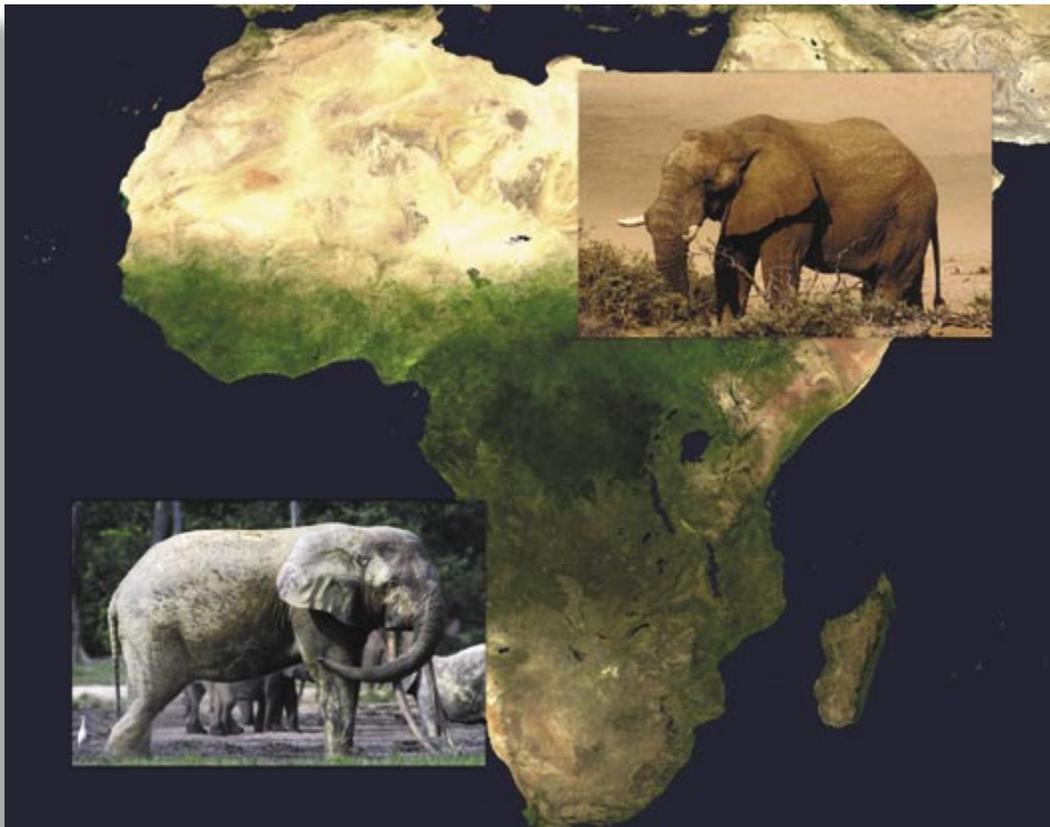


The IUCN Species Survival Commission

# African Elephant Status Report 2002

An update from the African Elephant Database

J.J. Blanc, C.R. Thouless, J.A. Hart, H.T. Dublin,  
I. Douglas-Hamilton, C.G. Craig and R.F.W. Barnes



Occasional Paper of the IUCN Species Survival Commission No. 29

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SPECIES SURVIVAL COMMISSION





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African Elephant Specialist Group  
Species Survival Commission  
The World Conservation Union

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2003**

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Cover: Elephants occur in a wide variety of habitats on the African continent - from deserts to tropical forests. Each habitat presents its own challenges for censusing elephants, and different survey methods have been developed for each. Photo Credits: Desert adapted elephant - Damaraland - Namibia - © 2001 *Gene Eckhart*; Forest Elephants in the Dzanga Clearing, Central African Republic © 2002 *Andrea Turkalo*; Blue Marble: Land Surface, Shallow Water, and Shaded Topography: NASA Goddard Space Flight Center. Image by *Reto Stöckli* (land surface, shallow water, clouds). Enhancements by *Robert Simmon* (ocean color, compositing, 3D globes, animation). Data and technical support: MODIS Land Group; MODIS Science Data Support Team; MODIS Atmosphere Group; MODIS Ocean Group Additional data: USGS EROS Data Center (topography);

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# INTRODUCTION

The *African Elephant Status Report 2002* provides the world's most authoritative and comprehensive source of knowledge on the distribution and abundance of the African elephant at the national, regional and continental levels. It is the most recent in a series of reports that began in 1979 with the *African Elephant Action Plan* (Douglas-Hamilton, 1979b). Like its predecessors, it was derived from data contained in the African Elephant Database (AED), a repository of information on the African elephant. Managed by the African Elephant Specialist Group (AfESG) of the IUCN Species Survival Commission (SSC), the AED is the most detailed and comprehensive single-species database of its kind.

The AfESG constantly seeks ways to enhance and upgrade the African Elephant Database, as well as the products derived from it. In addition to a vast array of updated information provided by a growing network of experts and organizations from across the continent, this report introduces a number of innovations with respect to its most recent predecessors (Barnes *et al.*, 1999; Said *et al.*, 1995). The change that is most likely to be noticed first by the reader is the new title. The previous title (*African Elephant Database*) has been replaced by *African Elephant Status Report* to better reflect the distinction between the AED as a living repository of raw information on elephant populations, and its periodic, synthesized snapshot reports. Other improvements include the categorization of distribution data, the display of point range information, the inclusion of data quality tables, a more detailed treatment at the regional and continental levels and new historical sections. To make the report more accessible and user-friendly, cartographic quality and document layout have been considerably enhanced. All these new features are described in detail in the sections that follow.

The *African Elephant Status Report 2002* is rich in data and information on numbers, distribution and current issues, which should aid the reader in understanding some of the more challenging questions surrounding the conservation of the world's largest land mammal.

## **Why count elephants?**

Information on elephant range and numbers is vital for the effective conservation and management of Africa's elephants. The elephant is a "keystone" species that plays a pivotal role in structuring both plant and animal communities (Shoshani, 1993; Dublin, 1995) and often dominates mammal biomass in the habitats it occupies (White, 1994). While the effect of the African elephant on its habitat is often beneficial (Chapman *et al.*, 1992; Ruggiero and Fay, 1994), it can have a detrimental impact on vegetation where high densities build up in confined areas (Craig, 1995; Tchamba and Mahamat, 1992; Swanepoel, 1993; Höft and Höft, 1995).

The potential impact of elephants on their habitats raises important management issues for protected areas. It is pertinent to ask, for instance, how large a protected area needs to be to support a viable elephant population without negatively affecting biological diversity (Armbruster and Lande, 1993). Conversely, and in order to prioritize efforts in elephant conservation, it is necessary to define minimum viable populations within isolated protected areas (Sukumar, 1993).

Elephant distribution, however, is not confined to protected areas. Indeed the majority of elephant range may still be found in unprotected land. This poses additional challenges for wildlife authorities and wildlife managers (Kangwana, 1995). Levels of human-elephant conflict, for instance, are high in many parts of the continent, and especially where human and agricultural expansion moves into new areas (Hoare, 2000).

In order to meet these challenges, it is essential that management objectives be clearly defined for both protected and unprotected areas of elephant range (Lindsay, 1993; Lindeque, 1995). Information on elephant distribution and abundance must be available in order to set such goals, as well as to monitor the effectiveness of management actions.

In summary, wildlife management authorities need to know the status of their elephant populations, whether they are increasing or decreasing and whether their numbers should be regulated to reduce conflict and to relax the pressure on habitats.

***The need for  
a continental  
approach***

The status of the African elephant varies significantly across its range, and the long-term survival of national populations is more threatened in some countries than in others. While the desire to conserve elephants is widespread, opinion differs as to how this goal can best be achieved. It is difficult, however, to make objective decisions about elephant management and conservation within and beyond protected areas without the sort of overview that a synthesis of continent-wide information can provide.

Continent-wide information is required because elephants move long distances across protected area boundaries and international borders, and a policy or management decision made in one country can affect elephant populations in other countries. Changing land-use patterns or different approaches to tourism, such as trophy hunting in border areas, may have impacts beyond sovereign boundaries. Likewise, policies concerned with ivory management and trade, in particular, transcend political boundaries drawn on a map. Trading by one country, for instance, could affect poaching or smuggling in another. Any management actions which, directly or indirectly, lead to fluctuations in the price of ivory, are all factors that can ultimately affect the future of the continent's elephant population. Furthermore, civil instability and wars often lead to the mass migration of refugees into previously uninhabited areas of elephant range. Several important range states are currently experiencing armed conflict, and have little or no monitoring capabilities. These factors all make it difficult to partition elephant management into clear political units.

While regional initiatives, such as the ELESMAF programme which involved most southern African range states in the 1990s (Craig, 1996a), are necessary to census and manage shared, cross-border populations, a continental perspective is also of foremost importance for identifying conservation priorities at the regional and continental levels.

# THE AFRICAN ELEPHANT DATABASE

## **History of the AED**

The African Elephant Database (AED) was initiated by Iain Douglas-Hamilton in 1986. The objective of the project was to develop a comprehensive picture of elephant numbers and distribution throughout Africa. Using data ranging from systematic survey results to guesses collected in questionnaires and interviews, a database of elephant population estimates and distribution was assembled (Burrill and Douglas-Hamilton, 1987) using a Geographical Information System (GIS).

Initially housed at UNEP headquarters in Nairobi, Kenya, the AED was from its inception and until April 1998 a collaborative effort of the Global Environment Monitoring System (GEMS), the Global Resource Information Database (GRID) of the United Nations Environment Programme (UNEP) and the IUCN/SSC African Elephant Specialist Group (AfESG). Towards the end of 1992, the AED became the direct responsibility of the AfESG, which had by then become a separate group from the African Rhino Specialist Group (AfRSG). In April 1998 the AED was moved from UNEP to its present location in the AfESG offices in Nairobi.

At an AfESG meeting in November 1992, a Data Review Taskforce (DRTF), consisting of five members, was appointed to review issues related to the future structure and management of the AED, as well as to define other data needs of the AfESG. Two DRTF meetings were convened in 1993, during which discussions were held on the restructuring, role and potential uses of the AED (IUCN/SSC/AfESG Taskforce, 1993). In late 1993, a GIS consultant was employed to evaluate recommendations made by the DRTF for data input and data quality categorisation, and to make further suggestions on the future use and management of the AED (Beardsley, 1993).

Building on the consultant's report, an AED manager was employed to develop and update the database. Said and Change (1994) produced a preliminary report for limited circulation at the CITES meeting in November 1994, which was then revised to produce the 1995 report (Said *et al.*, 1995). Funds were received from the US Fish and Wildlife Service (USFWS) to continue the activities of the AED until the end of 1999. A full-time database manager was hired, and activities continued, under the guidance of the DRTF, to refine and improve the structure of the database. A new report of the African Elephant Database was published in 1999 (Barnes *et al.*, 1999).

New funds were secured from the European Union and the USFWS, and preparations for a new report began in earnest in mid-2001. A meeting of the DRTF (now renamed Data Review Working Group or DRWG) was held soon after, and a number of improvements to the database and its reports were agreed. This report reflects the implementation of those decisions.

## **Database Management**

The AED is a continental database that aims to collect, maintain, analyse and publish information on the distribution and abundance of elephant populations, as well as on protected areas, in the African continent. In order to provide a current and accurate picture of the status of African elephants, the database must be regularly updated. Information to update the AED is constantly sought from every African elephant Range State, and continental status reports of the AED are produced and published approximately every three years.

The AED contains both spatial and non-spatial (attribute) data, managed using GIS software and a relational database management system (DBMS). Spatial data layers are currently maintained in ArcGIS 8.3 Geodatabase format within a Microsoft Jet (Access) database, and are stored as polygons or points depending on the geographic feature type. These datasets are

combined with base map data derived from the Digital Chart of the World (ESRI, 1992), a global geographical dataset available in the public domain.

Survey reports are obtained from wildlife management agencies and other organizations, and questionnaires and maps are distributed to AfESG members and other individuals with possible access to reliable information on elephant distribution and abundance. Data are received in a variety of formats, including paper maps, reports, personal communications and geo-referenced digital data. Information from paper maps is digitized and geo-referenced, while attribute data from reports, communications and questionnaire replies are entered through the keyboard.

New data are conflated with existing data and boundaries are adjusted to rivers, lakes, and political boundaries of the base map. Spatial polygon data are maintained in geographic (unprojected) coordinates in degrees of latitude and longitude. When it is necessary to calculate areas, the dataset is projected “on-the-fly” into the Lambert Azimuthal Equal-Area projection which, when applied to the African continent, results in minimal distortion to shape, distance and direction while retaining true area information. The surface areas of survey zone, protected area and elephant range as calculated by the GIS are aggregated at national, regional and continental levels to determine the total size of elephant range, protected areas and survey zones. In addition, overlay capabilities of the GIS are used to determine percentages of both protected and surveyed elephant range. However, such percentages may be sensitive even to small inaccuracies and hence must be treated with caution.

## **Data Types**

Recent genetic evidence seems to support the notion that the previously recognized subspecies of African elephant, namely the savanna elephant *Loxodonta africana africana* and the forest elephant *Loxodonta africana cyclotis*, may in fact constitute two separate species, namely *Loxodonta africana* (Blumenbach 1797) and *Loxodonta cyclotis* (Matschie 1900) respectively (Roca *et al.*, 2001). In addition, the existence of a third species, a West African elephant inhabiting both forests and savannas in that region, has been suggested (Eggert *et al.*, 2002). In 2002, after carefully reviewing the evidence available, the AfESG issued a position statement on the possibility of a multiple-species scenario (African Elephant Specialist Group, 2002). The Group believes that the premature allocation of African elephants into separate specific taxa would leave hybrids in an uncertain taxonomic and conservation status, and that more research is needed before such an allocation can be made. In consequence, and while the design of the African Elephant Database has been modified to accommodate information on different taxonomic groups within the genus *Loxodonta*, this report makes no distinction between such taxa.

Data on two basic variables, distribution or **range**, and **numbers** or abundance are collected and entered into the African Elephant Database.

### **Elephant range**

African elephants occur in a wide variety of habitats, from tropical swamp forests to deserts. Elephants often move extensively in search of food, water and minerals or in response to disturbance, and the extent to which they move may depend on a large number of factors. In certain areas, seasonal movements are predictable, while in others movement patterns are far more difficult to decipher. These factors, together with the scarcity of animals at the edges of range, make elephant range a complex concept to define and pin down. For these reasons, elephant range is broadly defined by the AfESG as the entire area where the species occurs in the wild at any time.

Collecting precise distribution information on such a wide-ranging species as the elephant presents a number of practical problems, often related to the remoteness and challenges posed by some of the habitats in which elephants are found. As a result, the quality of information varies considerably from one area to another. The range map for a particular country is often updated by a single representative at an AfESG meeting or by an individual answering a questionnaire, and thus subjective elements inevitably affect the collection of range information. Trying to draw a precise range boundary on maps of varying quality and scale is often an arbitrary exercise. Neat, rounded lines may be indicative of scanty knowledge in comparison to the fragmented, more detailed pictures which emerge from countries where more precise information is available. In some countries, national range is extrapolated from a small survey area. Range often fits, often too precisely, the boundaries of protected areas, because that is where most surveys are carried out. This means that movements in and out of protected areas, or between protected areas and surrounding dispersal areas, are largely ignored. Alternatively, range is delimited on a map by a natural boundary such as a river or a mountain range, for convenience rather than accuracy. When range information in one country extends to a national border, it does not always match the range in the neighbouring country because of non-response or poor information.

In order to address some of these difficulties, the AED now classifies elephant range information into four categories of certainty, as described in Table 1.

**Table 1. Categorization of elephant range data in the African Elephant Database**

<b>Range Category</b>	<b>Definition</b>
<b>Known Range</b>	Areas in suitable habitat which, if searched with reasonable intensity, are likely to yield signs of elephant presence. If no information is obtained confirming the presence of elephants for a ten-year period, <b>known</b> range is degraded to <b>possible</b> range (below)
<b>Possible Range</b>	Areas within historical range and in suitable habitat where there are no negative data to rule out the presence of elephants
<b>Doubtful Range</b>	Areas where there are reasons to believe that elephants are no longer present, but which have not been formally surveyed. If further corroborative evidence is obtained, areas of <b>doubtful</b> range are reclassified as <b>non-range</b>
<b>Non-Range</b>	Areas which do not harbour elephants due to habitat modification or local extinction
<b>Point Records</b>	Sightings of elephants or their signs outside of <b>known</b> range

Range information in the AED is now fully documented and referenced to the original source of the information. This allows some evaluation of the reliability of range information, based on how and when each record was obtained.

## Elephant numbers

There is a wide variety of methods available to obtain estimates of elephant numbers. The quality of an estimate is determined by a number of factors. Possible sources of bias include the choice of survey technique, surveyor skill, quality and availability of adequate equipment, financial constraints, climatic conditions and vegetative cover. Ideally, data on elephants in any country should be collected by a wildlife management authority using qualified staff and standardized methods for collecting, recording and analysing data. In reality, elephant data are often collected by a multiplicity of agencies and individuals, often without any direct linkage to one another and using a variety of different techniques based on current opinion and available resources. The result is a collection of data of variable quality in a most countries, and no data at all from many populations. Very few countries have the means, either financial or in the form of expertise, to conduct systematic surveys on a regular basis. Furthermore, political strife plagues many Range States and precludes monitoring work.

Elephants are often found in unprotected landscapes, where few surveys are undertaken. In some countries, elephants inhabit different types of habitat and it is necessary to combine data from different types of survey to calculate a national estimate. Seasonal and cross-border movements of elephants are additional factors that could potentially lead to inaccurate national estimates. To date there have been few cross-border surveys to estimate the size of such populations. Instead, they are treated as separate populations on either side of the border, which may occasionally result in either under- or over-counting.

There is no ideal method for counting elephants. Each method has its advantages and disadvantages and is applicable in a different situation. The brief description of some of the most important methods below is not intended to be detailed or comprehensive. For more details the reader is referred to the specialized texts available on the subject (e.g. Norton-Griffiths, 1978; Barnes, 1993; Craig, 1993; Douglas-Hamilton, 1996; Kangwana, 1996).

### **Methods of estimating elephant numbers**

Methods for estimating elephant numbers fall into three broad categories: **total counts**, **sample counts** and **guesses**.

**Total counts** aim to see and record all the elephants in a defined area, either from the air or from the ground.

Aerial counts are conducted from fixed-wing aircraft or helicopters, and are only suitable for open habitats, where elephants are less likely to be hidden by forest or thick bush. The speed at which the aircraft is flown also influences the accuracy of the count, with high speeds usually leading to undercounts (Norton-Griffiths, 1978). Aerial total counts are commonly used in savanna habitats, especially in Eastern and Southern Africa.

Total counts of a limited area can also be conducted at ground level by teams in vehicles or on foot. These are uncommon in Africa, but are sometimes used in India, where observers ride on domesticated elephants.

In a handful of places, total ground counts have been accomplished by identifying every individual in the population. This is only possible for intensively studied populations where animals can be observed readily. For such individual recognition studies to provide high quality data for the AED, *every* individual in the population must be registered. Many ongoing studies have so far only covered fractions of the populations being studied, and therefore cannot provide reliable estimates of entire populations.

**Sample counts**, in which only part of the area is counted (usually between 3% and 20%), can be further subdivided into *direct sample counts* and *indirect sample counts*. Both direct and

indirect sample counts are generally conducted along transects which may be randomly distributed or systematically placed across the area. The resulting data are used to calculate a population estimate with confidence limits. In contrast with total counts, which tend to produce underestimates of the true population, sample counts have in principle an equal chance of underestimating or overestimating the true population, provided that sampling error is the main source of error. In practice, however, factors such as high aircraft speed or dense vegetation cover will tend to lead to undercounts.

*Direct sample counts* are most commonly made from the air, but may also be conducted on the ground, either on foot or from vehicles. Aerial sample counts require considerable technical expertise and coordination, as well as the use of expensive equipment such as radar altimeters. Aerial sample counts are the most commonly employed survey technique in Eastern and Southern Africa.

*Indirect sample counts* are usually the only way in which to obtain objective estimates of elephant populations in forests, where it is difficult to see any animals. Elephant dung is counted along transects using distance sampling techniques, and results are combined with estimates of elephant defecation rate and dung decay to provide a population estimate with confidence limits. If properly conducted, dung-counting techniques can provide estimates that are as accurate as those from other methods and more precise than those of sample aerial surveys (Barnes, 2001; Barnes, 2002a).

A new indirect sample counting technique has recently been introduced for estimating the size of elephant populations in forests (Eggert *et al.*, 2003). The technique relies on the extraction of genetic material (DNA) from as many dung piles as possible within a given area, and the use of DNA fingerprinting methods to identify the number of unique genotypes (individuals) in the samples collected. The rates of repeat samples obtained can then be used to estimate the population size for the area, using the equivalent of a mark-recapture census technique (Eggert *et al.*, 2003). This census method is likely to find wide application in sites where more traditional methods are unlikely to give reliable results. This includes areas of mixed habitat and areas with low densities of elephants where other methods would give wide confidence limits.

**Guesses** are often the only kind of estimate obtainable for many areas. Organizing an elephant survey, whether a total or sample count, whether from the air or on the ground, requires a considerable investment in manpower, equipment, time and money, and this is often not feasible. It is then that guesses made by people who know the area in question have to be relied upon. If informants provide sufficient data to permit an evaluation of the accuracy of their estimate, such as a survey estimate with little or no details of methodology, then the estimate is considered an **informed guess**. If no such information accompanies the estimate, or if an estimate is older than 10 years old, then it is considered as an **other guess**.

# DATA CATEGORIZATION

Every survey method has its own sources of error and bias, and the choice of method is often not a matter of selecting the best, but of avoiding the worst (Norton-Griffiths, 1978). In addition, pooling individual estimates to arrive at national, regional and continental estimates, presents problems of its own. It is inappropriate, for instance, to obtain a combined estimate for two areas by adding up the results of a sample count in one area to those of a guess for another. Even if similar methodologies were employed the two areas, adding up the results would be of questionable value if the surveys were conducted at two very distant points in time. For these reasons, it is essential to categorize the information available and to present it in a manner that truly reflects the different degrees of reliability inherent in it.

Survey data in the AED are categorized according to data quality and survey reliability, as described below.

## **Data quality**

A score of 1 to 3 (best to worst) is given to each survey record in the AED based on survey parameters that may affect the accuracy and precision of the estimate. Data quality gives a basis with which to compare quality between surveys that employ the *same* methodology.

### **Ground survey data**

**Ground total counts**, including individual registration studies, are given a data quality of 1.

**Ground sample counts** are categorized according to *sampling intensity* or sample fraction. The following quality categories are based on percentage sampling intensity of a given area:

1. Greater than 20%
2. 5% to 20%
3. Less than 5%, or not reported.

### **Aerial survey data**

**Aerial total counts** are categorized in terms of *searching rates*, as follows:

1. Less than 100 km<sup>2</sup>/hr
2. 100 - 200 km<sup>2</sup>/hr
3. More than 200 km<sup>2</sup>/hr, or not reported

**Aerial sample counts** are categorized using *sampling intensity*. The following quality categories are based on percentage sampling intensity:

1. Greater than 20%
2. 5% to 20%
3. Less than 5%, or not reported.

### **Dung counts**

1. Percentage Relative Precision (PRP)<sup>1</sup> for mean elephant density less than 30% **and** one of the following:
  - a) Dung decay rate measured on site for 50 dung-piles
  - b) Defecation rate measured on site

---

1. PRP is the 95% confidence limit expressed as a percentage of the mean. Thus an estimate of 30 with confidence limits of  $\pm 15$  has a PRP of 50%

- c) PRP for dung density estimate  $\leq 20\%$
- d) Sampling done for both wet and dry seasons

**OR** any three of the above four conditions in (a)-(d).

- 2. PRP for elephant density  $\leq 50\%$

**OR** any two of the three following conditions:

- a) Decay rate measures on site for  $\geq 30$  dung-piles
  - b) Defecation rate measured on site
  - c) PRP for dung density  $\leq 30\%$
- 3. When the conditions for (1) and (2) are not fulfilled.

### Genetic Dung Counts

*Effective sampling intensity*, defined as the number of unique genotypes identified expressed as a percentage of the estimate, is used as the measure of quality for genetic dung counts.

- 1. Greater than 40%
- 2. 20% to 40%
- 3. Less than 20% or not reported.

### Guesses

Both **informed guesses** and **other guesses** are given a data quality category of 3.

## Survey Reliability

Population estimate data entered into the AED range in quality from the identification of individual animals (IR) to plain guesswork. The addition of population estimates of varying quality into national, regional and continental totals is strictly invalid and produces misleading results. On the other hand, discarding low-quality data would produce equally misleading estimates, as high quality surveys are not available for most areas in which elephants occur.

In order to solve this problem, a system was devised in 1995 that enabled the AED accommodate information of varying qualities by categorizing estimates by type and placing estimates into mutually exclusive groups. Thus, while it is still impossible to produce a single continental estimate, it is at least possible to obtain totals for a few separate categories.

Four categories are used, each associated with a different level of uncertainty.

- **Definite**
- **Probable**
- **Possible**
- **Speculative**

In order to place estimates into the appropriate category above, population estimates are rated according to survey type along a scale of survey reliability ranging from A (highest) to E (lowest), and each reliability category contributes to the **definite**, **probable**, **possible** and **speculative** categories as detailed in Table 2.

In addition to determining the breakdown of population estimates into **definite**, **probable**, **possible** and **speculative** numbers of elephants, survey reliability gives an indication of the level of certainty that can be placed on a given estimate, as determined by the type of method employed. Survey reliability gives a basis with which to compare surveys that employ *different* methodologies.

**Table 2. Categorization of elephant population estimates according to survey type and contribution of each to the four categories of elephant numbers.**

Survey Reliability	Survey type(s)	Categorization of estimates
<b>A</b>	<ul style="list-style-type: none"> <li>Individual registrations (IR)</li> <li>Aerial total counts (AT)</li> <li>Ground total counts (GT)</li> </ul>	<p><b>Definite</b>= the population estimate  <b>Probable</b>= none  <b>Possible</b>= none  <b>Speculative</b>= none</p>
<b>B</b>	<ul style="list-style-type: none"> <li>Aerial or ground sample counts (AS and GS respectively) with 95% confidence limits</li> <li>Dung counts (DC) with 95% confidence limits <i>and</i> dung decay rate measured on site</li> </ul>	<p><b>Definite</b>= the lower 95% confidence limit of the population estimate (there are <i>at least</i> this number of elephants) or the number actually seen, whichever is greater  <b>Probable</b>= the difference<sup>a</sup> between the estimate and the lower confidence limit, or between the estimate and the actual number seen or between the estimate and zero, if the lower confidence limit is negative<sup>b</sup>  <b>Possible</b>= the difference between the upper confidence limit and the estimate.  <b>Speculative</b>= none</p>
<b>C</b>	<ul style="list-style-type: none"> <li>Dung counts (DC) with 95% confidence limits but no on-site measurement of dung decay rate</li> <li>Genetic Dung Counts (GD)</li> </ul>	<p><b>Definite</b>= none or the number actually seen, if given<sup>c</sup>  <b>Probable</b>= the population estimate  <b>Possible</b>= the difference between the upper confidence limit and the estimate  <b>Speculative</b>= none</p>
<b>D</b>	<ul style="list-style-type: none"> <li>Aerial sample counts (AS), ground sample counts (GS) and dung counts (DC) without 95% confidence limits, and</li> <li>Informed guesses (IG)</li> </ul>	<p><b>Definite</b>= the number actually seen, if given  <b>Probable</b>= none  <b>Possible</b>= the population estimate or the lower estimate if a range is given, minus the actual number seen, if given  <b>Speculative</b>= the difference between upper and lower estimates, if given</p>
<b>E</b>	<ul style="list-style-type: none"> <li>Other guesses (OG)</li> <li>Any of the above survey types in which the estimate is over 10 years old</li> </ul>	<p><b>Definite</b>= the number actually seen, if given  <b>Probable</b>= none  <b>Possible</b>= none  <b>Speculative</b>= the estimate, or the mean of the upper and lower limit, minus the actual number seen, if given.</p>

- Rounded to the nearest whole number if necessary
- If the lower confidence limit of the estimate is a negative figure, the estimate will be zero or, if reported, the actual number of elephants seen in the survey.
- For dung counts it is assumed that there are no elephants unless any are observed directly. This is because, unlike with aerial surveys where the estimate is almost invariably lower than the true population size, dung counts may underestimate or overestimate the population size, depending on the choice of mathematical model and parameters used. For genetic dung counts (GD), the number of distinct genotypes identified is regarded as the number of elephants actually “seen”.

***Derivation  
of national,  
regional and  
continental  
totals***

The categorization system described above is implemented in the AED through a series of algorithms. When executed, these algorithms categorize every record in terms of data quality and survey reliability. The categorized records are then used to produce national, regional and continental totals.

In order to produce such totals, the confidence interval of the overall total of several sample counts from different areas is obtained by adding together the variances from the individual estimates (Norton-Griffiths, 1978). At all levels of addition of these estimates (i.e. national, regional and continental), the variances are pooled and confidence limits are calculated for the sum of the estimates before allocation of the pooled estimates to the four groups, **definite**, **probable possible** and **speculative**. This is why the regional group totals are not always the sum of the national group subtotals, and likewise, the continental totals of **definite**, **probable**, **possible** and **speculative** numbers of elephants are not always the simple sum of the regional group subtotals.

## HOW THIS REPORT IS ORGANIZED

Information in this report is presented at the continental, regional and national levels. The continental section is followed by regional sections, each of which contains the relevant individual country sections, in alphabetical order. Each section follows the format described below.

### **Overview**

Each section begins with a brief overview intended to supplement the information provided by the maps and tables that follow it. These overviews are not intended to provide the reader with exhaustive information on each country, but simply to describe the current situation and to highlight any factors that may have contributed to it. The overview contains the following sub-sections:

- **General Statistics.** This section provides summary statistics of country area, protected area coverage, area of elephant range, amount of elephant range in protected areas, and the amount of range which has been surveyed or has elephant population estimates. Only protected areas that fall within the IUCN protected area management categories I through IV have been included for these calculations. While many important management areas for elephants belong in categories V (Protected Landscapes) and VI (Managed Resource Areas), their conservation importance and effective protection is far from uniform across the continent.
- **Historical Background.** A brief historical account of elephant populations and their management since the beginning of the 20<sup>th</sup> century.
- **Range.** Summary information on how elephant range was determined and categorized, as well as any changes made to the map since the last publication.
- **Surveys and Data.** Description of the areas that have been surveyed and the methods employed, and how the data have been interpreted and categorized. Any changes between individual estimates for comparable surveys are described here.
- **Cross-border Movements.** Information on movements of elephants across international borders.
- **Current Issues.** Any issues that may, directly or indirectly, affect elephant populations and their conservation, such as poaching, political conflict, refugee crises, land use and wildlife management policies.

### **Summary Table**

The text overviews are followed by a summary table that presents pooled estimates at the national level, separated into four groups, **definite**, **probable**, **possible** and speculative numbers of elephants, based on the survey reliability categories (A-E) described under DATA CATEGORIZATION.

At all levels of addition (national, regional and continental), estimates in the **definite** (w), **probable** (x), **possible** (y) and **speculative** (z) totals are exclusive. In other words, a **possible** estimate does not include **definite** nor **probable** estimates. Thus, for a country, a region or the whole continent, there are, simply speaking, "definitely" (w) number of elephants, "probably" (w + x) number of elephants, "possibly" (w + x + y) number of elephants and "speculatively" (w + x + y + z) number of elephants.

It is important to note that the totals presented for each country are minimum estimates, based on the estimates for the areas that have been censused or for which guesses are available in that country. In many countries, there are large areas of elephant range where elephant numbers have not been estimated. No extrapolations have been performed for these areas in the AED, and they are therefore not included in the totals. If all of the elephant range is listed, then the totals are national estimates. If, on the other hand, estimates are only given for a

fraction of the elephant range in the country, the total cannot be considered a total national estimate.

### **Data Quality Tables**

The two tables that follow the summary table are meant to provide the reader with an indication of the limitations of data quality for each country or region. These tables can be used to prioritize data collection efforts at the national, regional and continental levels.

The first table (**area covered by each survey category**) depicts the relative contribution of each survey type to the total area (in km<sup>2</sup>) for which estimates are available. In addition, areas of unassessed **known**, **possible** and **doubtful** range are also shown on the table. Pooled estimates of elephant numbers for countries or regions where large areas of range remain unassessed are likely to be underestimates. Large areas of unassessed **possible** range, however, could simply reflect inadequate information on current elephant distribution.

The second table (**age of range data**) provides an indication of the reliability of range information. Age of range is broken down into ranges that coincide with the publication of AED reports. In general, older information can be taken to be less reliable, particularly in countries where political instability has taken place.

### **Table of Estimates and Map**

The AED 1995 and AED 1998 reports displayed two maps for each country – one for protected areas and elephant range and another for input zones and elephant range. In this edition, the information has been merged into a single map, and labels are displayed for each protected area and input zone. In order to simplify the maps, roads are no longer shown, while major towns, rivers and lakes have been retained.

**Input zones** are shown with a hatched pattern. The quality of the underlying population data is reflected by the spacing of the hatching, with reliable surveys depicted by a more closely spaced hatching than guesses.

**Elephant range** is depicted as described in the Data Types section above.

**Protected areas** of all IUCN Protected Area Management Categories (I-VI) are shown with a green boundary, the thickness of which is inversely proportional to the Protected Area Management Category.

Neighbouring countries and regions are shown in all maps to better highlight important cross-border populations, as well as the spatial relationships between elephant populations in different countries. A thumbnail locator map is also shown to easily identify the location of the country in the continental context.

Each country map is accompanied by a table listing the input zones in alphabetical order. This table serves as a map key by providing the location of the centroid of each input zone in decimal geographic coordinates. In addition, the table presents detailed information on estimates, data quality, area of the survey zone and reference information. Table 3 describes in more detail the parameters shown on the table of estimates.

**Table 3. Parameters shown in the tables of estimates for each country section of this report.**

<b>Survey Zone</b>	Name of the input zone in alphabetical order <sup>a</sup> followed by its legal designation (if any), e.g. Queen Elizabeth National Park.
<b>Survey Type</b>	Type of survey conducted and its assigned quality (1,2 or 3), as described under the DATA CATEGORIZATION section.
<b>Survey Reliability (Reliab.)</b>	Category (A, B, C, D or E) into which the elephant estimate falls. Category is dependent on survey type and additional criteria, as described under DATA CATEGORIZATION.
<b>Survey Year</b>	Year in which the survey was conducted, or in case of guesswork, the year to which the guess applies
<b>Number of Elephants</b>	Estimate from the survey or guess reported
<b>95% C.L.</b>	The 95% confidence limits for the estimate or, in the case of informed guesses, the upper range of the guess marked with an asterisk. This field is blank for surveys in which there are no confidence limits (e.g. total counts or lower-quality dung counts).
<b>Source</b>	Author(s) and year of the report, questionnaire reply, personal communication or published source from which the estimate was obtained. All sources appear in the list of references at the back of this report.
<b>Area</b>	Size of the input zone in <b>km<sup>2</sup></b> . Where available, this area indicates the area reported by the reference source. If unreported, the area is either derived from the size of the protected area(s) to which the estimate refers, or was calculated using the GIS in the Lambert Azimuthal Equal area projection.
<b>Map Location</b>	Longitude (LON) and latitude (LAT) of the centroid of the input zone, given in degrees with one decimal digit.

- a. Numerical codes for each input zone were presented in previous reports of the AED, but to make the report more user-friendly, these have been removed and replaced by an alphabetical listing of the input zone, coordinates of the centroid of each input zone and labels on the maps.

# CONTINENTAL OVERVIEW

## **General Statistics**

Total Area: 22,617,267 km<sup>2</sup>  
Range Area (% of continent): 4,929,874 km<sup>2</sup> (22%)  
Protected area coverage (% of continent): 8%  
Protected range (% of known and possible range in protected areas): 16%

## **Historical Background**

The African elephant (*Loxodonta africana*), the world's largest land mammal, may have once inhabited most of the continent (Cumming *et al.*, 1990). Elephants occurred in parts of Northern Africa until the beginning of the Current Era (Scullard, 1974), and are presumed to have been widespread everywhere south of the Sahara (Sikes, 1971).

Ivory was a priced commodity throughout history. It was traditionally used and traded by many African cultures, commercially exploited by the Romans in ancient times and later by Arab traders and Europeans. The commercial pursuit of ivory, along with the expansion of human populations and desertification, are often cited as the principal causes behind the contraction of elephant range and associated population declines in Africa (Cumming *et al.*, 1990; Milner-Gulland and Beddington, 1993a; Milner-Gulland and Beddington, 1993b). Between 1890 and 1900, nearly 3.7 million kg of ivory were traded in the London market alone, and it is estimated that the ivory of some 60,000 elephants reached European markets every year during that period (Sánchez Ariño, 1974).

In the early 20<sup>th</sup> century, human population densities were low in much of the continent as a result of the slave trade, wars and disease (Thouless, 1999). Land use patterns changed with the growth of human populations throughout the century, resulting in a contraction of elephant range. This led elephant populations to build up in protected areas by the second half of the 20<sup>th</sup> century, leading to local overpopulation of elephants in many areas.

During the early 1970s, speculation grew over a serious population decline of the African elephant. However, as hard data were lacking to support such claims, the need arose for an objective assessment of the situation. This led to the implementation of the African Elephant Survey and Conservation Programme in 1976. The programme recorded and publicized major declines in elephant populations in many African countries during that decade. Declines continued in the 1980s in much of East, West, Central and some northern parts of Southern Africa, while elephant populations in Botswana, Zimbabwe and South Africa showed stability or increases in the same period (Lombard *et al.*, 2001; Douglas-Hamilton, 1992; Cumming *et al.*, 1990).

In 1989 the African elephant was placed on Appendix I of the Convention of International Trade in Endangered Species of Flora and Fauna (CITES). The ruling, which came into effect in January 1990, effectively banned all international trade in elephant products among Parties to the Convention. However, most governments in Southern Africa's elephant Range States did not support the Appendix I listing, arguing that elephant populations in their countries were stable or increasing, largely due to good management, and that the apparent continental decline in elephant numbers was not indicative of local trends. This led to the emergence of strong divisions between those in favour of the trade ban, led by Eastern African countries and Kenya in particular, and those against.

The species retained an Appendix I CITES listing between 1990 and 1996, with unsuccessful proposals in 1992 and 1994 to downlist specific populations, primarily in southern Africa. Public interest in the fate of the African elephant remained high, and in 1996 a dialogue process between the Range States of the African elephant was initiated at a meeting in Dakar, Senegal. The Dialogue process enabled Range States to understand each others views, to discuss options and to build consensus on the conservation and management of Africa's elephants, including the future of the ivory trade. Four further Range States Dialogue Meetings have since been held in Damendale, Zimbabwe (1997), Arusha, Tanzania (1998), Gigiri, Kenya (2000) and Santiago, Chile (2002).

At the 10<sup>th</sup> Meeting of the Conference of the Parties to CITES (CoP10) held in Harare, Zimbabwe, in June 1997, the decision was taken to transfer the African elephant populations of Botswana, Namibia, and Zimbabwe from Appendix I to Appendix II, as well as to allow a single commercial sale of raw ivory from these countries to Japan in 1999, subject to a series of conditions being met by the trading parties. Later, in 2000, South Africa also had its elephant population transferred to Appendix II and was allowed to trade in elephant hides and leather goods, but with a zero quota for ivory. At the CITES Cop12 held in Santiago, Chile, in November 2002, the sale of set amounts of legally-acquired ivory by three countries (Botswana, Namibia and South Africa) was approved, subject to an acceptable trading partner being identified and other conditions being fulfilled.

## **Range**

Of the total area currently estimated as range, only 35% is categorized as **known**, with the remaining 65% percent remaining as **possible** range. The total area of range (**known** and **possible**) presented in this report (approximately 5,346,000 km<sup>2</sup>) is lower than that reported in the AED 1998 (5,772,500 km<sup>2</sup>) by nearly 8%. This decrease is largely due to better information rather than to real changes in the extent of elephant range.

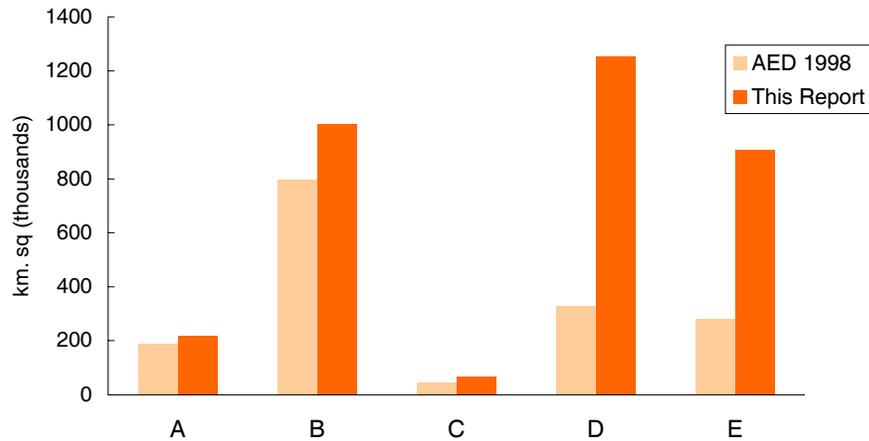
The extent of range varies considerably across the four regions. Central Africa has the largest range estimate (over 2 million km<sup>2</sup>), but the lowest proportion of **known** range. In contrast, West Africa has the smallest range estimate (221,000 km<sup>2</sup>), but the largest proportion of **known** range (74%). The Southern African region has the second largest range estimate (nearly 1.7 million km<sup>2</sup>) and the second lowest proportion of **known** range (39%), while Eastern Africa has just over 950,000 km<sup>2</sup> of total range, of which 42% is **known**.

Forest habitats are most prevalent in Central Africa, where they account for over 55% of the range estimate. Central African forests also account for over 23% of the entire continental range estimate. The only other region where the abundance of forest is of any note is West Africa, where it accounts for over 25% of elephant range.

The age of range information currently in the AED varies considerably across regions. For instance, nearly 40% of the range depiction (including non-range and doubtful range) for Central Africa was obtained before 1988, when the first report of the African Elephant Database was published.

## **Surveys and Data**

The total area for which elephant population estimates are available has nearly doubled between the AED 1998 report and this report, increasing from over 1.5 million km<sup>2</sup> to just over 3 million km<sup>2</sup>. Although this increase is reflected in every survey category, the largest differences are in informed guesses and other guesses. This is largely due to guesses being obtained for most of the Democratic Republic of Congo in Central Africa and Mozambique in Southern Africa (Figure 1).



**Figure 1. Comparison of continental coverage by survey type between the AED 1998 report and this report. Categories A-D refer to survey reliability categories as described in the Data Categorization section.**

This increase, together with the net decrease in the area depicted as elephant range, results in higher overall coverage at the continental level. However, nearly 45% of the range estimate continues to have no estimates attached, and only 15% of estimated range is covered by systematic surveys.

The **definite, probable, possible** and **speculative** figures reported at the continental level are higher than in the previous report. The number under the **definite** category is higher by 100,294 elephants, whereas those in the **probable, possible** and **speculative** categories are higher by 2,828, 39,033 and 30,711 respectively. While these changes suggest an increase, their interpretation is complicated and may be confounded by a large number of factors. In addition to reproduction and mortality, many other factors unrelated to overall elephant numbers could contribute to the apparent changes. These include more extensive survey and guess coverage, immigration and emigration, differences in methods, areas surveyed, the experience of survey crews and seasons at which surveys were conducted. In consequence, the data presented here cannot give any indication of overall changes in elephant populations in the period between the two reports, and a detailed analysis would be required in order to assess real changes in elephant populations over time.

### **Current Issues**

A large number of issues affect the conservation of the African elephant, and these are discussed in more detail at the regional and national levels.

International cooperation and coordination between Range States in matters of elephant conservation is one of the most important issues to be addressed at the supranational level. By developing a regional strategy for the conservation of elephants, West Africa has begun to take steps to address issues affecting the region as a whole. Central Africa is expected to develop a regional strategy of its own in the near future.

A future challenge for the continent as a whole will be the identification and prioritization of the elephant populations that each country can sustain, and the development of management strategies to maintain populations at viable levels.

The ivory debate continues to be one of the major points of disagreement over elephant conservation between African elephant Range States. Although compromises have been reached in the various Range State Dialogue Meetings, there is still no meeting of minds on ways to address the issue.

### Continental summary totals

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	41,823	0	0	0
Direct Sample Counts and Reliable Dung Counts	354,416	29,540	29,540	0
Other Dung Counts	86	6,698	29,484	0
Informed Guesses	5,742	63,575	0	18,116
Other Guesses	0	0	0	81,191
<b>TOTAL</b>	<b>402,067</b>	<b>59,024</b>	<b>99,813</b>	<b>99,307</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Aerial or Ground Total Counts	163,921	2.9%
Direct Sample Counts and Reliable Dung Counts	642,552	11.2%
Other Dung Counts	37,280	0.7%
Informed Guesses	1,119,354	19.6%
Other Guesses	506,356	8.9%
Unassessed Known Range	539,945	9.4%
Unassessed Possible Range	1,920,617	33.6%
Doubtful Range	785,030	13.7%
<b>TOTAL</b>	<b>5,715,055</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	1,189,643	20.8%
1988-1992	350,401	6.1%
1992-1995	1,278,741	22.4%
1996-1998	848,473	14.8%
Post-1998	2,047,797	35.8%
<b>TOTAL</b>	<b>5,715,055</b>	

## Regional and Continental totals

COUNTRY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE	COUNTRY AREA	RANGE AREA
Central Africa	16,450	32,263	64,477	82,563	5,365,550	2,060,763
Eastern Africa	117,716	17,702	22,511	5,738	6,182,037	969,113
Southern Africa	246,592	23,722	26,098	7,508	5,973,020	1,680,130
West Africa	5,458	1,188	3,039	3,498	5,096,660	219,868
<b>TOTAL*</b>	<b>402,067</b>	<b>59,024</b>	<b>99,813</b>	<b>99,307</b>	<b>22,617,267</b>	<b>4,929,874</b>

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\* Note that totals for the Definite, Probable and Possible categories are derived from pooling variances, as described under the Data Categorization section. As a result, totals do not necessarily match the simple sum of the entries within a category.

# Elephant Range in Africa



**Legend**

-  Regional Boundary

**Elephant Range**

-  Known
-  Possible
-  Doubtful



Geographic Projection  
Scale is indicative only

Sources:  
African Elephant Database  
Digital Chart of the World

IUCN/SSC



**African Elephant Specialist Group**



# CENTRAL AFRICA

## **General Statistics**

Total Area: 5,365,550 km<sup>2</sup>

Range Area (% of region): 2,060,763 km<sup>2</sup> (38%)

Protected area coverage (% of region): 5%

Protected range (% of known and possible range in protected areas): 12%

## **Historical Background**

During the late 19<sup>th</sup> and early 20<sup>th</sup> century, the activities of private concessions and unrestricted hunting resulted in the export of large quantities of ivory from the region. The impact upon elephant populations remains unknown because there were no estimates of elephant numbers. Commercial hunting for ivory was banned in most of Central Africa in the 1930s. The creation of national parks in the region began then, with the number of reserves created peaking in the 1960s, at around the time when most countries in the region attained their independence. However, the effectiveness of many of these reserves in protecting elephant populations has remained limited to this day due to the history of political instability that has marked much of post-independence Central Africa.

Perhaps coinciding with the development and penetration of extractive industries such as logging and oil prospecting in Central Africa, many areas were reported to have experienced severe episodes of poaching for ivory in the 1970s and 1980s (Barnes *et al.*, 1995; Barnes, 1987). Poaching was particularly intense in parts of the now Democratic Republic of Congo (e.g. Hillman *et al.*, 1983; Mertens, 1983; Alers *et al.*, 1992), Congo (Fay and Agnagna, 1991) and the Central African Republic (Douglas-Hamilton *et al.*, 1985). A comparison of lightly and heavily poached countries suggested that poaching may have had a substantial impact upon elephant populations in the Central African forest zone (Michelmore *et al.*, 1994).

While demand for ivory may have decreased in the 1990s, logging operations continued to expand in that decade. Although logging often results in the creation of secondary forest, a habitat preferred by elephants, the influx of logging workers into forest areas is often associated with poaching for meat (Barnes, 1987; Wilkie *et al.*, 1992). A number of conservation programmes were initiated in various national parks and reserves in the 1980s and 1990s. Although higher levels of protection could be afforded in these areas, population data has remained scanty throughout Central Africa.

## **Range**

Most of the continent's tropical forests occur in the Central Africa region, with forest originally occupying almost 1.15 million km<sup>2</sup> of the current **known** and **possible** range estimate of over 2 million km<sup>2</sup>. The nature of forest habitats and their remoteness make it difficult to conduct surveys and to obtain reliable range information for many areas in the region. As a result, much uncertainty remains as to the reliability of the range estimate for most of Central Africa, with only 36% of range categorized as **known**.

Despite the abundance of forest within elephant range in Central Africa, other habitats are almost equally prevalent, with a total estimated 915,000 km<sup>2</sup> across the region. Most of these habitats, however, are characterized by forest-savanna mosaics, where obtaining reliable range information is equally difficult.

Bearing in mind the limitations of range information for Central Africa, it is notable that the region potentially contains the largest tracts of elephant range on the continent (42% of the continental range estimate and 39% of the region's total surface area). In addition, Central

Africa has the largest proportion of range outside of protected areas (only 12% in protected areas, compared to an average of 24% for the other three regions).

Approximately 30% of the range information available for the region was collected before 1987, and although 44% of the information is recent (post-1999), nearly half of that is a result of categorization as **doubtful** range. While some areas have been categorized as non-range, much of the difference between the amount of range reported in the AED 1998 (over 2.7 million km<sup>2</sup>) and that reported here (over 2 million km<sup>2</sup>) is explained by the categorization of over 647,000 km<sup>2</sup> as **doubtful** range.

## **Surveys and Data**

Due largely to constraints posed by remoteness, the nature of habitats and limited resources, much of Central Africa has never been surveyed. A notable exception is the Gabon, where extensive dung counts were conducted in the 1980s (Barnes *et al.*, 1995; Barnes *et al.*, 1997). Results of systematic surveys account for under 3% of the region's total **known** and **possible** elephant range. About 40% of the remainder is still unassessed, while the rest is covered by guesses.

The overall amount of range for which estimates are available has increased from some 430,825 km<sup>2</sup> in the AED 1998 report to over 1,360,000 km<sup>2</sup> in this report. Most of this increase, however, is due to new guesses obtained for the Democratic Republic of Congo (Hart, 2003a). Although systematic surveys have been conducted in several areas for which estimates were previously unavailable, there has been a net decrease in the total area covered by such surveys since the last report, with the figure going from over 75,000 km<sup>2</sup> in the AED 1998 to about 61,000 km<sup>2</sup> in this report. This is largely due to the degradation of survey estimates to the category of **other guesses** because of their age or other factors affecting their reliability.

Taking into account the fact that estimate coverage has increased, as well as the limitations in data quality, pooled totals under all four categories of elephant numbers have increased for this region since the last AED report, with numbers under the **definite** category increasing from 7,322 to 16,450. Similarly, numbers under the probable category have increased to 32,263 (from a previous 27,104), **possible** numbers have jumped to 64,677 (from 27,613) and those under the speculative category have gone up to 82,563 (from 63,469).

## **Current Issues**

The prevalence of unrest in several Central African countries makes conservation and monitoring work difficult, and this remains a major cause of concern for the future of elephant populations in the region. Although habitat conversion caused by selective logging may benefit elephant populations by creating secondary forest, human activities associated with logging, such as the bushmeat trade, are also important threats to elephant populations in Central Africa.

Central African governments have entered into a number of initiatives to conserve their wildlife and other natural resources. These include the 1999 Yaoundé Declaration, through which Central African countries undertook to increase their protected area coverage, to create transboundary protected areas and to enhance international mechanisms of cooperation in matters of conservation, with particular emphasis on sustainable forestry practices. In addition, Central African governments have initiated the development of a Central Africa Elephant Conservation Strategy.

In 2002 the US Government earmarked US\$36 million to promote the responsible management of tropical rainforests in the Congo Basin. This fund was matched by a pledge by international conservation NGOs to raise an additional US\$37.5 million to increase their activities in the six countries of the Congo Basin – Cameroon, Congo, Central African Republic, Democratic Republic of Congo, Equatorial Guinea and Gabon.

### Summary totals for Central Africa

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	1,989	0	0	0
Direct Sample Counts and Reliable Dung Counts	10,542	3,393	3,393	0
Other Dung Counts	0	28,870	6,687	0
Informed Guesses	3,919	0	54,398	15,378
Other Guesses	0	0	0	67,185
<b>TOTAL</b>	<b>16,450</b>	<b>32,263</b>	<b>64,477</b>	<b>82,563</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	3,536	0.1%
Direct Sample Counts & Reliable Dung Counts	13,061	0.5%
Other Dung Counts	35,105	1.3%
Informed Guesses	934,030	34.5%
Other Guesses	219,020	8.1%
Unassessed Known Range	317,295	11.7%
Unassessed Possible Range	538,996	19.9%
Doubtful Range	646,833	23.9%
<b>TOTAL</b>	<b>2,707,876</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	1,050,872	38.8%
1988-1992	187,823	6.9%
1993-1995	75,183	2.8%
1996-1998	120,904	4.5%
Post-1998	1,273,094	47.0%
<b>TOTAL</b>	<b>2,707,876</b>	

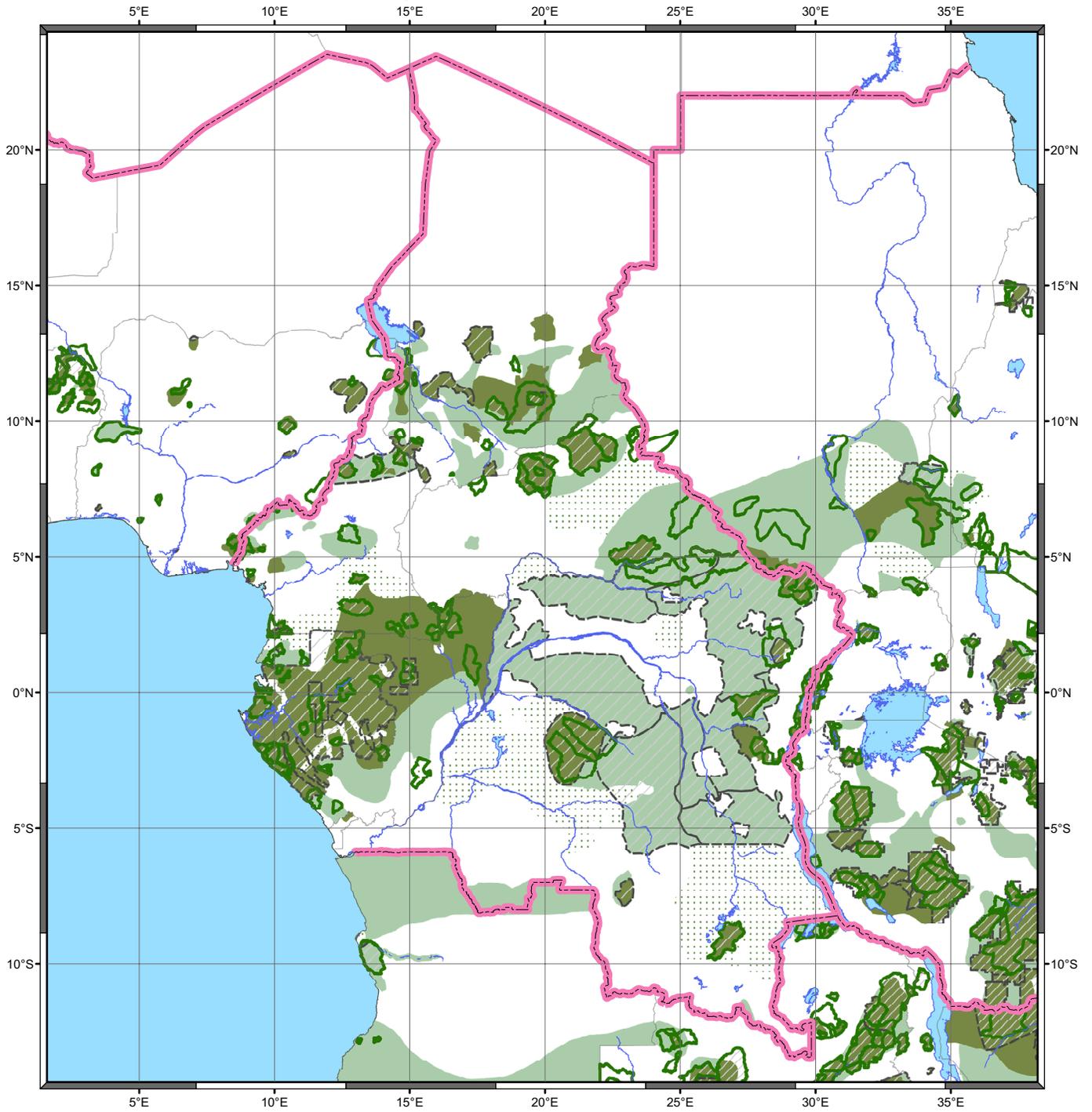
## Country and regional totals for Central Africa

COUNTRY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE	COUNTRY AREA	RANGE AREA
Cameroon	2,006	3,058	9,017	3,160	475,440	173,765
Central African Republic	2,977	1,600	2,420	390	622,980	217,708
Chad	1,989	0	2,000	550	1,284,000	263,973
Congo	431	18,222	6,572	2,300	342,000	248,361
Democratic Republic of Congo	7,667	2,631	34,996	17,554	2,345,410	912,105
Equatorial Guinea	0	0	0	300	28,050	15,257
Gabon	0	8,132	14,712	58,309	267,670	229,594
<b>TOTAL*</b>	<b>16,450</b>	<b>32,263</b>	<b>64,477</b>	<b>82,563</b>	<b>5,365,550</b>	<b>2,060,763</b>

\* Note that totals for the Definite, Probable and Possible categories are derived from pooling variances, as described under the Data Categorization section. As a result, totals do not necessarily match the simple sum of the entries within a category.

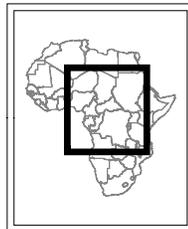
# Central Africa

## Elephant Range, Input Zones and Protected Areas



**Legend**

International Boundary	<b>Elephant Range</b>
Regional Boundary	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
<i>Input Zones</i>	



Sources:  
African Elephant Database  
Digital Chart of the World

0 250 500 1,000 km

Geographic Projection  
Scale is indicative only





# C A M E R O O N

## **General Statistics**

Country Area: 475,440 km<sup>2</sup>  
Range Area (% of country): 173,765 km<sup>2</sup> (37%)  
Protected area coverage (% of country): 8%  
Protected range (% of known and possible range in protected areas): 13%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

The ivory trade was one of the most important elements of the economy during the early colonial period, with export figures showing annual increases to a peak in 1916. Twenty years later, the northern savanna population was estimated at no more than 200, while the southern forested zone was thought to harbour between 9,000 and 10,000 elephants (Jeannin, 1936). Between the 1940s and the 1990s, populations in the northern savanna reportedly doubled through immigration from Chad, and control measures were implemented to reduce the impact of crop-raiding elephants (Tchamba, 1996).

Data on numbers are scanty until 1991, when a review collated a number of informed guesses by province to arrive at an estimated total of about 23,500 elephants, over two thirds of which were reported in East Province (Direction de la Faune et des Parcs Nationaux, 1991). The national figure was revised in 1997, producing a national estimate of 27,600 elephants. There were no new data for the Sahelian and Sudanian parts of the range, but new estimates for forest areas were included, contributing 90% of the total (Tchamba *et al.*, 1997).

## **Range**

Elephants in Cameroon occur in three distinct biogeographical regions, namely the northern savanna ranges in the Sahelian and Sudanian regions, and the southern forested area (Tchamba *et al.*, 1997). With the exception of pockets of forest range in the southwest of the country, which were added to the AED in 1998 based on information contained in the Cameroon National Elephant Management Plan (Tchamba *et al.*, 1997), the limits of the larger portions of range have not been studied in detail. The information on which the depiction of these areas is based dates back to the African Elephant Action Plan (Douglas-Hamilton, 1979b) and the 1992 edition of the African Elephant Database report (Douglas-Hamilton *et al.*, 1992).

For this report, a substantial portion of the southern part of the country has been categorized as **doubtful** range (Thomas *et al.*, 2001; J.A. Hart, pers. comm., 2003b), reflecting better information on elephant distribution in the area. Other areas categorized as **doubtful** are the northwestern sector of the new Mbam-Djerem National Park, where a reconnaissance survey found no signs of elephant presence (Maisels *et al.*, 2000), and the coastal areas to the west and north of Campo Ma'an National Park (Matthews and Matthews, 2000).

Much of the southeastern part of the country has been categorized as **known** range (Noupa *et al.*, 2002; J.A. Hart, pers. comm., 2003b). Based on radiotracking work by Powell (1997), a new area of **known** range has been added between Korup National Park and Bayang-Mbo Forest Reserve, and to the northeast of the latter. Radiotracking data has also provided the basis for categorizing parts of the northern Sahelian and Sudanian ranges as **known** range (Loomis, 2002).

Other areas surveyed within the last ten years have been categorized as **known** range, while remaining areas retained from the African Elephant Database 1998 report have been categorized as **possible** range.

## **Surveys and Data**

Little new data on elephant numbers in Cameroon could be obtained for this report. Although dung counts have been conducted by WWF in previously unsurveyed areas of southwestern

Cameroon, results were still being analysed at the time of writing. Surveys of Dja Faunal Reserve (Dongmo, 1999; Dongmo, 2001) the Ngoyla-Mintom forest (between Dja and Nki; Noupa *et al.*, 2002), and of parts of Mbam-Djerem National Park (Maisels *et al.*, 2000) provided relative indices of abundance but no estimates of elephant populations.

The only new estimates for Cameroon originate from a dung count conducted in the southern sector of the new Campo-Ma'an National Park (Bekhuis and Prins, 2001), and informed guesses for the Ma'an region (Matthews and Matthews, 2000) and the western slopes of Mount Cameroon (Epiemelle, 2002). In addition, a 1996 informed guess of 1,600 for Waza National Park (Tchamba, 1998) replaces an estimate of 1,071 from a 1991 aerial total count. All other estimates on the table have been retained from the previous report.

### **Cross-border Movements**

Satellite-tracking work suggests that elephants disperse from their northern savanna range as far as Lake Chad and into Nigeria (Loomis, 2002) in the dry season. There is evidence that in the wet season more than 100 elephants leave Bouba Ndjidah National Park and move into the Mayo-Kebbi region in Chad where they cause crop damage (Tchamba *et al.*, 1997).

Although information is lacking, elephants in the southern forest range probably move regularly between Cameroon, Gabon, Equatorial Guinea (Bekhuis and Prins, 2001) and the Central African Republic, from where elephants have been seen to move across the Sangha River into Lobéké National Park in Cameroon (Usongo, 2003). The results of ongoing radio-tracking studies will shed more light into elephant movements in this area (Usongo, 2003).

### **Current Issues**

A summit of Central African heads of state was held in Yaoundé in May 1999 to address common problems related to forest management in the Congo Basin. The outcomes of that meeting included commitments to create transboundary protected areas and to combat high levels of poaching and illegal logging in the region. Cameroon has since created three new national parks – Campo Ma'an (2,550 km<sup>2</sup>) along the border between Cameroon and Equatorial Guinea, Mbam et Djerem (4,170 km<sup>2</sup>), and Lobéké (2,180 km<sup>2</sup>). The allocation of logging concessions has been made more transparent and an anti-poaching plan began to be implemented in December 1999 (WWF Cameroon, 2002).

Despite these efforts, the pressure exerted by logging and expanding human populations may continue to have a negative impact on Cameroon's elephant populations. The number of logging concessions in southern Cameroon has continued to increase and they now occupy most of the southern range outside of protected areas (Wilkie *et al.*, 2002). In the extreme south west of the country elephants are reported to have abandoned former range directly as a result of disturbance caused by logging operations (Matthews and Matthews, 2000).

