorichus carunculata</i>	(Rüppell)	Wattled Ibis	E
<i>Boutorichus hadadai</i>	(Latham)	Hadada Ibis	
<i>Geronticus eremita</i>	(Linn.)	Waldrapp	T
<i>Threskiornis aestivo picus</i>	(Latham)	Secred Ibis	
<i>Platalea alba</i>	Scofield	African Spoonbill	
<i>Platalea leucorodia</i>	Linn.	Spoonbill	
<b>Order Phoenicopteriformes</b>			
<b>Family Phoenicopteridae - Flamingoes</b>			
<i>Phoenicopterus ruber</i>	Linn.	Greater Flamingo	
<i>Phoenicopterus minor</i>	(Geoffroy)	Lesser Flamingo	
<b>Order Anseriformes</b>			
<b>Family Anatidae - Ducks, Geese</b>			
<i>Dendrocygna bicolor</i>	(Vieillot)	Fulvous Tree Duck	
<i>Dendrocygna viduata</i>	(Linn.)	White-faced Tree Duck	
<i>Cyanochen cyanoptera</i>	(Rüppell)	Blue-winged Goose	E
<i>Allopochen aegyptiaca</i>	(Linn.)	Egyptian Goose	
<i>Tadorna ferruginea</i>	(Pallas)	Ruddy Shelduck	
<i>Plectropterus gambensis</i>	(Linn.)	Spur-winged Goose	
<i>Sarkidiornis melanotos</i>	(Ponsonby)	Knob-billed Goose	
<i>Nettion auritus</i>	(Boddaert)	Pygmy Goose	
<i>Anas sparsa</i>	Eyton	Black Duck	
<i>Anas penelope</i>	Linn.	Wigeon	
<i>Anas strepera</i>	Linn.	Gadwall	
<i>Anas crecca</i>	Linn.	Common Teal	
<i>Anas ca penus</i>	Gmelin	Cape Wigeon	
<i>Anas undulata</i>	Dubois	Yellow-billed Duck	
<i>Anas platyrhynchos</i>	Linn.	Mallard	
<i>Anas acuta</i>	Linn.	Pintail	
<i>Anas erythrorhynchos</i>	Gmelin	Red-billed Duck	
<i>Anas hottentota</i>	Eyton	Hottentot Teal	
<i>Anas querquedula</i>	Linn.	Garganey	
<i>Anas clypeata</i>	Linn.	Shoveler	
<i>Anas smithii</i>	Hartert	Cape Shoveler	
<i>Nettion erythro phthalma</i>	(Wied.)	African Pochard	
<i>Aythya ferina</i>	Linn.	Pochard	
<i>Aythya nyroca</i>	(Güldenstädt)	White-eyed Pochard	
<i>Aythya fuligula</i>	(Linn.)	Tufted Duck	
<i>Oxyura maccoa</i>	(Eyton)	Maccoa Duck	
<i>Thalassornis leucocottus</i>	Eyton	White-backed Duck	

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Scientific Name	Determinator	English Name	Status
Order Accipitriformes			
Family Accipitridae - Hawks, Vultures, Eagles			
<i>Accipiter cuculoides</i>	Swainson	African Cuckoo-hawk	
<i>Pernis ptilorhynchus</i>	(Linn.)	Honey Buzzard	
<i>Macharhamphus alcinus</i>	Westerman	Bait Hawk	
<i>Elanus caeruleus</i>	(Desfontaines)	Black-shouldered Kite	
<i>Chelictinia vociferans</i>	(Vieillot)	Swallow-tailed Kite	
<i>Milvus migrans</i>	(Boddaert)	Black Kite	
<i>Haliaeetus vocifer</i>	(Daudin)	African Fish Eagle	
<i>Gypaetus barbatus</i>	(Linn.)	Lammergeier	
<i>Neophron percnopterus</i>	(Linn.)	Egyptian Vulture	
<i>Necrocytus monachus</i>	(Temminck)	Horred Vulture	
<i>Gyps africanus</i>	Salvadori	African White-backed Vulture	
<i>Gyps fulvus</i>	(Hablitz)	Griffon Vulture	
<i>Gyps rueppellii</i>	(Brehm)	Rüppell's Griffon	
<i>Torgos trachelionus</i>	(Forster)	Lappet-faced Vulture	
<i>Trogonopsis occipitalis</i>	(Burchell)	White-headed Vulture	
<i>Circus pallidus</i>	(Gmelin)	European Short-toed Eagle	
<i>Circus pectoralis</i>	Smith	Black-chested Snake-eagle	
<i>Circus cinereus</i>	Vieillot	Brown Snake-eagle	
<i>Circus cinerascens</i>	von Müller	Smaller Banded Snake-eagle	
<i>Terathopus ecaudatus</i>	(Daudin)	Bateleur	
<i>Polyboroides typus</i>	Smith	African Harrier Hawk	
<i>Circus aeruginosus</i>	(Linn.)	Marsh Harrier	
<i>Circus ranivorus</i>	(Daudin)	African Marsh Harrier	
<i>Circus macrourus</i>	(Gmelin)	Pallid Harrier	
<i>Circus pygargus</i>	(Linn.)	Montagu's Harrier	
<i>Melierax metabates</i>	Heuglin	Dark Chanting Goshawk	
<i>Melierax canorus</i>	(Rischoff)	Pale Chanting Goshawk	
<i>Melierax gabor</i>	(Daudin)	Gabor Goshawk	
<i>Accipiter melanoleucus</i>	Smith	Great Sparrow-hawk	
<i>Accipiter ovium penus</i>	Gurney	Ovampo Sparrow-hawk	
<i>Accipiter nisus</i>	(Linn.)	European Sparrow-hawk	
<i>Accipiter nisus frontalis</i>	Smith	Rufous-breasted Sparrow-hawk	
<i>Accipiter nisus</i>	(Daudin)	African Little Sparrow-hawk	
<i>Accipiter taylori</i>	(Daudin)	African Goshawk	
<i>Accipiter baduus</i>	(Gmelin)	Shikra	
<i>Accipiter brevipes</i>	(Severtsov)	Levant Sparrow-hawk	
<i>Buteo rufigularis</i>	(Sundevall)	Orinibopper Buzzard	
<i>Kaupi falco monogrammicus</i>	(Temminck)	Lizard Buzzard	
<i>Buteo buteo</i>	(Linn.)	Common Buzzard	
<i>Buteo oreophilus</i>	Hartert & Neumann	African Mountain Buzzard	
<i>Buteo rufinus</i>	Cretzschmar	Long-legged Buzzard	
<i>Buteo auguralis</i>	Salvadore	African Red-tailed Buzzard	
<i>Buteo augur</i>	(Rüppell)	Augur Buzzard	
<i>Aquila pomarina</i>	Brehm	Lesser Spotted Eagle	
<i>Aquila clanga</i>	Pallas	Greater-spotted Eagle	
<i>Aquila rapax</i>	(Temminck)	Tawny Eagle	
<i>Aquila palmarum</i>	Hodgson	Steppe Eagle	
<i>Aquila heliaca</i>	Savigny	Imperial Eagle	
<i>Aquila waltheri</i>	Sundevall	Walther's Eagle	
<i>Aquila verreauxi</i>	Leroux	Verreaux's Eagle	
<i>Hieraaetus pennatus</i>	(Gmelin)	Booted Eagle	
<i>Hieraaetus pilosus</i>	(Bonaparte)	African Hawk-Eagle	
<i>Hieraaetus ayresii</i>	Guernsey	Ayres' Hawk-Eagle	
<i>Longicauda occipitalis</i>	(Daudin)	Long-crested Eagle	
<i>Sieroneetus coronatus</i>	(Linn.)	Crowned Eagle	
<i>Polemaetus bellicosus</i>	(Daudin)	Martial Eagle	
Family Pandionidae - Osprey			
<i>Pandion haliaetus</i>	(Linn.)	Osprey	

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Scientific Name	Determinator	English Name	Status
Family Sagittariidae - Secretary bird			
<i>Sagittarius serripennis</i>	(Miller)	Secretary Bird	
Order Falconiformes			
Family Falconidae - Falcons			
<i>Polyburae semitorquatus</i>	(A. Smith)	African Pygmy Falcon	
<i>Falco naumanni</i>	Fleischer	Lesser Kestrel	
<i>Falco rupestris</i>	A. Smith	Greater Kestrel	
<i>Falco alopecurus</i>	(Heuglin)	Fox Kestrel	
<i>Falco tinnunculus</i>	Linn.	Common Kestrel	
<i>Falco ardosiacus</i>	Vieillot	Grey Kestrel	
<i>Falco chrysurus</i>	Daudin	Red-necked Falcon	
<i>Falco vespertinus</i>	Linn.	Red-footed Falcon	
<i>Falco amurensis</i>	Radde	Eastern Red-footed Falcon	
<i>Falco subbuteo</i>	Linn.	European Hobby	
<i>Falco carveri</i>	Smith	African Hobby	
<i>Falco eleonorae</i>	Génié	Eleonora's Falcon	
<i>Falco concolor</i>	Temminck	Sooty Falcon	
<i>Falco biarmicus</i>	Temminck	Lanner Falcon	
<i>Falco cherrug</i>	Gray	Saker Falcon	
<i>Falco fasciinucha</i>	Reichenow & Neumann	Taita Falcon	
<i>Falco peregrinus</i>	Tunstall	Peregrine Falcon	
<i>Falco peregrinoides</i>	Temminck	Barbary Falcon	
Order Galliformes			
Family Phasianidae - Francolins, Quails			
<i>Alectoris melanocyphala</i>	(Rüppell)	Arabian Chukor	
<i>Ammo perdis heya</i>	(Temminck)	Sand Partridge	
<i>Francolinus coqui</i>	(Smith)	Coqui Francolin	
<i>Francolinus sephaena</i>	(Smith)	Crested Francolin	
<i>Francolinus palliolenus</i>	Gray	Grey-wing	
<i>Francolinus levaillantioides</i>	(Smith)	Archer's Grey-wing	
<i>Francolinus harwoodi</i>	Blundell & Lovat	Harwood's Francolin	E
<i>Francolinus chinipertoni</i>	Children	Clapperton's Francolin	
<i>Francolinus leucoscepus</i>	(Gray)	Yellow-necked Spurfowl	
<i>Francolinus castaneicollis</i>	Salvadori	Chestnut-striped Francolin	
<i>Francolinus erckelii</i>	(Rüppell)	Erckel's Francolin	
<i>Francolinus squamatus</i>	Cassin	Scaly Francolin	
<i>Coturnix coturnix</i>	(Linn.)	European Quail	
<i>Coturnix delegorguei</i>	Delegorgue	Harlequin Quail	
<i>Coturnix chinensis</i>	Linn.	Blue Quail	
<i>Ptilinopus petrosus</i>	(Gmelin)	Stone Partridge	
Family Numididae - Guinea-fowls			
<i>Numida meleagris</i>	(Linn.)	Tufted Guinea-fowl	
<i>Acridium vulturinum</i>	(Hardwicke)	Vulturine Guinea-fowl	
Order Gruiformes			
Family Turnicidae - Button-quails			
<i>Turnix sylvatica</i>	(Desfontaines)	Button Quail	
<i>Ortyxelos melifrenis</i>	(Vieillot)	Quail Plover	

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Scientific Name	Determinator	English Name	Status	
Family Rallidae - Rails, Crakes, Coots				
<i>Rallus caeruleus</i>	Gmelin	Kaffir Rail	E	
<i>Rougetus rougeti</i>	(Guerin-Meneville)	Rouget's Rail		
<i>Porzana porzana</i>	(Linn.)	Spotted Crake		
<i>Porzana parva</i>	(Scopoli)	Little Crake		
<i>Porzana pusilla</i>	(Pallas)	Baillon's Crake		
<i>Limnocorax flavirostris</i>	(Swainson)	Black Crake		
<i>Crex crex</i>	Linn.	Corn Crake		
<i>Crex egregia</i>	Peters	African Crake		
<i>Sarothrura ayaia</i>	(Gurney)	White-winged Crake		T
<i>Sarothrura rufo</i>	(Vieillot)	Red-chested Crake		
<i>Sarothrura elegans</i>	(Scarth)	Buff-spotted Crake		
<i>Gallinula angulata</i>	Sundevall	Lesser Moorhen		
<i>Gallinula chloropus</i>	Linn.	Moorhen		
<i>Porphyrio alleni</i>	(Thomson)	Allen's Gallinule		
<i>Porphyrio porphyrio</i>	(Linn.)	Purple Gallinule		
<i>Fulica atra</i>	Linn.	Coot		
<i>Fulica cristata</i>	Gmelin	Red-knobbed Coot		
Family Helornithidae - Finfoot				
<i>Podica senegalensis</i>	(Vieillot)	Finfoot		
Family Gruidae - Cranes				
<i>Grus grus</i>	(Linn.)	Common Crane	T	
<i>Grus carunculatus</i>	(Gmelin)	Wattled Crane		
<i>Anthropoides virgo</i>	(Linn.)	Demoelle Crane		
<i>Balaenica pavonina</i>	(Linn.)	Crowned Crane		
Family Otididae - Bustards				
<i>Neotis denhami</i>	(Chikire)	Denham's Bustard		
<i>Neotis heuglini</i>	(Hartlaub)	Heuglin's Bustard		
<i>Ardeotis kori</i>	(Barthel)	Kori Bustard		
<i>Ardeotis arabis</i>	(Linn.)	Arabian Bustard		
<i>Eu podotis rufigeris</i>	(Smith)	Crested Bustard		
<i>Eu podotis senegalensis</i>	(Vieillot)	Senegal Bustard		
<i>Eu podotis melanogaster</i>	(Rappell)	Black-bellied Bustard		
<i>Eu podotis hartlaubii</i>	(Heuglin)	Hartlaub's Bustard		
<i>Eu podotis humilis</i>	(Blyth)	Little Brown Bustard		
Order Charadriiformes				
Family Jacanidae - Jacanas				
<i>Actophilornis africana</i>	(Gmelin)	Jacana		
<i>Micro penna ca penalis</i>	(Smith)	Smaller Jacana		
Family Rostratulidae - Painted Snipe				
<i>Rostratula benghalensis</i>	(Linn.)	Painted Snipe		
Family Haematopodidae - Oystercatch.				
<i>Haematopus ostralegus</i>	Linn.	Oystercatcher		
Family Recurvirostridae - Stilt, Avocet				
<i>Himantopus himantopus</i>	(Linn.)	Black-winged Stilt		
<i>Recurvirostris avocetta</i>	Linn.	Avocet		
Family Dromadidae - Crab Plover				
<i>Dromas ardeola</i>	Paykull	Crab Plover		
Family Burhinidae - Thicknees				
<i>Burhinus oedicnemus</i>	(Linn.)	Stone Curlew		
<i>Burhinus senegalensis</i>	(Swainson)	Senegal Thicknee		
<i>Burhinus ca penalis</i>	(Lichtenstein)	Spotted Thicknee		
<i>Burhinus vermicularis</i>	(Cabanis)	Water Thicknee		

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Family Glareolidae - Coursers, Pratincoles			
<i>Pluvialis argyrius</i>	(Linn.)	Egyptian Plover	
<i>Cursorius cursor</i>	(Latham)	Cream-coloured Courser	
<i>Cursorius temminckii</i>	Swainson	Temminck's Courser	
<i>Hemerodromus africanus</i>	(Temminck)	Two-banded Courser	
<i>Hemerodromus cinereus</i>	Heuglin	Heuglin's Courser	
<i>Rhinopterus chalcopernis</i>	(Temminck)	Violet-tipped Courser	
<i>Glareola pratincola</i>	(Linn.)	Pratincole	
<i>Glareola nordmanni</i>	Fischer	Black-winged Pratincole	
<i>Glareola nuchalis</i>	(Gray)	Rock Pratincole	
<i>Glareola ocularis</i>	Verreaux	Madagascar Pratincole	
Family Charadriidae - Plovers			
<i>Charadrius dubius</i>	Scopoli	Little Ringed Plover	
<i>Charadrius hiaticula</i>	Linn.	Ringed Plover	
<i>Charadrius pecuarius</i>	Temminck	Kiritir's Sand-Plover	
<i>Charadrius tricoloratus</i>	Vieillot	Three-banded Plover	
<i>Charadrius alexandrinus</i>	Linn.	Kentish Plover	
<i>Charadrius mongolicus</i>	Pallas	Mongolian Sand-Plover	
<i>Charadrius leucorhynchus</i>	Lesson	Great Sand-Plover	
<i>Charadrius asiaticus</i>	Pallas	Caspian Plover	
<i>Pluvialis fulva</i>	(Gmelin)	Pacific Golden Plover	
<i>Pluvialis squatarola</i>	(Linn.)	Grey Plover	
<i>Hoploperus crassirostris</i>	(Hartlaub)	Long-toed Lapwing	
<i>Hoploperus spinosus</i>	(Linn.)	Spur-winged Plover	
<i>Hoploperus tectus</i>	(Boddaert)	Black-beaded Plover	
<i>Hoploperus melanocephalus</i>	(Cretzschmar)	Black-winged Plover	
<i>Hoploperus coronatus</i>	(Boddaert)	Crowned Lapwing	
<i>Hoploperus senegalensis</i>	(Linn.)	Wattled Plover	
<i>Hoploperus melanoccephalus</i>	(Rüppell)	Spot-breasted Plover	
<i>Charadrius fuscatus</i>	(Pallas)	Sociable Plover	E
Family Scolopacidae - Sandpipers			
<i>Calidris alba</i>	(Pallas)	Sanderling	
<i>Calidris minuta</i>	(Leisler)	Little Stint	
<i>Calidris temminckii</i>	(Leisler)	Temminck's Stint	
<i>Calidris subminuta</i>	Middendorff	Long-toed Stint	
<i>Calidris melanotos</i>	(Vieillot)	Pectoral Sandpiper	
<i>Calidris ferruginosa</i>	(Pontoppidan)	Curlew Sandpiper	
<i>Calidris alpina</i>	(Linn.)	Dunlin	
<i>Limicola falcinellus</i>	(Pontoppidan)	Broad-billed Sandpiper	
<i>Philomachus pugnax</i>	(Linn.)	Ruff	
<i>Limnortyx minimus</i>	(Brünnich)	Jack Snipe	
<i>Gallinago gallinago</i>	(Linn.)	Common Snipe	
<i>Gallinago nigripennis</i>	Bonaparte	African Snipe	
<i>Gallinago media</i>	(Latham)	Great Snipe	
<i>Limosa limosa</i>	(Linn.)	Black-tailed Godwit	
<i>Limosa lapponica</i>	(Linn.)	Bar-tailed Godwit	
<i>Numenius phaeopus</i>	(Linn.)	Whimbrel	
<i>Numenius arquata</i>	(Linn.)	Curlew	
<i>Tringa erythropus</i>	(Pallas)	Spotted Redshank	
<i>Tringa totanus</i>	(Linn.)	Redshank	
<i>Tringa stagnatilis</i>	(Bechstein)	Marsh Sandpiper	
<i>Tringa nebulosa</i>	(Günther)	Greenshank	
<i>Tringa ochropus</i>	Linn.	Green Sandpiper	
<i>Tringa glareola</i>	Linn.	Wood Sandpiper	
<i>Xenus cinereus</i>	(Göldenstädt)	Terek Sandpiper	
<i>Actitis hypoleucos</i>	Linn.	Common Sandpiper	
<i>Arenaria interpres</i>	(Linn.)	Turnstone	
<i>Phalaropus lobatus</i>	(Linn.)	Red-necked Phalarope	
<i>Phalaropus fulicarius</i>	(Linn.)	Grey Phalarope	

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Family Stercorariidae - Skuas			
<i>Stercorarius pomarinus</i>	(Temminck)	Pomarine Skua	
<i>Stercorarius parasiticus</i>	(Linn.)	Arctic Skua	
<i>Stercorarius stua</i>	(Brünnich)	Great Skua	
Family Laridae - Gulls			
<i>Larus hem pelagicus</i>	(Bruch)	Sooty Gull	
<i>Larus leuco phthalmus</i>	Temminck	White-eyed Gull	
<i>Larus ichthyophagus</i>	(Pallas)	Great Black-headed Gull	
<i>Larus ridibundus</i>	Linn.	Black-headed Gull	
<i>Larus cirrocephalus</i>	Vieillot	Grey-headed Gull	
<i>Larus genei</i>	Brême.	Slender-billed Gull	
<i>Larus fuscus</i>	Linn.	Lesser Black-backed Gull	
<i>Larus argentatus</i>	Pontoppidan	Herring Gull	
Family Sternidae - Terns			
<i>Gelochelidon nilotica</i>	(Gmelin)	Gull-billed Tern	
<i>Sterna caspia</i>	Pallas	Caspian Tern	
<i>Sterna bergii</i>	Lichtenstein.	Swift Tern	
<i>Sterna bergii</i>	Lesson.	Lesser-crested Tern	
<i>Sterna bergii</i>	Latham.	Sandwich Tern	
<i>Sterna bergii</i>	Montagu.	Roseate Tern	
<i>Sterna bergii</i>	Linn.	Common Tern	
<i>Sterna bergii</i>	Hartert	White-cheeked Tern	
<i>Sterna bergii</i>	Scopoli.	Bridled Tern	
<i>Sterna bergii</i>	Pallas.	Little Tern	
<i>Sterna bergii</i>	Hume	Saunders's Little Tern	
<i>Chlidonias hybridus</i>	(Pallas)	Whiskered Tern	
<i>Chlidonias niger</i>	(Linn.)	Black Tern	
<i>Chlidonias leucopterus</i>	(Temminck)	White-winged Black Tern	
<i>Anous stolidus</i>	(Linn.)	Noddy	
Family Rynchopidae - Skimmers			
<i>Rynchops flavirostris</i>	Vieillot.	Skimmer	
Order Pteroclidiformes			
Family Pteroclididae - Sandgrouse			
<i>Pterocles lichtensteinii</i>	Temminck	Lichtenstein's Sandgrouse	
<i>Pterocles senegallus</i>	(Linn.)	Spotted Sandgrouse	
<i>Pterocles eximius</i>	Temminck	Chestnut-bellied Sandgrouse	
<i>Pterocles decoratus</i>	Cabanis	Black-faced Sandgrouse	
<i>Pterocles gutturalis</i>	Smith	Yellow-throated Sandgrouse	
<i>Pterocles quadricinctus</i>	Temminck	Four-banded Sandgrouse	
Order Columbiformes			
Family Columbidae - Pigeons, Doves			
<i>Columba livia</i>	Gmelin	Rock Dove (eral)	E
<i>Columba albitorques</i>	Rüppell	White-collared Pigeon	
<i>Columba guinea</i>	Linn.	Speckled Pigeon	
<i>Columba arquatrix</i>	Temminck	Olive Pigeon	
<i>Streptopelia larvata</i>	(Temminck)	Lemon Dove	
<i>Streptopelia capicola</i>	(Sundevall)	Ring-necked Dove	
<i>Streptopelia roseogrisea</i>	(Sundevall)	Pink-beaded Dove	
<i>Streptopelia semitorquata</i>	(Rüppell)	Red-eyed Dove	
<i>Streptopelia decapinnis</i>	(Hartlaub & Fusch)	Mourning Dove	
<i>Streptopelia vinacea</i>	(Gmelin)	Vinaceous Dove	
<i>Streptopelia turtur</i>	Linn.	Turtle Dove	
<i>Streptopelia lugens</i>	(Rüppell)	Pink-breasted Dove	
<i>Streptopelia senegalensis</i>	(Linn.)	Laughing Dove	
<i>Streptopelia rischewoni</i>	(Erlanger)	White-winged Dove	
<i>Oena capensis</i>	(Linn.)	Namaqua Dove	
<i>Turtur typanistris</i>	(Temminck)	Tambourine Dove	
<i>Turtur afer</i>	(Linn.)	Blue-spotted Wood-Dove	
<i>Turtur chalcospilus</i>	(Wagler)	Emerald-spotted Wood-Dove	
<i>Turtur abyssinicus</i>	(Sharpe)	Black-billed Blue-spotted Wood-Dove	
<i>Trepon australis</i>	(Linn.)	Green Pigeon	
<i>Trepon waalia</i>	(Meyer)	Bruce's Green Pigeon	

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Order Psittaciformes			
Family Psittacidae - Parrots, Lovebirds			
<i>Poicephalus flavifrons</i>	(Rüppell)	Yellow-fronted Parrot	E
<i>Poicephalus meyeri</i>	(Cretzschmar)	Brown Parrot	
<i>Poicephalus rufriventris</i>	(Rüppell)	Orange-bellied Parrot	
<i>Psittacula krameri</i>	(Scopoli)	Rose-ringed Parakeet	
<i>Agapornis taranta</i>	(Stanley)	Black-winged Lovebird	E
<i>Agapornis pullaria</i>	(Linn.)	Red-beaded Lovebird	
Order Cuculiformes			
Family Musophagidae - Turacos			
<i>Tauraco leucotis</i>	(Rüppell)	White-cheeked Turaco	
<i>Tauraco ruspolii</i>	(Salvadori)	Prince Ruspoli's Turaco	ET
<i>Corythaeoides personata</i>	(Rüppell)	Bare-faced Go-away Bird	
<i>Corythaeoides leucogaster</i>	(Rüppell)	White-bellied Go-away Bird	
<i>Crotophaga sulcirostris</i>	(Rüppell)	Eastern Grey Plainin-eater	
Family Cuculidae - Cuckoos			
<i>Clamator jacobinus</i>	(Boddaert)	Black-and-White Cuckoo	
<i>Clamator leucillaniti</i>	(Swainson)	Lervillan's Cuckoo	
<i>Clamator leucillaniti</i>	(Linn.)	Great Spotted Cuckoo	
<i>Chrysococcyx caprius</i>	(Boddaert)	Didric Cuckoo	
<i>Chrysococcyx linnas</i>	(Stephens)	Klaas' Cuckoo	
<i>Chrysococcyx caprius</i>	(Shaw)	Emerald Cuckoo	
<i>Cathartochares aereus</i>	(Vieillot)	Yellowbill	
<i>Cuculus clamosus</i>	Latham	Black Cuckoo	
<i>Cuculus solitarius</i>	Stephens	Red-chested Cuckoo	
<i>Cuculus canorus</i>	Linn.	Cuckoo	
<i>Cuculus gularis</i>	Stephens	African Cuckoo	
<i>Centropus grillii</i>	Hartlaub	Black Coucal	
<i>Centropus monachus</i>	(Rüppell)	Blue-headed Coucal	
<i>Centropus senegalensis</i>	(Linn.)	Senegal Coucal	
<i>Centropus us percheronius</i>	Hemprich & Ehrenberg	White-browed Coucal	
Order Strigiformes			
Family Tytonidae - Barn Owls			
<i>Tyto alba</i>	(Scopoli)	Barn Owl	
<i>Tyto capensis</i>	(Smith)	Cape Grass Owl	
Family Strigidae - Owls			
<i>Otus scops</i>	(Linn.)	Eurasian Scops Owl	
<i>Otus senegalensis</i>	(Swainson)	African Scops Owl	
<i>Otus leucotis</i>	(Temminck)	White-faced Scops Owl	
<i>Bubo capensis</i>	Sundevall	Cape Eagle-owl	
<i>Bubo africanus</i>	(Temminck)	Spotted Eagle-owl	
<i>Bubo lacteus</i>	(Temminck)	Verreaux's Eagle-owl	
<i>Scotopelia peli</i>	(Bonaparte)	Pel's Fishing Owl	
<i>Glaucidium perlatum</i>	(Vieillot)	Pearl-spotted Owlet	
<i>Athene noctua</i>	(Scopoli)	Little Owl	
<i>Ciccaba woodfordi</i>	(Smith)	African Wood Owl	
<i>Nyctaleus abyssinicus</i>	(Guérin-Méneville)	Abyssinian Long-eared Owl	
<i>Nyctaleus flammeus</i>	(Pontoppidan)	Short-eared Owl	
<i>Nyctaleus capensis</i>	(Smith)	African Marsh Owl	

