

# Elfenbein und Artenschutz

## Ivory and Species Conservation

**INCENTIVS – Tagungsbeiträge (2004 - 2007)**

**Proceedings of INCENTIVS – Meetings (2004 - 2007)**



# **Elfenbein und Artenschutz**

## **Ivory and Species Conservation**

**INCENTIVS – Tagungsbeiträge (2004-2007)**

**Proceedings of INCENTIVS – Meetings (2004-2007)**



**Titelbild:** Dr. D. Jelden, Bundesamt für Naturschutz (BfN)  
Dr. A. Sliwa, Zoo Wuppertal

**Bearbeitung:**

J. Roth Bundesamt für Naturschutz (BfN) / Federal Agency for Nature Conservation  
Fachgebiet / Division Z 3.2  
Konstantinstr. 110  
53179 Bonn

**Bearbeitung und verantwortlich für den Inhalt:**

G. Bortolaso INCENTIVS – International Centre of Ivory Studies  
Johannes Gutenberg-Universität Mainz  
Institut für Geowissenschaften  
Becherweg 21  
55099 Mainz

Die Beiträge der Skripten werden aufgenommen in die Literaturlatenbank „**DNL-online**“ ([www.dnl-online.de](http://www.dnl-online.de)).

Die BfN-Skripten sind nicht im Buchhandel erhältlich.

Herausgeber: Bundesamt für Naturschutz  
Konstantinstr. 110  
53179 Bonn  
Telefon: 0228/8491-0  
Fax: 0228/8491-9999  
URL: [www.bfn.de](http://www.bfn.de)

Der Herausgeber übernimmt keine Gewähr für die Richtigkeit, die Genauigkeit und Vollständigkeit der Angaben sowie für die Beachtung privater Rechte Dritter. Die in den Beiträgen geäußerten Ansichten und Meinungen müssen nicht mit denen des Herausgebers übereinstimmen.

Nachdruck, auch in Auszügen, nur mit Genehmigung des BfN.

Druck: BMU-Druckerei

Gedruckt auf 100% Altpapier

Bonn – Bad Godesberg 2008

## **Elephant Conservation and the Ivory Trade**

<sup>1</sup>REIFENSTEIN, V., <sup>1</sup>KITSCHKE, C. & <sup>1\*</sup>ZIEGLER, S.

<sup>1</sup> WWF Germany, Rebstoeckerstrasse 55, 60326 Frankfurt, Germany

\* Corresponding author, email: sziegler@wwf.de

*Keywords: Ivory trade, CITES regulations, conservation and preservation of elephant, habitat*

*Schlagwörter: Elfenbeinhandel, CITES Bestimmungen, Rettung von Elefanten, Habitat*