The human elephant conflict situation in the Waza-Logone area, where the construction of a dam had altered the vegetation composition and led elephants to range more widely in search of food and water, was somewhat improved by the artificial reflooding of parts of Waza National Park (de Iongh *et al.*, 1999). Crop-raiding by elephants in the forested Mungo Division of southwest Cameroon is reported by local villagers to be a severe problem, and Ekobo (1997) suggests that the proximity of elephants to their farms may be partly explained by poaching pressure within the forests.

Cameroon has an annual CITES export quota of 160 tusks (80 animals) for legally-acquired hunting trophies (World Conservation Monitoring Centre, 2003).

## Summary totals for Cameroon

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	2,002	2,142	2,142	0
Other Dung Counts	0	916	347	0
Informed Guesses	4	0	6,528	510
Other Guesses	0	0	0	2,650
<b>TOTAL</b>	<b>2,006</b>	<b>3,058</b>	<b>9,017</b>	<b>3,160</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	2,985	1.3%
Other Dung Counts	1,010	0.4%
Informed Guesses	12,477	5.4%
Other Guesses	34,595	15.0%
Unassessed Known Range	64,205	27.9%
Unassessed Possible Range	58,498	25.4%
Doubtful Range	56,320	24.5%
<b>TOTAL</b>	<b>230,090</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	54,542	23.7%
1993-1995	17,111	7.4%
1996-1998	40,549	17.6%
Post-1998	117,888	51.2%
<b>TOTAL</b>	<b>230,090</b>	

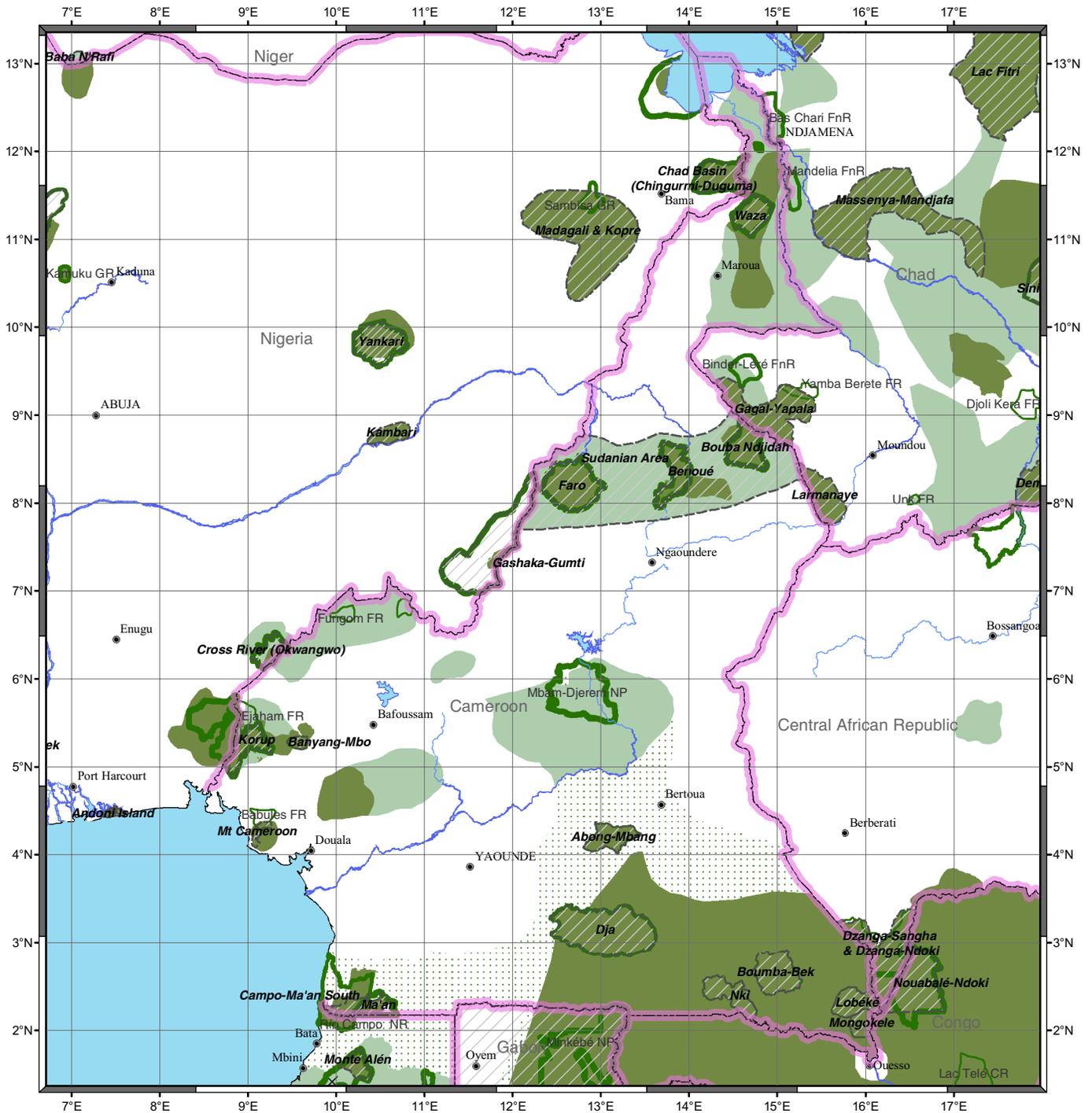
## CAMEROON: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Abong-Mbang Forest Reserve	OG3	E	1994	100		Ekobo pers. comm., 1994	1,540	13.1 E	4.2 N
Banyang-Mbo Forest Reserve	DC3	C	1993	368	236	Powell, quest. reply, 1993	426	9.6 E	5.3 N
Benoué National Park	IG3	E	1991	540		Tchamba et al., 1991	1,800	13.8 E	8.3 N
Bouba Ndjidah National Park	IG3	E	1991	660		Tchamba et al., 1991	2,200	14.7 E	8.6 N
Boumba-Bek Forest Reserve	DC3	D	1998	1,250		Ekobo pers. comm., 1998	2,500	15.0 E	2.7 N
Campo-Ma'an South National Park	DC2	C	2001	548	255	Bekhuis and Prins, 2001	648	10.1 E	2.3 N
Dja Faunal Reserve	IG3	D	1995	1,500	500*	Tchamba pers. comm., 1995	5,260	13.0 E	3.1 N
Faro National Park	IG3	E	1991	60		Tchamba, 1993	3,300	12.7 E	8.2 N
Korup National Park	DC3	B	1993	425	271	Powell, quest. reply, 1993	1,259	9.0 E	5.2 N
Lobéké National Park	DC2	B	1993	3,719	2,125	Ekobo, 1995	1,985	15.9 E	2.3 N
Ma'an Region	IG3	D	2000	4	10*	Matthews and Matthews, 2000	654	10.4 E	2.3 N
Mongokele Forest Reserve	DC2	E	1991	773	53	Ekobo pers. comm., 1994	850	16.0 E	2.1 N
Mt Cameroon	OG3	E	2002	157		Epiemelle, 2002	485	9.1 E	4.3 N
Nki Forest Reserve	DC3	D	1998	2,178		Ekobo pers. comm., 1998	1,815	14.5 E	2.4 N
Sudanian Area	IG3	E	1991	360		Tchamba et al., 1991	24,985	13.7 E	8.3 N
Waza National Park	IG3	D	1996	1,600		Tchamba, 1998	1,700	14.7 E	11.3 N

\* Range of informed guess

# Cameroon

## Elephant Range, Input Zones and Protected Areas

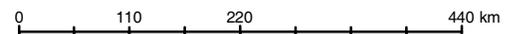


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# CENTRAL AFRICAN REPUBLIC

## General Statistics

Country Area: 622,980 km<sup>2</sup>  
Range Area (% of country): 217,708 km<sup>2</sup> (35%)  
Protected area coverage (% of country): 13%  
Protected range (% of known and possible range in protected areas): 28%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

The colonial government of Ubangi-Chari (later to become the Central African Republic), leased large tracts of land to private European companies and gave them a free hand in its management. Considerable amounts of ivory were exported up to 1932, when commercial hunting was banned (Sánchez Ariño, 1974). Up until the late 1970s, low human population densities left large areas of elephant habitat undisturbed, particularly in the savanna areas of the northeast (Loevinsohn *et al.*, 1978).

Limited surveys were conducted in the protected area complexes in the north of the country in the 1970s (Loevinsohn *et al.*, 1978; Spinage *et al.*, 1977; Spinage, 1976), and these were extrapolated to the entire country to give an estimated 100,000 elephants (Spinage, cited in Douglas-Hamilton *et al.*, 1985). This, however, was considered an overestimate (Douglas-Hamilton *et al.*, 1985), and other guesses put the total between 15,000 (Sánchez Ariño, 1974) and 60,000 (Froment, 1985).

In the late 1970s, the country's population was estimated at 70,000±10,000 (Fay, 1991). The Central African Republic became the world's largest exporter of ivory in that period but, according to the government of the day, most originated from neighbouring countries (Ruggiero, 1984). Significant hunting for ivory is known to have continued into the 1980s (Douglas-Hamilton *et al.*, 1985), and surveys in the north revealed high carcass ratios (Douglas-Hamilton *et al.*, 1985). Extrapolations for savannah and forest elephants in 1991 were 12,300 (Ministère des Eaux, des Forêts, Chasse, Pêches et du Tourisme, 1992) and 6,200 (Fay, 1991) respectively, giving a total of about 18,500.

## Range

The northern half of the CAR is characterized by Sudanian woodland, whereas forest and grassland mosaics predominate in the southern half, with true lowland rainforest in the southwestern tip.

The shape of the distribution map for the northern and eastern ranges dates back to a 1985 census report (Douglas-Hamilton *et al.*, 1985), while that for the southwestern tip of the country has not changed since the AED 1995 report (Said *et al.*, 1995).

For this report, areas where recent conservation work has confirmed the presence of elephants have been categorized as **known** range (Turkalo, quest. reply, 1998; Kpanou *et al.*, 1998). A portion of range stretching from the centre of the country to the northeast and up to the border with Sudan has been categorized as **doubtful** range (J.A. Hart, pers. comm., 2003b). This stretch effectively separates the northern range from that in the southeast of the country, much of which remains as **possible** range. No new information has been obtained about the isolated patch of range in the centre-west, and this has also been categorized as **possible** range.

## Surveys and Data

The estimate for the Dzanga-Sangha Special Reserve and Dzanga-Ndoki National Park has been updated with information provided by Turkalo (pers. comm., 2003), who has individually registered about 3,000 individual elephants in the area since 1989. Comparison of individual registration files between Dzanga-Sangha and Nouabalé-Ndoki (Congo), where another individual registration project is underway, has established that elephants regularly

move between the two areas (Maisels, 2001), and probably constitute a single population numbering around 6,000 (A.K. Turkalo, pers. comm., 2003). For the purpose of this report, this overall figure has been split between the two countries on the basis of known range area within each park, with the number of individually registered elephants (2,977) entering the summary table under the **definite** category while the remainder (290) do so under the **speculative** category.

A previous estimate of 5,000 for the Northern Savanna areas (Blom and Yamindou, 2001) has been replaced by more recent guesses of 1,000 and 300 for the Manovo-Gounda-St. Floris and Bamingui-Mangoran complexes respectively (R.G. Ruggiero, pers. comm., 2003). It is believed that elephant populations in these areas have continued to decline in recent years as a result of poaching.

A dung count conducted in the Bangassou Forest Reserve in 1998 has not been repeated since, and the estimate is therefore unchanged since the previous report.

### ***Cross-border Movements***

Elephants in Dzanga-Sangha are likely to be part of a single population that extends across the border with Congo and perhaps also across the Sangha river into Lobéké National Park in Cameroon (F. Maisels, pers. comm., 2003). Elephants may also move to Sudan along the southeastern border (J. Garang, pers. comm., 2002), to Chad across the northern border (Dejace, 1996; Dejace, 1999) and possibly south into the Democratic Republic of Congo.

### ***Current Issues***

An agreement signed in December 2000 between the governments of the Central African Republic, Cameroon and Congo resulted in the declaration of the Sangha River Trinational Park, encompassing the Dzanga-Sangha Special Reserve (CAR), Lobéké National Park (Cameroon) and Nouabalé-Ndoki National Park (Congo). This was the first of 12 transboundary parks to be created in the Central Africa region as a result of the Yaoundé Declaration.

Continued civil unrest in the Central African Republic and accessibility to firearms prevent conservation and monitoring work, especially in the north and east, where the government has little control. The European Union-funded Programme de Développement de la Région Nord (PDRN) in northeastern CAR offered temporary protection to the region, but had to close down in the late 1990s, partly due to insecurity (Blom and Yamindou, 2001). The only current activity in the northeast of CAR is being carried out by African Rainforest and Rivers Conservation, Inc. (ARCC), which obtained presidential permission in August 2001 to mount armed anti-poaching operations in the Chinko River basin, along the CAR's northeastern border with Sudan.

## Summary totals for Central African Republic

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Dung Counts	0	1,600	1,120	0
Informed Guesses	2,977	0	1,300	390
<b>TOTAL</b>	<b>2,977</b>	<b>1,600</b>	<b>2,420</b>	<b>390</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Dung Counts	11,976	3.8%
Informed Guesses	50,918	16.3%
Unassessed Known Range	1,779	0.6%
Unassessed Possible Range	153,035	48.9%
Doubtful Range	95,229	30.4%
<b>TOTAL</b>	<b>312,937</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	116,153	37.1%
1988-1992	15,187	4.9%
1993-1995	4,713	1.5%
1996-1998	59,960	19.2%
Post-1998	116,924	37.4%
<b>TOTAL</b>	<b>312,937</b>	

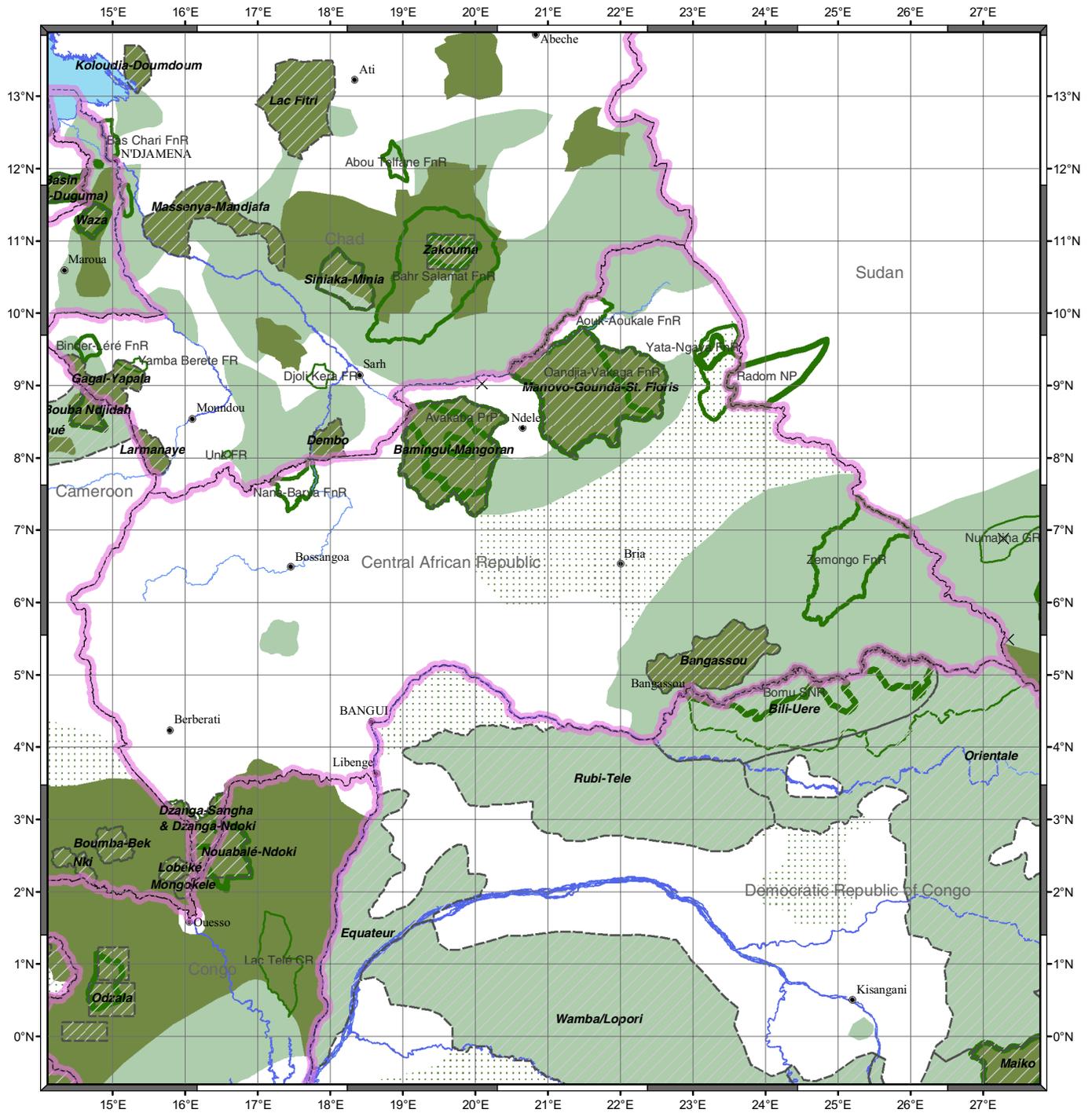
## CENTRAL AFRICAN REPUBLIC: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Bamingui-Mangoran Reserve Complex	IG3	D	2002	300	100*	Ruggiero pers. comm., 2003	20,123	19.7 E	8.1 N
Bangassou Forest Reserve	DC3	C	1996	1,600	1,120	Kpanou et al., 1998	16,600	23.3 E	5.2 N
Dzanga-Sangha & Dzanga-Ndoki National Parks	IG3	D	2002	2,977	290*	Turkalo pers. comm., 2003	4,743	16.2 E	2.9 N
Manovo-Gounda-St. Floris Reserve Complex	IG3	D	2002	1,000		Ruggiero pers. comm., 2003	26,086	21.6 E	8.9 N

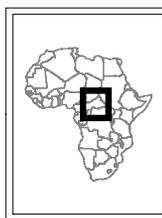
\* Range of informed guess

# Central African Republic

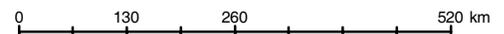
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# CHAD

## **General Statistics**

Country Area: 1,284,000 km<sup>2</sup>  
Range Area (% of country): 263,973 km<sup>2</sup> (21%)  
Protected area coverage (% of country): 9%  
Protected range (% of known and possible range in protected areas): 12%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Elephants may have always been restricted to the southernmost third of the country, where permanent sources of surface water are more prevalent. Malbrant (1930) estimated a total population of about 3,000 elephants, while in the 1970s, the population was guessed at 15,000 (Daboulaye and Thomassey, 1990). Population levels may have fluctuated in time as a result of severe droughts, poaching, and the ten years of civil unrest that broke out in 1979 (Direction des Parcs Nationaux et Réserves de Faune, 1991). In 1990, two significant sub-populations were reported, one of around 1,500 in the Salamat region, including Zakouma National Park, and another of about 500 around the Guera Massifs and Lake Fitri (Daboulaye and Thomassey, 1990). By 1995, these populations were believed to be increasing (B.Y.D. Daboulaye, pers. comm., 1995), but a 1995/1996 survey of the Salamat region returned an estimate of 1,600 (Dejace, 1996).

## **Range**

Elephants in Chad occur in Sudanian woodlands in the extreme south, as well as in the drier Sahelian Acacia wooded grasslands further north. Herds may move seasonally between these two zones in search of surface water (Depierre, 1967). No elephants are found in the Saharan northern half of the country.

The range map has been thoroughly revised based on recent poaching reports and incidents of human-elephant conflict (Dolmia Malachie and Lassou, 2002). This has resulted in the categorization of nine areas as **known** range. The rest of area depicted as range in the AED 1998 report, which remains largely unchanged since 1987 (Burrill and Douglas-Hamilton, 1987), has been categorized as **possible** range.

## **Surveys and Data**

A total aerial count of Zakouma National Park conducted in May 2000 returned an estimate of 1989 (Planton, 2000). Although a more recent aerial sample count gave an estimate of 4,351±1,354, the author of the survey report questioned the reliability of the estimate (Mackie, 2002b). In consequence, the total count figure has been used to replace the 1996 informed guess of 1,600 (Dejace, 1996) that appeared in the AED 1998 report. Another total count is expected to be conducted in Zakouma in 2004 as part of the CITES MIKE Programme.

Elsewhere in Chad, Dolmia Malachie and Lassou (2002) have provided informed guesses for most areas where elephants are known to occur, and these represent new entries into the table of estimates for Chad.

## **Cross-border Movements**

Between 300 and 400 elephants migrate between Lake Chad and northern Cameroon, but spend most of their time in the latter (Tchamba *et al.*, 1997). It is thought that these elephants come into conflict with human communities on their migration between the two countries. Dejace (1996) also believes that elephants move between Chad and the Central African Republic, but this has not been verified.

## **Current Issues**

Elephant habitat is becoming increasingly fragmented, probably as a result of increased human activities, and reported incidents of human-elephant conflict are becoming more frequent (Dolmia Malachie and Lassou, 2002). Elephant poaching is believed to occur

throughout the species range, albeit at unknown intensities (Dolmia Malachie and Lassou, 2002).

In 2000 the Government of Chad passed a decree to regulate hunting and improve monitoring. In addition, and subsequent to the Yaoundé summit, in the year 2000 Chad adopted an Action Plan for its National Biodiversity Strategy and created a fund to fight desertification.

### Summary totals for Chad

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	1,989	0	0	0
Informed Guesses	0	0	2,000	550
<b>TOTAL</b>	<b>1,989</b>	<b>0</b>	<b>2,000</b>	<b>550</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	3,536	1.3%
Informed Guesses	38,905	14.7%
Unassessed Known Range	62,429	23.6%
Unassessed Possible Range	159,103	60.3%
<b>TOTAL</b>	<b>263,973</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	152,997	58.0%
1993-1995	2,316	0.9%
1996-1998	5,151	2.0%
Post-1998	103,509	39.2%
<b>TOTAL</b>	<b>263,973</b>	

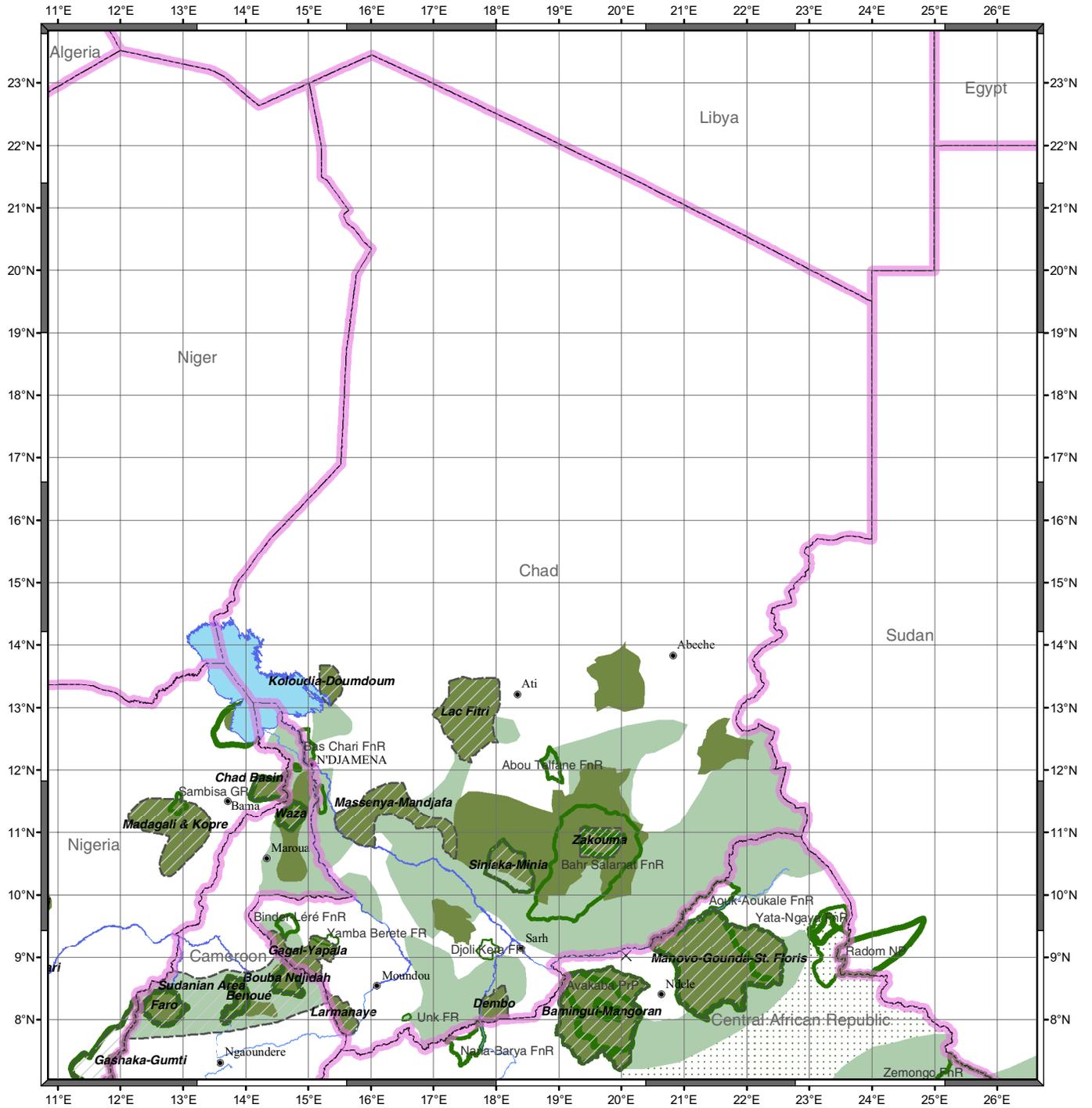
## CHAD: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Dembo Area	IG3	D	2002	600	100*	Dolmia Malachie and Lassou, 2002	2,409	18.0 E	8.2 N
Gagal-Yapala Area	IG3	D	2002	400	100*	Dolmia Malachie and Lassou, 2002	5,098	14.9 E	9.1 N
Koloudia-Doumdoum Area	IG3	D	2002	50	50*	Dolmia Malachie and Lassou, 2002	2,180	15.3 E	13.4 N
Lac Fitri Area	IG3	D	2002	200	100*	Dolmia Malachie and Lassou, 2002	11,670	17.6 E	12.9 N
Larmanaye Area	IG3	D	2002	100	50*	Dolmia Malachie and Lassou, 2002	2,340	15.5 E	8.1 N
Massenya-Mandjafa Area	IG3	D	2002	150	50*	Dolmia Malachie and Lassou, 2002	10,864	16.3 E	11.3 N
Siniaka-Minia Faunal Reserve	IG3	D	2002	500	100*	Dolmia Malachie and Lassou, 2002	4,743	18.2 E	10.4 N
Zakouma National Park	AT2	A	2000	1,989		Planton, 2000	2,987	19.6 E	10.8 N

\* Range of informed guess

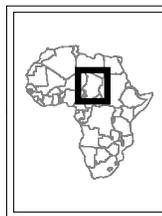
# Chad

## Elephant Range, Input Zones and Protected Areas

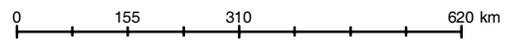


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# C O N G O

## **General Statistics**

Country Area: 342,000 km<sup>2</sup>  
Range Area (% of country): 248,361 km<sup>2</sup> (73%)  
Protected area coverage (% of country): 6%  
Protected range (% of known and possible range in protected areas): 5%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

During the late 1800s, the colonial government divided much of today's Congo into commercial concessions from which resources were extracted until 1930. Between 1950 and independence in 1970, elephants were still abundant in many parts of the country, especially in the swamp forests to the north (N'Sosso, *quest. reply*, 1977). The forest population is believed to have stood at around 40,000 in the mid-1970s (Michelmore *et al.*, 1994). Logging activity and the availability of firearms increased in the 1970s and 1980s, and this resulted in increased poaching (Fay and Agnagna, 1993). By the late 1980s, elephants were believed to be scarce in the savanna block of the country, which represents about 30% of the land area (Barnes, 1987; Fay and Agnagna, 1991).

The first comprehensive effort to describe the status of elephants, in 1991, found them to occupy a little over 40% of the territory, with numbers crudely estimated at around 50,000 (Direction de la Conservation de la Faune, 1991). According to extrapolations from dung counts, some 30,000 of these were to be found in the northern block of forest, where human density was low and concentrated along communication routes (Michelmore *et al.*, 1994). Between 3,000 and 11,000 others occupied a southern range adjacent to the Gabon border (Agnagna *et al.*, 1991).

## **Range**

Congo contains two well-defined biogeographical regions: tracts of tropical rainforest with large areas of swamp in the north, and forests of variable density alternating with savannas in the centre and south. Overall, nearly two thirds of the country is forested.

Most of the range information in the presented here originates from the AED 1992 report (Douglas-Hamilton *et al.*, 1992), but several areas in the centre and south of the country were added for the 1995 report (Said *et al.*, 1995). Three areas have been categorized as **known** range based on recent information: much of the northern half of the country, encompassing Nouabalé-Ndoki National Park and its environs, extending south to Lac Télé Community Reserve and west to Odzala National park and the border with Gabon (Maisels, 2002; F. Maisels, *pers. comm.*, 2003; Onononga, *quest. reply*, 2002a); the Chaillu forest area to the south of Franceville in neighbouring Gabon; and parts of Conkouati-Douli National Park (Maisels, 2002a).

The only other changes to the range map are the categorization of Lefini National Park, which is no longer thought to contain any elephants (Maisels, 2002a), as **doubtful** range; and the removal of a roughly circular area around the town of Ouesso, on the border with the southeastern tip of Cameroon (Beyers *et al.*, 2001; White, 2002). The rest has been categorized as **possible** range.

## **Surveys and Data**

At the time that the AED 1998 was published, no population estimates were available for Congo. All the figures appearing on the table are therefore new.

A dung survey of Odzala National Park and its environs was conducted in 2000 as part of the CITES MIKE Pilot Project for Central Africa (Beyers *et al.*, 2001). The survey gave an estimate of 18,222, with an asymmetric (lognormal) 95% confidence interval ranging from

13,381 to 24,913. Although the estimated dung density (25.6 dung piles per km<sup>2</sup> with a coefficient of variation of 15.6%) is considered by the authors of the report to be reliable, the calculated number of elephants must be treated with caution, as the dung decay and defecation rates used in the analysis were obtained from a different site.

A recent survey of Lac Télé Community Reserve found very few signs of elephants in the area (Poulsen and Clark, 2002) but provided no estimate of elephant numbers. Two reconnaissance surveys conducted in Conkouati-Douli National Park between 1996 and 2000 gave estimates of dung density, but no estimates of elephant numbers (Maisels and Cruickshank, 1996; Maisels and Onononga, 2000). However, Maisels (pers. comm., 2003) has provided an informed guess of 1,000 based on the latter study.

An individual registration project currently underway in Nouabalé-Ndoki National Park and its environs has so far identified 431 elephants (Maisels, 2001), but the extent to which this population overlaps with that of Dzanga-Sangha Special Reserve in neighbouring CAR is still being investigated (F. Maisels, pers. comm., 2003). As described under the Central African Republic section, the estimate of 6,000 for the two protected areas (A.K. Turkalo, pers. comm., 2003) has been split for this report on the basis of known range area within each park, with the number of individually registered elephants entering the AED under the **definite** category, and the remainder entering under the **speculative** category. For Nouabalé-Ndoki, this translates into 431 **definite** and 2,300 **speculative**.

### **Cross-border Movements**

Elephants are known to move between Nouabalé-Ndoki in northern Congo and Dzanga-Sangha in CAR, and the two areas are likely to form a single, transboundary population (Maisels, 2001; A.K. Turkalo, pers. comm., 2003). Cross-border movements are also likely to occur along much of the border between Congo and Gabon to the west, and possibly between Congo and remaining range in Equateur province in the Democratic Republic of Congo to the east.

### **Current Issues**

Although some political instability remains, the end of the conflict that began in early June 1997 has permitted the resumption of monitoring and conservation work in Congo.

Unchecked logging represents the most serious threat to elephant populations in the north of the country, where the majority of *terra firma* forest has been allocated to logging companies (Agnagna, 2001; Wilkie *et al.*, 2002). The bushmeat trade is reported to be negatively affecting wildlife populations in protected areas throughout the territory (Agnagna, 2001).

As part of its commitment to the Yaoundé Declaration, the Government of Congo has created the Lac Télé Community Reserve and participated in the creation of the Sangha River Trinational Park.

### Summary totals for Congo

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Dung Counts	0	18,222	5,572	0
Informed Guesses	431	0	1,000	2,300
<b>TOTAL</b>	<b>431</b>	<b>18,222</b>	<b>6,572</b>	<b>2,300</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Dung Counts	7,826	3.1%
Informed Guesses	5,618	2.2%
Unassessed Known Range	128,155	50.6%
Unassessed Possible Range	106,766	42.2%
Doubtful Range	4,814	1.9%
<b>TOTAL</b>	<b>253,179</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	67,011	26.5%
1993-1995	39,760	15.7%
1996-1998	421	0.2%
Post-1998	145,987	57.7%
<b>TOTAL</b>	<b>253,179</b>	

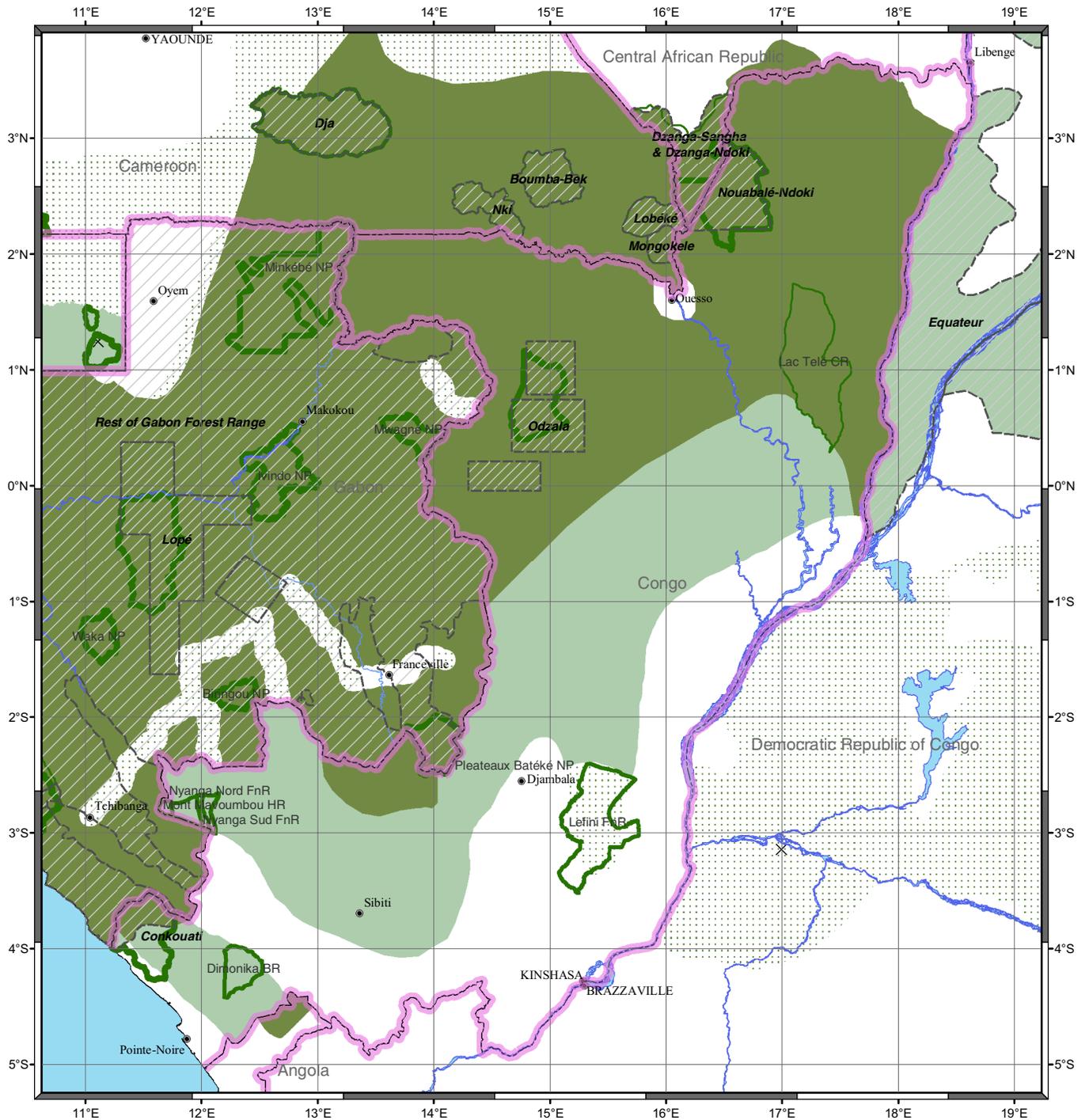
## CONGO: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Conkouati National Park	IG3	D	2000	1,000		Maisels pers. comm., 2003	1,587	11.5 E	3.7 S
Nouabalé-Ndoki National Park	IG3	D	2001	431	2300*	Maisels, 2002b	3,962	16.6 E	2.5 N
Odzala National Park & environs	DC2	C	2000	18,222	5,572	Thomas et al., 2001	7,818	14.9 E	0.6 N

\* Range of informed guess

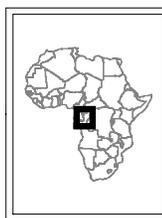
# Congo

## Elephant Range, Input Zones and Protected Areas

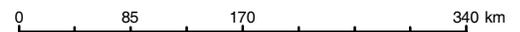


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**

# DEMOCRATIC REPUBLIC OF CONGO

## **General Statistics**

Country Area: 2,345,410 km<sup>2</sup>  
Range Area (% of country): 912,105 km<sup>2</sup> (39%)  
Protected area coverage (% of country): 5%  
Protected range (% of known and possible range in protected areas): 10%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

For much of the 20<sup>th</sup> century, the territory now known as the Democratic Republic of Congo (DRC) probably had one of the largest elephant populations in Africa, and was the largest source of ivory on the continent. Large quantities were exported from the Congo Free State (1895-1908) and during the Belgian Congo period, peaking at 418,000 kg in 1919 (Sánchez Ariño, 1974).

Crop-raiding became a problem towards the middle of the 20<sup>th</sup> century, especially in the northeast, and an average of 4,600 elephants were shot on control every year in the late 1940s and through the 1950s (Offermann, 1953; Rollais, 1979). In 1950, the elephant population in the territory was estimated at 100,000 (Offermann, 1951).

During the civil turmoil since independence in 1960, large numbers of elephants are thought to have been poached (Alers *et al.*, 1992; Barnes *et al.*, 1992). Poaching was intense in the forests, with tusks transported out by canoes and steamers along the extensive river system (Alers *et al.*, 1992). Between 1979 and 1988, at least 2,648 metric tons of ivory were exported, accounting for 36% of Africa's ivory exports (de Meulenaer and Meredith, 1989).

In the early 1990s, Alers *et al.* (1992) calculated that the forests of DRC could hold about 64,000 elephants. However, all national figures for DRC are unreliable, as systematic surveys have only been conducted in a small number of protected areas (Institut Zairois pour la Conservation de la Nature, 1991). In the Garamba National Park, the population was estimated at 22,670±11,790 in 1976 (Savidge *et al.*, 1976), while a similar survey in 1983 estimated 7,742±3,690 (Hillman *et al.*, 1983). A steady increase punctuated by episodic declines has since been documented in the park (Hillman Smith, 2001; Hillman Smith, pers. comm., 2002).

The outbreak of conflict in late 1996 is thought to have had negative consequences for elephant populations in some areas in the east of the country. In Kahuzi-Biega, for instance, at least 150 elephants were confirmed killed in the first months of conflict in 1996 and 1997 (O. Ilambu, pers. comm., 2002).

## **Range**

The DRC is transversely by an equatorial forest belt surrounded by savanna woodlands in the northeast and south of the country. Much of the baseline information for the DRC range map dates back to the 1979 African Elephant Action Plan (Douglas-Hamilton, 1979b), with many of the discontinuities in the map being introduced in 1987 (Burrill and Douglas-Hamilton, 1987; M. Colyn, pers. comm., 1987). Little change was made to the map prior to this report, which introduces substantial modifications that largely reflect the paucity of knowledge on the distribution of elephants in the DRC.

A considerable retraction in elephant range has been recorded in the east of the DRC in recent years (Thomas *et al.*, 2001), and this has been categorized as **non-range**. Several protected areas where elephants are known to occur in this region, such as Okapi, Kahuzi-Biega and Maiko, appear to be becoming islands of elephant range.

A recent expedition into central DRC has reported the probable absence of elephants in much of what was previously regarded as elephant range in the area (J.A. Hart, pers. comm., 2003c). Although much of the habitat is reported to remain relatively undisturbed, and is therefore still potential elephant range, this area has been categorized as **doubtful** range. The same expedition confirmed the presence of elephants in the Salonga National Park and its environs, where systematic surveys were initiated in 2003 for the CITES MIKE programme. This area has been categorized as **known** range.

Three other areas have also been categorized as **doubtful** range based on information provided by Hart (pers. comm., 2003c): A region in the extreme northwest of the country, on the border with the Central African Republic across the river from Bangui, where elephants are believed to have disappeared in the 1980s; an area on the Congo River valley northwest of Kisangani; and much of the southeast of the country, where pockets of range, such as Upemba National Park, are known to remain (Hart, quest. reply, 2002; Mwandumusa and Iba-Yung, 2002). These modifications to the AED range map probably reflect better information rather than recent changes in elephant distribution.

## **Surveys and Data**

Few new surveys have been conducted in the DRC during the ongoing conflict. A dung count in the Okapi National Park, conducted in 2000 as part of the CITES MIKE Central Africa Pilot Project (Thomas *et al.*, 2001), gave an estimate of 3,808 with an asymmetric 95% confidence interval of 2,649 to 5,464. This estimate replaces a 1995 dung count estimate of  $7,375 \pm 2,675$ , which was nevertheless conducted over a larger area (13,700 km<sup>2</sup>). In terms of elephant density, both estimates are of comparable magnitude.

Two aerial sample counts have been conducted in Garamba National Park since the last AED report. The first one of these, conducted in 2000, returned an estimate of  $6,022 \pm 1,046$ . The second, carried out in 2002, gave an estimate of  $5,983 \pm 1,184$ , and has been used to replace the 1998 estimate of  $5,874 \pm 1,339$  that appeared in the previous report. The results of these surveys suggest that the population in Garamba may be stable at present (Hillman Smith, pers. comm., 2002).

No systematic census has been carried out in Kahuzi-Biega since the dung survey conducted by Hall *et al.* (1997) in the lowland sector of the park and its environs. However, a visit to the upland sector in 2000 recorded very few signs of elephant presence, with an estimated 10 to 25 elephants remaining (O. Ilambu, pers. comm., 2002). The lowland sector was overrun by militias and coltan (colombo tantalite) miners at the time, and was too insecure to visit (UN Panel of Experts, 2001). In view of this, the estimate by Hall *et al.* (1997) has been retained but degraded to the category of **other guess**.

An aerial survey of the savanna areas in Virunga National Park had been planned for August 2002, but was postponed until March 2003 due to the security situation. Armed forces were occupying the central and southern sectors of the park, and only the northern sector could be surveyed as a result. Considerable agricultural encroachment was recorded in the area, with some 3,500 cattle and only 21 elephants seen (Hillman Smith, pers. comm., 2003b). Mubalama's 1998 estimate of 486 for the central sector of Virunga, has been retained in the database, but with an adjustment to allow a number of elephants possibly missed in the survey (Mubalama, 2000). As a result of this adjustment, the estimate has been re-categorized as an informed guess. Mubalama (pers. comm., 2003) has also provided an informed guess for the southern sector of Virunga National Park.

Hart (pers. comm., 2003c) has provided estimates based on informed guesses of elephant densities for all other areas in the country believed to contain elephants. Overall, Hart (pers. comm., 2003c) believes there may currently be 50,000 to 60,000 elephants in the DRC.

## ***Cross-border Movements***

Elephants move seasonally between the Virunga National Park and the southern sector of Queen Elizabeth National Park in Uganda (Mubalama, 2000; Keigwin, 2001), but this seasonal pattern may have been distorted by armed conflict. Movements may also take place between Virunga NP's northern sector and the Toro/Semliki range in western Uganda (F. Michelmore, pers. comm., 1998).

Elephants used to move seasonally between Garamba National Park and the forests of Western Equatoria in southern Sudan, and although elephants are known to occur on both sides of the border, it is not known whether ongoing conflict in both countries is having any effect on elephant movements.

There may be movement of elephants between the right bank of the Congo River and the Nouabalé and Lac Télé areas of northeastern Congo. Ongoing satellite tracking studies will confirm the existence of such movements.

## ***Current Issues***

Ongoing conflict in the east of the country, where the government has little control, and a generalized lack of resources, makes conservation and monitoring work difficult. The destruction of infrastructures, lack of equipment and encroachment by an increasingly impoverished human population have resulted in a virtual lack of protection in many gazetted areas. Unregulated mining, the influx of refugees, the prevalence of weapons, and poaching for bushmeat and ivory may be having an impact on elephant populations (J.A. Hart, pers. comm., 2003c). Nevertheless, limited protection exists in those parks where non-governmental organizations have continued to work (Hart and Hall, 1996).

Elephants in Garamba are reportedly retreating into the southern sector of the park and neighbouring hunting reserves as a result of increased poaching for bushmeat in the northern sector (L.K. Mubalama, pers. comm., 2003).

Sport hunting is being re-opened in the DRC, but it is not clear whether the hunting of elephants will be permitted (Causey, 2003). The trophy export quota submitted by the DRC to CITES in 2003 does not include elephant (World Conservation Monitoring Centre, 2003).

In June 2002, the DRC declared its adherence to the principles of the Yaoundé Declaration for the sustainable management of Central African forests.

## Summary totals for Democratic Republic of Congo

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	7,160	2,631	2,631	0
Informed Guesses	507	0	32,365	10,659
Other Guesses	0	0	0	6,895
<b>TOTAL</b>	<b>7,667</b>	<b>2,631</b>	<b>34,996</b>	<b>17,554</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	10,076	0.7%
Informed Guesses	815,712	59.4%
Other Guesses	26,979	2.0%
Unassessed Known Range	11,458	0.8%
Unassessed Possible Range	47,896	3.5%
Doubtful Range	461,352	33.6%
<b>TOTAL</b>	<b>1,373,473</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	781,722	56.9%
1988-1992	26,904	2.0%
1993-1995	10,486	0.8%
1996-1998	14,823	1.1%
Post-1998	539,538	39.3%
<b>TOTAL</b>	<b>1,373,473</b>	

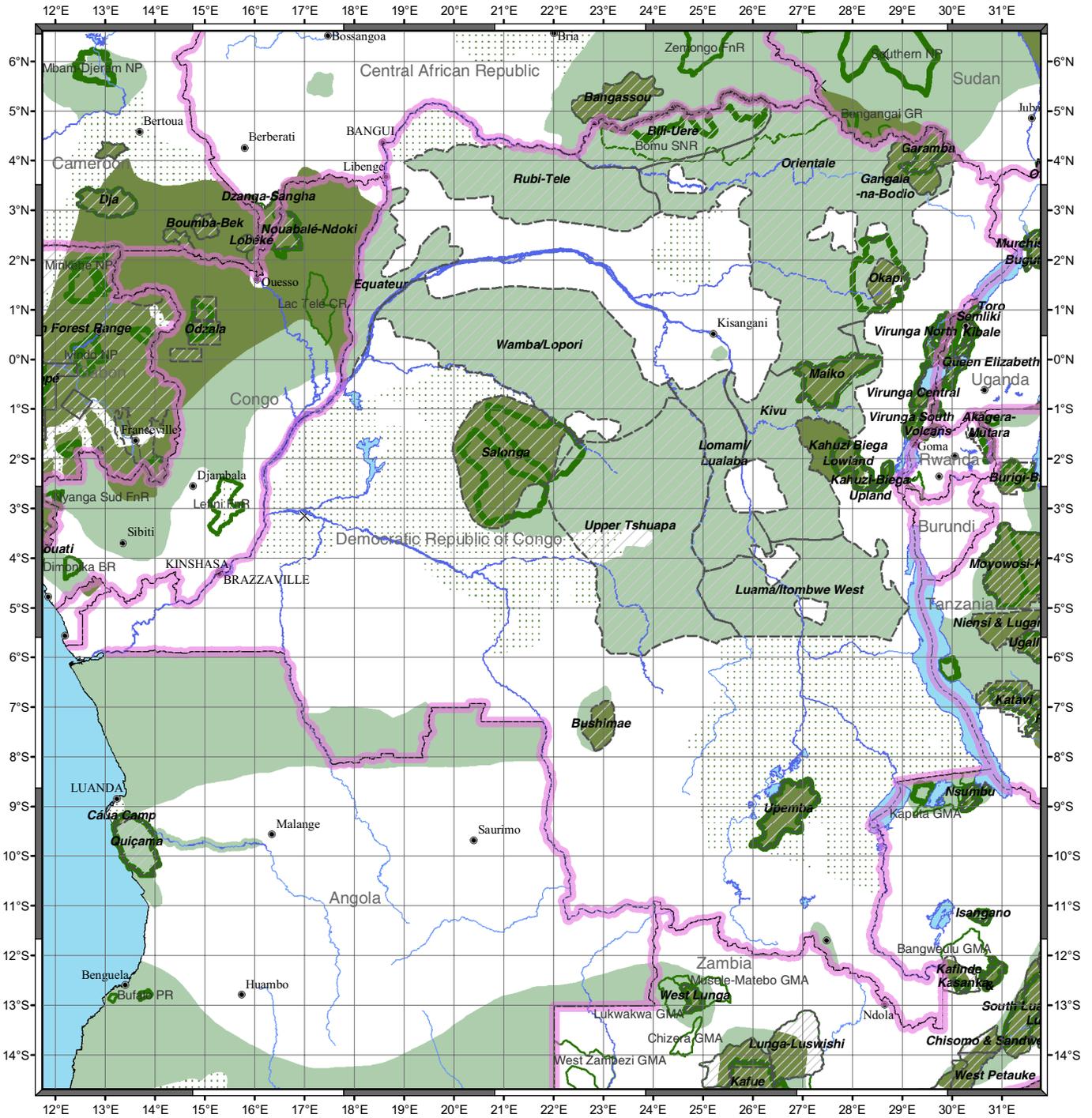
## DEMOCRATIC REPUBLIC OF CONGO: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Bili-Uere Region	IG3	D	2002	8,500	1500*	Hart, 2003	40,643	24.4 E	4.5 N
Bushimae	IG3	E	1987	120		Mohammed and Kassa, 1998	5,232	23.0 E	7.4 S
Equateur Province	IG3	D	2002	1,000	500*	Hart, 2003	32,006	18.7 E	1.7 N
Gangala-na-Bodio	IG3	D	2002	1,000	450*	Hart, 2003	9,547	29.3 E	3.9 N
Garamba National Park	AS3	B	2002	5,983	2,321	Hillman Smith pers. comm., 2002	5,000	29.5 E	4.2 N
Kahuzi Biega Lowland National Park Sector	IG3	D	2002	1,125	375*	Hart, 2003	15,570	28.0 E	2.1 S
Kahuzi-Biega Upland National Park Sector	IG3	D	2000	15	10*	Hart, 2003	920	28.6 E	2.4 S
Kivu Province	IG3	D	2002	625	375*	Hart, 2003	62,414	26.9 E	1.7 S
Lomami/Lualaba Area	IG3	D	2002	1,375	1125*	Hart, 2003	39,517	25.3 E	2.4 S
Luama/Itombwe West Area	IG3	D	2002	625	375*	Hart, 2003	72,532	27.1 E	4.7 S
Maiko National Park	DC1	E	1992	6,500	500	Hart and Sikubwabo Kiyengo, 1994	10,830	27.6 E	0.4 S
Okapi National Park	DC2	B	2000	3,808	1,239	Thomas et al., 2001	6,209	28.7 E	1.5 N
Orientale Province	IG3	D	2002	1,500	1000*	Hart, 2003	178,155	27.1 E	2.7 N
Rubi-Tele Area	IG3	D	2002	1,750	750*	Hart, 2003	68,453	21.7 E	3.5 N
Salonga National Park & surrounding area	IG3	D	2003	12,500	2500*	Hart, 2003	49,690	21.0 E	1.9 S
Upemba National Park	OG3	E	2002	200		Hart pers. comm., 2002	10,234	26.7 E	9.1 S
Upper Tshuapa Area	IG3	D	2002	1,500	1000*	Hart, 2003	141,048	23.8 E	3.4 S
Virunga Central National Park Sector	IG3	D	1998	486	49*	Mubalama, 2000	7,800	29.4 E	0.4 S
Virunga North National Park Sector	IG3	D	2003	21		Hillman Smith pers. comm., 2003b	2,903	29.5 E	0.3 S
Virunga South National Park Sector	OG3	E	2002	75		Mubalama pers. comm., 2003		29.5 E	0.3 S
Wamba/Lopori Area	IG3	D	2002	850	650*	Hart, 2003	122,444	21.6 E	0.2 N

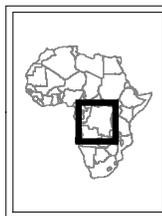
\* Range of informed guess

# Democratic Republic of Congo

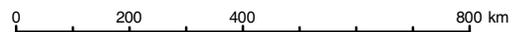
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	Elephant Range: Known
	Elephant Range: Possible
	Elephant Range: Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area abbreviations turn to Appendix I





# EQUATORIAL GUINEA

## General Statistics

Country Area: 28,050 km<sup>2</sup>  
Range Area (% of country): 15,257 km<sup>2</sup> (54%)  
Protected area coverage (% of country): 17%  
Protected range (% of known and possible range in protected areas): 23%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

During the colonial period, development was focused in the island of Bioko, where the country's capital is located. As a result, the impact on ecosystems in Río Muni, the continental part of Equatorial Guinea, may have been limited. Nevertheless, the Fang people, who now make up the majority of the population, turned from farming to elephant hunting after the arrival of Europeans. Since independence in 1969, the mainland has largely retained a subsistence economy, with sparse settlements of coffee and cocoa farmers who practice traditional methods of agriculture. Half of the country is still covered by forests, and although the timber industry has converted most of these into secondary growth, this is a habitat generally preferred by elephants.

In the mid-1970s elephants were said to occur throughout the mainland, where the resident population was estimated at around 1,000 (Sánchez Ariño, 1974). An IUCN survey in 1979 was unable to obtain any reliable information on elephants, except that potential range was relatively extensive (Douglas-Hamilton, 1979b). Little more was known in 1991, but elephants were then reported to be largely confined to mainland forests south of the Uolo River, which bisects the country in half. The highest reported densities were in the southeast, near the Gabon border (Alers and Blom, 1988), and the trade in ivory appeared to be small (Ministry of Agriculture, Livestock, Fisheries and Forestry, 1991).

## Range

Much of Equatorial Guinea is still covered in tropical forest, and is therefore possible elephant habitat. Little new range information could be obtained for this report, and this is reflected in the map, which closely resembles those in the 1995 and 1998 reports. However, a new area of **known** range has been added to coincide with the boundary of the Río Campo Nature Reserve in the extreme northwest of the country (Malonga Oko, cited in Hakizumwami, 2002). The area within the Monte Alén National Park has been categorized as **known** range, as elephants are known to occur there (Larison *et al.*, 1999). The depiction of range in the southern half of the country has not been changed since the AED 1992 report and has been categorized as **possible** range. Recent information on the presence or absence of elephants is lacking for much of this area, or indeed the northern half of the country, where they may still occur, albeit probably only at low densities (Alers and Blom, 1988). Baseline surveys conducted in 1998 recorded direct evidence of elephant presence in Montes Mitra, as well as third-party reports in Altos del Nsork (Larison *et al.*, 1999). These are shown as crosses on the range map.

## Surveys and Data

Although quantitative elephant surveys have not been conducted in Equatorial Guinea, it is estimated that around 300 elephants use Monte Alén National Park as part of their range (S. Engonga, pers. comm., 2002). No other recent estimates are available for the country.

## Cross-border Movements

Elephants may move between Gabon and southern Equatorial Guinea (L. Arranz, pers. comm., 1995) and possibly between Cameroon's southern forest range and the Río Campo Forest Reserve in northwest Equatorial Guinea (Bekhuis and Prins, 2001), although more survey work is required to establish whether this is the case.

## Current Issues

Subsistence hunting is an important economic activity, and the level of trade in bushmeat is reported to be high (Engonga, 2001). A study of bushmeat hunting in the Monte Mitra forests

in the southwest suggested that elephants may be affected by snares set for other species (Fa and García Yuste, 2001).

It is believed that logging activities are displacing elephants from concession areas around Monte Alén National Park. This in turn is leading to high densities within the park, and increased levels of crop raiding (Obama, cited in Hakizumwami, 2002).

As a signatory to the Yaoundé declaration, the Government of Equatorial Guinea adopted in May 2000 a new law on Protected Areas and created the National Protected Area System, which included the expansion of Monte Alén National Park and the creation of 5 new protected areas in the mainland. Some of these new protected areas contain logging concessions and are reported to have been disturbed in recent years (Larison *et al.*, 1999).

### Summary totals for Equatorial Guinea

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Guesses	0	0	0	300
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>300</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Guesses	797	3.2%
Unassessed Known Range	762	3.0%
Unassessed Possible Range	13,698	54.8%
Doubtful Range	9,745	39.0%
<b>TOTAL</b>	<b>25,002</b>	

### Age of range data

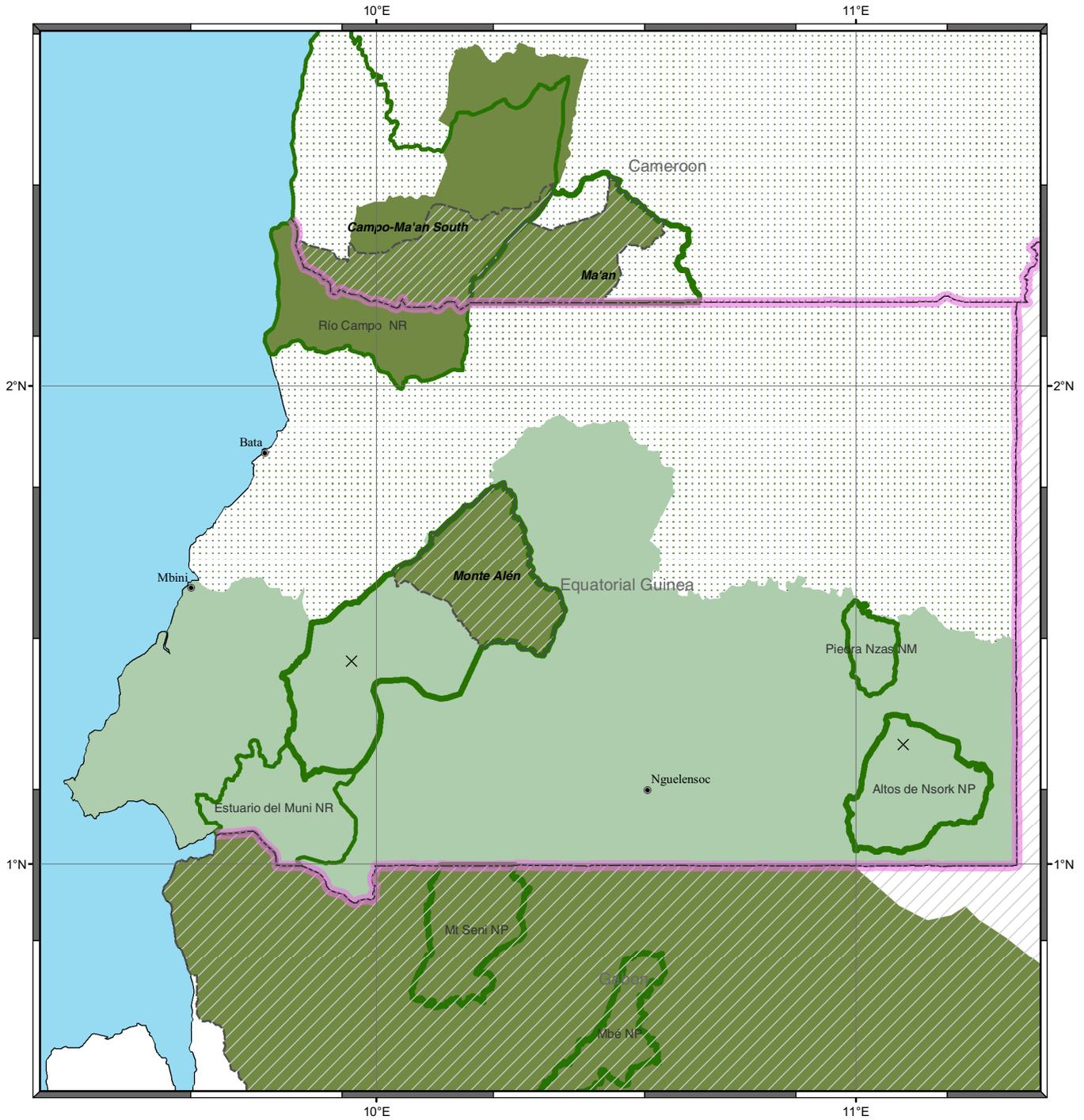
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	23,443	93.8%
1993-1995	797	3.2%
Post-1998	762	3.0%
<b>TOTAL</b>	<b>25,002</b>	

## EQUATORIAL GUINEA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Monte Alén National Park	OG3	E	2002	300		Engonga pers. comm., 2002	800	10.2 E	1.6 N

# Equatorial Guinea

## Elephant Range, Input Zones and Protected Areas

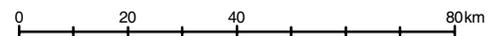


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# G A B O N

## General Statistics

Country Area: 267,670 km<sup>2</sup>  
Range Area (% of country): 229,594 km<sup>2</sup> (86%)  
Protected area coverage (% of country): 15%  
Protected range (% of known and possible range in protected areas): 14%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

In the early 1900s the colonial government established a concessionary system through which private enterprises extracted fixed ivory and timber quotas. Colonial records indicate that 9,000 kg of ivory were exported from Gabon in 1910 (Sánchez Ariño, 1974).

In 1979, elephant range in Gabon was reported to extend over nearly the whole of the country, little of which had been logged or settled, and the country was considered to have an undisturbed population of elephants (Douglas-Hamilton, 1979b).

A 1991 review noted that poaching pressure was weak compared to neighbouring countries and the population was deemed to be stable (Direction de la Faune et de la Chasse, 1991). A dung survey conducted in the forests of Gabon between 1985 and 1988 estimated a population of about 77,000 elephants in the country (Barnes *et al.*, 1997). All other historical estimates for Gabon are based on extrapolations from small samples or questionable assumptions and can be discounted (Barnes *et al.*, 1995).

## Range

Over three-quarters of Gabon's area is forested, with a few islands of savanna mainly in the south of the country. The African Elephant Database 1998 report (Barnes *et al.*, 1999) incorrectly depicted these areas of savanna as non-range, but in fact elephants do use these areas (Barnes *et al.*, 1997).

The range depiction presented in this report has been updated based on a detailed map provided by Lahm (2003). While most of the country remains as **known** range, areas around various population centres and communication routes have been categorized as **doubtful**. An area around the town of Oyem, on the border with Cameroon and Equatorial Guinea has been categorized as **non-range** (Thomas *et al.*, 2001; Lahm, 2003).