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Order Caprimulgiformes			
Family Caprimulgidae - Nightjars			
<i>Caprimulgus inornatus</i>	Heuglin	Plain Nightjar	
<i>Caprimulgus rubicous</i>	Lichtenstein	Nubian Nightjar	
<i>Caprimulgus euro paous</i>	Linn.	European Nightjar	
<i>Caprimulgus aegyptus</i>	Lichtenstein	Egyptian Nightjar	
<i>Caprimulgus fraenarius</i>	Salvadori	Northern Dusky Nightjar	
<i>Caprimulgus donaldsoni</i>	Sharpe	Donaldson Smith's Nightjar	
<i>Caprimulgus pulchro proalus</i>	Rüppell	Abyssinian Nightjar	
<i>Caprimulgus stellatus</i>	Blundell & Lovat	Star-spotted Nightjar	
<i>Caprimulgus tristigma</i>	Rüppell	Freckled Nightjar	
<i>Caprimulgus clarus</i>	Reichenow	Slender-tailed Nightjar	
<i>Caprimulgus dimacurus</i>	Vieillot	Long-tailed Nightjar	
<i>Caprimulgus natalensis</i>	Smith	White-tailed Nightjar	
<i>Macrodipteryx longipennis</i>	(Shaw)	Standard-wing Nightjar	
Order Apodiformes			
Family Apodidae - Swifts			
<i>Apus myso palus</i>	(Salvadori)	Scarce Swift	
<i>Apus apus</i>	(Linn.)	Common Swift	
<i>Apus niansae</i>	(Reichenow)	Nyassa Swift	
<i>Apus melba</i>	(Linn.)	Alpine Swift	
<i>Apus aequatorialis</i>	(Müller)	Mottled Swift	
<i>Apus horus</i>	(Heuglin)	Horn Swift	
<i>Apus caffer</i>	(Lichtenstein)	White-rumped Swift	
<i>Apus affinis</i>	(Gray)	Little Swift	
<i>Cypselurus parvus</i>	(Lichtenstein)	Palm Swift	
Order Coliiformes			
Family Coliidae - Mousebirds			
<i>Colius striatus</i>	Gmelin	Speckled Mousebird	
<i>Colius macrourus</i>	(Linn.)	Blue-naped Mousebird	
Order Trogoniformes			
Family Trogonidae - Trogon			
<i>Apaloderma narina</i>	(Stephens)	Narina's Trogon	
Order Coraciiformes			
Family Alcedinidae - Kingfishers			
<i>Halcyon senegalensis</i>	(Linn.)	Woodland Kingfisher	
<i>Halcyon malimbica</i>	(Shaw)	Blue-breasted Kingfisher	
<i>Halcyon chelicuti</i>	(Stanley)	Striped Kingfisher	
<i>Halcyon chloris</i>	(Boddaert)	White-collared Kingfisher	
<i>Halcyon leucoccephala</i>	(Müller)	Grey-headed Kingfisher	
<i>Alcedo semitorquata</i>	Swainson	Half-collared Kingfisher	
<i>Alcedo cristata</i>	(Pallas)	Malachite Kingfisher	
<i>Ceyx picta</i>	(Boddaert)	Pygmy Kingfisher	
<i>Ceryle rudis</i>	(Linn.)	Pied Kingfisher	
<i>Ceryle maxima</i>	(Pallas)	Giant Kingfisher	
Family Meropidae - Bee-eaters			
<i>Mero ps hirundineus</i>	Lichtenstein	Swallow-tailed Bee-eater	
<i>Mero ps albicollis</i>	Vieillot	White-throated Bee-eater	
<i>Mero ps pusillus</i>	Müller	Little Bee-eater	
<i>Mero ps variegatus</i>	Vieillot	Blue-breasted Bee-eater	
<i>Mero ps orientalis</i>	Latham	Little Green Bee-eater	
<i>Mero ps superciliosus</i>	Linn.	Olive Bee-eater	
<i>Mero ps persicus</i>	Pallas	Blue-cheeked Bee-eater	
<i>Mero ps a piaster</i>	Linn.	European Bee-eater	
<i>Mero ps rubicous</i>	Gmelin	Carmine Bee-eater	
<i>Mero ps revouillii</i>	Oustalet	Somali Bee-eater	
<i>Mero ps bullocki</i>	Vieillot	Red-throated Bee-eater	

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Family Coraciidae - Rollers			
<i>Coracias garrulus</i>	Linn.	European Roller	
<i>Coracias abyssinica</i>	Hermann	Abyssinian Roller	
<i>Coracias caudata</i>	Linn.	Libre-breasted Roller	
<i>Coracias naevia</i>	Dauid	Rufous-crowned Roller	
<i>Eurystomus glaucurus</i>	(Müller)	Broad-billed Roller	
Family Upupidae - Hoopoe			
<i>Upupa epops</i>	Linn.	Hoopoe	
Family Phoeniculidae - Wood-hoopoes			
<i>Phoeniculus purpurus</i>	(Müller)	Green Wood-hoopoe	
<i>Phoeniculus somaliensis</i>	(Ogilvie-Grant)	Black-billed Wood-hoopoe	
<i>Phoeniculus granti</i>	(Neumann)	Violet Wood-hoopoe	
<i>Phoeniculus aethiopicus</i>	(Stephens)	Black Wood-hoopoe	
<i>Phoeniculus minor</i>	(Rüppell)	Abyssinian Scimitar-bill	
Family Bucerotidae - Hornbills			
<i>Tockus naevius</i>	(Linn.)	Grey Hornbill	
<i>Tockus erythrorhynchus</i>	(Temminck)	Red-billed Hornbill	
<i>Tockus deckeni</i>	(Cabanis)	Von der Decken's Hornbill	
<i>Tockus flavirostris</i>	(Rüppell)	Yellow-billed Hornbill	
<i>Tockus hemprichii</i>	(Ehrenberg)	Hemprich's Hornbill	
<i>Tockus alboterminatus</i>	(Böttiker)	Crowned Hornbill	
<i>Bucanites brevis</i>	Friedmann	Silvery-checked Hornbill	
<i>Bucornis abyssinicus</i>	(Boddaert)	Abyssinian Ground Hornbill	
Order Piciformes			
Family Capitonidae - Barbets			
<i>Lybais bidentatus</i>	(Shaw)	Double-toothed Barbet	
<i>Lybais guifoballus</i>	Hermann	Black-billed Barbet	
<i>Lybais vieilloti</i>	(Leach)	Vieillot's Barbet	
<i>Lybais uleiensis</i>	(Rüppell)	Banded Barbet	E
<i>Lybais melanoccephalus</i>	(Cretzschmar)	Black-throated Barbet	
<i>Lybais diadematum</i>	(Heuglin)	Red-fronted Barbet	
<i>Pogonidius pusillus</i>	(Dumont)	Red-fronted Tinker-bird	
<i>Pogonidius chrysocornus</i>	(Temminck)	Yellow-fronted Tinker-bird	
<i>Trachyphonus margaritatus</i>	(Cretzschmar)	Yellow-breasted Barbet	
<i>Trachyphonus darnaudii</i>	(Prévoist & Des Murs)	D'Arnaud's Barbet	
<i>Trachyphonus erythrocephalus</i>	Cabanis	Red-and-yellow Barbet	
Family Indicatoridae - Honey-guides			
<i>Indicator virens</i>	Lesson	Scaly-throated Honey-guide	
<i>Indicator indicatus</i>	(Sparmann)	Black-throated Honey-guide	
<i>Indicator minor</i>	Stephens	Lesser Honey-guide	
<i>Prodotaxcus insularis</i>	(Cassin)	Cassin's Honey-bird	
<i>Prodotaxcus regulus</i>	Sundevall	Wahlberg's Honey-bird	
Family Picidae - Woodpeckers			
<i>Jynx torquilla</i>	Linn.	Wryneck	
<i>Jynx rufigollis</i>	Wagler	Red-breasted Wryneck	
<i>Campepthera rubica</i>	(Boddaert)	Nubian Woodpecker	
<i>Campepthera callipectus</i>	(Malherbe)	Little Spotted Woodpecker	
<i>Dendropicus fuscescens</i>	Vieillot	Cardinal Woodpecker	
<i>Dendropicus abyssinicus</i>	Stanley	Golden-backed Woodpecker	
<i>Dendropicus obsolentus</i>	(Wagler)	Brown-backed Woodpecker	E
<i>Mesopicus goettiae</i>	(Müller)	Grey Woodpecker	
<i>Thripias namaquus</i>	(Lichtenstein)	Bearded Woodpecker	

Scientific Name	Determinator	English Name	Status
Order Passeriformes			
Family Pirodae - Piroa			
<i>Piroa angolensis</i>	Vieillot	African Piroa	
Family Alaudidae - Larks			
<i>Mirafra cantillans</i>	Blyth	Singing Bush-Lark	
<i>Mirafra albicauda</i>	Reichenow	White-tailed Bush-lark	
<i>Mirafra pulpa</i>	Friedmann	Friedmann's Bush-lark	
<i>Mirafra hypermetra</i>	(Reichenow)	Redwing Lark	
<i>Mirafra rufocinnaeomea</i>	(Salvadori)	Flappet-Lark	
<i>Mirafra collaris</i>	Sharpe	Collared Lark	
<i>Mirafra africanoides</i>	Smith	Fawn-coloured Lark	
<i>Mirafra gillettii</i>	Sharpe	Gillett's Lark	
<i>Mirafra poecilosterna</i>	(Reichenow)	Pink-breasted Lark	
<i>Mirafra degodiensis</i>	Erard	Degodi Lark	ET
<i>Heteromirafra sidamoensis</i>	(Erard)	Sidamo Long-clawed Lark	ET
<i>Eremopernis nigricap</i>	(Gould)	White-fronted Sparrow-Lark	
<i>Eremopernis nigricap</i>	(Oustalet)	Chestnut-headed Sparrow-Lark	
<i>Eremopernis leucotis</i>	(Stanley)	Chestnut-headed Sparrow-Lark	
<i>Ammodramus diardi</i>	(Lichtenstein)	Desert Lark	
<i>Alaemon alaudii pes</i>	(Desfontaine)	Hoopoe-Lark	
<i>Melanocorypha bimaculata</i>	(Ménétriés)	Calandra Lark	
<i>Calandrella cinerea</i>	(Gmelin)	Red-capped Lark	
<i>Calandrella brachydactyla</i>	(Leisler)	Short-toed Lark	
<i>Calandrella somalica</i>	(Sharpe)	Rufous Short-toed Lark	
<i>Calandrella personata</i>	(Sharpe)	Masked Lark	
<i>Pseudalaemon fremantlii</i>	(Phillips)	Short-tailed Lark	
<i>Galerida cristata</i>	(Linn.)	Crested Lark	
<i>Galerida theklae</i>	(Brehm)	Short-crested Lark	
Family Hirundinidae - Swallows, Martins			
<i>Piparia pallidicollis</i>	(Vieillot)	African Sand Martin	
<i>Piparia piparia</i>	(Linn.)	Sand Martin	
<i>Piparia cincta</i>	(Boddaert)	Banded Martin	
<i>Hirundo griseo pyga</i>	Sundevall	Grey-rumped Swallow	
<i>Hirundo fuliginea</i>	Lichtenstein	African Black Martin	
<i>Hirundo rupestris</i>	Scopoli	European Crag Martin	
<i>Hirundo rustica</i>	Linn.	Swallow	
<i>Hirundo lucida</i>	Hartlaub	Red-chested Swallow	
<i>Hirundo smithii</i>	Leach	Wire-tailed Swallow	
<i>Hirundo aestivo pica</i>	Blanford	Ethiopian Swallow	
<i>Hirundo megarhynchos</i>	Benson	White-tailed Swallow	ET
<i>Hirundo senegalensis</i>	Linn.	Mosque Swallow	
<i>Hirundo daurica</i>	Linn.	Red-rumped Swallow	
<i>Hirundo abyssinica</i>	Guérin-Méneville	Striped Swallow	
<i>Delichon urbica</i>	(Linn.)	House Martin	
<i>Psaldo progne proso ptera</i>	(Rüppell)	Rough-winged Swallow	
<i>Psaldo progne albice ps</i>	Sclater	White-headed Rough-winged Swallow	
Family Motacillidae - Wagtails, Pipits			
<i>Anthus novaeseelandiae</i>	(Gmelin)	Richard's Pipit	
<i>Anthus campestris</i>	(Linn.)	Tawny Pipit	
<i>Anthus leucopygus</i>	Vieillot	Plain-backed Pipit	
<i>Anthus similis</i>	Jerdon	Long-billed Pipit	
<i>Anthus caffer</i>	Sundevall	Little Tawny Pipit	
<i>Anthus trivialis</i>	Linn.	Tree Pipit	
<i>Anthus cervinus</i>	(Pallas)	Red-throated Pipit	
<i>Trochilopygus melanocephalus</i>	(Cabanis)	Golden Pipit	
<i>Macronyx flavicollis</i>	Rüppell	Abyssinian Longclaw	E
<i>Motacilla flava</i>	Linn.	Yellow Wagtail	
<i>Motacilla cinerea</i>	Tunstall	Grey Wagtail	
<i>Motacilla clara</i>	Sharpe	Mountain Wagtail	
<i>Motacilla alba</i>	Linn.	White Wagtail	
<i>Motacilla alpina</i>	Dumont	African Pied Wagtail	

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Scientific Name	Determinator	English Name	Status
<b>Family Campephagidae - Cuckoo-shrikes</b>			
<i>Corucina pectoralis</i>	(Jardine & Selby)	White-breasted Cuckoo-shrike	
<i>Corucina caesia</i>	(Lichtenstein)	Grey Cuckoo-shrike	
<i>Campephaga phoenicea</i>	(Latham)	Red-shouldered Cuckoo-shrike	
<i>Campephaga flava</i>	Vieillot	Black Cuckoo-shrike	
<b>Family Pycnonotidae - Bulbuls</b>			
<i>Pycnonotus barbatus</i>	(Desfontaines)	White-vented Bulbul	
<i>Andropadus im portunus</i>	(Vieillot)	Zanzibar Sombre Greenbul	
<i>Chirocacchia flavicollis</i>	(Swainson)	Yellow-throated Leaf-love	
<i>Phylloscopus sibilatrix</i>	(Reichenow)	Northern Brownbul	
<b>Family Bombycillidae - Hypocolius</b>			
<i>Hypocolius am pelinus</i>	Bonaparte	Grey Hypocolius	
<b>Family Turdidae - Thrushes</b>			
<i>Cercotrichas galactes</i>	(Temminck)	Rufous Warbler	
<i>Cercotrichas pusilla</i>	(Müller)	Black Bush-robin	
<i>Cercotrichas leucophrys</i>	(Vieillot)	White-winged Scrub-robin	
<i>Cichladusa guttata</i>	(Heuglin)	Spotted Morning Warbler	
<i>Cosyphus natus</i>	(Smith)	Red-capped Robin-chat	
<i>Cosyphus seminae</i>	(Rüppell)	Rüppell's Robin-chat	
<i>Cosyphus heuglini</i>	Hartlaub	White-browed Robin-chat	
<i>Cosyphus albica pilla</i>	(Vieillot)	White-crowned Robin-chat	
<i>Cosyphus niveica pilla</i>	(Lafresnaye)	Snowy-headed Robin-chat	
<i>Lucania lucania</i>	(Linn.)	Sprosser	
<i>Lucania megarhynchus</i>	Brehm	Nightingale	
<i>Lucania siveasi</i>	(Linn.)	Bluethroat	
<i>Irania gutturobs</i>	(Guérin-Méneville)	White-throated Robin	
<i>Phoenicurus ochruros</i>	(Gmelin)	Black Redstart	
<i>Phoenicurus phoenicurus</i>	(Linn.)	Redstart	
<i>Cercomela melanura</i>	(Temminck)	Black-tailed Rock-chat	
<i>Cercomela scotoceros</i>	(Heuglin)	Brown-tailed Rock-chat	
<i>Cercomela dubia</i>	(Blundell & Lovat)	Sombre Rock-chat	
<i>Cercomela familiaris</i>	(Stephens)	Red-tailed Chat	
<i>Cercomela sordida</i>	(Rüppell)	Hill Chat	
<i>Saxicola rubetra</i>	(Linn.)	Whinchat	
<i>Saxicola torquata</i>	(Linn.)	Stonechat	
<i>Mymecocichla cinnamomeiventris</i>	(Lafresnaye)	Cliff-chat	
<i>Mymecocichla seminae</i>	(Rüppell)	White-winged Cliff-chat	E
<i>Mymecocichla albifrons</i>	(Rüppell)	White-fronted Black Chat	
<i>Mymecocichla melanura</i>	(Rüppell)	Rüppell's Chat	E
<i>Oenanthe isabellina</i>	(Temminck & Langier)	Isabelline Wheatear	
<i>Oenanthe boiae</i>	(Bonaparte)	Red-breasted Wheatear	
<i>Oenanthe oenanthe</i>	(Linn.)	Wheatear	
<i>Oenanthe phylli pa</i>	(Shelley)	Somali Wheatear	
<i>Oenanthe plechanka</i>	(Lepechin)	Pied Wheatear	
<i>Oenanthe cypraca</i>	(Homeyer)	Cyprus Wheatear	
<i>Oenanthe hispanica</i>	(Linn.)	Black-eared Wheatear	
<i>Oenanthe deserti</i>	(Temminck)	Desert Wheatear	
<i>Oenanthe sartho pyrina</i>	(Ehrenberg)	Red-rumped Wheatear	
<i>Oenanthe lugubris</i>	(Rüppell)	Abyssinian Black Wheatear	
<i>Oenanthe leuco pyga</i>	(Brehm)	White-rumped Wheatear	
<i>Monticola saxatilis</i>	(Linn.)	Rock-thrush	
<i>Monticola solitarius</i>	(Linn.)	Blue Rock-thrush	
<i>Monticola rufo capereus</i>	(Rüppell)	Little Rock-thrush	
<i>Turdus naevius</i>	Bouvier	Abyssinian Ground Thrush	
<i>Turdus lila parus pa</i>	(Smith)	Ground-scraper Thrush	
<i>Turdus peplus</i>	Bonaparte	African Thrush	
<i>Turdus olivaceus</i>	Linn.	Olive Thrush	
<i>Turdus leucophaea</i>	Cabanis	Bare-eyed Thrush	
<i>Turdus philomelos</i>	Brehm	Song Thrush	

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Family Sylviidae - Warblers			
<i>Bradyperus baboecia</i>	(Vieillot)	Little Rush Warbler	
<i>Bradyperus cinnamomeus</i>	(Rüppell)	Cinnamon Bracken Warbler	
<i>Bradyperus alfredi</i>	Hartlaub	Bamboo Warbler	
<i>Schoenocola platyura</i>	(Jerdon)	Fan-tailed Warbler	
<i>Parasoma boehmi</i>	Reichenow	Banded Tit-flycatcher	
<i>Parasoma lugens</i>	(Rüppell)	Brown Tit-flycatcher	
<i>Cisticola erythrops</i>	(Hartlaub)	Red-faced Cisticola	
<i>Cisticola cantans</i>	(Heuglin)	Singing Cisticola	
<i>Cisticola chiniana</i>	(A. Smith)	Rattling Cisticola	
<i>Cisticola bodessa</i>	Mearns	Boran Cisticola	
<i>Cisticola palacotes</i>	(Temminck)	Winding Cisticola	
<i>Cisticola robusta</i>	(Rüppell)	Stout Cisticola	
<i>Cisticola natalensis</i>	(Smith)	Croaking Cisticola	
<i>Cisticola cinerea</i>	Salvadori	Ashy Cisticola	
<i>Cisticola nana</i>	Fischer & Reichenow	Tiny Cisticola	
<i>Cisticola rufopectus</i>	(Cretzschmar)	Red-pate Cisticola	
<i>Cisticola brachyptera</i>	(Sharpe)	Siffling Cisticola	
<i>Cisticola troglodytes</i>	(Antinori)	Foxy Cisticola	
<i>Cisticola juncidis</i>	(Rafinesque)	Zitting Cisticola	
<i>Cisticola aridula</i>	Witherby	Desert Cisticola	
<i>Cisticola eximia</i>	(Heuglin)	Black-backed Cisticola	
<i>Cisticola brunneiceps</i>	Heuglin	Pectoral-patch Cisticola	
<i>Prinia gracilis</i>	(Lichtenstein)	Striped-back Prinia	
<i>Prinia subflava</i>	(Gmelin)	Tawny-flanked Prinia	
<i>Prinia somalica</i>	(Elliot)	Pale Prinia	
<i>Heliolais erythroptera</i>	(Jardine)	Red-wing Warbler	
<i>Apalis flavida</i>	(Strickland)	Black-breasted Apalis	
<i>Spilopila clamans</i>	(Temminck)	Cricketer Warbler	
<i>Spilopila rufifrons</i>	(Rüppell)	Red-faced Warbler	
<i>Phylloscopus pulchella</i>	(Cretzschmar)	Buff-bellied Warbler	
<i>Camaroptera brevicaudata</i>	(Cretzschmar)	Grey-backed Camaroptera	
<i>Camaroptera simplex</i>	(Cabanis)	Grey Wren-warbler	
<i>Eremomela ictero pygmaea</i>	(Lafresnaye)	Yellow-bellied Eremomela	
<i>Eremomela flavicristalis</i>	Sharpe	Yellow-vented Eremomela	
<i>Eremomela canescens</i>	Antinori	Green-backed Eremomela	
<i>Sylvietta brachyura</i>	Lafresnaye	Crombec	
<i>Sylvietta whyllii</i>	(Shelley)	Red-faced Crombec	
<i>Sylvietta walburgina</i>	Elliot	Somali Long-billed Crombec	
<i>Sylvietta philippinae</i>	Williams	Short-billed Crombec	
<i>Locustella naevia</i>	(Boddaert)	Grasshopper Warbler	
<i>Locustella fluviatilis</i>	(Wolf)	River Warbler	
<i>Locustella lusitana</i>	(Savi)	Savi's Warbler	
<i>Acrocephalus schrenckii</i>	(Linn.)	Sedge Warbler	
<i>Acrocephalus palustris</i>	(Bechstein)	Marsh Warbler	
<i>Acrocephalus scirpaceus</i>	(Hermann)	Reed Warbler	
<i>Acrocephalus baeticatus</i>	(Vieillot)	African Reed Warbler	
<i>Acrocephalus gracilirostris</i>	(Hartlaub)	Swamp Warbler	
<i>Acrocephalus seniores</i>	(Ehrenberg)	Southern Great Reed Warbler	
<i>Acrocephalus griseidus</i>	(Hartlaub)	Basra Reed Warbler	
<i>Acrocephalus arundinaceus</i>	(Linn.)	Great Reed Warbler	
<i>Chloropeta natalensis</i>	Smith	Yellow Flycatcher	
<i>Sphenocercus mentalis</i>	(Fraser)	Moustache Warbler	
<i>Hippolais pallida</i>	(Ehrenberg)	Olivaceous Warbler	
<i>Hippolais languida</i>	(Ehrenberg)	Upcher's Warbler	
<i>Hippolais olivetorum</i>	(Strickland)	Olive-tree Warbler	
<i>Hippolais icterina</i>	(Vieillot)	Icterine Warbler	
<i>Sylvia mystacea</i>	Ménétriés	Ménétriés Warbler	
<i>Sylvia rueppelli</i>	Temminck	Rüppell's Warbler	
<i>Sylvia nana</i>	(Ehrenberg)	Desert Warbler	

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Scientific Name	Determinator	English Name	Status
<i>Sylvia leucomelas</i>	(Ehrenberg)	Red Sea Warbler	
<i>Sylvia hortensis</i>	(Gmelin)	Orpbean Warbler	
<i>Sylvia nisoria</i>	(Bechstein)	Barred Warbler	
<i>Sylvia curruca</i>	(Linn.)	Lesser Whitethroat	
<i>Sylvia communis</i>	Latham	Whitethroat	
<i>Sylvia borin</i>	(Boddaert)	Garden Warbler	
<i>Sylvia atricapilla</i>	(Linn.)	Blackcap	
<i>Phylloscopus umbrovirens</i>	(Rüppell)	Brown Woodland-warbler	
<i>Phylloscopus bonelli</i>	(Vieillot)	Bonelli's Warbler	
<i>Phylloscopus collybita</i>	(Vieillot)	Chiff-chaff	
<i>Phylloscopus trochilus</i>	(Linn.)	Willow Warbler	
Family Muscipidae - Flycatchers			
<i>Muscicapa striata</i>	(Pallas)	Spotted Flycatcher	
<i>Muscicapa garabana</i>	(Alexander)	Ombaga Dusky Flycatcher	
<i>Muscicapa adusta</i>	(Boie)	Dusky Flycatcher	
<i>Myciops parvus plumbeus</i>	(Hartlaub)	Grey Tit-flycatcher	
<i>Ficedula albicollis</i>	(Temminck)	Collared Flycatcher	
<i>Melanerpes chocolatinus</i>	(Rüppell)	Abyssinian Slaty Flycatcher	
<i>Melanerpes edulis</i>	(Gmelin)	Black Flycatcher	
<i>Empidonax similis</i>	(Rüppell)	Silver-bird	
<i>Bradornis macrochrychus</i>	(Reichenow)	Grey Flycatcher	
<i>Bradornis pallidus</i>	(von Müller)	Pale Flycatcher	
<i>Hylota flavigaster</i>	Swainson	Yellow-bellied Flycatcher	
Family Monarchidae - Monarch Flycatchers			
<i>Batis orientalis</i>	(Heuglin)	Grey-headed Puff-back Flycatcher	
<i>Batis perleo</i>	Neumann	Pygmy Puff-back Flycatcher	
<i>Batis minor</i>	Erlanger	Black-headed Puff-back Flycatcher	
<i>Platysteira cyanea</i>	(Müller)	Wattle-eye	
<i>Trochocercus albonotatus</i>	Sharpe	White-tailed Crested Flycatcher	
<i>Terpsiphone viridis</i>	(Müller)	Paradise Flycatcher	
Family Timaliidae - Babbler			
<i>Alcippe abyssinica</i>	(Rüppell)	Abyssinian Hill-babbler	
<i>Paro phasma galinieri</i>	(Guérin-Méneville)	Abyssinian Catbird	E
<i>Turdoides plebejus</i>	(Cretzschmar)	Brown Babbler	
<i>Turdoides leucocapillus</i>	Cretzschmar	White-headed Babbler	
<i>Turdoides squamulatus</i>	(Shelley)	Scaly Babbler	
<i>Turdoides tenebrosus</i>	(Hartlaub)	Dusky Babbler	
<i>Turdoides leuco pygus</i>	(Rüppell)	White-rumped Babbler	
<i>Turdoides fulvus</i>	(Desfontaines)	Fulvous Chatterer	
<i>Turdoides rubiginosus</i>	(Rüppell)	Rufous Chatterer	
<i>Turdoides aethiops</i>	(Shelley)	Scaly Chatterer	
Family Paridae - Tits			
<i>Parus afer</i>	Gmelin	Grey Tit	
<i>Parus leucomelas</i>	Rüppell	Black Tit	
<i>Parus leucostictus</i>	Guérin-Méneville	White-backed Black Tit	E
Family Remizidae - Penduline Tits			
<i>Remiz muscivorus</i>	(Hartlaub)	Mouse-coloured Penduline Tit	
<i>Remiz punctirostris</i>	(Sundevall)	Sennar Penduline Tit	

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Scientific Name	Determinator	English Name	Status
Family Salpormithidae - Spotted Creeper			
<i>Salpormis pilonota</i>	(Franklin)	Spotted Creeper	
Family Nectarinidae - Sunbirds			
<i>Anthreptes orientalis</i>	Hartlaub	Kenya Violet-backed Sunbird	
<i>Anthreptes collaris</i>	(Vieillot)	Collared Sunbird	
<i>Anthreptes platurus</i>	(Vieillot)	Pygmy Sunbird	
<i>Anthreptes metallicus</i>	(Lichtenstein)	Nile Valley Sunbird	
<i>Nectarinia olivacea</i>	(Smith)	Olive Sunbird	
<i>Nectarinia amethystina</i>	(Shaw)	Amethyst Sunbird	
<i>Nectarinia senegalensis</i>	(Linn.)	Scarlet-chested Sunbird	
<i>Nectarinia hunteri</i>	(Shelley)	Hunter's Sunbird	
<i>Nectarinia venusta</i>	(Shaw & Nodder)	Variable Sunbird	
<i>Nectarinia chloropygia</i>	(Jardine)	Olive-bellied Sunbird	
<i>Nectarinia bifasciata</i>	(Shaw)	Purple-banded Sunbird	
<i>Nectarinia mariquensis</i>	(Smith)	Mariqua Sunbird	
<i>Nectarinia habessinica</i>	Ehrenberg	Shining Sunbird	
<i>Nectarinia cupea</i>	(Shaw)	Copper Sunbird	
<i>Nectarinia tacaze</i>	(Stanley)	Tacazze Sunbird	
<i>Nectarinia erythroceros</i>	Hartlaub	Red-chested Sunbird	
<i>Nectarinia pulchella</i>	(Linn.)	Black-headed Sunbird	
<i>Nectarinia nectarinoides</i>	(Richmond)	Smaller Black-bellied Sunbird	
<i>Nectarinia famosa</i>	(Linn.)	Malachite Sunbird	
<i>Nectarinia kilimensis</i>	Shelley	Bronze Sunbird	
Family Zosteropidae - White-eyes			
<i>Zosterops abyssinica</i>	Guérin-Méneville	White-breasted White-eye	
<i>Zosterops senegalensis</i>	Bonaparte	Yellow White-eye	
<i>Zosterops polioptera</i>	Heuglin	Green White-eye	
Family Oriolidae - Orioles			
<i>Oriolus oriolus</i>	(Linn.)	Golden Oriole	
<i>Oriolus auratus</i>	Vieillot	African Golden Oriole	
<i>Oriolus larvatus</i>	Lichtenstein	Black-headed Oriole	
<i>Oriolus monacha</i>	(Gmelin)	Black-headed Forest Oriole	E
Family Lanidae - Shrikes			
<i>Eurocephalus nigrifrons</i>	Bonaparte	White-crowned Shrike	
<i>Priocetes plumata</i>	(Shaw)	Crested Helmet-shrike	
<i>Nilaus afer</i>	(Latham)	Northern Brubra	
<i>Dryoscopus pringii</i>	Jackson	Pringle's Puff-back	
<i>Dryoscopus gambensis</i>	(Lichtenstein)	Puff-back	
<i>Tchagra murina</i>	(Hartlaub)	Blackcap Bush-shrike	
<i>Tchagra jamaesi</i>	(Shelley)	Three-streaked Bush-shrike	
<i>Tchagra senegalensis</i>	(Linn.)	Black-headed Bush-shrike	
<i>Rhodophoneus cruentus</i>	(Ehrenberg)	Rosy-patched Shrike	
<i>Laniarius ruficeps</i>	(Shelley)	Red-naped Bush-shrike	
<i>Laniarius aethiops</i>	(Gmelin)	Tropical Boubou	
<i>Laniarius erythrogaster</i>	(Cretzschmar)	Black-headed Gonolek	
<i>Laniarius fuscus</i>	(Hartlaub)	Slate-coloured Boubou	
<i>Malacoconotus sulfuriceps</i>	(Lesson)	Sulphur-breasted Bush-shrike	
<i>Malacoconotus bianchoti</i>	Stephens	Grey-headed Bush-shrike	
<i>Lanius isabellinus</i>	Ehrenberg	Isabelline Shrike	
<i>Lanius collurio</i>	Linn.	Red-backed Shrike	
<i>Lanius minor</i>	Gmelin	Lesser Grey Shrike	
<i>Lanius excubitor</i>	Linn.	Great Grey Shrike	
<i>Lanius excubitoroides</i>	Prevost & Des Murs	Grey-backed Fiscal	
<i>Lanius dorsalis</i>	Cabanis	Taita Fiscal	
<i>Lanius somaliensis</i>	Hartlaub	Somali Fiscal	
<i>Lanius collaris</i>	Linn.	Fiscal	
<i>Lanius senator</i>	Linn.	Woodchat Shrike	
<i>Lanius rubicus</i>	Lichtenstein	Nubian Shrike	
Family Dicruridae - Drongo			
<i>Dicrurus adsimilis</i>	(Bechstein)	Fork-tailed Drongo	