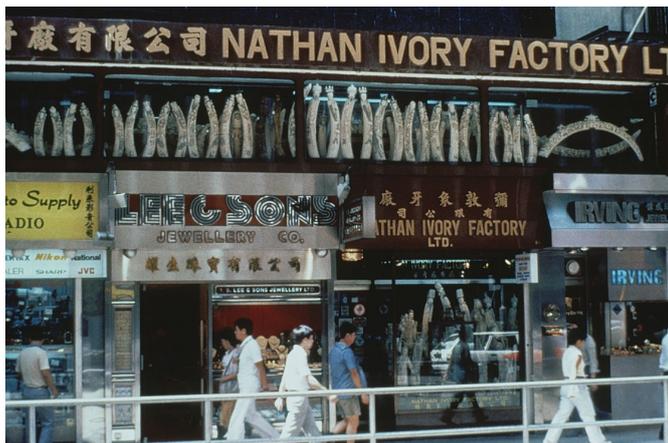
### **Zusammenfassung**

Der internationale Handel mit Elfenbein hat in vielen afrikanischen Ländern in den 1980er Jahren zu einem dramatischen Rückgang der Bestände geführt. Vor allem in Ost- und Zentralafrika wurden durch nicht nachhaltige Jagd sowie Wilderei pro Jahr bis zu 62.000 Tiere getötet. Um die Elefantenpopulationen Afrikas zu schützen, hat die internationale Gemeinschaft 1989 den Afrikanischen Elefanten auf Anhang I des Washingtoner Artenschutzübereinkommen (CITES) gelistet und damit jeglichen internationalen kommerziellen Handel mit Elfenbein und anderen Elefantenprodukten verboten. Das internationale Handelsverbot blieb nicht ohne Kritik, denn verschiedene südafrikanische Länder behaupteten, dass einige der Elefanten-Verbreitungsstaaten mit rückläufigen Populationen den Bann als Ersatz für eine effektive Gesetzgebung und Strafverfolgung auf nationaler Ebene missbrauchen und damit Jahrzehnte des Missmanagements kaschieren. Mittels vorliegender Bestandsschätzungen aus 33 Elefanten-Verbreitungsstaaten für den Zeitraum von 1981 bis 2007 haben wir untersucht, inwieweit diese Kritik gerechtfertigt ist. Unsere Ergebnisse weisen darauf hin, dass die Elefantenpopulationen der Elfenbeinküste, der Demokratischen Republik Kongo und der Zentralafrikanischen Republik kaum vom Handelsbann profitiert haben, denn dort gehen die Bestände seit 1981 kontinuierlich zurück. Die Daten von ETIS, dem Informations- und Überwachungsprogramm für den Handel und Schmuggel von Elefantenprodukten, zeigen zudem, dass der illegale Handel mit Elfenbein vor allem in einigen Ländern Zentralafrikas seit 2004 ansteigend ist. Positiv haben sich dagegen Verbesserungen von Schutzmassnahmen und Elefantenmanagement im Kontext der CITES Anhang I Listung für die Elefanten in Ostafrika entwickelt: Dort nehmen die Bestandszahlen seit Beginn der 1990er Jahre stetig zu.

### **Summary**

The international ivory trade remains one of the world's most controversial wildlife trade issues. Throughout the last four decades, public attention has focused primarily on trade in ivory derived from the African elephant. Following a decade in which African elephant populations in certain regions may have decreased by as much as 80 percent because of widespread hunting and poaching for ivory, in 1989 the international community acted through the Convention on International Trade in Endangered Species

of Wild Fauna and Flora (CITES) to list the species in Appendix I, the maximum level of protection afforded by the treaty. The ban was introduced to help safeguard the African elephant from illegal killing on a clearly non-sustainable scale. The Asian elephant has previously been listed in CITES Appendix I in 1975. Several southern African countries argued that in support of the ban, some elephant range states with declining populations used the ban as a substitute for effective law enforcement at the national level and were covering up decades of mismanagement. We evaluated this concern and its implication and calculated population trends across 33 elephant range states. Although many populations in southern and eastern Africa have shown signs of recovery, elephants in West and Central Africa are still at the brink of extinction if threats are not successfully mitigated in the near future. We found that the trade ban in 1989 had apparently no tangible conservation impact on elephant populations in Ivory Coast, Democratic Republic of Congo, and Central African Republic where the population trend remains negative since 1981. This may explain the recorded background levels of poaching that mainly take place in the forests of Central Africa. Furthermore, data from the ETIS database indicate that illicit trade in ivory has been increasing since 2004.



Shop window of an ivory dealer  
Hong Kong 1988  
Credit: © WWF-Canon / Mauri  
RAUTKARI

## 1 Elephant conservation status

For centuries people have viewed elephant ivory as a valuable commodity, used for carvings, jewellery, and other artefacts. Sculptures made of ivory are known to science from more than 30,000 years ago (Conrad 2003). The Trojans wore buckles and pins fashioned from the elephant's tusks, and adorned their war chariots with bits of ivory. Two thousand years ago, the Romans honoured illustrious men with handsomely chiselled writing tablets and sceptres carved in ivory. From prehistoric times to the present day, ivory has been sought as a luxury with multiple applications. Thus, the killing of elephants to satisfy the demand for ivory has presumably been the major factor in reducing elephant populations throughout most of history (Kingdon 1997).

### *African elephant*

The African elephant *Loxodonta africana* once occurred throughout Africa, but disappeared already from the north of the Sahara in the 6<sup>th</sup> century AD (Meester & Setzer 1977). During the 17<sup>th</sup> century, ivory mainly derived from sources in West Africa. The species' abundance was further reduced when Europeans started to establish permanent trading posts throughout Africa in the 18<sup>th</sup> and 19<sup>th</sup> century, expanding the trading routes, and thus increased the supply for timber and ivory (Fage 1969).