## Surveys and Data

Two surveys have been conducted in Gabon since the last report of the African Elephant Database. A dung survey conducted in 2000 as part of the CITES MIKE Central Africa Pilot Project estimated the population in Lopé National Park and its environs at 8,132, with an asymmetric confidence interval ranging from 5,229 to 11,766 (Thomas *et al.*, 2001). This estimate must be treated with caution, since survey coverage was low and dung decay rates were not measured on site. The estimated dung density for the site (622 dung piles per km<sup>2</sup> with a coefficient of variation of 22.0%) is, however, more reliable. The estimate from this survey replaces a previous informed guess of 4,500 (L.J.T. White, pers. comm., 1998).

An ongoing monitoring program in the Gamba complex has yielded an updated informed guess of 11,205 based on measured dung densities (Thibault *et al.*, 2001). This replaces a previous informed guess of 3,000 to 4,000.

Although the estimate shown for the rest of the country is still based on data collected by Barnes *et al.* (1995) between 1985 and 1988, the estimate has been replaced by a subsequent re-analysis of the data (Barnes *et al.*, 1997). This reanalysis yielded an estimate of about 77,000 with an asymmetric confidence interval of 53,000 to 104,000. The two recent estimates

for Lopé and Gamba have been subtracted from this estimate, which appears under the **speculative** category since the data are more than ten years old.

### **Cross-border Movements**

It is likely that there are cross-border movements of elephants in and out of Gabon from Cameroon, Congo and Equatorial Guinea, but information is lacking.

### **Current Issues**

For several decades Gabon has enjoyed considerable revenue from oil sales, and most of its small human population is urban. As a result, there has been less impact on natural habitats compared with neighbouring countries. However, loss of revenue from declining oil reserves may result in increased prospecting activities or in a shift to other natural resources. Although the number of logging concessions has increased substantially in recent times (Wilkie *et al.*, 2002), logging has not been followed by extensive permanent settlement or agriculture, and the increased prevalence of secondary forests may have improved the overall quality of elephant habitat. Following reports of unscrupulous practices by logging companies, Gabon introduced a new Forestry Code, followed by a National Environmental Action Plan.

Thirteen National Parks were created by presidential decree in 2002. These are the first National Parks ever to be gazetted in the country, and result from Gabon's commitment to the Yaoundé declaration, in which Central African heads of state agreed to protect at least 10% of their territory as national parks. The new national parks include Minkébé (7,567 km<sup>2</sup>), Moukalaba Dou (4,495), Lopé (4,970), Ivindo (3,000), Mpassa (2,050), Loango (1,550), Mwagné (1,137), Waka (1,069) and Biringou (690). Many of the new parks will be developed for eco-tourism, as an economic alternative to exploiting Gabon's forests for timber.

Poaching is reported to be a problem in the north and east of Gabon, along the borders with Equatorial Guinea, Cameroon and Congo (White, 2002). Since 2001 Gabon has had an annual CITES export quota of 150 ivory tusks (75 animals) from legally-acquired trophies (World Conservation Monitoring Centre, 2003).

### Summary totals for Gabon

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Dung Counts	0	8,132	3,507	0
Informed Guesses	0	0	11,205	969
Other Guesses	0	0	0	57,340
<b>TOTAL</b>	<b>0</b>	<b>8,132</b>	<b>14,712</b>	<b>58,309</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Dung Counts	14,293	5.7%
Informed Guesses	10,400	4.2%
Other Guesses	156,649	62.9%
Unassessed Known Range	48,507	19.5%
Doubtful Range	19,373	7.8%
<b>TOTAL</b>	<b>249,222</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	736	0.3%
Post-1998	248,486	99.7%
<b>TOTAL</b>	<b>249,222</b>	

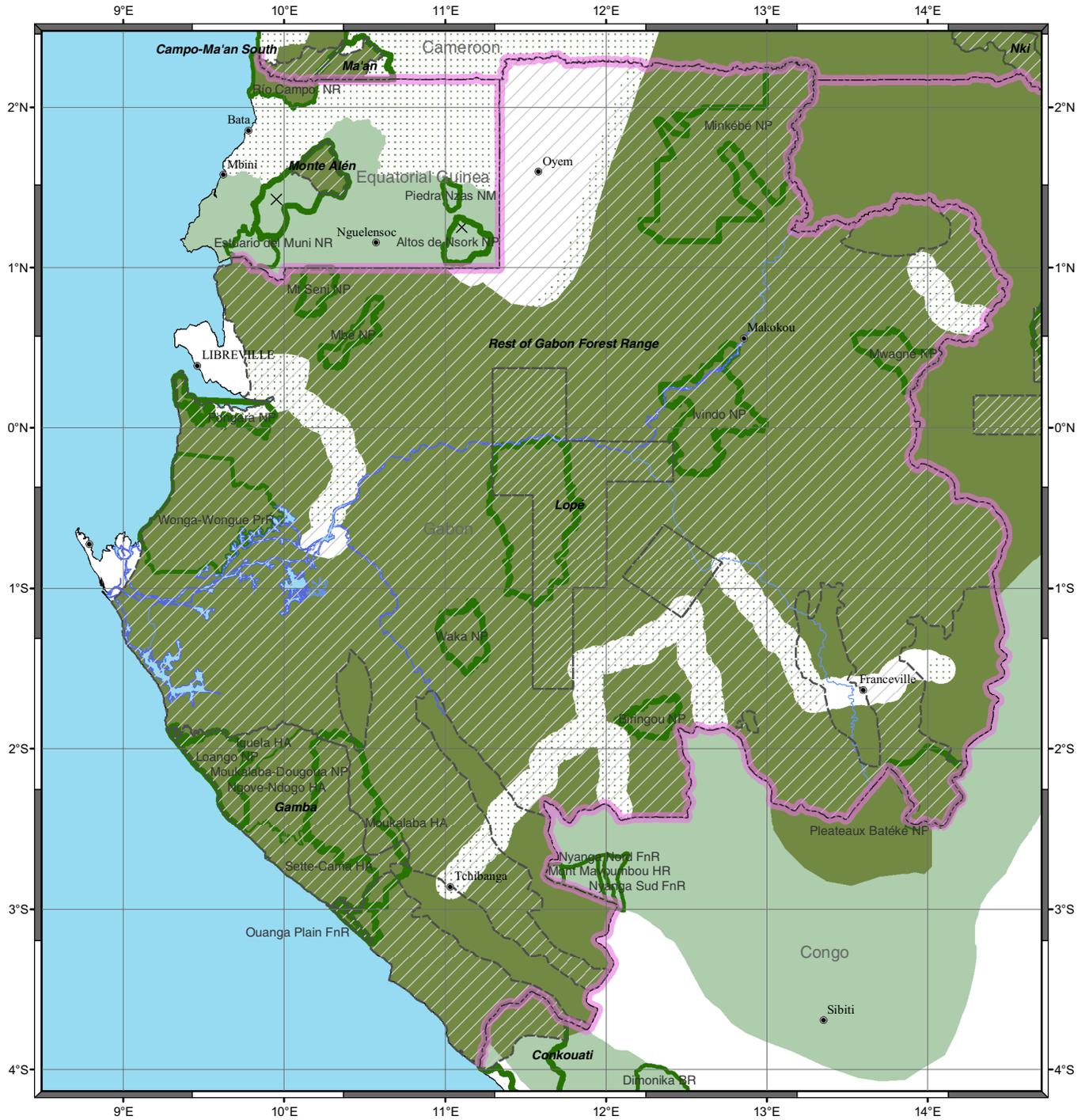
## GABON: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Gamba Reserve Complex	IG3	D	1999	11,205	969*	Thibault et al., 2001	10,485	10.1 E	2.4 S
Lopé Faunal Reserve & environs	DC2	C	2000	8,132	3,507	Thomas et al., 2001	14,360	11.8 E	0.5 S
Rest of Gabon Forest Range	DC2	E	1988	57,340	20,678	Barnes et al., 1997	222,627	11.8 E	0.4 S

\* Range of informed guess

# Gabon

## Elephant Range, Input Zones and Protected Areas

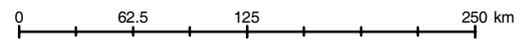


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**



# EASTERN AFRICA

## **General Statistics**

Total Area: 6,182,037 km<sup>2</sup>  
Range Area (% of region): 969,113 km<sup>2</sup> (16%)  
Protected area coverage (% of region): 4%  
Protected range (% of known and possible range in protected areas): 24%

## **Historical Background**

Eastern Africa was an important source of ivory to markets in the Middle and Far East from around 500 A.D. The trade in ivory surged in the middle of the 19<sup>th</sup> century to feed an increased demand in Europe and America (Parker, 1979).

At the beginning of the 20<sup>th</sup> century, colonial authorities in most of Eastern Africa prohibited commercial elephant hunting and licensed sport hunting (Simon, 1962). The creation of parks and reserves did not begin in earnest until the 1920s. Expanding human populations increasingly came into conflict with elephants, and this resulted in control measures and resettlement schemes being implemented in several countries (Swynnerton, 1923; Brooks and Buss, 1962; Rodgers and Lobo, 1980). In the mid 1960s the majority of protected areas within the species' range reported rapid increases in elephant densities, and this was attributed to compression by rising human populations. Some pilot culling schemes were conducted within national parks and reserves (Laws, 1968; Laws *et al.*, 1975), and sport hunting was generally permitted in designated hunting blocks.

In the 1970s and 1980s, a new increase in the price of ivory led to severe episodes of poaching in many areas, starting in unprotected areas but eventually penetrating major national parks and reserves such as Tsavo, Murchison Falls, Queen Elizabeth, Ruaha, Rungwa and the Selous ecosystem. Survey records from the period indicate that elephant populations declined substantially in these areas. Worldwide campaigns against the ivory trade ensued, and the African elephant was listed under CITES Appendix I at the CITES Conference of the Parties held in Lausanne (Switzerland) in October 1989. The uplisting of the African elephant was due in no small measure to the influence exerted by delegations of East African countries, and especially Kenya and Tanzania.

Most countries in the region, namely Ethiopia, Eritrea, Rwanda, Somalia, Sudan and Uganda, suffered civil wars in the 1980s and 1990s, and this has made conservation and monitoring work difficult. In the same period, other countries saw dramatic increases in their human populations matched by considerable loss of habitat. While elephant populations affected by poaching are since reported to have increased in many areas and to have remained stable in others, other important threats to elephant populations, such as habitat loss and human-elephant conflict, have not received as much attention from governments as the ivory trade.

## **Range**

Although a wide variety of habitats occur in Eastern Africa, savanna grassland and woodland dominate the landscape. Forests are largely restricted to coastal and montane areas as well as to remnants of Central African forests along the western edge of the region.

Elephant range in Eastern Africa spans over 950,000 km<sup>2</sup>, 42% of which is categorized as **known** range. This makes Eastern Africa the second best-known region in terms of elephant range after West Africa (74% **known**). The uncertainty that remains over the distribution of elephants in Eastern Africa is due largely to southern Sudan and Somalia, where ongoing conflict prevents conservation and monitoring work, as well as to large tracts of possible range

outside of protected areas in Tanzania which are not covered in the country's aerial survey programme.

Information for these areas of **possible** range was gathered prior to 1988, and accounts for over 10% of the total range estimate. Range information for most of the rest of Eastern Africa is far more recent, with 82% being less than 10 years old. Over 29% of elephant range in Eastern Africa is found within protected areas.

### **Surveys and Data**

While almost one third of the region's elephant range is covered by regular aerial surveys, the amount of range for which no estimates are available in Eastern Africa remains high at 60% of total **known** and **possible** range. This is largely due to the absence of estimates for most of Sudan and large portions of **possible** range in Tanzania.

The area covered by systematic surveys since the last report has nevertheless increased from just under 460,000 km<sup>2</sup> to just over 500,000 km<sup>2</sup>. The area for which guesses have been obtained has also increased from 47,000 km<sup>2</sup> to almost 80,000 km<sup>2</sup>.

The pooled estimate for the region under the **definite** category has increased from 83,770 in the previous report to 117,716 in this report. The most notable reported increase is in Tanzania, where the number of elephants under the **definite** category has gone from 67,416 to 92,453, while the probable estimate has gone from 12,196 to 17,231. The **definite** number in Kenya has gone from 14,364 to 22,036, but this increase is compensated by a decrease in the **probable** figure, which has declined from 11,350 to 1,101. Although the number of **definite** elephants in Uganda has increased from the 215 reported in the AED 1998 report to the 2,064 reported here, the change is a result of improvements in survey quality rather than actual changes in numbers, as the increase is almost exactly matched by decreases in the **probable** and **possible** categories.

### **Current Issues**

Increased competition between people and elephants for land and resources is leading to the fragmentation and reduction of elephant populations in the region. Sound land use planning policies and economic incentives for those sharing their resources with wildlife would be an important step to ensure the viability of elephant populations in Eastern Africa. The long-term viability of some populations, including those in Eritrea, Ethiopia, Rwanda, Somalia and certain parts of Uganda may already be in doubt. Civil conflict continues in Sudan and Somalia, and the status of elephants in these countries remains uncertain.

Tanzania is the only country in the region to have developed and implemented a national elephant conservation strategy. As many of the challenges faced by elephant conservation are common to several countries in the region, the formulation of a regional strategy would be desirable.

### Summary totals for Eastern Africa

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	23,048	0	0	0
Direct Sample Counts and Reliable Dung Counts	93,468	17,242	17,242	0
Other Dung Counts	0	460	383	0
Informed Guesses	1,200	0	4,885	1,801
Other Guesses	0	0	0	3,937
<b>TOTAL</b>	<b>117,716</b>	<b>17,702</b>	<b>22,511</b>	<b>5,738</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	116,681	11.0%
Direct Sample Counts & Reliable Dung Counts	193,472	18.3%
Other Dung Counts	1,360	0.1%
Informed Guesses	39,400	3.7%
Other Guesses	13,036	1.2%
Unassessed Known Range	123,144	11.6%
Unassessed Possible Range	481,930	45.5%
Doubtful Range	90,394	8.5%
<b>TOTAL</b>	<b>1,059,417</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	116,260	11.0%
1988-1992	54,906	5.2%
1993-1995	195,287	18.4%
1996-1998	366,477	34.6%
Post-1998	326,487	30.8%
<b>TOTAL</b>	<b>1,059,417</b>	

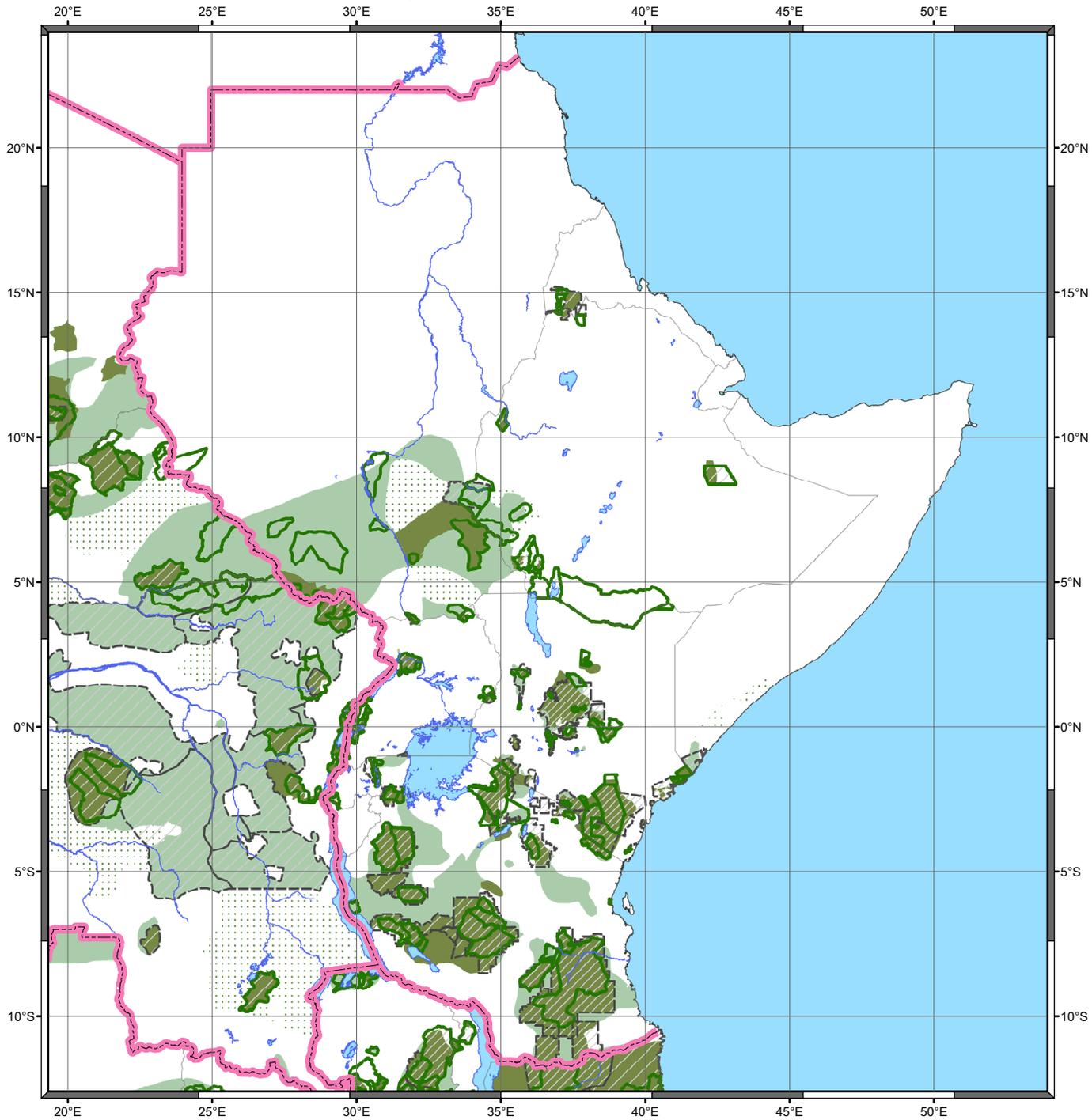
## Country and regional totals for Eastern Africa

COUNTRY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE	COUNTRY AREA	RANGE AREA
Eritrea	83	0	17	20	121,320	5,275
Ethiopia	396	0	965	335	1,127,127	48,170
Kenya	22,036	1,101	3,097	2,572	582,650	109,071
Rwanda	34	0	0	66	26,340	1,095
Somalia	0	0	70	0	637,660	4,525
Sudan	20	0	280	0	2,505,810	333,109
Tanzania	92,453	17,231	18,501	2,285	945,090	456,555
Uganda	2,064	0	210	460	236,040	11,313
<b>TOTAL*</b>	<b>117,716</b>	<b>17,702</b>	<b>22,511</b>	<b>5,738</b>	<b>6,182,037</b>	<b>969,113</b>

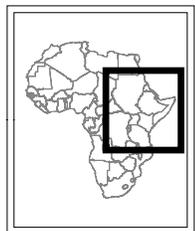
\* Note that totals for the Definite, Probable and Possible categories are derived from pooling variances, as described under the Data Categorization section. As a result, totals do not necessarily match the simple sum of the entries within a category.

# Eastern Africa

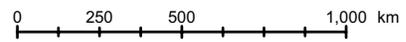
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Regional Boundary
	Rivers and lakes
	Protected Areas
	Input Zones
	Elephant Range: Known
	Elephant Range: Possible
	Elephant Range: Doubtful



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only





# ERITREA

## **General Statistics**

Country Area: 121,320 km<sup>2</sup>  
Range Area (% of country): 5,275 km<sup>2</sup> (4%)  
Protected area coverage (% of country): 0%  
Protected range (% of known and possible range in protected areas): 0%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

There is evidence that much of western Eritrea was elephant range until relatively recent historical times, but by 1940 they were confined to the southwest of the country (Largen and Yalden, 1987; Shoshani *et al.*, 2000), where herds of 100-200 animals were reported in the mid-1950s (Leuenberger, 1955).

This population was found to have survived over 30 years of war in Eritrea (1958-1991), and was estimated at 70 to 100 after independence in 1993 (Hagos, 1993). An aerial survey in 1997 counted only two animals on the Eritrean side of the border, but noted a high incidence of crop-raiding by elephants in the area. In addition, the report acknowledged that elephants may have been missed in the dense riverine woodland and that the entire range area was probably not covered in the survey (Litoroh, 1997a). Observations as far north as Haicota, near Tessenei, allowed speculation that the elephants were being quick to re-occupy areas from which they had been displaced by hostilities (Hagos, 2000).

## **Range**

Elephants in Eritrea are confined to the Gash-Setit area in the southwest of the country along the Ethiopian border, where vegetation is characterized by riverine thickets and *Acacia* woodland and savanna. The area is bound by the seasonal Gash River to the north and the permanent Setit River, which forms the border with Ethiopia to the south.

A detailed study of elephant sign and spoor has revealed a wider distribution of elephants in Eritrea than previously thought (Hagos *et al.*, 2003), and this information has been used to update the range map for this report.

## **Surveys and Data**

Although no systematic surveys have been conducted in Eritrea since 1996, numerous sightings have been reported by staff of the Ministry of Agriculture and United Nations Peace Keepers. A group of 28 elephants was sighted in 2001, and a total of 83 were seen during an expedition to the area in early 2003 (Hagos *et al.*, 2003). The same authors estimate the total population to stand at around 100 in the Gash-Setit area. This information has been entered into the database as an informed guess, and replaces the aerial total count estimate of 2 (Litoroh, 1997a) that appeared in the previous report.

## **Cross-border Movements**

Eritrea's elephants are likely to form part of a single transboundary population that straddles the border with Ethiopia to the south and perhaps also with Sudan to the west. A satellite-tracking study, currently in its planning stages, should shed light on the movement patterns of elephants in the area.

## **Current Issues**

The southeastern part of the Gash-Barka province, where the Gash-Setit population is situated, is one of the areas under dispute in the border conflict that broke out between Eritrea and Ethiopia in May 1998. In June 2000 a ceasefire was agreed by both parties, and the disputed areas have been monitored by United Nations peace keepers ever since (Yacob, quest. reply, 2002).

Gash-Barka is also one of the most important areas for agriculture in Eritrea, and reports of human-elephant conflict abound (Yacob, quest. reply, 2002). Although some farmers are

reported to have begun cultivating crops that are less palatable to elephants, others have resorted to shooting elephants or starting bush fires to drive them away (Hagos, 2000).

The establishment of a protected area in Gash-Setit has been recently proposed (Shoshani *et al.*, 2000). The proposal includes plans to re-locate and compensate affected farmers.

### Summary totals for Eritrea

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	0	0	0	0
Informed Guesses	83	0	17	20
<b>TOTAL</b>	<b>83</b>	<b>0</b>	<b>17</b>	<b>20</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	5,257	99.7%
Unassessed Known Range	18	0.3%
<b>TOTAL</b>	<b>5,275</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1996-1998	2,271	43.1%
Post-1998	3,004	56.9%
<b>TOTAL</b>	<b>5,275</b>	

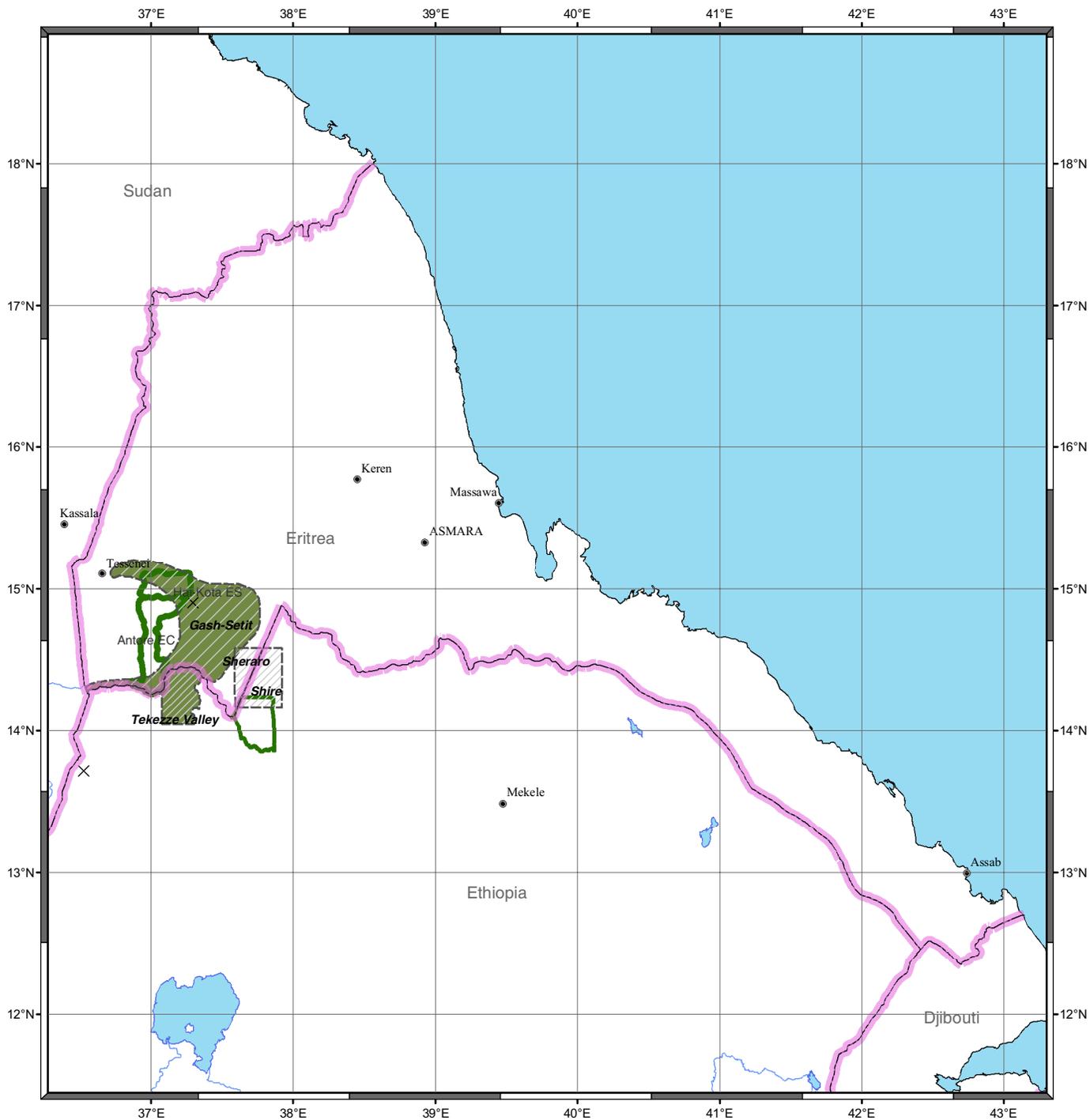
## ERITREA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Gash-Setit	IG3	D	2001	100	20*	Hagos et al., in prep.	5,275	37.3 E	14.8 N
Sheraro	AT2	A	1997	0		Litoroh, 1997a	534	37.6 E	14.4 N

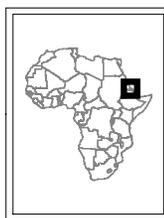
\* Range of informed guess

# Eritrea

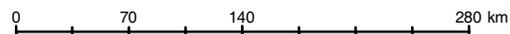
## Elephant Range, Input Zones and Protected Areas



Legend			
	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# ETHIOPIA

## General Statistics

Country Area: 1,127,127 km<sup>2</sup>  
Range Area (% of country): 48,170 km<sup>2</sup> (4%)  
Protected area coverage (% of country): 11%  
Protected range (% of known and possible range in protected areas): 20%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Elephants were relatively widely distributed in Ethiopia until the first quarter of the 19<sup>th</sup> century. In October 1909 Emperor Menelik II passed the first regulations aimed at protecting Ethiopian wildlife, and elephants in particular. Despite this, the elephants of the central Rift Valley and the Awash River Valley disappeared between 1900 and 1934 (Yalden *et al.*, 1986). During the Italian period (1936-1941), some conservation areas were created, but there was still considerable hunting pressure on wildlife. In 1944 a Wildlife Act was passed, and in the 1960s a UNESCO mission recommended the gazetting of a number of national parks and protected areas.

By the early 1970s, elephants were largely confined to the southwest of the country, with their population estimated at 5,000 to 6,000 but showing signs of regression (Sánchez Ariño, 1974). Another guess, however, put the population at around 8,700 elephants in 1986 (Yalden *et al.*, 1986). Four years later, and after the end of the civil war, Allen-Rowlandson (1990b) suggested a total population of 2,450.

The Mago and Omo complex was subject to six aerial surveys between 1976 and 1997 (Stephenson and Mizuno, cited in Lamprey, 1994; Allen-Rowlandson, 1990; Lamprey, 1994; Enawgaw, cited in Graham *et al.*, 1996; Graham *et al.*, 1997b), and numerous sightings were reported in the area. Estimates have ranged from 120 (Graham *et al.*, 1996) to 1320 (Demeke, 1994).

Sport hunting in Ethiopia was closed in 1992 (Thouless, 1995a), but subsequently re-opened. In 1998 Ethiopia filed a CITES export quota of six tusks (3 animals) to be exported as hunting trophies, but did not renew that quota in subsequent years (World Conservation Monitoring Centre, 2003).

## Range

Most of Ethiopia's elephant range is in the southwest of the country, where woodland and thickets predominate along with some areas of montane forest.

Several areas of range have been classified as **doubtful** based on information provided by Demeke (quest. reply, 2002). Elephant range in these areas is believed to have contracted further as a result of increased human settlement. A number of crosses are shown in areas where elephants are known to appear only sporadically, such as Gambella, the Borana Controlled Hunting Area, Chew Bahr Wildlife Reserve, Tama Wildlife Reserve, Murle Controlled Hunting Area and Alataash Natural Forest in the northwest (Demeke, quest. reply, 2002; Chago *et al.*, 2001). In general, it would appear that elephant populations in Ethiopia are small, fragmented and highly mobile, but their movements are not well understood.

## Surveys and Data

An aerial survey conducted in the Gambella National Park and its environs in May 2002 (Ethiopia Wildlife Conservation Organization, 2002) found no elephants within the park, but 200 elephants were reported to the southwest, near the Sudanese border. It is possible that these elephants crossed over from Sudan (R. Kock, pers. comm., 2003). This estimate, categorized as an informed guess in the absence of a detailed report, replaces a 1998 informed guess of 150 (M. Abdi, pers. comm., 1998).

A dung count conducted in Mago National Park in 1998 gave an estimate of 481±182 (Demeke and Bekele, 2000), but reported sightings during a 2002 law-enforcement survey by Demeke (2003) have been used to replace older estimates for both Mago and Omo National Parks. In that survey, 324 elephants were seen in one day in Omo National Park, and about 200 elephants were seen in Mago over the course of 2 weeks. As there is likely to be a single population that moves between the two reserves, the number of elephants seen in Omo has been taken as the estimate, with an upper range of 200 for both parks. The two areas were flown in September 2001, but no elephants were seen in either of them. However, 60 elephants were reported in the nearby Chew Bahr (Chalbi) Wildlife Reserve in the same survey (Chago *et al.*, 2001), and this has been entered as an informed guess.

A guess of 200 for the Dabus Valley Controlled Hunting Area has been retained from the previous report. Although unable to provide an alternative estimate, Demeke (quest. reply, 2002) believes this to be an overestimate. All other estimates on the table have been retained from the previous report.

### **Cross-border Movements**

A transboundary population occurs around the Shire Wildlife Reserve in the north, across the border with Eritrea. Southwest of Shire, in Alataash Natural Forest and Wildlife Management Area, elephants are reported to move in sporadically from Sudan (Demeke, quest. reply, 2002; Mohammed and Kassa, 1998). Given the relative proximity to Gash-Setit-Shire, it would be important to establish whether these elephants are part of the same population.

Elephants may also move between Ethiopia and Sudan in the Gambella area and further south, but the presence of camps of armed refugees on the border area may restrict their movements (Thouless, 1995a). A small population of 50-100 elephants may still exist in the desert between Moyale and Mandera in northern Kenya, and it is possible that these move in and out of Ethiopia (Thouless *et al.*, 2003).

### **Current Issues**

The presence of elephants in most aerial surveys conducted in Ethiopia since the early 1990s has been at best erratic (Lamprey, 1994; Thouless, 1995a; Thouless, 1995b), and this may be a consequence of elephants moving constantly in search of water or some other limiting resource. There is an urgent need to study the distribution and ranging habits of elephants in Ethiopia.

There is limited protection of elephants within parks and reserves, and none outside. Elephant populations and range are decreasing due to a number of factors, including human expansion – often encroaching onto elephant habitats and movement routes – unsustainable land-use practices, minimal prioritization given to wildlife conservation by the government and the limited power of the Ethiopian Wildlife Conservation Organization (Demeke, 1997). Ethiopia is one of the countries in most danger of losing its elephant populations.

A recent report identified Ethiopia as having the largest unregulated ivory market in Eastern Africa (ETIS, 2002). Most of the ivory available for sale in the capital, Addis Ababa, is of unknown provenance but believed to originate from other countries.

## Summary totals for Ethiopia

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	12	0	0	0
Informed Guesses	384	0	965	335
<b>TOTAL</b>	<b>396</b>	<b>0</b>	<b>965</b>	<b>335</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	14,660	24.6%
Informed Guesses	8,013	13.5%
Unassessed Known Range	1,314	2.2%
Unassessed Possible Range	24,183	40.6%
Doubtful Range	11,342	19.1%
<b>TOTAL</b>	<b>59,512</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	17,665	29.7%
1993-1995	7,086	11.9%
1996-1998	9,264	15.6%
Post-1998	25,497	42.8%
<b>TOTAL</b>	<b>59,512</b>	

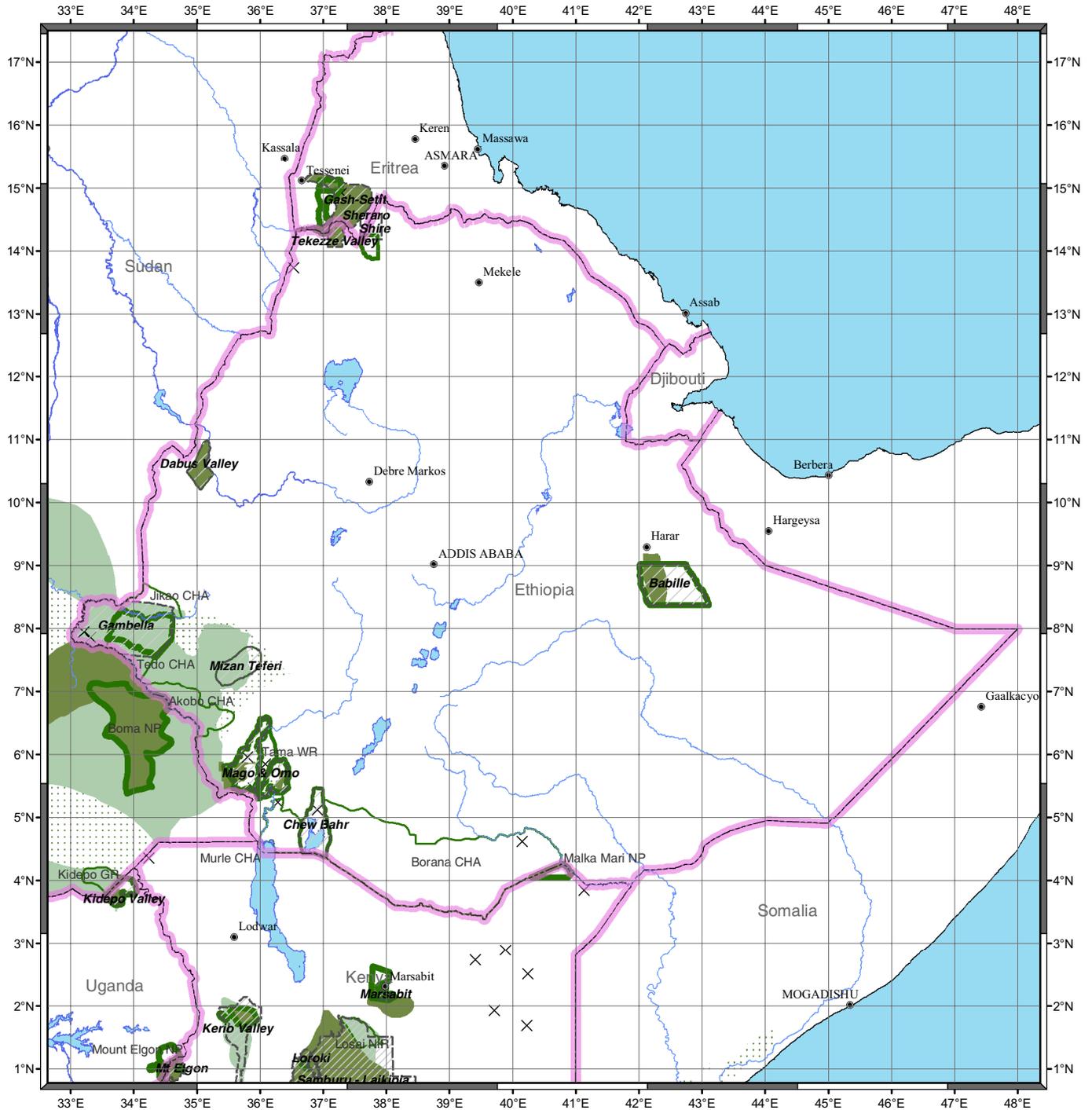
## ETHIOPIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Babile Elephant Sanctuary	IG3	D	1998	65	135*	Tekle pers. comm., 1998	6,982	42.5 E	8.7 N
Chew Bahr Wildlife Reserve	IG3	D	2001	60		Chago et al., 2001	4,212	36.9 E	4.9 N
Dabus Valley Controlled Hunting Area	IG3	D	1998	200		Abdi pers. comm., 1998	2,127	35.1 E	10.6 N
Gambella National Park	IG3	D	2002	200		Ethiopia Wildlife Conservation Organization, 2002	5,061	33.9 E	8.0 N
Mago & Omo National Parks	IG3	D	2002	324	200*	Demeke, 2003	6,230	36.0 E	5.8 N
Mizan Teferi Controlled Hunting Area	IG3	D	1998	500		Abdi pers. comm., 1998	3,160	35.7 E	7.4 N
Shire	AT2	A	1997	6		Litoroh, 1997a	1,123	37.8 E	14.3 N
Tekezze Valley Wildlife Reserve	AT2	A	1996	6		Litoroh, 1997a	1,130	37.2 E	14.2 N

\* Range of informed guess

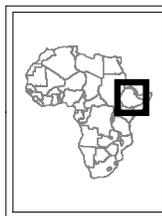
# Ethiopia

## Elephant Range, Input Zones and Protected Areas

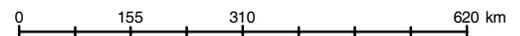


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I



# KENYA

## General Statistics

Country Area: 582,650 km<sup>2</sup>  
Range Area (% of country): 109,071 km<sup>2</sup> (19%)  
Protected area coverage (% of country): 8%  
Protected range (% of known and possible range in protected areas): 27%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

The commercial pursuit of ivory was unregulated in Kenya until 1900 (Simon, 1962). The first half of the 20<sup>th</sup> century saw regulation of elephant hunting and the creation of protected reserves, where numbers built up and eventually began to transform woodlands to grassland (Ayeni, 1980; Simon, 1962; Glover, 1963; Laws, 1969). In 1970-73 a severe drought caused an estimated 6,000 to 9,000 elephants to die of starvation in the Tsavo National Park (Corfield, 1973; Sheldrick, 1976). In the 1970s and 1980s there was heavy poaching for ivory, especially in the east of the country, with important declines in major populations such as Tsavo (Ottichilo, 1987), Tana, Galana and Lamu (Bunderson, 1979; Douglas-Hamilton, 1979a). This prompted a ban on elephant hunting in 1974, a ban on all sport hunting in 1977 and a national ivory trade ban in 1978.

These measures were ineffective, and elephant populations continued to decline in the 1980s. After the CITES ban on the international ivory trade in 1989, poaching was brought into control with the introduction of stepped-up anti-poaching operations and increased investment in wildlife protection (Poole *et al.*, 1992). The 1990s was the first decade in which elephant numbers did not decline nationally.

Instead, major savanna populations such as Tsavo, Amboseli and parts of Laikipia-Samburu have increased substantially of the order of 3-4% *per annum* (Kahumbu *et al.*, 1999; Omondi *et al.*, 2002; Thouless *et al.*, 2003), while others such as Mara have remained stable (Dublin and Watkin, 1994). These populations currently represent 40% of Kenya's estimated population. Less is known, however, about the status of forest populations, where surveys have been neither regular nor comprehensive. While intelligence work and carcasses recovered suggest that some elephant populations may have declined in forest areas such as Maralal and Mt. Elgon (O. Kahindi, pers. comm., 2003; Thouless *et al.*, 2003), there is no trend indication for others such as Mount Kenya and the Aberdare Range (Vanleeuwe, 2000; Thouless *et al.*, 2003).

## Range

Kenya's elephants occur in both savanna and forest habitats. The largest savanna populations are those of the Tsavo ecosystem and the Samburu and Laikipia districts. The main highland forest populations are those of the Aberdare range and Mount Kenya. There are other smaller, isolated forest populations in coastal forests and other inland areas.

Although the range map for Kenya has been completely revised and updated, changes in the depiction of range since the previous report are not substantial, and are largely due to better information rather than real changes. However, elephants have been recently sighted in areas where they had not been seen for years, including lakes Baringo and Bogoria and the outskirts of Nairobi. Crosses are shown in the map for individual elephant sightings outside of habitual range.

Most of the information used for the categorization of **known** range has been derived from Thouless *et al.* (in prep.2003), but this has been combined with other sources where necessary. Examples of this are the Transmara forests (Sitati, 2000) and the Amboseli ecosystem

(Omondi *et al.*, 2002). Remaining areas shown as **possible** range have been retained from maps in the 1998 report, which in turn originated largely from the AED 1995 report.

## **Surveys and Data**

Estimates for all major savanna populations in Kenya have been updated with figures from recent surveys conducted by the Kenya Wildlife Service (KWS) in collaboration with various partners. These include aerial total counts of Tsavo (Omondi *et al.*, 2002), Masai Mara (Muriuki, 2002), Samburu/Laikipia (Omondi *et al.*, 2002), Meru (Omondi *et al.*, 2002) and Kerio Valley (Omondi *et al.*, 2002).

The estimate for the Tsavo ecosystem has increased from the 1994 estimate of 7,371 (Douglas-Hamilton *et al.*, 1994) that appeared in the AED 1998 report, to the 9,221 reported here (Omondi *et al.*, 2002). Between these two surveys, there was another aerial total count in 1999, which returned an estimate of 8,088 (Kahumbu *et al.*, 1999).

The Samburu-Laikipia ecosystem has also been subject to two aerial total counts since the last AED report. The first of these, conducted in 1999, gave an estimate of 3,436 (Kahumbu *et al.*, 1999). The estimate for the second count, conducted under the auspices of the CITES MIKE Programme in 2002, was 5,447 (Omondi *et al.*, 2002). This difference, however, may be due to elephant movement into the survey area at the time of the 2002 census rather than to a real change in the elephant population.

An aerial total count conducted in the Amboseli ecosystem in August 2002 gave an estimate of 1,021 elephants (Omondi *et al.*, 2002), but a figure of 1,100, representing the number of elephants individually recognized by the Amboseli Elephant Research Project at the time of the aerial survey (C.J. Moss, pers. comm., 2003), has been used instead. Between then and early 2003, a number of births brought the Amboseli population to just under 1,200 (C.J. Moss, pers. comm., 2003).

In contrast to the aforementioned aerial surveys, only a few dung counts have been conducted in Kenya since 1998. This stems in part from the recognition of analytical problems associated with dung counts in montane forests (Vanleeuwe, in prep.). Dung surveys conducted include the Shimba Hills ecosystem (Litoroh, 2002c), Arabuko-Sokoke forest (Litoroh, 2002b), Boni and Doodori National Reserves (M. Litoroh, pers. comm., 2003) and Mount Kenya (Vanleeuwe, 2000; H. Vanleeuwe, pers. comm., 2003).

While the recent Mount Kenya dung surveys found similar elephant densities to those reported in the AED 1998 report (Omondi *et al.*, 1998b), the latter overestimated elephant habitat by about 50% (H. Vanleeuwe, pers. comm., 2003), leading to an inflated elephant estimate of  $4,022 \pm 1,083$ . Vanleeuwe's 1999 and 2001 surveys have given estimates ranging from 2,525 to 2,957, depending on season and analytical technique used.

A dung count of the Shimba Hills ecosystem conducted by Litoroh (2002c) gave an estimate of  $649 \pm 77$ . However, the more precise estimate of 658, based on an individual recognition study (Kahumbu, cited in Muir, 2000), has been used for this report. This replaces the estimate of 494 obtained in a 1997 helicopter aerial total count (Litoroh, 1997; Litoroh, 2002ba). Kahumbu (2002) believes this population to be increasing at a rate of 4.4% *per annum*.

## **Cross-border Movements**

Cross-border movements occur mainly across the Kenya - Tanzania border, in the Serengeti-Mara, Tsavo-Mkomazi and Amboseli-Kilimanjaro ecosystems. There may also be movement of elephants between Boni National Reserve in northeastern Kenya and Lag Badana Bushbush in Somalia. It is also possible that elephants move between northern Kenya and Ethiopia, but the number involved is likely to be small (Thouless *et al.*, 2003). Limited cross-border movements may occur between Kenya and Uganda from the vicinity of Kidepo National Park

and on Mount Elgon. However, a recent report suggests that there are no longer any elephants on the Ugandan side of the mountain (F. Michelmore, pers. comm., 1998).

### **Current Issues**

Human-elephant conflict is reported to be severe in many areas, especially where agriculture is practised, but also in pastoralist areas where water resources are scarce. Areas where human-elephant conflict has attracted considerable media attention include Narok district, Shimba Hills, heavily populated areas bordering the Tsavo, Mt. Kenya and Aberdare National Parks and south Laikipia.

Remedial action has included extensive electric fencing projects and elephant translocation exercises. A total of 141 elephants have been captured and translocated since 1996 (Omondi *et al.*, 2002), and at least 267 elephants were shot on control between 1996 and May 2002 (Thouless *et al.*, 2003).

The substantial economic and social costs that result from increasing levels of human-elephant conflict in Kenya, coupled with the negative effects of local overpopulation of elephants in some areas (Höft and Höft, 1995; Omondi *et al.*, 1998a) continue to put the issue high on the national conservation and political agendas. The high cost and relative ineffectiveness of translocation and electric fencing (Hoare, 2003; Barnes, 2002b) have led to calls for the development and adoption of a comprehensive land use plan to address this and other conservation issues.

## Summary totals for Kenya

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	19,582	0	0	0
Direct Sample Counts and Reliable Dung Counts	2,454	641	641	0
Other Dung Counts	0	460	383	0
Informed Guesses	0	0	2,073	50
Other Guesses	0	0	0	2,522
<b>TOTAL</b>	<b>22,036</b>	<b>1,101</b>	<b>3,097</b>	<b>2,572</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	76,941	70.5%
Direct Sample Counts & Reliable Dung Counts	2,527	2.3%
Other Dung Counts	1,360	1.2%
Informed Guesses	3,449	3.2%
Other Guesses	1,802	1.7%
Unassessed Known Range	15,670	14.4%
Unassessed Possible Range	7,318	6.7%
<b>TOTAL</b>	<b>109,067</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	47,495	43.5%
1996-1998	29,186	26.8%
Post-1998	32,386	29.7%
<b>TOTAL</b>	<b>109,067</b>	

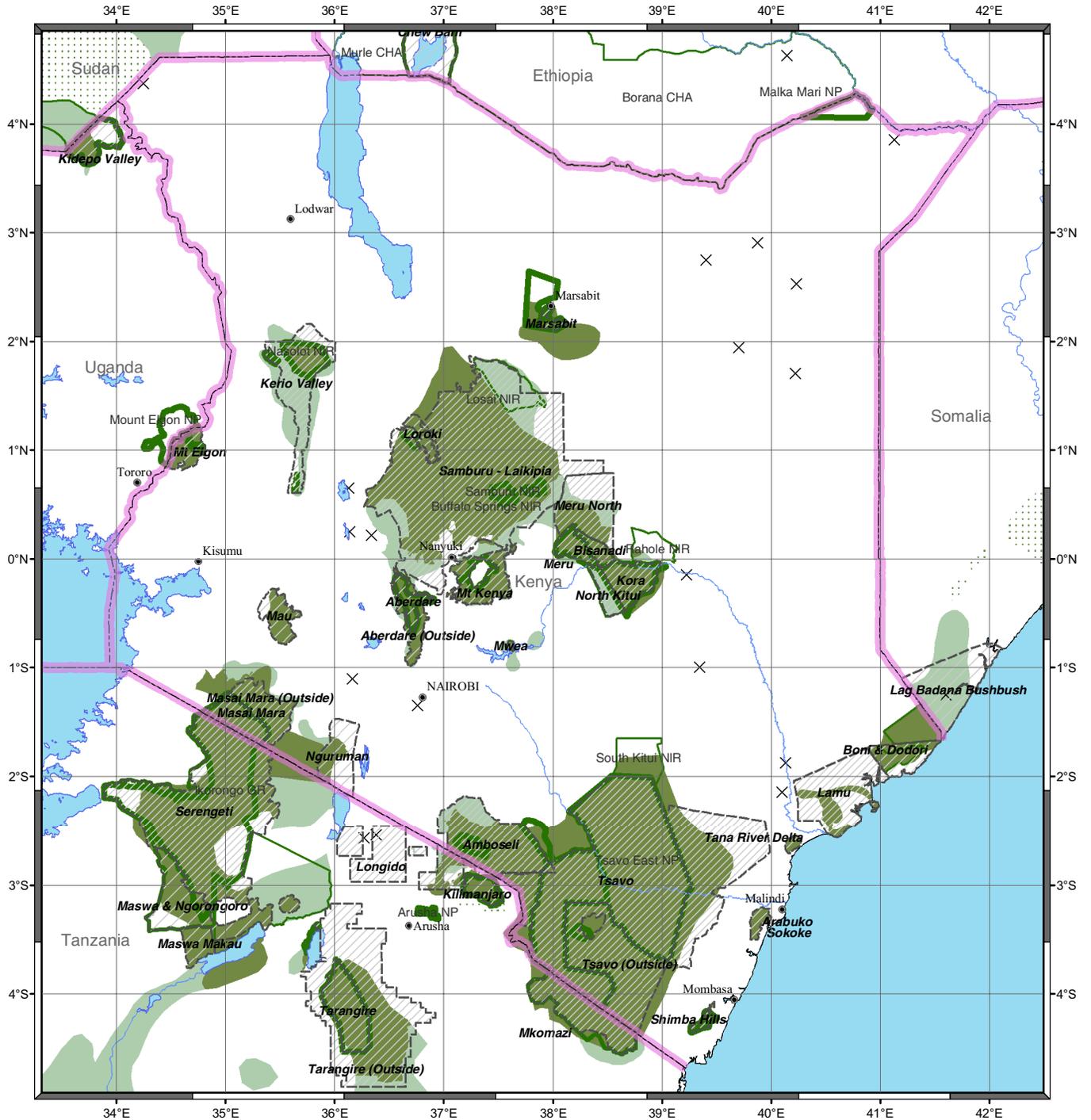
## KENYA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Aberdare National Park	DC2	E	1990	1,822	729	Blom et al., 1990	767	36.7 E	0.4 S
Aberdare (Outside)	OG3	E	1990	700		Butynski, 1999	1,070	36.7 E	0.6 S
Amboseli Ecosystem	IR1	A	2002	1,100		Moss pers. comm., 2003	5,547	37.4 E	2.6 S
Arabuko Sokoke Forest Reserve	DC1	B	2002	184	43	Litoroh, 2002b	415	39.9 E	3.3 S
Bisanadi National Reserve	AT2	A	2002	100		Omondi et al., 2002a	606	38.4 E	0.1 N
Boni & Dodori National Reserves	DC3	C	2000	50	46	Litoroh pers. comm., 2003	1,643	41.2 E	1.8 S
Kerio Valley Conservation and dispersal areas	AT3	A	2002	490		Omondi et al., 2002c	4,616	35.7 E	1.6 N
Kora National Park	AT2	A	2002	5		Omondi et al., 2002a	1,789	38.7 E	0.2 S
Lamu District	AT3	A	2000	82		Litoroh pers. comm., 2003	5,964	40.6 E	2.1 S
Loroki Forest	DC3	C	1997	210	354	Bitok et al., 1997	596	36.8 E	1.1 N
Marsabit National Park	IG3	D	1998	500		Omondi pers. comm., 1998	142	38.0 E	2.2 N
Masai Mara National Reserve	AT3	A	2002	1,655		Muriuki, 2002	1,510	35.1 E	1.5 S
Masai Mara (Outside)	AT3	A	2002	461		Muriuki, 2002	1,978	35.3 E	1.4 S
Mau Forest Complex	DC3	D	1995	1,003		Njumbi et al., 1995	1,267	35.5 E	0.5 S
Meru National Park	AT2	A	2002	272		Omondi et al., 2002a	884	38.2 E	0.1 N
Meru North Dispersal Areas	AT3	A	2002	36		Omondi et al., 2002a	3,516	38.3 E	0.5 N
Mt Elgon National Park and Forest Reserve	IG3	D	1999	400		Thouless et al., in prep.	1,083	34.6 E	1.0 N
Mt Kenya National Park and Forest Reserve	DC1	B	2001	2,911	640	Vanleeuwe, 1997	2,007	37.4 E	0.2 S
Mwea National Reserve	GT1	A	1998	55		Manegene and Musoki, 1998	68	37.6 E	0.8 S
Nguruman	IG3	D	1998	150	50*	Chege, 1998	2,197	36.0 E	1.8 S
North Kitui National Reserve	AT2	A	2002	0		Omondi et al., 2002a	745	38.5 E	0.3 S
Samburu - Laikipia Ecosystem	AT3	A	2002	5,447		Omondi et al., 2002b	28,529	37.3 E	0.8 N
Shimba Hills Ecosystem	IR1	A	1999	658		Muir, 2000	250	39.4 E	4.2 S
Tana River Delta	IG3	D	2002	20		Knocker pers. comm., 2003	184	40.2 E	2.6 S
Transmara Forest	DC3	C	1997	200	139	Wamukayo et al., 1997	300	Not	Shown
Tsavo National Park	AT3	A	2002	8,344		Omondi et al., 2002d	20,812	38.6 E	3.0 S
Tsavo (Outside) Ecosystem	AT3	A	2002	877		Omondi et al., 2002d	16,570	39.0 E	3.2 S

\* Range of informed guess

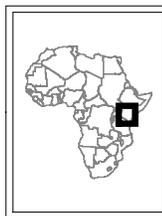
# Kenya

## Elephant Range, Input Zones and Protected Areas

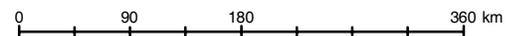


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**



# R W A N D A

## **General Statistics**

Country Area: 26,340 km<sup>2</sup>  
Range Area (% of country): 1,095 km<sup>2</sup> (4%)  
Protected area coverage (% of country): 9%  
Protected range (% of known and possible range in protected areas): 93%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

In 1950, the territory of Ruanda-Urundi (the Rwanda and Burundi of today) was estimated to have some 800 elephants (Offermann, 1951). By 1973 there may have been roughly 300 elephants remaining (Sánchez Ariño, 1974; Douglas-Hamilton, 1977), half of which were found in unforested areas.

As human populations grew, human-elephant conflict reached such a point that, in 1975, the Government of Rwanda commissioned professional hunters and trappers to eliminate all adult elephants and unweaned calves in high-conflict areas, and to translocate as many of the remaining juveniles as possible to the southern sector of Akagera National Park, an area occupied by elephants up to 1938. A total of 126 animals were shot, and 30 captured. Of the latter, 26 were released in Akagera (Haigh *et al.*, 1979).

Through much of the 1990s, civil war and the presence of soldiers, armed rebels and refugees in and around protected areas posed an intermittent threat to elephants and other wildlife. Rwanda has recognised only three elephant populations in recent times. In 1991 these totalled between 80 and 100 individuals (Office Rwandais du Tourisme et des Parcs Nationaux, 1991) distributed between Akagera (about 40) and the Nyungwe Forest (about 10), while those in the Parc National des Volcans were not permanent residents.

## **Range**

Rwanda is one of Africa's smallest and yet most densely populated nations, and natural habitats are scarce as a result. *Acacia* bushland predominates in the east of the country, transitioning to montane forests in the west.

Part of Akagera National Park on the northeastern border with Tanzania has been categorized as **known** range based on information from a recent survey (Lamprey, 2002). Akagera is part of the now entirely fragmented Akagera-Mburo ecosystem, which once straddled the borders of Rwanda, Tanzania and Uganda with a mosaic of different habitats.

Elephants had not been seen in the Parc National des Volcans since the start of the civil war in the early 1990s, but the area has been categorized as **known** range based on recent sightings in the vicinity of the park (Williamson *et al.*, 2000).

No elephants are believed to remain in the Nyungwe Forest Reserve (Plumptre *et al.*, 2002), and the patch of range depicted in the AED 1998 has been categorized as **doubtful**.

## **Surveys and Data**

An aerial sample count was conducted in the Akagera National Park and adjacent Mutara area in 2002, under the auspices of the CITES MIKE Programme. Although no elephants were seen inside the transect strips, 34 individuals were spotted on the edge of the park. The park warden believes that the total resident population stands at 80 individuals (cited in Lamprey, 2002). These figures have been entered as an informed guess, which yield a **definite** 34 elephants and a **possible** 46 more.

An estimated 20 elephants were seen raiding crops outside the Parc National des Volcans in 2000 (Williamson *et al.*, 2000), and this figure has been used to update a 1989 estimate of 20-30 (Office Rwandais du Tourisme et des Parcs Nationaux, 1991).

Signs of what was probably the last elephant in the Nyungwe Forest Reserve were seen during a reconnaissance survey in 1999, but this elephant is thought to have been poached soon thereafter (Plumptre *et al.*, 2002).

### **Cross-border Movements**

Elephants used to move between the Parc National des Volcans and the neighbouring Virunga National Park in the Democratic Republic of Congo (Plumptre and Harris, 1995; J. Bizimana, pers. comm., 1998) until the start of the civil war in Rwanda in the early 1990s, when they reportedly disappeared from Volcans NP (Kanyamimbwa, 1998). Movement appears to have resumed recently, but this may be a consequence of the deteriorating situation in Virunga NP (Williamson *et al.*, 2000).

Elephants also used to move between Akagera and Ibanda, Burigi and Biharamulo in Tanzania, but high levels of refugee settlement are believed to have blocked their passage in recent years.

### **Current Issues**

Despite the dramatic loss of many human lives and the relentless impacts of civil war over the past 40 years, Rwanda continues to have the highest human population density on the African continent.

The Mutara Hunting zone was degazetted in 1997 to accommodate returning Rwandan refugees, and the area of the Akagera National Park was reduced from 2,710 km<sup>2</sup> to the current 1,018 km<sup>2</sup>. The degazetted areas are rapidly becoming heavily settled, with increased levels of bush clearance and charcoal production. Illegal hunting camps were seen during a recent aerial survey within the new park boundaries (Lamprey, 2002).

The possible loss of the elephant population in the Nyungwe Forest, which is soon to acquire the status of National Park, leaves no large mammals to control the extent of understory herbaceous vegetation in the forest. The impact that this may have on the forest and its regeneration is as yet undetermined (Plumptre *et al.*, 2001).

### Summary totals for Rwanda

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	34	0	0	46
Other Guesses	0	0	0	20
<b>TOTAL</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>66</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	772	70.4%
Other Guesses	226	20.6%
Unassessed Known Range	17	1.6%
Doubtful Range	81	7.4%
<b>TOTAL</b>	<b>1,096</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	1,015	92.6%
Post-1998	81	7.4%
<b>TOTAL</b>	<b>1,096</b>	

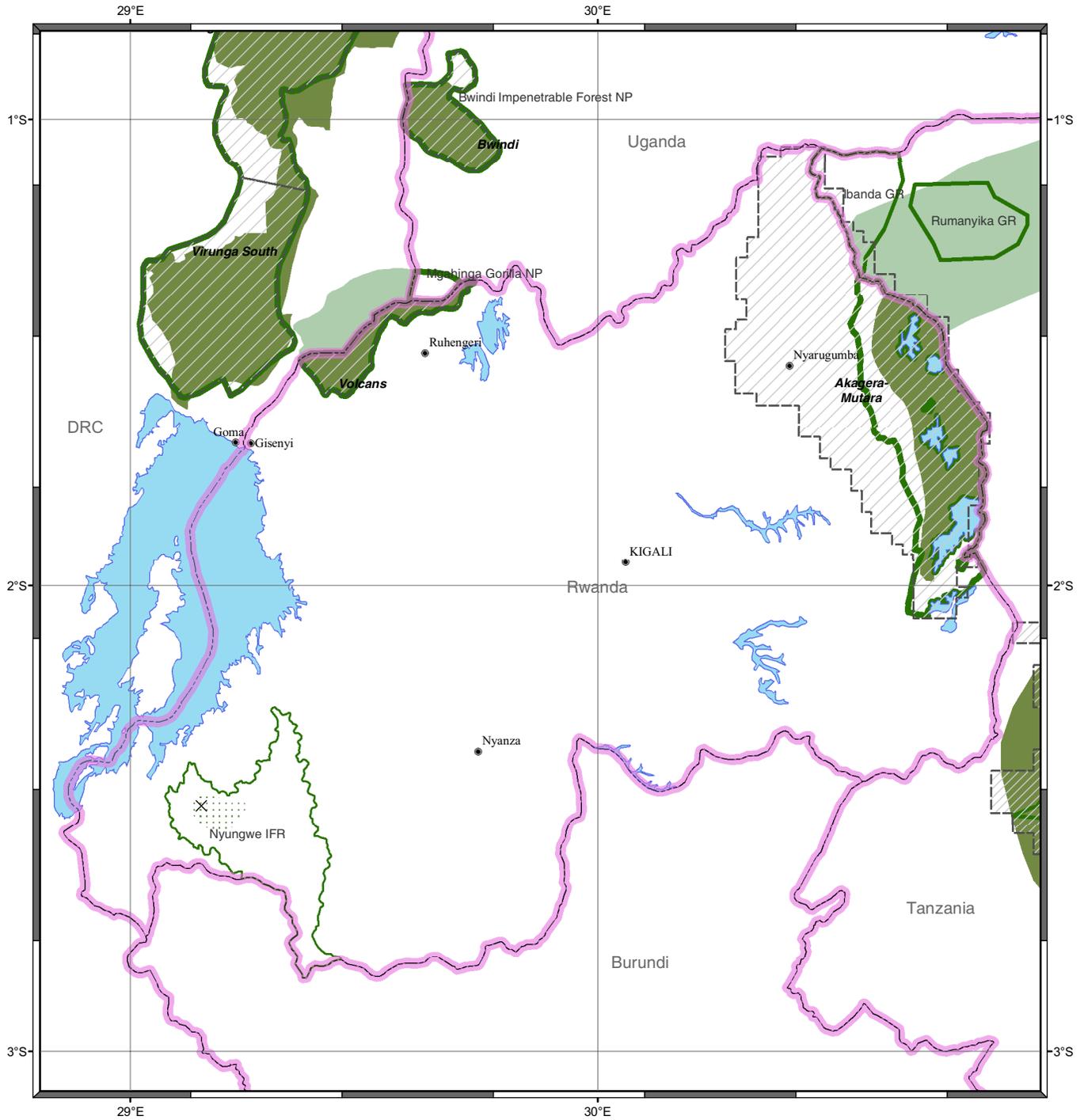
## RWANDA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Akagera-Mutara National Park	IG3	D	2002	34	46*	Lamprey, 2002	3,463	30.6 E	1.5 S
Volcans National Park	IG3	E	1989	20	10*	Office Rwandais du Tourisme et des Parcs Nationaux, 1991	150	29.5 E	1.5 S

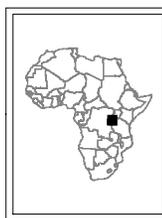
\* Range of informed guess

# Rwanda

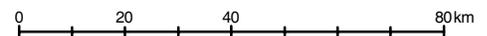
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# S O M A L I A

## **General Statistics**

Country Area: 637,660 km<sup>2</sup>  
Range Area (% of country): 4,525 km<sup>2</sup> (1%)  
Protected area coverage (% of country): 0%  
Protected range (% of known and possible range in protected areas): 0%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

At the beginning of the 20<sup>th</sup> century, there were two widely separated elephant populations in Somalia. One was in the south of the country, shared with Kenya, and a much smaller population in the Golis Hills in the extreme north, bordering the Gulf of Aden. The latter disappeared in the early 1950s, prior to independence.