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Family Corvidae - Crows, Ravens			
<i>Pallostructions afer</i>	(Linn.)	Pupiac	E T
<i>Zavattaronomus stresemanni</i>	Mohou	Stresemann's Bush-crow	
<i>Pyrrhocorax pyrrhocorax</i>	(Linn.)	Chough	E
<i>Corvus splendens</i>	Vieillot	Indian House-crow	
<i>Corvus albus</i>	Müller	Pied Crow	
<i>Corvus rufo-collis</i>	Lesson	Brown-necked Raven	
<i>Corvus cafer</i>	Lichtenstein	Cape Rook	
<i>Corvus rufidivus</i>	Hartert	Fan-tailed Raven	
<i>Corvus crassirostris</i>	Rüppell	Thick-billed Raven	
Family Sturnidae - Starlings			
<i>Pooecetes gramineus</i>	(Reichenow)	Stuhlmann's Starling	E
<i>Onychognathus morio</i>	(Linn.)	Red-wing Starling	
<i>Onychognathus blythii</i>	(Hartlaub)	Somali Chestnut-wing Starling	
<i>Onychognathus tenuirostris</i>	(Rüppell)	Slender-billed Chestnut-wing Starling	
<i>Onychognathus albirostris</i>	(Rüppell)	White-billed Starling	
<i>Onychognathus sahadorii</i>	(Sharpe)	Bristle-crowned Starling	
<i>Lamprolaima splendens</i>	(Vieillot)	Splendid Glossy Starling	
<i>Lamprolaima chloropectus</i>	Swainson	Little Blue-eared Glossy Starling	
<i>Lamprolaima chalybeus</i>	Ehrenberg	Blue-eared Glossy Starling	
<i>Lamprolaima purpuriceps</i>	Rüppell	Rüppell's Long-tailed Glossy Starling	
<i>Cinnyricinclus leucogaster</i>	(Boddaert)	Violet-backed Starling	
<i>Cinnyricinclus sharpei</i>	(Jackson)	Sharpe's Starling	
<i>Specaulipastor bicolor</i>	Reichenow	Maggie Starling	
<i>Specaulipastor fischeri</i>	(Reichenow)	Fischer's Starling	
<i>Specaulipastor albicaillatus</i>	Blyth	White-crowned Starling	
<i>Specaulipastor pulcher</i>	(Müller)	Chestnut-bellied Starling	
<i>Specaulipastor shelleyi</i>	Sharpe	Shelley's Starling	
<i>Specaulipastor superbus</i>	(Rüppell)	Superb Starling	
<i>Coereba bartholemica</i>	Reichenow	Golden-breasted Starling	
<i>Sturnus vulgaris</i>	Linn.	European Starling	
<i>Creatophora cinerea</i>	(Menschen)	Wartled Starling	
Family Buphagidae - Ospreckers			
<i>Buphagus africanus</i>	Linn.	Yellow-billed Osprecker	E
<i>Buphagus erythrorhynchus</i>	(Stanley)	Red-billed Osprecker	
Family Passeridae - Sparrows			
<i>Passer montanus</i>	Smith	Rufous Sparrow	E
<i>Passer castaneus</i>	Blyth	Somali Sparrow	
<i>Passer griseus</i>	(Vieillot)	Grey-headed Sparrow	
<i>Passer swainsonii</i>	(Rüppell)	Swainson's Sparrow	
<i>Passer gongonensis</i>	(Oustalet)	Parrot-billed Sparrow	
<i>Passer luteus</i>	(Lichtenstein)	Sudan Golden Sparrow	
<i>Passer eminibey</i>	(Hartlaub)	Chertmet Sparrow	
<i>Petronia brachyactyla</i>	Bonaparte	Pale Rock Sparrow	
<i>Petronia pyrgula</i>	(Heuglin)	Yellow-spotted Petronia	
<i>Petronia dentata</i>	(Suavevall)	Bush Petronia	
<i>Sporopipes frontalis</i>	(Daudin)	Speckle-fronted Weaver	
Family Ploceidae - Weavers			
<i>Bubalornis albirostris</i>	(Vieillot)	White-billed Buffalo-weaver	E
<i>Bubalornis niger</i>	Smith	Red-billed Buffalo-weaver	
<i>Dinemellia dinemelli</i>	(Rüppell)	White-headed Buffalo-weaver	
<i>Ploceus passer mahali</i>	Smith	Stripe-breasted Sparrow-weaver	
<i>Ploceus passer perillousus</i>	(Cretschmar)	Chestnut-crowned Sparrow-weaver	
<i>Ploceus passer donaldsoni</i>	Sharpe	Donaldson Smith's Sparrow-weaver	
<i>Pseudonotus griseus arnaudi</i>	(Bonaparte)	Grey-headed Social Weaver	
<i>Pseudonotus griseus cabanisi</i>	(Fischer & Reichenow)	Black-capped Social Weaver	
<i>Amblyospiza albifrons</i>	(Vigors)	Grosbeak Weaver	
<i>Ploceus baglafechtii</i>	(Daudin)	Baglafecht Weaver	
<i>Ploceus luteoides</i>	(Lichtenstein)	Little Weaver	
<i>Ploceus bojeri</i>	(Cabanis)	Golden Palm Weaver	
<i>Ploceus galbula</i>	Rüppell	Rüppell's Weaver	

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Scientific Name	Determinator	English Name	Status
<i>Ploceus castropterus</i>	Reichenbach	Northern Masked Weaver	
<i>Ploceus intermedius</i>	Rüppell	Masked Weaver	
<i>Ploceus virens</i>	Viellot	Vitelline Masked Weaver	
<i>Ploceus spekei</i>	(Heuglin)	Speke's Weaver	
<i>Ploceus cucullatus</i>	(Müller)	Black-headed Weaver	
<i>Ploceus dichrocephalus</i>	(Salvadori)	Jubaland Weaver	
<i>Ploceus melanocephalus</i>	(Linn.)	Yellow-backed Weaver	
<i>Ploceus rubiginosus</i>	Rüppell	Chestnut Weaver	
<i>Ploceus superciliosus</i>	(Shelley)	Compact Weaver	
<i>Ploceus ocularis</i>	Smith	Spectacled Weaver	
<i>Ploceus rupecollis</i>	(Viellot)	Black-necked Weaver	
<i>Malimbus rubriceps</i>	(Müller)	Red-headed Weaver	
<i>Quelea cardinalis</i>	(Hartlaub)	Cardinal Quelea	
<i>Quelea erythrops</i>	(Hartlaub)	Red-headed Quelea	
<i>Quelea quelea</i>	(Linn.)	Red-billed Quelea	
<i>Euplectes afer</i>	(Gmelin)	Yellow-crowned Bishop	
<i>Euplectes albonotatus</i>	(Cassin)	White-winged Widow-bird	
<i>Euplectes ardens</i>	(Boddaert)	Red-collared Widow-bird	
<i>Euplectes astillaris</i>	(Smith)	Pink-tailed Widow-bird	
<i>Euplectes capensis</i>	(Linn.)	Yellow Bishop	
<i>Euplectes gerroni</i>	Cabanis	Black Bishop	
<i>Euplectes hordeaceus</i>	(Linn.)	Black-winged Red Bishop	
<i>Euplectes macrourus</i>	(Gmelin)	Yellow-shouldered Widow-bird	
<i>Euplectes franciscanus</i>	(Linn.)	West Nile Red Bishop	
<i>Anomalops pica imberbis</i>	(Cabanis)	Parasitic Weaver	
Family Estrinidae - Whydahs, Waxbills			
<i>Vidua macroura</i>	(Pallas)	Pink-tailed Whydah	
<i>Vidua fischeri</i>	(Reichenow)	Fischer's Whydah	
<i>Vidua hypocherina</i>	Verreaux & Verreaux	Steel-blue Whydah	
<i>Vidua paradisaea</i>	(Linn.)	Paradise Whydah	
<i>Vidua orientalis</i>	Heuglin	Broad-tailed Paradise Whydah	
<i>Hypochera chalybeata</i>	(Müller)	Indigo-bird	
<i>Mandingoa nitidula</i>	(Hartlaub)	Green-backed Twin-spot	
<i>Cryptospiza salvadorii</i>	Reichenow	Abyssinian Crimson-wing	
<i>Amadina fasciata</i>	(Gmelin)	Cat-throat	
<i>Pytilia melba</i>	(Linn.)	Green-winged Pytilia	
<i>Pytilia afer</i>	(Gmelin)	Orange-winged Pytilia	
<i>Pytilia phoenicoptera</i>	Swainson	Red-winged Pytilia	
<i>Lagonosticta larvata</i>	(Rüppell)	Black-faced Firefinch	
<i>Lagonosticta rufopicta</i>	(Fraser)	Bar-breasted Firefinch	
<i>Lagonosticta senegalensis</i>	(Linn.)	Red-billed Firefinch	
<i>Lagonosticta rhodoparens</i>	(Heuglin)	Jameson's Firefinch	
<i>Lagonosticta rubricata</i>	(Lichtenstein)	African Firefinch	
<i>Uraeginthus ianthinogaster</i>	Reichenow	Purple Grenadier	
<i>Uraeginthus bengalus</i>	(Linn.)	Red-beaked Cordon-bleu	
<i>Uraeginthus cyanocephalus</i>	(Richmond)	Blue-capped Cordon-bleu	
<i>Estrilda melanotos</i>	(Temminck)	Yellow-bellied Waxbill	
<i>Estrilda paludicola</i>	Heuglin	Fawn-breasted Waxbill	
<i>Estrilda rhodopygia</i>	Sundevall	Crimson-rumped Waxbill	
<i>Estrilda troglodytes</i>	(Lichtenstein)	Black-rumped Waxbill	
<i>Estrilda astrild</i>	(Linn.)	Waxbill	
<i>Estrilda erythronotos</i>	(Viellot)	Black-beaked Waxbill	
<i>Amadava subflava</i>	(Viellot)	Zebra Waxbill	
<i>Oryzopsis atricollis</i>	(Viellot)	Quail-finch	
<i>Lonchura malabarica</i>	(Linn.)	Silver-bill	
<i>Lonchura griseicapilla</i>	Delacour	Grey-beaked Silver-bill	
<i>Lonchura frontiloides</i>	(Lafresnaye)	Maggie Mannikin	
<i>Lonchura bicolor</i>	(Fraser)	Black-and-white Mannikin	
<i>Lonchura cucullata</i>	(Swainson)	Bronze Mannikin	

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Scientific Name	Determinator	English Name	Status
Family Fringillidae - Finches			
<i>Serinus mozambicus</i>	(Miller)	Yellow-fronted Canary	
<i>Serinus arnegani</i>	(A. Smith)	Yellow-rumped Seed-eater	
<i>Serinus leuco pygus</i>	(S. Odévall)	White-rumped Seed-eater	
<i>Serinus flavigula</i>	Salvadori	Yellow-throated Seed-eater	ET
<i>Serinus dorsostriatus</i>	(Reichenow)	White-bellied Canary	
<i>Serinus donaldsoni</i>	Sharpe	Grosbeak Canary	
<i>Serinus canicollis</i>	(Swainson)	Yellow-crowned Canary	
<i>Serinus castrobellides</i>	Rüppell	African Citril	
<i>Serinus nigricap</i>	Rüppell	Black-headed Siskin	E
<i>Serinus striolatus</i>	(Rüppell)	Streaky Seed-eater	
<i>Serinus tristrami</i>	Rüppell	Brown-rumped Seed-eater	
<i>Serinus richardi</i>	(Reichenow)	Streaky-headed Seed-eater	
<i>Serinus ankoberensis</i>	Ash	Ankober Seed-eater	ET
<i>Serinus xantholaema</i>	Salvadori	Salvadori's Seed-eater	E
<i>Serinus xanthopygus</i>	Rüppell	White-throated Seed-eater	E
Family Emberizidae - Buntings			
<i>Emberiza azialetis</i>	(Lichtenstein)	Mopse Bunting	
<i>Emberiza taha plai</i>	Smith	Cinnamon-breasted Bunting	
<i>Emberiza cineracea</i>	Brehm	Cinereous Bunting	
<i>Emberiza hortulana</i>	Linn.	Oriole	
<i>Emberiza caesia</i>	Cretrachmar	Cretrachmar's Bunting	
<i>Emberiza flaviventris</i>	Stephens	Golden-breasted Bunting	
<i>Emberiza polio pleura</i>	(Salvadori)	Southern Golden-breasted Bunting	
<i>Emberiza forbesi</i>	Hartlaub	Brown-rumped Bunting	

## Status

E - Endemic to Ethiopia

T - Threatened status in the world

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## The Endemic Birds of Ethiopia

Group & Species	Determinator	Vernacular name
<b>Order Ciconiiformes</b>		
<i>Bostrychia carunculata</i>	(Rüppell)	Wattled Ibis
<b>Order Anseriformes</b>		
<i>Cyanochen cyanoptera</i>	(Rüppell)	Blue-winged Goose
<b>Order Galliformes</b>		
<i>Fraucolinus harwoodi</i>	Blundell & Lovat	Harwood's Francolin
<b>Order Gruiformes</b>		
<i>Rougenus rougeti</i>	Guérin-Méneville	Rouget's Rail
<b>Order Charadriiformes</b>		
<i>Hoplopterus melanocephalus</i>	(Rüppell)	Spot-breasted Plover
<b>Order Columbiformes</b>		
<i>Columba albitorques</i>	(Rüppell)	White-collared Pigeon
<b>Order Psittaciformes</b>		
<i>Poicephalus flavifrons</i>	(Rüppell)	Yellow-fronted Parrot
<i>Agapornis taranta</i>	(Stanley)	Black-winged Lovebird
<b>Order Cuculiformes</b>		
<i>Tauraco ruspolii</i>	Salvadori	Prince Ruspoli's Turaco
<b>Order Piciformes</b>		
<i>Lybius undatus</i>	(Rüppell)	Banded Barbet
<i>Dendropicus abyssinicus</i>	Stanley	Golden-backed Woodpecker
<b>Order Passeriformes</b>		
<i>Mirafraga degodiensis</i>	Erard	Degodi Lark
<i>Heteromirafraga sidamoensis</i>	(Erard)	Sidamo Long-clawed Lark
<i>Hirundo megaensis</i>	Benson	White-tailed Swallow
<i>Macronyx flavicollis</i>	Rüppell	Abyssinian Longclaw
<i>Myrmecocichla semirufa</i>	(Rüppell)	White-winged Cliff-chat
<i>Myrmecocichla melaena</i>	(Rüppell)	Rüppell's Chat
<i>Porophasma galinieri</i>	(Guérin-Méneville)	Abyssinian Catbird
<i>Parus leuconotus</i>	Guérin-Méneville	White-backed Black Tit
<i>Oriolus monacha</i>	(Gmelin)	Black-headed Forest Oriole
<i>Zavatanornis stresemanni</i>	Moltoni	Stresemann's Bush-crow
<i>Corvus crassirostris</i>	Rüppell	Thick-billed Raven
<i>Onychognathus albirostris</i>	(Rüppell)	White-billed Starling
<i>Serinus flavigula</i>	Salvadori	Yellow-throated Seed-eater
<i>Serinus nigriceps</i>	Rüppell	Black-headed Siskin
<i>Serinus ankoberensis</i>	Ash	Ankober Seed-eater
<i>Serinus xantholaema</i>	Salvadori	Salvadori's Seed-eater
<i>Serinus xanthopygius</i>	Rüppell	White-throated Seed-eater

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## Summary

Group	Total species	Endemic species	% Endemic
<i>Order Struthioniformes</i>			
Family Struthionidae	1	0	0.00
Total	1	0	0.00
<i>Order Podicipediformes</i>			
Family Podicipedidae	3	0	0.00
Total	3	0	0.00
<i>Order Procellariiformes</i>			
Family Procellariidae	1	0	0.00
Total	1	0	0.00
<i>Order Pelecaniformes</i>			
Family Phaeothroptidae	1	0	0.00
Family Sulae	2	0	0.00
Family Phalacrocoracidae	3	0	0.00
Family Anhingidae	1	0	0.00
Family Pelecanidae	1	0	0.00
Family Fregatidae	1	0	0.00
Total	10	0	0.00
<i>Order Ciconiiformes</i>			
Family Ardeidae	17	0	0.00
Family Balaenicipitidae	1	0	0.00
Family Scopidae	1	0	0.00
Family Ciconiidae	8	0	0.00
Family Threskiornithidae	7	1	14.29
Total	34	1	2.94
<i>Order Phoenicopteriformes</i>			
Family Phoenicopteridae	2	0	0.00
Total	2	0	0.00
<i>Order Anseriformes</i>			
Family Anatidae	27	1	3.70
Total	27	1	3.70
<i>Order Accipitriformes</i>			
Family Accipitridae	56	0	0.00
Family Pandionidae	1	0	0.00
Family Sagittariidae	1	0	0.00
Total	58	0	0.00
<i>Order Falconiformes</i>			
Family Falconidae	18	0	0.00
Total	18	0	0.00
<i>Order Galliformes</i>			
Family Phasianidae	16	1	6.25
Family Numididae	2	0	0.00
Total	18	1	5.56
<i>Order Gruiformes</i>			
Family Turnicidae	2	0	0.00
Family Rallidae	17	1	5.88
Family Helminthidae	1	0	0.00
Family Gruidae	4	0	0.00
Family Otididae	9	0	0.00
Total	33	1	3.03

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Group	Total species	Endemic species	% Endemic
<i>Order Charadriiformes</i>			
Family Jacanidae	2	0	0.00
Family Rostratulidae	1	0	0.00
Family Haematopodidae	1	0	0.00
Family Recurvirostridae	2	0	0.00
Family Dromadidae	1	0	0.00
Family Burhinidae	4	0	0.00
Family Glareolidae	10	0	0.00
Family Charadriidae	18	1	5.56
Family Scolopacidae	28	0	0.00
Family Stercorariidae	3	0	0.00
Family Laridae	8	0	0.00
Family Sternidae	15	0	0.00
Family Rynchopidae	1	0	0.00
Total	94	1	1.06
<i>Order Pteroclidiformes</i>			
Family Pteroclididae	6	0	0.00
Total	6	0	0.00
<i>Order Columbiformes</i>			
Family Columbidae	21	1	4.76
Total	21	1	4.76
<i>Order Psittaciformes</i>			
Family Psittacidae	6	2	33.33
Total	6	2	33.33
<i>Order Cuculiformes</i>			
Family Musophasgidae	5	1	20.00
Family Cuculidae	15	0	0.00
Total	20	1	5.00
<i>Order Strigiformes</i>			
Family Tytonidae	2	0	0.00
Family Strigidae	13	0	0.00
Total	15	0	0.00
<i>Order Caprimulgiformes</i>			
Family Caprimulgidae	13	0	0.00
Total	13	0	0.00
<i>Order Apodiformes</i>			
Family Apodidae	9	0	0.00
Total	9	0	0.00
<i>Order Coliiformes</i>			
Family Coliidae	2	0	0.00
Total	2	0	0.00
<i>Order Trogoniformes</i>			
Family Trogonidae	1	0	0.00
Total	1	0	0.00
<i>Order Coraciiformes</i>			
Family Alcedinidae	10	0	0.00
Family Meropidae	11	0	0.00
Family Coraciidae	5	0	0.00
Family Upupidae	1	0	0.00
Family Phoeniculidae	5	0	0.00
Family Bucerotidae	8	0	0.00
Total	40	0	0.00
<i>Order Piciformes</i>			
Family Capitonidae	11	1	9.09
Family Indicatoridae	5	0	0.00
Family Picidae	9	1	11.11
Total	25	2	8.00

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Group	Total species	Endemic species	% Endemic
<i>Order Passeriformes</i>			
Family Pittidae	1	0	0.00
Family Alaudidae	24	2	8.33
Family Hirundinidae	17	1	5.88
Family Motacillidae	14	1	7.14
Family Campephagidae	4	0	0.00
Family Pycnonotidae	4	0	0.00
Family Bombycillidae	1	0	0.00
Family Turdidae	46	2	4.35
Family Sylviidae	70	0	0.00
Family Muscicapidae	11	0	0.00
Family Monarchidae	6	0	0.00
Family Timaliidae	10	1	10.00
Family Paridae	3	1	33.33
Family Remizidae	2	0	0.00
Family Salpornithidae	1	0	0.00
Family Ploceidae	20	0	0.00
Family Zosteropidae	3	0	0.00
Family Oriolidae	4	1	25.00
Family Laniidae	25	0	0.00
Family Dicruridae	1	0	0.00
Family Corvidae	9	2	22.22
Family Sturnidae	21	1	4.76
Family Buphagidae	2	0	0.00
Family Passeridae	11	0	0.00
Family Ploceidae	34	0	0.00
Family Estrildidae	33	0	0.00
Family Pringillidae	15	5	33.33
Family Emberizidae	8	0	0.00
Total	404	17	4.21
<b>Overall Total</b>	<b>861</b>	<b>28</b>	<b>3.25</b>

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Notes to accompany the table of Bird occurrence in Wildlife Conservation Areas

Sources of names:

The scientific names used here are based upon those used in Urban & Brown (1971), and more recent revisions of African ornithological taxonomy, as communicated by Per Ole Syvertsen (in litt. 1992, 1993).

Sources of information:

The original source of information, as for mammals, was the species lists maintained by Ato Tesfaye Hundessa, presently Head of Conservation in the Ethiopian Wildlife Conservation Organisation (the "EWCO records" below, and "a" in the table. These have been gleaned from reports coming into EWCO over the years up to about 1987. No lists were available for the Birds of the Babilie (Harerghe) Elephant Sanctuary, Kuni-Muktar Mountain Nyala Sanctuary and Yabello Sanctuary.

This information is only as good and varied as the people in the field that have compiled the reports. Often their knowledge and experience has been limited at best, thus the reliability of reports on easily confused species cannot be ascertained.

This data has been supplemented and corroborated where possible from other more scientific sources. There is as yet no scientific treatment of the data available on bird distribution in Ethiopia, comparative to the "Catalogue of the Mammals of Ethiopia", although Dr John Ash is in the process of assembling an "Atlas of the Birds of Ethiopia". Only those records have been included here that add to our knowledge of the bird fauna of the Ethiopian Wildlife Conservation Areas (up to three records per species per area). This cannot therefore be taken as a complete record of those other sources' lists.

Where further specialised research has been carried out in an area, or the records of visits by recognised ornithologists, this data has been added, denoted by the letter/number used in the Table (up to a maximum of three):

- "a" - EWCO Wildlife Conservation Area species lists (Tefaye Hundessa, pers. com.);
- "b" - Bale Mountains National Park Management Plan (Hillman 1986a);
- "c" - J.C. Hillman, personal records, 1983-1992;
- "d" - Hareenna Forest Expedition, preliminary report (Hillman 1986b, and personal records);
- "e" - J.S. Ash & T.M. Gullick expedition 1989 (pers. com.);
- "f" - Per Ole Syvertsen, Awash National Park records (1990); Borana records (Syvertsen 1991); (pers. com. 1993);
- "g" - Per Ole Syvertsen, Abijatta-Shalla Lakes National Park waterfowl survey report (Syvertsen 1991);
- "h" - Simien Mountains National Park Management Plan (Hurni 1986);
- "j" - Yangudi-Rassa National Park bird report (Yilma Dellelegn 1989);
- "k" - Yabello Sanctuary bird report (Yilma Dellelegn 1990);
- "m" - Kuni-Muktar Mountain Nyala Sanctuary report (Abdurahiman Kubsa 1990);
- "n" - Peter Clement, Cygnus trip to Awash, Abijatta-Shalla Lakes and Bale Mountains National Parks (in litt. Feb 1991)

Bird Occurrence - 2

- "p" - David and Maryanne Mills, Naturetrek trip to Awash, Abijatta-Shalla  
Lakes and Bale Mountains National Parks (in litt. 1988);  
"q" - Steve Stephenson notes (in litt. 1978);  
"r" - J.S. Ash (1989);  
"s" - Clapham (1964);  
"t" - C.J. Jolly, New York University (in litt. 1986-1989);  
"u" - Nigel Redman, Birdquest, UK (in litt. Dec 1987, Nov 1988, & Nov 1990);  
"v" - K.D. Smith (1951, 1955, 1957);  
"w" - Urban & Boswell (1969);  
"x" - Alamargot (1988);  
"y" - J.S. Ash (in litt. 1987);  
"z" - Pia Nystrom, Washington University, St Louis (in litt. 1990);  
"1" - Duckworth et al (1992);  
"2" - Bolton (1969);  
"3" - Urban (1969);  
"4" - Löffler (1977);  
"5" - Dorst & Roux (1972);

Questionable species:

It is evident from the records, that there are certain groups of birds that are difficult for many observers to identify. This is evident in the paucity of records for various terrestrial bird groups, including in particular the Waders, Nightjars, Larks, Pipits, Warblers and Buntings. Conversely, other groups have been readily identified and concentrated upon, for example the birds of prey, so that a reasonable spread of information exists across all species and areas.

As many as three confirmations of a species' existence in a Wildlife Conservation Area have been included. Where only one record exists further clarification may be necessary, based as far as is possible upon scientific documentation - such as a photograph, tape-recording of the call, a specimen, or a very good description.

Birds which have been recorded, but require further clarification include:

<i>Circus gallicus</i>	YS
<i>Ardeotis arabs</i>	OM
<i>Streptopelia lugens</i>	YS
<i>Phoenicopterus purpureus</i>	YS
<i>Anthus caffer</i>	AS
<i>Cisticola ruficeps</i>	YS
<i>Nectarinia senegalensis</i>	YS
<i>Corvus capensis</i>	YS
<i>Passer griseus</i>	AW, AS, BM, MG, OM, KM

I am extremely grateful to Per Ole Syvertsen for his extensive comments on the lists and database, and for his considerable additions to the final outcome.