African elephant (*Loxodonta africana*), herd on the move. Amboseli National Park, Kenya. Distribution Sub-Saharan Africa  
Credit: © WWF-Canon/Martin HARVEY

The decline of the elephant populations eventually accelerated in the 20<sup>th</sup> century. Particularly *L. africana* suffered tremendously due to widespread hunting and poaching for ivory. Several million African elephants might have roamed throughout Africa at the beginning of the 20<sup>th</sup> century (Milner-Gulland & Beddington 1993). The number may have declined from three to five millions in the 1930s and 1940s to fewer than 400,000 remaining individuals in the early 1990s (Douglas-Hamilton et al. 1992; Said et al. 1995). Poaching skyrocketed in the 1980s and was fuelled by an increasing international demand, with Japan and the USA the largest importer countries for raw ivory (Thomsen 1988). At that time, up to 100,000 elephants were killed annually and certain regions lost 80 percents of their populations due to poaching and the illicit trade of ivory (Eltringham & Malpas 1980; Douglas-Hamilton 1987; Cobb & Western 1989; Merz & Hoppe-Dominik 1991, Alers et al. 1992; WWF 1997, 1998).



African elephant *Loxodonta africana* Elephant ivory confiscated from poachers  
Credit: © WWF-Canon / Martin HARVEY

Nowadays *L. africana* can still be found in 37 range states in Sub-Saharan Africa, but certain populations hardly exceed a few hundred individuals. At the time of the last continent wide assessment in 2007, the African elephant population was calculated to be at least 472,000 individuals, with possible numbers exceeding 690,000 elephants (Blanc et al., 2007).

### ***Asian elephant***

The Asian elephant *Elephas maximus* once roamed the forests from China to Iraq, but today, its distribution is patchy and fragmented (Anonym. 2005). Like its African cousin, *E. maximus* was traditionally hunted for its tusks for thousands of years. Additionally, its habitat rapidly diminished due to the growth of human population and the associated agricultural expansion. Consequently, in most range countries of *E. maximus*, elephant numbers crashed drastically during the 19th century (Olivier 1978). At the start of 20<sup>th</sup> century, Asia contained approximately 100,000 elephants in the wild (WWF 2002). In 1990, their numbers were thought to be between 34,500 and 54,000 individuals (Santiapillai et al. 1990). As recently as 1995, only 25,600 to 32,750 Asian elephants were thought to remain in the wild (Anonym. 2006). Since then, several populations have dwindled still further, and scientists fear that current populations may have fallen well below 1995 estimates.



Herd of Asian elephants in Rajaji National Park, North India.  
Credit: © WWF-Canon / A. Christy WILLIAMS



Sumatran elephant (*Elephas maximus sumatrensis*) in the remote region of the Minas elephants' camp. Tesso Nilo, Riau Province, Sumatra, Indonesia  
Credit: © WWF / Volker KESS

Table 1: Population estimates and trends of African elephants from 1981 to 2007. Elephant population data from 1995 and 2007 have been aggregated from the “Definite”, “Probable”, “Possible” and “Speculative” categories to produce indicative national totals.

Range states	1981	1989	1995	2007	Population trend		
					1981-1989	1989-1995	1989-2007
<b>West Africa</b>							
Benin	1.250	2.100	1.550	1.223	+	-	-
Burkina Faso	3.500	4.500	2.600	4.994	+	-	+
Ghana	970	2.500	2.300	1.429	+	-	-
Guinea	800	560	1.000	350	-	+	-
Ivory Coast	4.800	3.600	2.200	965	-	-	-
Liberia	2.000	1.300	1.800	1.676	-	+	+
Mali	780	640	800	654	-	+	+
Niger	800	440	800	102	-	+	-
Nigeria	1.820	1.300	1.600	828	-	+	-
Senegal	370	140	40	10	-	-	-
Togo	150	380	200	65	+	-	-
<b>Central Africa</b>							
Central Afr.Rep.	31.000	22.000	9.300	3.334	-	-	-
Cameroon	5.000	32.000	17.000	15.387	+	-	-
Chad	15.000	3.100	3.100	6.435	-	0	+
Congo	10.800	42.000	33.000	22.102	+	-	-
Democratic Rep of Congo	376.000	112.000	84.000	23.714	-	-	-
Equator Guinea	1.300	500	400	1.330	-	-	+
Gabon	13.400	74.000	82.000	70.746	+	+	-
<b>East Africa</b>							
Ethiopia	900	8.000	2.400	1.760	+	-	-
Kenya	65.056	16.000	26.600	31.636	-	+	+
Rwanda	150	50	80	117	-	+	+
Somalia	24.323	2.000	250	70	-	-	-
Sudan	133.772	22.000	0	300	-	-	-
Tanzania	203.900	22.000	98.000	167.003	-	+	+
Uganda	2.320	3.000	1.850	6.559	+	-	+