Somalia's southern elephants have retreated progressively south and westwards towards the Kenya border, with much former range disappearing along the upper reaches of both the Shebelle and Juba rivers during the 1970s and 1980s (National Range Agency, 1991). By 1976 an estimated population of 2,500-3,000, split into four seasonally-mobile sub-populations, was found south of the 4<sup>th</sup> parallel (Fagotto, 1976; Abel and Kille, 1976). Although the density of carcasses was high, this was attributed to slow decay rates in the prevailing semi-arid conditions, and poaching levels were reported to be low (Abel and Kille, 1976).

The outbreak of the Ogaden war in 1977 and the subsequent proliferation of automatic weapons resulted in an increase in poaching (Omar, 1981). Aerial surveys carried out in 1983-4 yielded an estimate of between 3,262 and 20,510 live elephants, and between 21,700 and 28,000 carcasses, most of which were old (85%) or very old (14%; Watson and Nimmo, 1985). A rough estimate given in a 1991 review put the numbers of elephants in Somalia at 1,000 to 2,000 (National Range Agency, 1991).

Political and administrative turmoil persisted throughout the 90s, allowing no opportunities for a systematic elephant survey and mounting pessimism as to the survival prospects for elephants in Somalia.

## **Range**

Habitats in southern Somalia are characterized by coastal forest and *Acacia-Commiphora* deciduous bushland. Much of this bushland is managed extensively for charcoal production.

Reports from humanitarian personnel suggest that elephants may have disappeared from the swamps to the northeast and southwest of Kismayo (M. Benet, pers. comm., 2002). Pockets of range depicted in the AED 1998 in this area have therefore been categorized as **doubtful**. Only the area in the extreme south of the country has been retained as **possible** range, as fresh elephant dung was seen about 30 km north of the Kenya border in 2001 (R. Carter, pers. comm., 2002).

## **Surveys and Data**

No new population estimates are available for Somalia. Estimates for the areas categorized as **doubtful** range have been removed from the table. The only estimate remaining, that for Lag Badana Bushbush, dates back to 1995 (Bauer, quest. reply, 1995) and should be treated with extreme caution, as the continuing civil conflict is likely to have had a negative impact on any remaining elephant populations.

## **Cross-border Movements**

Elephants in the northeastern corner of Kenya and the southern tip of Somalia once formed a continuous population, and while movement between the two areas may continue, information is lacking.

***Current Issues***

The prevalence of weapons and the absence of the rule of law are likely to be having a negative impact on wildlife populations in Somalia. Live wildlife and wildlife products, including ivory, are reportedly being exported in dhow boats, hidden in consignments of charcoal, destined for the Gulf states.

### Summary totals for Somalia

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	0	0	70	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	3,089	26.4%
Unassessed Possible Range	1,436	12.3%
Doubtful Range	7,187	61.4%
<b>TOTAL</b>	<b>11,712</b>	

### Age of range data

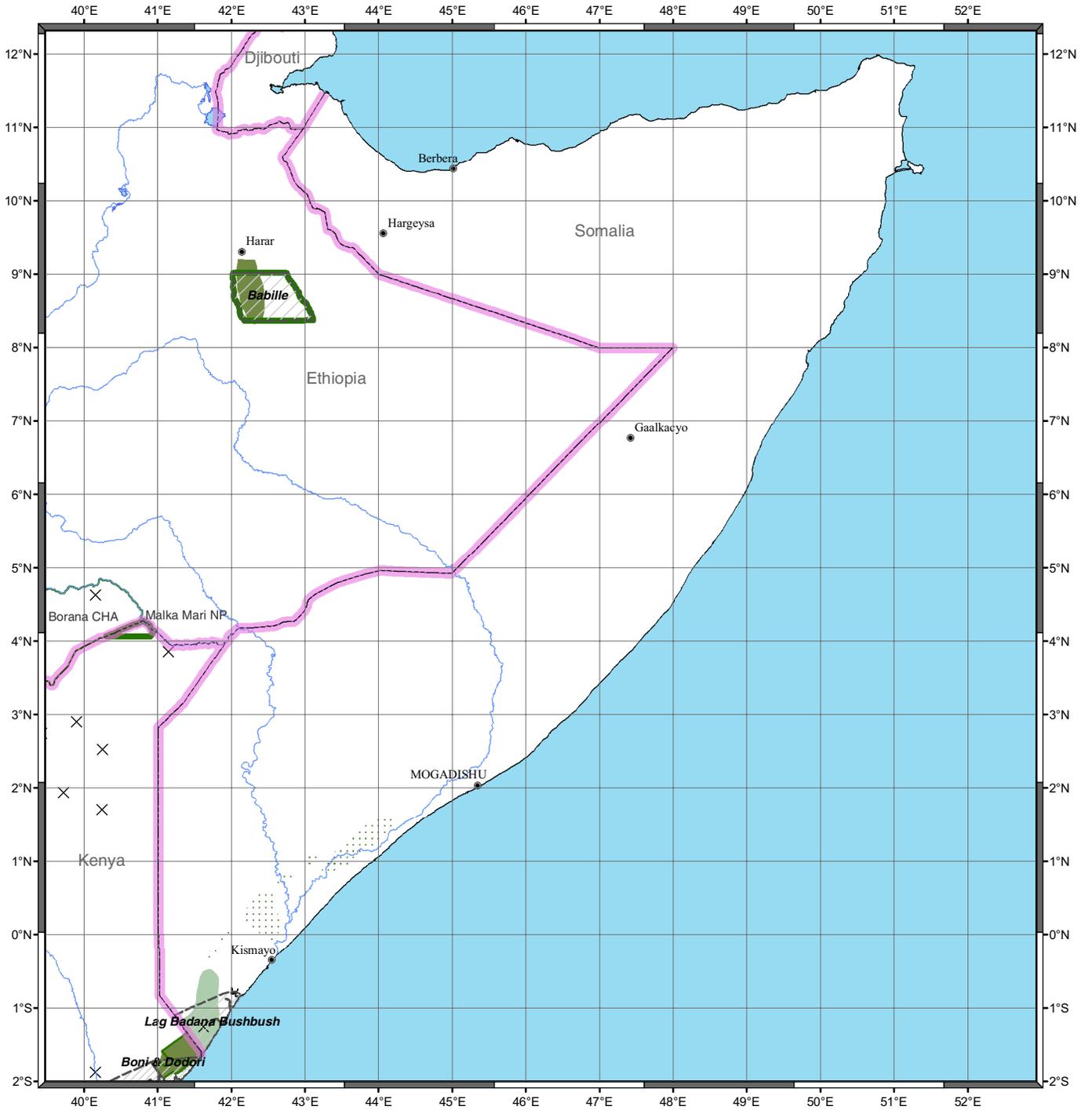
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	4,525	38.6%
Post-1998	7,187	61.4%
<b>TOTAL</b>	<b>11,712</b>	

## SOMALIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Lag Badana Bushbush	IG3	D	1995	70		Bauer, quest. reply, 1995	4,500	41.7 E	1.1 S

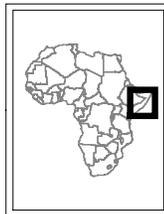
# Somalia

## Elephant Range, Input Zones and Protected Areas

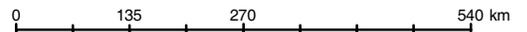


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# S U D A N

## General Statistics

Country Area: 2,505,810 km<sup>2</sup>  
Range Area (% of country): 333,109 km<sup>2</sup> (13%)  
Protected area coverage (% of country): 4%  
Protected range (% of known and possible range in protected areas): 11%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Hunting records suggest that elephant range in Sudan may have retracted southwards in recent historical times (Kunz, 1916; Wildlife Conservation and National Parks Forces, 1991). There was intense hunting in the first half of the 20<sup>th</sup> century, and by 1950 elephants only occurred south of the 9<sup>th</sup> parallel, with a population estimated at 15-20,000 (Barker, 1953). The start of Sudan's first civil war (1955-1972) limited conservation and monitoring work, but in 1960 the Game Department estimated the total population at 25,000 (cited in Sánchez Ariño, 1974).

Based on the results of aerial surveys conducted between 1975 and 1977, Watson *et al.* (1977) estimated Sudan's elephant population at 133,772±37,144. A 1981 aerial survey of Southern National Park and adjacent areas (Boitani, 1981) found elephants to be plentiful, with an estimated 15,400±2,000. The outbreak of the (still ongoing) second civil war in 1983 prevented any repetitions of these surveys, and hunting for ivory was reported to be intense at the time (Parry, 1983) despite a ban enacted in 1984 (Vigne, 1984). Although detailed information is unavailable for the 1980s, a significant trade in ivory, both legal and illegal, continued in that decade (Marajan *et al.*, 1995).

A 1991 review noted that potential elephant range amounted to 15% of what is the largest country in Africa, and concluded that between 22,000 and 44,600 elephants might be found in this area. Radom National Park was at the time considered the likely northern limit of the elephant range in the west of the country, while to the east, Dinder NP was reported to no longer contain any elephants (Wildlife Conservation and National Parks Forces, 1991). By 1998 Radom NP was no longer thought to have any elephants (Hashim, cited in Barnes *et al.*, 1999).

## Range

Large, undisturbed and uninhabited areas of swamp, woodland and grassland could still provide suitable habitat for elephants in southern Sudan, but there is little direct evidence or updated information on distribution (L.I. Ojok, pers. comm., 2002).

Three areas, namely Boma, Nimule and the forests of Western Equatoria have been categorized as **known** range based on reconnaissance surveys conducted by the New Sudan Wildlife Society (L.I. Ojok, pers. comm., 2002). In addition, a strip between the River Nile and the Ethiopian border, where elephants are known to move seasonally (R. Kock, pers. comm., 2003) has also been categorized as **known** range. A large area to the north of that strip has been categorized as **doubtful**, based on information provided by a pilot who has been doing relief flights in Sudan for the last 20 years (J. Gaunt, pers. comm., 2002). The same source indicated that an area to the east of Juba in the extreme south is heavily settled and may no longer harbour any elephants, and this has also been categorized as **doubtful** range.

Elephants have been recently sighted on several occasions around the town of Wau, to the northeast of Numatina Game Reserve, where elephants are reported to be present throughout the year (J. Garang, pers. comm., 2002). Other sightings and indirect evidence have been recorded in Southern National Park and along the borders with the Democratic Republic of Congo and the Central African Republic (Knocker, 2001). The locations of these records are depicted as crosses on the map.

**Surveys  
and Data**

No quantitative survey work has been undertaken in Sudan since the early 1980s, and any information available on the status of elephants is based on anecdotal observations from local people and humanitarian relief workers.

About 300 elephants were seen in Nimule Game Reserve in June 2000, while a group of 20 was seen in the same area in January 2002 (L.I. Ojok, pers. comm., 2002). These figures are the only estimates entered for Sudan in this report.

**Cross-border  
Movements**

Elephants may still migrate between Sudan and Ethiopia around the Dinder and Gambella National Parks, and movements between Sudan and Kenya may occur, but little information is available. Elephants are thought to move between Kidepo Game Reserve in Sudan and Kidepo Valley National Park in Uganda (D. Aleper, pers. comm., 2002) and between Nimule National Park in Sudan and the Otze Forest in Uganda (F. Michelmore, pers. comm., 1998). There may also be movements between the area around Numatina Game Reserve in southwestern Sudan and the Central African Republic (J. Garang, pers. comm., 2002).

**Current Issues**

The substantial international assistance to southern Sudan is largely focused on emergency humanitarian relief, and little consideration is devoted to long-term resource management planning or sustainability (Winter, 2000). Although funding for conservation in Sudan is still largely non-existent, some initiatives have begun to emerge with the creation of a number of wildlife conservation organizations in south Sudan. A workshop held in Boma National Park in December 2001 compiled a number of recommendations from experts and stakeholders and resulted in a proposal for renewed wildlife conservation efforts in the park.

While the ongoing civil war may have reduced pressure on elephant populations in parts of the country by forcing people to abandon large areas (Guillet, 1990), unregulated consumptive utilization is the only benefit that people obtain from elephants in areas where the two still coexist.

### Summary totals for Sudan

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	20	0	280	0
<b>TOTAL</b>	<b>20</b>	<b>0</b>	<b>280</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	781	0.2%
Unassessed Known Range	58,935	14.6%
Unassessed Possible Range	273,392	67.7%
Doubtful Range	70,837	17.5%
<b>TOTAL</b>	<b>403,945</b>	

### Age of range data

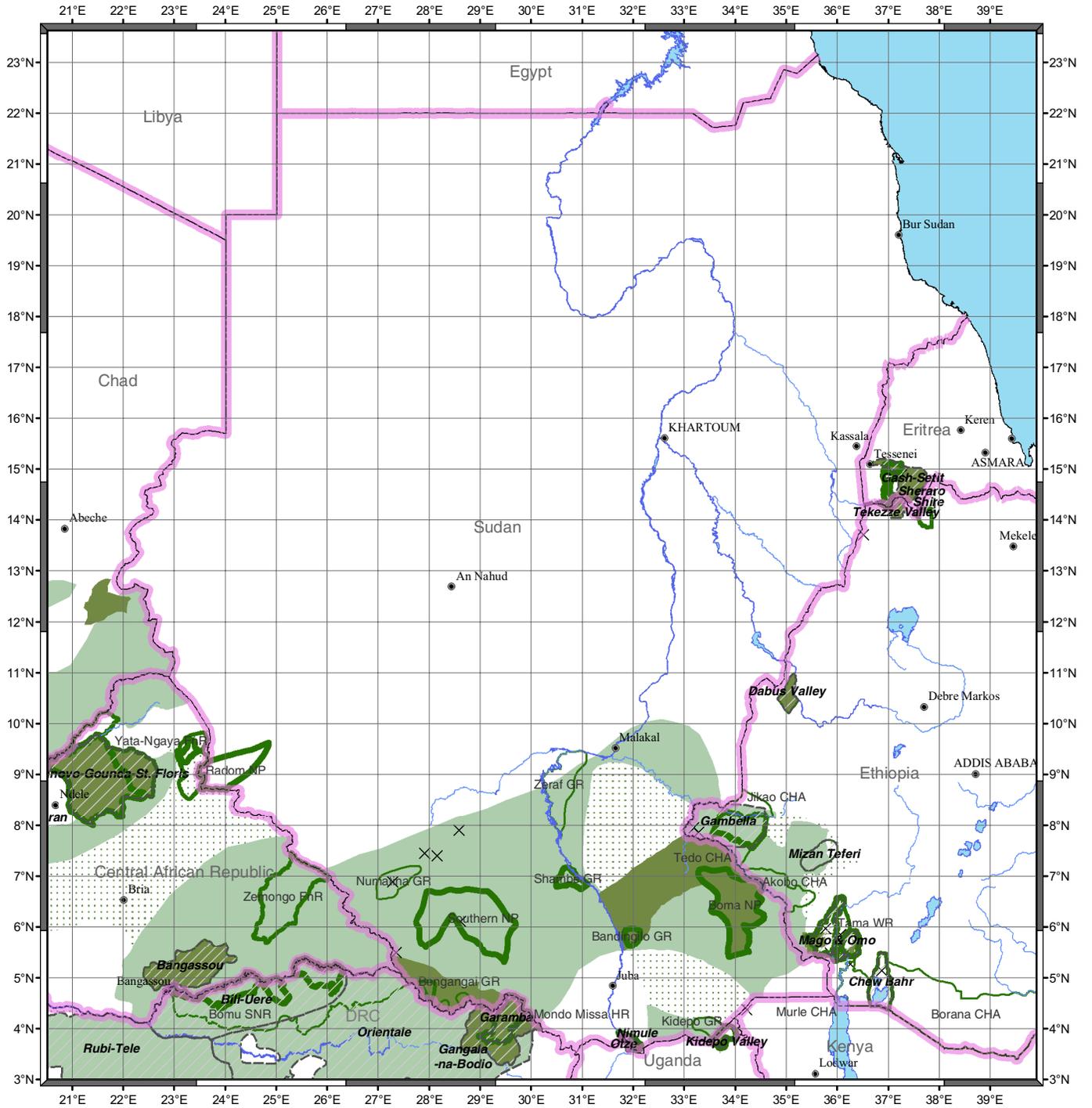
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1996-1998	269,641	66.8%
Post-1998	134,304	33.2%
<b>TOTAL</b>	<b>403,945</b>	

## SUDAN: ELEPHANT ESTIMATES

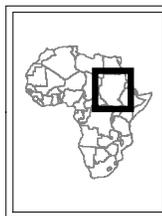
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Nimule National Park	IG3	D	2002	300		Ojok pers. comm., 2002	779	32.0 E	3.7 N

# Sudan

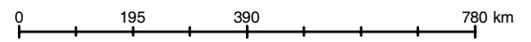
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**

# TANZANIA

## General Statistics

Country Area: 945,090 km<sup>2</sup>  
Range Area (% of country): 456,555 km<sup>2</sup> (48%)  
Protected area coverage (% of country): 16%  
Protected range (% of known and possible range in protected areas): 31%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

For centuries, and until restrictions on commercial hunting were introduced in the early 1900s, the territory that was later to become mainland Tanzania was an important source of ivory, supplying markets in the Middle and Far East. High levels of crop damage led to a policy of elephant control in the 1920s (Rodgers and Lobo, 1980). In the early 1950s the country's elephant population was believed to occupy up to 90% of the territory and was estimated at around 80,000 (Rushby, 1953). Elephant numbers built up in protected areas, creating worries about vegetation damage and stirring debate on the possibility of culling certain populations (Savidge, 1968). In the mid 1970s, the elephant population in the Selous ecosystem alone was estimated at over 100,000 (Douglas-Hamilton, 1976).

Poaching began to intensify in the late 1970s, spreading southwards from the north (EcoSystems Ltd., 1980; Douglas-Hamilton, 1987) and eventually affecting much of the country's elephant range. During the 1980s, important declines were recorded in some of the major protected areas, including Ruaha (Barnes and Douglas-Hamilton, 1982), Selous (Borner and Severre, 1986) and the Serengeti ecosystem (Dublin and Douglas-Hamilton, 1987). In 1989, the government of Tanzania inaugurated "Operation Uhai," an anti-poaching campaign supported by army and police (Dublin and Jachmann, 1992). By the early 1990s, range was believed to have shrunk to about 50% of the country (Ministry of Tourism, Natural Resources and the Environment, 1991; Hirji, 1989). Most populations stabilized or increased in the 1990s (Campbell *et al.*, 1993).

## Range

Tanzania has a wide variety of habitats, ranging from the predominant miombo woodland of the southern and western plateaux to *Acacia-Commiphora* woodlands, savanna grasslands, forests and wetlands. Elephants are found in all of these habitats.

The overall shape of the current AED range map for Tanzania was adapted from Kingdon (1979) and has been a feature of the AED since 1987, with only slight modifications being introduced in subsequent reports.

Within this framework, areas regularly surveyed by Tanzania's Wildlife Research Institute (TAWIRI), which include all major protected areas and their environs, have been categorized as **known** range. Other areas classified as **known** range include a number of hunting blocks where concessionaries have given information on the presence of elephants. A recent aerial survey of the slopes of Mt. Kilimanjaro found many areas to be heavily settled by people, and elephants are no longer thought to occur there (Lambrechts *et al.*, 2002). As a result, this area has been categorized as **doubtful** range. All other areas have been categorized as **possible** range.

## Surveys and Data

Of the 30 input zones listed in the estimates table for Tanzania, eight cover areas for which estimates were previously unavailable, and a further ten have been subject to new surveys since the previous AED report. Of the former eight, aerial sample counts of two areas connecting the Selous ecosystem with the Niassa ecosystem in Mozambique are particularly noteworthy. The rest of the new input zones include informed guesses for five hunting blocks

and a sighting of 50 elephants during a aerial total count of Saadani Game Reserve (S. Mduma, pers. comm., 2002c), which lies outside of previously known elephant range.

Surveys repeated using comparable methods and survey areas include an aerial total count of the Serengeti ecosystem and aerial sample counts of the Moyowosi-Kigosi, Katavi-Rukwa, Ruaha-Rungwa and Selous ecosystems. Most of these repeated surveys have yielded results of similar magnitude to those reported in the AED 1998. An exception to this is the Ruaha-Rungwa ecosystem, in which the estimate increased from 13,021±4,300 in 1996 to 24,685±6,495 in 2002 (Conservation Information Monitoring Unit, 2003b). This apparent increase cannot be explained by breeding alone, as it would be equivalent to a rate of increase of 11.25% *per annum* over a six-year period. The reliability of the 2002 survey is supported by a similar result obtained in a comparable census conducted in 1999 (26,151 S. Mduma, pers. comm., 2002c). The 1996 estimate, on the other hand, may have been an undercount, given that a 1993 survey had returned an estimate for the ecosystem of 18,864±3,578 (Tanzania Wildlife Conservation Monitoring, 1994). Alternatively, immigration from neighbouring areas could explain the recorded increase.

Surveys conducted using different methods or survey areas include Ugalla River, Burigi-Biharamulo and Tarangire ecosystem. An individual recognition study started in 1993 had, by the end of 2002, identified 1,049 elephants in Tarangire National Park, and this figure contributes to the **definite** category in this report. The Tarangire population is believed to have been increasing at close to its maximum potential level (approximately 6.4% per annum; C.A.H. Foley, pers. comm., 2003). Lake Manyara National Park has been excluded from Tarangire surveys since 1987, but a recent report suggested that they might be parts of the same ecosystem, and that the boundaries of the Tarangire survey zone ought to be redefined to include Lake Manyara National Park (Tanzania Wildlife Conservation Monitoring, 2000).

Despite these new surveys, the map of Tanzania still shows large tracts of **possible** range that remain unsurveyed. Surveys of this area could provide information of significance at both the national and regional levels, as these areas contain excellent elephant habitat. Additionally, much of this land is allocated as hunting blocks, where it would be important to monitor wildlife populations (see under Current Issues below).

### **Cross-border Movements**

Elephants move between the Selous and Niassa in northern Mozambique along corridors connecting the two ecosystems (Mpanduji *et al.*, 2002).

Elephants in the Longido-West Kilimanjaro area constitute a single transboundary population with the Amboseli ecosystem in Kenya, and between 150 to 400 elephants can be found on the Tanzania side of the border at any one time (F. Nelson, pers. comm., 2003). Other transboundary populations shared with Kenya are those in the Serengeti-Mara and Tsavo-Mkomazi ecosystems.

There may also be some movement of elephants between Ibanda Game Reserve in the northwest of the country and Akagera National Park in Rwanda, although refugee settlement is believed to have blocked passage routes in recent years.

### **Current Issues**

As well as having one of the most extensive wildlife monitoring programmes on the continent, Tanzania has one of the highest proportions of protected area coverage in the world. Twelve national parks, 34 game reserves and 38 game controlled areas grant varying degrees of effective protection to 28% of the country's land area.

Despite the extensive monitoring efforts, surveys concentrate in and around protected areas managed by Tanzania National Parks. Most areas managed by the Wildlife Division, which

include most of the country's hunting blocks, are not subject to any form of population monitoring, with the exception of those within the Selous Game Reserve.

The Selous and Niassa (Mozambique) ecosystems are probably amongst the most important, as well as amongst the better surveyed, transboundary populations on the continent, and yet surveys of these areas are neither simultaneous nor coordinated across the border.

A large influx of Rwandese refugees in the mid to late 1990s led the United Nations High Commission for Refugees (UNHCR) to create camps along the boundaries of the Burigi-Biharamulo and Moyowosi-Kigosi Game Reserves in northwestern Tanzania. Although this is reported to have led to a drastic decline in wildlife abundance in the region, mainly as a result of illegal hunting for bushmeat (GTZ Wildlife Programme in Tanzania, 2000), it is not known whether the elephant population was affected by this. A GTZ-funded project, aimed at bringing poaching under control and establishing community-based conservation programmes, is being implemented in the region by the Wildlife Division.

In 2003, Tanzania notified the CITES Secretariat of a doubling in its export quota for legally acquired trophies, from the previous 100 tusks to 200 tusks (100 elephants; World Conservation Monitoring Centre, 2003).

## Summary totals for Tanzania

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	1,764	0	0	0
Direct Sample Counts and Reliable Dung Counts	90,384	17,231	17,231	0
Informed Guesses	305	0	1,270	1,150
Other Guesses	0	0	0	1,135
<b>TOTAL</b>	<b>92,453</b>	<b>17,231</b>	<b>18,501</b>	<b>2,285</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	17,660	3.9%
Direct Sample Counts & Reliable Dung Counts	190,945	41.7%
Informed Guesses	15,475	3.4%
Other Guesses	10,309	2.3%
Unassessed Known Range	46,856	10.2%
Unassessed Possible Range	175,306	38.3%
Doubtful Range	947	0.2%
<b>TOTAL</b>	<b>457,498</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	116,260	25.4%
1988-1992	36,542	8.0%
1993-1995	134,861	29.5%
1996-1998	47,567	10.4%
Post-1998	122,268	26.7%
<b>TOTAL</b>	<b>457,498</b>	

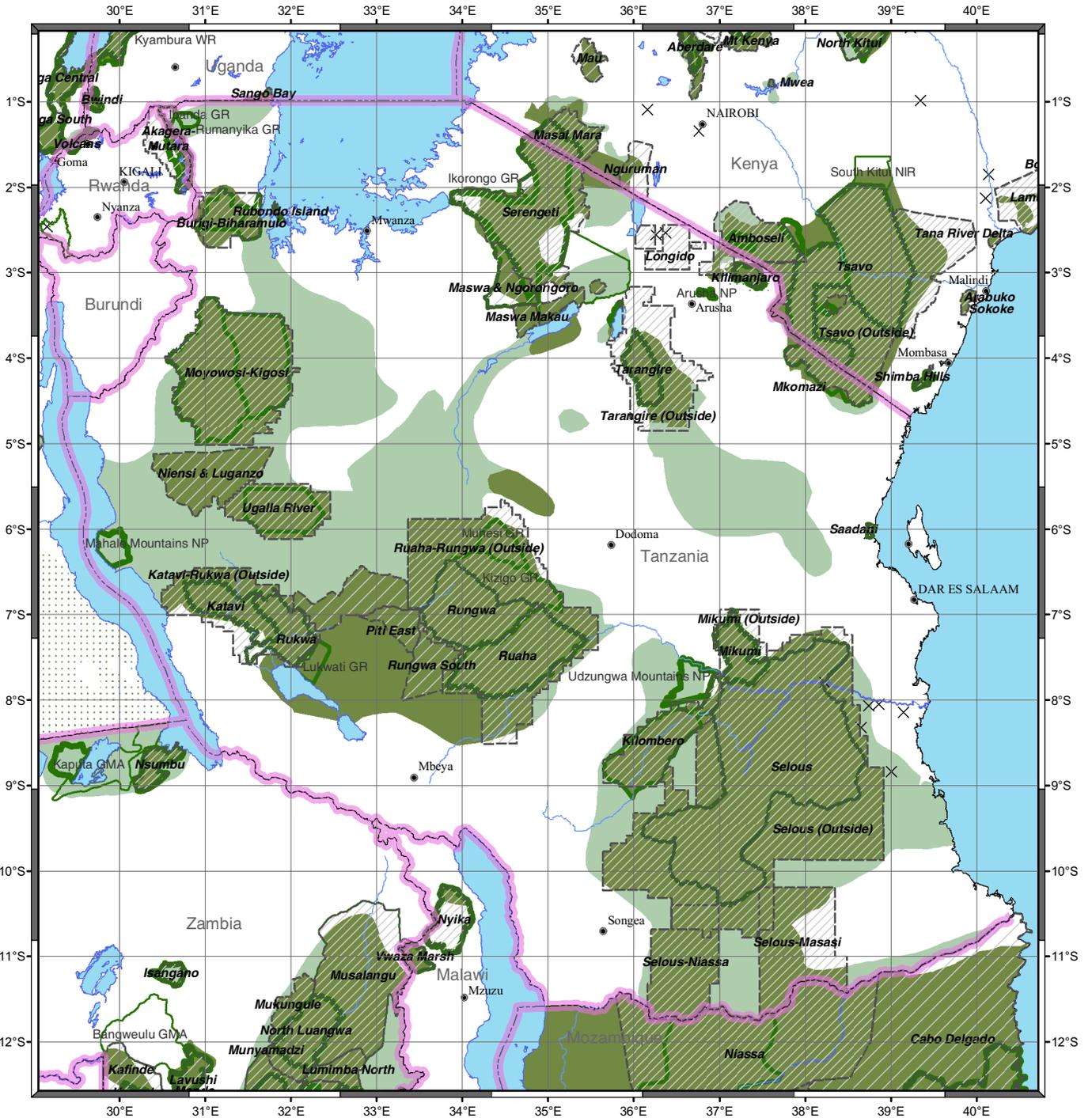
## TANZANIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Burigi-Biharamulo Ecosystem	AS3	B	2000	761	821	Mduma pers. comm., 2002a	7,295	31.3 E	2.4 S
Inyonga Game Conservation Areas	OG3	E	2002	600		Angelides, 2003	6,050	32.8 E	6.8 S
Katavi National Park	AS3	B	2002	4,897	4,465	Conservation Information Monitoring Unit, 2003b	4,332	31.3 E	6.9 S
Katavi-Rukwa (Outside)	AS3	B	2002	591	804	Conservation Information Monitoring Unit, 2003b	3,864	31.3 E	6.9 S
Kilimanjaro National Park	DC2	E	1990	220	88	Tanzania Wildlife Conservation Monitoring, 1992	418	37.3 E	3.0 S
Kilombero Game Controlled Area	AS3	B	2002	6,203	4,639	Conservation Information Monitoring Unit, 2003a	6,006	36.3 E	8.5 S
Longido Game Conservation Area	AT3	A	2002	70		Conservation Information Monitoring Unit, 2003d	4,759	36.6 E	2.8 S
Maswa & Ngorongoro Conservation Area	AT3	E	1992	315		Farm pers. comm., 1995	4,275	34.8 E	3.2 S
Maswa Makau Hunting Block	IG3	D	2002	100	50*	Hurt pers. comm., 2002	1,019	34.7 E	3.5 S
Mikumi National Park	AS3	B	2002	1,144	923	Conservation Information Monitoring Unit, 2003a	3,069	37.2 E	7.4 S
Mikumi (Outside)	AS3	B	2002	578	594	Conservation Information Monitoring Unit, 2003a	1,138	37.2 E	7.3 S
Mkomazi Game Reserve	AT3	A	2002	63		Omondi et al., 2002d	3,509	38.3 E	4.2 S
Moyowosi-Kigosi Game Reserve	AS2	B	2000	2,861	956	Mduma pers. comm., 2002a	21,870	31.3 E	4.2 S
Niensi & Luganzo Hunting Blocks	IG3	D	2002	800	800*	Hurt pers. comm., 2002	8,268	31.0 E	5.4 S
Piti East Hunting Block	IG3	D	2002	200	100*	Hurt pers. comm., 2002	2,223	33.3 E	7.1 S
Ruaha National Park	AS3	B	2002	11,827	4,161	Conservation Information Monitoring Unit, 2003c	10,232	34.6 E	7.5 S
Ruaha-Rungwa (Outside)	AS3	B	2002	2,271	1,520	Conservation Information Monitoring Unit, 2003c	17,203	34.4 E	6.8 S
Rubondo Island National Park	IG3	D	2002	20		Borner pers. comm., 2003	400	31.8 E	2.3 S
Rukwa Game Reserve	AS3	B	2002	263	339	Conservation Information Monitoring Unit, 2003b	3,666	31.9 E	7.2 S
Rungwa Game Reserve	AS3	B	2002	10,005	3,849	Conservation Information Monitoring Unit, 2003c	8,636	34.1 E	6.9 S
Rungwa South Hunting Block	IG3	D	2002	400	200*	Hurt pers. comm., 2002	3,658	33.6 E	7.6 S
Saadani Game Reserve	IG3	D	1998	55		Mduma pers. comm., 2002a	2,753	38.8 E	6.0 S
Selous Game Reserve	AS3	B	2002	39,907	11,464	Conservation Information Monitoring Unit, 2003a	42,843	37.5 E	8.8 S
Selous (Outside)	AS3	B	2002	17,979	8,908	Conservation Information Monitoring Unit, 2003a	27,722	37.4 E	9.4 S
Selous-Masasi Corridor	AS2	B	2000	1,076	107	Mduma pers. comm., 2002b	14,082	37.9 E	10.8 S
Selous-Niassa Corridor	AS3	B	2000	2,486	937	Tanzania Wildlife Research Institute, 2000	10,110	36.6 E	11.1 S
Serengeti	AT3	A	2000	1,631		Mduma pers. comm., 2002c	16,860	34.8 E	2.3 S
Tarangire National Park	AS2	B	1999	2,299	1,880	Tanzania Wildlife Conservation Monitoring, 2000	2,597	36.1 E	4.1 S
Tarangire (Outside)	AS2	B	1999	556	723	Tanzania Wildlife Conservation Monitoring, 2000	6,761	36.3 E	4.1 S
Ugalla River Game Reserve	AS3	B	1999	1,911	1,313	Mduma pers. comm., 2002a	7,252	31.9 E	5.8 S

\* Range of informed guess

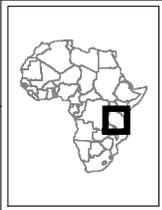
# Tanzania

## Elephant Range, Input Zones and Protected Areas

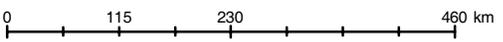


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**



# UGANDA

## General Statistics

Country Area: 236,040 km<sup>2</sup>  
Range Area (% of country): 11,313 km<sup>2</sup> (5%)  
Protected area coverage (% of country): 8%  
Protected range (% of known and possible range in protected areas): 91%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Human settlement was dense in the early 20<sup>th</sup> century, and elephants were only abundant in the least populated areas (Laws *et al.*, 1970). An outbreak of human sleeping sickness in 1912 prompted a resettlement scheme that in turn led to an expansion of elephant range, with numbers estimated at as many as 20,000 around 1920 (Pitman, 1953). The creation of the first game reserves followed soon after, as did a period of escalating human-elephant conflict on their borders and beyond. This reached such proportions that a special department of elephant control was created in 1925, and some 46,000 elephants were shot on control and licensed hunting between then and 1959 (Brooks and Buss, 1962). As human populations re-occupied formerly abandoned areas, elephant range became increasingly compressed towards reserves in the west. In 1929 elephants were found in 70% of the territory, but only occupied 17% by 1959. The population at the time was estimated at 23,500 (Buss and Brooks, 1962).

In Murchison Falls and Queen Elizabeth National Parks, which together held the largest populations in the country, the effects of range compression were still being felt in the 1960s. The increasing damage to woody vegetation that resulted prompted Uganda National Parks to cull over 2,000 elephants in that decade (Laws *et al.*, 1975).

The 1971 coup and the political instability that ensued had a negative impact on elephant populations in Uganda, primarily due to poaching. Elephants in Murchison Falls declined from an estimated 14,000 in the early 1970s to under 1,500 in 1980 (Eltringham and Malpas, 1980). Although the population in Queen Elizabeth National Park is inherently variable due to cross-border movements with Virunga National Park in the DRC, the decline from 3500 to 150 in the park was corroborated by high carcass ratios (Douglas-Hamilton *et al.*, 1980; Eltringham and Malpas, 1980; Kayanja and Douglas-Hamilton, 1983). The population in Kidepo Valley National Park, on the other hand, is believed have remained stable through that period (Edroma, 1981). Poaching was brought under control in 1980 (Malpas, 1980; Kayanja and Douglas-Hamilton, 1983), and although surveys were not conducted consistently in the rest of the decade, there were signs that populations were stabilizing or beginning to recover (Oneka, 1986; Goodman *et al.*, 1986). This was confirmed in surveys conducted in the 1990s (Olivier and Abe, 1992; Ministry of Tourism, Wildlife and Antiquities, 1996a; Ministry of Tourism, Wildlife and Antiquities, 1996b).

## Range

Elephants in Uganda are largely confined to protected areas along the west of the country, where forests alternate with savanna.

No changes have been made to the range map, other than the categorization of most areas as **known** range, based on recent survey information (Barnes *et al.*, 1999; Olivier and Abe, 1992; Said *et al.*, 1995; Ministry of Tourism, Wildlife and Antiquities, 1996a).

In an effort to completely remove elephants from an area where they were causing crop damage, four elephants from the Luwero area northwest of Kampala were translocated to Murchison Falls National Park (Wambwa *et al.*, 2001). Recent reports of crop damage in the area, however, suggest that not all elephants were moved (Uganda Wildlife Authority, 2002). This area is depicted as a cross on the range map.

It is not known whether elephants are still present on the eastern slopes of the Rwenzori Mountains in western Uganda, even though elephant range is believed to extend up to the border on the DRC side.

### **Surveys and Data**

Two aerial surveys have been conducted in Murchison Falls Conservation Area since 1998. A 1999 aerial sample count gave an estimate of  $778 \pm 1,092$  (Lamprey, 2000), and a 2002 aerial total count, conducted under the auspices of the CITES MIKE Programme, returned an estimate of 692. This figure has been used to replace the previous estimate of  $336 \pm 300$  for Murchison Falls Conservation Area (Ministry of Tourism, Wildlife and Antiquities, 1996a). No elephants were seen in Bugungu Wildlife Reserve during the survey, and hence an estimate of zero is shown on the table.

The Queen Elizabeth Conservation Area has been surveyed three times since 1998: two aerial sample counts in 1999 and 2000, which returned estimates of  $1,353 \pm 800$  and  $1086 \pm 920$  respectively (Lamprey, 2000), and a 2002 aerial total count which estimated the population at 998 (Rwetsiba *et al.*, 2002). The total count figure replaces a 1998 informed guess of 800 by Michelmore (pers. comm., 1998). It is worth noting that parts of Queen Elizabeth National Park and Kigezi Wildlife Reserve (which, together with Kyambura Wildlife reserve, comprise the Queen Elizabeth Conservation Area) are forested and were not covered in any of the above surveys.

A census of large mammals conducted in Bwindi Impenetrable Forest National Park in 1997 returned an estimate of 30 (A. McNeilage, pers. comm., 2003). The survey was repeated in 2002, and although the data had not been formally analysed at the time of writing, it is believed that numbers have not changed since the 1997 survey. The estimate of 30 has been entered as an informed guess, and replaces a 1998 guess of 20 (F. Michelmore, pers. comm., 1998).

The only other new estimates in the table are those for Kidepo Valley National Park, where an opportunistic count of 374 elephants in 2000 was believed to cover the population in its entirety (D. Aleper, pers. comm., 2002), and Kibale National Park, where the results of a long term monitoring programme suggest a population of 100 to 300 (Cochrane, cited in Naughton *et al.*, 1999).

### **Cross-border Movements**

It is believed that movement of elephants from Virunga National Park into Queen Elizabeth National Park may have intensified in recent years as a result of armed conflict in eastern Democratic Republic of Congo (Keigwin, 2001). There is also evidence of elephant movement between Toro/Semliki and the northern sector of Virunga National Park in DRC (F. Michelmore, pers. comm., 1998), as well as between Kidepo National Park and adjacent range in southern Sudan (D. Aleper, pers. comm., 2002) and, sporadically, into northwestern Kenya (Thouless *et al.*, 2003).

### **Current Issues**

In 1996 the Uganda Wildlife Authority (UWA) was created by the merger of the Game Department and Uganda National Parks. UWA manages national parks and adjacent reserves as single units known as conservation areas.

While the status of savanna populations in Uganda is well known thanks to regular aerial surveys, forest populations have never been systematically surveyed. It would therefore be desirable for surveys to be conducted in order to assess the status of elephants in Uganda's forests.

### Summary totals for Uganda

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	1,690	0	0	0
Informed Guesses	374	0	210	200
Other Guesses	0	0	0	260
<b>TOTAL</b>	<b>2,064</b>	<b>0</b>	<b>210</b>	<b>460</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	7,420	65.6%
Informed Guesses	2,564	22.7%
Other Guesses	699	6.2%
Unassessed Known Range	334	3.0%
Unassessed Possible Range	295	2.6%
<b>TOTAL</b>	<b>11,312</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	699	6.2%
1993-1995	305	2.7%
1996-1998	8,548	75.6%
Post-1998	1,760	15.6%
<b>TOTAL</b>	<b>11,312</b>	

## UGANDA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Bugungu Wildlife Reserve	AT3	A	2002	0		Rwetsiba et al., 2002	490	31.6 E	1.9 N
Bwindi Impenetrable Forest National Park	IG3	D	2002	30		McNeilage pers. comm., 2003	336	29.7 E	1.0 S
Karuma Wildlife Reserve	AT2	A	2002	0		Rwetsiba et al., 2002	415	32.0 E	2.0 N
Kibale National Park	IG3	D	1999	100	200*	Naughton et al., 1999	946	30.4 E	0.5 N
Kidepo Valley National Park	IG3	D	2000	374		Aleper pers. comm., 2002	1,416	33.8 E	3.8 N
Murchison Falls National Park	AT3	A	2002	692		Rwetsiba et al., 2002	4,064	31.8 E	2.2 N
Otze Forest	OG3	E	1998	200		Michelmores pers. comm., 1998	200	31.9 E	3.7 N
Queen Elizabeth Conservation Area	AT2	A	2002	998		Rwetsiba et al., 2002	1,977	30.0 E	0.1 S
Sango Bay	OG3	E	1998	30		Michelmores pers. comm., 1998	305	31.7 E	0.9 S
Semliki National Park	OG3	E	1998	30		Michelmores pers. comm., 1998	195	30.0 E	0.8 N
Toro (Semliki Valley) Wildlife Reserve	IG3	D	1998	80		Michelmores pers. comm., 1998	790	30.4 E	1.0 N

\* Range of informed guess





# SOUTHERN AFRICA

## **General Statistics**

Total Area: 5,973,020 km<sup>2</sup>

Range Area (% of region): 1,680,130 km<sup>2</sup> (28%)

Protected area coverage (% of region): 4%

Protected range (% of known and possible range in protected areas): 13%

## **Historical Background**

In contrast to other parts of the continent, European colonists began to penetrate the interior and to create permanent settlements in much of Southern Africa soon after colonization began in the 17<sup>th</sup> century. In contrast, European penetration did not begin in other parts of the region, notably Angola and Mozambique, until the eve of the 19<sup>th</sup> century. In 1836, thousands of Boer farmers began a concerted northward expansion from the Cape Colony (part of today's South Africa), in what was known as the Great Trek. One of the main economic activities associated with this expansion was commercial hunting for skins, meat and ivory. It is believed that, by the early 20<sup>th</sup> century, elephant populations south of the Zambezi River had declined drastically as a result of commercial hunting (Bryden, 1903). Protection measures were implemented in the late 1800s and early 1900s, and elephant populations are thought to have been increasing ever since in most countries, with the notable exceptions of Mozambique, Angola and Malawi, where there is little information on the status of elephant populations over the last hundred years. In the last quarter of the 20<sup>th</sup> century civil wars affected elephant conservation in Mozambique, Angola and Namibia.

United by a strong acceptance of the practice of sustainable use and adaptive management, most Southern African governments voted against the proposal to transfer the African elephant to CITES Appendix I at the Seventh Meeting of the Conference of the Parties (CoP 7) held in Lausanne, Switzerland in 1989. While their bid to prevent uplisting of the African elephant was unsuccessful, the Parties recognized at CoP 7 that not all of the continent's populations qualified for inclusion in Appendix I, and criteria for future transfers to Appendix II were established at the meeting. Southern African countries nevertheless filed reservations at that time. Successive attempts to reverse the uplisting proved unsuccessful until Botswana, Namibia and Zimbabwe had their populations downlisted to Appendix II at the Tenth Meeting of the Conference of the Parties held in Harare, Zimbabwe in 1997.

## **Range**

Savanna grassland and (miombo and mopane) woodland habitats predominate through much of Southern Africa, with large areas of low rainfall in the southwest. Although equatorial forests occupy only a very small fraction of total elephant range in the north of the region, there are important coastal and montane forests in Mozambique.

With an estimated total elephant range spanning nearly 1.7 million km<sup>2</sup>, Southern Africa ranks second in terms of range extension, behind Central Africa. However, only 39% of this estimate is categorized as **known** range. This is largely caused by uncertainty over elephant distribution in Angola, where only 0.24% of estimated range is currently categorized as **known**. This proportion is much higher in other countries, ranging from 56% in Zambia to 100% in South Africa and Swaziland. There has been a slight net decrease in the total range estimate for Southern Africa since the AED 1998 report, largely as a result of the categorization of parts of Angola and Mozambique as **doubtful** range. However, range is reported to be expanding in Botswana and Namibia, and translocation operations are moving elephants into new areas in South Africa and Mozambique.

The overall proportion of range within protected areas for the entire region is 16%, and while in Angola only 3% of estimated range falls within gazetted areas, protected area coverage in other countries ranges from 12% in Mozambique to nearly complete coverage in South Africa and Swaziland.

Although nearly 95% of the information that forms the basis for the range estimate in Southern Africa is less than 10 years old, 52% of the total was gathered between 1993 and 1995.

## **Surveys and Data**

Several countries in the region, including Botswana, Namibia, South Africa, Swaziland and Zimbabwe possess regular survey programmes that cover elephant populations in their entirety. Aerial surveys are the most commonly used technique in the region, and cover over a quarter of the range area. However, and again largely due lack of information on Angola, no estimates are available for over two thirds of the range estimate for the region.

The number of elephants under the **definite** category has increased by nearly 50,000 (25%) since the last report of the AED, with numbers in the **probable** and **possible** categories increasing by 39% and 15% respectively. Although the area for which estimates are available has more than doubled since the last report, this increase in estimate coverage is largely the result of guesses obtained for Mozambique, which do not affect numbers in the **definite** and **probable** categories. Changes in these categories arise from repeated, comparable surveys conducted in Botswana, Namibia, South Africa and Zimbabwe, where national populations are believed to be increasing.

Botswana and Zimbabwe hold the largest populations of elephants in the region, and some of the largest on the continent.

## **Current Issues**

Elephant populations are reported to be on the increase in Botswana, northern Mozambique, Namibia, South Africa and Zimbabwe, but may be declining in parts of Zambia. There is insufficient information on the situation in Angola, Malawi and the rest of Mozambique.

Culling has not been employed in the region since Zimbabwe discontinued the practice in 1988 and South Africa in 1994. Novel management strategies are being employed to deal with the consequences of high elephant densities. Translocation has become a common tool in the region, but has generated considerable controversy in some cases. Trophy hunting is actively practiced and brings significant revenues and benefits to local communities.

A number of transboundary conservation areas have been created within the region and others are in the pipeline. One of these initiatives, the Greater Limpopo Transfrontier Park, will potentially join South Africa's Kruger National Park, Mozambique's Limpopo National Park and Zimbabwe's Gonarezhou National Park. Another initiative currently underway is the Four Corners Project, which aims to encourage an integrated approach in the management of shared natural resources in the upper Zambezi Valley between Botswana, Namibia, Zambia and Zimbabwe, an area that harbours the largest known population of elephants on the continent.

In 2002, five southern African countries put forward proposals to CITES to be allowed to export ivory from their legally-acquired national stockpiles. Three of these proposals (by Botswana, Namibia and South Africa) were approved at the CITES Twelfth Conference of the Parties held in Santiago, Chile in November of the same year, while the other two (Zambia and Zimbabwe) were rejected by the Parties.

### Summary totals for Southern Africa

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	16,125	0	0	0
Direct Sample Counts and Reliable Dung Counts	230,135	23,722	23,722	0
Informed Guesses	332	0	2,376	231
Other Guesses	0	0	0	7,277
<b>TOTAL</b>	<b>246,592</b>	<b>23,722</b>	<b>26,098</b>	<b>7,508</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	41,031	2.4%
Direct Sample Counts & Reliable Dung Counts	405,761	23.7%
Informed Guesses	58,214	3.4%
Other Guesses	253,721	14.8%
Unassessed Known Range	63,294	3.7%
Unassessed Possible Range	858,072	50.1%
Doubtful Range	32,867	1.9%
<b>TOTAL</b>	<b>1,712,960</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	70,570	4.1%
1993-1995	972,353	56.8%
1996-1998	335,940	19.6%
Post-1998	334,097	19.5%
<b>TOTAL</b>	<b>1,712,960</b>	

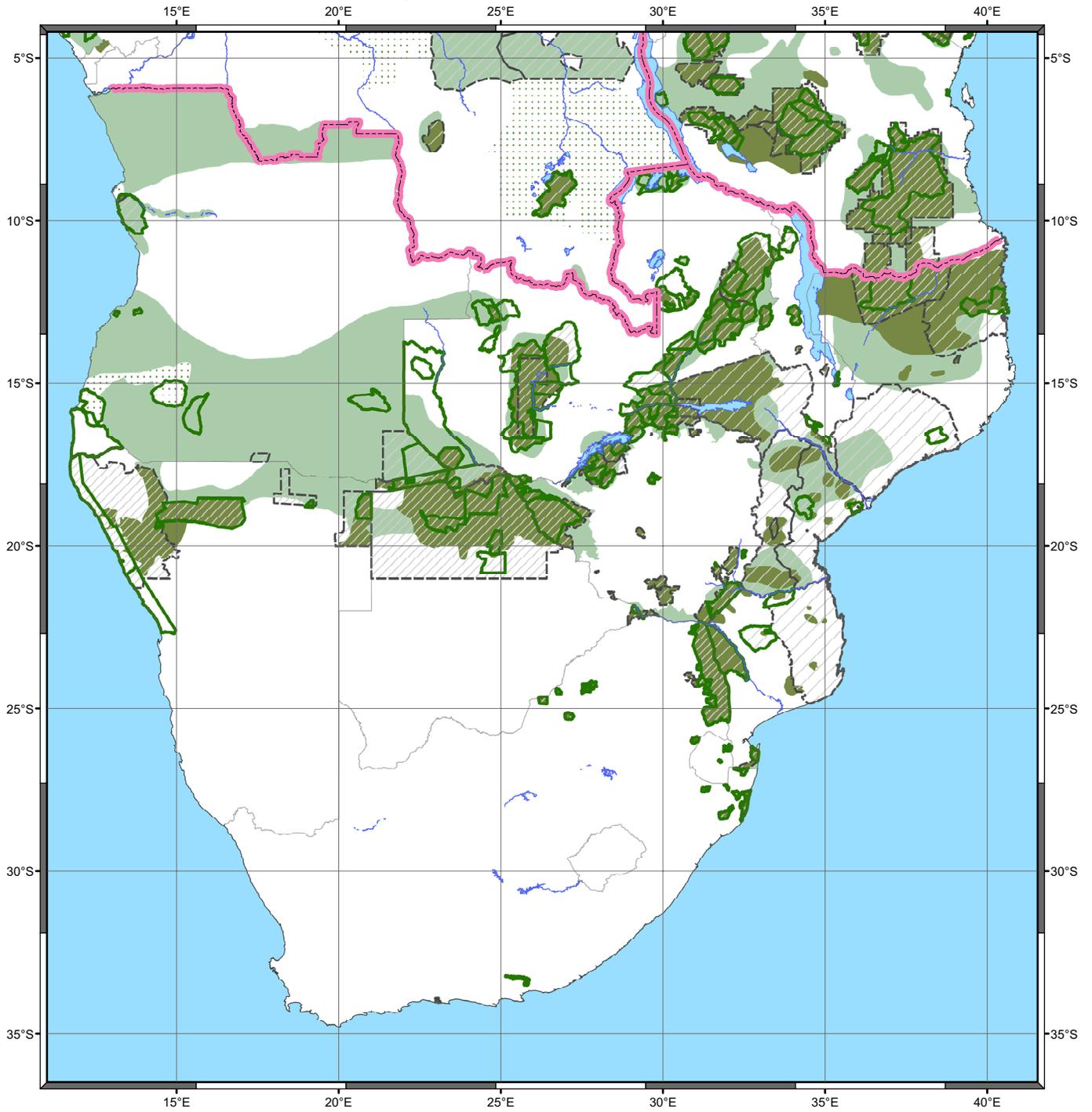
## Country and regional totals for Southern Africa

COUNTRY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE	COUNTRY AREA	RANGE AREA
Angola	36	0	150	60	1,246,700	658,620
Botswana	100,629	21,237	21,237	0	600,370	99,099
Malawi	647	1,569	1,649	20	118,480	7,939
Mozambique	11,647	2,786	3,073	6,902	801,590	415,906
Namibia	7,769	1,872	1,872	0	825,418	147,349
South Africa	14,071	0	855	0	1,219,912	29,356
Swaziland	39	0	0	0	17,360	187
Zambia	12,457	6,961	7,631	235	752,610	208,072
Zimbabwe	81,555	7,039	7,373	291	390,580	113,602
<b>TOTAL*</b>	<b>246,592</b>	<b>23,722</b>	<b>26,098</b>	<b>7,508</b>	<b>5,973,020</b>	<b>1,680,130</b>

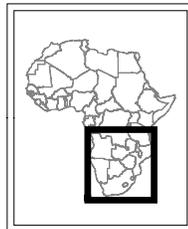
\* Note that totals for the Definite, Probable and Possible categories are derived from pooling variances, as described under the Data Categorization section. As a result, totals do not necessarily match the simple sum of the entries within a category.

# Southern Africa

## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Regional Boundary
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only





# ANGOLA

## General Statistics

Country Area: 1,246,700 km<sup>2</sup>  
Range Area (% of country): 658,620 km<sup>2</sup> (53%)  
Protected area coverage (% of country): 7%  
Protected range (% of known and possible range in protected areas): 2%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Angola is believed to have been a stronghold for elephants at one time, but little is known about their history. Hunting was unregulated in the first half of the 20<sup>th</sup> century, and while some controls were established in 1952, it is believed that these were inadequate and that most wildlife, including elephants, declined between 1950 and 1970 (Anstey, 1993). Controls improved after the civil war that followed independence (1961-1974), and hunting was banned in 1976. By then, however, another civil war had broken out, and armed combatants actively engaged in poaching and ivory smuggling between 1975 and 1986 (Kumleben, 1996).

In 1981 it was estimated that Angola had a maximum of 12,400 elephants (Cumming *et al.*, 1990). Surveys of some areas in 1989 (Hall-Martin and Pienaar, 1992) and 1992 (Anstey, 1993) put the total then at around 8,000, but all of these estimates are speculative as no systematic surveys have ever taken place. A third war broke out in 1992 and lasted until 2002, thus preventing any conservation work.

## Range

Angola has a variety of landscapes that range from equatorial forests in the northwest, savanna woodlands and grasslands in the centre, Kalahari woodland in the southeast and desert in the southwest.

The basis for the AED range map for Angola originates from the 1995 report (Said *et al.*, 1995). A number of changes have been made for this report. Based on recent reconnaissance surveys, the area within Iona National Park has been categorized as non-range (J. Hanks, pers. comm., 2003; J. Leite, pers. comm., 2003), while Bicuar NP, Moçamedes Partial Reserve and an area connecting the two has been categorized as **doubtful** range (P. Vaz Pinto, pers. comm., 2003; J. Leite, pers. comm., 2003).

The area around Cáua Camp in the northern portion of Quiçama National Park has been categorized as **known** range as a result of an ongoing translocation programme. The rest of Quiçama NP and adjacent areas to the south and east of the park have been categorized as **possible** range based on information provided by Vaz Pinto (pers. comm., 2003).

The Angolan enclave of Cabinda, bordering with Congo and the DRC, is still reported to harbour elephants in its forests (Ron, cited by J. Hanks, pers. comm., 2003), and part of the territory has been categorized as **known** range.

In the absence of negative data, the rest of the range estimate as depicted in the AED 1998 report remains classified as **possible** range. However, this is highly speculative and is likely to be an overestimate, especially in the south, where some of the sides involved in the civil war are reported to have hunted elephants out from many areas (Vadjon, 1999; P. Vaz Pinto, pers. comm., 2003).

## Surveys and Data

Between 2000 and 2001, thirty-two elephants from Tuli Block in Botswana were airlifted into Cáua Camp, a 130 km<sup>2</sup> fenced area within Quiçama National Park. Five calves are reported to have been born to translocated cows since, and the total number of elephants stood at 36 at the time of writing (P. Vaz Pinto, pers. comm., 2003). This figure appears under the **definite**

category in the summary table. In addition, about 50 naturally-occurring elephants are believed to remain in Quiçama (P. Vaz Pinto, pers. comm., 2003).

A preliminary survey of Luiana Partial Reserve was conducted in March 2003, and although no elephants were actually seen, it is estimated that some 100 elephants may remain in the south of the reserve (J. Hanks, pers. comm., 2003). A more comprehensive survey in 2003 will yield a more reliable assessment of the situation in Luiana.

The estimate of 60 for Bikuar National Park reported in the AED 1998 has been removed, as elephants are no longer thought to occur in the area (P. Vaz Pinto, pers. comm., 2003; J. Leite, pers. comm., 2003). The estimate for Bongola has been retained from the 1998 report, but as it is over ten years old, it has been downgraded to the **speculative** category. No elephants are believed to remain in Iona National Park in the southwestern corner of the country (J. Hanks, pers. comm., 2003).

No other surveys have been conducted in Angola since the early 1990s.

### ***Cross-border Movements***

Radiotracking work has shown that elephants from the Caprivi strip in Namibia move in and out of Angola on an occasional basis (Directorate of Environmental Affairs, 2002). There may also be cross-border movements of elephants between Angola and Zambia, Zimbabwe, Botswana and possibly DRC, but no information is available.

### ***Current Issues***

The end of the civil war in Angola after over thirty years of intermittent conflict has allowed some conservation and monitoring work to begin. A project currently underway to restore the Luiana Partial Reserve (J. Hanks, pers. comm., 2003) includes plans to remove landmines, which may restrict the movement of elephants from important populations in neighbouring countries.

It is reported that thousands of internally displaced persons (IDP's) have been confined to refugee camps in rural areas and are facing food shortages and malnutrition (US Committee for Refugees, 2002). The impact that these IDP's may be having on wildlife populations is unknown, and surveys are needed to ascertain current elephant distribution and population levels.

The translocation project mentioned in the Surveys and Data section will culminate with the shipment and subsequent release of 150 elephants from Botswana and South Africa into Quiçama National Park.

### Summary totals for Angola

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	36	0	0	0
Informed Guesses	0	0	150	0
Other Guesses	0	0	0	60
<b>TOTAL</b>	<b>36</b>	<b>0</b>	<b>150</b>	<b>60</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	468	0.1%
Informed Guesses	32,423	4.7%
Other Guesses	1,503	0.2%
Unassessed Known Range	1,082	0.2%
Unassessed Possible Range	623,143	90.1%
Doubtful Range	32,867	4.8%
<b>TOTAL</b>	<b>691,486</b>	

### Age of range data

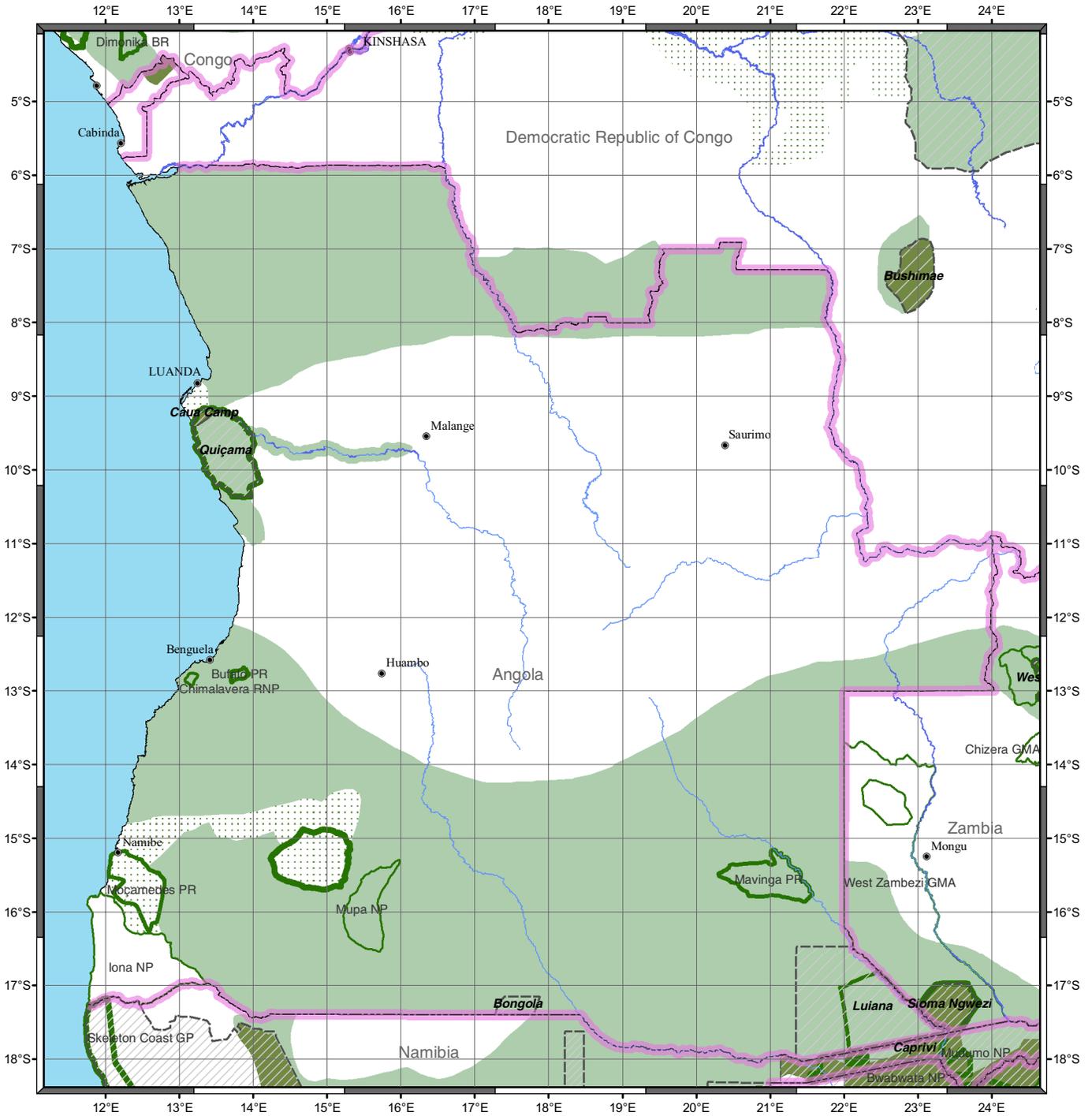
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	626,951	90.7%
Post-1998	64,535	9.3%
<b>TOTAL</b>	<b>691,486</b>	

## ANGOLA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Bongola Area	IG3	E	1992	60		Anstey, 1993	1,505	17.6 E	17.3 S
Cáua Camp	IR1	A	2002	36		Vaz Pinto pers. comm., 2003	9,500	13.3 E	9.3 S
Luíana National Park	IG3	D	2003	100		Hanks pers. comm., 2003		22.1 E	17.3 S
Quiçama National Park	IG3	D	2002	50		Vaz Pinto pers. comm., 2003	9,500	13.6 E	9.8 S

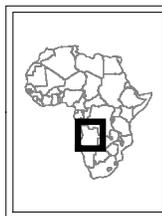
# Angola

## Elephant Range, Input Zones and Protected Areas

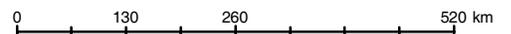


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# B O T S W A N A

## **General Statistics**

Country Area: 600,370 km<sup>2</sup>  
Range Area (% of country): 99,099 km<sup>2</sup> (17%)  
Protected area coverage (% of country): 18%  
Protected range (% of known and possible range in protected areas): 18%  
CITES Appendix: II  
Listing Year: 1997

## **Historical Background**

It is speculated that, at the beginning of the 19<sup>th</sup> century Botswana supported a widely distributed population of 200,000 to 400,000 elephants (Campbell, 1990). Uncontrolled commercial hunting for ivory, which may have begun as early as 1780 (Campbell, 1990), along with a drying of the habitat, reduced numbers to a remnant in the north of the country by 1900 (Campbell, 1990). In 1893, elephant hunting licenses became a requirement and, by about 1930, growth of the elephant population could be seen (Campbell, 1990). A rapid increase in the late 1950s was thought to be partly due to immigration from neighbouring countries (Child, 1968). Repeated systematic aerial surveys since 1987 have shown that the upward trend has continued at a rate of about 6% per annum. Botswana now holds the largest known population of elephants in Africa (Gibson *et al.*, 1998).