J.C. Hillman  
NYZS The Wildlife Conservation Society - International

Jan 1993

(jch vs7 a:birdoccr; 23 Mar 1993)

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Scientific Name	Determinator	English Name	Status	AW	AB	BK	DM	GM	MG	NC	OM	SM	YR	BB	KM	SS	YS	Total
Order Struthioniformes																		
Family Struthionidae - Ostrich																		
<i>Struthio camelus</i>	Linn.	Ostrich		ac				a	ac		ac		acj				fk	6
Order Podicipediformes																		
Family Podicipedidae - Grebes																		
<i>Tachybaptus ruficollis</i>	(Pallas).	Little Grebe		ae	aeq	ab4			a	a							fk	6
<i>Podiceps cristatus</i>	Linn.	Great-crested Grebe			2													1
<i>Podiceps nigricollis</i>	Brehm.	Black-necked Grebe		f	f					1								3
Order Procellariiformes																		
Family Procellariidae - Shearwaters																		
<i>Puffinus lherminieri</i>	Lesson	Perlan Gulf Shearwater																0
Order Pelecaniformes																		
Family Phaethonidae - Tropicbirds																		
<i>Phaethon aethereus</i>	Linn.	Red-billed Tropicbird																1
Family Bullidae - Boobies																		
<i>Sula dactylatra</i>	Lesson.	Masked Booby																0
<i>Sula leucogaster</i>	(Boddeert).	Brown Booby																1
Family Phalacrocoracidae - Cormorants																		
<i>Phalacrocorax carbo</i>	(Linn.).	Cormorant		f	aeq			a			a							4
<i>Phalacrocorax nigrogularis</i>	Ogilvie-Grant & Forbes.	Boootran Cormorant																0
<i>Phalacrocorax africanus</i>	Gmelin.	Long-tailed Cormorant		ae	ae2	c					at	a						6
Family Anhingidae - Darters																		
<i>Anhinga rufa</i>	(Daudin).	African Darter		ae	ae			a	a	at								5
Family Pelecanidae - Pelicans																		
<i>Pelecanus onocrotalus</i>	Linn.	Great White Pelican		an	acg			a		1								4
<i>Pelecanus rufescens</i>	Gmelin.	Pink-backed Pelican		an	acg			avw	aq	at							f	6
Family Fregatidae - Frigate-birds																		
<i>Fregata ariel</i>	(Gray).	Lesser Frigate-bird																0
Order Ciconiiformes																		
Family Ardeidae - Herons, Bitterns, Egrets																		
<i>Botaurus stellaris</i>	(Linn.).	Bittern																0
<i>Ixobrychus minutus</i>	(Linn.).	Little Bittern			a				a									2
<i>Ixobrychus sturmi</i>	(Wagler).	African Dwarf Bittern			2													2
<i>Nycticorax nycticorax</i>	(Linn.).	Night Heron		at	af			a	a	1	a							6
<i>Nycticorax leucorotus</i>	(Wagler).	White-backed Night Heron																0
<i>Butorides striatus</i>	(Linn.).	Green-backed Heron		an	a			sw		1	a							7
<i>Ardeola ralloides</i>	(Boopoll).	Squacco Heron		a	aeq				a	a	at	a		a			f	7
<i>Bubucus ibis</i>	(Linn.).	Cattle Egret		af	aq2	ab			a	a	at	a		a			fk	9
<i>Egretta ardesiaca</i>	(Wagler).	Black Heron			ae2													1
<i>Egretta gularis</i>	(Boac)	Reef Heron						svw										1
<i>Egretta garzetta</i>	(Linn.).	Little Egret		af	aeq		x	a	a	at	a		a					6
<i>Egretta intermedia</i>	(Wagler).	Yellow-billed Egret		a	an2				a	a	a	a						6
<i>Egretta alba</i>	(Linn.).	Great White Egret		an	acg	ab	v	a	a	at	a		a				f	10

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Scientific Name	Determinator	English Name	B	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	BS	KM	ES	YS	Total
<i>Ardea cinerea</i>	Linn.	Grey Heron		aan	q25	ab	x	a	a	a1			aj				fk	9
<i>Ardea melanocephala</i>	Vigors & Children.	Black-headed Heron		ae	23	ab5	v	a	a	a1	a		a				fk	9
<i>Ardea goliath</i>	Cretschmer.	Goliath Heron		an	608		svw	a	a	a1			a					7
<i>Ardea purpurea</i>	Linn.	Purple Heron		aan	an			a	a	a1								5
Family Balaenicipitidae - Whale-headed Stork																		
<i>Balaeniceps rex</i>	Gould.	Whale-headed Stork		T				aq										1
Family Scopidae - Hammerkop																		
<i>Scopus umbretta</i>	Gmelin.	Hammerkop		an	aan	abd		a	a	a1	a	a	aj				f	10
Family Ciconiidae - Storks																		
<i>Mycteria ibis</i>	(Linn.)	Yellow-billed Stork		aan	ag2		v	a	a	a1	a		aj				i	9
<i>Ciconia nigra</i>	(Linn.)	Black Stork		a		ab5							h				a	4
<i>Ciconia abdimi</i>	(Lichtenstein).	Abdim's Stork		a	oag	abd	vw	a	a	a1	a		h				a	10
<i>Ciconia episcopus</i>	(Boddaert).	Woolly-necked Stork		a	a			a	a	a1	a						af	6
<i>Ciconia ciconia</i>	(Linn.)	White Stork		a	a5	ab												6
<i>Ephippiorhynchus senegalensis</i>	(Shaw).	Saddle-billed Stork		an	ac2		v	aq	a	a1	a		aj					8
<i>Anastomus lamelligerus</i>	Temminck.	Open-bill Stork						a	a	a1	a							3
<i>Leptoptilos crumeniferus</i>	(Lesson).	Marabou		ae	oag	ab		aq	a	a1	a		aj				f	9
Family Threskiornithidae - Ibis, Spoonbills																		
<i>Plegadis falcinellus</i>	(Linn.)	Glossy Ibis		af	oag			a	a	a1	a		aj					8
<i>Bostrychia carunculata</i>	(Rüppell).	Wattled Ibis		a	oag	(bd)		a	a	a1	a		ach	a		m		8
<i>Bostrychia hagedash</i>	(Latham).	Hageda Ibis		af	oag	d		a	a	a1	a		aj					8
<i>Geronticus eremita</i>	(Linn.)	Waldraup																0
<i>Threskiornis aethiopicus</i>	(Latham).	Sacred Ibis		af	oag	abc	x	a	a	a1	a		aj				f	9
<i>Platalea alba</i>	Boopis.	African Spoonbill		a	oag		w										f	5
<i>Platalea leucorodia</i>	Linn.	Spoonbill		a		c	svw										f	4
Order Phoenicopteriformes																		
Family Phoenicopteridae - Flamingoes																		
<i>Phoenicopterus ruber</i>	Linn.	Greater Flamingo		an	oag		cvx											3
<i>Phoenicopterus minor</i>	(Geoffroy).	Lesser Flamingo		an	oag													4
Order Anseriformes																		
Family Anasidae - Ducks, Geese																		
<i>Dendrocygna bicolor</i>	(Vieillot).	Fulvous Tree Duck			a					a								2
<i>Dendrocygna viduata</i>	(Linn.)	White-Isoed Tree Duck		ae	a2			a	a				aj				fk	6
<i>Cyanochen cyanoptera</i>	(Rüppell).	Blue-winged Goose		E		ab5												1
<i>Nyroca aegyptiaca</i>	(Linn.)	Egyptian Goose		ae	oag	abd		a	a	a1	a		aj				fk	9
<i>Tadorna ferruginea</i>	(Pallas).	Ruddy Shelduck			3	abc												2
<i>Plectropterus gambensis</i>	(Linn.)	Spur-winged Goose			ae2			a										2
<i>Sarkidornis melanotos</i>	(Pennant).	Knob-billed Goose		a	23			a	a								fk	6
<i>Nettion auritus</i>	(Boddaert).	Pygmy Goose			e													2
<i>Anas sparsa</i>	Eyton.	Black Duck				abd							ah					2
<i>Anas penelope</i>	Linn.	Wigeon		a	oag	ab												3
<i>Anas strepera</i>	Linn.	Gadwall																0
<i>Anas crecca</i>	Linn.	Common Teal			oag	ab4												2

Scientific Name	Determinator	English Name	Blacks	AW	AS	BM	DM	CM	BQ	NC	OL	SM	YR	BB	KM	SB	YB	Total
<i>Anas capensis</i>	Gmelin.	Cape Wigeon		a	ag2													2
<i>Anas undulata</i>	Dubois.	Yellow-billed Duck		a	a	cb4												3
<i>Anas platyrhynchos</i>	Linn.	Mallard																0
<i>Anas acuta</i>	Linn.	Pintail			ag2	ab4												3
<i>Anas erythrorhynchos</i>	Gmelin.	Red-billed Duck		a	c2													3
<i>Anas hottentota</i>	Eyton.	Hottentot Teal		a	a23													2
<i>Anas querquedula</i>	Linn.	Garganey		ae	a23	ly		a		l								6
<i>Anas clypeata</i>	Linn.	Shoveler		a	aeq	ab4	c											4
<i>Anas amihii</i>	Hartert.	Cape Shoveler		a														1
<i>Nettion erythrophthalma</i>	(Wied.)	African Pochard		a	4			a										4
<i>Aythya ferina</i>	Linn.	Pochard			23	ab												2
<i>Aythya nyroca</i>	(Güldenstädt).	White-eyed Pochard			3													1
<i>Aythya fuligula</i>	(Linn.)	Tufted Duck			a23	ab4												2
<i>Oxyura mecooa</i>	(Eyton).	Mecooa Duck			n23	4												2
<i>Thalassornis leuconotus</i>	Eyton.	White-backed Duck		e														2
Order Acipitiformes																		2

Family Accipitridae - Hawks, Vultures, Eagles

<i>Accipiter cuculoides</i>	Swainson.	African Cuckoo-hawk								1								1
<i>Pernis ptilorhynchus</i>	(Linn.)	Honey Buzard				ce												1
<i>Miccothorax acritus</i>	Westerman	Bat Hawk		a						1								1
<i>Elaenia caerulea</i>	(Desfontaines).	Black-shouldered Kite		an	2	ab	av			a1	a	h	l			af	efk	10
<i>Chelictinia riocourii</i>	(Vieillot)	Swallow-tailed Kite		af						1	a		l				c	5
<i>Milvus migrans</i>	(Boddaert).	Black Kite		aan	aan	abd	avw	a	a	a1	a	ah	aj		m	a	efk	13
<i>Haliaeetus vocifer</i>	(Daudin).	African Fish Eagle		af	aeq	d5		a	a	a1	a		aj					9
<i>Gyps barbatus</i>	(Linn.)	Lammergeier		af	a	ab5				a1		ach			m			8
<i>Neophron percnopterus</i>	(Linn.)	Egyptian Vulture		ae	a2	ebc	avw		a	a1	a	ah	aj		m	a	l	12
<i>Gyps africanus</i>	Salvadori.	Hooded Vulture		ae	ac2	abd	v	a	a	a1	a	ach	aj		m	a	kl	13
<i>Gyps fulvus</i>	(Hablitz).	African White-backed Vulture		af	a2	abd		a	a	a1	a		l					9
<i>Gyps rueppellii</i>	(Brahm).	Griffon Vulture								a			l					3
<i>Torgos tracheliotus</i>	(Forster).	Rüppell's Griffon		aan	a2	abe		a		a1	a	ah	aj					9
<i>Trigonocaps occipitalis</i>	(Burchell).	Lappet-faced Vulture		aan	a2	c5		a	a	a1	a	ah						10
<i>Circus pallidus</i>	(Gmelin).	White-headed Vulture		ae	2	abd	v		a	a1	a		l			a	efk	10
<i>Circus pectoralis</i>	Smith.	European Short-toed Eagle			2	5				1		h						4
<i>Circus cinereus</i>	Vieillot.	Black-chested Snake-eagle		af	l	e		a	a	a	a		l			a	l	9
<i>Circus cinereocapillus</i>	von Müller.	Brown Snake-eagle		an						1	a							3
<i>Terathopus ecaudatus</i>	(Daudin).	Smaller Banded Snake-eagle		l						1	a							3
<i>Polyboroides typus</i>	Smith.	Bateleur		aan	a2	abd		a	a	a1	a		aj					9
<i>Circus aeruginosus</i>	(Linn.)	African Harrier Hawk		a	a2	abe		a	a	1			l					8
<i>Circus ranivorus</i>	(Daudin)	Marsh Harrier		a	an2	abe	av						l					5
<i>Circus mecorourus</i>	(Gmelin).	African Marsh Harrier																0
<i>Circus pygargus</i>	(Linn.)	Pallid Harrier		af	an2	ab	v		a			ah						8
<i>Melierax metabates</i>	Heuglin.	Montagu's Harrier		an	a2	ab	v			1	c		l					8
<i>Melierax canorus</i>	(Riessch).	Dark Chanting Goshawk		aan	l2					a1	a	h	l			af		7
		Pale Chanting Goshawk		an	a2	ab		a	a	a	a		aj					9

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Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	DM	MG	NC	OM	SM	YH	SS	KM	SS	YS	Total
<i>Mallerax gabor</i>	(Daudin).	Gaber Goshawk		a	ac2	e				l	a						fk	6
<i>Accipiter melanoleucus</i>	Smith.	Great Sparrow-hawk		u		cy			a	l		h	a				e	7
<i>Accipiter ovanensis</i>	Gurney.	Ovambo Sparrow-hawk								l								1
<i>Accipiter nisus</i>	(Linn.).	European Sparrow-hawk									a						e	1
<i>Accipiter rufiventris</i>	Smith.	Rufous-breasted Sparrow-hawk			a	abe					a	h					e	5
<i>Accipiter minullus</i>	(Daudin).	African Little Sparrow-hawk		af	c	abd				l		h	a				f	7
<i>Accipiter techiro</i>	(Daudin).	African Goshawk				ab5				l								2
<i>Accipiter bedius</i>	(Gmelin).	Shikra		a			v			i							e	4
<i>Accipiter brevipes</i>	(Severtsov)	Levant Sparrow-hawk																0
<i>Buteo rufipennis</i>	(Sundevall).	Grasshopper Buzzard		af				a			a	h	a					5
<i>Keupfalco monogrammicus</i>	(Temminck).	Lizard Buzzard									a							1
<i>Buteo buteo</i>	(Linn.).	Common Buzzard			a	ab1												2
<i>Buteo oreophilus</i>	Hartert & Neumann.	African Mountain Buzzard				abd												1
<i>Buteo rufinus</i>	Cretzschmar.	Long-legged Buzzard				ab			a			af						3
<i>Buteo auguralis</i>	Salvatore.	African Red-tailed Buzzard																0
<i>Buteo augur</i>	(Rüppell)	Augur Buzzard		af	a2	abd		a	a	a1	a	sch	a		m	af	efk	12
<i>Aquila pomarina</i>	Brahm.	Lesser Spotted Eagle			fn	n	fn											3
<i>Aquila clanga</i>	Pallas.	Greater-spotted Eagle																0
<i>Aquila rapax</i>	(Temminck).	Tawny Eagle		af	ac2	ab5			a	a1		ah	aj		m	af	efk	10
<i>Aquila nipalensis</i>	Hodgson	Steppe Eagle			f				a		a							3
<i>Aquila heliaca</i>	Savigny.	Imperial Eagle			n	p												2
<i>Aquila wahibergii</i>	Sundevall.	Wahiberg's Eagle		af	2	c				l		h						5
<i>Aquila verreauxii</i>	Lesson.	Verreaux's Eagle		af	2	ab5				l		ch						5
<i>Hieraaetus pennatus</i>	(Gmelin).	Booted Eagle		af		e												2
<i>Hieraaetus spilogaster</i>	(Bonaparte)	African Hawk-Eagle		an	af				a	l	a	h						6
<i>Hieraaetus ayresii</i>	Gurney	Ayres' Hawk Eagle				abd												1
<i>Lophaaetus occipitalis</i>	(Daudin).	Long-crested Eagle		af	a2	de		a		a1	a		a				fk	6
<i>Stephanoaetus coronatus</i>	(Linn.).	Crowned Eagle			2	de		a	a		a							5
<i>Polemaetus bellioosus</i>	(Daudin).	Martial Eagle		ae				a		a1		h	a				fk	6
Family Pandionidae - Osprey																		
<i>Pandion haliaetus</i>	(Linn.).	Osprey			c		svw		a	l								4
Family Sagittariidae - Secretary Bird																		
<i>Sagittarius serpentarius</i>	(Miller).	Secretary Bird		a		ab	a	a	a	a1	a	ah	aj			a	fk	11
Order Falconiformes																		
Family Falconidae - Falcons																		
<i>Polybherax semitorquatus</i>	(A. Smith).	African Pygmy Falcon		af	c2						a		j				efk	5
<i>Falco naumanni</i>	Fleischer.	Lesser Kestrel		af	f2	y5	v		a	a			aj					7
<i>Falco rupicoloides</i>	A. Smith.	Greater Kestrel		a	c2					a1	a							4
<i>Falco tinnunculus</i>	(Hauglin).	Fox Kestrel		a		e	s				a	h						5
<i>Falco tinnunculus</i>	Linn.	Common Kestrel		ae	ae2	ab5	w	a		a1	a	ah			a	af		10
<i>Falco ardoalaceus</i>	Vieillot.	Grey Kestrel		l	f2				a	l	a							5
<i>Falco chicquara</i>	Daudin	Red-necked Falcon		a								h						2
<i>Falco vespertinus</i>	Linn.	Red-footed Falcon																0

Scientific Name	Determinator	English Name	Stas	AW	AS	BM	DM	GM	MD	NC	OM	SM	YH	BB	KM	SS	YS	Total
<i>Falco amurensis</i>	Radde	Eastern Red-footed Falcon																0
<i>Falco subbuteo</i>	Linn.	European Hobby															fk	1
<i>Falco cuvieri</i>	Smith.	African Hobby		a		c5			a									3
<i>Falco eleonora</i>	Géné.	Eleonora's Falcon		u														1
<i>Falco concolor</i>	Temminck.	Sooty Falcon		a			svw				a							3
<i>Falco biarmicus</i>	Temminck.	Lanner Falcon		af	a2	abc	sw				a	ech					fk	7
<i>Falco cherrug</i>	Gray.	Saker Falcon	?															0
<i>Falco fasciatus</i>	Reichenow & Neumann.	Taita Falcon																0
<i>Falco peregrinus</i>	Tunstall.	Peregrine Falcon		a	af	cen				l		ah			a		l	7
<i>Falco peregrinoides</i>	Temminck	Barbary Falcon																0
Order Galliformes																		
Family Phasianidae - Francolin, Quails																		
<i>Alectoris melanoccephala</i>	(Rüppell).	Arabian Chukor																0
<i>Ammodramus hayi</i>	(Temminck).	Sand Partridge																0
<i>Francolinus coqui</i>	(Smith).	Coqui Francolin															e	1
<i>Francolinus sephaena</i>	(Smith).	Crested Francolin		an	a2	n		a	a	af	a		aj				efk	9
<i>Francolinus palli</i>	Gray.	Grey-wing		a		ab5												2
<i>Francolinus leucostriatus</i>	(Smith).	Archer's Grey-wing			a	e				l	a						l	5
<i>Francolinus harwoodi</i>	Blundell & Lovel.	Harwood's Francolin	E															0
<i>Francolinus clappertoni</i>	Children.	Clapperton's Francolin		a	a2	e											af	4
<i>Francolinus leucocapus</i>	(Gray).	Yellow-necked Spurwing		an				a	af	af		aj					efk	6
<i>Francolinus castaneicollis</i>	Salvadori.	Chestnut-naped Francolin				abd					a	ah			m			4
<i>Francolinus erckelli</i>	(Rüppell).	Erckel's Francolin		a							a	ah						3
<i>Francolinus squamatus</i>	Cassin	Scaly Francolin			2	c			a	a	a	a						5
<i>Coturnix coturnix</i>	(Linn.).	European Quail		ae	a	abv	v				a		j					6
<i>Coturnix delegorguei</i>	Delegorgue.	Harlequin Quail		ae				a		af	a					a	fk	6
<i>Coturnix chinensis</i>	Linn.	Blue Quail		a														1
<i>Ptilopus petrosus</i>	(Gmelin).	Stone-Partridge																0
Family Numididae - Guinea-fowls																		
<i>Numida meleagris</i>	(Linn.).	Tufted Guinea-fowl		an	ac2		v	a	a	af	a		aj				efk	9
<i>Acryllium vulturinum</i>	(Hardwicke).	Vulturine Guinea-fowl							a								efk	2
Order Gruiformes																		
Family Turnicidae - Button-quails																		
<i>Turnix sylvatica</i>	(Desfontaines).	Button Quail		ae				a		af	a	a					l	6
<i>Ortyxotis meffreni</i>	(Vallot).	Quail Plover																0
Family Rallidae - Rails, Crakes, Coots																		
<i>Rallus caerulescens</i>	Gmelin.	Kaffir Rail																0
<i>Rougetius rougetii</i>	(Guérin-Ménéville).	Rouget's Rail	E			abd												1
<i>Porzana porzana</i>	(Linn.).	Spotted Crake								a								1
<i>Porzana parva</i>	(Boopoll).	Little Crake																0
<i>Porzana pusilla</i>	(Pallas).	Ballon's Crake																0
<i>Limnocorax flavirostris</i>	(Swainson).	Black Crake		a	a2					af		j						4
<i>Crex crex</i>	Linn.	Corn Crake					v											1

Scientific Name	Determinator	English Name	AW	AS	BM	DM	GM	MG	NC	OM	SM	VR	SS	KM	SS	YS	Total
<i>Lymnocyptes minimus</i>	(Brünnloh).	Jack Snipe															0
<i>Gallinago gallinago</i>	(Linn.).	Common Snipe		ae	e	a											3
<i>Gallinago nigripennis</i>	Bonaparte	African Snipe	a	2	abe		a	a	a		h					f	8
<i>Gallinago media</i>	(Latham).	Great Snipe															0
<i>Limosa limosa</i>	(Linn.).	Black-tailed Godwit		ae2													2
<i>Limosa lapponica</i>	(Linn.).	Bar-tailed Godwit	a			wx											2
<i>Numenius phaeopus</i>	(Linn.).	Whimbrel		3		wx											2
<i>Numenius arquata</i>	(Linn.).	Curlew		a		CWX											2
<i>Tringa erythropus</i>	(Pallas).	Spotted Redshank	a	ae2													2
<i>Tringa totanus</i>	(Linn.).	Redshank	a	ae2		wx	a										5
<i>Tringa stagnatilis</i>	(Bechstein).	Marsh Sandpiper	an	aeg	ab		a		a		a					f	7
<i>Tringa nebularia</i>	(Gunnerus).	Greenshank	af	eg2	abn	wx			1	a						fk	7
<i>Tringa ochropus</i>	Linn.	Green Sandpiper	af	a23	abd	sv			1	a	h					f	7
<i>Tringa glareola</i>	Linn.	Wood Sandpiper	an	ae2	abe	a	a	a	1	a						fk	10
<i>Xenus cinereus</i>	(Güldenstädt)	Terek Sandpiper		a3		w											3
<i>Actitis hypoleucos</i>	Linn.	Common Sandpiper	ae	a23	abd	w		a	1	a	a					fk	10
<i>Arenaria interpres</i>	(Linn.).	Turnstone		a		CWX											3
<i>Phalaropus lobatus</i>	(Linn.).	Red-necked Phalarope															0
<i>Phalaropus fulicarius</i>	(Linn.).	Grey Phalarope															0
Family Stercorariidae - Skuas																	
<i>Stercorarius pomarinus</i>	(Temminck).	Pomarine Skua															0
<i>Stercorarius parasiticus</i>	(Linn.).	Aroto Skua		3													1
<i>Stercorarius skua</i>	(Brünnloh).	Great Skua															0
Family Laridae - Gulls																	
<i>Larus hemprichii</i>	(Bruch).	Sooty Gull				svw											1
<i>Larus leucophthalmus</i>	Temminck.	White-eyed Gull				svw											1
<i>Larus ichthyaetus</i>	(Pallas).	Great Black-headed Gull		af													1
<i>Larus ridibundus</i>	Linn.	Black-headed Gull		ae		CX											2
<i>Larus cirrocephalus</i>	Vieillot.	Grey-headed Gull	a	aeg	c		a		a		a					f	7
<i>Larus genei</i>	Brême.	Slender-billed Gull															0
<i>Larus fuscus</i>	Linn.	Lesser Black-backed Gull	a	agn		CWX											3
<i>Larus argentatus</i>	Pontoppidan.	Herring Gull		n													1
Family Sternidae - Terns																	
<i>Oelochelidon nilotica</i>	(Günell)	Gull-billed Tern		beg					1							f	4
<i>Sterna caspia</i>	Pallas	Caspian Tern		ace		svw										c	3
<i>Sterna bergii</i>	Lichtenstein.	Swift Tern				svw											1
<i>Sterna bengalensis</i>	Lesson.	Lesser-crested Tern				svw											1
<i>Sterna sandvicensis</i>	Latham.	Sandwich Tern															0
<i>Sterna dougalli</i>	Montagu.	Roseate Tern															0
<i>Sterna hirundo</i>	Linn.	Common Tern				s											1
<i>Sterna repressa</i>	Hartert.	White-cheeked Tern				sv											1
<i>Sterna anaethetus</i>	Scopoli.	Bridled Tern				svw											1
<i>Sterna albifrons</i>	Pallas.	Little Tern	a	e		s											3
<i>Sterna saundersi</i>	Hume	Saunders's Little Tern															0
<i>Chlidonias hybridus</i>	(Pallas)	Whiskered Tern	p	ae													2

Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OM	SM	YR	BB	KM	SS	YS	Total
<b>Family Burhinidae - Thickknees</b>																		
<i>Burhinus oedipnemus</i>	(Linn.)	Stone Curlew			n2					a								2
<i>Burhinus senegalensis</i>	(Swainson).	Senegal Thickknee		an	as3					1	a							5
<i>Burhinus capensis</i>	(Lichtenstein).	Spotted Thickknee		a	a		v	a		1			a				f	7
<i>Burhinus vermiculatus</i>	(Cabanis).	Water Thickknee																0
<b>Family Glareolidae - Coursers, Pratincoles</b>																		
<i>Pluvialis aegyptius</i>	(Linn.)	Egyptian Plover		a	2					a								3
<i>Cursorius cursor</i>	(Latham).	Cream-coloured Courser		a	2		v											3
<i>Cursorius temminckii</i>	Swainson.	Temminck's Courser		a	c23	y				a						a	fk	6
<i>Hemerodromus africanus</i>	(Temminck).	Two-banded Courser		a														2
<i>Hemerodromus cinctus</i>	Heuglin	Heuglin's Courser		af													f	2
<i>Rhinoptilus chelopterus</i>	(Temminck).	Violet-tipped Courser																0
<i>Glareola pratincola</i>	(Linn.)	Pratincole			as2													1
<i>Glareola nordmanni</i>	Flecher.	Black-winged Pratincole																0
<i>Glareola nuchalis</i>	(Gray).	Rock Pratincole																0
<i>Glareola ocularis</i>	Verreaux.	Madagascar Pratincole																0
<b>Family Charadriidae - Plovers</b>																		
<i>Charadrius dubius</i>	Boopoll.	Little Ringed Plover		af	asg	w	a										f	5
<i>Charadrius hiaticula</i>	Linn.	Ringed Plover		a	as2	vwx											f	5
<i>Charadrius pecuarius</i>	Temminck.	Kittitz's Sand-Plover		a	ang	a											af	4
<i>Charadrius tricollaris</i>	Vieillot.	Three-banded Plover		af	a	abe					a							5
<i>Charadrius alexandrinus</i>	Linn.	Kentish Plover		a	e	vw												3
<i>Charadrius mongolus</i>	Pallas.	Mongolian Sand-Plover			a													1
<i>Charadrius leucorhynchus</i>	Lesson.	Great Sand-Plover			3	vwx		a										3
<i>Charadrius asiaticus</i>	Pallas.	Caspian Plover			3												f	2
<i>Pluvialis fulva</i>	(Gmelin)	Pacific Golden Plover			n													1
<i>Pluvialis squatarola</i>	(Linn.)	Grey Plover				wx												1
<i>Hoplopterus caucasiensis</i>	(Hartlaub).	Long-toed Lapwing						a										1
<i>Hoplopterus spinosus</i>	(Linn.)	Spur-winged Plover		as	asg			a	a	af	a						af	8
<i>Hoplopterus tectus</i>	(Boddaert).	Black-headed Plover		as		v												3
<i>Hoplopterus melanocephalus</i>	(Cretzschmar).	Black-winged Plover			n	abe											af	4
<i>Hoplopterus coronatus</i>	(Boddaert).	Crowned Lapwing		af	ecn	z				af	a						af	7
<i>Hoplopterus senegalius</i>	(Linn.)	Wattled Plover			as3					1							fk	3
<i>Hoplopterus melanocephalus</i>	(Rüppell).	Spot-breasted Plover	E			ab5						a						2
<i>Chettusia gregaria</i>	(Pallas).	Booby Plover																0
<b>Family Scolopacidae - Sandpipers</b>																		
<i>Calidris alba</i>	(Pallas).	Sanderling			a	w												2
<i>Calidris minuta</i>	(Leisler).	Little Sstnt		an	asg	e	cax	a	a	af							f	9
<i>Calidris temminckii</i>	(Leisler).	Temminck's Sstnt		fu	asg	p											f	5
<i>Calidris subminuta</i>	Middendorff.	Long-toed Sstnt			3													1
<i>Calidris melanotos</i>	(Vieillot).	Pectoral Sandpiper																0
<i>Calidris ferruginea</i>	(Pontoppidan).	Curlew Sandpiper		an	asg	w				1							f	6
<i>Calidris alpina</i>	(Linn.)	Dunlin			a													1
<i>Tringa leucostriata</i>	(Pontoppidan).	Broad-billed Sandpiper																0
<i>Philomechus pugnax</i>	(Linn.)	Ruff		af	as2	abe					a						f	5

Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OR	SM	YH	BB	KM	BS	YS	Total
Order Cuculiformes																		
Family Musophagidae - Turacos																		
<i>Tauraco leucotis</i>	(Rüppell)	White-cheeked Turaco			2	ab4		a	a	1	a	h					k	6
<i>Tauraco rufipollis</i>	(Salvadori)	Prince Rüppell's Turaco	E T															0
<i>Corythaeoides personata</i>	(Rüppell)	Bare-faced Go-away Bird			2					a1							efk	3
<i>Corythaeoides leucogaster</i>	(Rüppell)	White-bellied Go-away Bird		an	a2				a	a1	a	a					efk	7
<i>Ciridifer zonurus</i>	(Rüppell)	Eastern Grey Plantain-eater		an							a							2
Family Cuculidae - Cuckoos																		
<i>Clamator jacobinus</i>	(Boddaert)	Black-and-White Cuckoo		a						a		eh					fk	4
<i>Clamator levallantii</i>	(Swainson)	Levallant's Cuckoo									a							1
<i>Clamator glandarius</i>	(Linn.)	Great Spotted Cuckoo		a	2					a1								3
<i>Chrysococcyx caprius</i>	(Boddaert)	Didric Cuckoo		et	ac	ce				1			a1				k	6
<i>Chrysococcyx kileas</i>	(Stephens)	Kilias' Cuckoo		a	ac2	a				1	a						fk	6
<i>Chrysococcyx cupreus</i>	(Brewster)	Emerald Cuckoo				de5					a		a					3
<i>Ceuthmochares aereus</i>	(Vieillot)	Yellowbill								1								1
<i>Cuculus clamosus</i>	Latham	Black Cuckoo		a							a						k	3
<i>Cuculus solitarius</i>	Stephens	Red-chested Cuckoo		a		ebd					a		a				k	5
<i>Cuculus canorus</i>	Linn.	Cuckoo		a	ac					a1	a	h					k	6
<i>Cuculus gularis</i>	Stephens	African Cuckoo																0
<i>Centropus grillii</i>	Hartlaub	Black Coucal						a		e						a		3
<i>Centropus monachus</i>	(Rüppell)	Blue-headed Coucal																1
<i>Centropus senegalensis</i>	(Linn.)	Senegal Coucal		a														1
<i>Centropus superciliosus</i>	Hemprich & Ehrenberg	White-browed Coucal		an	ac2			a		a1	a	a					efk	7
Order Strigiformes																		
Family Tytonidae - Barn Owls																		
<i>Tyto alba</i>	(Scopoli)	Barn Owl		a	ac2						a						k	4
<i>Tyto capensis</i>	(Smith)	Cape Grass Owl																0
Family Strigidae - Owls																		
<i>Otus scops</i>	(Linn.)	European Scops Owl		a	a					a	1	a		a				6
<i>Otus senegalensis</i>	(Swainson)	African Scops Owl																0
<i>Otus leucotis</i>	(Temminck)	White-faced Scops Owl		fp	a	ebd				1	a							5
<i>Bubo capensis</i>	Smith	Cape Eagle-owl				ab5												1
<i>Bubo africanus</i>	(Temminck)	Spotted Eagle-owl		af	o			a		1	a		a				f	7
<i>Bubo lacteus</i>	(Temminck)	Verreaux's Eagle-owl		a	con	ub				1							f	5
<i>Scotopelia pell</i>	(Bonaparte)	Pel's Fishing Owl							a		a							2
<i>Glaucidium perlatum</i>	(Vieillot)	Pearl-spotted Owllet		a						1	a							3
<i>Nyctale noctua</i>	(Scopoli)	Little Owl																0
<i>Ciccaba woodfordii</i>	(Smith)	African Wood Owl		a	a	e				1	a							5
<i>Asio abyssinicus</i>	(Guérin-Ménéville)	Abyssinian Long-eared Owl				ab5												1
<i>Asio flammeus</i>	(Ponoppiden)	Short-eared Owl			a													1
<i>Asio capensis</i>	(Smith)	African Marsh Owl		p		ab				a	a							4