<b>Southern Africa</b>							
Angola	12.400	18.000	8.200	2.530	+	-	-
Botswana	20.000	51.000	80.200	175.487	+	+	+
Malawi	4.500	2.000	2.300	2.727	-	+	+
Mozambique	54.800	7.000	14.900	26.088	-	+	+
Namibia	2.300	5.700	12.000	19.103	+	+	+
South Africa	8.000	8.200	10.000	18.507	+	+	+
Zambia	160.000	32.000	33.000	29.231	-	+	-
Zimbabwe	49.000	52.000	82.000	99.107	+	+	+

## 2 International conservation action

The sharp decline of elephant numbers in Africa and Asia prompted swift international action shortly after the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered in force in 1975. The Asian elephant *E. maximus* has been listed in CITES Appendix I in 1975, thus prohibiting international commercial trade in ivory and other elephant products from the Asian elephant species (O'Connell-Rodwell & Parry-Jones 2002). In 1977, the African elephant was placed in Appendix II of CITES, which means commercial trade in ivory is regulated according to certain requirements. The Parties to CITES agreed in 1985 to put in place a quota system for tightening controls on the ivory trade. In 1989, the international efforts to halt the ivory trade culminated in the listing of the African elephant in CITES Appendix I to cut off supply to the markets. However, the so-called Somalia Amendment established specific down-listing criteria for the transfer of stable or increasing populations back to Appendix II, thus addressing concerns of certain elephant range states that not all elephant populations qualified for placement on Appendix I (Dublin et al. 1997).



African elephant (*Loxodonta africana*), in the foreground, bull with large tusks. Amboseli National Park, Kenya.  
Distribution Sub-Saharan Africa  
Credit: © WWF-Canon/ Martin HARVEY

Applying these criteria, Namibia, Botswana, Zimbabwe, and South Africa successfully down-listed their elephant populations on CITES Appendix II in 1997 and 2000, respectively. Furthermore, the down listing of their elephant populations on Appendix II qualified these countries to conduct a one-off sale of their ivory supplies, but only with permission from CITES. The convention developed strict conditions under which such kind of sale is allowed. The countries are permitted to sale only ivory descended from governmental stocks. The conditions commit the amount, origin and size of the ivory products, further on the requirements within the import country as well as the time of trade. The achieved benefits must be used for elephant conservation and livelihood programmes to improve the situation of local communities.



Elephant tusks stored away under extreme security measures in the ivory stock pile of the Kruger National Park, South Africa. February 2006

Credit: © WWF-Canon/Folke WULF

In 1999 the first one-off sale took place to Japan. A second sale was approved by CITES in 2002 but not realized, because the conditions were not fully met (Stephenson 2007). On the CITES Conference of the Parties in 2007, all African states have agreed on a compromise in trade with raw ivory. They have decided that South Africa, Namibia, Botswana, and Zimbabwe can dispose every ivory from governmental stocks, registered until 31st January 2007, in a one-off sale. After this transaction the ivory trade for these four countries will be ceased for at least nine years.