In 1997 Botswana had its elephant population transferred to CITES Appendix II, and in 1999 an experimental one-off sale of 25,300 kg of ivory to Japan was permitted following the country's compliance with a number of agreed conditions (CITES, 2000).

## **Range**

Elephant range in Botswana is one of the best known on the continent. Most of the country's elephant range is situated in the north and spans over 80,000 km<sup>2</sup> of savanna woodlands, open grasslands, and the floodplains and swamps of the Okavango Delta. This area has been categorized as **known** range. Elephant range in northern Botswana is expanding westwards into areas of the Okavango where elephants had not been seen for many years (Government of Botswana, 2002), and an area of **possible** range has been added to the map to reflect this (G.C. Craig, pers. comm., 2003a). Two small areas of **known** range have been added to the south of the range depicted in the previous report, into Makgadikgadi National Park and to the west of it (G.C. Craig, pers. comm., 2003a).

The only other area where elephants occur, the Tuli Block, is considerably smaller than the northern range and lies in the eastern corner of Botswana, covering 927 km<sup>2</sup> at the confluence of the Shashe and Limpopo rivers. This area has been categorized as **known** range.

Although the southward expansion of elephant range in northern Botswana is largely limited by water availability, in 1997 two elephants moved south through the Kalahari into Gemsbok National Park and then into South Africa (C.R. Thouless, pers. comm., 1998).

## **Surveys and Data**

Most of Botswana is covered by regular aerial sample counts that include the whole of the northern elephant range. Surveys in the Tuli Block are conducted less regularly.

Four surveys have been conducted in northern Botswana since 1998, but only the full results of the 1999 dry season survey were made available in time for this report (Department of Wildlife and National Parks, 1999). This survey gave estimates of 22,053 for Chobe National Park, 5,442 for Moremi Game Reserve and 30,971 for the Okavango Delta. The combined estimate for all strata in the survey (120,604±21,237) replace a 1995-1996 merged estimate of 89,227±13,406 reported in the AED 1998.

A total aerial count was conducted in the Tuli Block and adjacent areas in Zimbabwe and South Africa in 2001 (Selier *et al.*, 2002). Although a few elephants were seen on the Zimbabwean and South African sides of the border, these have been included in the estimate for Botswana, as it is there that they spend the most of their time (Selier *et al.*, 2002). The estimate of 1,262 from this survey replaces a 1994 aerial sample count estimate of 831±456.

### **Cross-border Movements**

The northern Botswana population extends into Zimbabwe, the Caprivi Strip in Namibia (Craig, 1996b) and possibly into Zambia and Angola as well. It constitutes the largest known population of elephants in Africa, and one of the largest continuous stretches of **known** range. Elephants also move from the Tuli Block in Botswana to Zimbabwe and occasionally into private reserves in northern Limpopo Province (South Africa). As elephant range expands westwards in northern Botswana, there may also be increased contact with the Khaudom/Tsumkwe population in Namibia.

### **Current Issues**

The westward expansion of elephant range in Botswana is causing increasing levels of conflict with farmers on the leading edge of the expansion. Elephants currently occur at high densities in northern Botswana, particularly along watercourses, and are causing considerable structural damage to the vegetation (Mosugelo *et al.*, 2002). This has led to calls for a culling programme to be instituted, but others argue that the provision of better-dispersed watering points would reduce damage along the riverfronts.

These and other issues are being addressed in a review of the 1991 National Elephant Management Plan to be completed in July 2003. This review will lead to the drafting of a new national Elephant Conservation Policy and Strategy.

At the Twelfth meeting of the Conference of the Parties to CITES, held in Santiago de Chile in November 2002, Botswana obtained approval to sell 20,000 kg of ivory in a single shipment to an approved destination, subject to a number of strict conditions. In 2002 Botswana increased its annual quota for the export of elephant tusks as hunting trophies from 180 to 210 animals, and has notified CITES that the quota will be maintained in 2003 (World Conservation Monitoring Centre, 2003).

### Summary totals for Botswana

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	1,262	0	0	0
Direct Sample Counts and Reliable Dung Counts	99,367	21,237	21,237	0
<b>TOTAL</b>	<b>100,629</b>	<b>21,237</b>	<b>21,237</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	882	0.9%
Direct Sample Counts & Reliable Dung Counts	98,215	99.1%
<b>TOTAL</b>	<b>99,097</b>	

### Age of range data

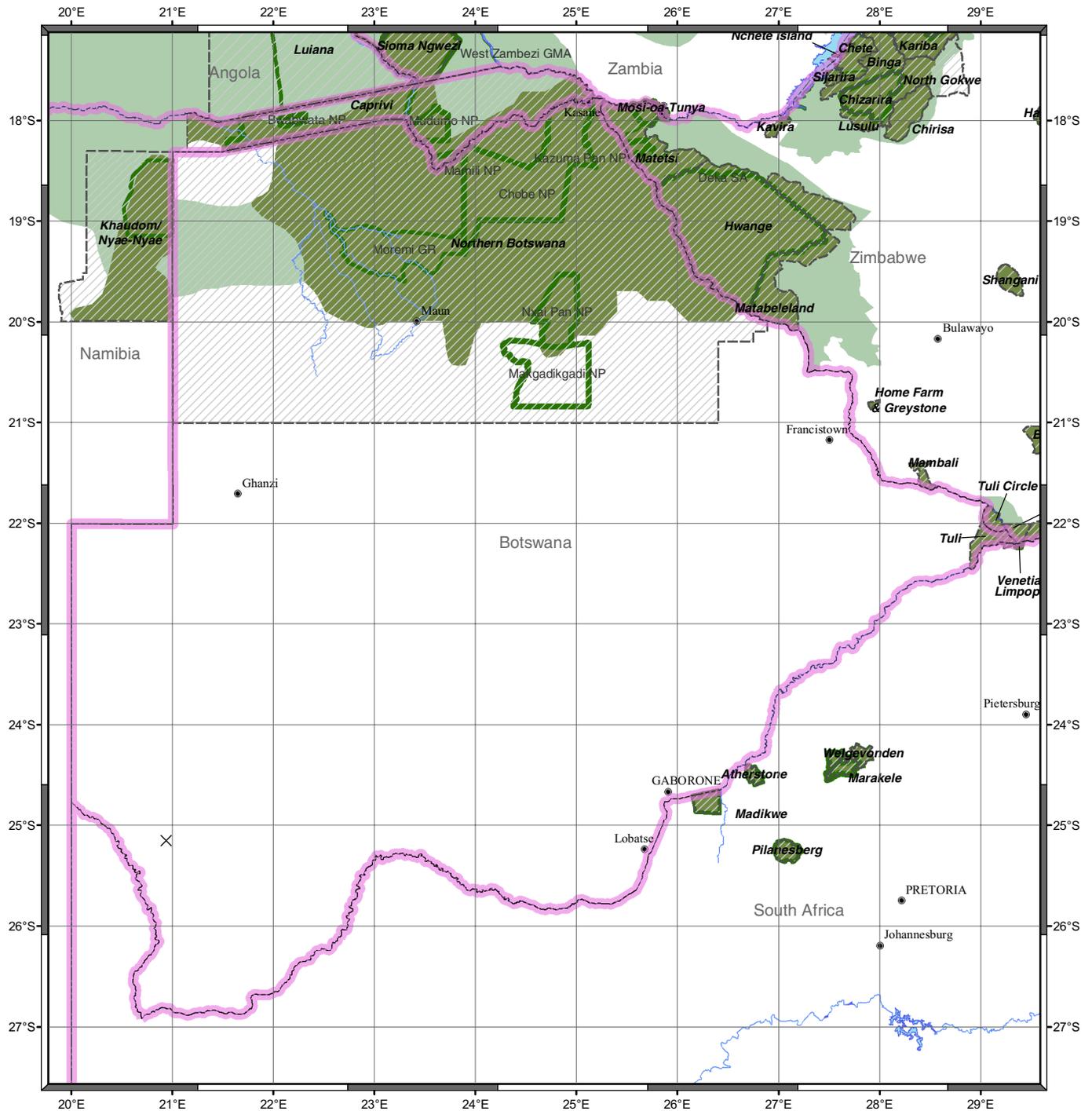
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	882	0.9%
1996-1998	80,225	81.0%
Post-1998	17,990	18.2%
<b>TOTAL</b>	<b>99,097</b>	

## BOTSWANA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Northern Botswana	AS2	B	1999	120,604	21,237	Department of Wildlife and National Parks, Botswana, 1999	171,280	23.6 E	19.6 S
Tuli Block	AT2	A	2001	1,262		Selier et al., 2002	885	29.1 E	22.2 S

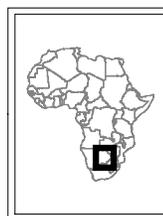
# Botswana

## Elephant Range, Input Zones and Protected Areas



**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**

# M A L A W I

## **General Statistics**

Country Area: 118,480 km<sup>2</sup>  
Range Area (% of country): 7,939 km<sup>2</sup> (7%)  
Protected area coverage (% of country): 9%  
Protected range (% of known and possible range in protected areas): 78%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Although reliable information on the status of elephants in Malawi prior to the late 1970s is unavailable, the country was a popular destination for sport hunters in the first half of the 20<sup>th</sup> century. By the early 1970s elephants occurred only in a small number of isolated and widely dispersed sub-populations, mainly confined to protected areas (Department of National Parks, Wildlife and Tourism, 1991; Munthali, 1991), and were thought to number no more than 1,000 (Sánchez Ariño, 1974).

Despite growing pressure for agricultural land caused by Malawi's high human population density (over 95 inhabitants per km<sup>2</sup> in 2001), most of these populations survive, albeit in diminished numbers. An exception is a population of about 300 in Majete Game Reserve, which disappeared between 1987 and 1994 (Sherry and Tattersall, 1996).

## **Range**

Because of its small size and high human population densities, Malawi's elephants are almost entirely confined to protected areas, including national parks and forest reserves, with only a small part of range outside protected areas in the southeast (Bhima, 1996).

Due to the extent of survey work done in the 1990s, the depiction of range is still considered to be reliable and most areas are therefore categorized as **known** range. The major elephant populations reside in Kasungu and Liwonde National Parks and the Nkhotakota and Vwaza Marsh Wildlife Reserves. Elephants in the Thuma Forest Reserve are reported to be expanding their range within the reserve, with signs being found in eastern parts of the reserve where they had not been seen for 15 years (Wildlife Action Group, 1999).

## **Surveys and Data**

No formal surveys have been conducted in Malawi since 1997, and all the entries on the table of estimates have been retained from the previous report.

## **Cross-border Movements**

Movement of elephants between Kasungu National Park in Malawi and the North Luangwa ecosystem was documented by Jachmann & Bell (1985). There may also be cross-border movements between Malawi and Mozambique, but information is lacking.

## **Current Issues**

Pressure on both land and wildlife in protected areas remains high, and the excision of land from protected areas for agricultural purposes has not been uncommon (Mkanda, 1992). Although the 1992 National Parks and Wildlife Act stipulates stiff penalties for illegal use of protected areas and natural resources, preliminary results from an ongoing monitoring study in Kasungu National Park suggest that law enforcement efforts may be inadequate (Bhima, 2003).

Malawi's elephant populations are small and fragmented, and may not be viable in the long term. Little work is being done on the country's elephants at present, and a renewed effort to determine their status is needed.

## Summary totals for Malawi

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	414	0	0	0
Direct Sample Counts and Reliable Dung Counts	198	1,569	1,569	0
Informed Guesses	35	0	80	20
<b>TOTAL</b>	<b>647</b>	<b>1,569</b>	<b>1,649</b>	<b>20</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	470	5.9%
Direct Sample Counts & Reliable Dung Counts	4,754	59.9%
Informed Guesses	1,306	16.5%
Unassessed Known Range	34	0.4%
Unassessed Possible Range	1,375	17.3%
<b>TOTAL</b>	<b>7,939</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	1,375	17.3%
1996-1998	4,319	54.4%
Post-1998	2,245	28.3%
<b>TOTAL</b>	<b>7,939</b>	

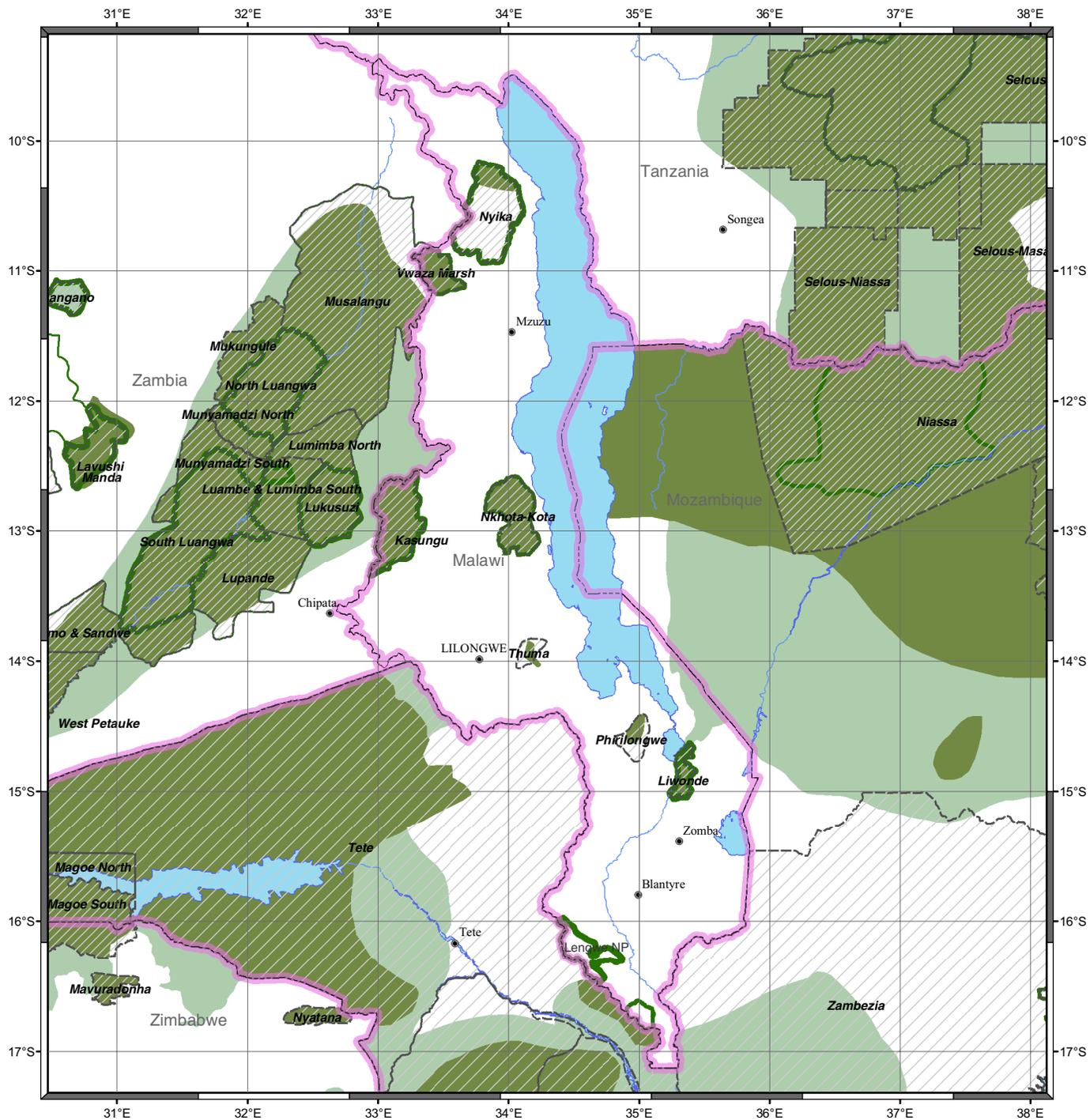
## MALAWI: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Kasungu National Park	AS2	B	1995	391	349	Bhima, 1996	2,316	33.1 E	12.9 S
Liwonde National Park	AT3	A	1995	414		Bhima, 1996	538	35.3 E	14.9 S
Nkhota-Kota Wildlife Reserve	AS2	B	1995	1,037	1,511	Japan International Cooperation Agency and Government of Malawi, 1997	1,802	34.0 E	12.9 S
Nyika National Park	AS1	B	1997	339	239	Gibson, 1997b	3,134	33.8 E	10.6 S
Phirilongwe Forest Reserve	IG3	D	1998	50		Munthali pers. comm., 1998	640	35.0 E	14.6 S
Thuma Forest Reserve	IG3	D	1998	30	20*	Munthali pers. comm., 1998	370	34.2 E	13.9 S
Vwaza Marsh Wildlife Reserve	IG3	D	1997	35		Gibson, 1997b	986	33.4 E	11.0 S

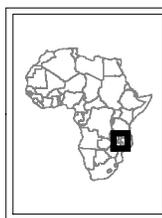
\* Range of informed guess

# Malawi

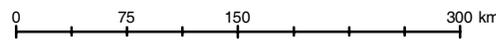
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area abbreviations turn to Appendix I





# MOZAMBIQUE

## General Statistics

Country Area: 801,590 km<sup>2</sup>  
Range Area (% of country): 415,906 km<sup>2</sup> (52%)  
Protected area coverage (% of country): 7%  
Protected range (% of known and possible range in protected areas): 9%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Mozambique had a long history of trade in ivory, with recorded exports in the 1590s reaching 440,000 kg. Elephant populations are believed to have declined considerably in the 20<sup>th</sup> century until commercial hunting for ivory was banned in 1960. However, elephants were still reported to occur throughout most of the country in the early 1970s (Lobao Tello, 1986). Guesses as to the total population ranged from 12,000 - 15,000 (Sánchez Ariño, 1974) to 50,000 - 66,500 (Lobao Tello, 1986). However, there is evidence that throughout the civil war (1975-1992) armed combatants were involved in the killing of elephants for meat and ivory. By 1986, Tello Lobao (1986) estimated the country's population at 15,500 – 27,000, and populations were said to be declining rapidly (Smithers and Lobao Tello, 1976; Lobao Tello, 1986). Survey work has been sporadic since the end of the war; the national estimate was given as 17,000 – 19,000 in 1999 (Direcção Nacional de Florestas e Fauna Bravia, 1999), although much of this total was comprised of subjective estimates.

## Range

The range map for Mozambique has been completely revised and updated, based on information from the recent National Elephant Strategy (Direcção Nacional de Florestas e Fauna Bravia, 1999). Areas shown as range in the Strategy document have been categorized as **known** range. Although an area between Niassa Game Reserve and Lake Malawi has been categorized as **known** range on the basis of information in the National Elephant Strategy, high levels of human settlement in the area make the presence of elephants there unlikely.

A number of areas in the south of the country have been categorized as **known** range, and others removed based on information provided by Anderson (quest. reply, 2002). Remaining areas classified as **possible** range date back to the African Elephant Database 1995 (Said *et al.*, 1995). Changes since the previous report probably reflect better information rather than a retraction in range.

## Surveys and Data

Although survey work has in general been irregular, a number of guesses effectively covering the entire country were provided by delegates attending a workshop for the development of Mozambique's National Elephant Management Strategy (Direcção Nacional de Florestas e Fauna Bravia, 1999). As the basis for these estimates is unknown, they have been categorized as **other guesses**.

A notable exception to general lack of surveys is the Niassa Game Reserve and buffer zone in northern Mozambique, in which three aerial sample counts have been conducted since 1998 (Gibson, 1998; Gibson, 2000; Craig and Gibson, 2002). The latest estimate of 13,601±2,433 replaces the 1998 estimate of 8,707±1,937 (Gibson, 1998) that appeared in the AED 1998 report. The November 2000 survey returned an estimate of 11,828±2,140 (Gibson, 2000). Comparisons between the three estimates suggest that the population may be increasing. The Niassa reserve, home to what is probably the largest population of elephants in the country, is becoming one of the better-surveyed areas in the entire continent.

The only other post-1998 systematic survey appearing on the table, an aerial sample count of the southern Magoe district with an estimate of 1,264±1,359 (Mackie, 2001), replaces a 1995 estimate of 137±187 (Mackie and Chafota, 1995). The 1995 survey found no elephants in the

northern half of the district, and this area was not flown again in the 2001 survey. For the sake of completeness, the 1995 figure of zero for northern Magoe has been retained in the table.

Dung counts have been attempted in Gilé National Reserve and Moribane-Chimanimani Forest Reserve, but the density of the vegetation affected dung visibility to the extent that a proper survey could not be conducted. Informed guesses have nevertheless been provided for these two areas (C. Ntumi, pers. comm., 2003). Informed guesses have also been received for Banhine National Park (Anderson, quest. reply, 2002) and Maputo Game Reserve (R. Morley, pers. comm., 2002).

Aerial surveys of Gorongosa National Park and Marrromeu Game Reserve have been conducted over the four years preceding 2002, but concerns have been expressed over the methodology employed and reports have not been made available. The park authorities are addressing these issues and are planning to adopt a standardized methodology to conduct regular aerial surveys in the future (R.D. Taylor, pers. comm., 2003).

### **Cross-border Movements**

The Niassa Game Reserve is likely to constitute a transboundary population contiguous with the Selous Game Reserve in Tanzania (Mpanduji *et al.*, 2002), and together they may constitute one of the most important populations on the continent. Elephants also move between the Maputo Game Reserve in southern Mozambique and Tembe Elephant Park in eastern South Africa via the Futi Corridor. Occasionally, elephants moving between Mozambique and South Africa cross via northern Swaziland.

Out of twenty-five elephants translocated in 2001 from Kruger National Park (South Africa) into the neighbouring Limpopo National Park in Mozambique, ten eventually found their way back to Kruger. A further 48 Kruger elephants were moved to Limpopo in 2002, and plans are afoot to move an additional 1,100.

### **Current Issues**

In 1999 Mozambique adopted a comprehensive National Strategy for the Management of Elephants. The strategy aims to devolve direct benefits of wildlife tourism to local communities, as well as to establish monitoring programmes for habitats, wildlife populations and law enforcement. The strategy also aims to achieve a 20% increase in the elephant population by 2010, but progress on this will be difficult to measure, given the lack of a current, accurate estimate of the country's overall elephant population.

The elephant strategy contemplates the development and approval of management plans for all national parks and most other protected areas. The number of protected areas in Mozambique has grown with the creation of the Quirimbas National Park and the gazetting of the Coutada 16 hunting block as the Limpopo National Park, part of a transfrontier park initiative between Mozambique, South Africa, and Zimbabwe. There are also plans to create a transboundary conservation area to link the Niassa Game Reserve, the Selous Game Reserve (Tanzania) and a number of protected areas in Malawi.

As with other countries emerging from civil war, reports of human-elephant conflict incidents are becoming more frequent as a result of the return and resettlement of refugees and internally displaced persons. Another consequence of the civil war is the prevalence of landmines, which may restrict the movement of elephants.

Mozambique has had an annual CITES export quota of 20 tusks (10 animals) for trophy hunting since 2000.

### Summary totals for Mozambique

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	11,539	2,786	2,786	0
Informed Guesses	108	0	287	120
Other Guesses	0	0	0	6,782
<b>TOTAL</b>	<b>11,647</b>	<b>2,786</b>	<b>3,073</b>	<b>6,902</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	45,886	11.0%
Informed Guesses	13,766	3.3%
Other Guesses	245,612	59.1%
Unassessed Known Range	48,653	11.7%
Unassessed Possible Range	61,983	14.9%
<b>TOTAL</b>	<b>415,900</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	174,044	41.8%
1996-1998	41,610	10.0%
Post-1998	200,246	48.1%
<b>TOTAL</b>	<b>415,900</b>	

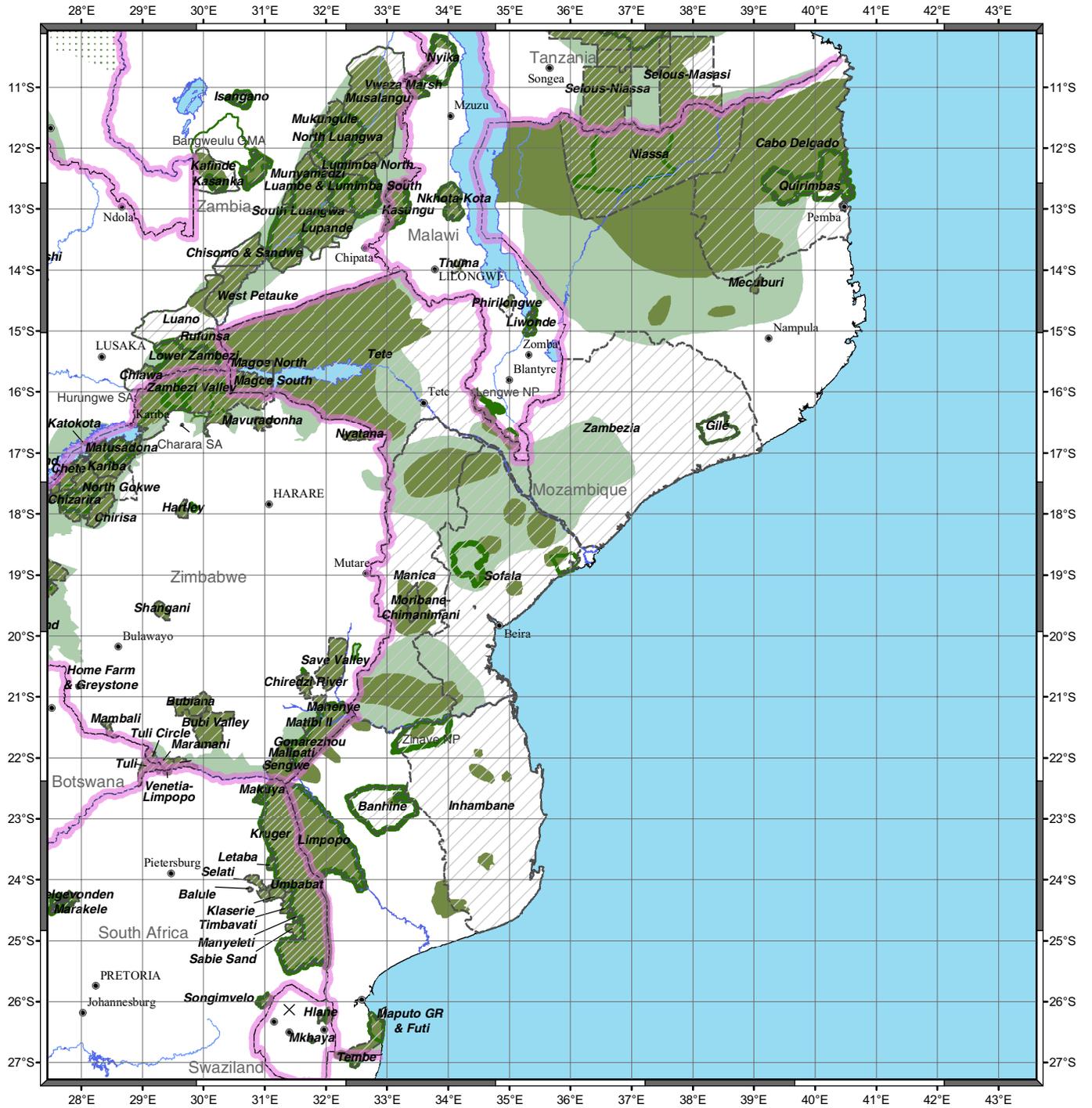
## MOZAMBIQUE: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Banhine National Park	IG3	D	2002	8	2*	Anderson, quest. reply, 2002	7,000	32.9 E	22.8 S
Cabo Delgado Province	OG3	E	1998	2,450		Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	64,819	39.4 E	12.5 S
Gilé National Reserve	IG3	D	2002	15	18*	Ntumi pers. comm., 2003	2,100	38.4 E	16.6 S
Inhambane Province	OG3	E	1998	260		Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	68,681	34.5 E	22.8 S
Limpopo National Park	IG3	D	2002	150	50*	Anderson, quest. reply, 2002	10,000	31.9 E	23.3 S
Magoe North District	AS2	B	1995	0		Mackie and Chafota, 1995	2,030	30.8 E	15.6 S
Magoe South District	AS2	B	2001	1,264	1,359	Mackie, 2001	2,824	30.7 E	15.9 S
Manica Province	OG3	E	1998	260		Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	62,694	33.4 E	19.0 S
Maputo GR & Futi Corridor	IG3	D	2002	200	50*	Morley pers. comm., 2002	900	32.7 E	26.6 S
Mecuburi Forest Reserve	OG3	E	2002	5	5*	Anderson, quest. reply, 2002	195	39.0 E	14.3 S
Moribane-Chimanimani Forest Reserve	IG3	D	2002	22		Ntumi pers. comm., 2003	185	33.4 E	19.5 S
Niassa Game Reserve and Buffer Zone	AS2	B	2002	13,061	2,433	Craig and Gibson, 2002	42,341	37.2 E	12.1 S
Quirimbas National Park	OG3	E	2000	90		Motta pers. comm., 2002	7,845	40.0 E	12.5 S
Sofala Province	OG3	E	1999	800	200*	Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	66,385	34.7 E	19.1 S
Tete Province	OG3	E	1998	2,260	1650*	Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	100,743	32.8 E	15.5 S
Zambezia Province	OG3	E	1998	657		Direcção Nacional de Florestas e Fauna Bravia, Mozambique, 1999	101,289	37.0 E	16.6 S

\* Range of informed guess

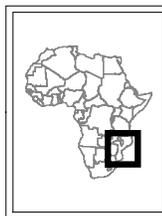
# Mozambique

## Elephant Range, Input Zones and Protected Areas

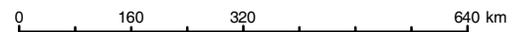


**Legend**

International Boundary	<b>Elephant Range</b> Known
Towns	Possible
Rivers and lakes	Doubtful
Protected Areas	Sighting/sign
Input Zones	



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# NAMIBIA

## General Statistics

Country Area: 825,418 km<sup>2</sup>  
Range Area (% of country): 147,349 km<sup>2</sup> (18%)  
Protected area coverage (% of country): 13%  
Protected range (% of known and possible range in protected areas): 23%  
CITES Appendix: II  
Listing Year: 1997

## Historical Background

Elephants probably once occurred at low densities throughout Namibia wherever surface water could be found during the dry season, excluding only the hyper-arid southwestern third of the country and parts of the coastal desert. As a result of commercial hunting and expanding settlement in the 1800s, elephants were rapidly depleted in central and southern Namibia. By 1900 they were only found in the northern part of the country, but colonial hunting regulations enacted in the 1890s and the formation of the Etosha National Park in the early 1900s provided some protection. Elephants have since remained confined to northern Namibia (Shortridge, 1934; Ministry of Environment and Tourism, 1997). Between 1962 and 1982, illegal killing reportedly reduced elephant numbers from roughly 3,000 to 220 in the Kunene region (Viljoen, 1987).

Populations in Kunene and elsewhere in northern Namibia have been increasing since 1984 (Loutit and Douglas-Hamilton, 1992; Loutit, 1995). National estimates in the 1990s were based on broadly comparable surveys and suggest a steady increase from 5,300 in 1990 (Ministry of Wildlife, Conservation and Tourism, 1991) to around 7,700 in 1995 (Lindeque *et al.*, 1995).

At the Tenth Meeting of the Conference of the Parties to CITES, held in Harare in 1997, Namibia had its elephant population transferred to Appendix II, with an experimental one-off quota of 13,800 kg for the export of raw ivory to Japan being permitted in 1999, following verification of Namibia's compliance with the agreed conditions (World Conservation Monitoring Centre, 2003).

## Range

Today elephants are restricted to the north of the country, where they occur in the Namib Desert, *mopane* savannas, semi-arid Kalahari woodlands and Okavango wetlands.

While large populations are found in Etosha National Park, Kaudom Game Reserve and the Caprivi region, Namibian elephants range widely in search of water depending on annual rainfall patterns, and have some of the largest home ranges recorded anywhere on the continent (Lindeque, 1995). For this reason, most of unsurveyed range, which was taken from Dublin (1989), has been categorized as **possible** range. Surveyed areas where elephants are known to occur have been categorized as **known** range. Elephant range has recently been expanding into previously unused parts of the Kunene region to the south of Etosha National Park, and these have been added to the map as **known** range (Craig, quest. reply, 2002). Elephants in Kavango are known to be resident only in the Mangetti Game Reserve, and this area has also been categorized as **known** range (Lindeque *et al.*, 1995). The rest of the Kavango survey zone remains as **possible** range (Craig, quest. reply, 2002).

## Surveys and Data

All major elephant habitats in Namibia have been surveyed between 1998 and 2002. Sample aerial counts were conducted in Kunene (G.C. Craig, pers. comm., 2003b), Etosha National Park (G.C. Craig, pers. comm., 2003; Kilian, 2003b), Caprivi (Ministry of the Environment and Tourism, 1998) and Kaudom, Tsumkwe and Nyae-Nyae (G.C. Craig, pers. comm., 2003b).

An aerial sample count of Etosha National Park conducted in 2002 returned an estimate of 2,417±663 (Kilian, 2003), and this replaces a 1995 aerial sample count estimate of 1,189±774 (Lindeque *et al.*, 1995). Another aerial sample count conducted in Etosha in 2000 gave an estimate of 2,100±774 (G.C. Craig, pers. comm., 2003b).

The 1998 estimate of 4,576±1,223 shown for Caprivi (Ministry of the Environment and Tourism, 1998) replaces a similar 1995 estimate of 4,883±1,247 (Lindeque *et al.*, 1995), while an estimate of 1,966±973 for Khaudom/Tsumkwe/Nyae-Nyae replaces a 1995 estimate of 1,085±545.

The figure of 663±790 shown for Kunene has wide confidence limits due to the elephants' tendency to concentrate along dry water courses in arid areas. While the aerial total count estimate of 508 (Lindeque *et al.*, 1995) reported in the African Elephant Database 1998 is more precise, the total count technique also presents problems when applied to desert populations, as detailed knowledge of elephant distribution is required for accurate estimates to be obtained. Ongoing radio-tracking studies in this area should improve knowledge of elephant movement patterns and hence the precision and accuracy of future surveys.

No surveys have been conducted in Kavango since 1995, and the estimate of 19 has been retained from the previous report.

The results of broadly comparable surveys conducted since 1990 suggest that Namibia's elephant population has continued to increase to around 10,000 in the year 2000 (Government of Namibia, 2002).

### **Cross-border Movements**

The Caprivi Strip in Namibia is an extension of the northern Botswana population, and provides an important corridor for the movement of elephants between Zimbabwe, Botswana, Zambia and Angola (Craig, 1996a). There may also be movement between other areas in northern Namibia and southern Angola. As elephant range expands in northern Botswana, there may also be increased contact with the Khaudom/Tsumkwe population in Namibia.

### **Current Issues**

The Government of Namibia has allocated over 35,000 km<sup>2</sup> of elephant range outside of protected areas to communal conservancies, and a further 10,000 km<sup>2</sup> are in the process of being established as such. Many of these conservancies lie in areas that serve as critical elephant migratory routes in periods of drought. Communal conservancies operate under the guidance of Namibia's Ministry of Environment and Tourism, which requires the adoption of management plans and emphasizes sustainable utilization (Government of Namibia, 2002).

The Kunene population is believed to have increased in both range and numbers since 1990, and this has led to increased competition for water with resident human populations. The Kunene elephants attract considerable conservation and scientific interest because of their adaptations to arid conditions. The population remains vulnerable due to its small size and the propensity for long droughts within its range.

In 2002 Namibia's proposal to be allowed to sell 10,000 kg of ivory in second sale was approved at the Twelfth Meeting of the Conference of the Parties to CITES, held in Santiago, Chile. Since 2000 Namibia has had an annual export quota of 150 tusks (75 animals) for trophy hunting (World Conservation Monitoring Centre, 2003).

### Summary totals for Namibia

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	19	0	0	0
Direct Sample Counts and Reliable Dung Counts	7,750	1,872	1,872	0
<b>TOTAL</b>	<b>7,769</b>	<b>1,872</b>	<b>1,872</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	5,085	3.5%
Direct Sample Counts & Reliable Dung Counts	89,124	60.5%
Unassessed Known Range	5,330	3.6%
Unassessed Possible Range	47,794	32.4%
<b>TOTAL</b>	<b>147,333</b>	

### Age of range data

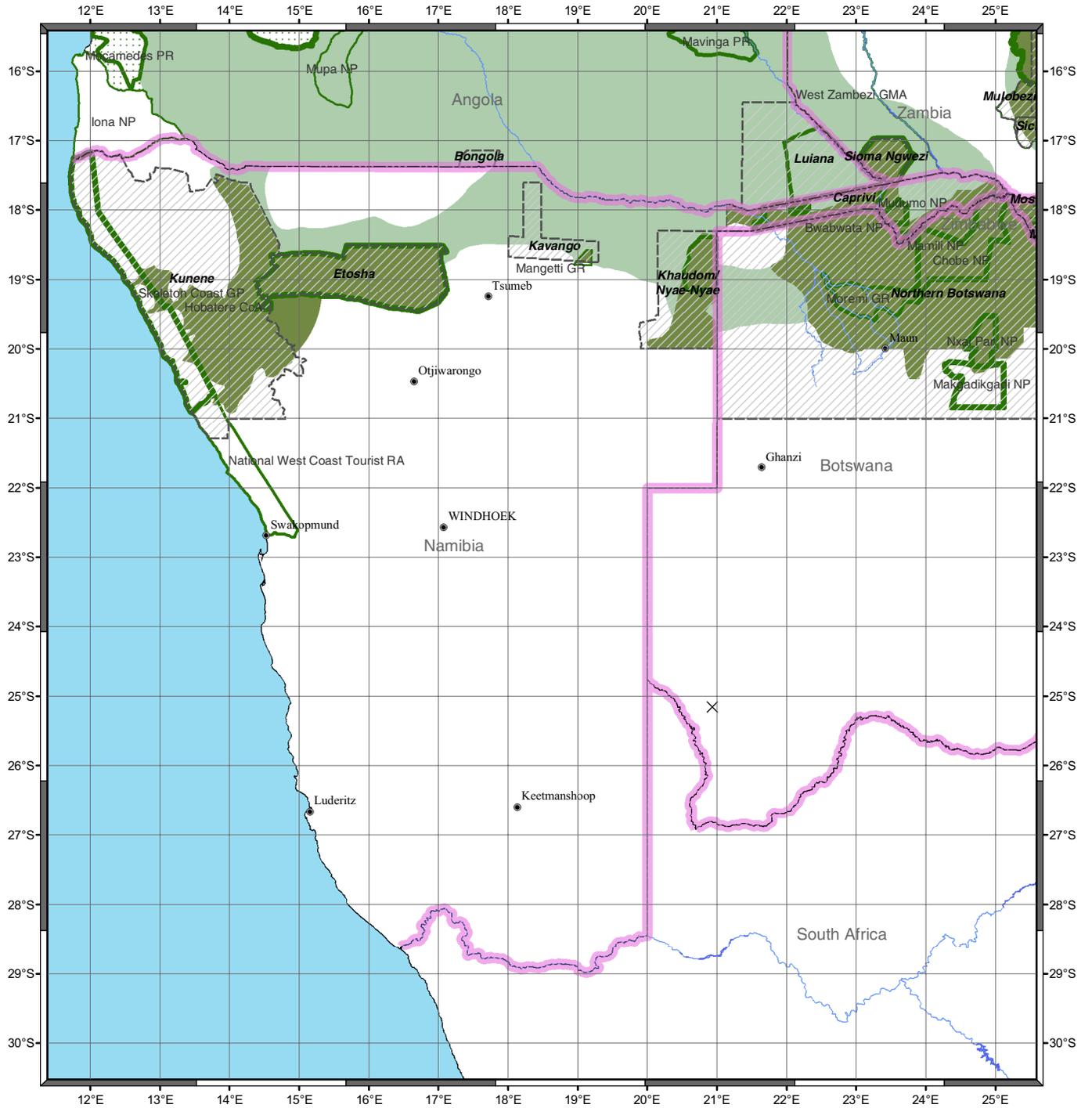
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	48,046	32.6%
1993-1995	76,009	51.6%
Post-1998	23,278	15.8%
<b>TOTAL</b>	<b>147,333</b>	

## NAMIBIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Caprivi Region	AS2	B	1998	4,576	1,223	Ministry of the Environment and Tourism Namibia, 1998	18,259	23.3 E	17.9 S
Etosha National Park	AS1	B	2002	2,417	663	Kilian, 2003	18,464	15.9 E	19.0 S
Kavango Region	AT3	A	1995	19		Lindeque et al., 1995	762	18.5 E	18.4 S
Khaudom/Nyae-Nyae	AS2	B	2000	1,966	973	Craig pers. comm., 2003a	12,107	20.5 E	19.2 S
Kunene	AS3	B	2000	663	790	Craig pers. comm., 2003a	86,451	13.5 E	19.0 S

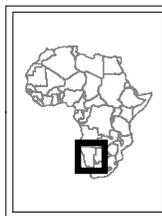
# Namibia

## Elephant Range, Input Zones and Protected Areas

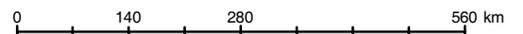


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# SOUTH AFRICA

## **General Statistics**

Country Area: 1,219,912 km<sup>2</sup>  
Range Area (% of country): 29,356 km<sup>2</sup> (2%)  
Protected area coverage (% of country): 4%  
Protected range (% of known and possible range in protected areas): 90%  
CITES Appendix: II  
Listing Year: 2000

## **Historical Background**

In 1652, when European colonization began, there may have been as many as 100,000 elephants distributed in many parts of the country. By 1920, however, there were no more than about 120 elephants left in four remnant populations, largely as a result of human settlement and commercial ivory hunting. These were at Knysna on the Cape's south coast, Addo in the Eastern Cape Province, the Tembe area in Natal, and Olifants Gorge in Transvaal. This latter area became the Kruger National Park in 1926.

The Addo population, though small, increased rapidly from 17 in 1953 (Hanks, 1979) to 272 in 1998 (Castley and Knight, 1998), necessitating the expansion of Addo National Park. While the Tembe population has long been considered secure, the Knysna population was virtually extinct by 1990 (National Parks Board, 1992). The Kruger population is by far the largest, accounting for about 80% of the country's elephants. A border fence erected in 1974 minimized cross-border movement between Kruger and Mozambique. Between 1967 and 1994, Kruger's population was controlled to keep numbers at about 7,000 (Hall-Martin, 1997), but numbers were allowed to increase thereafter. The Kruger population has since been controlled largely by translocation, at first of orphans from culling operations, but more recently entire cow-calf groups began to be moved in single operations. Translocated populations include those in Hluhluwe-Umfolozi Game Reserve and Greater St. Lucia Wetland Park in Kwa Zulu-Natal, as well as a growing number of small private reserves.

## **Range**

South Africa's elephants are confined to protected areas and private reserves, largely in the north and east of the country. The largest portion of elephant range falls within and around Kruger National Park, which is also the source of most of the country's elephants. As of 2002, a total of 1,402 Kruger elephants had been translocated into other national parks and reserves within South Africa since 1980 (Government of South Africa, 2002).

As a result, the distribution of elephants in the country is well known, and all areas have been categorized as **known** range. Some new range areas have been added to the AED as a result of recent translocations. These include the Songimvelo Game Reserve (Free State), the Greater St. Lucia Wetland Park (KwaZulu-Natal) and the Welgevonden Private Game Reserve (Limpopo Province). The boundaries of Addo National Park have been expanding thanks to an active land acquisition programme. A number of private reserves with populations of 50 or fewer animals are not shown in the map at the request of their owners, for security reasons.

## **Surveys and Data**

A complete update of all populations in South Africa has been obtained from South Africa National Parks (Whyte, 2002a) and EMOA (Elephant Managers and Owners Association, 2002). While most surveys in South Africa are aerial total counts conducted from helicopters (and therefore appear under the **definite** category in the summary table), the estimates for some reserves for which detailed census methods could not be obtained have been classified as informed guesses. At the request of their owners, private reserves holding 50 or fewer elephants are grouped under one overall estimate and are not shown on the map. This is due to fears that disseminating detailed information may encourage poaching.

The elephant population in Kruger National Park has continued to grow steadily in recent years and currently stands at 10,459 within the park (Whyte, 2002a), compared with the 8,869 reported in the AED 1998. The population at Addo Elephant National Park stood at 337 in 2002, while in 1998 it was 272. Recent surveys suggest that the Addo population is growing at an annual rate of 5% (Whitehouse and Hall-Martin, 2000).

### **Cross-border Movements**

Movement of elephants is known to occur between Kruger National Park, Mozambique and Zimbabwe, and this may increase in the future if the fence that separates Kruger from Limpopo NP in Mozambique is lifted, as contemplated in the Great Limpopo Transfrontier Park initiative (but see under Current Issues below). Elephants recently introduced into the Songimvelo Game Reserve are known to have crossed into neighbouring Swaziland, where elephants have also long been known to occasionally pass on their way between South Africa and Mozambique (Sánchez Ariño, 1974; M. Reilly, pers. comm., 2002).

### **Current Issues**

As a result of frequent translocation exercises, an increasing proportion of South Africa's elephant population is now found in small, private reserves scattered around various parts of the country. Many such reserves are too small to sustainably support viable populations, and this may lead to negative consequences associated with small and fragmented populations, as well as to future management problems.

A revised management plan for the Kruger National Park (Whyte *et al.*, 1999) has been approved by South Africa National Parks Board, but awaits implementation (Government of South Africa, 2002). The plan aims to maintain the biodiversity of the park and its ecological processes, including spatial and temporal fluctuations in the elephant population. The plan foresees the need to remove 1,100 elephants within its first year of implementation, and anticipates the removal to be conducted largely through non-lethal means thanks to developments in translocation techniques for entire cow-calf groups (Government of South Africa, 2002). However, in view of the magnitude of the translocation effort required and the limited availability of appropriate destinations, the plan does not rule out culling as a management option.

The creation of a transfrontier park to encompass the boundaries of Kruger, Limpopo (Mozambique) and Gonarezhou (Zimbabwe) National Parks has been signed by the governments of the three countries. As part of the park's development plan, 73 elephants have been moved from Kruger to the Limpopo National Park in Mozambique in two separate translocation exercises. However, ten out of twenty-five elephants moved in the first exercise found their way back to Kruger within a few months of being translocated (I. Whyte, pers. comm., 2002b). The planned removal of the fence that separates Kruger from Limpopo National Park in Mozambique is taking time to materialize, with only 20 meters taken down as of late 2002 (Anon., 2002).

At the Eleventh Meeting of the Conference of the Parties to CITES (CoP 11) held in Nairobi in 2000, South Africa had its elephant population transferred to Appendix II. While a zero quota for ivory exports was established, South Africa was allowed to trade internationally in elephant hides and leather goods. At CITES CoP 12, held in Santiago in November 2002, South Africa obtained approval for an international one-off sale of 30,000 kg of its ivory stockpile subject to a number of strict conditions.

In 2002 South Africa increased its annual CITES sport hunting trophy export quota from the 86 tusks (43 animals) it had established in 1997 to 60 animals (120 tusks) (CITES Secretariat, 2003).

### Summary totals for South Africa

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	14,071	0	0	0
Informed Guesses	0	0	855	0
<b>TOTAL</b>	<b>14,071</b>	<b>0</b>	<b>855</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	28,541	97.2%
Informed Guesses	807	2.7%
Unassessed Known Range	8	0.0%
<b>TOTAL</b>	<b>29,356</b>	

### Age of range data

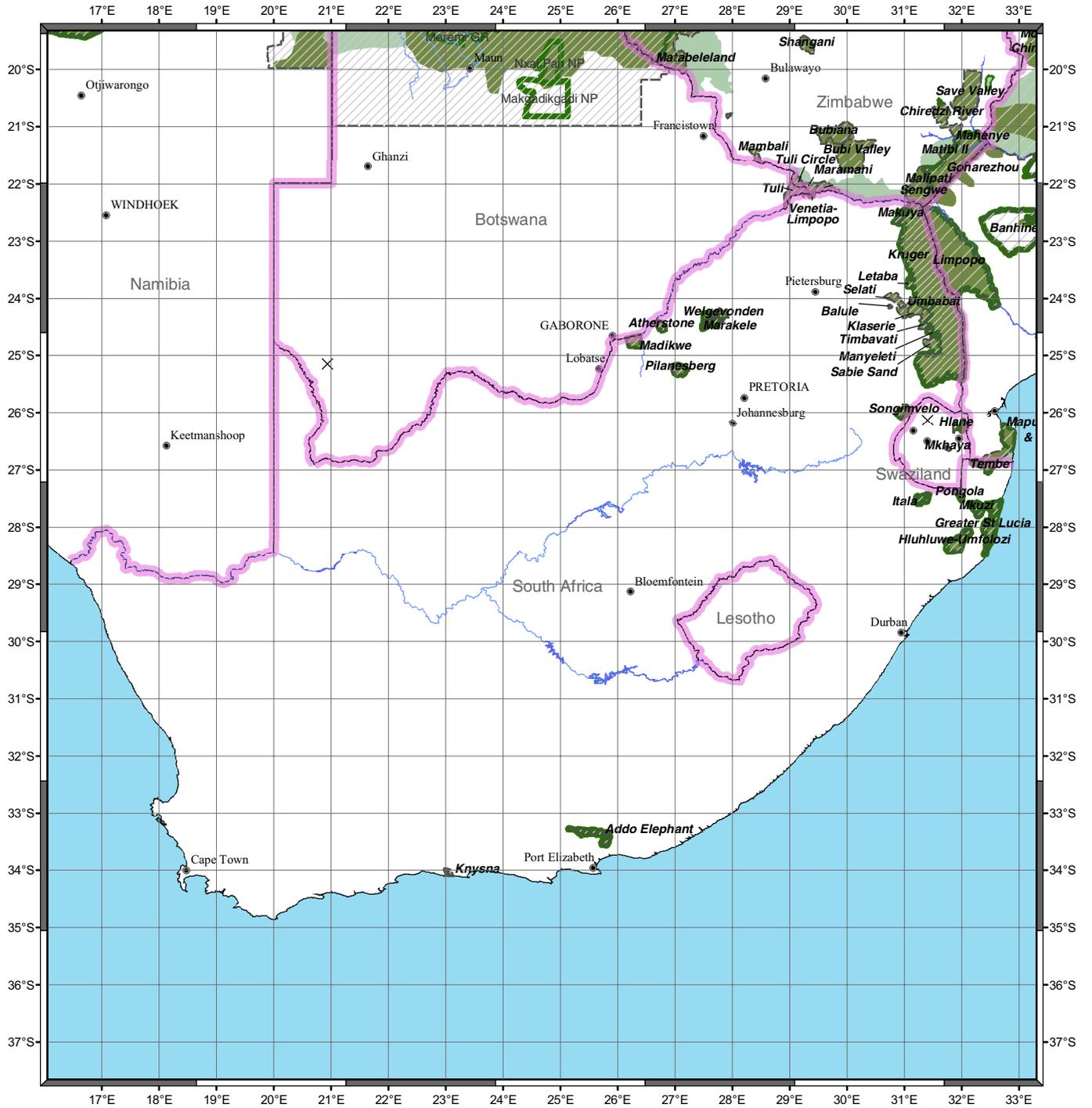
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	21,823	74.3%
1996-1998	519	1.8%
Post-1998	7,014	23.9%
<b>TOTAL</b>	<b>29,356</b>	

## SOUTH AFRICA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Addo Elephant National Park	IR1	A	2002	337		Elephant Managers and Owners Association, 2002	513	25.6 E	33.4 S
Atherstone Nature Reserve	AT3	A	2002	32		Elephant Managers and Owners Association, 2002	136	26.8 E	24.5 S
Balule Nature Reserve	AT3	A	2002	80		Elephant Managers and Owners Association, 2002	400	31.0 E	24.2 S
Greater St Lucia Wetland Park (Managed Nature Reserve)	AT3	A	2002	31		Elephant Managers and Owners Association, 2002	539	32.5 E	27.9 S
Hluhluwe-Umfolozi Game Reserve	GT1	A	2002	310		Elephant Managers and Owners Association, 2002	965	31.9 E	28.3 S
Itala Nature Reserve	GT1	A	2002	61		Elephant Managers and Owners Association, 2002	297	31.3 E	27.5 S
Klaserie Private Nature Reserve	AT2	A	2002	467		Whyte, in prep.	628	31.2 E	24.2 S
Knysna Forest Reserve	IR1	A	2002	4		Elephant Managers and Owners Association, 2002	126	23.0 E	34.0 S
Kruger National Park	AT2	A	2002	10,459		Whyte, in prep.	19,624	31.5 E	24.0 S
Letaba Game Ranch	IG3	D	1997	66		Whyte, in prep.	420	31.1 E	23.7 S
Madikwe Nature Reserve	AT3	A	2002	318		Elephant Managers and Owners Association, 2002	700	26.3 E	24.8 S
Makalali Private Game Reserve	GT1	A	2002	59		Elephant Managers and Owners Association, 2002	140	30.7 E	24.2 S
Makuya National Park	AT2	A	2002	27		Whyte, in prep.	165	30.9 E	22.6 S
Manyeleti Game Reserve	IG3	D	2002	100		Whyte, in prep.	228	31.5 E	24.6 S
Marakele National Park	IR1	A	2002	91		Elephant Managers and Owners Association, 2002	380	27.6 E	24.4 S
Marakele Concession (National Park Extension)	AT3	A	2002	30		Elephant Managers and Owners Association, 2002	258	27.6 E	24.3 S
Mkuzi Game Reserve	IR1	A	2002	28		Elephant Managers and Owners Association, 2002	380	32.3 E	27.7 S
Phalaborwa Mining Company	AT2	A	2002	23		Whyte, in prep.	41	31.2 E	24.0 S
Pilanesberg National Park	AT3	A	2002	142		Elephant Managers and Owners Association, 2002	553	27.1 E	25.2 S
Pongola Nature Reserve	IR1	A	2002	33		Elephant Managers and Owners Association, 2002	119	32.0 E	27.4 S
Private Reserves	IG3	D	2002	650		Elephant Managers and Owners Association, 2002	4,111	Not Shown	
Sabie Sand Game Reserve	AT2	A	2002	757		Whyte, in prep.	572	31.5 E	24.8 S
Selati Game Reserve	GT1	A	2002	56		Elephant Managers and Owners Association, 2002	300	30.8 E	24.0 S
Songimvelo Game Reserve	IG3	D	2002	39		Elephant Managers and Owners Association, 2002	490	31.0 E	26.0 S
Tembe Elephant Park	AT3	A	2002	140		Elephant Managers and Owners Association, 2002	300	32.5 E	26.9 S
Timbavati Private Nature Reserve	AT2	A	2002	372		Whyte, in prep.	494	31.3 E	24.4 S
Umbabat Private Nature Reserve	AT2	A	2002	88		Whyte, in prep.	144	31.4 E	24.1 S
Venetia-Limpopo National Park	AT3	A	2002	59		Elephant Managers and Owners Association, 2002	91	29.3 E	22.2 S
Welgevonden Private Game Reserve	AT3	A	2002	67		Elephant Managers and Owners Association, 2002	330	27.8 E	24.3 S

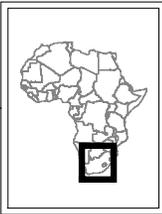
# South Africa

## Elephant Range, Input Zones and Protected Areas

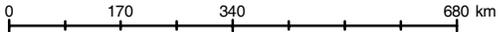


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**

# SWAZILAND

## **General Statistics**

Country Area: 17,360 km<sup>2</sup>  
Range Area (% of country): 187 km<sup>2</sup> (1%)  
Protected area coverage (% of country): 3%  
Protected range (% of known and possible range in protected areas): 91%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Elephants were probably eliminated from Swaziland by about 1920, although reports of sporadic visits from the nearby Kruger National Park in South Africa and Maputo province in Mozambique continued thereafter (Sánchez Ariño, 1974). In 1986, a group of 18 elephants from South Africa were introduced to Hlane Royal National Park and Mkhaya Game Reserve. This was followed by a second translocation of 19 young elephants in 1994, also from South Africa.

## **Range**

Elephant distribution is well known in Swaziland, being restricted to only to fenced enclosures within Hlane Royal National Park and Mkhaya Game Reserve. Although the enclosures only occupy a small fraction of the reserves (6% and 19% respectively), both parks have been categorized as **known** range.

## **Surveys and Data**

Total counts with individual registration of all animals are maintained for both populations in Swaziland. Although the estimates for both Mkhaya and Hlane were updated in 2002, no net change in numbers has been reported (M. Reilly, pers. comm., 2002).

## **Cross-border Movements**

Two adult elephants from the Songimvelo Reserve in South Africa inhabit the Komati Valley in Swaziland as part of their home range, and have now produced a calf. On occasion elephant bulls pass through Swaziland on their way between Kruger NP in South Africa and Maputo Elephant Reserve in Mozambique, or vice versa (M. Reilly, pers. comm., 2002).

## **Current Issues**

Some of the bulls originally introduced from South Africa were causing crop damage outside Mkhaya Game Reserve and were removed from the wild.

A planned sale of 11 elephants from Swaziland to zoos in the United States was granted royal approval in 2002, but stirred considerable controversy among animal welfare groups. At the time of writing, the planned sale was meeting with administrative hurdles in the USA.

The management of Mkhaya Game Reserve considers the elephant population there to be at its acceptable maximum, and additional management action may be taken soon (M. Reilly, pers. comm., 2002).

Breeding is reported to continue at Hlane with several recent births, but lions have preyed on all of the newborns except for one (M. Reilly, pers. comm., 2002).

### Summary totals for Swaziland

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	39	0	0	0
<b>TOTAL</b>	<b>39</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	187	100.0%
<b>TOTAL</b>	<b>187</b>	

### Age of range data

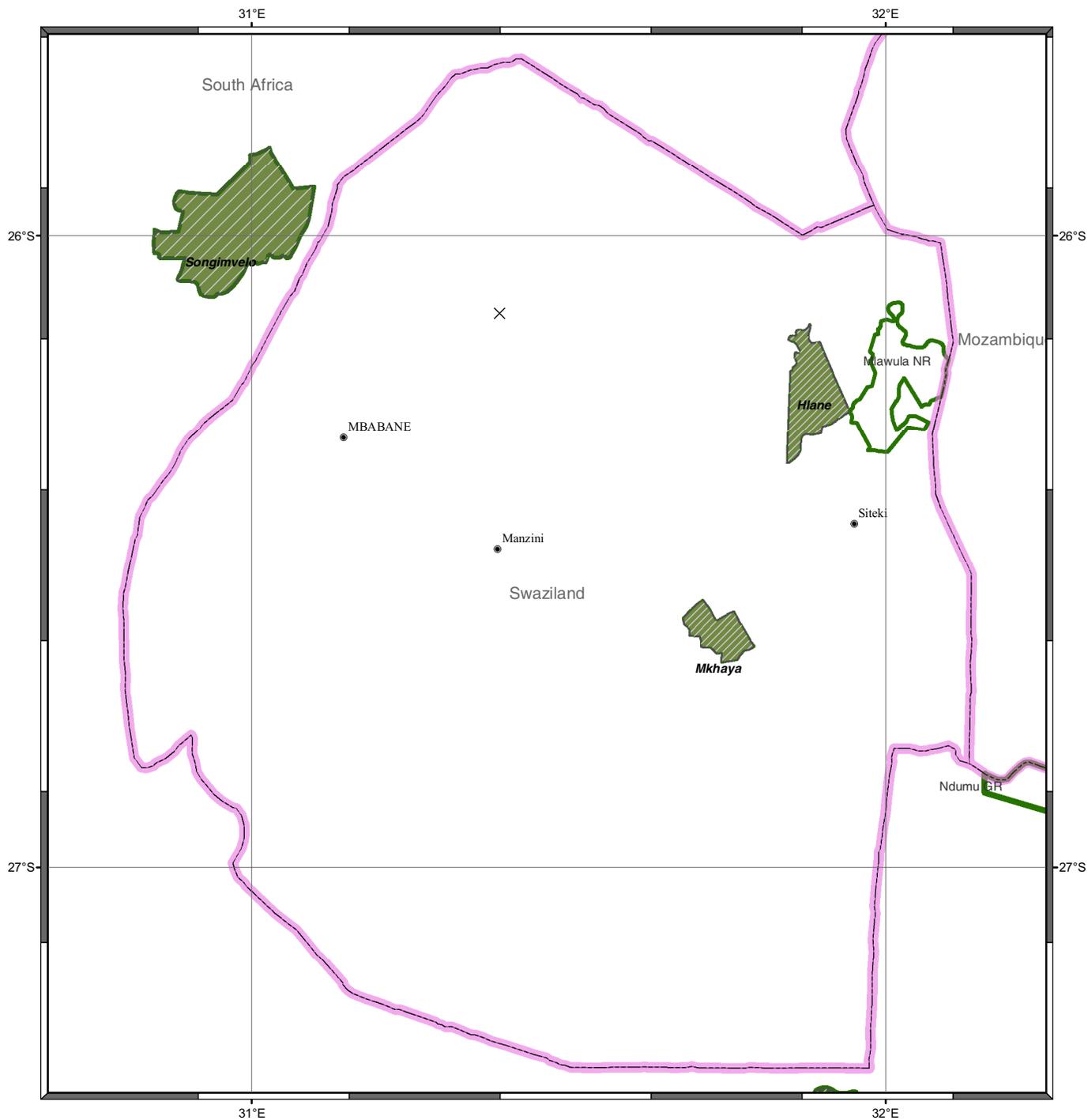
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	187	100.0%
<b>TOTAL</b>	<b>187</b>	

## SWAZILAND: ELEPHANT ESTIMATES

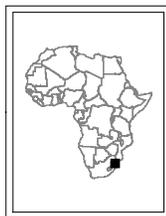
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Hlane Royal National Park	IR1	A	2002	20		Reilly pers. comm., 2002	142	31.9 E	26.2 S
Mkhaya Nature Reserve	IR1	A	2002	19		Reilly pers. comm., 2002	65	31.7 E	26.6 S

# Swaziland

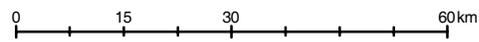
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
Elephant Range	
	Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# Z A M B I A

## General Statistics

Country Area: 752,610 km<sup>2</sup>  
Range Area (% of country): 208,072 km<sup>2</sup> (28%)  
Protected area coverage (% of country): 31%  
Protected range (% of known and possible range in protected areas): 25%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

In the first half of the 20<sup>th</sup> century, various writers described elephants as scarce in most of Zambia, with the exception of the Luangwa Valley and Mweru Marsh (Johnston, 1897; Barns, 1923; Jordan, 1959). The first estimate of numbers was given by Pitman (1934), who believed the country's population to have increased threefold since 1900 to 12,000 in 1934, and estimated about 7,000 in the Luangwa Valley alone. In the mid 1930s, the prevalence of crop raiding incidents prompted colonial authorities to establish an elephant control programme (Langham, 1953). Later in that decade, the country's population was estimated at over 15,000 (Grimwood *et al.*, 1958).

In 1951, Poles (1951) estimated the population in the North and South Luangwa National Parks, and the Munyamadzi corridor that adjoins the two, at 3,430 elephants. The first aerial survey of Luangwa Valley, conducted in 1964, put the population at 18,500 (Uys, 1966). A more intensive survey of the same area two years later gave an estimate of 23,200 with 90% confidence limits of  $\pm 2,200$  (Dean and Dowsett, 1966), and another in 1973 returned an estimate of  $56,000 \pm 9,000$  (Caughley and Goddard, 1975). By 1979 the estimate was  $33,000 \pm 7,500$ , and relatively high carcass ratios were recorded (Douglas-Hamilton *et al.*, 1979).