Scientific Name	Determinator	English Name	Status	AW	AS	BW	DM	GM	MG	SC	OM	SM	YH	BB	KM	SS	YS	Total
<i>Chlidonias niger</i>	(Linn.)	Black Tern		a														1
<i>Chlidonias leucopterus</i>	(Temminck)	White-winged Black Tern		e	aeq			a		af	a						f	7
<i>Anous stolidus</i>	(Linn.)	Noddy					s											1

Family Rynchopidae - Skimmers

<i>Rynchops flavirostris</i>	Vieillot	Skimmer				n3		v	a									3
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Order Pteroclidiformes

Family Pteroclididae - Sandgrouse

<i>Pterocles lichtensteini</i>	Temminck	Lichtenstein's Sandgrouse		acn														2
<i>Pterocles senegalus</i>	(Linn.)	Spotted Sandgrouse			q		vw											2
<i>Pterocles exustus</i>	Temminck	Chestnut-bellied Sandgrouse		an	ecn			a					e					4
<i>Pterocles decoratus</i>	Cabanis	Black-faced Sandgrouse		a	a								a					3
<i>Pterocles gutturalis</i>	Smith	Yellow-throated Sandgrouse		a	a					a	a		e					5
<i>Pterocles quadricinctus</i>	Temminck	Four-banded Sandgrouse		f							a							2

Order Columbiformes

Family Columbidae - Pigeons, Doves

<i>Columba livia</i>	Gmelin	Rock Dove (feral)																0
<i>Columba albitorques</i>	Rüppell	White-collared Pigeon	E			ab5						ach						2
<i>Columba guinea</i>	Linn.	Speckled Pigeon		ae	ace	abd		a	a	a1	a	ah	aj		m	af	ek	12
<i>Columba arquatrix</i>	Temminck	Olive Pigeon				abd				a1	a						af	4
<i>Aplopelia larvata</i>	(Temminck)	Lemon Dove				de				1								2
<i>Streptopelia capicola</i>	(Bundevall)	Ring-necked Dove		af	ae2			a	a	a1	a	a	aj		m	a	ek	11
<i>Streptopella roseogrisea</i>	(Bundevall)	Pink-headed Dove					svw											1
<i>Streptopella semitorquata</i>	(Rüppell)	Red-eyed Dove		an	ae2	de		a	a	a1	a					af	ek	10
<i>Streptopella decipiens</i>	(Hartlaub & Finch)	Mourning Dove		af	ace					1	a						af	6
<i>Streptopella vinacea</i>	(Gmelin)	Vinaceous Dove		a							a							2
<i>Streptopella turtur</i>	Linn.	Turtle Dove			a												f	3
<i>Streptopella lugens</i>	(Rüppell)	Pink-breasted Dove		a	a	abd						ah	a					5
<i>Streptopelia senegalensis</i>	(Linn.)	Laughing Dove		aan	ace				a	a1	a		aj			af	ek	8
<i>Streptopelia reichenowi</i>	(Erlanger)	White-winged Dove																0
<i>Oena capensis</i>	(Linn.)	Namaqua Dove		an	ae2		svw	a	a	a1	a		aj			f	ek	10
<i>Turtur tympanistris</i>	(Temminck)	Tambourine Dove				ce				a1	a						k	4
<i>Turtur aler</i>	(Linn.)	Blue-spotted Wood-Dove			ace	e				1	a							4
<i>Turtur chalcops</i>	(Vigler)	Emerald-spotted Wood-Dove		aan	a			a	a	a1	a						ek	6
<i>Turtur abyssinicus</i>	(Sharpe)	Black-billed Blue-spotted Wood-Dove		a					u									2
<i>Treron australis</i>	(Linn.)	Green Pigeon								a	a							3
<i>Treron waalia</i>	(Freyer)	Bruce's Green Pigeon		ae	a					1	a						f	6

Order Psittaciformes

Family Psittacidae - Parrots, Lovebirds

<i>Polocephalus flavifrons</i>	(Rüppell)	Yellow-fronted Parrot	E		a	abd												2
<i>Polocephalus meyeri</i>	(Cretzschmar)	Brown Parrot																1
<i>Polocephalus rufiventris</i>	(Rüppell)	Orange-bellied Parrot		af	c					a1	a						ek	5
<i>Pittacula krameri</i>	(Boopoll)	Rose-ringed Parakeet									a							1
<i>Agapornis fuscata</i>	(Stanley)	Black-winged Lovebird	E	ae	abd						a	h			m			5
<i>Agapornis pullaria</i>	(Linn.)	Red-headed Lovebird			c2													1

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Scientific Name	Determinator	English Name	BA	AW	AS	BM	DM	GM	MG	NC	OM	SH	YH	SB	KM	SS	YS	Total
<b>Family Meropidae - Bee-eaters</b>																		
<i>Merops hirundinus</i>	Lichtenstein	Swallow-tailed Bee-eater						a										1
<i>Merops albicollis</i>	Vieillot	White-throated Bee-eater		af					a	a	a		aj					5
<i>Merops pusillus</i>	Müller	Little Bee-eater		an	a2	cd		a	a	a1	a		aj		m	a	fk	11
<i>Merops variegatus</i>	Vieillot	Blue-breasted Bee-eater		an	a2	ce				1								4
<i>Merops orientalis</i>	Latham	Little Green Bee-eater											j					1
<i>Merops superciliosus</i>	Linn.	Olive Bee-eater		af	a		s				a		j					5
<i>Merops persicus</i>	Pallas	Blue-cheeked Bee-eater																0
<i>Merops epiastor</i>	Linn.	European Bee-eater		af	ace	acd	s			1	a	h				f	fk	9
<i>Merops rubicus</i>	Gmelin	Carmine Bee-eater		an	ac2			a	a	a	a		aj			af		6
<i>Merops revivillii</i>	Oustalet	Small Bee-eater		a														1
<i>Merops bulcocki</i>	Vieillot	Red-throated Bee-eater						a	a									2
<b>Family Coraciidae - Rollers</b>																		
<i>Coracias garrulus</i>	Linn.	European Roller		a								a						2
<i>Coracias abyssinica</i>	Hermann	Abyssinian Roller		ae	c2			a	a		a		aj					6
<i>Coracias caudata</i>	Linn.	Lilac-breasted Roller		a	af			a	a	a1	a		a			af	efk	9
<i>Coracias naevia</i>	Daudin	Rufous-crowned Roller		ae	c2			a		a1	a		aj			a	efk	6
<i>Eurystomus glaucurus</i>	(Müller)	Broad-billed Roller		a						a1	a							3
<b>Family Upupidae - Hoopoes</b>																		
<i>Upupa epops</i>	Linn.	Hoopoe		ae	af	abe	aw	a	a	af	a	h	aj			a	fk	12
<b>Family Phoeniculidae - Wood-hoopoes</b>																		
<i>Phoeniculus purpureus</i>	(Miller)	Green Wood-hoopoe		af	ac			a	a	a	a		aj			a		8
<i>Phoeniculus somaliensis</i>	(Ogilvie-Grant)	Black-billed Wood-hoopoe		a	af											f	af	4
<i>Phoeniculus grartii</i>	(Neumann)	Violet Wood-hoopoe		n							a							2
<i>Phoeniculus aethiopicus</i>	(Stephens)	Black Wood-hoopoe		a	ace					1	a	h					k	6
<i>Phoeniculus minor</i>	(Rüppell)	Abyssinian Scimitar-bill		a							a						f	3
<b>Family Bucconidae - Hornbills</b>																		
<i>Tockus nasutus</i>	(Linn.)	Grey Hornbill		an	a			a	a	a1	a		j		m			8
<i>Tockus erythrorhynchus</i>	(Temminck)	Red-billed Hornbill		an	ac2			a	a	1	a	h	aj				efk	8
<i>Tockus deckeni</i>	(Cabanis)	Von der Decken's Hornbill		a	ac2			a	a1	a	h	a					efk	6
<i>Tockus flavigularis</i>	(Rüppell)	Yellow-billed Hornbill		an	a			a		a	a		aj				efk	6
<i>Tockus henrici</i>	(Ehrenberg)	Hemprich's Hornbill		ae	ac2					1	a						ek	5
<i>Tockus sibaticus</i>	(Büttikofer)	Crowned Hornbill			2							h						2
<i>Bycanistes brevis</i>	Friedmann	Silvery-cheeked Hornbill			a2	abd		a	a	a1								5
<i>Bucorvus abyssinicus</i>	(Boddeert)	Abyssinian Ground Hornbill		ae	ac2	ab5		a	a1	a	h	aj			a	fk		10

Scientific Name	Determinator	English Name	Stabe	AW	AS	BM	DM	GM	MD	NC	OM	SB	YH	SB	KM	SB	YH	Total	
<b>Order Caprimulgiformes</b>																			
<b>Family Caprimulgidae - Nightjars</b>																			
<i>Caprimulgus inornatus</i>	Heuglin	Plain Nightjar		a							a							2	
<i>Caprimulgus nubicus</i>	Lichtenstein	Nubian Nightjar		u														2	
<i>Caprimulgus europaeus</i>	Linn.	European Nightjar			a						a							2	
<i>Caprimulgus aegyptius</i>	Lichtenstein	Egyptian Nightjar			a													1	
<i>Caprimulgus fraenatus</i>	Salvadori	Northern Dusky Nightjar		a	a			a		a1	a							5	
<i>Caprimulgus donaldsoni</i>	Sharpe	Donaldson Smith's Nightjar								1								1	
<i>Caprimulgus poliocephalus</i>	Rüppell	Abyssinian Nightjar		a	a	ab5					a							4	
<i>Caprimulgus stellatus</i>	Blundell & Lovat	Star-spotted Nightjar		an	2					1								-	
<i>Caprimulgus tristigma</i>	Rüppell	Freckled Nightjar		a		c					a							3	
<i>Caprimulgus clerus</i>	Reichenow	Slender-tailed Nightjar		p						1								2	
<i>Caprimulgus cilimecurus</i>	Vieillot	Long-tailed Nightjar		a														1	
<i>Caprimulgus natalensis</i>	Smith	White-tailed Nightjar																0	
<i>Macrodipteryx longipennis</i>	(Shaw)	Standard-wing Nightjar		a				a			a							3	
<b>Order Apodiformes</b>																			
<b>Family Apodidae - Swifts</b>																			
<i>Apus myiophilus</i>	(Salvadori)	Scarce Swift				e			1	a								3	
<i>Apus apus</i>	(Linn.)	Common Swift										h						1	
<i>Apus nyanzae</i>	(Reichenow)	Nyanza Swift		a		ab5		a		a1			h					5	
<i>Apus melba</i>	(Linn.)	Alpine Swift		af		abc				1			h				f	5	
<i>Apus sequetorialis</i>	(Müller)	Mottled Swift		a		e			a	1			h				f	7	
<i>Apus horus</i>	(Heuglin)	Horus Swift		a	af					1								4	
<i>Apus cafer</i>	(Lichtenstein)	White-rumped Swift		f	c					1				a			k	4	
<i>Apus illinia</i>	(Gray)	Little Swift		an	a					1							k	5	
<i>Cypselurus parvus</i>	(Lichtenstein)	Palm Swift		an		e			a	1								5	
<b>Order Coliiformes</b>																			
<b>Family Coliidae - Mousebirds</b>																			
<i>Colius striatus</i>	Gmelin	Speckled Mousebird		af	a2	abd			a	a1	a			a1		m	af	efk	10
<i>Colius macrourus</i>	(Linn.)	Blue-naped Mousebird		an	an2				a	a	a1	a		a1			a	fk	9
<b>Order Trogoniformes</b>																			
<b>Family Trogonidae - Trogon</b>																			
<i>Apaloderma narina</i>	(Stephens)	Narina's Trogon			2	abd				a1	a								4
<b>Order Coraciiformes</b>																			
<b>Family Alcedinidae - Kingfishers</b>																			
<i>Halcyon senegalensis</i>	(Linn.)	Woodland Kingfisher		an	ae2			a	a	a1	a								7
<i>Halcyon malimbica</i>	(Shaw)	Blue-breasted Kingfisher																	0
<i>Halcyon cheilicut</i>	(Stanley)	Striped Kingfisher		ae	an				a		a1	a						fk	7
<i>Halcyon chloris</i>	(Boddaert)	White-collared Kingfisher					av												1
<i>Halcyon leucocapala</i>	(Müller)	Grey-headed Kingfisher		af	ace			a	a	a1	a							f	8
<i>Acledo semitorquata</i>	Bwalnson	Half-collared Kingfisher				de			a		a								3
<i>Acledo cristata</i>	(Pallas)	Malachite Kingfisher		an	ae2					1	a			a1					5
<i>Ceryx picta</i>	(Boddaert)	Pygmy Kingfisher		an	a2	d		a	a	a1	a								8
<i>Ceryle rudis</i>	(Linn.)	Pied Kingfisher		an	ac0	ab		a	a	a1	a							f	9
<i>Ceryle maxima</i>	(Pallas)	Giant Kingfisher		a	a			a	a	1	a								0

Scientific Name	Determinator	English Name	State	AW	AB	BM	DM	GM	MG	HC	CM	SM	VN	BS	KM	SS	YS	Tota.
<i>Eremophila leucolla</i>	(Sclater)	Chestnut-backed Sparrow-Lark		a	e			a									f	4
<i>Ammomanes deserti</i>	(Lichtenstein)	Desert Lark																0
<i>Aeoloman aegyptius</i>	(Desfontaine)	Hoopoe-Lark					sv											1
<i>Melanocorypha bimaculata</i>	(Ménétriés)	Calandra Lark																0
<i>Calandrella cinerea</i>	(Gmelin)	Red-capped Lark				y						ah	a			a		4
<i>Calandrella brachydactyla</i>	(Leisler)	Short-toed Lark					v											1
<i>Calandrella somalica</i>	(Sharpe)	Rufous Short-toed Lark															k	1
<i>Calandrella personata</i>	(Sharpe)	Masked Lark		t														1
<i>Pseudaeoloman tremantillii</i>	(Phillips)	Short-tailed Lark															f	1
<i>Galerida cristata</i>	(Linn.)	Crested Lark		a			sw				a							3
<i>Galerida theklae</i>	(Brehm)	Short-crested Lark				ben							ah					3
Family Hirundinidae - Swallows, Martins																		
<i>Pipera pumila</i>	(Vieillot)	African Sand Martin		an	ae	d5		a	a	at		h	j				k	9
<i>Pipera riparia</i>	(Linn.)	Sand Martin		p	ae		s			t	a	h	j			a	f	9
<i>Pipera cinerea</i>	(Doddart)	Bardot Martin		af	a	ab												3
<i>Hirundo griseopygia</i>	Burdevall	Grey-rumped Swallow				y												1
<i>Hirundo fuliginea</i>	Lichtenstein	African Rock Martin		ep	f	ab5				t		ah					k	6
<i>Hirundo rupestris</i>	Burdevall	European Crag Martin				y												1
<i>Hirundo rustica</i>	Linn.	Swallow		et	ae2	abd	vw	a		at	a	h	j			af	fk	11
<i>Hirundo lucida</i>	Hartlaub	Red-cheeked Swallow				y5												1
<i>Hirundo smithii</i>	Leach	Wire-tailed Swallow		an				a	a	t								6
<i>Hirundo aethiopica</i>	Blanford	Ethiopian Swallow		ae						a								3
<i>Hirundo megalena</i>	Benson	White-tailed Swallow		E	T												efk	1
<i>Hirundo senegalensis</i>	Linn.	Mosque Swallow			a					t							fk	3
<i>Hirundo daurica</i>	Linn.	Red-rumped Swallow		ae	ae2	abe						h					f	5
<i>Hirundo abyssinica</i>	Quérin-Ménéville	Striped Swallow		an	2					a	at						efk	7
<i>Oelchion urbica</i>	(Linn.)	House Martin		t	e					t	s	h	a				k	6
<i>Psalidoprocne pristoptera</i>	(Rüppell)	Rough-winged Swallow			a2	abd		a		t		h	a				k	7
<i>Psalidoprocne albiceps</i>	Sclater	White-headed Rough-winged Swallow																0
Family Motacillidae - Wagtails, Pipits																		
<i>Arthus novaezealandiae</i>	(Gmelin)	Richard's Pipit		a	ae2	ae												3
<i>Arthus campestris</i>	(Linn.)	Tawny Pipit		a			v											2
<i>Arthus leucophrys</i>	Vieillot	Plain-backed Pipit			af					t						af	fk	4
<i>Arthus similis</i>	Jerdon	Long-billed Pipit		eru													f	2
<i>Arthus cafer</i>	Burdevall	Little Tawny Pipit															f	1
<i>Arthus trivialis</i>	Linn.	Tree Pipit		a	a	abd				t						a	f	7
<i>Arthus cervinus</i>	(Pallas)	Red-throated Pipit			ae	abe											f	3
<i>Imatohylecus tenellus</i>	(Cabanis)	Golden Pipit						a										1
<i>Macronyx flavicollis</i>	Rüppell	Abyssinian Longjaw		E		abe						h						2
<i>Motacilla flava</i>	Linn.	Yellow Wagtail		ae	ae2	abd	svw	a	a	at	a	ah	af			af	efk	12
<i>Motacilla cinerea</i>	Tunstall	Grey Wagtail		af		abe			a	t		ah						5
<i>Motacilla alba</i>	Sharpe	Mountain Wagtail		ft		abd			a	t		ah						5
<i>Motacilla alba</i>	Linn.	White Wagtail		af	ae2	abd	vw										f	6
<i>Motacilla eguimp</i>	Dumont	African Pied Wagtail		af	ae2			a	t	a								6

Scientific Name	Determinator	English Name	Status	AW	AB	BM	DM	GM	MD	HC	GM	SM	YR	BB	KM	SS	YS	Total	
<b>Order Piciformes</b>																			
<b>Family Capitonidae - Barbets</b>																			
<i>Lybhus bidentatus</i>	(Shaw)	Double-toothed Barbet			2			a	a	af	a							5	
<i>Lybhus guilloberti</i>	Hermann	Black-billed Barbet		an	ae			a	a	af								6	
<i>Lybhus vielloti</i>	(Leach)	Viellot's Barbet																0	
<i>Lybhus undatus</i>	(Rüppell)	Banded Barbet	E	a	ee	d												3	
<i>Lybhus melanocephalus</i>	(Cretzschmar)	Black-throated Barbet		a				a			a							4	
<i>Lybhus diadematus</i>	(Heuglin)	Red-fronted Barbet		af	ae					af	a						fk	5	
<i>Pogonotus pusillus</i>	(Dunont)	Red-fronted Tinker-bird		an	ae	de				af	a						k	7	
<i>Pogonotus chrysoconus</i>	(Temminck)	Yellow-fronted Tinker-bird		a		e												2	
<i>Trachyphonus margaritatus</i>	(Cretzschmar)	Yellow-breasted Barbet		af														2	
<i>Trachyphonus darneaudi</i>	(Prévoet & Des Murs)	D'Arnaud's Barbet		an						a	a						efk	5	
<i>Trachyphonus erythrocephalus</i>	Cabanis	Red-and-yellow Barbet		a						a	af	a					a	6	
<b>Family Indicatoridae - Honey-guides</b>																			
<i>Indicator variegatus</i>	Lesson	Scaly-throated Honey-guide		a		e				l	a							4	
<i>Indicator indicator</i>	(Sperman)	Black-throated Honey-guide		a	2			a	a	af	a						fk	7	
<i>Indicator minor</i>	Stephens	Lesser Honey-guide		a		de				l	a						k	6	
<i>Prodotellus insignis</i>	(Cassin)	Cassin's Honey-bird																0	
<i>Prodotellus regulus</i>	Sundevall	Wahlberg's Honey-bird								l	a							2	
<b>Family Picidae - Woodpeckers</b>																			
<i>Jynx torquilla</i>	Linn.	Wryneck		n		ce												3	
<i>Jynx ruficollis</i>	Wagler	Red-breasted Wryneck				abe												1	
<i>Campethera rubica</i>	(Boddaert)	Nubian Woodpecker		an	an	e			a	l	a					a	fk	9	
<i>Campethera callisquall</i>	(Meyer)	Little Spotted Woodpecker							a									1	
<i>Dendropicos fuscescens</i>	Viellot	Cardinal Woodpecker		ae	ac					af							fk	6	
<i>Dendropicos abyssinicus</i>	Stanley	Golden-beaked Woodpecker	E	a		abd												2	
<i>Dendropicos obsolitus</i>	(Wagler)	Brown-beaked Woodpecker			2													1	
<i>Mesopicus goertae</i>	(Müller)	Grey Woodpecker		af	ac2	abd			a	l	a						af	7	
<i>Thriplex namaquus</i>	(Lichtenstein)	Bearded Woodpecker		af	ac2				a	a	af	a					l	7	
<b>Order Passeriformes</b>																			
<b>Family Pittidae - Pitta</b>																			
<i>Pitta angolensis</i>	Viellot	African Pitta																0	
<b>Family Alaudidae - Larks</b>																			
<i>Mirafra cantillans</i>	Blyth	Singing Bush-lark		ae													k	2	
<i>Mirafra albicauda</i>	Reichenow	White-tailed Bush-lark								l								1	
<i>Mirafra pulpa</i>	Friedmann	Friedmann's Bush-lark																0	
<i>Mirafra hypermetra</i>	(Reichenow)	Redwing Lark		af						a								3	
<i>Mirafra rufocinnamomea</i>	(Salvadori)	Flappet-lark		an					a		af	a					a	5	
<i>Mirafra collaris</i>	Sharpe	Collared Lark																0	
<i>Mirafra africanoides</i>	Smith	Fawn-coloured Lark		a														efk	2
<i>Mirafra gillettii</i>	Sharpe	Gillett's Lark																0	
<i>Mirafra poecilosterna</i>	(Reichenow)	Pink-breasted Lark																0	
<i>Mirafra degodiana</i>	Erard	Degodi Lark	E T															0	
<i>Heteromirafra aldamaensis</i>	(Erard)	Bidamo Long-eared Lark	E T															0	
<i>Eremopterix nigriceps</i>	(Oould)	White-fronted Sparrow-Lark		a			avw											3	
<i>Eremopterix signata</i>	(Oustalet)	Chestnut-headed Sparrow-Lark		a	a					a	a							6	

Scientific Name	Determinator	English Name	Stable	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	BS	KM	SS	YS	Total
<i>Oenanthe deserti</i>	(Temminck)	Desert Wheatear		a														2
<i>Oenanthe xanthopyrma</i>	(Ehrenberg)	Red-rumped Wheatear																0
<i>Oenanthe lugubris</i>	(Rüppell)	Abyssinian Black Wheatear		a	aE						a							3
<i>Oenanthe leucopyga</i>	(Brehm)	White-rumped Wheatear		a							a							2
<i>Monticola saxatilis</i>	(Linn.)	Rock-thrush		e	f	c5				a						a	ek	6
<i>Monticola solitarius</i>	(Linn.)	Blue Rock-thrush		e														1
<i>Monticola rufocinerea</i>	(Rüppell)	Little Rock-thrush		f	a	c												3
<i>Turdus pliggleae</i>	Bouvier	Abyssinian Ground Thrush		a		bda												2
<i>Turdus litalpallus</i>	(Smith)	Ground-scraper Thrush				abd						ah				a		3
<i>Turdus palios</i>	Bonaparte	African Thrush		u	a2	ce			a	1	a						ek	7
<i>Turdus olivaceus</i>	Linn.	Olive Thrush			a2	abd				1	a	h				a	k	7
<i>Turdus tephronotus</i>	Cabanis	Bare-eyed Thrush			2			a		a	a						e	5
<i>Turdus philomelos</i>	Brehm	Song Thrush																0
Family Sylviidae - Warblers																		
<i>Bredypterus baboecala</i>	(Vieillot)	Little Rush Warbler																0
<i>Bredypterus cinnamomeus</i>	(Rüppell)	Cinnamon Bracken-Warbler		a	a	abd				a		h						5
<i>Bredypterus affredi</i>	Hartlaub	Bamboo Warbler																0
<i>Schoenicola platyura</i>	(Jerdon)	Fan-tailed Warbler																1
<i>Parusoma boehmi</i>	Reichenow	Banded Tit-flycatcher																0
<i>Parusoma lugens</i>	(Rüppell)	Brown Tit-flycatcher				e5												1
<i>Cisticola erythropus</i>	(Hartlaub)	Red-faced Cisticola				a				1	a					a		3
<i>Cisticola cartusii</i>	(Heuglin)	Singing Cisticola								a1	a							3
<i>Cisticola chiniana</i>	(A. Smith)	Rattling Cisticola		a	ee	e				1	a					a	ek	7
<i>Cisticola bodessa</i>	Mearns	Boran Cisticola			e					1	a						e	3
<i>Cisticola galactotes</i>	(Temminck)	Winding Cisticola				abd				1								2
<i>Cisticola robusta</i>	(Rüppell)	Blout Cisticola							a			h						2
<i>Cisticola natalensis</i>	(Smith)	Creaking Cisticola																0
<i>Cisticola cinereola</i>	Salvadori	Ashy Cisticola		m							a						f	2
<i>Cisticola nana</i>	Fischer & Reichenow	Tiny Cisticola																1
<i>Cisticola ruficeps</i>	(Cretzschmar)	Red-pate Cisticola																0
<i>Cisticola brachyptera</i>	(Sharpe)	Bifling Cisticola																0
<i>Cisticola troglodytes</i>	(Antonori)	Foxy Cisticola																0
<i>Cisticola juncidis</i>	(Rafinesque)	Zitting Cisticola																1
<i>Cisticola aridula</i>	Witherby	Desert Cisticola							a	1								2
<i>Cisticola eximia</i>	(Heuglin)	Black-backed Cisticola																0
<i>Cisticola brunneiceps</i>	Heuglin	Pectoral-patch Cisticola		a		y												2
<i>Prinia gracilis</i>	(Lichtenstein)	Striped-back Prinia					av											1
<i>Prinia subflava</i>	(Omelin)	Tawny-fronted Prinia				af	abd		a	a1	a					a		6
<i>Prinia somalica</i>	(Ehrh)	Pale Prinia		t													e	2
<i>Heliolais erythroptera</i>	(Jardine)	Red-wing Warbler																0
<i>Apollia flevida</i>	(Strickland)	Black-breasted Apollia															ek	2
<i>Spiloptila clamans</i>	(Temminck)	Crickel Warbler																0
<i>Spiloptila rufifrons</i>	(Rüppell)	Red-faced Warbler		af														1
<i>Phylloscopus pulchellus</i>	(Cretzschmar)	Buff-bellied Warbler		ean	en2					a1							ek	4
<i>Comaroptera brevicaudata</i>	(Cretzschmar)	Grey-backed Comaroptera		af	a2	de				1	a						ek	7

Scientific Name	Determinator	English Name	AW	AS	BM	DM	GM	MG	RC	OM	SM	YH	SB	KM	BB	YB	Total	
Family Campephagidae - Cuckoo-shrikes:																		
<i>Coracina pectoralis</i>	(Jardine & Selby)	White-breasted Cuckoo-shrike							1								1	
<i>Coracina caesia</i>	(Lichtenstein)	Grey Cuckoo-shrike			a				a								2	
<i>Campephaga phoenicea</i>	(Latham)	Red-shouldered Cuckoo-shrike		a2	e				1	a							4	
<i>Campephaga flava</i>	Vieillot	Black Cuckoo-shrike	a						a1	a						fr	4	
Family Pycnonotidae - Bulbuls																		
<i>Pycnonotus barbatus</i>	(Desfontaines)	Black-capped Bulbul		aan	a2	abd		a	a	a1	a		a1			af	ek	10
<i>Andropedus importunus</i>	(Vieillot)	Zanzibar Sombre Greenbul																0
<i>Chlorocichla flavicollis</i>	(Swainson)	Yellow-throated Leaf-love																0
<i>Phyllastrephus streptans</i>	(Reichenow)	Northern Brownbul	a						1	a								3
Family Bombycolidae - Hypocollus																		
<i>Hypocollus ampellus</i>	Bonaparte	Grey Hypocollus																0
Family Turdidae - Thrushes																		
<i>Cercotrichas galactotes</i>	(Temminck)	Rufous Warbler		af														2
<i>Cercotrichas podobe</i>	(Müller)	Black Bush-robin	a			v												2
<i>Cercotrichas leucophrys</i>	(Vieillot)	White-winged Bush-robin	aan						a1	a						ek		4
<i>Cichladusa guttata</i>	(Heuglin)	Spotted Morning Warbler							1	a								2
<i>Cossypha natalensis</i>	Smith	Red-capped Robin-chat						a	1	a								3
<i>Cossypha semirufa</i>	(Rüppell)	Rüppell's Robin-chat				abd						h			m		k	4
<i>Cossypha heuglini</i>	Harterlaub	White-browed Robin-chat	a	ae			a		1	a	h	a						7
<i>Cossypha albicapilla</i>	(Vieillot)	White-crowned Robin-chat							a									1
<i>Cossypha niveicapilla</i>	(Lafresnaye)	Snowy-headed Robin-chat							a									1
<i>Lucinia lucinia</i>	(Linn.)	Spreeer		a														1
<i>Lucinia megarhynchos</i>	Brahm	Nighthale	ae	a								ah						3
<i>Lucinia evaeica</i>	(Linn.)	Bluethroat	n	a														2
<i>Irania gutturalis</i>	(Quérin-Ménéville)	White-throated Robin																1
<i>Phoenicurus ochruros</i>	(Gmelin)	Black Redstart		2														1
<i>Phoenicurus phoenicurus</i>	(Linn.)	Redstart	a	ae	abd											h		5
<i>Cercomela melanura</i>	(Temminck)	Black-tailed Rock-chat	ae			v												3
<i>Cercomela scotocerca</i>	(Heuglin)	Brown-tailed Rock-chat	u															1
<i>Cercomela dubia</i>	(Blundell & Lovell)	Sombre Rock-chat	af															1
<i>Cercomela familiaris</i>	(Stephens)	Red-tailed Chat	a				a	a										3
<i>Cercomela soritida</i>	(Rüppell)	Hill Chat		2	abd						ah							3
<i>Saxicola rubetra</i>	(Linn.)	Whinchat	a	a2					1	a					af	f		6
<i>Saxicola torquata</i>	(Linn.)	Stonechat		a	ab5						h				a	f		5
<i>Myrmecocichla cinnamomeiventris</i>	(Lafresnaye)	Cliff-chat	aan	1					1	a								4
<i>Myrmecocichla semirufa</i>	(Rüppell)	White-winged Cliff-chat	E	a	c5			a			h							4
<i>Myrmecocichla albilrons</i>	(Rüppell)	White-fronted Black Chat							1									1
<i>Myrmecocichla melaena</i>	(Rüppell)	Rüppell's Chat	E								a							1
<i>Oenanthe isabellina</i>	(Temminck & Langler)	Isabelline Wheatear	ae	an	ce	v			1		h				a	ef		9
<i>Oenanthe bottae</i>	(Bonaparte)	Red-breasted Wheatear	a		be5						ah							3
<i>Oenanthe oenanthe</i>	(Linn.)	Wheatear	a	a2	be		a		a1		h					ef		6
<i>Oenanthe philippei</i>	(Shelley)	Small Wheatear									ah							1
<i>Oenanthe pleochanta</i>	(Lepechin)	Pied Wheatear	ae	f	be	v					ah				a	ef		7
<i>Oenanthe cyriaca</i>	(Tomes)	Cyprus Wheatear																0
<i>Oenanthe hispanica</i>	(Linn.)	Black-eared Wheatear	u															1