### **3 The impact of the trade ban**

Since the global CITES trade ban took effect in 1990, there have been conflicting views about its impact on the ivory trade. The immediate result was an apparent reduction in illicit trade and a decline in the scale of certain key ivory markets. Against a backdrop of growing international pressure, numerous importing countries began introducing

domestic legislation to stop importation of raw ivory (Dublin et al. 1997). All ivory-producing states were facing the fact that the demand for ivory in the major, pre-ban consumer nations had fallen off sharply. A virtual demise of the demand for ivory in North America and Western Europe and reductions of up to 50 percent in Japan were described by O'Connell & Sutton (1990) shortly after the trade ban was imposed. Furthermore, it quickly became evident that the drop reflected a true and lasting change in market demand for ivory, which put those countries in a dilemma that wished to earn revenues from the sale of ivory. Botswana, Malawi, Mozambique, South Africa, Zambia, and Zimbabwe, some of them had not suffered the sharp decline of their elephant populations in the 1970s and 1980s, did see their options for funding elephant conservation programmes undermined (Dublin et al. 1997). When trade was banned, Botswana lost about 53 percent of its potential direct use values (Bennett 1997). Several southern African countries argued that in support of the ban, some elephant range states with declining populations used the ban as a substitute for effective law enforcement at the national level and were covering up decades of mismanagement.

In order to verify this concern and its implication for today's elephant management, we calculated population trends across 33 elephant range states with data from the African Elephant Database (Blanc et al. 2007; Douglas-Hamilton 1992; Douglas-Hamilton 1980) for the pre-ban period from 1981 to 1989, the first few years after the ban was imposed from 1989 to 1995, and the post-ban period from 1989 to 2007. We decided to assess population trends for two different time horizons after the trade ban in order to rule out the impact of short-term effects, such as civil disorder, on the elephant populations. The results of this assessment are summarized in table 1.

Population trend lines for the period from 1981 to 1989 showed declining elephant numbers for 19 of the 33 assessed African elephant range states. Trend lines for the post-trade ban period from 1989 to 1995 pointed out a slightly improved overall picture to the extent that in 16 of the 33 range states, numbers of elephants decreased. The period from 1989 to 2007 depicted 18 out of 33 range states, in which trend lines indicated declining elephant numbers. Interestingly, elephant populations in four southern African countries (Namibia, South Africa, Botswana, and Zimbabwe) already started to increase years before the trade ban was imposed. This might indicate that the elephant populations in those countries were better managed and protected than in many other range states where poaching was rampant in the 1980s. However, the apprehension of the four southern African countries to become targets of increased poaching activities due to the cease of the direct use values after the trade ban did not materialize: elephant numbers in Namibia, South Africa, Botswana, and Zimbabwe have continued to increase since 1989.

Moreover, the trade ban in 1989 had apparently no tangible conservation impact on elephant populations in certain West and Central African countries (Ivory Coast, Democratic Republic of Congo, and Central African Republic) where the population trend remains negative since 1981. The continued killing of elephants has often been attributed to the effects of civil disorder (Dublin & Jachmann 1991) and a high perception of corruption, which together lead to poor law enforcement. This may explain the recorded background levels of poaching that mainly takes place in the forests of Central Africa (Blake & Hedges 2004). Particularly the new increasing

demand of ivory in China has significantly influenced the increasing illicit trade since 1995 and the international ivory market as a whole (Stephenson 2007).

However, in certain countries the ban on ivory trade clearly changed the economic environment for elephants as it helped the illegal hunting to collapse. In Kenya, for instance, the average annual number of elephants killed by poaching decreased from 3,500 elephants per year in the early 1980s, to about 50 in 1993. Furthermore, the Tanzanian elephant population has considerably increased, from 22,000 in 1989 to more than 150,000 in 2007, and continues to increase.

#### **4 Monitoring illegal killing and illicit trade**

Despite the official trade ban, ivory was still moving within Africa but little was known regarding the exact amounts involved or how much of this was actually leaving the continent (Dublin & Jachmann 1991). While there was evidence that some sort of ivory leaking out of government-held stocks, the origin of most illegal ivory shipments was not always clear. Therefore, in the early 1990s, the African elephant range states stated the need to develop a monitoring system to track the illegal killing of elephants in the field (Hunter & Milliken 2004). The decision to establish this monitoring system (MIKE – Monitoring the Illegal Killing of Elephants) was agreed by CITES Parties at CoP 10 in Resolution Conf. 10.10. It was considered of primary importance having a simple system of international reporting of incidents of illegal hunting as a baseline against which changes in trends can be detected. Thus, the overall aim of MIKE is to build institutional capacity within the range States for the long-term management of their elephant populations (CITES 1994). Furthermore, the system allows for assessing whether observed trends of illegal killing of elephants are related to CITES decisions on ivory trade and population listings (Hunter & Milliken 2004). Prior to the development of MIKE, there was evidently no centralized way to track elephant mortalities and feed this information into the CITES process. MIKE tracks the illegal killing of elephants through a site-based monitoring programme in some 70 locations in 29 African elephant and 12 Asian elephant range states. At each site, data on elephant numbers, illegal killings and other deaths, law enforcement effort and other factors are collected in a standardized way (TRAFFIC 2007).