Elephant hunting was banned in 1983, but poaching for ivory reportedly increased thereafter (National Parks and Wildlife Service, 1992). Confiscated ivory was auctioned to generate revenue for anti-poaching operations in 1984 (National Parks and Wildlife Service, 1992). Survey activity has since been irregular in frequency, methodology and areas covered, but a 1996 aerial survey of the Luangwa Valley put the population at  $16,300 \pm 5,200$  (Jachmann and Kalyocha, 1994).

## Range

The shape of the range map for Zambia has not changed since the last AED report, other than in the categorization of all areas surveyed since the 1990s as **known** range. All areas beyond surveyed boundaries, which originate from the African Elephant Database 1995, have been retained as **possible** range. In view of recent events in Zambian conservation (see under Issues below), it is not known whether the map remains accurate, and work is therefore needed to establish the current limits of elephant range in the country.

## Surveys and Data

There has not been a nationwide count of Zambia's elephants since 1996. New surveys since the AED 1998 report have not covered entire ecosystems, and errors may have thus been introduced through under- or over-counting. In addition, areas surveyed have not always been the same in consecutive surveys, which makes it difficult to make comparisons across years.

Surveys since the last report include aerial sample counts conducted in the Central Luangwa Valley (Jachmann and Phiri, 1999a) and Kafue National Park (Fairall and Kampamba, 2001); aerial sample and total counts in North Luangwa (Aucamp, 2000; van der Westhuizen, 2001); and a stratified aerial sample count in South Luangwa (Dunham and Simwanza, 2002).

In Kafue National Park, a 2001 aerial sample count returned an estimate of  $2,194 \pm 5,590$ , which replaces a 1997 aerial sample count result of  $4,482 \pm 3,222$ . In North Luangwa National

Park, an aerial total count conducted in 2000 gave an estimate of 1,599. However, a more recent estimate of  $3,750 \pm 1,076$  from a 2001 aerial sample count has been used to replace the 1996 aerial sample count estimate of  $3,033 \pm 2,252$  reported in the AED 1998. Ground line-transect surveys of Mumbwa and Namwala Game Management Areas returned estimates of  $1539 \pm 3017$  and  $216 \pm 411$  respectively (Jachmann, 2000). These figures replace aerial sample count estimates of  $124 \pm 229$  and zero respectively (Zyambo, 1997).

In South Luangwa National Park, an estimate  $4,459 \pm 1,519$  from a 2002 aerial sample count replaces the result of  $7,942 \pm 2,930$  from a 1996 survey. While a recent report suggests that the population in Luangwa may be stable, it noted a northward movement of elephants into North Luangwa, where an effective law enforcement programme may afford significantly more protection than surrounding areas. As a result, the density of elephants in North Luangwa National Park is currently believed to be the highest in the country (CITES Panel of Experts on the African Elephant, 2002).

### ***Cross-border Movements***

Elephant range in southwestern Zambia is contiguous with range in northern Botswana, northwest Matabeleland in Zimbabwe, the Caprivi Strip in Namibia, and possibly the Luiana Reserve in Angola (Mwiya, 1996). Elephant movement also occurs between Zambia, Zimbabwe and Mozambique in the Zambezi Valley, as well as between North Luangwa and Kasungu National Park in Malawi (Jachmann and Bell, 1985). It is not known whether elephants still move between northern Zambia and the Democratic Republic of Congo

### ***Current Issues***

In 2000 the former Zambia National Parks and Wildlife Service was reorganized into a new parastatal body, the Zambia Wildlife Authority (ZAWA). The transition process was slowed by limited resources and resulted in the retrenchment of half of the law enforcement staff and the virtual cessation of field operations for nearly a year. A consequence of this was an increase elephant poaching in several areas for the duration of the transition period, with an estimated 156 elephants killed in central Kafue alone. In addition, an indefinite ban on all safari hunting imposed in 2001 resulted in a further decline in enforcement levels and the loss of income from concession and trophy fees. While the government agreed to pay ZAWA salaries until such time as it becomes self-sufficient, the authority currently has insufficient operational resources to conduct effective wildlife monitoring. Only donor-assisted operations, such as the North Luangwa Conservation Programme (NLCP), the South Luangwa Area Management Unit (SLAMU), and the Kasanka Trust, continued their operations through the transition (CITES Panel of Experts on the African Elephant, 2002).

In 2002, Zambia submitted a proposal to CITES to downlist its elephant population and to be allowed to conduct an international one-off sale of its legally-acquired ivory stocks. Based on the findings of the CITES Panel of Experts (CITES Panel of Experts on the African Elephant, 2002) this proposal was turned down at the Twelfth Meeting of the Conference of the Parties to CITES, held in Santiago in November 2002.

While over 35% of Zambia's land surface is gazetted with some form of protection, lack of resources may eventually lead to the loss of the very resources that these areas were meant to conserve. One new approach being taken to support the protected areas network of Zambia is the concession of protected area management to private sector operators. The success of this approach will be better assessed in future years.

## Summary totals for Zambia

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	48	0	0	0
Direct Sample Counts and Reliable Dung Counts	12,409	6,961	6,961	0
Informed Guesses	0	0	670	0
Other Guesses	0	0	0	235
<b>TOTAL</b>	<b>12,457</b>	<b>6,961</b>	<b>7,631</b>	<b>235</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	2,399	1.2%
Direct Sample Counts & Reliable Dung Counts	102,791	49.4%
Informed Guesses	3,165	1.5%
Other Guesses	4,184	2.0%
Unassessed Known Range	7,752	3.7%
Unassessed Possible Range	87,779	42.2%
<b>TOTAL</b>	<b>208,070</b>	

## Age of range data

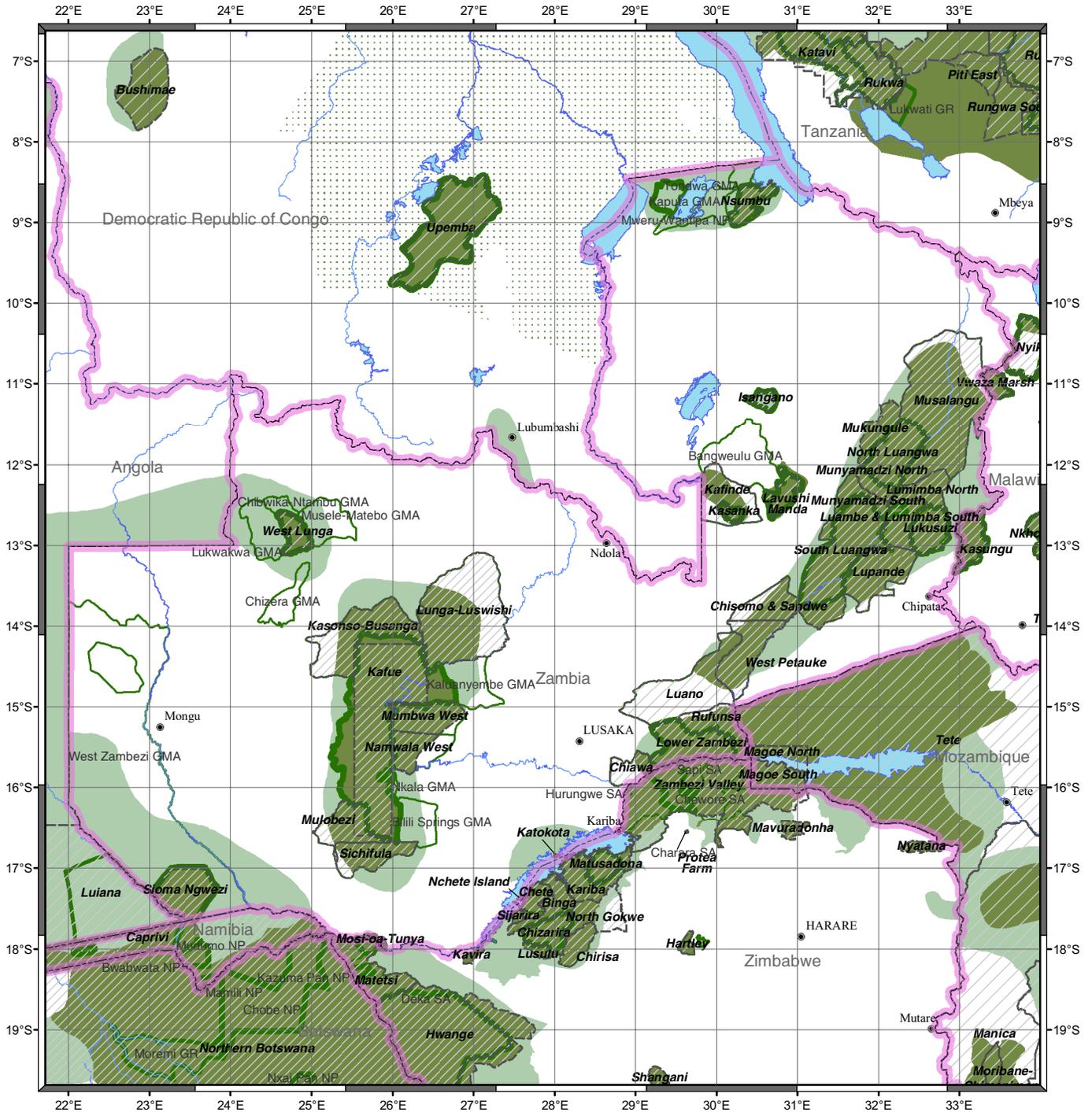
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	701	0.3%
1993-1995	92,905	44.7%
1996-1998	109,141	52.5%
Post-1998	5,323	2.6%
<b>TOTAL</b>	<b>208,070</b>	

## ZAMBIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Chiawa Game Management Area	AS2	B	1996	48	102	Phiri, 1996	900	28.9 E	15.8 S
Chisomo & Sandwe Game Management Area	AS2	B	1999	128	155	Jachmann and Phiri, 1999a	750	30.9 E	13.8 S
Isangano National Park	GT1	A	1993	3		Tembo, quest. reply, 1993	840	30.6 E	11.2 S
Kafinde Game Management Area	IG3	E	1991	50		Tembo, quest. reply, 1993	3,860	30.1 E	12.4 S
Kafue National Park	AS3	B	2001	2,194	5,590	Fairall and Kampamba, 2001	16,929	25.9 E	15.2 S
Kasanka National Park	DC2	E	1991	76	9	Jachmann and Phiri, 1999b	390	30.2 E	12.6 S
Kasonso-Busanga Game Management Area	AS2	B	1997	0		Zyambo, 1997	7,780	25.6 E	14.1 S
Katokota Game Ranch	AT3	E	1991	19		Tembo, quest. reply, 1993	15	28.0 E	16.8 S
Lavushi Manda National Park	IG3	E	1991	15		Tembo, quest. reply, 1993	1,500	30.8 E	12.4 S
Lower Zambezi National Park	AS2	B	1996	232	457	Phiri, 1996	4,092	29.7 E	15.5 S
Luambe & Lumimba South National Park and Game Management Area	AS2	B	1999	1,053	551	Jachmann and Phiri, 1999a	2,415	32.3 E	12.7 S
Luano Game Management Area	IG3	D	1996	150		Jachmann, 1996	8,930	29.6 E	14.8 S
Lukusuzi National Park	AS2	B	1994	110	190	Jachmann and Kalyocha, 1994	2,720	32.6 E	12.8 S
Lumimba North Game Management Area	AS3	B	2001	114	214	van der Westhuizen, 2001	2,105	32.6 E	12.3 S
Lunga-Luswishi Game Management Area	AS2	B	1997	0		Zyambo, 1997	13,340	26.9 E	13.8 S
Lupande Game Management Area	AS2	B	2002	975	586	Dunham and Simwanza, 2002	4,959	32.0 E	13.3 S
Mosi-oa-Tunya National Park	AT3	E	1991	19		Tembo, quest. reply, 1993	66	25.8 E	17.9 S
Mukungule Game Management Area	AS3	B	2001	156	112	van der Westhuizen, 2001	1,910	32.0 E	11.6 S
Mulobezi Game Management Area	AS2	B	1997	0		Zyambo, 1997	3,420	25.4 E	16.5 S
Mumbwa West Game Management Area	GS3	B	2000	2,435	3,017	Jachmann, 2000	1,220	26.4 E	15.1 S
Munyamadzi North Game Management Area	AS3	B	2001	189	274	van der Westhuizen, 2001	1,092	31.9 E	12.3 S
Munyamadzi South Game Management Area	AS2	B	1999	919	417	Jachmann and Phiri, 1999a	2,200	31.7 E	12.5 S
Musalangu Game Management Area	AS3	B	2001	1,121	898	van der Westhuizen, 2001	17,350	32.8 E	11.2 S
Namwala West Game Management Area	GS3	B	2000	216	411	Jachmann, 2000	540	26.2 E	15.5 S
Nchete Island Wildlife Sanctuary	AT3	E	1991	49		Tembo, quest. reply, 1993	25	27.6 E	17.4 S
North Luangwa National Park	AS3	B	2001	3,750	1,076	van der Westhuizen, 2001	4,636	32.2 E	11.9 S
Nsumbu National Park	IR1	A	1998	45		Saiwana pers. comm., 1998	2,063	30.4 E	8.8 S
Rufunsa Game Management Area	AS3	B	1996	0		Phiri, 1996	2,328	30.0 E	15.2 S
Sekula Island Wildlife Sanctuary	AT3	E	1991	7		Tembo, quest. reply, 1993	10	27.5 E	17.4 S
Sichifula Game Management Area	AS2	B	1997	374	686	Zyambo, 1997	3,600	25.7 E	16.8 S
Sioma Ngwezi National Park	AS3	B	1996	0	0	Mwiya, 1996	5,276	23.4 E	17.3 S
South Luangwa National Park	AS2	B	2002	4,459	1,519	Dunham and Simwanza, 2002	8,448	31.6 E	13.1 S
West Lunga National Park	AS3	D	1996	520		Phiri pers. comm., 1998	1,684	24.8 E	12.8 S
West Petauke Game Management Area	AS2	B	1999	897	1,399	Jachmann and Phiri, 1999a	905	30.3 E	14.3 S

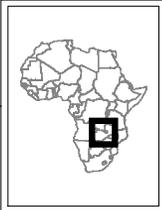
# Zambia

## Elephant Range, Input Zones and Protected Areas

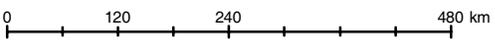


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**



# Z I M B A B W E

## **General Statistics**

Country Area: 390,580 km<sup>2</sup>  
Range Area (% of country): 113,602 km<sup>2</sup> (29%)  
Protected area coverage (% of country): 13%  
Protected range (% of known and possible range in protected areas): 23%  
CITES Appendix: II  
Listing Year: 1997

## **Historical Background**

It is thought that ivory exploitation during the 19<sup>th</sup> century left only a few small populations in Zimbabwe by the start of the 20<sup>th</sup> century. Laws passed in 1899, 1906 and 1929 to control hunting enabled these populations to recover (Cumming, 1983). In 1930, there were an estimated 5,500 elephants in the country (Cumming, 1981) and by 1960 the estimate had increased to approximately 30,000. Despite the removal over the next 30 years of a recorded 47,000 elephants, mainly through culling but also in problem animal control, tsetse control, safari hunting and illegal hunting (Martin, 1992), the population estimate stood at 68,000 in 1994 (Department of National Parks and Wildlife Management, 1997b). While earlier population estimates were partly subjective, all surveys since 1980 have been systematic and comparable, and their results document a continued increase in numbers (Price Waterhouse, 1996).

At the Tenth Meeting of the Conference of the Parties to CITES, held in Harare in 1997, Zimbabwe had its elephant population transferred to Appendix II, with an experimental one-off quota of 20,000 kg for the export of raw ivory to Japan being permitted subject to strict conditions (World Conservation Monitoring Centre, 2003).

## **Range**

Elephants in Zimbabwe are divided into four populations, largely in and around protected areas along the boundaries with neighbouring countries. Most of the central Highveld and eastern highlands are extensively settled and farmed, and have long been devoid of elephants as a result. However, the amount of land available to elephants since the last AED report has remained constant (Government of Zimbabwe, 2002).

The range map has been updated with information from the latest national elephant census (Dunham and Mackie, 2002), with all the areas surveyed being categorized as **known** range. Areas shown as **possible** range have been retained from the 1998 report, and are likely to be used by elephants only seasonally.

## **Surveys and Data**

A national survey of all major elephant areas was conducted in Zimbabwe in 2001 (Dunham and Mackie, 2002). Only a small number of private farms and ranches were left out of the survey, although informed guesses were provided for these. Estimates from this national survey replace estimates shown in the AED 1998 report, which largely originated from a national census conducted between 1995 and 1996 (Davies, 1996; Mackie, 1998; Gibson, 1997a).

Between this and the previous AED report, estimates in Hwange National Park have changed from 31,613±6,962 in 1997 to 44,492±5,770 in 2001. In 1997, the Gonarezhou National Park population was estimated at 3,741±1,687, while the 2001 estimate was 4,992±1,577. In Chizarira National Park the estimate has gone from 3,626±762 in 1997 to 5,011±1,171. These, together with other changes in estimates, have resulted in the number of elephants reported under the **definite** category to increase from 63,070 in the AED 1998 report to 81,555 in this report.

**Cross-border Movements**

All of Zimbabwe's elephant populations are located along the border with neighbouring countries, and movements can be expected to take place across of all them. The population in Hwange national park and surrounding areas is part of a much larger population that spans across the borders of Zimbabwe, Botswana, Namibia (Craig, 1996a) and perhaps also Angola. Elephants are also known to move between Zimbabwe, Zambia and Mozambique along the Zambezi Valley in the north, and to Botswana and South Africa in the south (Selier *et al.*, 2002).

**Current Issues**

In view of the importance of the transboundary population in western Zimbabwe, and since cross-border movement of elephants can affect the precision of surveys conducted at the national level, it would be desirable for the timing and methodology of aerial surveys in such areas to be coordinated across the international borders with Botswana and Namibia. This was done in the mid-1990s for the ELESMAF project (Craig, 1996a), but given the strength of the wildlife monitoring programmes in all three countries, it is unfortunate that such coordination has not continued.

In 2001 Gonarezhou National Park was demarcated for resettlement under Zimbabwe's ongoing land reform programme, but the move conflicted with the country's commitment to participate in the Greater Limpopo Transfrontier Park initiative, which is to link Gonarezhou with the Limpopo National Park in Mozambique and Kruger National Park in South Africa. As a result of this conflict, the resettlement plan was rescinded within days of its initial approval (Anon., 2001). Nevertheless, settlement is reported to be taking place within the park, and this may compromise the success of the planned Transfrontier Park (Zuyilu, 2002).

A proposal by Zimbabwe to be allowed to conduct a second international sale of 10,000 kg of legally acquired ivory was rejected by the Twelfth Meeting of the Conference of the Parties to CITES held in Santiago in 2002. Zimbabwe's annotation to commercially export elephant hides, as well as elephant leather goods and ivory carvings for non-commercial purposes, was however retained (World Conservation Monitoring Centre, 2003). Zimbabwe has a hunting export quota of 800 tusks (400 animals) *per annum* (CITES Secretariat, 2003).

## Summary totals for Zimbabwe

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	236	0	0	0
Direct Sample Counts and Reliable Dung Counts	81,130	7,039	7,039	0
Informed Guesses	189	0	334	91
Other Guesses	0	0	0	200
<b>TOTAL</b>	<b>81,555</b>	<b>7,039</b>	<b>7,373</b>	<b>291</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	2,999	2.6%
Direct Sample Counts & Reliable Dung Counts	64,991	57.2%
Informed Guesses	6,747	5.9%
Other Guesses	2,422	2.1%
Unassessed Known Range	435	0.4%
Unassessed Possible Range	35,998	31.7%
<b>TOTAL</b>	<b>113,592</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1996-1998	100,126	88.1%
Post-1998	13,466	11.9%
<b>TOTAL</b>	<b>113,592</b>	

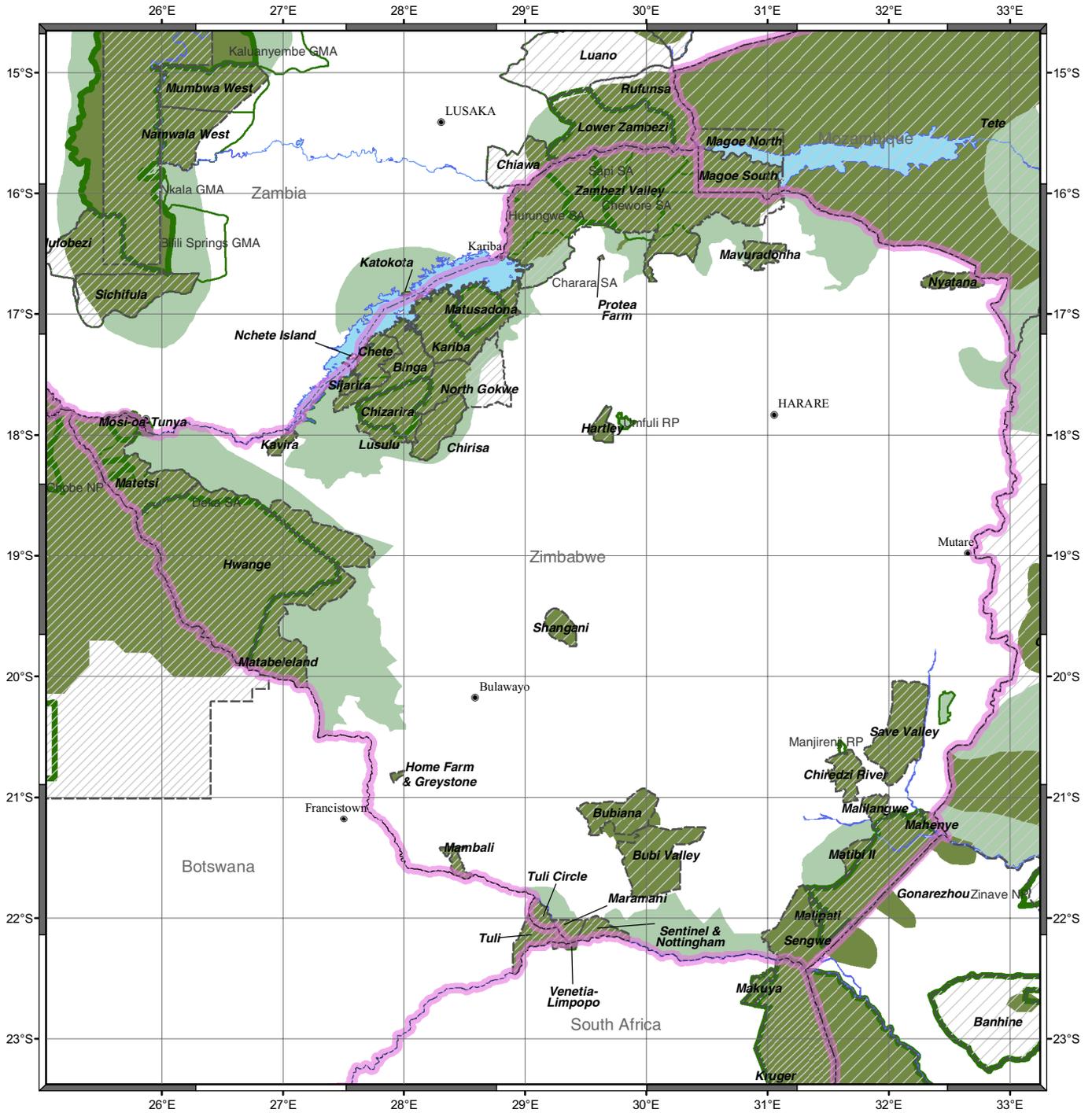
## ZIMBABWE: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Binga Communal Lands	AS2	B	2001	836	385	Mackie, 2002a	2,217	27.9 E	17.4 S
Bubi Valley Conservancy	IG3	D	2001	53		Dunham and Mackie, 2002	2,895	30.1 E	21.5 S
Bubiana Conservancy	IG3	D	2001	50	50*	Dunham and Mackie, 2002	1,772	29.8 E	21.1 S
Chete Safari Area	AS2	B	2001	1,219	542	Mackie, 2002a	1,260	27.8 E	17.4 S
Chiredzi River Conservancy	GT1	A	2001	28		Dunham and Mackie, 2002	895	31.6 E	20.8 S
Chirisa Safari Area	AS2	B	2001	1,977	1,091	Mackie, 2002a	1,529	28.3 E	17.9 S
Chizarira National Park	AS2	B	2001	5,011	1,171	Mackie, 2002a	2,084	27.9 E	17.8 S
Gonarezhou National Park	AS2	B	2001	4,987	1,577	Dunham and Mackie, 2002	4,987	31.9 E	21.6 S
Hartley Safari Area	IG3	D	2001	100	20*	Dunham and Mackie, 2002	445	29.6 E	17.9 S
Home Farm & Greystone Ranches	IG3	D	2001	3	1*	Dunham and Mackie, 2002	60	27.9 E	20.8 S
Hwange National Park and Safari Area	AS2	B	2001	44,492	5,770	Dunham and Mackie, 2002	12,900	26.6 E	19.1 S
Kariba Communal Lands	AS2	B	2001	2,373	802	Mackie, 2002a	3,224	28.4 E	17.1 S
Kavira Forest Land	IG3	D	2001	100		Dunham and Mackie, 2002	287	27.0 E	18.1 S
Lusulu	AS2	B	2001	33	63	Mackie, 2002a	543	27.8 E	18.0 S
Mahenye Ward	AS2	B	2001	0		Dunham and Mackie, 2002	221	32.4 E	21.2 S
Malilangwe Conservancy	AT3	A	2001	116		Dunham and Mackie, 2002	424	31.9 E	21.1 S
Malipati Safari Area	AS2	B	2001	5	9	Dunham and Mackie, 2002	175	31.4 E	21.9 S
Mambali Communal Lands	AT3	A	2001	10		Dunham and Mackie, 2002	327	28.4 E	21.5 S
Maramani Communal Lands	AT3	A	2001	0		Dunham and Mackie, 2002	367	29.4 E	22.1 S
Matabeleland Forest Area	AS2	B	2001	553	496	Dunham and Mackie, 2002	2,344	27.3 E	18.8 S
Matabeleland Communal Lands	AS2	B	2001	64	79	Dunham and Mackie, 2002	3,110	27.1 E	19.6 S
Matetsi Safari Complex	AS2	B	2001	4,201	1,670	Dunham and Mackie, 2002	4,399	25.7 E	18.2 S
Matibi II	AS2	B	1996	33	34	Davies et al., 1996	400	31.7 E	21.5 S
Matusadona National Park	AS2	B	2001	1,716	603	Mackie, 2002a	1,413	28.6 E	17.0 S
Mavuradonha Wilderness Area	AS2	B	2001	13	26	Dunham and Mackie, 2002	617	30.9 E	16.5 S
North Gokwe Communal Lands	AS2	B	2001	791	621	Mackie, 2002a	3,082	28.5 E	17.5 S
Nyatana Wildlife Management Area	IG3	D	2001	150		Dunham and Mackie, 2002	653	32.5 E	16.7 S
Protea Farm	IG3	D	2001	7		Dunham and Mackie, 2002	14	29.6 E	16.5 S
Save Valley Conservancy	AS1	B	2001	535	318	Dunham and Mackie, 2002	3,484	32.1 E	20.4 S
Sengwe Communal Land	OG3	E	2001	200		Dunham and Mackie, 2002	2,422	31.3 E	22.1 S
Sentinel & Nottingham Ranches	AT3	A	2001	82		Dunham and Mackie, 2002	568	29.6 E	22.1 S
Shangani Ranch	IG3	D	2001	60	20*	Dunham and Mackie, 2002	628	29.3 E	19.6 S
Sijarira Forest Area	AS2	B	2001	33	33	Mackie, 2002a	270	27.5 E	17.6 S
Tuli Circle Safari Area	AT3	A	2001	0		Dunham and Mackie, 2002	416	29.1 E	22.0 S
Zambezi Valley	AS2	B	2001	19,297	2,493	Mackie, 2002b	16,476	29.6 E	15.9 S

\* Range of informed guess

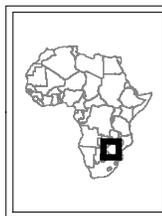
# Zimbabwe

## Elephant Range, Input Zones and Protected Areas

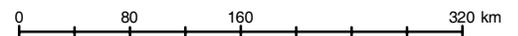


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# WEST AFRICA

## **General Statistics**

Total Area: 5,096,660 km<sup>2</sup>  
Range Area (% of region): 219,868 km<sup>2</sup> (4%)  
Protected area coverage (% of region): 2%  
Protected range (% of known and possible range in protected areas): 40%

## **Historical Background**

Partly as a result of its geographical location, the West Africa region has a longer and more extensive history of contacts with outside cultures than the other regions. Elephants were widely distributed in West Africa in classical times (Scullard, 1974), and for centuries ivory was transported to ports on the Mediterranean (Wilson and Ayerst, 1976), and later to the Atlantic, where it was sold to foreign traders. Colonial penetration inland began in the 19<sup>th</sup> century, and ivory exports from the region increased until elephant populations collapsed early in the 20<sup>th</sup> century (Roth and Douglas-Hamilton, 1991). Human populations grew exponentially in the 20<sup>th</sup> century, and habitat conversion and fragmentation is estimated to have reduced elephant range to 7% of its extent in 1900 (Roth and Douglas-Hamilton, 1991). Several populations have disappeared since the 1980s, including those in Mauritania and all but one in Mali (Gourma) and Senegal (Niokolo-Koba).

## **Range**

Elephant range in West Africa is found in small fragments scattered across the region, in forest, savanna and other habitats. It is the only region outside Central Africa where a sizeable proportion of elephant range occurs in tropical forests. Elephant range is smaller in West Africa than in any other region, covering approximately 221,000 km<sup>2</sup>. Perhaps as a result of the reduced extent and increased fragmentation of range, elephant distribution is better known in West Africa than elsewhere, with **known** range representing 74% of the total range estimate.

West Africa is also the only region where a higher proportion of elephant range (60%) is found inside gazetted areas than outside. Approximately 76% of gazetted range is within protected areas of IUCN categories I to IV.

While West Africa has the highest proportion of recent range information of any region (nearly 50%), over 21% of the range information for the region (in terms of km<sup>2</sup>) is more than 10 years old.

## **Surveys and Data**

Estimates of elephant numbers are available for 56% of elephant range in West Africa, making it the region with the largest proportion of range with population estimates. However, 53% of the range covered by estimates is in the form of guesses, leaving the area covered by systematic surveys at just over 26% of total elephant range.

Numbers in all four categories of elephant numbers have increased since the last report. The **definite** number has gone from 2,489 in the AED 1998 to 5,458 in this report, while the number in the **probable** category has increased from 644 to 1,188. These changes, however, do not necessarily suggest an actual increase in the numbers of elephants, as estimates have been obtained for a number of previously unsurveyed areas (e.g. the southern half of the Pendjari Biosphere Reserve in Benin). In other areas, such as Yankari National Park in Nigeria and Parc National "W" in Niger, the results of systematic surveys have replaced informed or other guesses. Overall, the area covered by estimates has increased from 128,000 km<sup>2</sup> in the AED 1998 report to nearly 178,500 km<sup>2</sup> reported here.

In April-May 2003, the cross-border population spanning Benin, Burkina Faso, Niger and Togo was surveyed simultaneously for the first time, but results were being analysed at the time of writing.

### **Current Issues**

Many elephant populations in the region are probably not viable because they are genetically isolated, their numbers are small, and their sex ratios and age structures have been distorted by hunting. The impact of poaching has been severe in two large national parks, Niokolo Koba in Senegal and Taï in Cote d'Ivoire, both of which have reported steep declines in elephant numbers during the last 25 years despite having received large amounts of foreign aid.

The common challenges faced by West African countries are linked to small and genetically isolated populations surrounded by growing human populations. Human-elephant conflict is a pervasive problem throughout the region. The successful conservation and management of these fragile populations calls for a coordinated and integrated approach. In response to this need, West Africa became the first region on the continent to develop a regional strategy for the conservation of elephants (African Elephant Specialist Group, 1999). Building on the framework laid by the West Africa Elephant Conservation Strategy, many countries in the region have developed, or are in the process of developing, national strategies of their own. In addition, the subregion has recognised the importance of securing habitats in a number of important cross-border areas, which are critical to the survival of important elephant populations in West Africa. To this end, several West African range states have recently gathered to prepare action plans for a number of these critical transfrontier areas. The implementation of these plans will be fundamental to the long-term survival of these populations.

West African elephants may have diverged from the rest of Africa's elephants more than two million years ago (Eggert *et al.*, 2002), and may constitute a separate taxon. If this were confirmed by more extensive genetic sampling, the implications would make securing the long-term survival of the small and fragmented remaining populations of elephants in West Africa all the more challenging.

### Summary totals for West Africa

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	661	0	0	0
Direct Sample Counts and Reliable Dung Counts	4,420	1,034	1,034	0
Other Dung Counts	86	154	89	0
Informed Guesses	291	0	1,916	706
Other Guesses	0	0	0	2,792
<b>TOTAL</b>	<b>5,458</b>	<b>1,188</b>	<b>3,039</b>	<b>3,498</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	2,673	1.1%
Direct Sample Counts & Reliable Dung Counts	30,258	12.9%
Other Dung Counts	815	0.3%
Informed Guesses	87,710	37.4%
Other Guesses	20,579	8.8%
Unassessed Known Range	36,212	15.4%
Unassessed Possible Range	41,619	17.7%
Doubtful Range	14,936	6.4%
<b>TOTAL</b>	<b>234,802</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	22,511	9.6%
1988-1992	37,102	15.8%
1993-1995	35,918	15.3%
1996-1998	25,152	10.7%
Post-1998	114,119	48.6%
<b>TOTAL</b>	<b>234,802</b>	

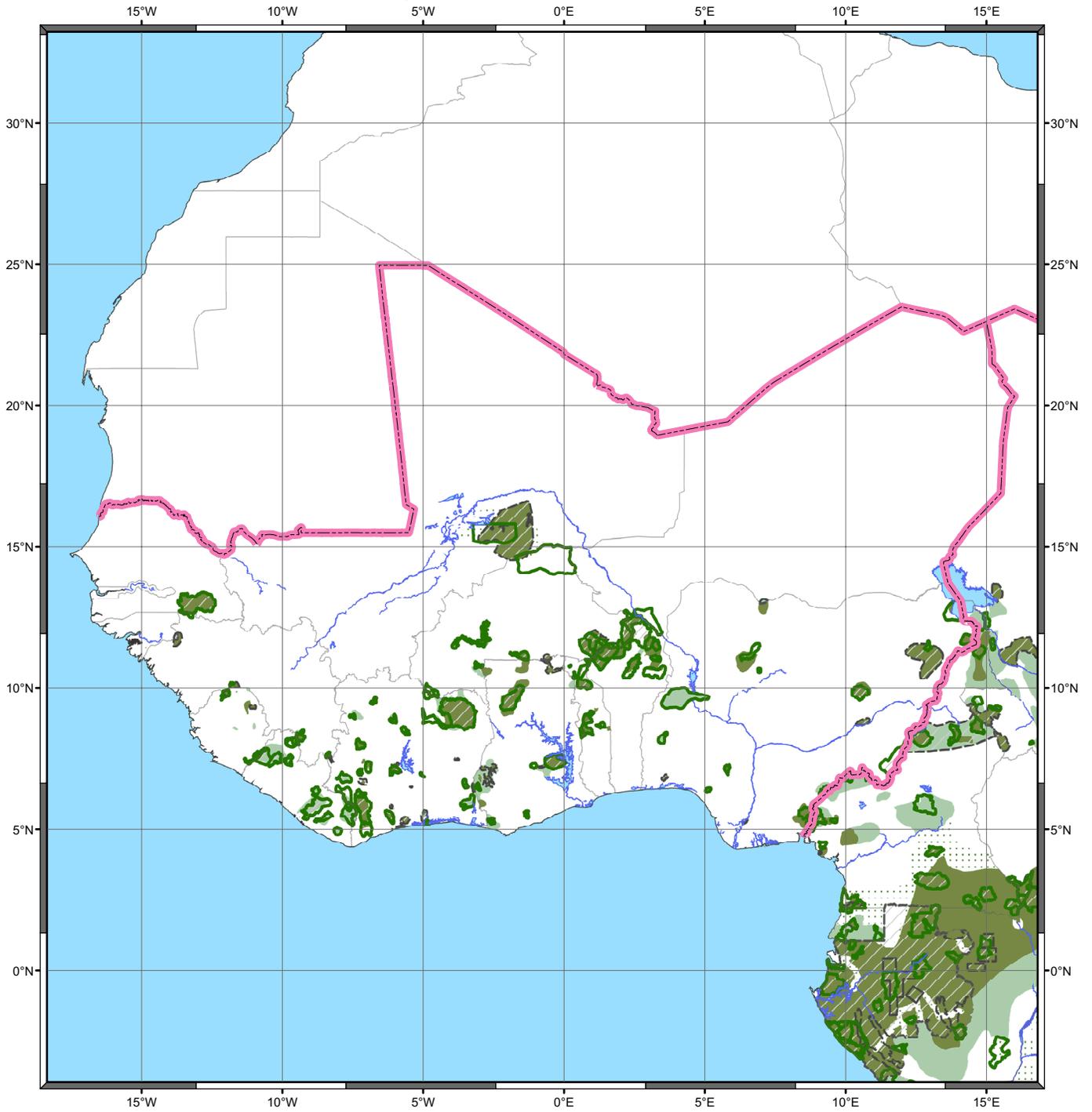
## Country and regional totals for West Africa

COUNTRY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE	COUNTRY AREA	RANGE AREA
Benin	1,101	504	504	0	112,620	17,314
Burkina Faso	2,031	833	1,059	0	274,200	18,834
Côte d'Ivoire	63	0	360	666	322,460	34,415
Ghana	530	428	1,100	303	238,540	31,519
Guinea	0	0	108	140	245,860	2,562
Guinea Bissau	0	0	0	35	36,120	361
Liberia	0	0	0	1,676	111,370	21,151
Mali	322	0	28	25	1,240,000	29,838
Niger	136	214	214	100	1,267,000	2,683
Nigeria	478	0	340	300	923,770	44,067
Senegal	2	0	0	48	196,190	8,396
Sierra Leone	0	0	5	205	71,740	2,894
Togo	4	0	112	0	56,790	5,834
<b>TOTAL*</b>	<b>5,458</b>	<b>1,188</b>	<b>3,039</b>	<b>3,498</b>	<b>5,096,660</b>	<b>219,868</b>

\* Note that totals for the Definite, Probable and Possible categories are derived from pooling variances, as described under the Data Categorization section. As a result, totals do not necessarily match the simple sum of the entries within a category.

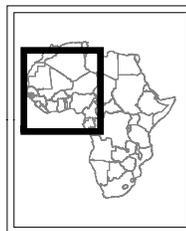
# West Africa

## Elephant Range, Input Zones and Protected Areas

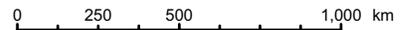


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Regional Boundary		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only





# BENIN

## **General Statistics**

Country Area: 112,620 km<sup>2</sup>  
Range Area (% of country): 17,314 km<sup>2</sup> (15%)  
Protected area coverage (% of country): 24%  
Protected range (% of known and possible range in protected areas): 26%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Benin is relatively small and not heavily forested, and the number and distribution of elephants have probably always been comparatively limited (Sayer and Green, 1984). It was never an important producer of ivory, and exports ceased completely in the early 1920s (Roth and Douglas-Hamilton, 1991).

A nationwide assessment in 1991 recorded two main ranges, one in the centre of the country on the border with Togo, and the other in the north, contiguous with Burkina Faso, Niger and Nigeria (Direction des Eaux, Forêts et Chasses, 1991). The total for Benin, based on a variety of data, was put between 1,120 and 2,410 elephants.

The extreme northwest has always been the most important part of the country for elephants, and includes two major protected areas, namely the Parc National de la Pendjari on the border with Burkina Faso and the Parc National “W,” adjacent to Burkina Faso and Niger. According to the 1991 assessment, these held 500-1,000 and 250-800 elephants respectively (Direction des Eaux, Forêts et Chasses, 1991). Very little was then known about the small populations surviving elsewhere.

The contiguous elephant range of Benin, Burkina Faso and Niger has long been recognized as the largest and most important savanna elephant range in West Africa (Green, 1988; Roth and Douglas-Hamilton, 1991). Elephants have been counted in the Benin component since 1981 (UNDP and FAO, 1981). Apart from differences in methods, the fact that these elephants move freely across international borders on a seasonal basis introduces yet more variation to the data. With that in mind, the 1981 and 1991 data do not suggest any significant change in numbers (Direction des Eaux, Forêts et Chasses, 1991).

## **Range**

Elephants are restricted to the north of Benin, where the vegetation consists largely of savannas.

A number of modifications to the range map have been made since the last report, based on information provided by Tehou (quest. reply, 2002). These include the addition of areas of **known** range between the Djona and Trois Rivières Forest Reserves and the southward extension range in the Pendjari area to coincide with the boundary of the Pendjari Hunting Zone, thus encompassing the entire Pendjari Biosphere Reserve. A strip of range connecting Djona with Alibori Supérieur has been categorized as **possible** range. All remaining areas of range have been categorized as **known**.

It is not known whether these changes in range are due to different quality of information or to the ranging behaviour of elephants in Benin.

## **Surveys and Data**

A sample aerial count was conducted in April 2002 in Park “W”, a transboundary protected area that spans the borders of Benin, Burkina Faso and Niger (ECOPAS, 2002). Although no elephants were sighted in the Benin sector of the park, the estimate for the entire transboundary park has been split into its three constituent sectors in proportion to the amount

of elephant range contributed by each. The resulting estimate of  $156\pm 143$  for Benin replaces a 1998 informed guess of 250.

The same April 2002 aerial survey also provided estimates for the Atakora and Djona hunting zones. Estimates for these areas were not available for the previous AED report, and are therefore new entries in the table of estimates. Tehou and Sinsin (2000) estimated the Djona population at 94 individuals, but as details on methods were not reported, the estimate of  $143\pm 84$  from the aforementioned aerial survey estimate has been used instead.

Annual ground sample surveys using the line transect method have been conducted in the Pendjari Biosphere Reserve between 2000 and 2002 (Sinsin, 2000; 2001; 2002). The results of these surveys range from 428 in 2000 to 2,607 in 2002. The line transect method requires a minimum of 60 sightings, but the number of contacts did not exceed 13 in any of these surveys. In consequence, an estimate of  $1232\pm 466$  from a 2002 aerial sample count of the Pendjari Biosphere Reserve (Rouamba and Hien, 2002) have been used instead to update the table of estimates. This result replaces the informed guess of 150 reported in the AED 1998, which only applied to the Pendjari National Park.

***Cross-border  
Movements***

Benin's elephants are likely to be part of a single, highly mobile transboundary population, spanning the borders of Benin, Burkina Faso, Niger and Togo.

***Current Issues***

The prevalence of livestock in the Parc W complex, currently estimated at 50,000 animals, together with ongoing encroachment by cotton farmers, pose important threats to habitats within the park. While human-elephant conflict is not reported to be a major problem in Benin, it is acknowledged that local populations derive no benefits from living with wildlife.

Planning for the development of a national elephant conservation strategy is currently underway, and a proposal to hold a workshop was under review at the time of writing.

### Summary totals for Benin

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	1,101	504	504	0
<b>TOTAL</b>	<b>1,101</b>	<b>504</b>	<b>504</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	8,870	51.2%
Unassessed Known Range	7,328	42.3%
Unassessed Possible Range	1,118	6.5%
<b>TOTAL</b>	<b>17,316</b>	

### Age of range data

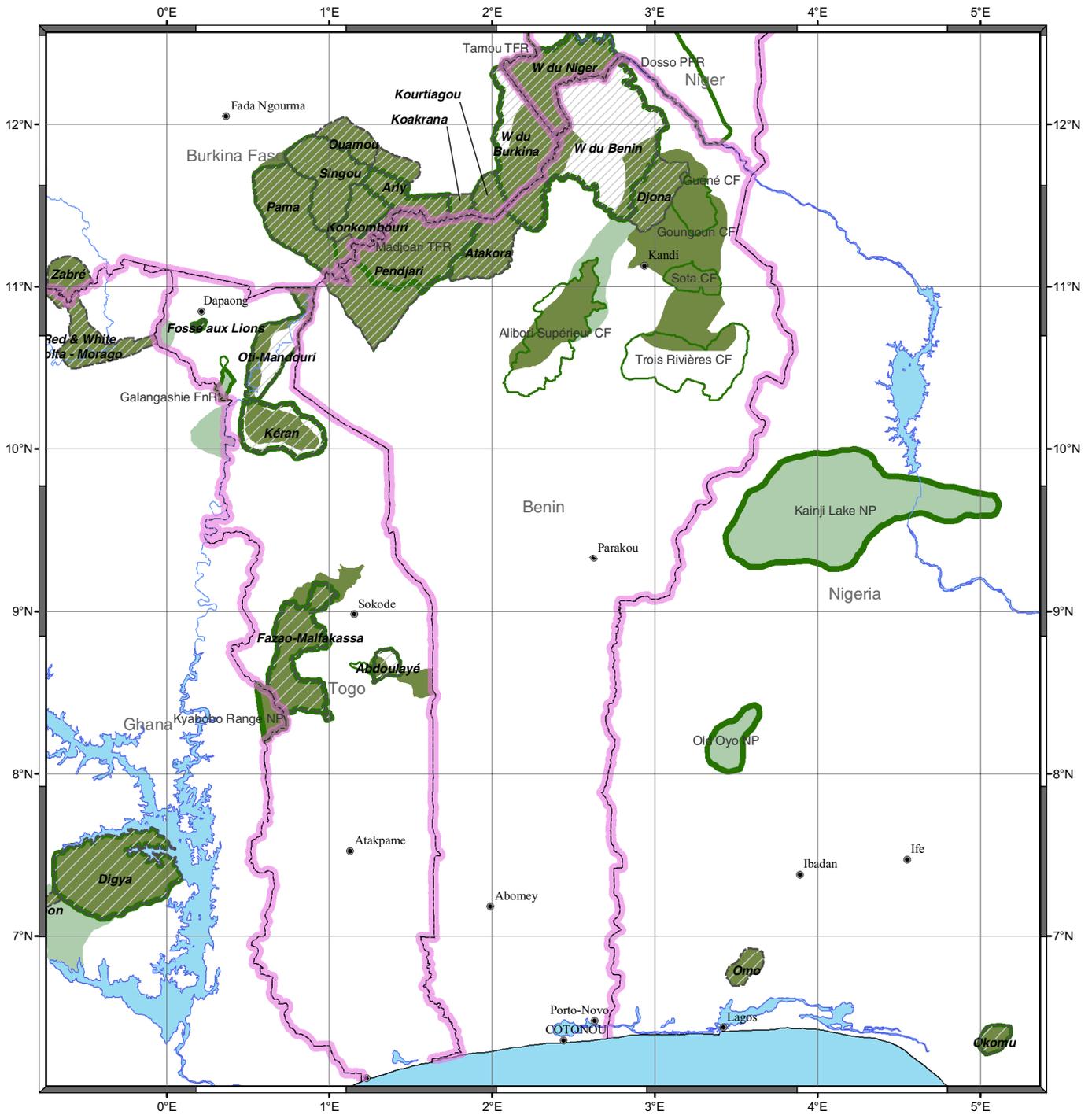
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	1,617	9.3%
Post-1998	15,699	90.7%
<b>TOTAL</b>	<b>17,316</b>	

## BENIN: ELEPHANT ESTIMATES

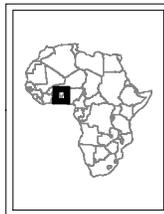
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Atakora Hunting Zone	AS3	B	2002	74	94	ECOPAS, 2002	1,321	2.0 E	11.2 N
Djona Hunting Zone	AS3	B	2002	143	84	ECOPAS, 2002	1,164	3.0 E	11.6 N
Pendjari Biosphere Reserve	AS3	B	2002	1,232	466	Rouamba and Hien, 2002	4,670	1.4 E	11.1 N
W du Benin National Park	AS3	B	2002	156	143	ECOPAS, 2002	5,020	2.6 E	11.9 N

# Benin

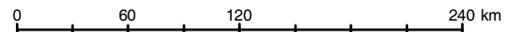
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# BURKINA FASO

## **General Statistics**

Country Area: 274,200 km<sup>2</sup>  
Range Area (% of country): 18,834 km<sup>2</sup> (7%)  
Protected area coverage (% of country): 14%  
Protected range (% of known and possible range in protected areas): 54%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Information on the history of elephants in Burkina Faso is scanty. The southeastern area had abundant wildlife and few people, but elephants were heavily hunted there until 1947 (Spinage, 1985). A 1990-91 review reported that half the country's remaining elephants were to be found in one contiguous block on the borders of Niger and Benin (Direction des Parcs Nationaux, des Réserves de Faune et des Chasses, 1991b), where the range covering the three countries is the biggest savanna elephant range in West Africa (Green, 1988).

In the south-centre of the country, numbers in the Nazinga Game Ranch may have increased from around 300 to about 450 during the 1980s, making it the densest population in Burkina Faso. The population in the Kabore Tambi (formerly Po) National Park, which had been estimated 230, is said to have moved into the nearby Nazinga Ranch because of better protection there. Elephant poaching to supply elephant meat to the Ghanaian market was said to be intense during the 1980s (Dougherty, 1991). Aerial surveys of all the principal elephant ranges carried out between December 1991 and April 1992 returned an estimated grand total of 2,300 (Lacroix, 1992).

## **Range**

Burkina Faso is characterized by a Sahelian climate, and contains some of the most important remaining savanna woodlands in West Africa. Elephant populations are distributed in six areas, mainly in the south.

The information displayed on the range map is virtually unchanged from the AED 1998, except for the seasonal range on the border with Mali in the north, which has been expanded based on satellite tracking of Gourma elephants (Douglas-Hamilton, 2002). All elephant ranges in Burkina Faso have been categorized as **known** range based on recent survey information, except for part of the northern range which does not overlap with the expanded and updated transboundary Gourma range. This area has been classified as **doubtful** range (Douglas-Hamilton, 2002).

## **Surveys and Data**

Aerial sample surveys have been conducted in the Partial Faunal Reserves in the east (Bouché *et al.*, 2000) and Nazinga Game Ranch (Cornelis, 2000), and the results of these replace previous sample counts by Barry and Chardonnet (1998) and Nganga (1998) respectively.

An aerial sample count of the transboundary Park "W" returned an estimate of zero for the Burkina Faso sector of the park (ECOPAS, 2002). However, the overall estimate of 743±306 has been split between the three component sectors (Niger, Benin and Burkina Faso) in proportion to the area of elephant range contributed by each. For the Burkina Faso sector, this translates to an estimate of 237±176. The same survey covered the adjacent Kortiagou Partial Faunal Reserve, but no elephants were seen there either, and the estimate of zero has been retained in the table.

In 2002 two aerial sample counts were conducted in the Mohoun complex in the centre-west of the country (Belemsobgo, 2002a; Belemsobgo, 2002b). The estimates shown on the table are for the more precise (April) survey (Belemsobgo, 2002a), and replace informed guesses

by Chardonnet and Koalo (quest. reply, 1998) for Deux Balé and Dibon (200), and Maro and Tuy Classified Forests (80).

An informed guess has been added for Diefoula Classified Forest (Traore, 1998). The estimates for Bontioli and Zabré by Chardonnet (quest. reply, 1998) have been retained from the AED 1998 report.

### ***Cross-border Movements***

Most of Burkina Faso's elephants are likely to be part of important transboundary populations. Elephants are known to migrate between Gourma in Mali and the Sahel Partial Faunal Reserve in northern Burkina Faso (Chardonnet and Koalo, quest. reply, 1998; Barry and Chardonnet, 1998; Douglas-Hamilton, 2002). Movements also occur between Nazinga Game Ranch, northern Ghana and Togo in the wet season (Jachmann, 1992; Chardonnet and Koalo, quest. reply, 1998; Barry and Chardonnet, 1998; Okoumassou *et al.*, 1998); between Zabré and the Red Volta - White Volta - Morago ecosystem in Ghana (Chardonnet and Koalo, quest. reply, 1998; Okoumassou *et al.*, 1998); and between Côte d'Ivoire and the Diefoula Classified Forest in southwestern Burkina Faso (Chardonnet and Koalo, quest. reply, 1998; Traore, 1998).

### ***Current Issues***

Burkina Faso continues to have some of the largest and best-known elephant populations in West Africa, but largely shares them with other countries. In order to obtain a more reliable picture of the status of elephant populations in the region, surveys of these populations should be carried out simultaneously and in coordination on all sides of the border. A step in this direction was taken in April-May 2002, when the first-ever aerial survey to encompass the transboundary populations of the W complex and environs was undertaken by the CITES MIKE Programme.

In January 2002 a workshop was held in Ouagadougou for the development of a national elephant management strategy for Burkina Faso. A draft strategy document was produced in February 2003 and was under review at the time of writing.

### Summary totals for Burkina Faso

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	2,031	833	833	0
Informed Guesses	0	0	226	0
<b>TOTAL</b>	<b>2,031</b>	<b>833</b>	<b>1,059</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	13,353	69.6%
Informed Guesses	2,125	11.1%
Unassessed Known Range	2,215	11.5%
Unassessed Possible Range	1,141	5.9%
Doubtful Range	365	1.9%
<b>TOTAL</b>	<b>19,199</b>	

### Age of range data

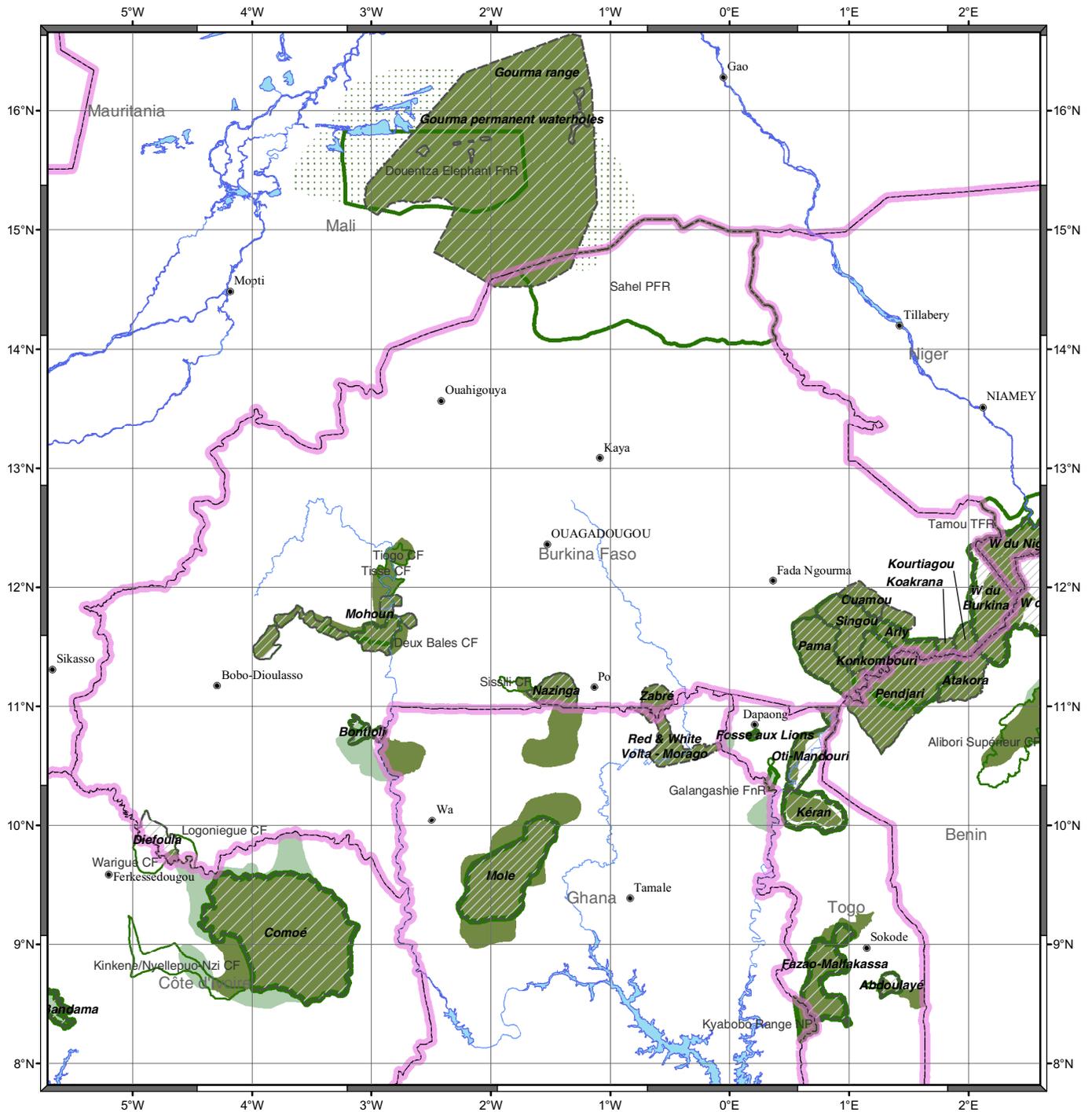
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	10,375	54.0%
Post-1998	8,824	46.0%
<b>TOTAL</b>	<b>19,199</b>	

## BURKINA FASO: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Arly National Park	AS2	B	2000	355	476	Bouché et al., 2000	930	1.4 E	11.5 N
Bontioli Partial and Total Faunal Reserve	IG3	D	1998	50		Chardonnet, quest. reply, 1998	420	3.1 W	10.8 N
Diefoula Classified Forest	IG3	D	1998	26		Traore, 1998	880	4.8 W	9.9 N
Koakrana Hunting Zone	AS2	B	2000	0	0	Bouché et al., 2000	229	1.8 E	11.5 N
Konkombouri Hunting Zone	AS2	B	2000	490	174	Bouché et al., 2000	650	1.2 E	11.4 N
Kourtiagou Partial Faunal Reserve	AS3	B	2002	0		ECOPAS, 2002	2,878	2.0 E	11.5 N
Mohoun Protected Area Complex	AS1	B	2002	541	320	Belemsobgo, 2002b	3,296	3.3 W	11.6 N
Nazinga Game Ranch	AS3	B	2000	350	335	Cornelis, 2000	940	1.5 W	11.1 N
Ouamou Hunting Zone	AS2	B	2000	73	63	Bouché et al., 2000	644	1.1 E	11.9 N
Pagou-Tandougou Hunting Zone	AS2	B	2000	0		Bouché et al., 2000	350	1.4 E	11.7 N
Pama Partial Faunal Reserve	AS2	B	2000	200	166	Bouché et al., 2000	2,755	0.8 E	11.4 N
Singou Partial Faunal Reserve	AS2	B	2000	618	400	Bouché et al., 2000	1,518	1.0 E	11.7 N
W du Burkina National Park	AS3	B	2002	237	176	ECOPAS, 2002	2,878	2.2 E	11.9 N
Zabré Department	IG3	D	1998	150		Chardonnet, quest. reply, 1998	600	0.6 W	11.1 N

# Burkina Faso

## Elephant Range, Input Zones and Protected Areas



**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# CÔTE D'IVOIRE

## General Statistics

Country Area: 322,460 km<sup>2</sup>  
Range Area (% of country): 34,415 km<sup>2</sup> (11%)  
Protected area coverage (% of country): 11%  
Protected range (% of known and possible range in protected areas): 53%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

Elephants were once ubiquitous in Côte d'Ivoire, which was one of the largest sources of West African ivory during the colonial period. At the turn of the 20<sup>th</sup> century, the conversion of forest for the cultivation of cash crops such as coffee and cocoa began in earnest. Of the country's original extent of rainforest, 75% remained in 1956, 33% in 1974, and only 10% in 1985 (Merz and Hoppe-Dominik, 1991). In 1974 elephants were still found in many parts of the country, but the majority were concentrated in the southwestern forested zone (Roth *et al.*, 1984).

By 1980, forest conversion had fragmented the distribution of elephants into more than 26 separate and isolated relict populations, the most important being that in the Taï National Park near the border with Liberia. The total number of elephants living in forest was estimated in 1980 to be about 3,000. About half of these were to be found in the Taï National Park and adjacent reserves (Merz, in prep.; Roth *et al.*, 1984). The country's population is believed to have declined by 50% over a nine-year period, to about 1,500 in 1989 (Merz and Hoppe-Dominik, 1991).

Elephants were also found in the central and northern savanna zones of the country until the 1950s (Roth and Douglas-Hamilton, 1991). Since then, only isolated populations have survived. By far the largest of these is in the Comoé NP and adjacent reserves, where numbers in 1980 were estimated at between 1,000 and 1,500 (Roth *et al.*, 1984), but at only 200 in 1998 (F. Fischer, pers. comm., 1998).

## Range

Elephants are found in many small, isolated forest and savanna sites scattered throughout the country, largely in protected areas. There are only a few small pockets of elephant range outside protected areas in south-central Côte d'Ivoire. Most of these have not been studied for many years, and the status of their elephant populations remains unknown. Areas where elephants are still known to occur have been classified as **known** range, based largely on information provided by Kobon (quest. reply, 2002). The remaining areas that appeared in the 1998 AED report have been retained as **possible** range.

The depiction of most ranges displayed in the map has remained unchanged in the AED for many years, with most sites in north and east dating back to the 1987 report (Burrill and Douglas-Hamilton, 1987) and those in the south and west originating largely from Merz and Hoppe-Dominik (1991).

## Surveys and Data

Little new survey activity has taken place in Côte d'Ivoire since the early 1990s. The ecological monitoring programme in the Taï National Park has continued, and no net change in numbers has been reported since the previous report. Taï elephants are largely restricted to the Mont Nienokoué area in the centre-south of the park, where the density is about 0.3 per km<sup>2</sup> (B. Hoppe-Dominik, pers. comm., 2003).

A ground total count of elephants in Abokoamekro Faunal Reserve, conducted in 2000, returned an estimate of 11 (Kobon, quest. reply, 2002). Villagers angry at crop-raiding

elephants invaded Abokoamekro in September 2002, but the impact this may have had is as yet undetermined.

Other changes to the table of estimates include guesses for Haut Sassandra, Douekoué, Mont Péko, Tené Forest (Kobon, quest. reply, 2002), Mont Sangbe (Lauginie *et al.*, 2001) and Songan-Tamin-Mabi-Yaya (Theuerkauf *et al.*, 2001). These estimates replace 1989 informed guesses by Merz and Hoppe-Dominik (1991). A guess for Haut Bandama (Bouché, 2002) is a new entry to the table, as no estimates were previously available for this reserve.

Genetic dung surveys of Taï and Marahoué National Parks were conducted in 2002, and a survey of Azagny NP was completed in April-May 2003, but results were still unavailable at the time of writing. An aerial survey of Comoé had been planned for 2002 by the CITES MIKE population monitoring programme, but was cancelled due to the outbreak of civil war.

### **Cross-border Movements**

Côte d'Ivoire shares several elephant populations with neighbouring countries. There are cross-border movements between Comoé and Diefoula in Burkina Faso (Traore, 1998; Chardonnet and Koalo, quest. reply, 1998), between Djambamakrou and Bia in Ghana and possibly between Taï and Grebo (Liberia).

### **Current Issues**

The estimates of elephant numbers range from 5 to 200 for the 24 input zones, with a median of 30. Most are informed and other guesses, but if they turn out to be accurate, then most of these populations are unlikely to be viable in the long term, especially if their sex ratios have been distorted by ivory hunting.

The outbreak of civil war in 2002 may have had an impact on Côte d'Ivoire's small and fragmented elephant populations, although the real effect will never be known due to the lack of monitoring activities even before the conflict started.

In February 2002 donor support to draft a national elephant management strategy was secured, but activities were put on hold due to the conflict. A national survey of elephant populations will be conducted in 2004-2005, assuming hostilities have completely ceased by then.