## Ethiopian Birds - Occurrence in Wildlife Conservation Area

Scientific Name	Determinator	English Name	BL	AW	AS	BM	DM	DM	MD	NC	US	SE	YH	SS	KA	SM	YB	Total
<i>Melaneroria chocolina</i>	(Rüppell)	Abyssinia. Slaty Flycatcher			cd					1	a						efk	2
<i>Melaneroria edoloides</i>	(Swainson)	Black Flycatcher		a	en2													3
<i>Empidonax semipartitus</i>	(Rüppell)	Silver-bird		a	e	abd					a							5
<i>Bradornis microhynchus</i>	(Reichenow)	Grey Flycatcher		a	e	abd					a							4
<i>Bradornis pallidus</i>	(von Müller)	Pale Flycatcher		aen							a							1
<i>Hylota flavigaster</i>	Swainson	Yellow-bellied Flycatcher		a														
Family Monarchidae - Monarch Flycatchers																		3
<i>Batis orientalis</i>	(Meuglin)	Grey-headed Puff-back Flycatcher		enp	a													0
<i>Batis perkeo</i>	Neumann	Pygmy Puff-back Flycatcher		a	en2	d					a							5
<i>Batis minor</i>	Erlanger	Black-headed Puff-back Flycatcher		nz		de				a1	a							5
<i>Platystira cyanea</i>	(Müller)	Wattle-eye																0
<i>Trochocercus albonotatus</i>	Sharpe	White-tailed Crested Flycatcher		an	en2	abd			a	a	a1	a						9
<i>Terpalphone viridis</i>	(Müller)	Paradise Flycatcher																
Family Timaliidae - Babbler																		2
<i>Acippa abyssinica</i>	(Rüppell)	Abyssinian Hill-babbler					abd						h					2
<i>Parophaea galfreri</i>	(Quérin-Ménéville)	Abyssinian Catbird	E				abd						h					2
<i>Turdoides plebejus</i>	(Cretzschmar)	Brown Babbler																1
<i>Turdoides leucocephalus</i>	Cretzschmar	White-headed Babbler																0
<i>Turdoides squamulatus</i>	(Shelley)	Scaly Babbler																1
<i>Turdoides tenebrosus</i>	(Hartlaub)	Dusky Babbler			g	cd				1		ah			a1	ek		8
<i>Turdoides leucopygius</i>	(Rüppell)	White-rumped Babbler																0
<i>Turdoides fulvus</i>	(Desfontaines)	Fulvous Chatterer																6
<i>Turdoides rubiginosus</i>	(Rüppell)	Rufous Chatterer		an	en2					a	1	a						1
<i>Turdoides eymeri</i>	(Shelley)	Scaly Chatterer		a														
Family Paridae - Tits																		2
<i>Parus aler</i>	Gmelin	Grey Tit									1					a	ek	2
<i>Parus leucomeles</i>	Rüppell	Black Tit			a	ee												5
<i>Parus leucorotus</i>	Quérin-Ménéville	White-backed Black Tit	E				bde					ah			m			3
Family Hemizidae - Penduline Tits																		3
<i>Remiz musculus</i>	(Hartlaub)	Mouse-coloured Penduline Tit			an						1							0
<i>Remiz punctifrons</i>	(Sunderall)	Bennar Penduline Tit																
Family Salpinctidae - Spotted Creeper																		1
<i>Salpinctes obsoletus</i>	(Franklin)	Spotted Creeper									a							
Family Nectariniidae - Sunbirds																		3
<i>Anthreptes orientalis</i>	Hartlaub	Kenya Violet-backed Sunbird		a						1	a							5
<i>Anthreptes colvris</i>	(Vieillot)	Collared Sunbird									a1	a						2
<i>Anthreptes platurus</i>	(Vieillot)	Pygmy Sunbird		an														1
<i>Anthreptes metallicus</i>	(Lichtenstein)	Nile Valley Sunbird					v											3
<i>Nectarinia olivacea</i>	(Smith)	Olive Sunbird					de					ah	a					0
<i>Nectarinia amethystina</i>	(Shaw)	Amethyst Sunbird									1							2
<i>Nectarinia senegalensis</i>	(Linn.)	Scarlet-chested Sunbird		ee														0
<i>Nectarinia hurneri</i>	(Shelley)	Hunter's Sunbird		a	a2	be				a		a	h	a				8
<i>Nectarinia varzea</i>	(Shaw & Modder)	Variable Sunbird																0
<i>Nectarinia chloropygia</i>	(Jardine)	Olive-bellied Sunbird																1
<i>Nectarinia bifasciata</i>	(Shaw)	Purple-banded Sunbird																

Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	GU	HC	OM	SM	YR	BB	KM	SS	YE	Total
<i>Cameroptera simplex</i>	(Cabanis)	Grey Wren-warbler		soe						a1	a						ak	4
<i>Eremomela icteropygialis</i>	(Lafresnaye)	Yellow-bellied Eremomela		ent	on			a		a1	a					a	ent	6
<i>Eremomela flavicristata</i>	Sharpe	Yellow-vented Eremomela		a	a													2
<i>Eremomela canescens</i>	Antinori	Green-backed Eremomela																0
<i>Sylvietta brachyura</i>	Lafresnaye	Crombec		on	c2					1	a						k	6
<i>Sylvietta whyllii</i>	(Shelley)	Red-faced Crossbill		u	aa					1	a						f	5
<i>Sylvietta leucellina</i>	Elliot	Small Long-billed Crombec																0
<i>Sylvietta philippae</i>	Willama	Short-billed Crombec																0
<i>Locustella naevia</i>	(Boddaert)	Grasshopper Warbler		a														1
<i>Locustella thuioides</i>	(Wolf)	River Warbler			a													1
<i>Locustella luscinioides</i>	(Savi)	Savi's Warbler																0
<i>Acrocephalus schoenobaenus</i>	(Linn.)	Sedge Warbler			a												f	2
<i>Acrocephalus palustris</i>	(Bechstein)	Marsh Warbler			a													1
<i>Acrocephalus scirpaceus</i>	(Hermann)	Reed Warbler			aa													1
<i>Acrocephalus baeticatus</i>	(Vieillot)	African Reed Warbler																0
<i>Acrocephalus gracillirostris</i>	(Hartlaub)	Swamp Warbler			aa				a	1								3
<i>Acrocephalus stentoreus</i>	(Ehrenberg)	Southern Great Reed Warbler																0
<i>Acrocephalus griseldis</i>	(Hartlaub)	Baars Reed Warbler			a													1
<i>Acrocephalus arundinaceus</i>	(Linn.)	Great Reed Warbler			a	c												2
<i>Chloropeta natalensis</i>	Smith	Yellow Flycatcher		f														1
<i>Sphenocercus mentalis</i>	(Fraser)	Moustache Warbler																0
<i>Hippolais pallida</i>	(Ehrenberg)	Olivaceous Warbler		u	an					1								3
<i>Hippolais languida</i>	(Ehrenberg)	Upcher's Warbler		f	e													2
<i>Hippolais olivetorum</i>	(Bridland)	Olive-tree Warbler			a													1
<i>Hippolais icterina</i>	(Vieillot)	Icterine Warbler																0
<i>Sylvia mystacea</i>	Ménétriés	Ménétriés Warbler		e														1
<i>Sylvia ruficapilla</i>	Temminck	Rüppell's Warbler																0
<i>Sylvia nana</i>	(Ehrenberg)	Desert Warbler																0
<i>Sylvia leucomegala</i>	(Ehrenberg)	Red Sea Warbler																0
<i>Sylvia hortensis</i>	(Gmelin)	Orphean Warbler					v											1
<i>Sylvia nisoria</i>	(Bechstein)	Barred Warbler			a													1
<i>Sylvia curruca</i>	(Linn.)	Lesser White-throat		uf	e													2
<i>Sylvia communis</i>	Latham	White-throat		af	a	p	v									a	f	6
<i>Sylvia borin</i>	(Boddaert)	Garden Warbler			a	e											f	3
<i>Sylvia atricapilla</i>	(Linn.)	Blackcap		e	aa	e										a	k	6
<i>Phylloscopus umbrovirens</i>	(Rüppell)	Brown Woodland-warbler			a	abd				a1		ah					k	5
<i>Phylloscopus bonelli</i>	(Vieillot)	Bonelli's Warbler																0
<i>Phylloscopus collybita</i>	(Vieillot)	Chiffchaff			ae	enp	v									a		4
<i>Phylloscopus trochilus</i>	(Linn.)	Willow Warbler		af	ae	abd	e		a	1						a	f	8
Family Muscicapidae - Flycatchers																		
<i>Muscicapa striata</i>	(Pallas)	Spotted Flycatcher		af	a					1							f	5
<i>Muscicapa gambageae</i>	(Alexander)	Gambage Dusky Flycatcher				d												1
<i>Muscicapa edulis</i>	(Bate)	Dusky Flycatcher		a		abd					a	h	a			a		6
<i>Myiophobus plumbeus</i>	(Hartlaub)	Grey Tit-flycatcher		a						1								2
<i>Ficedula albicollis</i>	(Temminck)	Collared Flycatcher																0

Scientific Name	Determinator	English Name	BL	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	SS	KA	SS	YS	Total	
<b>Family Dromicidae - Drongo</b>																			
<i>Dicrurus adimilis</i>	(Bechstein)	Fork-tailed Drongo		aan	af				s	a	a1	a					af	efk	9
<b>Family Corvidae - Crows, Ravens</b>																			
<i>Ptilostomus alpestris</i>	(Linn.)	Plapiao																0	
<i>Zavattarloria stresemanni</i>	Moltoni	Stresemann's Bush-crow	B	T														efk	1
<i>Pyrrhocorax pyrrhocorax</i>	(Linn.)	Chough				bn							ah						2
<i>Corvus splendens</i>	Vieillot	Indian House-crow					avw												1
<i>Corvus albus</i>	Müller	Pied Crow		af	a2	b	v	a					ah	aj			a		8
<i>Corvus ruficollis</i>	Lesson	Brown-necked Raven				bc	x										af	3	
<i>Corvus capensis</i>	Lichtenstein	Cape Rook			a2	bcn							ah	a		m	af	6	
<i>Corvus rhizophidurus</i>	Hartert	Fan-tailed Raven		aan	ac2	bcn		a		a1	a		ah				a	efk	10
<i>Corvus crassirostris</i>	Rüppell	Thick-billed Raven		a	a2	bde			a	a1			ah	a		m		k	9
<b>Family Sturnidae - Starlings</b>																			
<i>Poocoptera stuhlmanni</i>	(Reichenow)	Stuhlmann's Starling																	0
<i>Onychognathus morio</i>	(Linn.)	Red-wing Starling			a2	bde			a	1	a	h						efk	7
<i>Onychognathus blythii</i>	(Hartlaub)	Small Chestnut-wing Starling		no		e													2
<i>Onychognathus tenuirostris</i>	(Rüppell)	Slender-billed Chestnut-wing Starling		a		bcn							ah						3
<i>Onychognathus albrostris</i>	(Rüppell)	White-billed Starling	B	a									ah						2
<i>Onychognathus salvedorii</i>	(Sharpe)	Bristle-crowned Starling		au															1
<i>Lamprolaima splendens</i>	(Vieillot)	Splendid Glossy Starling		2															2
<i>Lamprolaima chloroptera</i>	Swainson	Lesser Blue-eared Glossy Starling																	1
<i>Lamprolaima chalybaeus</i>	Ehrenberg	Blue-eared Glossy Starling		af	ac2	bc5		a	a	a1	a	h	aj			m	af	efk	12
<i>Lamprolaima purpuroptera</i>	Rüppell	Rüppell's Long-tailed Glossy Starling		an	ac2			a	a	a1	a							fk	9
<i>Cinnyricinclus leucogaster</i>	(Boddaert)	Violet-backed Starling		a						a1	a							e	4
<i>Cinnyricinclus sharpi</i>	(Jackson)	Sharpe's Starling			a	e													2
<i>Speulipator bicolor</i>	Reichenow	Magpie Starling																	1
<i>Spreo flacheri</i>	(Reichenow)	Fischer's Starling																	0
<i>Spreo albicapillus</i>	Blyth	White-crowned Starling		a														efk	3
<i>Spreo pulcher</i>	(Müller)	Chestnut-bellied Starling																	1
<i>Spreo shelleyi</i>	Sharpe	Shelley's Starling		a														efk	3
<i>Spreo superbus</i>	(Rüppell)	Superb Starling		an	acn					a1	a		aj				af	efk	7
<i>Cosmopsarus regius</i>	Reichenow	Golden-breasted Starling		ap						a								efk	3
<i>Sturnus vulgaris</i>	Linn.	European Starling																	0
<i>Crestophore cinerea</i>	(Neschen)	Wattled Starling		a	aan					a1	a		aj				1	efk	7
<b>Family Buphagidae - Ouzpeckers</b>																			
<i>Buphagus africanus</i>	Linn.	Yellow-billed Ouzpecker																	1
<i>Buphagus erythrorhynchus</i>	(Stanley)	Red-billed Ouzpecker		aa	ace	bc5				a1	a	h	aj				af	efk	9
<b>Family Passeridae - Sparrows</b>																			
<i>Passer mollellis</i>	Smith	Rufous Sparrow																efk	1
<i>Passer castaneopterus</i>	Blyth	Small Sparrow																1	2
<i>Passer griseus</i>	(Vieillot)	Grey-headed Sparrow																	1
<i>Passer swainsonii</i>	(Rüppell)	Swainson's Sparrow		aa	ace	bde		a		a	a	ah	aj				af	efk	10
<i>Passer porphyreus</i>	(Oustalet)	Parrot-billed Sparrow																	0
<i>Passer lituus</i>	(Lichtenstein)	Sudan Golden Sparrow																	0
<i>Passer eminibey</i>	(Hartlaub)	Chestnut Sparrow		a	a													af	3

Scientific Name	Determinator	English Name	Stabe	AW	AB	BM	DM	GM	MG	NC	OM	SM	VA	BB	KM	BS	YS	Total	
<i>Nectarinia mariquensis</i>	(Smith)	Mariqua Sunbird		af						1	a						fk	4	
<i>Nectarinia habessinica</i>	Ehrenberg	Shining Sunbird		an	2													3	
<i>Nectarinia cuprea</i>	(Shaw)	Copper Sunbird																0	
<i>Nectarinia tacaze</i>	(Stanley)	Tacaze Sunbird			a2	bde						ah	a				a	5	
<i>Nectarinia erythrocerca</i>	Hartlaub	Red-cheeked Sunbird											aj					1	
<i>Nectarinia pulchella</i>	(Linn.)	Beautiful Sunbird		an	a2			a		a1	a	h	aj				k	8	
<i>Nectarinia nectarinoides</i>	(Richmond)	Smaller Black-bellied Sunbird																0	
<i>Nectarinia femosa</i>	(Linn.)	Malachite Sunbird			a	bde				1	a	ah	a					8	
<i>Nectarinia killimensis</i>	Shelley	Bronze Sunbird											a					1	
Family Zosteropidae - White-eyes																			
<i>Zosterops abyssinica</i>	Guérin-Ménéville	White-breasted White-eye		ae		n					a	h						4	
<i>Zosterops senegalensis</i>	Bonaparte	Yellow White-eye				n		a			a	h					k	5	
<i>Zosterops poliostrata</i>	Hauglin	Green White-eye			2	bde						ah						3	
Family Oriolidae - Orioles																			
<i>Oriolus oriolus</i>	(Linn.)	Golden Oriole		fu	a	b	s		a									5	
<i>Oriolus aureus</i>	Vieillot	African Golden Oriole		a	2					a								3	
<i>Oriolus larvatus</i>	Lichtenstein	Black-headed Oriole		af	a2				a	a1	a		a				efk	7	
<i>Oriolus monacha</i>	(Gmelin)	Black-headed Forest Oriole	E		ae	bde			a				h					4	
Family Laniidae - Shrikes																			
<i>Eurocephalus rueppellii</i>	Bonaparte	White-crowned Shrike		aan	acon			a		a1	a		aj				af	efk	8
<i>Prionops plumata</i>	(Shaw)	Crested Halmet-shrike		an	a2				a	a1	a							fk	8
<i>Nilaus afer</i>	(Latham)	Northern Brubru		fn	an					1	a							efk	5
<i>Oryzocopus pringilli</i>	Jackson	Pringle's Puff-bank																e	1
<i>Oryzocopus gambensis</i>	(Lichtenstein)	Puff-back		a	a2	any		a		1	a							ek	8
<i>Tchagra minuta</i>	(Hartlaub)	Blackcap Bush-shrike		a					a										0
<i>Tchagra jamesi</i>	(Shelley)	Three-streaked Bush-shrike																	0
<i>Tchagra senegalae</i>	(Linn.)	Black-headed Bush-shrike		an	aa2			a		a1	a						a	k	7
<i>Rhodophanes cruentus</i>	(Ehrenberg)	Rose-patched Shrike		acon						a	a							fk	5
<i>Lanius ruficeps</i>	(Shelley)	Red-naped Bush-shrike									a								1
<i>Lanius aethiopicus</i>	(Gmelin)	Tropical Boubou		tz	2	abd				a1	a	h					f	ek	9
<i>Lanius erythrogastrer</i>	(Cretschmer)	Black-headed Goshawk						a			a								2
<i>Lanius funebris</i>	(Hartlaub)	Slate-coloured Boubou		an	a2					a1	a							efk	5
<i>Malaconotus sulfurepectus</i>	(Lesson)	Sulphur-breasted Bush-shrike		aan	a2	a				a1	a							fk	6
<i>Malaconotus blanchoti</i>	Stephens	Grey-headed Bush-shrike		px	a	e				1	a							k	6
<i>Lanius isabellinus</i>	Ehrenberg	Isabelline Shrike		f		e					a							f	3
<i>Lanius collurio</i>	Linn.	Red-backed Shrike		af	a	ab				a	a								5
<i>Lanius minor</i>	Gmelin	Lesser Grey Shrike																	1
<i>Lanius excubitor</i>	Linn.	Great Grey Shrike		an															1
<i>Lanius excubitoroides</i>	Prévost & Des Murs	Grey-backed Fiscal		a	ace	abd			a	a1	a						af	fk	9
<i>Lanius dorsalis</i>	Cabanis	Taita Fiscal								1								f	2
<i>Lanius somalicus</i>	Hartlaub	Small Fiscal		an															1
<i>Lanius collaris</i>	Linn.	Fiscal		af	a2	abd			e	a1	a	ah	a				a	efk	10
<i>Lanius senator</i>	Linn.	Woodhoop Shrike		af															1
<i>Lanius rubicus</i>	Lichtenstein	Nubian Shrike		np	af														2

Scientific Name	Determinator	English Name	Stou	AW	AS	BM	DM	GM	MG	NC	OM	SM	YH	BS	KM	SS	YS	Total
Family Estrildidae - Whydahs, Waxbills																		
<i>Vidua macroura</i>	(Pallas)	Pin-tailed Whydah		af	f	b				a1	a	ah	aj		m		k	9
<i>Vidua flacheri</i>	(Reichenow)	Flacher's Whydah		a													fk	2
<i>Vidua hypocherina</i>	Verreaux & Verreaux	Steel-blue Whydah		a	c					a							ek	4
<i>Vidua paradisaea</i>	(Linn.)	Paradise Whydah		ae						1	a							3
<i>Vidua orientalis</i>	Heuglin	Broad-tailed Paradise Whydah		a														1
<i>Hypochera chalybeata</i>	(Müller)	Indigo-bird		az	a					1								3
<i>Mandingoa nitidula</i>	(Hartlaub)	Green-backed Train-spot								1								1
<i>Cryptopiza salvadorii</i>	Reichenow	Abyssinian Crissal-wing		az		bds												2
<i>Amedina fasciata</i>	(Gmelin)	Cut-throat		an	so					a1	a						f	5
<i>Pytilia melba</i>	(Linn.)	Green-winged Pytilia		npz							a							3
<i>Pytilia alba</i>	(Gmelin)	Orange-winged Pytilia									a							1
<i>Pytilia phoenicoptera</i>	Swainson	Red-winged Pytilia																0
<i>Legonosticta larvata</i>	(Rüppell)	Black-faced Firefinch						a										1
<i>Legonosticta rufopicta</i>	(Fraser)	Bar-breasted Firefinch																0
<i>Legonosticta senegalensis</i>	(Linn.)	Red-billed Firefinch		etz	ac2					a1	a			j	m	f	f	8
<i>Legonosticta rhodoparia</i>	(Heuglin)	Jamieson's Firefinch								1								1
<i>Legonosticta rubricata</i>	(Lichtenstein)	African Firefinch		a					a		a		a					4
<i>Uraeginthus larchinogaster</i>	Reichenow	Purple Grenadier		af													ek	2
<i>Uraeginthus bangalus</i>	(Linn.)	Red-cheeked Condon-bleu		ae	a2	e		a		a1	a		a			a1	f	9
<i>Uraeginthus cyanocephalus</i>	(Richmond)	Blue-capped Condon-bleu																0
<i>Estrilda melanotos</i>	(Temminck)	Yellow-bellied Waxbill			a	bds		a	a				h	a		a	k	8
<i>Estrilda paludicola</i>	Heuglin	Fawn-breasted Waxbill		a						1								2
<i>Estrilda rhodopyga</i>	Sundevall	Crimson-rumped Waxbill		an	a2					1	a							4
<i>Estrilda troglodytes</i>	(Lichtenstein)	Black-rumped Waxbill				bds		a			a						efk	5
<i>Estrilda astrild</i>	(Linn.)	Waxbill																0
<i>Estrilda erythronotos</i>	(Vieillot)	Black-cheeked Waxbill		an	2					1							fk	4
<i>Ammodramus sublineatus</i>	(Vieillot)	Zebra Waxbill		a														2
<i>Ortygospiza atricollis</i>	(Vieillot)	Quail-finch																0
<i>Lonchura malabarica</i>	(Linn.)	Silver-bill		an														2
<i>Lonchura griseicapilla</i>	Delacour	Grey-headed Silver-bill															f	2
<i>Lonchura tringilloides</i>	(Lafresnaye)	Megpie Mannikin																0
<i>Lonchura bicolor</i>	(Fraser)	Black-and-white Mannikin				ds												1
<i>Lonchura cucullata</i>	(Swainson)	Bronze Mannikin		a	2			a		1								5
Family Fringillidae - Finches																		
<i>Serinus mozambicus</i>	(Müller)	Yellow-fronted Canary							a									1
<i>Serinus atroqueria</i>	(A. Smith)	Yellow-rumped Seed-eater		u	n2	e			a		a1					a	efk	7
<i>Serinus leucopygius</i>	(Sundevall)	White-rumped Seed-eater																0
<i>Serinus flavigula</i>	Salvadori	Yellow-breasted Seed-eater		E	T													0
<i>Serinus dorsostriatus</i>	(Reichenow)	White-bellied Canary		an							a						efk	3
<i>Serinus donaldsoni</i>	Sharpe	Grosbeak Canary																0
<i>Serinus canicollis</i>	(Swainson)	Yellow-crowned Canary				bds							h					2
<i>Serinus citrinellus</i>	Rüppell	African Citril		a	2	bds				1			h					5
<i>Serinus nigricaps</i>	Rüppell	Black-headed Citril		E		son							ah					2
<i>Serinus striolatus</i>	(Rüppell)	Streaky Seed-eater		a	so	bds			a		a		ah		m	a		8

Scientific Name	Determinator	English Name	Status	AW	AS	BM	DM	GM	MG	NC	OM	SM	YR	BB	KM	SS	YS	Total
<i>Petronia brachyactylis</i>	Bonaparte	Pale Rock Sparrow																0
<i>Petronia pygmaea</i>	(Heuglin)	Yellow-spotted Petronia		aan						1	a						ek	4
<i>Petronia dentata</i>	(Sundevall)	Bush Petronia																0
<i>Sporopipes frontalis</i>	(Daudin)	Speckle-fronted Weaver																0
Family Ploceidae - Weavers																		
<i>Bubalornis albrostris</i>	(Vieillot)	White-billed Buffalo-weaver			2						a							2
<i>Bubalornis niger</i>	Smith	Red-billed Buffalo-weaver		an	acn					1	a						efk	5
<i>Dinemella dinemelli</i>	(Rüppell)	White-headed Buffalo-weaver		an	ac2					a1	a		a1			a1	efk	7
<i>Plocepasser mahali</i>	Smith	White-browed Sparrow-weaver		aan	acon					a1	a		a1			f	efk	7
<i>Plocepasser superciliosus</i>	(Cretzschmar)	Chestnut-crowned Sparrow-weaver		ae														1
<i>Plocepasser donaldsoni</i>	Sharpe	Donaldson Smith's Sparrow-weaver							a		a							2
<i>Pseudonigrigila arnaudi</i>	(Bonaparte)	Grey-headed Sooty Weaver															efk	1
<i>Pseudonigrigila cabanisi</i>	(Fischer & Reichenow)	Black-capped Sooty Weaver															ef	1
<i>Amblyospiza albifrons</i>	(Vigors)	Grosbeak Weaver		u		d				1								3
<i>Ploceus baglafecht</i>	(Daudin)	Baglafecht Weaver		a	af	bde							h		a			5
<i>Ploceus luteolus</i>	(Lichtenstein)	Little Weaver		f	aan					1								3
<i>Ploceus bojeri</i>	(Cabanis)	Golden Palm Weaver																0
<i>Ploceus galbula</i>	Rüppell	Rüppell's Weaver		an	ac	av											e	4
<i>Ploceus tentopterus</i>	Reichenow	Northern Masked Weaver																0
<i>Ploceus intermedius</i>	Rüppell	Masked Weaver		ae	a2				a	a1	a		a				k	7
<i>Ploceus velatus</i>	Vieillot	Vitelline Masked Weaver		c	a2					a1			a1				fk	5
<i>Ploceus spekei</i>	(Heuglin)	Speke's Weaver		f	2			a								f		4
<i>Ploceus cucullatus</i>	(Müller)	Black-headed Weaver		ae	ac					1	a		a1					5
<i>Ploceus dichrocephalus</i>	(Salvadori)	Jubaland Weaver																0
<i>Ploceus melanocephalus</i>	(Linn.)	Yellow-bellied Weaver									a							1
<i>Ploceus rubiginosus</i>	Rüppell	Chestnut Weaver		a	ac					1			a				k	5
<i>Ploceus superciliosus</i>	(Shelley)	Compact Weaver																0
<i>Ploceus ocularis</i>	Smith	Spectacled Weaver		uz	a	e				1	a		a1			a		7
<i>Ploceus nigricollis</i>	(Vieillot)	Black-necked Weaver									a							1
<i>Malimbus rubricaps</i>	(Müller)	Red-headed Weaver		ae	ac2				a	a1	a		a				fk	7
<i>Quelea cardinalis</i>	(Hartlaub)	Cardinal Quelea			a			a		a	a						k	5
<i>Quelea erythropus</i>	(Hartlaub)	Red-headed Quelea									a							1
<i>Quelea quelea</i>	(Linn.)	Red-billed Quelea		cn	acon			a		1	a		a1				e	7
<i>Euplectes aler</i>	(Gmelin)	Yellow-crowned Bishop			a													1
<i>Euplectes albonotatus</i>	(Cassin)	White-winged Widow-bird		a	a					1	a						k	5
<i>Euplectes ardens</i>	(Boddaert)	Red-collared Widow-bird		e		y				a1	a						k	5
<i>Euplectes axillaris</i>	(Smith)	Fan-tailed Widow-bird			a						a							2
<i>Euplectes capensis</i>	(Linn.)	Yellow Bishop				ban							ah	a				3
<i>Euplectes glerowii</i>	Cabanis	Black Bishop		a														1
<i>Euplectes horreocaeus</i>	(Linn.)	Black-winged Red Bishop							a	1								2
<i>Euplectes macrourus</i>	(Gmelin)	Yellow-shouldered Widow-bird																0
<i>Euplectes franciscanus</i>	(Lessert)	West Nile Red Bishop		af	ac2					a1	a							5
<i>Anomalospiza imberbis</i>	(Cabanis)	Parasitic Weaver									a							1