The CITES Secretariat monitors ivory trade through the Elephant Trade Information System (ETIS), which is managed by TRAFFIC, the joint wildlife trade monitoring programme of WWF and IUCN. ETIS is a comprehensive information system to track illegal trade in ivory and other elephant products. It shares identical objectives as set out for MIKE, with the difference that it aims to record and analyse levels and trends in illegal trade, rather than the illegal killing of elephants (Hunter & Milliken 2004). Analysis of the ETIS data state that a total of over 322 tonnes of ivory has been seized and reported to ETIS between 1989 and 2006. The number of seizures ranges from a minimum of 289 cases in 1989 to a maximum of 1,008 cases in 1990, with a mean value of 630 cases per year. The ivory volumes varied between 9,668 kilograms in 1995 and 33,090 kilograms in 2002, with a mean value of 17,883 kilograms each year. A steady decline in seizures of illicit ivory could be registered from 1989 until 1995, followed by

an increase from 1996 to 1998. Thereafter regressive ivory seizures were reported until 2004, again followed by an upward movement from 2005 onward. In conclusion, a number of 11,331 ivory seizures have been reported to ETIS by 82 countries or territories between 1989 and 2006. These data imply that at least 164 countries or territories worldwide are implicated in the illicit ivory trade. The evaluation of ETIS data indicate that illegal trade in ivory is most directly related to the presence of large scale unregulated domestic ivory markets in several African and Asian countries. Due to poor law enforcement, weak regulatory oversight of the illegal markets can prevail. The five countries most heavily implicated today in the illegal ivory trade are: Cameroon, China, the Democratic Republic of Congo, Nigeria, and Thailand. Of this group only China shows significant progress in taking action against illicit ivory trade (Milliken et al. 2007).

## **5 Conclusion**

Data from ETIS indicate that the level of illicit trade in ivory is once again increasing from 2004 onwards. This trend line is cause for concern as it points out that measures taken to date to control the trade in African elephant ivory were not completely successful. Furthermore, population trends derived from the African Elephant Database indicate that intense poaching is widespread throughout much of Central Africa, leading to recent declining population numbers in five of seven range states in the region. However, elephants in Africa and Asia are not only sought after for their ivory. Habitat loss and deterioration in habitat is occurring throughout elephant range, and there is anecdotal evidence that elephants are hunted for their meat in Central Africa (Stephenson 2007). Although many populations in southern and eastern Africa have shown signs of recovery, elephants in West and Central Africa are still at the brink of extinction if threats are not successfully mitigated in the near future.

## **6 References**

- ALERS, M.P.T., BLOM, A., SIKUBWABO KIYENGO, et al. (1992). Preliminary assessment of the status of the forest elephant in Zaire. *African Journal of Ecology* 30:279-291.
- ANONYMOUS (2005). WWF Hintergrundinformation Asiatischer Elefant. WWF Arten A-Z. <http://wwf-arten.wwf.de/detail.php?id=101> (10.8.07)
- ANONYMOUS (2006). WWF Species fact sheet: Asian Elephant. [http://assets.panda.org/downloads/asian\\_elephant\\_factsheet2006.pdf](http://assets.panda.org/downloads/asian_elephant_factsheet2006.pdf) (10.8.07)
- BENNETT, A., (1997). <http://www.colby.edu/personal/t/thtieten/end-bots.html>.
- BLAKE, S. & HEDGES, S. (2004). Sinking the flagship: the case of forest elephants in Asia and Africa. *Conservation Biology* 18: 1191-1202