A recent report of the Elephant Trade Information System (ETIS) identified Côte d'Ivoire as having the largest domestic market of ivory on the continent as well as one of the largest in the world (Milliken *et al.*, 2002).

### Summary totals for Côte d'Ivoire

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	11	0	0	0
Informed Guesses	52	0	360	25
Other Guesses	0	0	0	641
<b>TOTAL</b>	<b>63</b>	<b>0</b>	<b>360</b>	<b>666</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	134	0.4%
Informed Guesses	19,109	55.5%
Other Guesses	5,370	15.6%
Unassessed Known Range	2,314	6.7%
Unassessed Possible Range	7,488	21.8%
<b>TOTAL</b>	<b>34,415</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	2,056	6.0%
1988-1992	17,909	52.0%
1993-1995	352	1.0%
Post-1998	14,098	41.0%
<b>TOTAL</b>	<b>34,415</b>	

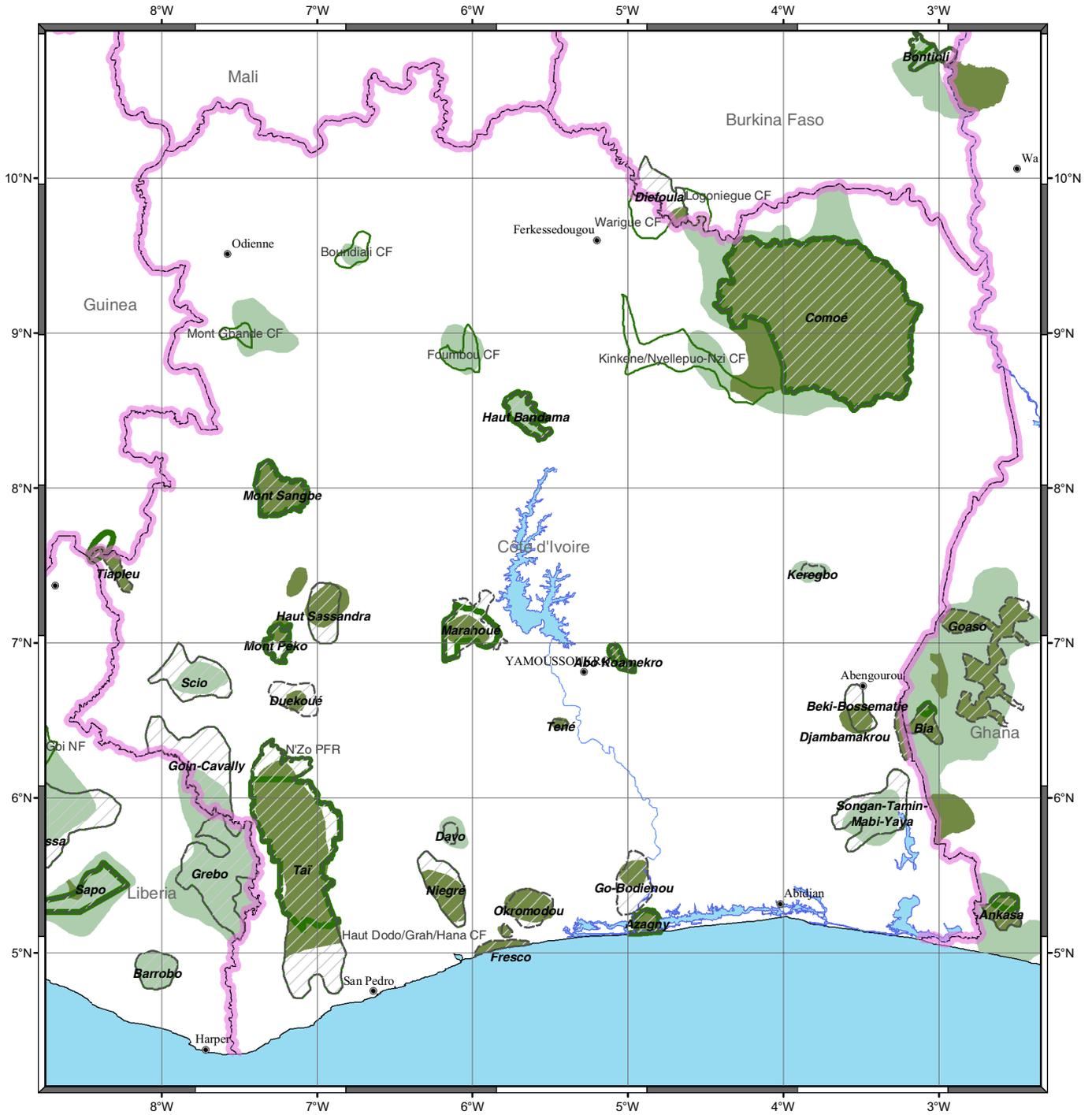
## CÔTE D'IVOIRE: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Abokoamekro Faunal Reserve	GT1	A	2000	11		Kobon, quest. reply, 2002	135	5.1 W	6.9 N
Azagny National Park	AS3	E	1987	60		Lauginie in Douglas-Hamilton et al., 1992	190	4.9 W	5.2 N
Beki-Bossematie Classified Forest	IG3	D	1993	35		Theuerkauf et al., 2001	389	3.5 W	6.6 N
Bolo Forest	OG3	E	1989	5		Merz and Hoppe-Dominik, 1991	88	5.8 W	5.2 N
Comoé National Park	IG3	D	1998	200		Fischer pers. comm., 1998	11,500	3.7 W	9.1 N
Davo Forest	OG3	E	1989	20		Merz and Hoppe-Dominik, 1991	126	6.1 W	5.8 N
Djambamakrou Forest	OG3	E	1989	30		Merz and Hoppe-Dominik, 1991	274	3.2 W	6.4 N
Duekoué Forest	OG3	E	1997	6		Kobon, quest. reply, 2002	536	7.1 W	6.7 N
Fresco Forest	IG3	E	1991	150		Alers in Douglas-Hamilton et al., 1992	2,229	5.8 W	5.1 N
Go-Bodienou Forest	OG3	E	1989	20		Merz and Hoppe-Dominik, 1991	600	5.0 W	5.4 N
Goin-Cavally Classified Forest	OG3	E	1989	70		Merz and Hoppe-Dominik, 1991	1,890	7.8 W	6.2 N
Haut Bandama Fauna and Flora Reserve	OG3	E	1996	20		Bouché, 2002	1,300	5.7 W	8.5 N
Haut Sassandra Classified Forest	IG3	D	1997	30		Kobon, quest. reply, 2002	1,024	7.0 W	7.2 N
Keregbo Forest	OG3	E	1989	30		Merz and Hoppe-Dominik, 1991	213	3.8 W	7.5 N
Marahoué National Park	IG3	E	1991	50		Alers in Douglas-Hamilton et al., 1992	1,010	6.0 W	7.1 N
Mont Péko National Park	OG3	E	2000	40		Kobon, quest. reply, 2002	340	7.3 W	7.0 N
Mont Sangbé National Park	IG3	D	2001	47		Lauginie et al. 2001	950	7.3 W	8.0 N
Niégré Classified Forest	OG3	E	1989	50		Merz and Hoppe-Dominik, 1991	1,056	6.2 W	5.4 N
Okromodou Forest	OG3	E	1989	50		Merz and Hoppe-Dominik, 1991	945	5.6 W	5.3 N
Scio Classified Forest	OG3	E	1989	30		Merz and Hoppe-Dominik, 1991	1,338	7.8 W	6.8 N
Songan-Tamin-Mabi-Yaya Classified Forest	IG3	D	1993	20		Theuerkauf et al., 2001	1,698	3.4 W	5.9 N
Taï Ecosystem	IG3	D	2001	75	25*	Hoppe-Dominik pers. comm., 2003	6,410	7.1 W	5.6 N
Téné Forest	IG3	D	1998	5		Kobon, quest. reply, 2002	4	5.4 W	6.5 N
Tiapleu Forest	OG3	E	1989	10		Merz and Hoppe-Dominik, 1991	380	8.3 W	7.5 N

\* Range of informed guess

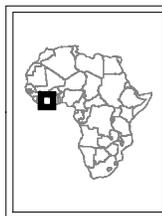
# Côte d'Ivoire

## Elephant Range, Input Zones and Protected Areas

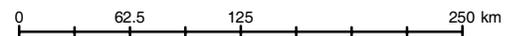


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# G H A N A

## **General Statistics**

Country Area: 238,540 km<sup>2</sup>  
Range Area (% of country): 31,519 km<sup>2</sup> (13%)  
Protected area coverage (% of country): 5%  
Protected range (% of known and possible range in protected areas): 28%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Elephants were widely distributed in the early 20<sup>th</sup> century, but were probably never very abundant (Sánchez Ariño, 1974). They had disappeared from large parts of the north by the 1950s (Roth and Douglas-Hamilton, 1991; Okoumassou *et al.*, 1998). The largest savanna population remained in Mole NP. Between 1982 and 1987 over 100 elephants were killed in and around the park (Dougherty, 1991). In 1993 an aerial count estimated the population at 589±218 (Grainger, 1994a). Bui NP once had a significant elephant population but it is thought to have been exterminated by heavy poaching (Dougherty, 1991; Roth and Douglas-Hamilton, 1991).

Since the 1950s elephant range in the forest zone has been fragmented by expanding subsistence and commercial agriculture (Barnes *et al.*, 1995). The Goaso complex is now the largest forest elephant range in Ghana, and parts of it were surveyed by Dickinson (1990). Surveys of the Bia Conservation Area by Sikes (1975), Martin (1982), Short (1983), Heffernan & Graham (2000) and Sam (2000) indicate an increasing elephant density. But at the same time, elephant range has contracted due to clearance for cocoa, and therefore the number of elephants may not have changed (Wildlife Division, 2000).

In 1991 guesses and extrapolations indicated an elephant population between 700 and 2,900 (Department of Game and Wildlife, 1991). A decade later total numbers have been estimated at between 1,000 and 2,000 in eleven separate ranges (Wildlife Division, 2000).

## **Range**

A rainfall gradient gives Ghana a variety of habitats, from humid forests in the south and dry semi-deciduous forest to long grass savannas in the north. Elephant range is entirely fragmented and largely confined to protected areas.

The baseline information for the range map, which originates largely from the AED 1995 report (Said *et al.*, 1995), has been categorized as **possible** range. The map has been updated with **known** range information obtained from the Strategy for the Conservation of Elephants in Ghana (Wildlife Division, 2000). This update has resulted in the addition of two new areas of **known** range: one in the northwest corner of the country (Nandom, adjacent to Bontioli in Burkina Faso) and another in the central part, which links to Digya National Park via the Chichibon corridor.

## **Surveys and Data**

Four new surveys conducted since 1998 have been entered into the database population estimates and replace informed guesses.

A survey of Kakum and Assin-Attandansso (Eggert *et al.*, 2003) was the first ever on the continent to employ a genotyping technique to estimate elephant population size. The survey identified 86 distinct genotypes, and produced a population estimate of 219, with an asymmetric confidence interval of 156 to 338. However, the reported standard error of 44.8 has been used to derive the symmetric confidence interval required for pooling variances. Two dung surveys of Kakum Conservation Area were conducted in the dry and wet seasons in 2000 (Barnes, cited in Eggert *op. cit.*). The combined results of these surveys gave an estimate of 233 with an asymmetric confidence interval of 160 to 347.

The three other surveys mentioned above are dung counts of Bia National Park and Resource Reserve (Sam, 2000), Ankasa Conservation Area (Danquah *et al.*, 2001) and the Red - White Volta & Morago Ecosystem (Sam, 1998).

A combined aerial and ground survey of the Mole National Park was conducted in 2002 as part of the CITES MIKE Programme, but results were still being analysed at the time of writing.

**Cross-border Movements**

Ghana shares several elephant populations with neighbouring countries. Elephants move between Ghana and Burkina Faso, across the eastern border with Togo (Okoumassou *et al.*, 1998), and possibly the western border with Côte d'Ivoire. The corridor between Togo and Ghana is protected by forest reserves in Ghana, but is under serious threat from expanding agriculture on the Togolese side (Sam *et al.*, 1998).

**Current Issues**

Ghana has a high human population density, which has resulted in the elimination or reduction of many elephant populations. The land available to elephants has contracted in areas such as Bia as a result of land conversion for cocoa plantations, and crop-raiding by elephants continues to be a problem wherever elephants are found (Wildlife Division, 2000).

In 2000 Ghana became the first country in the West Africa region to draw up a national strategy for the conservation of elephants (Wildlife Division, 2000). The strategy addresses challenges and threats in elephant conservation common to most countries in the region, including high human population densities and small, fragmented elephant populations in a variety of habitats. The strategy is part of a much wider conservation planning exercise currently ongoing in Ghana, which considers a variety of tools and actions to sustainably use and manage its natural resources.

## Summary totals for Ghana

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	361	274	274	0
Other Dung Counts	86	154	89	0
Informed Guesses	83	0	737	303
<b>TOTAL</b>	<b>530</b>	<b>428</b>	<b>1,100</b>	<b>303</b>

## Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	5,702	18.1%
Other Dung Counts	815	2.6%
Informed Guesses	6,260	19.9%
Unassessed Known Range	8,330	26.4%
Unassessed Possible Range	10,413	33.0%
<b>TOTAL</b>	<b>31,520</b>	

## Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	587	1.9%
1993-1995	18,453	58.5%
Post-1998	12,480	39.6%
<b>TOTAL</b>	<b>31,520</b>	

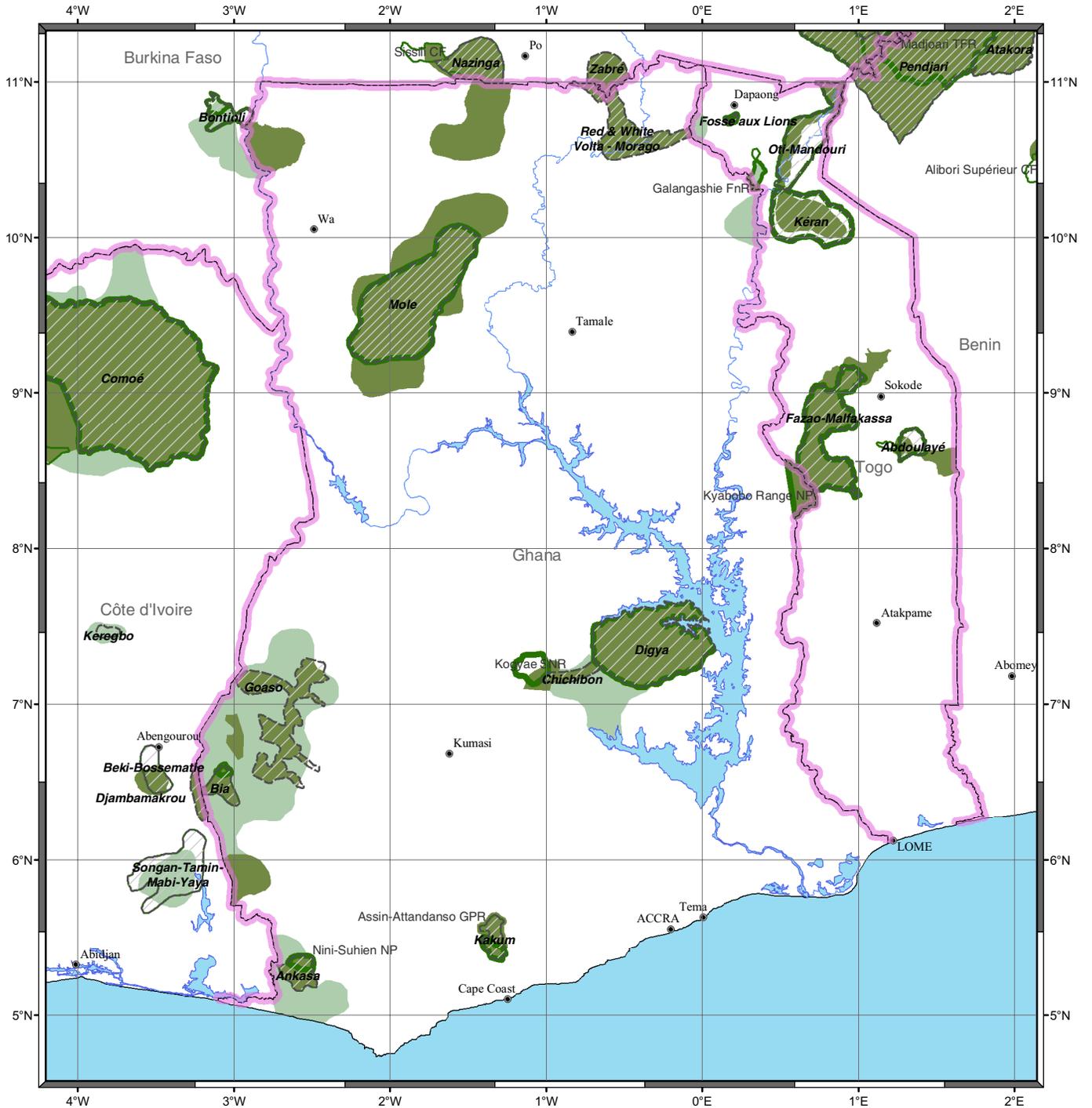
## GHANA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Ankasa Conservation Area	DC3	C	2001	21	15	Danquah et al., 2001	509	2.6 W	5.3 N
Bia National Park and Resource Reserve	DC3	D	1999	108		Sam, 2000	306	3.1 W	6.5 N
Chichibon Corridor	IG3	D	1994	12	3*	Sam and Wilson, 1994	290	0.8 W	7.2 N
Digya National Park	IG3	D	1994	200		Sam, 1994	3,478	0.3 W	7.4 N
Goaso Forest	IG3	D	1994	500	300*	Sam pers. comm., 1995	2,035	2.7 W	6.9 N
Kakum Conservation Area	GD2	C	1997	219	88	Eggert et al., 2003	372	1.3 W	5.5 N
Mole National Park	AS3	B	1993	589	218	Grainger pers. comm., 1994	4,840	1.9 W	9.6 N
Red & White Volta - Morago Ecosystem	DC3	B	1998	46	167	Sam, 1998	1,370	0.5 W	10.7 N

\* Range of informed guess

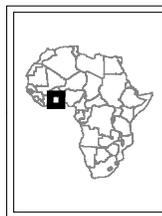
# Ghana

## Elephant Range, Input Zones and Protected Areas

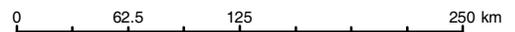


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# GUINEA

## **General Statistics**

Country Area: 245,860 km<sup>2</sup>  
Range Area (% of country): 2,562 km<sup>2</sup> (1%)  
Protected area coverage (% of country): 6%  
Protected range (% of known and possible range in protected areas): 20%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Construction of the Conakry-Mamou railway in the 1920s split elephant range into northern and southern parts on either side of the railway. Elephants were still common in the southern area in the 1930s right up to the Sierra-Leone border, and were widely distributed in the northern savannas into the 1950s (Roth and Douglas-Hamilton, 1991).

Before independence, the total population of elephants in Guinea was estimated between 1,000 and 1,500 individuals. By 1991 guesses of the national population ranged from 800 individuals (Roth and Douglas-Hamilton, 1991) to 1,200, split in four separate sub-populations along the country's borders (Direction des Forêts et de la Chasse, 1991). Since then it has been reported that elephants are no longer to be found in the northern range on the border with Mali (Barnes *et al.*, 1999).

Of the three sub-populations remaining, only the one in Ziama has been subject to formal assessment, where a dung survey generated an estimate of 108 animals (Direction Nationale des Forêts et Faune and Kreditanstalt für Wiederaufbau, 1997). A 1998 combined guess put the other two populations at 140 animals.

## **Range**

Elephants are currently believed to occur in three areas in Guinea: one in the southeast around the Ziama Forest Reserve; another on the border with Sierra Leone (Ouré Kaba); and a third in the northwest on the border with Guinea Bissau (Sansalé).

The shape of the Ziama range has been altered for this report based on information from the Ziama monitoring programme (Direction Nationale des Forêts et Faune, 1999), and has been categorized as **known** range. In the absence of recent information, the remaining two ranges have been categorized as **possible**.

## **Surveys and Data**

There have been no updated estimates for Guinea's elephant population since the last report. A joint World Bank and German Government project monitored elephant populations in the Ziama Forest Reserve between 1997 and 1999 (Direction Nationale des Forêts et Faune and Kreditanstalt für Wiederaufbau, 1997; Direction Nationale des Forêts et Faune, 1999), but no elephant estimates have been produced since 1997.

## **Cross-border Movements**

Elephants had long been absent from Ziama until 1996, when it is thought they arrived from neighbouring Liberia (Direction Nationale des Forêts et Faune and Kreditanstalt für Wiederaufbau, 1997; Sagnah and Sagnah, 2000). Elephants are believed to move seasonally from the Sansalé area into Guinea Bissau (da Silva Naga and Sera, 2001). Elephants from Niokolo-Koba in Senegal have not been seen on the Guinea side of the border for over 10 years (Litoroh *et al.*, 2002).

## **Current Issues**

The Ziama Massif, one of the last two remaining dense moist forests in Guinea, is probably the country's only remaining viable elephant population. The area is coming under increasing pressure from growing human populations, habitat compression and increased cultivation up to the edges of the reserve, as well as the influx of refugees from the civil war in Liberia. As a result, elephants are increasingly coming into conflict with people in the area (Sagnah and

Sagnah, 2000). In response to this problem, the Ministry of Agriculture has put in place a project to evaluate the situation, monitor elephant populations and propose solutions (Sagnah and Sagnah, 2000).

Guinea is planning the development of a national elephant conservation strategy, and funding is being sought for a workshop.

### Summary totals for Guinea

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	0	0	108	0
Other Guesses	0	0	0	140
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>108</b>	<b>140</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	504	19.7%
Other Guesses	1,705	66.6%
Unassessed Known Range	119	4.6%
Unassessed Possible Range	233	9.1%
<b>TOTAL</b>	<b>2,561</b>	

### Age of range data

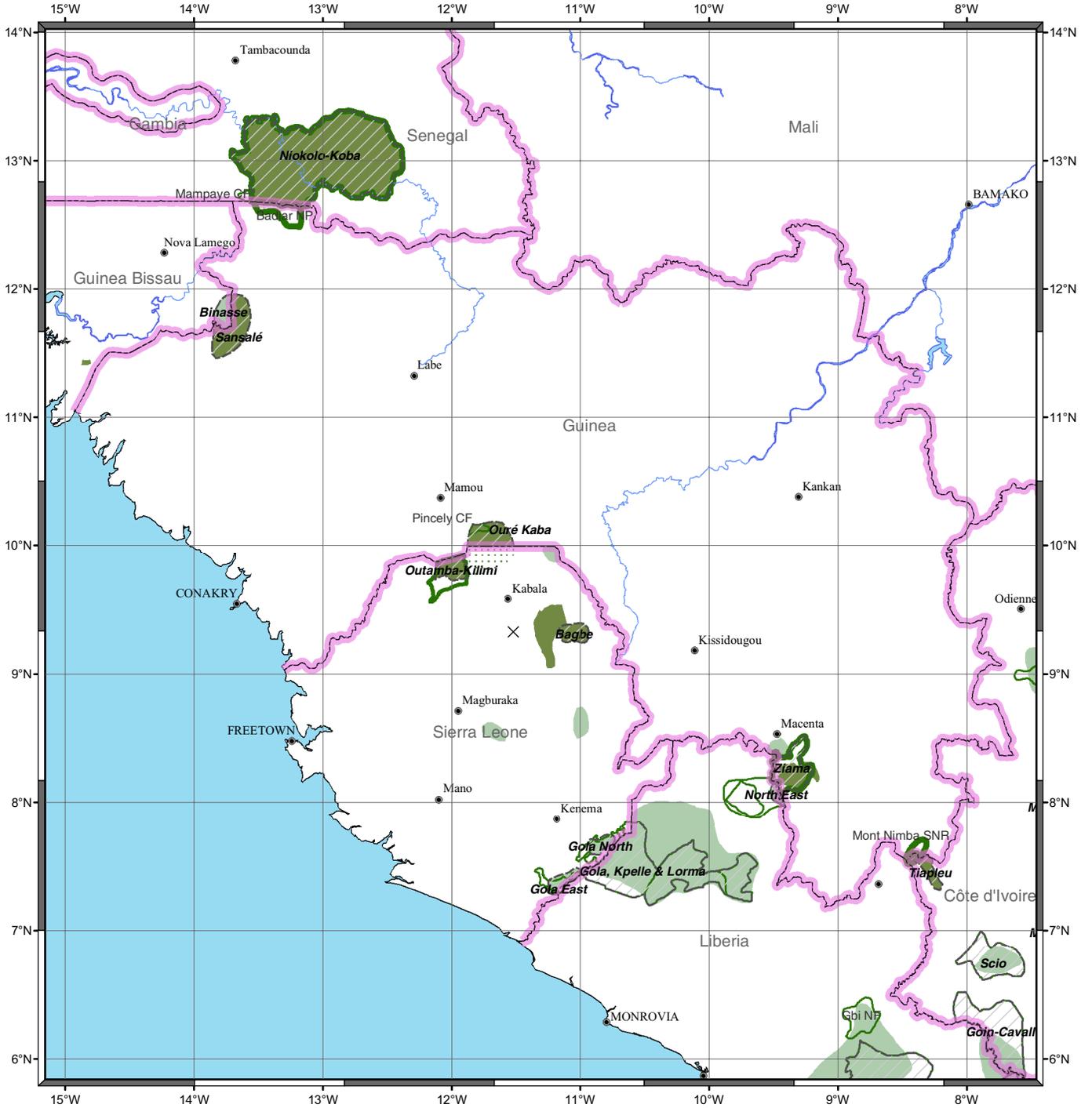
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	691	27.0%
1988-1992	1,014	39.6%
1996-1998	409	16.0%
Post-1998	447	17.5%
<b>TOTAL</b>	<b>2,561</b>	

## GUINEA: ELEPHANT ESTIMATES

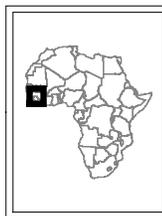
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Ouré Kaba & Sansalé	OG3	E	1998	140		Sagnah, quest. reply, 1998	1,017	12.9 W	11.0 N
Ziama Strict Nature Reserve	DC3	D	1998	108		Direction Nationale des Forêts et Faune, 1999	1,123	9.4 W	8.3 N

# Guinea

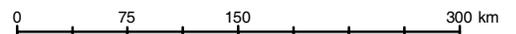
## Elephant Range, Input Zones and Protected Areas



Legend			
	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**

# GUINEA BISSAU

## **General Statistics**

Country Area: 36,120 km<sup>2</sup>  
Range Area (% of country): 361 km<sup>2</sup> (1%)  
Protected area coverage (% of country): 0%  
Protected range (% of known and possible range in protected areas): 0%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

By the time Guinea Bissau's war of independence started in 1962, elephants were restricted to an area between the Corubal and Buba, Fulacunda and Pai-pai rivers, and were thought to number less than 100 (Sánchez Ariño, 1974). The impact of the independence war and later hostilities between the two Guineas is unknown.

Elephants were reported in the central part of the country during the 1980s (Roth and Douglas-Hamilton, 1991). By the early 1990s their distribution was found to be limited to only two areas, Cantanhez and Dulombi-Corubal, both in the southeast. Between 5 and 10 individuals were thought to frequent each of these areas but probably only during the wet season, moving to a swamp on the River Kogon in the Bouliagna area of Guinea during the dry (Direcção General dos Serviços Florestais e Caça, 1991). An informant provided a rough estimate of 35 elephants in 1991 (Douglas-Hamilton *et al.*, 1992).

## **Range**

Much of Guinea Bissau is low-lying and affected by the sea, with abundant mangrove swamps in the coastal region and tidal waters reaching up to 60 km inland. The interior is densely forested, except in the north, where savanna vegetation prevails.

The range map in the previous report only displayed one range based on a survey by Limoges (1989). This has been categorized as **possible** range. According to a more recent report, however, elephants still frequent foraging grounds in the Cantanhez area (da Silva Naga and Sera, 2001), and a small **known** range has been added to reflect this. While the report describes the routes taken by elephants to reach these foraging grounds, movements were not traced all the way to their assumed origin across the border in Guinea.

## **Surveys and Data**

No recent estimates of elephant numbers could be obtained for this report. Data in the table of estimates are from a 1991 estimate made by Sournia (in Douglas-Hamilton *et al.*, 1992). As this estimate is now more than ten years old, it appears under the **speculative** category.

## **Cross-border Movements**

Elephants in the Cantanhez area are reported to arrive seasonally from neighbouring Guinea (da Silva Naga and Sera, 2001), but there is no detailed information on their movements across the border.

## **Current Issues**

The political situation in the country has remained unstable since civil conflict of 1998-99, making conservation work difficult.

A network of protected areas, which will include the Cantanhez forest, is being developed in Guinea Bissau. If the gazetting of Cantanhez is to succeed in conserving Guinea Bissau's elephants, effective protection will also be required along the corridors that allow the seasonal movement of elephants from Guinea. However, forests are currently being cleared and land converted to agriculture within these corridors (da Silva Naga and Sera, 2001).

### Summary totals for Guinea Bissau

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Guesses	0	0	0	35
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>35</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Guesses	329	91.1%
Unassessed Known Range	32	8.9%
<b>TOTAL</b>	<b>361</b>	

### Age of range data

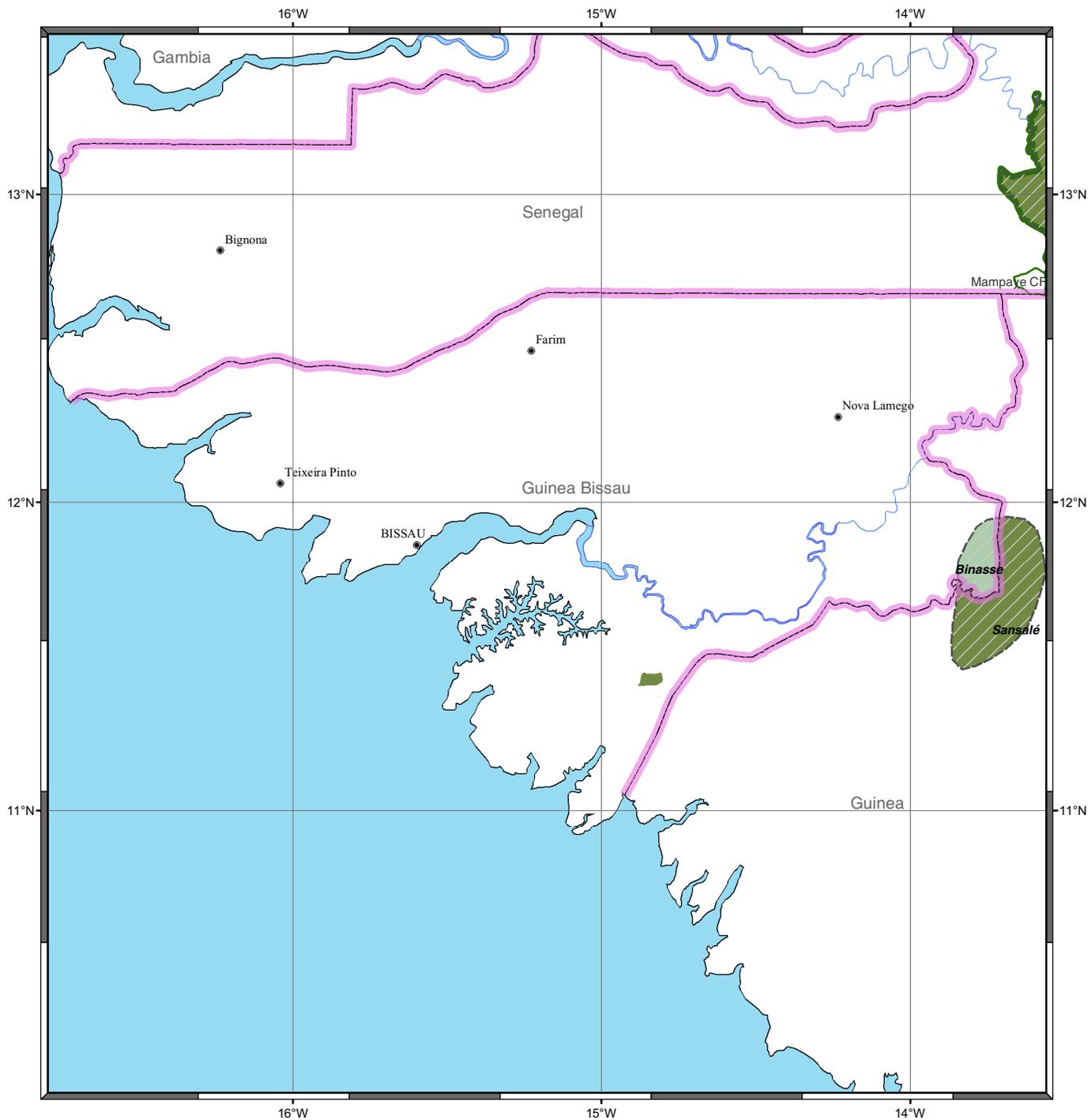
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	329	91.1%
Post-1998	32	8.9%
<b>TOTAL</b>	<b>361</b>	

## GUINEA BISSAU: ELEPHANT ESTIMATES

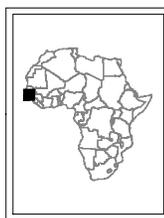
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Binasse Area	OG3	E	1991	35		Sournia in Douglas-Hamilton et al., 1992	330	13.8 W	11.8 N

# Guinea Bissau

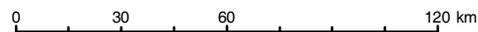
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
<b>Elephant Range</b>	
	Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
*African Elephant Database*  
*Digital Chart of the World*



Geographic Projection  
 Scale is indicative only  
 For Key to protected area  
 abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
 Specialist Group**



# LIBERIA

## **General Statistics**

Country Area: 111,370 km<sup>2</sup>  
Range Area (% of country): 21,151 km<sup>2</sup> (19%)  
Protected area coverage (% of country): 15%  
Protected range (% of known and possible range in protected areas): 5%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Until the 1950s Liberia had a relatively low human population density and undeveloped interior. Elephants were still widely distributed in the forests that covered the majority of the land, but were more abundant in the east, and rarer in the coastal zone where human settlement was concentrated. From the 1960s onwards, however, rates of logging, deforestation and human disturbance increased, leading to a fragmentation and reduction in elephant range. Nevertheless this process got underway in Liberia much later than in surrounding countries (Forestry Development Authority, 1991; Roth and Douglas-Hamilton, 1991).

By 1974, elephants in the east of the country were confined to the “Kongwa Jungle” between Dambala and Kailahun. In 1990, six ranges were recognized within extensive forest blocks in the southeast and northwest, which together may have had as many as 1,800 elephants (Anstey and Dunn, 1991). At this time, the major influence on elephant status was disturbance due to logging, rather than direct competition with people for land, hunting or loss of habitat (Forestry Development Authority, 1991).

During the civil war that erupted in 1990, people abandoned many rural areas. Although this reportedly caused wildlife populations to flourish in some parts, unregulated and intensive logging was pursued by one of the warring factions and new logging roads were built at the time (Robinson and Suter, 1999).

## **Range**

The range map shown in this report originates from Anstey and Dunn (1991). All areas have been categorized as **possible** range, with the exceptions noted below.

A 1999 survey of the Cestos and Senkwehn river basins in the Krahn Bassa forest found the ecosystem in relatively good condition, but recorded no evidence of elephant presence (Robinson and Suter, 1999). However, more recent (albeit unconfirmed) reports suggest that elephants from nearby areas may have migrated in and out as a result of heavy logging (J. Suter, pers. comm., 2002). The area covered in the Cestos-Senkwehn survey has been categorized as **doubtful** range.

A 2001 rapid assessment survey of Sapo National Park found evidence of undisturbed groups in the west-central part of the park (Waitkuwait, 2001), and this area has been classified as **known** range. Although the survey did not record evidence of elephants in the northwestern and the southwestern parts of the park, those areas were not explored with the same intensity as the west-central portion, and have therefore been retained as **possible** range. Other parts of the Sapo ecosystem were not visited, and also remain as **possible** range.

## **Surveys and Data**

Neither of the two surveys cited above have yielded any elephant population estimates. However, Barnes and Dunn (2002) have recently reanalysed data from a 1989 survey of Sapo National Park (Anstey and Dunn, 1991), and the new figure has been used to replace the estimate in the previous report. It is important to note, however, that the estimate appears in category the **other guesses** category, since the data are now more than 10 years old. The same applies to all other figures on the table, which have been retained from the previous report.

***Cross-border Movements***

No information is available on cross-border movements though it is likely that elephants move into Côte d'Ivoire and Sierra Leone. Elephants in the Ziama forest in Guinea are reported to have moved there from Liberia some years ago.

***Current Issues***

Human settlements have grown rapidly in rural areas since the end of the civil war, and hunting for the bushmeat trade is reported to be intense (Robinson and Suter, 1999). Logging operations are expanding into previously undisturbed forests.

There is an urgent need to assess the elephant situation in Liberia, but conservation activities since the end of the civil war have been limited by the uncertain security situation, especially in the northwest.

### Summary totals for Liberia

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Other Guesses	0	0	0	1,676
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,676</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Other Guesses	11,523	52.6%
Unassessed Known Range	47	0.2%
Unassessed Possible Range	9,582	43.7%
Doubtful Range	773	3.5%
<b>TOTAL</b>	<b>21,925</b>	

### Age of range data

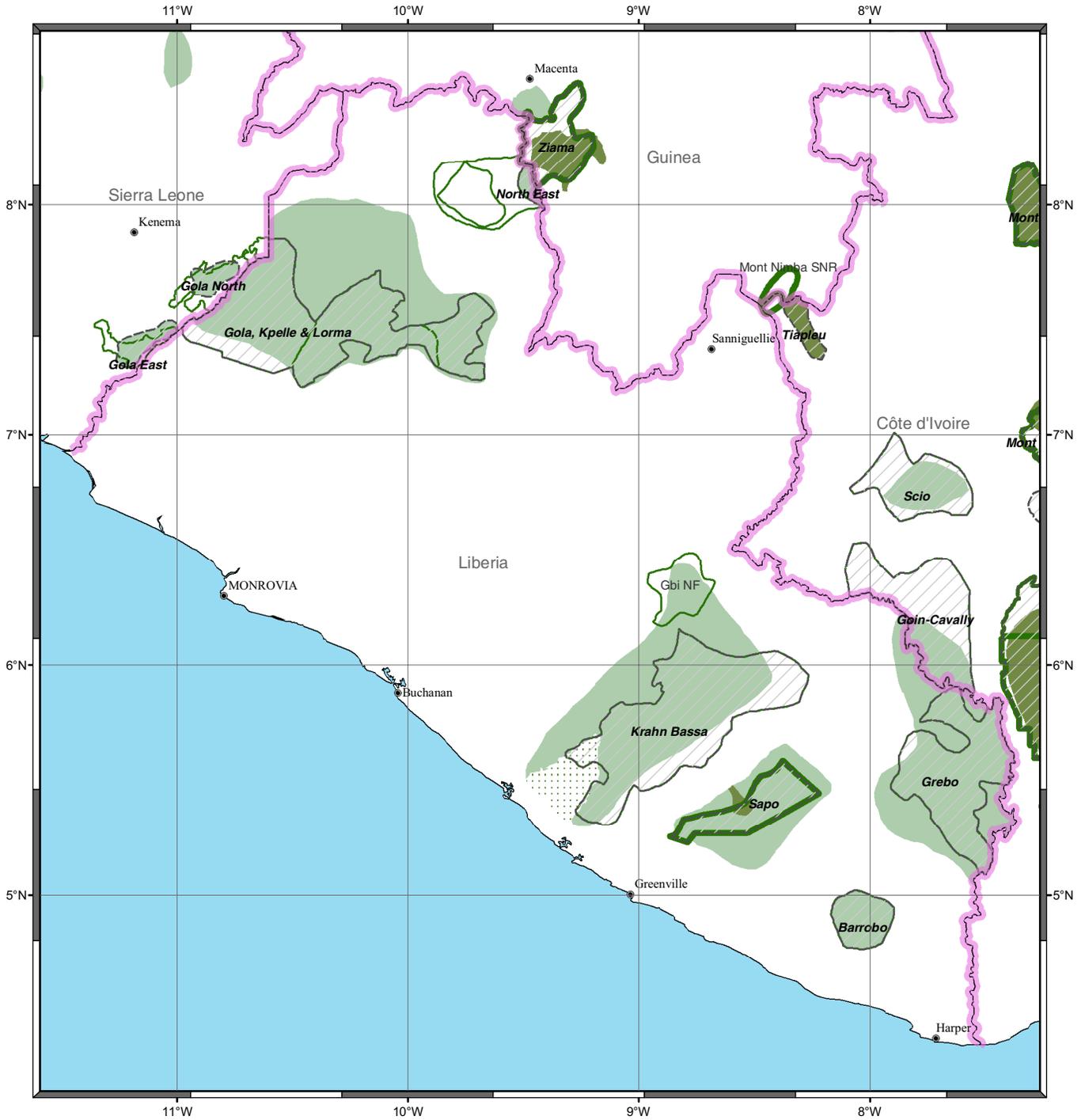
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1988-1992	15,296	69.8%
Post-1998	6,629	30.2%
<b>TOTAL</b>	<b>21,925</b>	

## LIBERIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Barrobo National Forest	OG3	E	1990	100		Anstey and Dunn, 1991	640	8.0 W	4.9 N
Gola, Kpelle & Lorma National Forests	OG3	E	1990	500		Anstey and Dunn, 1991	4,255	10.4 W	7.5 N
Grebo National Forest	OG3	E	1990	230		Anstey and Dunn, 1991	2,510	7.6 W	5.5 N
Krahn Bassa National Forest	OG3	E	1990	500		Anstey and Dunn, 1991	5,142	8.8 W	5.8 N
North East National Forest	OG3	E	1990	33		Anstey and Dunn, 1991	130	9.5 W	8.1 N
Sapo National Park	DC3	E	1989	313	304	Barnes and Dunn, 2002	1,292	8.5 W	5.4 N

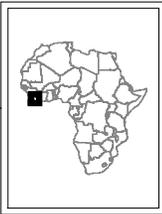
# Liberia

## Elephant Range, Input Zones and Protected Areas

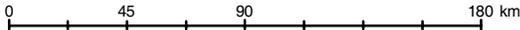


**Legend**

	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant Specialist Group**



# MALI

## **General Statistics**

Country Area: 1,240,000 km<sup>2</sup>  
Range Area (% of country): 29,838 km<sup>2</sup> (2%)  
Protected area coverage (% of country): 3%  
Protected range (% of known and possible range in protected areas): 29%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

At the end of the 19<sup>th</sup> century elephants were widespread in southern Mali but were intensively hunted by colonialists once the railway reached the capital Bamako, facilitating the export of ivory via Dakar. Until the 1920s, elephants occurred on both sides of the Niger to the eastern border (Roth and Douglas-Hamilton, 1991).

Estimates in the 1970s were between 700 and 1000 individuals in the whole country. In 1983, there may have been approximately 650 elephants in Mali, in four discrete populations. These were located in the Gourma (c.600 elephants), in the Reserve de Faune de Sousan adjacent to Ivory Coast (20), and the Boucle de Baoulé complex adjacent to Mauritania (14). The survival of a fourth population in the Faleme valley and Mandingue plateau, adjacent to Senegal and Guinea, was uncertain (Olivier, 1983). By the late 1970s, all three of the smaller populations were no longer considered viable (Olivier, 1983; Roth and Douglas-Hamilton, 1991).

By 1991, the Gourma population was the only one whose survival was not in serious doubt (Direction Nationale des Eaux et Forêts, 1991), and the consensus now is that it is the sole survivor. Until recently, its size has been the subject of informed guesswork and one dung count (Jachmann, 1991). Several estimates are recorded, most of which are in the 300-800 range (Olivier, 1983; Direction Nationale des Eaux et Forêts, 1991; Jachmann, 1991; Nomba, 2000). There has been speculation that this population has been at ecological carrying capacity for decades (Direction Nationale des Eaux et Forêts, 1991). If so, the limiting factor is likely to be water rather than food (Olivier, 1983).

## **Range**

Elephants in Mali are now confined to a single population in the Gourma, an arid area in the Sahel on the border with Burkina Faso. After the extinction of Mauritania's elephants in the 1980s, Gourma became the continent's most northerly population, and together with Namibia's elephants, the most adapted to arid conditions.

A recent radio-collaring study (Douglas-Hamilton, 2002) has extended the range known to be used by Gourma elephants both northward and southward, and this has been categorized as **known** range. It is unlikely that elephants continue to use other areas of the previous range estimate (Douglas-Hamilton, 2002), and these areas have been categorized as **doubtful** range.

## **Surveys and Data**

In a recent dry season survey of the Gourma area (Douglas-Hamilton, 2002), a total of 322 elephants were counted around waterholes where they are known to concentrate at the height of the dry season. Although the survey was not done systematically, it has been treated as a medium-intensity aerial total count, since the spatial distribution of elephants at the time of the survey was well known. An additional 53 elephants may have been present in areas not flown, and these have been entered as an informed guess in a separate input zone. These estimates replace a previous guess of 950 (Niagate, quest. reply, 1998). Estimates for this population have been fluctuating between 300 and 900 for three decades, but this may simply be a reflection of the problems of censusing highly mobile populations.

***Cross-border Movements***

The Gourma elephants move in a roughly circular migration in a search for water that takes them into northern Burkina Faso (Spinage, 1985; Jachmann, 1991; Douglas-Hamilton, 2002) and covers over 34,000 km<sup>2</sup>.

***Current Issues***

As one of the few desert elephant populations and the last significant population in the Sahel, the Gourma elephants are of great scientific interest and conservation importance.

The expansion of human populations into marginal areas is increasingly putting elephants in direct conflict with people. Pastoralists have complained that elephants invade livestock ponds and pollute the waters with hitherto unknown diseases. Elephants are also reported to attack livestock in competition for water, destroy property in search of salt and make land cultivation impossible (Nomba, 2000). Large-scale agricultural irrigation and infrastructure projects are being developed in the Gourma area with the support of international donors, but with no assessments of their potential impact on the elephant population.

Proposals to alleviate this situation include an assessment of hydraulic and forage resources, the drilling of elephant-proof boreholes for livestock watering and the development of tourist infrastructures. However, a general lack of funds and lack of coordination between the development and conservation sectors may undermine the mitigation of these problems.

Mali is currently planning a national elephant conservation strategy.

### Summary totals for Mali

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	322	0	0	0
Informed Guesses	0	0	28	25
<b>TOTAL</b>	<b>322</b>	<b>0</b>	<b>28</b>	<b>25</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	386	0.9%
Informed Guesses	29,422	68.8%
Unassessed Known Range	26	0.1%
Doubtful Range	12,931	30.2%
<b>TOTAL</b>	<b>42,765</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1996-1998	22,945	53.7%
Post-1998	19,820	46.3%
<b>TOTAL</b>	<b>42,765</b>	

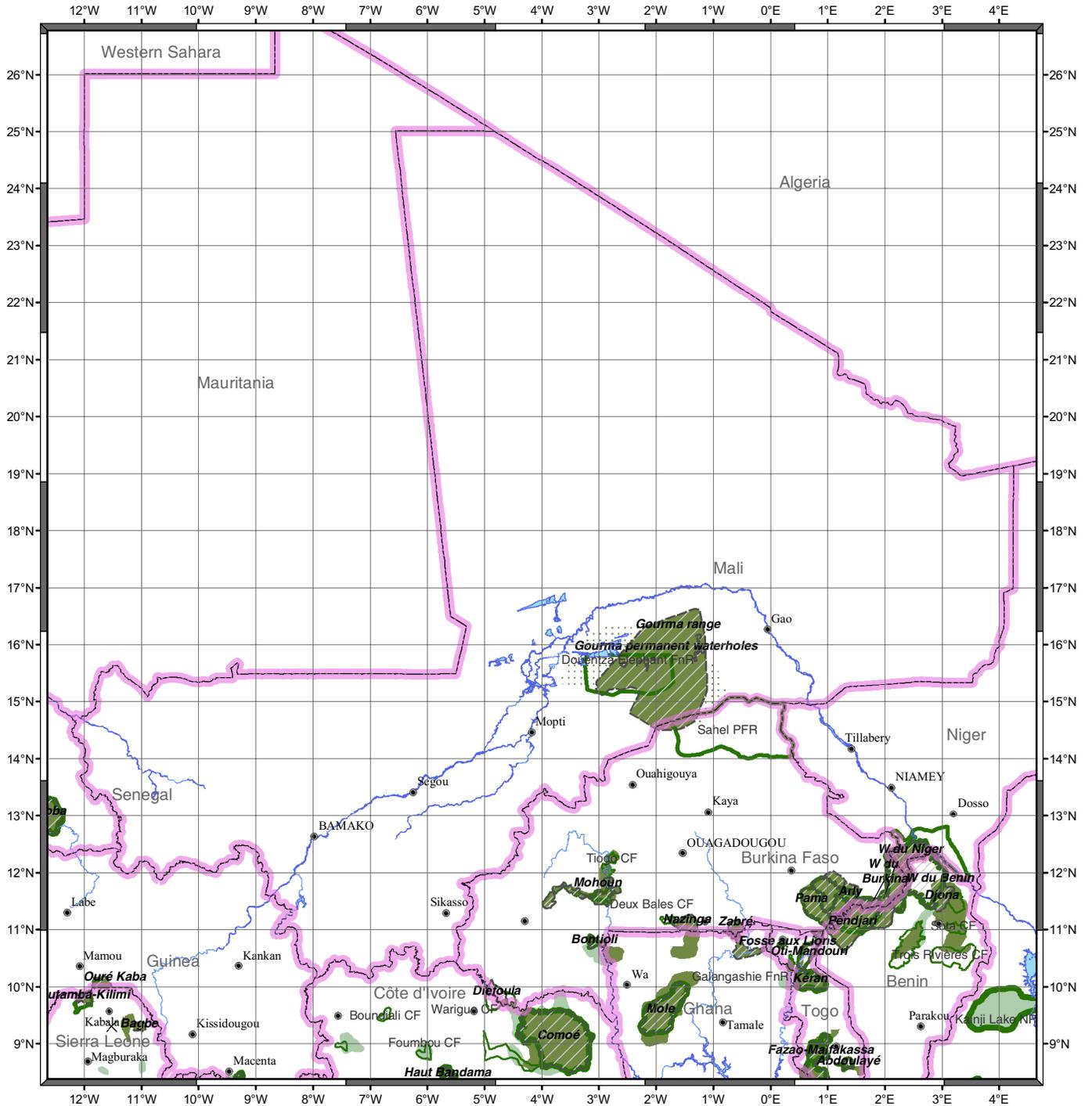
## MALI: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Gourma permanent waterholes	AT2	A	2002	322		Douglas-Hamilton, 2002	387	1.7 W	15.9 N
Gourma range	IG3	D	2002	28	25*	Douglas-Hamilton, 2002	27,363	1.9 W	15.5 N

\* Range of informed guess

# Mali

## Elephant Range, Input Zones and Protected Areas

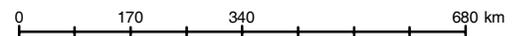


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# NIGER

## General Statistics

Country Area: 1,267,000 km<sup>2</sup>  
Range Area (% of country): 2,683 km<sup>2</sup> (0%)  
Protected area coverage (% of country): 9%  
Protected range (% of known and possible range in protected areas): 87%  
CITES Appendix: I  
Listing Year: 1989

## Historical Background

As most of Niger is desert, elephants have probably long been restricted to the two current ranges along the southern border. Of these, by far the most important is the one occupying the Niger sector of the transnational Parc “W”. There have been few attempts to count elephants in this sector, and interpretation of these data is complicated because elephants move both within and between the countries on a seasonal basis. A dry season track count in the early 1970s estimated only 245 elephants in the park, but during the 1960s and up to at least 1971 large numbers were known to move between the park and an area 150 km to the north (Poche, 1974). Aerial counts estimated 706 in 1977 (Koster, 1977) and 817 in 1992 (Seydou, quest. reply, 1998).

## Range

Most of Niger is in the southern Sahara, and only two populations are believed to exist, both in the Sudanian wooded savannas to the south of the country.

The more important population is located in the southwest of the country, within the boundary of the W du Niger National Park, a transfrontier park shared with Burkina Faso and Benin. The second, much smaller, sub-population occurs in the Baba N’Rafi forest, and is part of Nigeria’s Rongou Forest population (Direction de la Faune, Pêche et Pisciculture, 1991). Although there have been no recorded sightings of elephants in Baba N’Rafi since 1994, the area is categorized as **possible** range since the elephants may not always return there on an annual basis.

The depiction of these ranges has not changed in the AED range map since the 1995 report (Said *et al.*, 1995).

## Surveys and Data

A 2002 aerial sample count of the “W” complex, encompassing all three sectors of the park as well as surrounding areas, gave an estimate of 743±306 (ECOPAS, 2002). Although elephants were only seen in the Niger sector of the park, the estimate has been split between the Niger, Benin, and Burkina Faso sectors in proportion to the area of elephant range contained within each. The resulting estimate of 350±214 for the Niger sector replaces a 1992 informed guess by Seydou (quest. reply, 1998). Although another survey of a larger area was conducted by the CITES MIKE Programme in 2003, the results were not available in time for inclusion in this report.

An aerial census in 1992 gave an estimate of 100 for Baba N’Rafi Forest (Seydou, quest. reply, 1998). As this estimate is now more than 10 years old, and since there have been no confirmed sightings since 1994 (J. Burt, pers. comm., 2002), the estimate is categorized as **speculative**.

## Cross-border Movements

The Park “W” population straddles the borders of Niger, Benin and Burkina Faso and, together with other adjacent protected areas now represents the largest savanna elephant range in West Africa, both in terms of extent and numbers of elephants (Green, 1988; Roth and Douglas-Hamilton, 1991).

Although the Baba N’Rafi population is known to move between southern Niger and northern Nigeria, information on the movement patterns is contradictory. Some authors maintain that it spends most of its time in Niger (Seydou, 1997), whereas others suggest that they only visit Niger in the dry season, and only began doing so in 1986 (Direction de la Faune, Pêche et Pisciculture, 1991).

***Current Issues***

While the Park W population will be regularly surveyed as part of the CITES MIKE Programme, the status of the Baba N’Rafi population is currently unknown on either side of the border.

Niger is currently planning a national elephant management strategy.

### Summary totals for Niger

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Direct Sample Counts and Reliable Dung Counts	136	214	214	0
Other Guesses	0	0	0	100
<b>TOTAL</b>	<b>136</b>	<b>214</b>	<b>214</b>	<b>100</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Direct Sample Counts & Reliable Dung Counts	2,333	87.0%
Other Guesses	350	13.0%
<b>TOTAL</b>	<b>2,683</b>	

### Age of range data

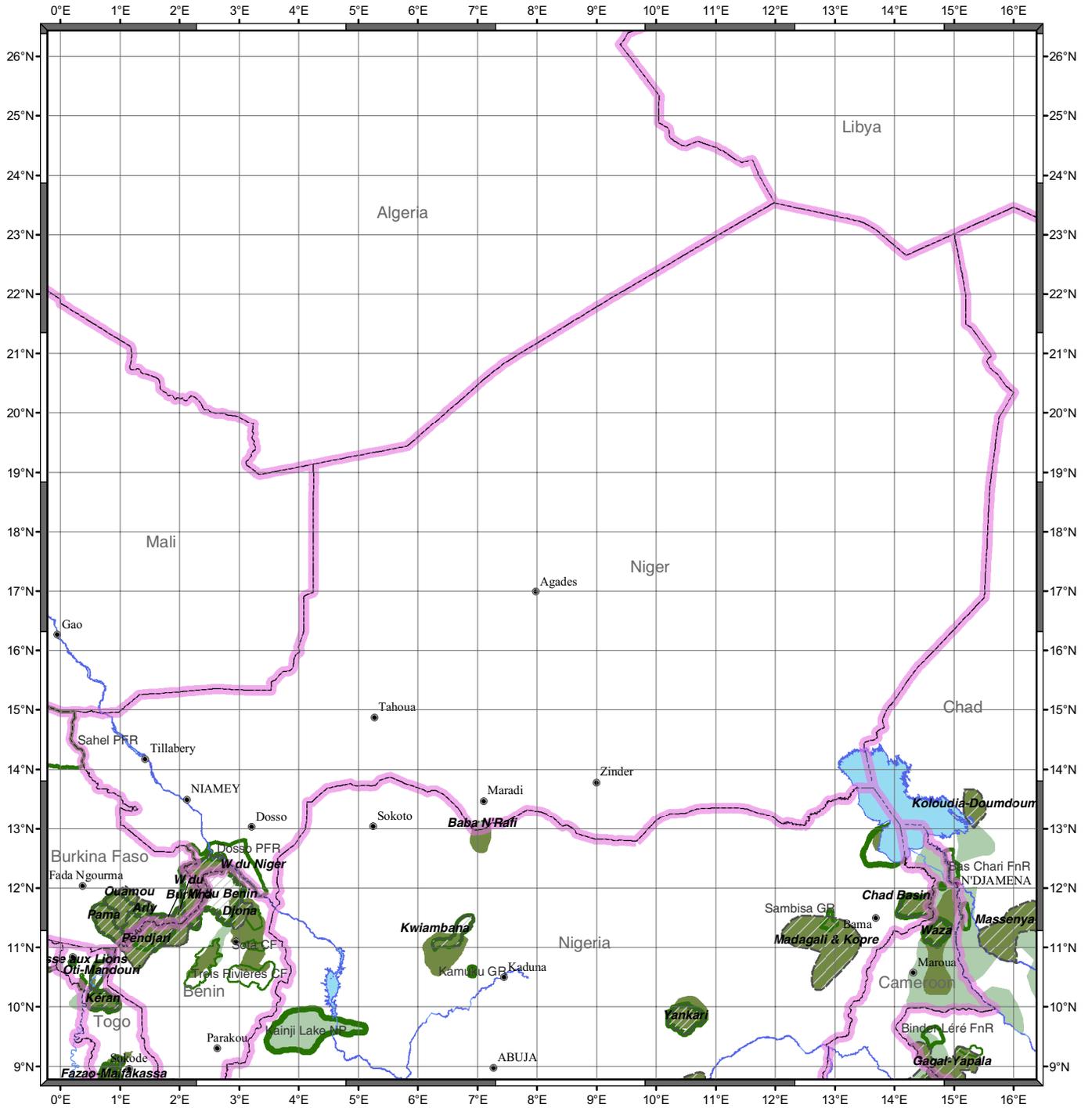
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	2,333	87.0%
1988-1992	350	13.0%
<b>TOTAL</b>	<b>2,683</b>	

## NIGER: ELEPHANT ESTIMATES

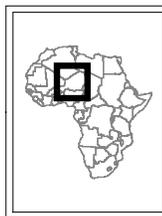
INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Baba N'Rafi Forest	OG3	E	1998	100		Seydou, quest. reply, 1998	430	7.0 E	13.1 N
W du Niger National Park	AS3	B	2002	350	214	ECOPAS, 2002	2,200	2.4 E	12.3 N

# Niger

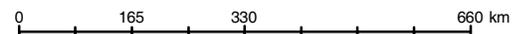
## Elephant Range, Input Zones and Protected Areas



Legend			
	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





# NIGERIA

## **General Statistics**

Country Area: 923,770 km<sup>2</sup>  
Range Area (% of country): 44,067 km<sup>2</sup> (5%)  
Protected area coverage (% of country): 3%  
Protected range (% of known and possible range in protected areas): 46%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

Little is known of Nigeria's elephants prior to 1900, but during the 20<sup>th</sup> century many herds were either reduced in numbers or lost completely. Their range became progressively reduced and increasingly fragmented, and formerly extensive migrations between wet and dry season areas were curtailed. Before the Biafra war (1967-70), there were probably no more than 3,000 elephants in Nigeria (Sánchez Ariño, 1974). In 1991 informed opinion held that there were approximately 1,500 elephants, and only five potentially viable populations (Dougherty, 1991; Natural Resources Conservation Council, 1991).

## **Range**

Nigeria's elephants live in small, relict populations, divided between forest and savanna in the south and north of the country respectively. Nigeria is Africa's most populous country, and the fragmentation of elephant range is an inevitable consequence of increasing human density, agriculture and settlement (Happold, 1987; Roth and Douglas-Hamilton, 1991).

Two new areas of range, Kainji Lake and Old Oyo, have been added to the map based on information provided by Mshelbwala (pers. comm., 2002b), who categorized them as **possible** range. The same source provided information to categorize 18 populations previously featured in the AED as **known** range, with another three remaining as **possible** range.

## **Surveys and Data**

Few surveys have been conducted in Nigeria since the last AED report. An aerial total count of Yankari National Park was conducted in 1999 (Nicholas, 1999), yielding an estimate of 328. This replaces a 1993 informed guess of 463 (Mshelbwala, 1998).

The only other new entries to the table are informed guesses for Andoni Island (Mshelbwala, 2002a) and Gashaka-Gumti National Park (R. Barnwell, pers. comm., 2002), which replace informed guesses by Thouless (1993) and Gaiwasa (quest. reply, 1998) respectively.

All other estimates remain unchanged from the previous report.

## **Cross-border Movements**

Cross-border movements of elephants probably occur from both northern savanna and southeastern forest populations. Mshelbwala (1998) reported that elephants move across from Waza National Park in Cameroon and are now spending longer periods in the Chingurmi-Duguma sector of Chad Basin National Park. A migratory population may still move between Cameroon, Chad and Nigeria (Bita, 1997; Halla, 2002).

Elephants may also move between Nigeria and the Baba N'Rafi Forest in Niger (Seydou, quest. reply, 1998), and between the Cross River National Park (Oban Division) and Korup National Park in Cameroon (Tooze, 1994).

## **Current Issues**

Most elephant populations are small, fragmented and probably unviable in the long term. Only that of Yankari in northern Nigeria has good prospects for survival (Dougherty, 1994).

Incidences of crop raiding and destruction of property by elephants in Borno State are reported annually as elephants move between Cameroon and Nigeria (Halla, 2002).

According to a 2002 report, Nigeria has one of the poorest records in the fight against the illicit international ivory trade, ranking high amongst originating countries and low on the law enforcement scale. The problem is exacerbated by its unregulated domestic ivory market, second in size only to China's (ETIS, 2002).

Nigeria is in the initial stages of developing a national strategy for elephant conservation.

In 1998 Nigeria filed a CITES export quota of 150 tusks (75 animals) as hunting trophies, but did not renew that quota in subsequent years (World Conservation Monitoring Centre, 2003).