Scientific Name	Determinator	English Name	Status	AW	AS	SM	DM	GM	MG	NC	OM	SM	YR	BB	KM	SS	YS	Total	
<i>Serinus tristriatus</i>	Rüppell	Brown-rumped Seed-eater			a2	ba5					a	ah						4	
<i>Serinus reichardi</i>	(Reichenow)	Streaky-headed Seed-eater								1								1	
<i>Serinus ankoberensis</i>	Ash	Ankober Seed-eater	E T															0	
<i>Serinus xantholeuca</i>	Salvadori	Salvadori's Seed-eater	E															0	
<i>Serinus xanthopygius</i>	Rüppell	White-throated Seed-eater	E															0	
Family Emberizidae - Buntings																			
<i>Emberiza sibilans</i>	(Lichtenstein)	House Bunting																0	
<i>Emberiza tahpisi</i>	Sav.ith	Cinnamon-breasted Bunting		ae						a1	a							3	
<i>Emberiza cinerea</i>	Brahm.	Cinerea Bunting																0	
<i>Emberiza hortulana</i>	Linn.	Oriolan		i														2	
<i>Emberiza caesia</i>	C. strachan	Cratichneumon's Bunting				v												1	
<i>Emberiza flaviventris</i>	Stephens	Golden-breasted Bunting		p				a										2	
<i>Emberiza polioptera</i>	(Salvadori)	Small Golden-breasted Bunting		an														2	
<i>Emberiza torquata</i>	Hartlaub	Brown-rumped Bunting									a						ak	1	
Total species				26	11	451	403	282	109	152	149	332	335	125	229	2	22	100	290

## Status:

- E - species endemic to Ethiopia  
 T - species of threatened status in the world

## Wildlife Conservation Area codes:

- |  |  |
|--|--|
| AW - Awash National Park                 | OM - Omo National Park                     |
| AS - Abijatta-Shalla Lakes National Park | SM - Simien Mountains National Park        |
| SM - Bale Mountains National Park        | YR - Yangudi-Rassa National Park           |
| DM - Dahlac Marine National Park         | BB - Babilie Elephant Sanctuary            |
| GM - Gambella National Park              | KM - Kuni Muktar Mountain Nyala Sanctuary  |
| MG - Mago National Park                  | SS - Senkelle Swayne's Hartbeest Sanctuary |
| NC - Nechisar National Park              | YS - Yabelo Sanctuary                      |

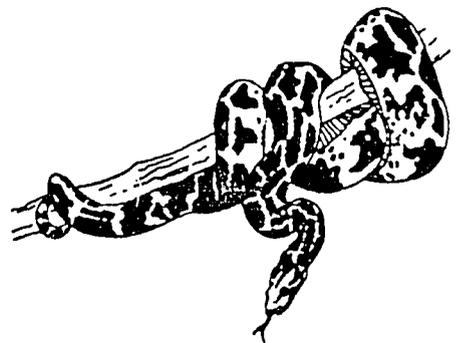
Jesse C. Hillman  
 NY78 The Wildlife Conservation Society - International

(opora: ethbird.wq1; Jan 1993)

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# The Snakes of Ethiopia

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## The Snakes of Ethiopia

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### Order Serpentes - Snakes

#### Family Typhlopidae

#### Blind or Earth Snakes

- Rhinotyphlops erythraeus* (Scortecci 1928) •  
[*Rhinotyphlops leucocephalus* (Parker 1930)]  
*Rhinotyphlops pallidus* (Cope 1868) •  
*Rhinotyphlops schlegelii* (Bianconi 1850) Schlegel's Blind Snake  
*Rhinotyphlops somalicus* (Boulenger 1895) •  
*Rhinotyphlops unitaeniatus* (Peters 1879)  
*Typhlops cuneirostris* Peters 1879  
*Typhlops lineolatus* Jan 1863

#### Family Leptotyphlopidae

#### Thread or Worm Snakes

- Leptotyphlops cairi* (Duméril & Bibron 1844)  
*Leptotyphlops macrorhynchus* (Jan 1862)  
*Leptotyphlops nigricans* (Schlegel 1839) Black Worm Snake  
[*Leptotyphlops reticulatus* (Boulenger 1906)]

#### Family Boidae

#### Boas and Pythons

- Eryx colubrinus* (Linnaeus 1758) Sand Boa  
*Eryx somalicus* Scortecci 1939  
*Python sebae* (Gmelin 1789) African Rock Python

#### Family Colubridae

#### Typical Snakes

- Aeluroglena cucullata* Boulenger 1898  
*Aparallactus jacksonii* (Günther 1888)  
*Aparallactus lunulatus* (Peters 1854) Reticulated Centipede-eater  
*Atractaspis fallax* Peters 1866  
*Atractaspis irregularis* (Reinhardt 1843) Burrowing Viper  
*Atractaspis leucomelas* Boulenger 1895 •  
*Atractaspis magretti* Scortecci 1928  
*Atractaspis microlepidota* Günther 1866  
*Atractaspis scorteccii* Parker 1949  
*Coluber brevis* (Boulenger 1895)  
*Coluber florulentus* Geoffroy 1827  
*Coluber rhodorachis* (Jan 1865)  
[*Coluber scorteccii* Lanza 1963]  
*Coluber smithii* (Boulenger 1895)  
*Coluber somalicus* (Boulenger 1896) •  
*Coluber taylori* Parker 1949  
*Coluber* sp.

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**Ethiopian Snakes - 2**

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[ <i>Crotaphopeltis braestrupi</i> Rasmussen 1985]	
<i>Crotaphopeltis degeni</i> (Boulenger 1906)	White-lipped Snake
<i>Crotaphopeltis hotamboeia</i> (Laurenti 1768)	
[ <i>Dasyopeltis atra</i> Sternfeld 1912]	
<i>Dasypeltis scabra</i> (Linnaeus 1758)	Common Egg-eating Snake
<i>Dispholidus typus</i> (Smith 1829)	Boomslang
<i>Dromophis lineatus</i> (Duméril & Bibron 1854)	Striped Swamp Snake
<i>Duberria lutrix</i> (Linnaeus 1758)	Common Slug-eater
<i>Eirenis africana</i> (Boulenger 1914)	
<i>Grayia tholloni</i> Mocquard 1897	
<i>Hemirhagerrhis kelleri</i> Boettger 1893	Keller's Bark Snake
<i>Hemirhagerrhis nototaenia</i> (Günther 1864)	Eastern Bark Snake
<i>Lamprophis abyssinicus</i> Mocquard 1906 •	
<i>Lamprophis erlangeri</i> (Sternfeld 1908) •	
<i>Lamprophis filiginosus</i> (Boie 1827)	Brown House Snake
[ <i>Lamprophis maculatus</i> (Parker 1932)]	
<i>Lycophidion capense</i> (Smith 1831)	Cape Wolf Snake
<i>Lycophidion depressirostre</i> Laurent 1968	
<i>Lycophidion taylori</i> Broadley & Hughes 1992	
<i>Mehelya capensis</i> (Smith 1847)	Cape File Snake
<i>Meizodon plumbiceps</i> (Boettger 1893)	
<i>Meizodon regularis</i> Fischer 1856	Regular Bush Snake
<i>Meizodon semiornatus</i> (Peters 1854)	Semiornate Bush Snake
<i>Micrelaps boettgeri</i> Boulenger 1896	Black Snake
<i>Natriciteres olivacea</i> (Peters 1854)	Olive Marsh Snake
<i>Philothamnus battersbyi</i> Loveridge 1951	
<i>Philothamnus bequaerti</i> (Schmidt 1923)	
<i>Philothamnus heterolepidotus</i> (Günther 1863)	
<i>Philothamnus punctatus</i> Peters 1866	
<i>Philothamnus semivariiegatus</i> (Smith 1847)	Spotted Bush Snake
[ <i>Prosymna ambigua</i> Bocage 1873]	East African Shovel-snout]
<i>Prosymna meleagris</i> (Reinhardt 1843)	
<i>Prosymna ruspoli</i> (Boulenger 1896)	
<i>Prosymna somalica</i> Parker 1930	
<i>Psammophis angolensis</i> (Bocage 1872)	Dwarf Sand Snake
<i>Psammophis biseriatus</i> Peters 1881	Eastern Link-marked Snake
[ <i>Psammophis phillipsii</i> (Hallowell 1844)]	Olive Grass Snake]
<i>Psammophis pulcher</i> Boulenger 1895	
<i>Psammophis punctulatus</i> Duméril & Bibron 1854	Speckled Sand Snake
[ <i>Psammophis rukwae</i> Broadley 1966]	
<i>Psammophis schokari</i> Foraskål 1775)	
<i>Psammophis sibilans</i> (Linnaeus 1758)	Hissing Sand Snake
<i>Psammophis tanganicus</i> Loveridge 1940	
<i>Psammophylax variabilis</i> Günther 1893	Grey-bellied Grass Snake
<i>Pseudoboodon boehmei</i> Rasmussen & Largen 1992 •	
<i>Pseudoboodon gascae</i> Peracca 1697 •	
<i>Pseudoboodon lemniscatus</i> (Duméril & Bibron 1854) •	Ethiopian Mountain Snake
<i>Rhamphiophis oxyrhynchus</i> (Reinhardt 1843)	Eastern Beaked Snake
<i>Rhamphiophis rubropunctatus</i> (Fischer 1884)	Red-spotted Beaked Snake
<i>Scaphiophis albopunctatus</i> Peters 1870	Peter's Beaked Snake
<i>Telescopus dhara</i> (Foraskål 1775)	Large-eyed Snake
<i>Telescopus pulcher</i> (Scortecchi 1935)	

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*Ethiopian Snakes - 3*

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Family Elapidae

Cobras and Mambas

<i>Dendroaspis polylepis</i> (Günther 1864)	Black Mamba
<i>Elapsoidea loveridgei</i> Parker 1949	Garter Snake
<i>Naja haje</i> (Linnaeus 1758)	Egyptian Cobra
<i>Naja melanoleuca</i> Hallowell 1857	Forest Cobra
<i>Naja nigricollis</i> Reinhardt 1843	Black-necked Spitting Cobra
<i>Naja pallida</i> Boulenger 1896	

Family Viperidae

Adders and Vipers

<i>Bitis arietans</i> (Merrem 1820)	Puff Adder
[ <i>Bitis gabonica</i> (Duméril & Bibron 1854)]	Gaboon Viper]
[ <i>Bitis nasicornis</i> (Shaw 1802)]	Rhinoceros-horned Viper]
<i>Bitis parviocula</i> Böhme 1977 *	Small-eyed Viper
<i>Causus maculatus</i> (Hallowell 1842)	
<i>Causus resimus</i> (Peters 1862)	Velvety Green Night-adder
<i>Causus rhombeatus</i> (Lichtenstein 1823)	Rhombic Night Adder
<i>Echis pyramidum</i> (Geoffroy 1827)	
<i>Echis varia</i> Reuss 1834	

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Key:     \* endemic species  
 Names inset in square brackets: [Species that probably occur in Ethiopia, but have not yet been recorded there]

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<u>Summary:</u>	Family	Species:	Confirmed	Endemic	% total	Unconfirmed
	6		87	9	10.3	11

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Source:

Largen M.J. & Rasmussen B. (in press). Catalogue of the snakes of Ethiopia (Reptilia Serpentes), including identification keys. *Tropical Zoology*.

Vernacular names from:

Branch B. 1988. *Field Guide to the Snakes and other Reptiles of Southern Africa*. New Holland, London, UK. 326pp

FitzSimons V.F.M. 1980. *A Field Guide to the Snakes of Southern Africa*. Collins, London, UK. 221pp

Hedges N.G. 1983. *Reptiles and Amphibians of East Africa*. Kenya Literature Bureau. Nairobi, Kenya. 139pp

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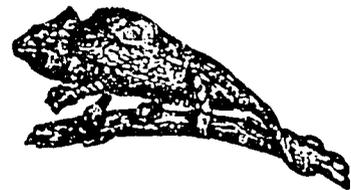
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# The Lizards of Ethiopia

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1807

Order Sauria - Lizards

Family Gekkonidae - Geckoes

- Cnemaspis dickersoni* (Schmidt 1919)  
*Cyrtodactylus scaber* (Heyden 1827)  
*Hemidactylus albopunctatus* Loveridge 1947  
*Hemidactylus barodanus* Boulenger 1901  
*Hemidactylus brookii* Gray 1845  
*Hemidactylus curlei* Parker 1942  
*Hemidactylus flaviviridis* Rüppell 1835  
*Hemidactylus isolepis* Boulenger 1895  
*Hemidactylus jubensis* Boulenger 1895  
*Hemidactylus laticaudatus* Anderson 1910  
*Hemidactylus mabouia* (Moreau de Jonnes 1818) Tropical House Gecko  
*Hemidactylus macropholis* Boulenger 1896  
*Hemidactylus ophiolepis* Boulenger 1903  
*Hemidactylus parkeri* Loveridge 1936  
*Hemidactylus robustus* Heyden 1827  
*Hemidactylus ruspolii* Boulenger 1896  
*Hemidactylus sinaitus* Boulenger 1885  
*Hemidactylus smithi* Boulenger 1895  
*Hemidactylus tropidolepis* Mocquard 1888  
*Hemidactylus somalicus* Parker 1932  
*Hemitheconyx taylori* Parker 1930  
*Holodactylus africanus* Boettger 1893  
*Homopholis fasciata* Boulenger 1890  
*Lygodactylus gutturalis* (Bocage 1873)  
*Lygodactylus keniensis* Parker 1936  
*Lygodactylus scorteccii* Pasteur 1959  
*Lygodactylus somalicus* Loveridge 1935  
*Lygodactylus sudanensis* Loveridge 1935  
*Pristurus crucifer* (Valenciennes 1861)  
*Pristurus phillipsi* Boulenger 1895  
*Pristurus rupestris* Blanford 1874  
*Pristurus flavipunctatus* Rüppell 1835  
*Ptyodactylus hasselquistii* (Donndorff 1798)  
*Stenodactylus sthenodactylus* (Lichtenstein 1823)  
*Tarentola annularis* (Geoffroy 1809)

Family Agamidae - Agamas

- Agama agama* (Linnaeus 1758)  
*Agama cornii* Scortecci 1928  
*Agama doriae* Boulenger 1885  
*Agama hartmanni* Peters 1869  
*Agama persimilis* Parker 1942  
*Agama rueppelli* Vaillant 1882  
*Agama sinaita* Heyden 1827  
*Agama spinosa* Gray 1831  
*Stellio annectens* (Blanford 1870)  
*Stellio atricollis* (Smith 1849)  
*Stellio cyanogaster* Rüppell 1835

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*Stellio phillipsi* (Boulenger 1895)  
*Stellio zonura* (Boulenger 1895)  
*Dromastyx ocellata* Lichtenstein 1823  
*Xenagama batillifera* (Vaillant 1882)  
*Xenagama taylori* Parker 1935

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**Family Chamaeleonidae - Chameleons**

<i>Chamaeleo affinis</i> Rüppell 1845	
<i>Chamaeleo africanus</i> Laurenti 1768	
<i>Chamaeleo bitaeniatus</i> Fischer 1884	<b>Montane Chamaeleon</b>
<i>Chamaeleo calcaricarenis</i> Böhme 1965	
<i>Chamaeleo dilepis</i> Leach 1819	Flap-necked Chamaeleon
<i>Chamaeleo gracilis</i> Hallowell 1842	Graceful Chamaeleon
<i>Chamaeleo ruspolii</i> Boettger 1893	Ruspoli's Chamaeleon
<i>Chamaeleo senegalensis</i> Daudin 1802	
<i>Rhampholeon kerstenii</i> (Peters 1868)	Kersten's Leaf Chamaeleon

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**Family Scincidae - Skinks**

<i>Chalcides ocellatus</i> (Forsskål 1775)	
<i>Chalcides ragazzii</i> Boulenger 1890	
<i>Lygosoma afrum</i> (Peters 1854)	Mozambique Writhing Skink
<i>Lygosoma paedocarinatum</i> (Lanza & Carfi 1968)	
<i>Lygosoma sundevalli</i> (Smith 1849)	Sundevall's Writhing Skink
<i>Lygosoma vinciguerrae</i> Parker 1932	
<i>Mabuya brevicollis</i> (Wiegmann 1837)	
<i>Mabuya hildebrandti</i> (Peters 1874)	
<i>Mabuya iselli</i> (Peters 1871)	
<i>Mabuya maculilabris</i> (Gray 1845)	
<i>Mabuya megalura</i> (Peters 1878)	Grass-top Skink
<i>Mabuya planifrons</i> (Peters 1878)	
<i>Mabuya quinquetaeniata</i> (Lichtenstein 1823)	Five-lined Skink
<i>Mabuya striata</i> (Peters 1844)	Striped Skink
<i>Mabuya varia</i> (Peters 1867)	Variable Skink
<i>Mabuya wingatii</i> Werner 1908	
<i>Panaspis tancredii</i> (Boulenger 1909)	
<i>Panaspis wahlbergii</i> (Smith 1849)	Wahlberg's Snake-eyed Skink

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**Family Lacertidae - Rock Lizards**

*Acanthodactylus boskianus* (Daudin 1802)  
*Heliobolus spekii* (Günther 1872)  
*Heliobolus neumanni* (Tornier 1905)  
*Latastia boscai* Bedriaga 1884  
*Latastia caeruleopunctata* Parker 1935  
*Latastia doriai* Bedriaga 1884  
*Latastia longicaudata* (Reuss 1834)  
*Pseuderemias brenneri* (Peters 1869)

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*Ethiopian Lizards - 3*

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*Pseuderemias mucronata* (Blanford 1870)  
*Pseuderemias smithii* (Boulenger 1895)  
*Pseuderemias striata* (Peters 1875)  
*Philochortus hardeggeri* (Steindachner 1891)  
*Philochortus intermedius* Boulenger 1917  
*Philochortus phillipsi* (Boulenger 1898)  
*Philochortus spinalis* (Peters 1875)

Family *Cordylidae* - Plated Lizards

*Cordylus tropidosternum* (Cope 1869)  
*Gerrhosaurus flavigularis* Wiegmann 1828  
*Gerrhosaurus major* Duméril 1851

Yellow-throated Plated Lizard  
Rough-scaled Plated Lizard

Family *Varanidae* - Monitors

*Varanus albigularis* (Daudin 1802)  
*Varanus exanthematicus* (Bosc 1792)  
*Varanus niloticus* (Linnaeus 1766)

White-throated Monitor  
Rock Monitor  
Water Monitor

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Order *Amphisbaenia* - Amphisbaenians

*Ancylocranium somalicum* (Scortecci 1931)

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Order *Crocodylia* - Crocodiles

*Crocodylus niloticus* Laurenti 1768

Nile Crocodile

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Summary:

<u>Order</u>	<u>Family</u>	<u>Species</u>
Sauria	Gekkonidae	35
	Agamidae	16
	Chamaeleonidae	9
	Scincidae	18
	Lacertidae	15
	Cordylidae	3
Amphisbaenia	Varanidae	3
		1
Crocodylia	Crocodylidae	1

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*Ethiopian Lizards - 4*

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Source:

Lanza B. 1990. Amphibians and Reptiles of the Somali Democratic Republic :  
checklist and biogeography. *Biogeographia* 14:407-465

Largen M.J. (pers. com. 1993)

Vernacular names from:

Branch B. 1988. *Field Guide to the Snakes and other Reptiles of Southern  
Africa*. New Holland, London, UK. 326pp

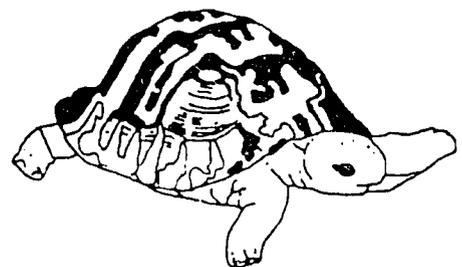
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(jch vs7 a:mjllizrd; 22 Mar 1993)

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## The Chelonians of Ethiopia

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**Ethiopian Chelonians - 1**

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**Order Chelonia - Turtles and Tortoises**

**Family Testudinidae - Land Tortoises**

<i>Geochelone pardalis</i> (Bell 1828)	Leopard Tortoise
<i>Geochelone sulcata</i> (Miller 1779)	African Spurred Tortoise
<i>Kinixys belliana</i> Gray 1831	Bell's Hinge-back Tortoise

**Family Pelomedusidae - Side-necked Terrapins**

<i>Pelomedusa subrufa</i> (Lacépède 1788)	African Helmeted Terrapin
<i>Pelusios sinuatus</i> (Smith 1838)	East African Serrated Mud Terrapin
<i>Pelusios adansonii</i> (Schweigger 1812)	

**Family Trionychidae - Soft-shelled Terrapins**

<i>Cyclanorbis elegans</i> (Gray 1869)	
<i>Trionyx triunguis</i> (Forsskål)	African Soft-shelled Terrapin

**Family Cheloniidae - Modern Sea Turtles**

<i>Caretta caretta</i> (Linnaeus 1758)	Loggerhead Turtle
<i>Chelonia mydas</i> (Linnaeus 1758)	Green Turtle
<i>Eretmochelys imbricata</i> (Linnaeus 1766)	Hawksbill Turtle
<i>Lepidochelys olivacea</i> (Eschscholtz 1829)	Olive Ridley Turtle

**Family Dermochelyidae - Leatherback Turtles**

<i>Dermochelys coriacea</i> (Vandelli 1761)	Leatherback Turtle
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Summary:

Families - 5                      Species - 13

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Source:

Frazier J., Bertram G.C. & Evans P.G.H. 1987. *Turtles and Marine Mammals*. p.288-314 in: Edwards A.J. & Head S.M. (Eds.) *Red Sea*. IUCN & Pergamon Press, Oxford, UK. 441pp

Lanza B. 1990. Amphibians and Reptiles of the Somali Democratic Republic : checklist and biogeography. *Biogeographia* 14:407-465

Largen M.J. (pers. com. 1993)

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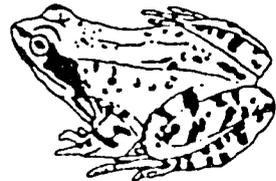
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Ethiopian Amphibians - 1

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Family Caeciliidae

*Sylvacaecilia grandisonae* (Taylor 1970) .

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Family Pipidae

*Xenopus clivii* Peracca 1898 Clawed Toad

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Family Bufonidae

*Bufo regularis* Reuss 1834  
*Bufo garmani* Meek 1897  
*Bufo xeros* Tandy et al. 1976  
*Bufo dodsoni* Boulenger 1895  
*Bufo blanfordii* Boulenger 1882  
*Bufo langanoensis* Largen et al. 1978  
*Bufo kerinyagae* Keith 1968  
*Bufo asmarae* Tandy et al. 1982  
*Bufo pentoni* Anderson 1893  
*Bufo lughensis* Loveridge 1932  
*Bufo steindachneri* Pfeffer 1893  
*Bufo maculatus* Hallowell 1854  
*Nectophrynoides osgoodi* (Loveridge 1932) .  
*Nectophrynoides malcolmi* Grandison 1978 .

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Family Hyperoliidae

*Leptopelis bocagii* (Gunther 1864)  
*Leptopelis gramineus* (Boulenger 1898) .  
*Leptopelis ragazzii* (Boulenger 1896) .  
*Leptopelis vannutellii* (Boulenger 1898) .  
*Leptopelis yaldeni* Largen 1977 .  
*Leptopelis susanae* Largen 1977 .  
*Afrixalus quadrivittatus* (Werner 1907)  
*Afrixalus vittiger* (Peters 1876)  
*Afrixalus enseticola* Largen 1974 .  
*Afrixalus clarkii* Largen 1974 .  
*Hyperolius nasutus* Gunther 1864  
*Hyperolius viridiflavus* (Duméril & Bibron 1841)  
*Hyperolius zavattarii* Scortecci 1943 .  
*Rassina senegalensis* (Duméril & Bibron 1841)  
*Paracassina obscura* (Boulenger 1894) .  
*Paracassina kounhiensis* (Mocquard 1905) .

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Family Microhylidae

*Phrynomerus bifasciatus* (Smith 1847)  
*Balebreviceps hillmani* Larget & Drewes 1989

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Family Rhacophoridae

*Chiromantis petersii* Boulenger 1882

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Family Hemisidae

*Hemisus marmoratus* (Peters 1854)  
*Hemisus microscaphus* Laurent 1972

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Family Ranidae

*Conraua beccarii* (Boulenger 1911)  
*Hildebrandtia macrotympanum* (Boulenger 1912)  
*Nylarana galamensis* (Duméril & Bibron 1841)  
*Rana angolensis* Bocage 1866  
*Rana occipitalis* Günther 1858  
*Rana wittei* Angel 1924  
*Tomopterna cryptotis* (Boulenger 1907)  
*Ptychadena anchietae* (Bocage 1867)  
*Ptychadena mascareniensis* (Duméril & Bibron 1841)  
*Ptychadena pumilio* (Boulenger 1920)  
*Ptychadena porosissima* (Steindachner 1867)  
*Ptychadena schillukorum* (Werner 1907)  
*Ptychadena erlangeri* (Ahl 1924)  
*Ptychadena neumanni* (Ahl 1924)  
*Ptychadena nana* Perret 1980  
*Ptychadena cooperi* (Parker 1930)  
*Phrynobatrachus natalensis* (Smith 1849)  
*Phrynobatrachus bottegi* (Boulenger 1895)  
*Phrynobatrachus minutus* (Boulenger 1895)  
*Phrynobatrachus tellinii* Peracca 1904  
*Phrynobatrachus sciangallarum* Scortecci 1943  
*Phrynobatrachus zavattarii* Scortecci 1943  
*Phrynobatrachus acridoides* (Cope 1867)  
*Phrynobatrachus* cf. *perpalmatus* Boulenger 1898  
*Cacosternum boettgeri* (Boulenger 1882)  
*Ericabatrachus baleensis* Larget 1991

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Key:

- endemic species

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*Ethiopian Amphibians - 3*

Summary:

Family	Genera	Species	Endemic	Endemic as % total
Caeciliidae	1	1	1	100.0
Pipidae	1	1	0	0.0
Bufo	2	14	2	14.3
Hyperoliidae	5	16	10	62.5
Microhylidae	2	2	1	50.0
Rhacophoridae	1	1	0	0
Hemisidae	1	2	1	50.0
Ranidae	9	26	9	34.6

	Families	Genera	Species	Endemic species	Endemic as % total
Total	8	22	63	24	38.1

Source:

Information collated by Dr M.J. Lagen, Liverpool National Museum, Mar 1993.