### Summary totals for Nigeria

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Aerial or Ground Total Counts	328	0	0	0
Informed Guesses	150	0	340	260
Other Guesses	0	0	0	40
<b>TOTAL</b>	<b>478</b>	<b>0</b>	<b>340</b>	<b>300</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Total Counts	2,153	4.9%
Informed Guesses	17,424	39.5%
Other Guesses	312	0.7%
Unassessed Known Range	13,567	30.8%
Unassessed Possible Range	10,610	24.1%
<b>TOTAL</b>	<b>44,066</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	7,810	17.7%
1993-1995	3,355	7.6%
1996-1998	931	2.1%
Post-1998	31,970	72.6%
<b>TOTAL</b>	<b>44,066</b>	

## NIGERIA: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Andoni Island	IG3	D	2002	6	4*	Mshelbwala, 2002	215	7.5 E	4.5 N
Chad Basin (Chingurmi-Duguma) National Park Sector	IG3	D	1994	100		Mshelbwala, 1998	2,160	14.4 E	11.7 N
Cross River (Okwangwo) National Park	DC3	D	1998	74	56*	Obot et al., 1998	239	9.2 E	6.3 N
Gashaka-Gumti National Park	IG3	D	2002	20	30*	Barnwell pers. comm., 2002	5,860	11.7 E	7.5 N
Kambari	IG3	D	1998	5	10*	Gawaisa, quest. reply, 1998	2,000	10.6 E	8.8 N
Kwiambana Game Reserve	IG3	D	1993	80	40*	Hurst, quest. reply, 1994	1,715	6.6 E	11.3 N
Madagali & Kopre	IG3	D	1996	150	100*	Gawaisa, quest. reply, 1998	5,600	12.8 E	11.1 N
Okomu Game Sanctuary	OG3	E	1991	40		Natural Resources Conservation Council, 1991	1,082	5.1 E	6.4 N
Omo Forest Reserve	IG3	D	1994	30	20*	Mshelbwala, 1998	1,300	3.6 E	6.8 N
Taylor Creek	IG3	D	1993	25		Powell, in Thouless, 1993	145	6.4 E	5.2 N
Yankari National Park	AT3	A	1999	328		Nicholas, 1999	2,254	10.5 E	9.8 N

\* Range of informed guess

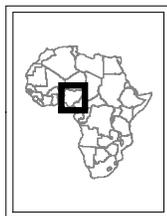
# Nigeria

## Elephant Range, Input Zones and Protected Areas

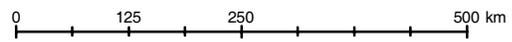


**Legend**

International Boundary	<b>Elephant Range</b>
Towns	Known
Rivers and lakes	Possible
Protected Areas	Doubtful
Input Zones	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area abbreviations turn to Appendix I



# SENEGAL

## **General Statistics**

Country Area: 196,190 km<sup>2</sup>  
Range Area (% of country): 8,396 km<sup>2</sup> (4%)  
Protected area coverage (% of country): 16%  
Protected range (% of known and possible range in protected areas): 100%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

By the early 20<sup>th</sup> century elephants had practically disappeared from the west of Senegal (Roth and Douglas-Hamilton, 1991), and elephant hunting was banned in 1913. The enlargement and improved management of the Niokolo-Koba National Park some fifty five years later may have prevented the loss of the park's population at that time (Dupuy and Verschuren, 1977).

In the early 1970s, the country's population of about 150 elephants was divided in small herds in the south and east of the country (Sánchez Ariño, 1974; Douglas-Hamilton, 1979b). By the mid 1980s, all but the Niokolo-Koba elephants were extinct. All subsequent guesses as to the size of the Niokolo-Koba population have been less than 40 (but see under Surveys and Data), suggesting that this is not a viable population (Direction des Parcs Nationaux du Senegal, 1991; Barnes *et al.*, 1999).

## **Range**

Elephants are found only in Niokolo Koba National Park in the southeast of the country. As recent ground evidence confirms the presence of at least two elephants in the park, the area has been classified as **known** range (Mauvais, 2002).

## **Surveys and Data**

Four systematic aerial surveys conducted between 2001 and 2002, in both dry and wet seasons and with good visibility, failed to find any evidence of elephants in Niokolo-Koba National Park (Mauvais, 2002). Tracks and sign on the ground suggest the presence of at least two animals in the park, although "some at the Directorate of National Parks still estimate the population at 50 individuals" (translated verbatim from Mauvais, 2002). This has been entered as an informed guess, giving a **definite** of 2 and 48 **speculative**.

## **Cross-border Movements**

Despite claims to the contrary, it is unlikely that elephants move into Guinea from Niokolo-Koba, as there have been no records of elephant presence across the border for over 10 years (Litoroh *et al.*, 2002).

## **Current Issues**

Poaching has reduced the numbers of elephants at Niokolo-Koba to their current levels. Illegal hunting is still not under control in the park (Litoroh *et al.*, 2002). The loss of the last remaining elephants in Senegal is possible.

A proposal has been made to reintroduce a small number of elephants from Burkina Faso into Niokolo-Koba National Park. A recent technical mission to evaluate the proposal raised concerns about the operation on grounds ranging from security to population viability (Litoroh *et al.*, 2002).

### Summary totals for Senegal

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	2	0	0	48
<b>TOTAL</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>48</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	8,396	100.0%
<b>TOTAL</b>	<b>8,396</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	8,396	100.0%
<b>TOTAL</b>	<b>8,396</b>	

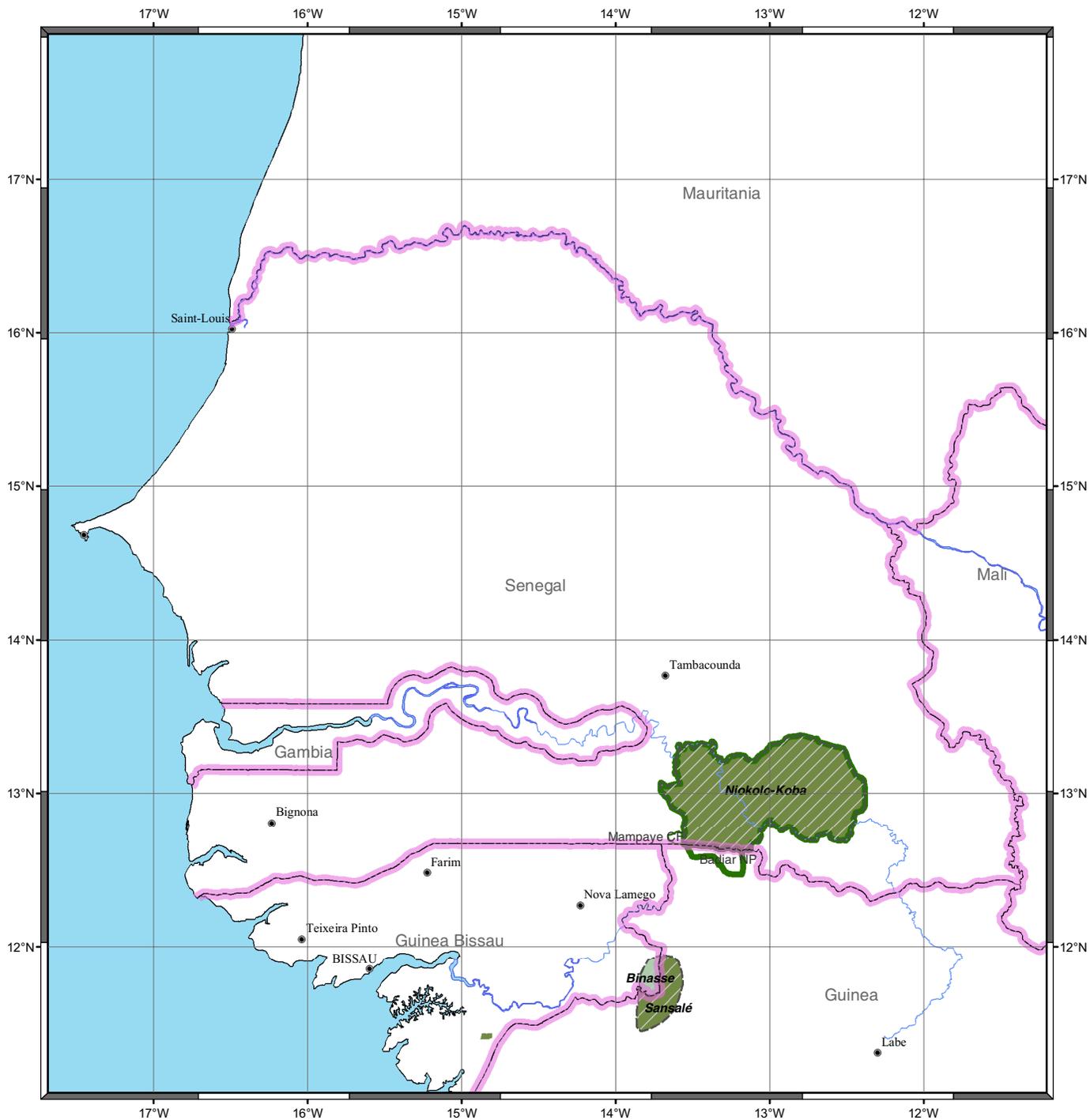
## SENEGAL: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Niokolo-Koba National Park	IG3	D	2002	2	48*	Mauvais, 2002	9,130	13.0 W	13.0 N

\* Range of informed guess

# Senegal

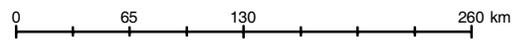
## Elephant Range, Input Zones and Protected Areas



Legend				
	International Boundary	<b>Elephant Range</b>		Known
	Towns		Possible	
	Rivers and lakes		Doubtful	
	Protected Areas		Sighting/sign	
	Input Zones			



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**

# SIERRA LEONE

## **General Statistics**

Country Area: 71,740 km<sup>2</sup>  
Range Area (% of country): 2,894 km<sup>2</sup> (4%)  
Protected area coverage (% of country): 2%  
Protected range (% of known and possible range in protected areas): 15%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

The first known historical reference to elephants in Sierra Leone dates back to 1446, and by 1505 a trade in gold, ivory and slaves had been established by the Portuguese and later continued by the English. The process of forest conversion in Sierra Leone got underway sooner, and was more extensive, than in other West African Range States.

A 1937 guess put the elephant numbers in the country at between 500 and 600, while another guess made in 1973 estimated between 200 and 300 (Sánchez Ariño, 1974). This later estimate is identical to that made by Teleki (1980) seven years later. By then elephants in the country were limited to five poorly known sub-populations.

## **Range**

While no systematic surveys have been conducted in Sierra Leone since the start of hostilities in 1991, recent information suggests that elephants are still to be found in some areas. Reports from the northern central part of the country confirm that elephants are present in the Bagbe River forest, and are moving into areas they had not frequented during the 1990s (A. Kortenhoven, pers. comm., 2002). A new area of **known** range has been added to reflect this.

Elephants are also present in the former Outamba-Kilimi National Park, and this has also been categorized as **known** range. There are unconfirmed reports that elephants may still be found in the Gola Forests on the border with Liberia, and two areas are shown as **possible** range. Remaining areas, originating from Davies (quest. reply, 1993) and Wood (quest. reply, 1993), have been retained from the previous report and are categorized as **possible** range.

## **Surveys and Data**

The AED 1998 reported no estimates for Sierra Leone, and there have been no formal surveys since. An informed guess for the Bagbe River forest, based on a visit to the area in 1995 (A. Kortenhoven, pers. comm., 2002), has been entered into the table of estimates. Other guesses have been obtained from Murgatroyd and Moore (1994) and Davies (1987) (both cited in Grubb *et al.*, 1998).

## **Cross-border Movements**

Elephants may move from Sierra Leone into Guinea and Liberia, but there is no information available.

## **Current Issues**

Although it is not known whether elephants were affected by poaching while the Revolutionary United Front (RUF) was in control of the north, wildlife populations are reported to have recovered during that time, as the RUF actively discouraged gun ownership by the local population and there was little hunting.

Considerable amounts of mahogany continue to arrive in Freetown, most likely originating from the Gola forest. While elephants may still occur in the area, the habitat could be severely disturbed by the logging. In addition, elephants in Gola may have come under pressure following a recent incursion of armed guerrillas from Liberia into Sierra Leone. The planned creation of a bird sanctuary in the Gola forest may lead to a better assessment of the status of elephants in the area.

### Summary totals for Sierra Leone

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	0	0	5	45
Other Guesses	0	0	0	160
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>205</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	349	9.3%
Other Guesses	990	26.3%
Unassessed Known Range	859	22.8%
Unassessed Possible Range	696	18.5%
Doubtful Range	867	23.1%
<b>TOTAL</b>	<b>3,761</b>	

### Age of range data

TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
Pre-1988	1,225	32.6%
1996-1998	867	23.1%
Post-1998	1,669	44.4%
<b>TOTAL</b>	<b>3,761</b>	

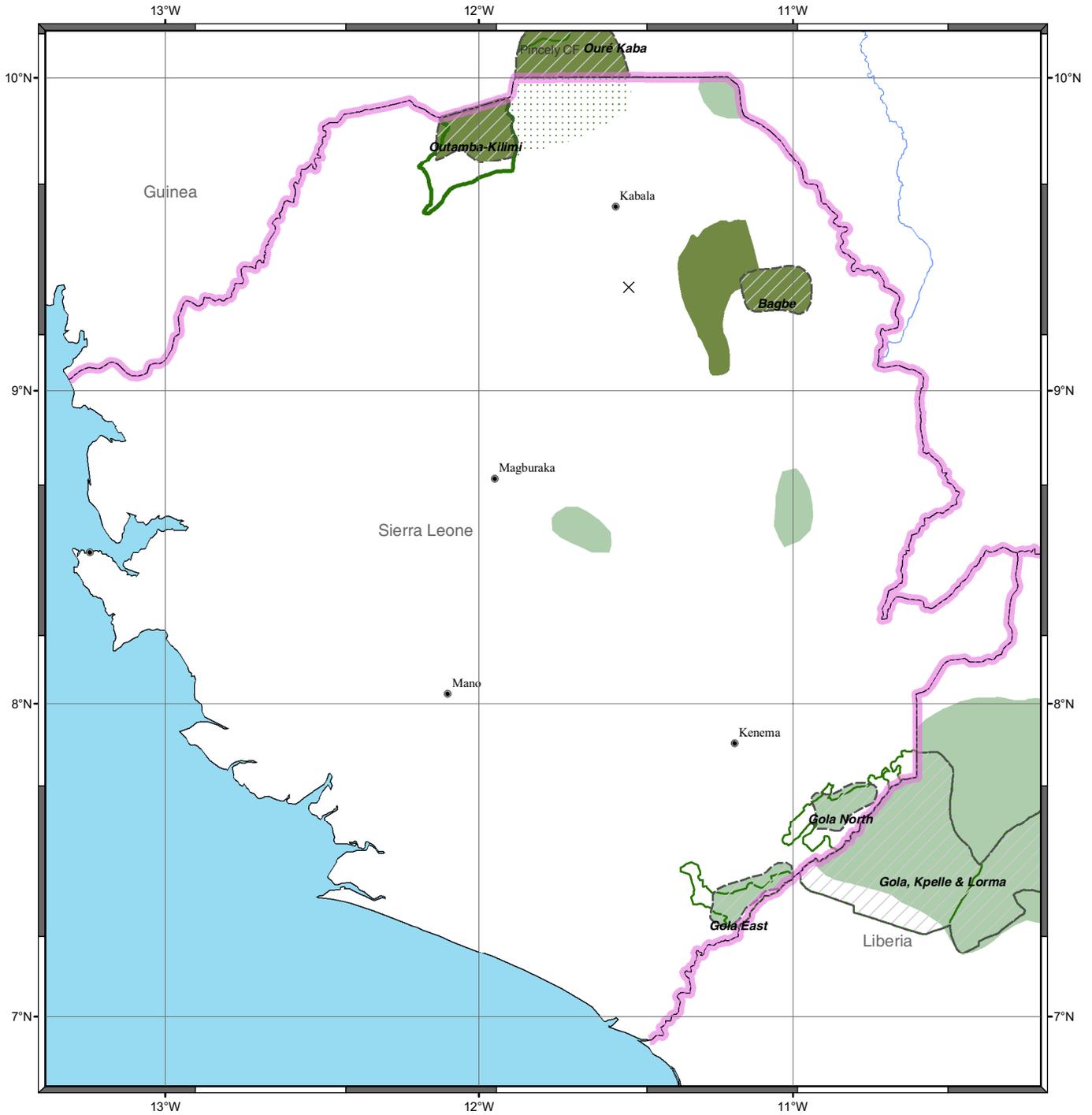
## SIERRA LEONE: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Bagbe River Forest	IG3	D	1995	5	45*	Kortenhoven pers. comm., 2002	349	11.1 W	9.3 N
Gola East Forest Reserve	OG3	E	1987	60		Davies (1987) in Grubb et al., 1998	287	11.1 W	7.4 N
Gola North Forest Reserve	OG3	E	1987	50		Davies (1987) in Grubb et al., 1998	242	10.8 W	7.7 N
Outamba-Kilimi	OG3	E	1994	50		Grubb et al., 1998	461	12.0 W	9.8 N

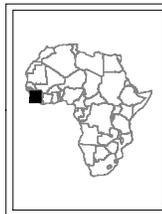
\* Range of informed guess

# Sierra Leone

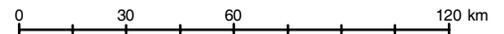
## Elephant Range, Input Zones and Protected Areas



Legend			
	International Boundary	<b>Elephant Range</b>	
	Towns		Known
	Rivers and lakes		Possible
	Protected Areas		Doubtful
	Input Zones		Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I

IUCN/SSC



**African Elephant  
Specialist Group**



# T O G O

## **General Statistics**

Country Area: 56,790 km<sup>2</sup>  
Range Area (% of country): 5,834 km<sup>2</sup> (10%)  
Protected area coverage (% of country): 13%  
Protected range (% of known and possible range in protected areas): 73%  
CITES Appendix: I  
Listing Year: 1989

## **Historical Background**

By the early 1900s elephants were no longer recorded in the moister, southern part of the country. Today elephants are found in two ranges, one in the north and one in the centre. Guesses and extrapolations of the total population before 1990 ranged from 100 to 400 (Direction des Parcs Nationaux, des Réserves de Faune et des Chasses, 1991; Burrill and Douglas-Hamilton, 1987; Burrill and Douglas-Hamilton, 1987a).

The northern range included Fosse aux Lions NP, Kéran NP and the Oti-Mandouri Game Reserve. In 1991 an aerial count recorded 130 elephants in Fosse-aux-Lions NP (Stalmans and Anderson, 1992). Elephants moved from Ghana along a corridor to the Fosse aux Lions NP, and it was believed they moved eastwards from Oti-Mandouri to Benin (Okoumassou *et al.*, 1998). The southern range included Fazao-Malfakassa National Park and the Fôret d'Abdoulayé (Okoumassou, 1995).

In 1991, during a period of political unrest, local people invaded protected areas and many elephants were killed, while others fled into neighbouring countries (Tandzidani, 1993; Okoumassou, 1995). In 1996 elephants were reported absent from the Kéran NP and the Galangashie and Barkoissie Forest Reserves, and they were only seen seasonally in the Doung-Pana area where they had previously been abundant (Okoumassou, 1995). Large parts of the Fosse-aux-Lions NP and of the corridor westwards to Ghana were later cultivated.

## **Range**

There are two main areas of elephant range, one in the north centred around Kéran National Park and Oti-Mandouri Faunal Reserve, and the other in the Fazao-Malfakassa massif in the central part of the country. In the drier, northern half of the country, elephants migrate seasonally in search of water, and the only permanent ranges are currently Fazao-Malfakassa and Abdoulayé Faunal Reserves. Remaining areas in the north are only visited seasonally (Okoumassou and Durlot, 2002).

The boundaries of elephant range have been fine-tuned and updated in this report with information provided by Okoumassou (quest. reply, 2002). Based on the same source, a portion of range in Abdoulayé Faunal Reserve has been returned to the database, and an adjacent strip connecting to the border with Benin has been newly added. Except for the ranges in Doung-Pana and Galangashie, which have been classified as **possible**, all range areas in Togo have been categorized as **known**.

## **Surveys and Data**

No systematic surveys have been conducted in Togo since the last report. Okoumassou (quest. reply, 2002) has provided an updated informed guess of 61 for Fazao-Malfakassa National Park. This estimate replaces a 1995 informed guess of 30. The same source has also provided an informed guess for Abdoulayé Faunal Reserve, for which the AED had no previous estimates.

Although elephants are periodically seen in Fosse aux Lions National Park, none are believed to reside there permanently. Hence, an estimate of zero has been added to the table (Okoumassou, quest. reply, 2002).

***Cross-border  
Movements***

A recent study of elephant movements in Togo has confirmed the seasonal passage between Togo and Ghana, Benin and Burkina Faso (Okoumassou and Durlot, 2002).

***Current Issues***

Togo's small and fragmented populations of elephants range widely in search of water during the dry season, especially in the north. The country may serve as a vital corridor connecting other populations in West Africa.

Elephant movements, coupled with Togo's high human population density and the decreased availability of natural habitat has brought the country's elephants in direct, and in places severe, conflict with humans (Okoumassou and Durlot, 2002).

In 1999 Togo elaborated a National Environmental Action Plan as well as a National Environmental Management Plan. A National Elephant Conservation Strategy was developed in 2002 and published in May 2003 (Ministère de l'Environnement et des Ressources Forestières, 2003).

### Summary totals for Togo

DATA CATEGORY	DEFINITE	PROBABLE	POSSIBLE	SPECULATIVE
Informed Guesses	4	0	112	0
<b>TOTAL</b>	<b>4</b>	<b>0</b>	<b>112</b>	<b>0</b>

### Area of range covered by each data category

DATA CATEGORY	AREA (km <sup>2</sup> )	% of Total
Informed Guesses	4,121	70.6%
Unassessed Known Range	1,375	23.6%
Unassessed Possible Range	338	5.8%
<b>TOTAL</b>	<b>5,834</b>	

### Age of range data

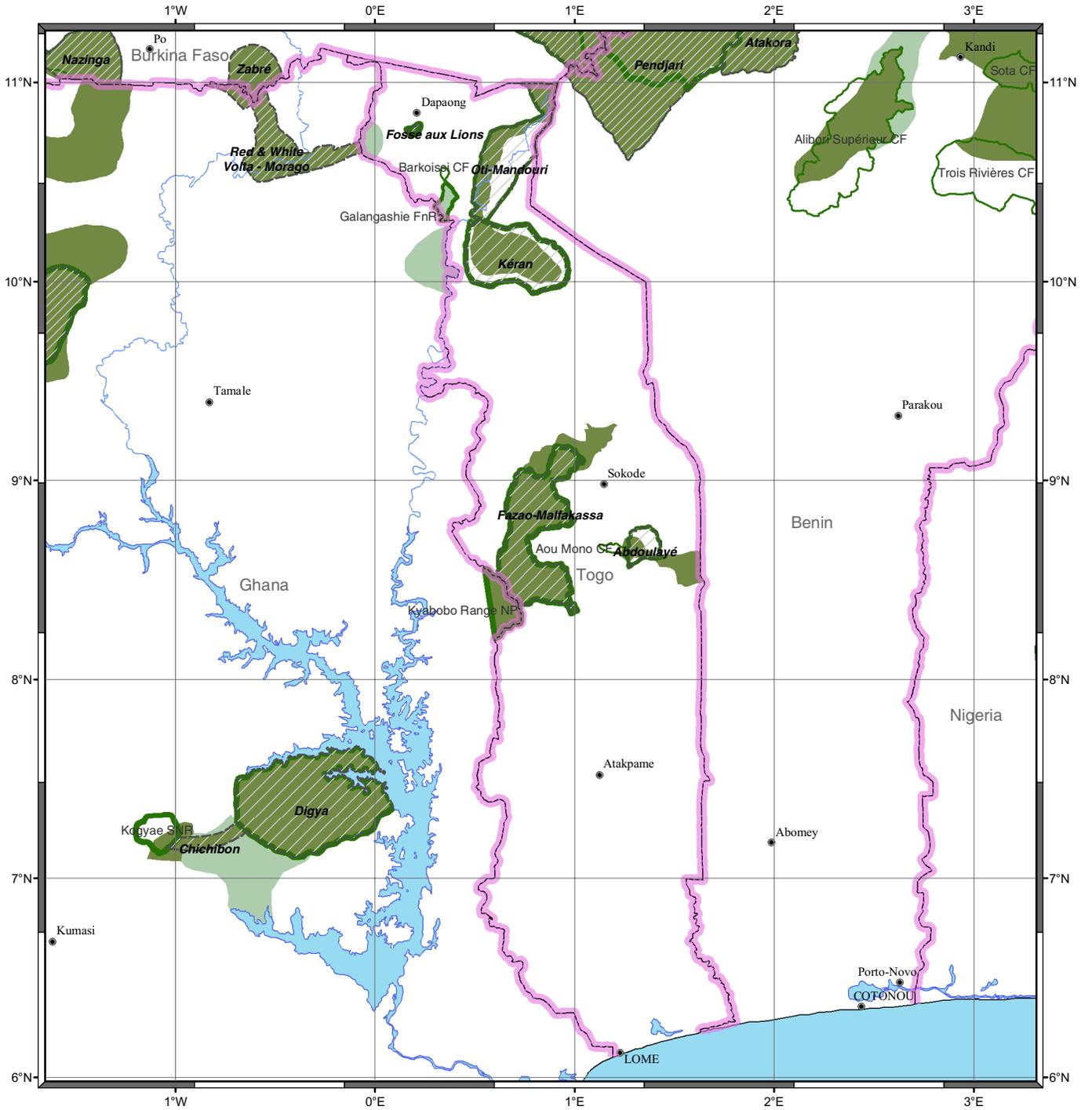
TIME PERIOD	AREA (km <sup>2</sup> )	% of Total
1993-1995	3,383	58.0%
Post-1998	2,451	42.0%
<b>TOTAL</b>	<b>5,834</b>	

## TOGO: ELEPHANT ESTIMATES

INPUT ZONE	SURVEY DETAILS		SURVEY YEAR	NUMBER OF ELEPHANTS		SOURCE	AREA (km <sup>2</sup> )	MAP LOCATION	
	TYPE	RELIAB.		ESTIMATE	95% C.L.			LONG.	LAT.
Abdoulayé Faunal Reserve	IG3	D	2002	4		Okoumassou, quest. reply, 2002	300	1.3 E	8.7 N
Fazao-Malfakassa National Park	IG3	D	2002	61		Okoumassou, quest. reply, 2002	1,920	0.8 E	8.7 N
Fosse aux Lions National Park	IG3	D	2002	0		Okoumassou, quest. reply, 2002	17	0.2 E	10.8 N
Kéran National Park	IG3	D	1998	16		Okoumassou, quest. reply, 1998	1,636	0.7 E	10.1 N
Oti-Mandouri Faunal Reserve	IG3	D	1995	35		Okoumassou, 1995	1,478	0.7 E	10.6 N

# Togo

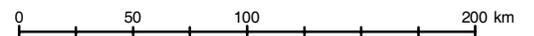
## Elephant Range, Input Zones and Protected Areas



Legend	
	International Boundary
	Towns
	Rivers and lakes
	Protected Areas
	Input Zones
	<b>Elephant Range</b> Known
	Possible
	Doubtful
	Sighting/sign



Sources:  
African Elephant Database  
Digital Chart of the World



Geographic Projection  
Scale is indicative only  
For Key to protected area  
abbreviations turn to Appendix I





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# APPENDIX I

## ABBREVIATIONS USED IN PROTECTED AREA DESIGNATIONS

<b>Abbreviation</b>	<b>Designate</b>	<b>Abbreviation</b>	<b>Designate</b>
BR	Biosphere Reserve	NPe	National Park Extension
BtR	Botanical Reserve	NR	Nature Reserve
CA	Conservation Area	NS	National Sanctuary
CcA	Concession Area	PFR	Partial Faunal Reserve
CF	Classified Forest	PGR	Private Game Reserve
CHA	Controlled Hunting Area	Pk	Park
CR	Community Reserve	PNE	Protected Natural Environment
EC	Elephant Corridor	PNR	Private Nature Reserve
ES	Elephant Sanctuary	PR	Partial Reserve
FFR	Fauna and Flora Reserve	PrP	Presidential Park
FnR	Faunal Reserve	PrR	Presidential Reserve
FR	Forest Reserve	PvR	Private Reserve
GMA	Game Management Area	RA	Recreation Area
GmR	Game Ranch	RNP	Regional Nature Park
GP	Game Park	RP	Recreation Park
GPR	Game Production Reserve	RyNP	Royal National Park
GR	Game Reserve	SA	Safari Area
GS	Game Sanctuary	SF	State Forest
HA	Hunting Area	SNR	Strict Nature Reserve
HR	Hunting Reserve	SR	Special Reserve
HZ	Hunting Zone	Sty	Sanctuary
IFR	Integral Forest Reserve	TFR	Total Faunal Reserve
INR	Integral Nature Reserve	WA	Wilderness Area
NF	National Forest	WP	Wetland Park
NIR	National Reserve	WR	Wildlife Reserve
NM	Natural Monument	WS	Wildlife Sanctuary
NNR	National Nature Reserve		
NP	National Park		



# APPENDIX II

## ALPHABETICAL LIST OF PROTECTED AREAS IN ELEPHANT RANGE

Protected Area	Area	Year Established	IUCN Category	Country (Region)
Abdoulayé Faunal Reserve	300	1951	IV	Togo (West Africa)
Aberdare National Park	766	1950	II	Kenya (Eastern Africa)
Abokoamekro Faunal Reserve	135	1993	?	Côte d'Ivoire (West Africa)
Abong-Mbang Forest Reserve	1,540	?	VI	Cameroon (Central Africa)
Abou Telfane Faunal Reserve	1,100	1955	IV	Chad (Central Africa)
Addo Elephant National Park	513	1931	II	South Africa (Southern Africa)
Akagera National Park	1,018	1934	II	Rwanda (Eastern Africa)
Akobo Controlled Hunting Area	5,049	1973	VI	Ethiopia (Eastern Africa)
Alibori Supérieur Classified Forest	2,560	1995	VI	Benin (West Africa)
Altos de Nsork National Park	691	2000	II	Equatorial Guinea (Central Africa)
Amboseli National Park	392	1974	II	Kenya (Eastern Africa)
André Felix National Park	1,700	1960	II	Central African Republic (Central Africa)
Ankasa Game Production Reserve	343	1976	VI	Ghana (West Africa)
Aou Mono Classified Forest	65	?	VI	Togo (West Africa)
Aouk-Aoukale Faunal Reserve	3,300	1939	IV	Central African Republic (Central Africa)
Arly National Park	930	1954	II	Burkina Faso (West Africa)
Arly Partial Faunal Reserve	1,300	1954	IV	Burkina Faso (West Africa)
Arusha National Park	132	1967	II	Tanzania (Eastern Africa)
Assin-Attandanso Game Production	140	1991	VI	Ghana (West Africa)
Atakora Hunting Zone	1,220	1954	VI	Benin (West Africa)
Atherstone Nature Reserve	136	1990	IV	South Africa (Southern Africa)
Avakaba Presidential Park	2,500	1980	IV	Central African Republic (Central Africa)
Azagny National Park	190	1981	II	Côte d'Ivoire (West Africa)
Babille Elephant Sanctuary	6,982	1970	II	Ethiopia (Eastern Africa)
Babules Forest Reserve	530	?	VI	Cameroon (Central Africa)
Badiar National Park	382	1985	II	Guinea (West Africa)
Bahr Salamat Faunal Reserve	20,600	1964	IV	Chad (Central Africa)
Bamingui-Bangoran National Park	10,700	1933	II	Central African Republic (Central Africa)
Bandingilo Game Reserve	16,500	1986	II	Sudan (Eastern Africa)
Bangassou Forest Reserve	16,600	?	VI	Central African Republic (Central Africa)
Bangweulu Game Management Area	6,570	1971	VI	Zambia (Southern Africa)
Banhine National Park	7,000	1972	II	Mozambique (Southern Africa)
Banyang-Mbo Forest Reserve	426	?	VI	Cameroon (Central Africa)
Barkoissi Classified Forest	25	?	VI	Togo (West Africa)
Barrobo National Forest	640	?	VI	Liberia (West Africa)
Bas Chari Faunal Reserve	975	?	IV	Chad (Central Africa)ational

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Beki-Bossematie Classified Forest	389	?	VI	Côte d'Ivoire (West Africa)
Bengangai Game Reserve	170	1939	IV	Sudan (Eastern Africa)
Benoué National Park	1,800	1968	II	Cameroon (Central Africa)
Bia National Park	78	1974	II	Ghana (West Africa)
Bia Game Production Reserve	228	1974	VI	Ghana (West Africa)
Biharamulo Game Reserve	1,300	1959	IV	Tanzania (Eastern Africa)
Bikuar National Park	7,900	1964	II	Angola (Southern Africa)
Bilili Springs Game Management Area	3,080	1971	VI	Zambia (Southern Africa)
Bili-Uere Hunting Reserve		?	VI	Democratic Republic of Congo (Central Africa)
Binder-Léré Faunal Reserve	1,350	1974	IV	Chad (Central Africa)
Bire Kpatuos Game Reserve	445	1939	VI	Sudan (Eastern Africa)
Biringou National Park	708	2002	II	Gabon (Central Africa)
Bisanadi National Reserve	606	1979	VI	Kenya (Eastern Africa)
Boma National Park	22,800	1986	II	Sudan (Eastern Africa)
Bomu Strict Nature Reserve	10,700	?	I	Democratic Republic of Congo (Central Africa)
Boni National Reserve	1,339	1976	VI	Kenya (Eastern Africa)
Bontioli Total Faunal Reserve	127	1957	IV	Burkina Faso (West Africa)
Bontioli Partial Faunal Reserve	295	1957	IV	Burkina Faso (West Africa)
Borana Controlled Hunting Area	45,366	1973	VI	Ethiopia (Eastern Africa)
Bouba Ndjidah National Park	2,200	1968	II	Cameroon (Central Africa)
Boumba-Bek Forest Reserve	2,500	?	VI	Cameroon (Central Africa)
Boundiali Classified Forest	350	?	VI	Côte d'Ivoire (West Africa)
Bufalo Partial Reserve	400	1974	IV	Angola (Southern Africa)
Buffalo Springs National Reserve	131	1985	II	Kenya (Eastern Africa)
Bugungu Wildlife Reserve	553	1968	IV	Uganda (Eastern Africa)
Burigi Game Reserve	2,200	1972	IV	Tanzania (Eastern Africa)
Bwabwata National Park	5,792	2002	II	Namibia (Southern Africa)
Bwindi Impenetrable Forest National Park	336	1991	II	Uganda (Eastern Africa)
Campo Faunal Reserve	3,000	?	IV	Cameroon (Central Africa)
Campo Ma'an National Park	2,550	2000	II	Cameroon (Central Africa)
Chad Basin National Park	2,300	?	II	Nigeria (West Africa)
Charara Safari Area	1,694	1975	VI	Zimbabwe (Southern Africa)
Chete Safari Area	1,081	1975	VI	Zimbabwe (Southern Africa)
Chew Bahr Wildlife Reserve	4,212	1973	IV	Ethiopia (Eastern Africa)
Chewore Safari Area	3,390	1964	VI	Zimbabwe (Southern Africa)
Chiawa Game Management Area	900	?	VI	Zambia (Southern Africa)
Chibwika-Ntambu Game Management Area	1,550	1971	VI	Zambia (Southern Africa)
Chimalavera Regional Nature Park	100	1974	V	Angola (Southern Africa)
Chipinge Safari Area	261	1975	VI	Zimbabwe (Southern Africa)
Chirisa Safari Area	1,713	1975	VI	Zimbabwe (Southern Africa)
Chisomo Game Management Area	3,390	1971	VI	Zambia (Southern Africa)
Chizarira National Park	1,910	1975	II	Zimbabwe (Southern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Chizera Game Management Area	2,280	1971	VI	Zambia (Southern Africa)
Chobe National Park	10,570	1968	II	Botswana (Southern Africa)
Chyulu Hills National Reserve	471	1983	II	Kenya (Eastern Africa)
Comoé National Park	11,500	1968	II	Côte d'Ivoire (West Africa)
Counkouati-Douli National Park	3,134	2000	II	Congo (Central Africa)
Cross River National Park	4,000	1991	II	Nigeria (West Africa)
Dabus Valley Controlled Hunting Area	2,127	1973	VI	Ethiopia (Eastern Africa)
Dande Safari Area	523	1975	VI	Zimbabwe (Southern Africa)
Deka Safari Area	510	1975	VI	Zimbabwe (Southern Africa)
Deux Bales Classified Forest	566	1967	IV	Burkina Faso (West Africa)
Dibon Classified Forest	225	?	VI	Burkina Faso (West Africa)
Diefoula Classified Forest	880	?	VI	Burkina Faso (West Africa)
Digya National Park	3,478	1971	II	Ghana (West Africa)
Dimonika Biosphere Reserve	1,225	1988	IV	Congo (Central Africa)
Dja Faunal Reserve	5,260	1950	IV	Cameroon (Central Africa)
Djoli Kera Forest Reserve	950	?	VI	Chad (Central Africa)
Djona Hunting Zone	1,880	1980	VI	Benin (West Africa)
Dodori National Reserve	877	1976	VI	Kenya (Eastern Africa)
Doma Safari Area	945	1975	VI	Zimbabwe (Southern Africa)
Dosso Partial Faunal Reserve	4,075	1962	IV	Niger (West Africa)
Douentza Elephant Faunal Reserve	12,000	1959	IV	Mali (West Africa)
Dzanga-Ndoki National Park	1,220	1990	II	Central African Republic (Central Africa)
Dzanga-Sangha Special Reserve	3,359	1990	VI	Central African Republic (Central Africa)
Ejaham Forest Reserve	715	?	VI	Cameroon (Central Africa)
Estuario del Muni Nature Reserve	626	2000	IV?	Equatorial Guinea (Central Africa)
Etosha National Park	22,270	1907	II	Namibia (Southern Africa)
Faro National Park	3,300	1980	II	Cameroon (Central Africa)
Fazao-Malfakassa National Park	1,920	1951	II	Togo (West Africa)
Fosse aux Lions National Park	17	1954	II	Togo (West Africa)
Foumbou Classified Forest	480	?	VI	Côte d'Ivoire (West Africa)
Fungom Forest Reserve	360	?	VI	Cameroon (Central Africa)
Galangashie Faunal Reserve	75	1954	IV	Togo (West Africa)
Gambella National Park	5,061	1974	II	Ethiopia (Eastern Africa)
Gangala-na-bodio Hunting Reserve		?	VI	Democratic Republic of Congo (Central Africa)
Garamba National Park	4,920	1938	II	Democratic Republic of Congo (Central Africa)
Gashaka-Gumti National Park	5,860	1991	II	Nigeria (West Africa)
Gbi National Forest	610	?	VI	Liberia (West Africa)
Gilé Game Reserve	2,100	1960	IV	Mozambique (Southern Africa)
Goin-Cavally and Goin-Debe Classified	1,890	?	VI	Côte d'Ivoire (West Africa)
Gola National Forest	2,071	?	VI	Liberia (West Africa)
Gola East and West Forest Reserve	295	?	VI	Sierra Leone (West Africa)
Gola North Forest Reserve	480	?	VI	Sierra Leone (West Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Gola North Extension Forest Reserve	70	?	VI	Sierra Leone (West Africa)
Gonarezhou National Park	5,053	1975	II	Zimbabwe (Southern Africa)
Gorongosa National Park	3,750	1960	II	Mozambique (Southern Africa)
Goungoun Classified Forest	732	1950	VI	Benin (West Africa)
Greater St. Lucia Wetland Park	2,587	1895	II	South Africa (Southern Africa)
Grebo National Forest	2,604	?	VI	Liberia (West Africa)
Gribingui-Bamingui Faunal Reserve	4,380	1940	IV	Central African Republic (Central Africa)
Grumeti Game Reserve	2,000	1994	IV	Tanzania (Eastern Africa)
Guéné Classified Forest	13	1942	VI	Benin (West Africa)
Hartley Safari Area	445	1975	VI	Zimbabwe (Southern Africa)
Haut Bandama Fauna and Flora Reserve	1,230	1973	I	Côte d'Ivoire (West Africa)
Haut Dodo/Grah/Hana Classified Forest	1,905	?	VI	Côte d'Ivoire (West Africa)
Haut Sassandra Classified Forest	1,024	?	VI	Côte d'Ivoire (West Africa)
Hlane Royal National Park	142	1967	VI	Swaziland (Southern Africa)
Hluhluwe-Umfolozi Park	965	1989	II	South Africa (Southern Africa)
Hobatere Concession Area	230	?	UA	Namibia (Southern Africa)
Hurungwe Safari Area	2,878	1975	VI	Zimbabwe (Southern Africa)
Hwange National Park	14,651	1949	II	Zimbabwe (Southern Africa)
Ibanda Game Reserve	200	1974	IV	Tanzania (Eastern Africa)
Ifon Game Reserve	500	?	IV	Nigeria (West Africa)
Iguela Hunting Area	1,800	1962	VI	Gabon (Central Africa)
Ikorongo Game Reserve	3,000	1994	IV	Tanzania (Eastern Africa)
Iona National Park	15,150	1964	VI	Angola (Southern Africa)
Isangano National Park	840	1972	II	Zambia (Southern Africa)
Itala Nature Reserve	297	1972	II	South Africa (Southern Africa)
Ivindo National Park	3,000	2002	II	Gabon (Central Africa)
Jikao Controlled Hunting Area	3,375	1973	VI	Ethiopia (Eastern Africa)
Kafinda Game Management Area	3,860	1971	VI	Zambia (Southern Africa)
Kafue National Park	22,400	1951	II	Zambia (Southern Africa)
Kahuzi-Biega National Park	6,000	1975	II	Democratic Republic of Congo (Central Africa)
Kainji Lake National Park	5,320	1975	II	Nigeria (West Africa)
Kakum National Park	207	1991	II	Ghana (West Africa)
Kalamaloué National Park	45	1972	II	Cameroon (Central Africa)
Kalio Classified Forest	275	?	VI	Burkina Faso (West Africa)
Kaluanyembe Game Management Area	3,425	?	VI	Zambia (Southern Africa)
Kamnarok National Reserve	50	1983	VI	Kenya (Eastern Africa)
Kamuku Game Reserve	200	?	IV	Nigeria (West Africa)
Kansonso-Busanga Game Management	7,780	1971	VI	Zambia (Southern Africa)
Kaputa Game Management Area	3,600	1971	VI	Zambia (Southern Africa)
Kariba Recreation Park	2,830	1979	V	Zimbabwe (Southern Africa)
Karuma Wildlife Reserve	696	1964	IV	Uganda (Eastern Africa)
Kasanka National Park	390	1972	II	Zambia (Southern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Kasungu National Park	2,316	1970	II	Malawi (Southern Africa)
Katavi National Park	4,241	1974	II	Tanzania (Eastern Africa)
Katokota Game Ranch	15	?	UA	Zambia (Southern Africa)
Kazuma Pan National Park	313	1975	II	Zimbabwe (Southern Africa)
Kéran National Park	1,636	1977	II	Togo (West Africa)
Khaudom Game Park	3,842	1989	IV	Namibia (Southern Africa)
Kibale National Park	766	1993	II	Uganda (Eastern Africa)
Kidepo Game Reserve	1,975	1975	VI	Sudan (Eastern Africa)
Kidepo Valley National Park	1,416	1962	II	Uganda (Eastern Africa)
Kigezi Wildlife Reserve	850	1952	IV	Uganda (Eastern Africa)
Kigosi Game Reserve	7,000	1983	IV	Tanzania (Eastern Africa)
Kilimanjaro National Park	753	1973	II	Tanzania (Eastern Africa)
Kilombero Conservation Area	7,282	?	IV	Tanzania (Eastern Africa)
Kinkene/Nyellepuo-Nzi Classified Forest	1,865	?	VI	Côte d'Ivoire (West Africa)
Kizigo Game Reserve	4,000	1982	IV	Tanzania (Eastern Africa)
Klaserie Private Nature Reserve	628	?	UA	South Africa (Southern Africa)
Kogyae Strict Nature Reserve	386	1971	I	Ghana (West Africa)
Kora National Reserve	1,788	1989	II	Kenya (Eastern Africa)
Korup National Park	1,259	1986	II	Cameroon (Central Africa)
Koukourou-Bamingui Faunal Reserve	1,100	1940	IV	Central African Republic (Central Africa)
Kourtiagou Partial Faunal Reserve	510	1957	IV	Burkina Faso (West Africa)
Kpelle National Forest	1,749	?	VI	Liberia (West Africa)
Krahn Bassa National Forest	5,142	?	VI	Liberia (West Africa)
Kruger National Park	19,624	1926	II	South Africa (Southern Africa)
Kwiambana Game Reserve	1,715	?	IV	Nigeria (West Africa)
Kyabobo Range National Park	415	?	II	Ghana (West Africa)
Kyambura Wildlife Reserve	213	1965	IV	Uganda (Eastern Africa)
Laba Classified Forest	150	?	VI	Burkina Faso (West Africa)
Lac Télé Community Reserve	4,390	2002	VI?	Congo (Central Africa)
Lake Lobéké Forest Reserve	2,179	?	VI	Cameroon (Central Africa)
Lake Manyara National Park	330	1960	II	Tanzania (Eastern Africa)
Lavushi Manda National Park	1,500	1972	II	Zambia (Southern Africa)
Lefini Faunal Reserve	4,595	1951	IV	Congo (Central Africa)
Lengwe National Park	887	1970	II	Malawi (Southern Africa)
Letaba Ranch Private Game Reserve	420	1981	IV	South Africa (Southern Africa)
Limpopo National Park	10,736	2001	II	Mozambique (Southern Africa)
Limpopo Valley National Park	75	1998	II	South Africa (Southern Africa)
Liwonde National Park	538	1973	II	Malawi (Southern Africa)
Loango National Park	1,550	2002	II	Gabon (Central Africa)
Logoniegue Classified Forest	355	?	VI	Burkina Faso (West Africa)
Lopé National Park	5,000	2002	II	Gabon (Central Africa)
Lorma Conservation Area	675	?	UA	Liberia (West Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Lorma National Forest	435	?	VI	Liberia (West Africa)
Losai National Reserve	1,806	1976	VI	Kenya (Eastern Africa)
Lower Zambezi National Park	4,092	1983	II	Zambia (Southern Africa)
Luambe National Park	254	1972	II	Zambia (Southern Africa)
Luano Game Management Area	8,930	1971	VI	Zambia (Southern Africa)
Luiana Partial Reserve	8,400	1966	IV	Angola (Southern Africa)
Lukusuzi National Park	2,720	1972	II	Zambia (Southern Africa)
Lukwakwa Game Management Area	2,540	1971	VI	Zambia (Southern Africa)
Lukwati Game Reserve	1,201	?	IV	Tanzania (Eastern Africa)
Lumimba Game Management Area	4,500	1971	VI	Zambia (Southern Africa)
Lunga-Luswishi Game Management Area	13,340	1971	VI	Zambia (Southern Africa)
Lupande Game Management Area	4,840	1971	VI	Zambia (Southern Africa)
Madikwe Nature Reserve	700	1992	IV	South Africa (Southern Africa)
Madjoari Total Faunal Reserve	170	1955	IV	Burkina Faso (West Africa)
Mago National Park	2,162	1978	II	Ethiopia (Eastern Africa)
Mahale Mountains National Park	1,577	1985	II	Tanzania (Eastern Africa)
Maiko National Park	10,830	1970	II	Democratic Republic of Congo (Central Africa)
Makgadikgadi National Park	4,877	1992	II	Botswana (Southern Africa)
Makuya Park	165	1994	IV	South Africa (Southern Africa)
Malipati Safari Area	154	1975	VI	Zimbabwe (Southern Africa)
Malka Mari National Park	876	1989	II	Kenya (Eastern Africa)
Mamili National Park	1,010	1990	II	Namibia (Southern Africa)
Mampaye Classified Forest	80	?	VI	Senegal (West Africa)
Mana Pools National Park	2,196	1975	II	Zimbabwe (Southern Africa)
Mandelia Faunal Reserve	1,380	1969	IV	Chad (Central Africa)
Mangetti Game Reserve	420	?	UA	Namibia (Southern Africa)
Manjirenji Recreation Park	34	?	V	Zimbabwe (Southern Africa)
Manovo-Gounda-Saint Floris NP	17,400	1933	II	Central African Republic (Central Africa)
Manyeleti Game Reserve	228	1967	IV	South Africa (Southern Africa)
Maputo Game Reserve	900	1969	IV	Mozambique (Southern Africa)
Marahoué National Park	1,010	1968	II	Côte d'Ivoire (West Africa)
Marakele National Park	380	1987	II	South Africa (Southern Africa)
Marakele Concession (NPe)	258	2002	II	South Africa (Southern Africa)
Maralal National Sanctuary	155	1988	IV	Kenya (Eastern Africa)
Maro Classified Forest	475	?	VI	Burkina Faso (West Africa)
Marromeu Game Reserve	1,100	?	IV	Mozambique (Southern Africa)
Marsabit National Park	350	1967	II	Kenya (Eastern Africa)
Marsabit National Reserve	1,554	1949	II	Kenya (Eastern Africa)
Masai Mara National Reserve	1,510	1974	II	Kenya (Eastern Africa)
Massif du Ziama Strict Nature Reserve	1,123	1943	I	Guinea (West Africa)
Maswa Game Reserve	2,200	1962	IV	Tanzania (Eastern Africa)
Matetsi Safari Area	2,955	1975	VI	Zimbabwe (Southern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Matusadona National Park	1,407	1975	II	Zimbabwe (Southern Africa)
Mavinga Partial Reserve	5,950	1966	IV	Angola (Southern Africa)
Mbambe Forest Reserve	305	?	VI	Cameroon (Central Africa)
Mbam-Djerem National Park	4,170	2000	II	Cameroon (Central Africa)
Mbarizunga Game Reserve	615	1939	VI	Sudan (Eastern Africa)
Mbé National Park	600	2002	II	Gabon (Central Africa)
Meru National Park	870	1966	II	Kenya (Eastern Africa)
Mgahinga Gorilla National Park	67	1991	II	Uganda (Eastern Africa)
Mikumi National Park	3,230	1964	II	Tanzania (Eastern Africa)
Minkébé National Park	7,567	2002	II	Gabon (Central Africa)
Mizan-Teferi Controlled Hunting Area	3,146	1985	VI	Ethiopia (Eastern Africa)
Mkhaya Nature Reserve	65	1981	VI	Swaziland (Southern Africa)
Mkomazi Game Reserve	3,000	1951	IV	Tanzania (Eastern Africa)
Mkuzi Game Reserve	380	1912	II	South Africa (Southern Africa)
Mlawula Nature Reserve	170	1977	IV	Swaziland (Southern Africa)
Moçamedes Partial Reserve	4,450	1960	IV	Angola (Southern Africa)
Mole National Park	4,840	1971	II	Ghana (West Africa)
Mondo Missa Hunting Reserve		?	VI	Democratic Republic of Congo (Central Africa)
Mongokele Forest Reserve	850	?	VI	Cameroon (Central Africa)
Mont Fouari Faunal Reserve	156	1958	IV	Congo (Central Africa)
Mont Gbande Classified Forest	225	?	VI	Côte d'Ivoire (West Africa)
Mont Mavoumbou Hunting Reserve	420	1955	IV	Congo (Central Africa)
Mont Nimba Strict Nature Reserve	50	1944	I	Côte d'Ivoire (West Africa)
Mont Nimba Strict Nature Reserve	130	1944	I	Guinea (West Africa)
Mont Péko National Park	340	1968	II	Côte d'Ivoire (West Africa)
Mont Sangbe National Park	950	1976	II	Côte d'Ivoire (West Africa)
Monte Alén National Park	1,951	1990	II	Equatorial Guinea (Central Africa)
Moremi Game Reserve	4,968	1965	IV	Botswana (Southern Africa)
Mosi-oa-Tunya National Park	66	1972	II	Zambia (Southern Africa)
Moukalaba Hunting Area	200	1962	VI	Gabon (Central Africa)
Moukalaba-Dougoua National Park	4,495	2002	II	Gabon (Central Africa)
Mount Elgon National Park	169	1968	II	Kenya (Eastern Africa)
Mount Elgon National Park	1,264	?	II	Uganda (Eastern Africa)
Mount Kenya National Park	718	1949	II	Kenya (Eastern Africa)
Moyowosi Game Reserve	6,000	1981	IV	Tanzania (Eastern Africa)
Mt Seni National Park	600	2002	II	Gabon (Central Africa)
Mudumo National Park	320	1990	II	Namibia (Southern Africa)
Muhesi Game Reserve	2,000	1994	IV	Tanzania (Eastern Africa)
Mulobezi Game Management Area	3,420	1971	VI	Zambia (Southern Africa)
Mumbwa Game Management Area	3,370	1971	VI	Zambia (Southern Africa)
Munyamadzi Game Management Area	3,300	1971	VI	Zambia (Southern Africa)
Mupa National Park	6,600	1964	VI	Angola (Southern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Murchison Falls National Park	3,795	1952	II	Uganda (Eastern Africa)
Murle Controlled Hunting Area	4,172	1973	VI	Ethiopia (Eastern Africa)
Musalangu Game Management Area	17,350	1971	VI	Zambia (Southern Africa)
Musele-Matebo Game Management Area	3,700	1971	VI	Zambia (Southern Africa)
Mwabvi Wildlife Reserve	135	1953	IV	Malawi (Southern Africa)
Mwagné National Park	1,132	2002	II	Gabon (Central Africa)
Mwea National Reserve	68	1976	VI	Kenya (Eastern Africa)
Mweru-Wantipa National Park	3,134	1972	II	Zambia (Southern Africa)
Namwala Game Management Area	3,600	1971	VI	Zambia (Southern Africa)
Nana-Barya Faunal Reserve	2,300	1960	IV	Central African Republic (Central Africa)
Nasolot National Reserve	194	1979	II	Kenya (Eastern Africa)
National West Coast Tourist Recreation	7,800	1973	V	Namibia (Southern Africa)
Nazinga Game Ranch	940	?	VI	Burkina Faso (West Africa)
Ndumu Game Reserve	101	1924	II	South Africa (Southern Africa)
Ngorongoro Conservation Area	8,300	1959	VI	Tanzania (Eastern Africa)
Ngove-Ndogo Hunting Area	2,500	1962	VI	Gabon (Central Africa)
Niassa Game Reserve	15,000	1960	IV	Mozambique (Southern Africa)
Niégré Classified Forest	1,056	?	VI	Côte d'Ivoire (West Africa)
Nimule National Park	410	1954	II	Sudan (Eastern Africa)
Nini-Suhien National Park	160	1976	II	Ghana (West Africa)
Niokolo-Koba National Park	9,130	1954	II	Senegal (West Africa)
Nkala Game Management Area	194	1971	VI	Zambia (Southern Africa)
Nkhota-Kota Wildlife Reserve	1,802	1954	IV	Malawi (Southern Africa)
Nki Forest Reserve	1,815	?	VI	Cameroon (Central Africa)
North East National Forest	130	?	VI	Liberia (West Africa)
North Kitui National Reserve	745	1979	VI	Kenya (Eastern Africa)
North Luangwa National Park	4,636	1972	II	Zambia (Southern Africa)
Nouabalé-Ndoki National Park	3,866	1994	II	Congo (Central Africa)
Nsumbu National Park	2,063	1985	II	Zambia (Southern Africa)
Numatina Game Reserve	3,865	1939	VI	Sudan (Eastern Africa)
Nxai Pan National Park	2,770	1971	II	Botswana (Southern Africa)
Nyanga Nord Faunal Reserve	77	1958	IV	Congo (Central Africa)
Nyanga Sud Faunal Reserve	230	1958	IV	Congo (Central Africa)
Nyika National Park	3,134	1965	II	Malawi (Southern Africa)
Nyungwe Integral Forest Reserve	970	?	VI	Rwanda (Eastern Africa)
N'Zo Partial Faunal Reserve	950	1972	IV	Côte d'Ivoire (West Africa)
Oandjia-Vakaga Faunal Reserve	1,300	1925	IV	Central African Republic (Central Africa)
Odzala National Park	2,848	1940	II	Congo (Central Africa)
Okapi National Park	13,700	1992	II	Democratic Republic of Congo (Central Africa)
Okomu Game Sanctuary	1,082	?	IV	Nigeria (West Africa)
Old Oyo National Park	2,530	1991	II	Nigeria (West Africa)
Omo National Park	4,068	1966	II	Ethiopia (Eastern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Oti-Mandouri Faunal Reserve	1,478	?	IV	Togo (West Africa)
Ouanga Plain Faunal Reserve	200	1966	IV	Gabon (Central Africa)
Outamba-Kilimi National Park	808	1986	IV	Sierra Leone (West Africa)
Pa Classified Forest	120	?	VI	Burkina Faso (West Africa)
Pama Partial Faunal Reserve	2,230	1955	IV	Burkina Faso (West Africa)
Pendjari Hunting Zone	1,750	1980	VI	Benin (West Africa)
Pendjari National Park	2,755	1954	II	Benin (West Africa)
Phalaborwa Mining Co. Private Reserve	41	?	UA	South Africa (Southern Africa)
Piedra Nzas Natural Monument	190	2000	III?	Equatorial Guinea (Central Africa)
Pilanesberg National Park	553	1979	IV	South Africa (Southern Africa)
Pincely Classified Forest	130	?	VI	Guinea (West Africa)
Plateaux Batéké National Park	1,748	2002	II	Gabon (Central Africa)
Pongara National Park	962	2002	II	Gabon (Central Africa)
Pongolapoort Nature Reserve	119	1979	II	South Africa (Southern Africa)
Queen Elizabeth National Park	2,343	1952	II	Uganda (Eastern Africa)
Quiçama National Park	9,500	1957	II	Angola (Southern Africa)
Quirimbas National Park	7,500	2002	II	Mozambique (Southern Africa)
Radom National Park	12,500	1980	II	Sudan (Eastern Africa)
Rahole National Reserve	1,270	1976	VI	Kenya (Eastern Africa)
Rimoi National Reserve	55	1983	VI	Kenya (Eastern Africa)
Río Campo Nature Reserve	762	2000	IV?	Equatorial Guinea (Central Africa)
Ruaha National Park	10,300	1964	II	Tanzania (Eastern Africa)
Rubondo Island National Park	457	1977	II	Tanzania (Eastern Africa)
Rufunsa Game Management Area	2,328	?	VI	Zambia (Southern Africa)
Rukwa Game Reserve	4,109	?	IV	Tanzania (Eastern Africa)
Rumanyika Game Reserve	800	1974	IV	Tanzania (Eastern Africa)
Rungwa Game Reserve	9,000	1974	IV	Tanzania (Eastern Africa)
Rwenzori Mountains National Park	386	1991	II	Uganda (Eastern Africa)
Saadani Game Reserve	510	1968	IV	Tanzania (Eastern Africa)
Sabie Sand Game Reserve	572	?	UA	South Africa (Southern Africa)
Sahel Partial Faunal Reserve	16,000	1970	IV	Burkina Faso (West Africa)
Salonga Nord National Park	19,000	1970	II	Democratic Republic of Congo (Central
Salonga Sud National Park	17,000	1970	II	Democratic Republic of Congo (Central
Sambisa Game Reserve	525	?	IV	Nigeria (West Africa)
Samburu National Reserve	165	1985	II	Kenya (Eastern Africa)
Sandwe Game Management Area	1,530	1971	VI	Zambia (Southern Africa)
Sapi Safari Area	1,180	1975	VI	Zimbabwe (Southern Africa)
Sapo National Park	1,292	1983	II	Liberia (West Africa)
Scio Classified Forest	1,338	?	VI	Côte d'Ivoire (West Africa)
Selous Game Reserve	44,000	1967	IV	Tanzania (Eastern Africa)
Semliki National Park	195	1993	II	Uganda (Eastern Africa)
Semliki Valley (Toro) Wildlife Reserve	518	1929	IV	Uganda (Eastern Africa)

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Serengeti National Park	14,763	1957	II	Tanzania (Eastern Africa)
Sette-Cama Hunting Area	2,000	1962	VI	Gabon (Central Africa)
Shaba National Reserve	239	1974	II	Kenya (Eastern Africa)
Shambe Game Reserve	620	1985	II	Sudan (Eastern Africa)
Shimba Hills National Reserve	193	1968	II	Kenya (Eastern Africa)
Shire Wildlife Reserve	753	1973	IV	Ethiopia (Eastern Africa)
Sichifula Game Management Area	3,600	1971	VI	Zambia (Southern Africa)
Singou Partial Faunal Reserve	1,920	1955	IV	Burkina Faso (West Africa)
Siniaka-Minia Faunal Reserve	4,260	1965	IV	Chad (Central Africa)
Sioma Ngwezi National Park	5,276	1972	II	Zambia (Southern Africa)
Sissili Classified Forest	285	?	VI	Burkina Faso (West Africa)
Skeleton Coast Game Park	16,390	1971	II	Namibia (Southern Africa)
Songan-Tamin-Mabi-Yaya Classified Forest	1,698	?	VI	Côte d'Ivoire (West Africa)
Songimvelo Game Reserve	490	1983	IV	South Africa (Southern Africa)
Sorobouli Classified Forest	200	?	VI	Burkina Faso (West Africa)
Sota Classified Forest	530	1947	VI	Benin (West Africa)
South Kitui National Reserve	1,833	1979	VI	Kenya (Eastern Africa)
South Luangwa National Park	9,050	1972	II	Zambia (Southern Africa)
South Turkana National Reserve	1,091	1979	II	Kenya (Eastern Africa)
Southern National Park	23,000	1939	II	Sudan (Eastern Africa)
Tai National Park	3,500	1973	II	Côte d'Ivoire (West Africa)
Taita Hills National Reserve	165	?	II	Kenya (Eastern Africa)
Tama Wildlife Reserve	3,269	1973	IV	Ethiopia (Eastern Africa)
Tamou Total Faunal Reserve	777	1962	IV	Niger (West Africa)
Tarangire National Park	2,600	1970	II	Tanzania (Eastern Africa)
Tedo Controlled Hunting Area	2,347	1973	VI	Ethiopia (Eastern Africa)
Tembe Elephant Park	300	1983	IV	South Africa (Southern Africa)
Timbavati Private Nature Reserve	785	?	UA	South Africa (Southern Africa)
Tiogo Classified Forest	300	?	VI	Burkina Faso (West Africa)
Tisse Classified Forest	185	?	VI	Burkina Faso (West Africa)
Tondwa Game Management Area	540	1971	VI	Zambia (Southern Africa)
Trois Rivières Classified Forest	3,549	1949	VI	Benin (West Africa)
Tsavo East National Park	11,747	1948	II	Kenya (Eastern Africa)
Tsavo West National Park	9,065	1948	II	Kenya (Eastern Africa)
Tui Classified Forest	460	?	VI	Burkina Faso (West Africa)
Tuli Safari Area	416	1975	VI	Zimbabwe (Southern Africa)
Udzungwa Mountains National Park	1,900	1992	II	Tanzania (Eastern Africa)
Ugalla River Game Reserve	5,000	1965	IV	Tanzania (Eastern Africa)
Umbabat Private Nature Reserve	144	?	UA	South Africa (Southern Africa)
Umfuli Recreation Park	115	?	V	Zimbabwe (Southern Africa)
Unk Forest Reserve	120	?	VI	Chad (Central Africa)
Upemba National Park	11,730	1939	II	Democratic Republic of Congo (Central

<b>Protected Area</b>	<b>Area</b>	<b>Year Established</b>	<b>IUCN Category</b>	<b>Country (Region)</b>
Vassako-Bolo Strict Nature Reserve	860	1960	I	Central African Republic (Central Africa)
Victoria Falls Natural Monument	20	1952	III	Zimbabwe (Southern Africa)
Virunga National Park	7,800	1925	II	Democratic Republic of Congo (Central Africa)
Volcans National Park	150	1929	II	Rwanda (Eastern Africa)
Vwaza Marsh Wildlife Reserve	986	1977	IV	Malawi (Southern Africa)
W du Benin National Park	5,020	1954	II	Benin (West Africa)
W du Burkina National Park	2,368	1954	II	Burkina Faso (West Africa)
W du Niger National Park	2,200	1954	II	Niger (West Africa)
Waka National Park	1,069	2002	II	Gabon (Central Africa)
Warigue Classified Forest	645	?	VI	Côte d'Ivoire (West Africa)
Waza National Park	1,700	1968	II	Cameroon (Central Africa)
Welgevonden Private Game Reserve	330	?	UA	South Africa (Southern Africa)
West Lunga National Park	1,684	1972	II	Zambia (Southern Africa)
West Petauke Game Management Area	4,140	1971	VI	Zambia (Southern Africa)
West Zambezi Game Management Area	38,070	1971	VI	Zambia (Southern Africa)
Wonga-Wongue Presidential Reserve	3,800	1971	IV	Gabon (Central Africa)
Yamba Berete Forest Reserve	550	?	VI	Chad (Central Africa)
Yankari National Park	2,254	1991	II	Nigeria (West Africa)
Yata-Ngaya Faunal Reserve	4,200	1960	IV	Central African Republic (Central Africa)
Zakouma National Park	3,000	1963	II	Chad (Central Africa)
Zambezi National Park	563	1979	II	Zimbabwe (Southern Africa)
Zemongo Faunal Reserve	10,100	1925	IV	Central African Republic (Central Africa)
Zeraf Game Reserve	8,085	1939	VI	Sudan (Eastern Africa)