(jch ws7 a:ethaphb; 22 Mar 1993)

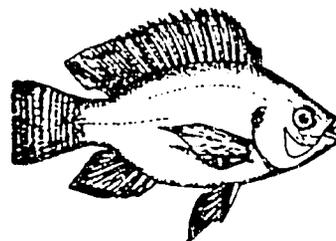
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# The Freshwater Fish of Ethiopia

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## The Freshwater Fish of Ethiopia

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Order Lepidosireniformes

Family Lepidosirenidae

<i>Protopterus aethiopicus</i> Heckel	Lungfish	R. Baro
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Order Polypteriformes

Family Polypteridae

<i>Polypterus bichir</i> Geoffroy 1802	Bichir, Reedfish	R. Baro
<i>Polypterus senegalus</i> Cuvier 1829	Bichir, Reedfish	R. Baro

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Order Osteoglossiformes

Family Osteoglossidae

<i>Heterotis niloticus</i> (Cuvier 1829)	R. Baro
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Family Mormyridae

<i>Brienomyrus niger</i> (Günther 1866)	R. Baro
<i>Hippopotamyrus harringtoni</i> (Boulenger 1905)	Elephant-trunk Fish R. Baro
<i>Hippopotamyrus pictus</i> (Marcusen 1864)	Elephant-trunk Fish R. Baro
<i>Mormyrus caschive</i> (Linnaeus 1758)	R. Baro
<i>Mormyrus deliciosus</i> (Leach 1818)	
<i>Mormyrus hasselquistii</i> Valenciennes 1846	R. Baro
<i>Mormyrus longirostris</i> Peters 1852	L. Abaya
<i>Hyperopisus bebe</i> (Lacépède 1803)	L. Abaya R. Baro
<i>Marcusenius petherici</i> Boulenger 1898	
<i>Marcusenius cyprinoides</i> (Linnaeus 1758)	R. Baro
<i>Mormyrops anguilloides</i> (Linnaeus 1758)	R. Baro
<i>Gnathonemus annamariae</i> *	L. Abaya
<i>Petrocephalus bane</i> (Lacépède 1803)	R. Baro
<i>Petrocephalus bovei</i> (Valenciennes 1846)	R. Baro
<i>Pollimyrus isidori</i> (Valenciennes 1846)	R. Baro
<i>Pollimyrus petherici</i> (Boulenger 1898)	R. Baro

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**Ethiopian Freshwater Fish - 2**

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**Family Gymnarchidae**

*Gymnarchus niloticus* Cuvier 1829 R. Baro

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**Family Cromeriidae**

*Cromeria nilotica* Boulenger 1901 R. Baro

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**Order Characiformes**

**Family Characidae**

<i>Hydrocynus brevis</i> Günther 1864		R. Baro
<i>Hydrocynus lineatus</i> Bleeker 1862		
<i>Hydrocynus forskalii</i> (Cuvier 1819)	Tigerfish	L. Abaya
	L. Chamo,	R. Baro
<i>Alestes dentox</i> (Linnaeus 1757)		R. Baro
<i>Alestes baremose</i> (Joannis 1835)		R. Baro
<i>Brycinus nurse</i> (Rüppell 1832)		R. Baro
<i>Brycinus affinis</i> Günther 1894		
<i>Brycinus macrolepidotus</i> (Cuvier & Valenciennes 1849)		R. Baro
<i>Micralestes acutidens</i> (Peters 1852)		R. Baro

---

**Family Distichodontidae**

<i>Distichodus brevipinnis</i> Günther 1864		R. Baro
<i>Distichodus engycephalus</i> Günther 1864		R. Baro
<i>Distichodus niloticus</i> (Linnaeus 1762)		R. Baro
<i>Distichodus rostratus</i> Günther 1864		R. Baro
<i>Citharinus citharus</i> (Geoffroy 1809)		R. Baro
<i>Citharinus latus</i> Müller & Troschel 1845		R. Baro
<i>Ichthyoborus besse</i> (Joannis 1835)		R. Baro
<i>Nannocharax niloticus</i> (Joannis 1835)		R. Baro
<i>Neolebias trewavasae</i> Poll & Gosse 1965		R. Baro

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**Order Cypriniformes**

**Family Cyprinidae**

<i>Labeo coubie</i> Rüppell 1832		R. Baro
<i>Labeo niloticus</i> (Forsskål 1775)	Mudsucker	L. Abaya,
		R. Baro
<i>Labeo horie</i> Heckel 1846	Mudsucker	R. Baro
<i>Labeo bottegi</i> Vinciguera 1897	Mudsucker	R. Baro
(? = <i>L. neumanni</i> Boulenger 1903, & <i>L. brunelli</i> Parenzan 1939)		
<i>Labeo forskalii</i> Rüppell 1835	Mudsucker	R. Baro

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*Ethiopian Freshwater Fish - 3*

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<i>Labeo cylindricus</i> Peters 1852	Mudsucker	L. Abaya, R. Baro
<i>Garra dembeensis</i> (Rüppell 1837)		
<i>Garra makiensis</i> Boulenger 1903		L. Zwai R. Meki
<i>Garra blanfordii</i> Boulenger 1903		
<i>Garra quadrimaculatus</i> (Rüppell 1837)		
<i>Varicorhinus beso</i> Rüppell 1837		
<i>Varicorhinus jubae</i> Banister 1984		R. Genale R. Yadot
<i>Barbus affinis</i> Rüppell 1837		
<i>Barbus akakianus</i> Boulenger 1911		
<i>Barbus alticola</i> Boulenger 1906		L. Abaya
<i>Barbus anema</i> Boulenger 1903		R. Baro
<i>Barbus bingeri</i> (Pellegrin 1905)		
<i>Barbus bottegi</i> Boulenger 1906		
<i>Barbus brevibarbis</i> Boulenger 1902		
<i>Barbus byuni</i> (Forsskål 1775)		L. Abaya
	R. Guder, R. Metti, R. Abay, R. Sagen, R. Errer, R. Baro, R. Wabe Shebelle	
<i>Barbus degeni</i> Boulenger 1902		
<i>Barbus duchesnii</i> Boulenger 1902		L. Abaya
<i>Barbus ethiopicus</i> Zolezzi 1939		L. Zwai
<i>Barbus eumystus</i> Boulenger 1906		
<i>Barbus gananensis</i> Vinciguerra 1895		R. Genale R. Yadot
<i>Barbus gorquari</i> Rüppell 1837		
<i>Barbus gregorii</i> Boulenger 1902		L. Zwai L. Abaya
<i>Barbus harringtonii</i> Boulenger 1902		
<i>Barbus humilis</i> Boulenger 1902		
<i>Barbus hursensis</i> Boulenger 1902		
<i>Barbus ilgi</i> Pellegrini 1905		
<i>Barbus intermedius</i> Rüppell 1837		L. Tana
	L. Abaya, L. Zwai, L. Langanano, L. Stephanie, L. Orsodi, R. Abay, R. Omo, R. W. Shebelle	
<i>Barbus kassamensis</i> Boulenger 1902		
<i>Barbus leptosoma</i> Boulenger 1902		
<i>Barbus macmillani</i> Boulenger 1906		L. Abaya
<i>Barbus macronema</i> Boulenger 1902		
<i>Barbus margaritae</i> Boulenger 1906		L. Abaya
<i>Barbus meneliki</i> Pellegrin 1905		
<i>Barbus mento</i> Boulenger 1902		
<i>Barbus microterolepis</i> Boulenger 1902		R. Meki
<i>Barbus nedgia</i> Günther 1868		
<i>Barbus neglectus</i> Boulenger 1903		
<i>Barbus perince</i> Rüppell 1837		R. Baro
<i>Barbus plagiostomus</i> Boulenger 1902		
<i>Barbus platystomus</i> Boulenger 1902		
<i>Barbus pleurogramma</i> Boulenger 1902		
<i>Barbus pumilis</i> Boulenger 1901		R. Baro
<i>Barbus rueppelli</i> Boulenger 1902		
<i>Barbus ruspolti</i> Vinciguerra 1896	BEST AVAILABLE COPY	L. Abaya

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**Ethiopian Freshwater Fish - 4**

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<i>Barbus stigmatopygus</i> Boulenger 1903	R. Baro
<i>Barbus surkis</i> Rüppell 1837	
<i>Barbus trispilopleura</i> Boulenger 1902	
<i>Barbus wernerı</i> Boulenger 1905	
<i>Barbus zaphiri</i> Boulenger 1906	
<i>Barbus zuaicus</i> Boulenger 1906	
<i>Raiamas loati</i> Boulenger 1901	R. Baro
<i>Engraulicypris bottegi</i> (Vinciguerra 1895)	
<i>Chelaethiops bibie</i> (Joannis 1835)	R. Baro
<i>Leptocypris niloticus</i> (Joannis 1835)	R. Baro

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**Order Siluriformes**

**Family Cobitidae**

*Noemacheilus abyssinicus* Boulenger 1902

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**Family Bagridae**

<i>Bagrus bayad</i> (Forskål 1775)	Catfish	R. Baro
<i>Bagrus docmak</i> (Geoffroy 1827)	Catfish	L. Abaya, R. Baro
<i>Clarotes laticeps</i> (Rüppell 1829)		
<i>Auchenoglanis occidentalis</i> (Cuvier & Valenciennes 1840)		R. Baro
<i>Auchenoglanis biscutatus</i> (Geoffroy 1827)		R. Baro
<i>Chrysichthys auratus</i> (Geoffroy-St.-Hilaire 1809)		R. Baro

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**Family Schilbeidae**

<i>Schilbe mystus</i> (Linnaeus 1758)	L. Abaya, L. Chamo, R. Baro
<i>Schilbe niloticus</i> (Rüppell 1829)	R. Baro
<i>Schilbe uranoscopus</i> Rüppell 1832	R. Baro
<i>Siluranodon auritus</i> (Geoffroy 1827)	R. Baro

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**Family Amphiliidae**

<i>Andersonia leptura</i> Boulenger 1900	R. Baro
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**Family Clariidae**

<i>Clarias anguillaris</i> (Linnaeus 1758)	R. Baro
<i>Clarias gariepinus</i> (Burchell 1822)	R. Baro
<i>Heterobranchus bidorsalis</i> Geoffroy St.-Hilaire 1809	L. Abaya, L. Chamo R. Baro

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**Ethiopian Freshwater Fish - 5**

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*Heterobranchius longifilis* Valenciennes 1840 R. Baro

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Family Malapteruridae

*Malapterurus electricus* (Gmelin 1789) Electric Catfish R. Baro

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Family Mochokidae

*Synodontis caudovittatus* Boulenger 1901 R. Baro  
*Synodontis clarias* (Linnaeus 1758) R. Baro  
*Synodontis eupterus* Boulenger 1901 R. Baro  
*Synodontis filamentosus* Boulenger 1901 R. Baro  
*Synodontis frontosus* Vaillant 1895 R. Baro  
*Synodontis geledensis* Günther 1896 R. Baro  
*Synodontis nigrita* Cuvier & Valenciennes 1840 R. Baro  
*Synodontis schall* (Bloch & Schneider 1801) L. Abaya,  
R. Baro  
*Synodontis serratus* Rüppell 1829 R. Baro  
*Synodontis sorex* Günther 1864 R. Baro  
*Synodontis zambenensis* Peters 1852 R. Baro  
*Brachysynodontis batensoda* (Rüppell 1832) R. Baro  
*Chiloglanis modjensis* Boulenger 1903 R. Baro  
*Chiloglanis niloticus* Boulenger 1900 R. Baro  
*Hemisynodontis membranaceus* (Geoffroy 1809) R. Baro  
*Mochocus niloticus* Joannis 1869 R. Baro

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Order Cyprinodontiformes

Family Aplocheilidae

*Epiplatys antinorii* Vinciguerra 1883 Top Minnows  
*Epiplatys marnoi* (Steindachner 1881) Top Minnows R. Baro  
*Nothobranchius* sp. R. Baro

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Family Poeciliidae

*Aplocheilichthys* spp. R. Baro

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Order Perciformes

Family Centropomidae

*Lates niloticus* (Linnaeus 1758) Nile Perch L. Abaya,  
L. Chamo, R. Baro

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**Ethiopian Freshwater Fish - 6**

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**Family Cichlidae**

<i>Hemichromis fasciatus</i> Peters 1857	Jewel Fish	R. Baro
<i>Hemichromis letourneauxi</i> Sauvage 1880	Jewel Fish	R. Baro
<i>Oreochromis niloticus</i> (Linnaeus 1758)	Nile Tilapia	L. Zwai, L. Abaya, L. Chamo, L. Shalla, L. Abijatta, R. Baro
<i>Tilapia zilli</i> (Gervais 1848)		R. Baro
<i>Sarotherodon galilaeus</i> (Linnaeus 1758)		R. Baro

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**Family Anabantidae**

<i>Ctenopoma muriei</i> (Boulenger 1906)	Climbing Perch	R. Baro
<i>Ctenopoma petherici</i> Günther 1864	Climbing Perch	R. Baro

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**Family Channidae**

<i>Parachanna obscura</i> (Günther 1861)	Snakehead	R. Baro
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**Family Tetraodontidae**

<i>Tetraodon fahaka</i> Linnseus 1762	Puffer	R. Baro
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**Key:**

- - species endemic to Ethiopia
  - \* - Determinator and/or date unknown
- 

**Summary:**

	Orders	Families	Genera	Species	Endemic species	Endemic as % total
Total	8	23	57	145	4	2.8

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*Ethiopian Freshwater Fish - 7*

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Introductions

Exotic fish species introduced to Ethiopia include:

<u>Species</u>	<u>Name</u>	<u>Date</u>	<u>Area</u>
<i>Esox lucius</i> Linn.	Pike	1938	L. Tana
<i>Gambusia holbrooki</i> Cuv. & Val.	Gambusia	1938	L. Tana
<i>Salmo gairdneri</i> Richardson	Rainbow Trout	1940	L. Aba Samuel
		1967	R. Danka
		1971 *	R. Meribo, R. Layleeso, R. Furunna, R. Zetegna Melka,
			R. Shaiya, R. Togona, R. Micha
		1973 *	R. Sibilo
	1974 *	R. Chacha, R. Beressa, L. Wonchi, R. Web	
<i>Salmo trutta</i> Linn.	Brown Trout	1967	R. Web
<i>Tilapia zilli</i> (Gervais)	Tilapia	1974	Dukam, Sebeta
<i>Cyprinus carpio</i> Linn.	Common Carp	1940	L. Aba Samuel
<i>Hypophthalmichthys molitrix</i> (Val.)	Silver Carp	1975	Fincha Dam
<i>Ctenopharyngodon idella</i> (Val.)	Grass Carp	1975	Fincha Dam

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\* Both the exotic *Salmo gairdneri* and the indigenous *Oreochromis niloticus* have both been transplanted to other waters within Ethiopia (Shibru Tedla & Fisseha Haile-Meskal 1981).

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Compiled by J.C. Hillman  
Conservation Ecologist  
Wildlife Conservation International

Mar 1993

The assistance given by Dr Gordon Reid, Chester, UK, in checking and adding to the above list is gratefully acknowledged.

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(jch vs7 a:ethfish; 23 Mar 1993)

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# The Butterflies of Ethiopia

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Jesse C. Hillman  
NYZS The Wildlife Conservation Society - International

Mar 1993

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*2007*

Ethiopian Butterflies - 1

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Order Lepidoptera

Superfamily Hesperioidea

Family Hesperidae

Subfamily Coeliadinae

*Coeliades libeon* (Druce 1875)  
*Coeliades keithloa menelik* (Ung.1932)

Subfamily Pyrginae

*Eagris denuba obliterata* Carp.1928  
*Eagris nottoana nottoana* (Wall.1857)  
*Eretis mixta* Evans 1937  
*Eretis lugens* (Rog.1891)  
*Sarangesa lucidella helena* Evans 1947  
*Sarangesa motozi* (Wall 1857)  
*Leucochitonea hindei* Druce 1903  
*Spialia mangana* (Rbl.1899)  
*Spialia mafa higginsi* Evans 1937

Subfamily Hesperinae

*Metisella tsadicus* (Aur.1905)  
*Metisella formosa mittoni* Carc.1961  
*Chondrolepsis niveicornis* (Pl.1883)  
*Artitropa reducta* Aur.1925  
*Fresna nyassae* (Hew.1878)  
*Platylesches galesa* (Hew.1877)

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Superfamily Papilionoidea

Family Papilionidae

Subfamily Papilioninae

Tribe Papilionini

*Papilio rex abyssinicus* Poul.1926                   ▪ ssp.  
*Papilio rex franciscaae* Carp.1928  
*Papilio dardanus antinorii* Ob.1883  
*Papilio constantinus* W.1871  
*Papilio aethiops* R & J 1905                         ▪  
*Papilio nireus pseudonireus* Fld.1865  
*Papilio demodocus demodocus* Esper 1798  
*Papilio cynorta arnoldi* Poul.1926                 ▪ ssp.  
*Papilio echerioides leucospilus* R.1902  
*Papilio echerioides oscar* R.1902                 ▪ ssp.

Tribe Leptocircini

*Graphium angolanus baronis* (Ung.1932)  
*Graphium almansor birbiri* (Ung.1932)  
*Graphium philonoe whalleyi* (Ta.1929)  
*Graphium colonna* (W.1873)

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Family Pieridae  
Subfamily Pierinae  
Tribe Coliadini

*Catopsilia florella* (F.1775)  
*Colias electo meneliki* Berger 1940                   • ssp.  
*Colias electo marnoana* Rog.1884  
*Eurema hecabe hecabe* (L.1758)  
*Eurema hapale* (M.1882)  
*Eurema desjardinsi desjardinsi* (Boisd.1833)  
*Eurema brigitta brigitta* (Stoll 1780)

Tribe Euchloini

*Pinacopteryx tritogenia* (Klug 1829)  
*Euchloe belemia abyssinica* Riley 1928

Tribe Pierini

*Nepheronia thalassina verulana* (W.1871)  
*Nepheronia thalassina sinalata* (Suff.1904)  
*Nepheronia buqueti buqueti* (Bois.1836)  
*Eronia cleodora cleodora* Hüb.1823  
*Eronia leda* (Boisd.1847)  
*Colotis calais calais* (Cr.1775)  
*Colotis phisadia phisadia* (Gt.1819)  
*Colotis phisadia ocellatus* (B.1885)  
*Colotis vestalis castalis* (St.1885)  
*Colotis chrysonome chrysonome* (Klug 1829)  
*Colotis ungemachi* (Le C.1922)  
*Colotis vesta vesta* (Reichs 1849)  
*Colotis protomedia* (Klug 1829)  
*Colotis celimene celimene* (Lucas 1852)  
*Colotis celimene praeclarus* (B.1885)  
*Colotis halimede maxima* Ta.1939  
*Colotis pleione heliocaustus* (B.1885)  
*Colotis hetaera lorti* (Sh.1896)                   • ssp.  
*Colotis hetaera aspasi* (Ung.1932)  
*Colotis danae eupompe* (Klug 1829)  
*Colotis eucharis evarne* (Klug 1829)  
*Colotis antevippe zera* (Lucas 1852)  
*Colotis evenina casta* (Gers.1871)  
*Colotis evippe epigone* (Fld.1865)  
*Colotis दौरa stygia* (Fld.1865)  
*Colotis rogersi* (Dixey 1915)  
*Colotis liagore* (Klug 1829)  
*Colotis agoye zephyrus* (Marshall 1897)  
*Belenois raffrayi raffrayi* (Ob.1878)  
*Belenois zochalia galla* (Ung.1932)  
*Belenois aurota aurota* (F.1793)  
*Belenois creona creona* (Cr.1776)  
*Belenois creona boguensis* (Fld.1865)                   • ssp.  
*Belenois subeida hiemalis* (Ung.1932)

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**Ethiopian Butterflies - 3**

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*Belenois calypso hailo* (Ung.1932)  
*Belenois thysa tricolor* (Ung.1932)  
*Belenois solilucis loveni* (Aur.1922)  
*Belenois gidica* (Gt.1819)  
*Pieris brassicoides brassicoides* Guer.1847  
*Pontia daplidice aethiops* (Joannis & Verity 1912)  
*Pontia glauconome* Klug 1829  
*Dixeia dixeyi* (N.1904)  
*Dixeia orbona vidua* (B.1899)  
*Dixeia doxo venata* (B.1871)  
*Dixeia charina septentrionalis* Bernardi 1958  
*Appias sylvia abyssinica* Ta.1932  
*Appias ephphia contracta* (B.1888)  
*Mylothris sagala swaynei* B.1899  
*Mylothris chloris agathina* (Cr.1779)  
*Mylothris rueppellii rueppellii* (Koch 1865)  
*Mylothris erlangeri* Pag.1902  
*Mylothris yulei amhara* Ung.1932  
*Mylothris mortoni mortoni* Blachier 1912  
*Mylothris mortoni balkis* Ung.1932  
*Leptosia alcesta inalcesta* Bernardi 1959  
*Leptosia nupta pseudonuptilla* Bernadi 1959

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**Superfamily Lycaenoidea**

**Family Lycaenidae**

**Subfamily Lipteninae**

**Tribe Pentilini**

*Pentila pauli ras* Ta.1935

**Subfamily Miletinae**

**Tribe Lachnocnemini**

*Lachnocnema brimo* Karsch 1893

**Subfamily Theclinae**

**Tribe Amblypodiini**

*Myrina silenus nzoiae* Stoneham 1937

**Tribe Aphnaeini**

*Spindasis waggae* Sh.1898  
*Chloroselas pseudozeritis tytleri* Riley 1932  
*Axiocerces bambana* S.1900  
*Axiocerces amanga* (West.1881)  
*Axiocerces maureli* Dufr.1954  
*Axiocerces argenteomaculata* Pag.1902  
*Axiocerces jacksoni* Stempffer 1948

**Tribe Iolaini**

*Iolaus diametra diametra* (Karsch 1895)  
*Iolaus mimosae berbera* (BB 1924)

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*Iolaus tajoraca tajoraca* Walker 1870  
*Iolaus umbrosa sudanica* Aur. 1905  
*Iolaus glaucus glaucus* 1885  
*Iolaus pallene* (Wall. 1857)  
*Iolaus ismenias piaggiae* Ob. 1863  
*Iolaus crawshayi maureli* Dufr. 1954  
*Iolaus bowkeri ethiopica* (S & B 1958)

Tribe Hypolycaenini

*Hypolycaena philippus philippus* (F. 1794)  
*Hypolycaena pachalica* B. 1888  
*Hypolycaena hatita* ssp.  
*Leptomyrina boschi* Str. 1911

Tribe Deudorigini

*Deudorix baronica* Ung. 1932

Subfamily Iycaeninae

Tribe Lycaenini

*Lycaena phlaeas pseudophlaeas* (Lucas 1866)

• ssp.

Subfamily Polyommatinae

Tribe Anthenini

*Anthene saddacus* (Ta. 1935)  
*Anthene definata definata* (B. 1899)  
*Anthene definata nigrocaudata* (Pag. 1902)  
*Anthene indefinita* (BB 1910)  
*Anthene otacilia dulcis* (Pag. 1902)  
*Anthene contrastata contrastata* (Ung. 1932)  
*Anthene suquala* (Pag. 1902)  
*Anthene opalina* Stempffer 1946  
*Anthene janna* Gabriel 1949  
*Anthene hodsoni hodsoni* (Ta. 1935)  
*Anthene liodes* (Hew. 1874)  
*Anthene butleri butleri* (Ob. 1880)  
*Anthene aureobrunnea* (Ung. 1932)  
*Anthene lunulata* (T. 1894)  
*Anthene kersteni* (Gers. 1871)  
*Anthene rothschildi* (Aur. 1922)  
*Anthene crawshayi minuta* (BB 1915)  
*Neurellipes gemmifera* (N. 1910)  
*Cupidesthes ysobelae* Jackson 1965  
*Cupidesthes wilsoni* (Ta. 1935)

Tribe Polyommadini

*Cupidopsis jobates uranochroa* Ung. 1932  
*Petrealaea sichela sichela* (Wall. 1857)  
*Uranothauma nubifer* (T. 1895)  
*Uranothauma falkenstoini* (D. 1897)  
*Uranothauma antinorii antinorii* (Ob. 1883)

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• ssp.

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*Cacyreus lingeus* (Stoll 1782)  
*Cacyreus ethiopicus* Tite 1961  
*Cacyreus palaemon ghimirra* Ta.1935  
*Leptotes pirithous pirithous* (L.1767)  
*Castalius kaffana* Ta.1935  
*Castalius cretosus cretosus* B.1876  
*Castalius melaena melaena* (T.1887)  
*Zintha resplendens* (B.1976)  
*Tarucus theophrastus* (F.1793)  
*Tarucus ungemachi* Stempffer 1944  
*Tarucus rosacea* (Austant 1885)  
*Tarucus grammicus* (S & K 1893)  
*Actizera stellata* (T.1883)  
*Zizula hylax* (F.1775)  
*Azanus jesus* (Guer.1847)  
*Azanus mirza* (Pl.1880)  
*Azanus isis* (Dr.1773)  
*Eicochrysops messapus sebgadis* (Guer.1847)  
*Eicochrysops antoto* (Str.1911)  
*Eicochrysops distractus* (De Joannis 1913)  
*Eicochrysops masai* (BB 1905)  
*Eicochrysops pusillus* (Ung.1932)  
*Euchrysops mauensis abyssiniae* Storace 1950  
*Euchrysops albistriatus severini* Hul.1924  
*Euchrysops reducta niveocincta* Ung.1932  
*Euchrysops cyclopterus* (B.1876)  
*Euchrysops abyssinicus* (Aur.1922)  
*Lepidochrysops guichardi* Gabriel 1949  
*Lepidochrysops cinerea lunulifer* (Ung.1932)  
*Lepidochrysops parsimon abyssiniensis* (Str.1911)  
*Lepidochrysops negus* (Fld.1865)  
*Lepidochrysops pterou lilacina* (Ung.1932)  
*Lepidochrysops subvariegata* Ta.1935  
*Thermoniphas micylus colorata* (Ung.1932)  
*Chilades eleusis* (Demaison 1888)  
*Chilades elicola* (Str.1911)  
*Chilades kedonga* (S.1898)

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Superfamily Nymphaloidea

Family Libytheidae

*Libythea libythea labdaca* West.1851

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Family Nymphalidae

Subfamily Charaxidinae

*Charaxes galawadiwosi*  
*Charaxes jahlusa ganalensis* Carp.1937  
*Charaxes achaemenes monticola* J & T 1925  
*Charaxes etesipe abyssinicus* R.1900  
*Charaxes jasius epijasius* Reiche 1850

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**Ethiopian Butterflies - 7**

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**Tribe Nymphalini**

<i>Kallima ansorgei</i> R.1899		
<i>Hypolimnas salmacis platydema</i> R & J 1903		
<i>Hypolimnas dubius dubius</i> (Beauvois 1805)		
<i>Salamis temora temora</i> Fld.1867		
<i>Salamis anacardii</i> (L.1758)		
<i>Salamis parhassus</i> (Dr.1782)		
<i>Salamis cacta cacta</i> (F.1793)		
<i>Junonia westermanni westermanni</i> West.1870		
<i>Junonia sophia infracta</i> B.1888		
<i>Junonia chorimene</i> (Guer.1844)		
<i>Junonia terea fumata</i> (R & J 1903)		
<i>Junonia actia</i>	?	Precis
<i>Junonia antilope</i>	?	Precis
<i>Precis octavia octavia</i> (Cr.1777)		
<i>Precis limnoria limnoria</i> (Klug 1845)		
<i>Precis limnoria taveta</i> Rog.1891		
<i>Precis coelestina</i> D.1879		
<i>Precis ceryne ceryne</i> (Boisd.1847)		
<i>Precis pelarga</i> (F.1775)		
<i>Precis tugela aurorina</i> (B.1893)		
<i>Precis oenone</i>	?	Junonia
<i>Precis terea fumata</i>	?	Junonia • ssp.
<i>Precis sophia</i>	?	Junonia
<i>Precis hierta cebrene</i>	?	Junonia
<i>Vanessa cardui</i> (L.1758)		
<i>Antanartia schaeneia diluta</i> R & J 1903		• ssp.
<i>Antanartia abyssinica abyssinica</i> (Fld.1867)		• ssp.
<i>Antanartia dimorphica aethiopica</i> Howarth 1966		• ssp.

**Tribe Melitaeini**

*Melitaea abyssinica abyssinica* Ob.1909

**Tribe Argynnini**

<i>Phalanta eurytis microps</i> (R & J 1903)		
<i>Argyreus hyperbius neumanni</i> (R & J 1902)		• ssp.

**Subfamily Acraeinae**

**Tribe Acraeini**

<i>Bematistes alcinoe nado</i> (Ung.1932)		
<i>Bematistes aganice orientalis</i> (Ung.1932)		• ssp.
<i>Bematistes poggei ras</i> (Ung.1932)		
<i>Bematistes epaea homochroa</i> (R & J 1905)		
<i>Acraea insignis insignis</i> Dist.1880		
<i>Acraea insignis kakana</i> Elt.1911		
<i>Acraea peneleos gelonica</i> R & J 1905		
<i>Acraea ungemachi</i> Le Cerf 1927		
<i>Acraea cinerea</i> N.1904		
<i>Acraea safie safie</i> Fld.1867		
<i>Acraea safie antinorii</i> Ob.1879		• ssp.
<i>Acraea servona subochreatea</i> Gr.1910		

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<i>Acraea servona rhodina</i> R.J.1905	
<i>Acraea perenna kaffana</i> R.1902	• ssp.
<i>Acraea pharsalus rhodina</i> R.1902	
<i>Acraea guichardi</i> Gabriel 1949	
<i>Acraea sotikensis</i> Sh.1891	
<i>Acraea bonasia banka</i> Elt.1912	• ssp.
<i>Acraea rangatana maji</i> Carp.1935	
<i>Acraea rangatana jordani</i> Le.Doux 1928	
<i>Acraea miranda</i> Riley 1920	
<i>Acraea mirabilis</i> B.1885	
<i>Acraea alciope schecana</i> R & J 1905	• ssp.
<i>Acraea jodutta aethiops</i> R & J 1905	
<i>Acraea lycoa aequalis</i> R & J 1905	
<i>Acraea johnstoni johnstoni</i> G.1885	
<i>Acraea necoda</i> Hew.1861	
<i>Acraea natalica abadima</i> Ribbe 1889	
<i>Acraea caecilia caecilia</i> (F.1781)	
<i>Acraea oncaea</i> Hop.1855	
<i>Acraea doubledayi doubledayi</i> Guer.1847	
<i>Acraea braesia</i> G.1885	
<i>Acraea egina bellehui</i> Carc.1961	
<i>Acraea zetes sidamona</i> R & J 1905	• ssp.
<i>Acraea oscari</i> R.1902	
<i>Acraea chilo chilo</i> G.1880	
<i>Acraea pseudolycia astrigera</i> B.1899	
<i>Acraea eponina</i>	

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Family Satyridae  
 Subfamily Biinae  
 Tribe Melanitini

*Gnophodes betsimena parmeno* (Dbl.1847)  
*Melanitis leda* (L.1758)  
*Melanitis lybia* Dist.1882

Subfamily Elymniinae  
 Tribe Lethini

*Lasiommata maderakal maderakal* (Guer.1847)

Tribe Mycalesini

*Bicyclus sandace* (Hew.1877)  
*Bicyclus safitza safitza* (Hew.1851)  
*Bicyclus safitza aethiops* (R & J 1905) • ssp.  
*Bicyclus angulosus angulosus* (B.1868)  
*Bicyclus milyas* (Hew.1864)  
*Bicyclus pavonis* (B.1876)  
*Bicyclus funebris* (Guer.1844)  
*Henotesia perspicua* (T.1873)

Subfamily Satyrinae  
 Tribe Ypthimini

Ethiopian Butterflies - 9

*Ypthima asterope asterope* (Klug 1832)  
*Ypthima simplicia* (B.1876)  
*Ypthima doleta* (Kirby 1880)  
*Ypthima pupillaris paupera* Ung.1932  
*Neocoenyra duplex* B.1885

**Family Danaidae**  
**Subfamily Danainae**

*Danaus chrysippus aegyptius* (Schreber 1759)  
*Danaus formosa neumanni* R.1902  
*Amauris niavius aethiops* R & J 1903      • ssp.  
*Amauris ochlea darius* R & J 1903  
*Amauris ochlea ochleides* St.1895  
*Amauris hecate stictica* R & J 1903  
*Amauris echeria steckeri* Kheil 1889  
*Amauris echeria abessinica* Schmidt 1921  
*Amauris petiverana*

• = endemic species;

• ssp. = endemic subspecies

Summary:

<u>Family</u>	<u>Genera</u>	<u>Species</u>	<u>Endemic</u>	<u>% total</u>
Hesperiidae	11	17	0	0
Papilionidae	2	14	1	7.1
Pieridae	15	65	1	1.5
Lycaenidae	31	87	3	3.4
Libytheidae	1	1	0	0
Nymphalidae	24	114	2	1.8
Satyridae	7	17	0	0
Danaidae	2	9	0	0

	<u>Families</u>	<u>Genera</u>	<u>Species</u>	<u>Endemic</u>	<u>% total</u>
Total	8	93	324	7	2.2

Source:

Carcasson R.H. 1981. Butterflies of Africa. Collins, London, UK 184pp.

Collins S. 1993. (personal communication)

(jch vs7 a:butterfl; 22 Mar 1993)

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**AGENCY FOR INTERNATIONAL DEVELOPMENT  
BUREAU FOR AFRICA**  
Office of Analysis, Research and Technical Services/  
Office of Operations and New Initiatives  
AFR/ARTS-ONI

COUNTRY SPECIFIC SUPPLEMENTARY ENVIRONMENTAL ASSESSMENT (SEA) TO  
THE PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA)  
FOR LOCUST/GRASSHOPPER CONTROL IN AFRICA AND ASIA

FINAL ACTION FORM

COUNTRY: ETHIOPIA

DATE: July, 1993

ACTION TAKEN:

Approved: ✓ Date 8/20/93

Disapproval: \_\_\_\_\_ Date \_\_\_\_\_

Bureau Environmental Officer: J. J. G. G.

K:\DATA\NR\SEA\ACTION\FO.ETH