- BLANC, J.J., BARNES, R.F.W., CRAIG, G.C., et al. (2003). African Elephant Status Report 2002: an update from the Elephant Database. Occasional Paper Series of the IUCN Species Survival Commission, No. 33. IUCN/SSC African Elephant Specialist Group. IUCN, Gland, Switzerland. vi + 302 pp.
- CITES, (1994). Resolutions of the Conference of the Parties, Conf. 10.10, Annex 2.
- CONRAD, N.J. (2003). Palaeolithic ivory sculptures from southwestern Germany and the origins of figurative art. *Nature* 426: 830-832
- COBB, S. & WESTERN, D. (1989). The ivory trade and the future of the African elephant. *Pachyderm* 12: 32-27
- DOUGLAS-HAMILTON, I. (1987). African elephants: population trends and their causes. *Oryx* 21: 11-24.
- DOUGLAS-HAMILTON, I. (1980). Africa's elephants - can they survive? *Natl. Geog. Nov:* 578.
- DOUGLAS-HAMILTON, I. (1992). In defense of the ivory trade ban. *Oryx* 26:1.
- DOUGLAS-HAMILTON, I., MICHELMORE, F. & INAMDAR, A. (1992). African Elephant Database. UNEP, Nairobi, Kenya
- DUBLIN, H. & JACHMANN, H. (1991). The impact of the ivory ban on illegal hunting of elephants in six range states in Africa. WWF project report 4578, Gland, Switzerland, p.3.
- DUBLIN, H., MCSHANE, T. & NEWBY, J. (1997). Conserving Africa's elephants. WWF Report. Gland, Switzerland.
- ELTRINGHAM, S.K. & MALPAS, R.C. (1980) The decline of elephant numbers in Rwenzori und Kabalega Falls National Parks, Uganda. *African Journal of Ecology* 18:73-86.
- FAGE, J.D. (1969). A History of West Africa: an introductory survey. Cambridge University Press, Cambridge, UK.
- HUNTER, N. & MILLIKEN, T. (2004). Clarifying MIKE and ETIS. *Pachyderm* 36: 129-132.
- KINGDON, J. (1997). The Kingdon Field Guide to African Mammals. Academic Press, Harcourt Brace & Co., New York, NY, USA.
- MEESTER, J. & SETZER, H.W. (1977). The Mammals of Africa: an identification guide. Smithsonian Institute Press, Washington DC, USA
- MERZ, G. & HOPPE-DOMINIK, B. (1991). Distribution and status of the forest elephant in the Ivory Coast, West Africa. *Pachyderm* 14: 22-24.
- MILLIKEN T., BURN R.W., SANGALAKULA L. (2007). The Elephant Trade Information System (ETIS) and the illicit trade in ivory: a report for the 14th meeting of the Conference of the Parties to CITES. TRAFFIC East/Southern Africa, CITES Document CoP14 Doc. 53.2, The Hague (Netherlands), 3-15 June 2007

- MILNER-GULLAND, E.J. & BEDDINGTON, J.R. (1993). The exploitation of elephants for the ivory trade: an historical perspective. *Proceedings of the Royal Society of London, series B* 252: 29-37.
- O'CONNELL, M.A. & SUTTON, M. (1990). The effects of trade moratoria on international commerce in African elephant ivory. WWF-US, unpublished report.
- OLIVIER, R. (1978). Distribution and status of the Asian elephant. *Oryx* 14:380.
- SANTIAPILLAI C., JACKSON P. AND THE IUCN/SSC ASIAN ELEPHANT SPECIALIST GROUP (1990). *The Asian Elephant: An Action Plan for its Conservation*, 1990, IUCN
- SAID, M.Y., CHUNGE R.N., CRAIG, G.C., et al. (1995). *African Elephant Database 1995. Occasional Paper of the IUCN Species Survival Commission No. 11*. IUCN, Gland, Switzerland
- STEPHENSON, P.J. (2007). *WWF Species Action Plan: African Elephant, 2007-2011*. WWF, Gland, Switzerland. 74 pp.
- THOMSEN, J.B. (1988). Recent U.S. imports of certain products from the African elephant. *Pachyderm* 10:1-5.
- TRAFFIC (2007). *African Elephants and the 14th meeting of the Conference of the Parties to CITES, The Hague, Netherlands, 03–15 June 2007*.  
[http://www.traffic.org/cop14/Elephants\\_and\\_CoP14\\_final\\_web.pdf](http://www.traffic.org/cop14/Elephants_and_CoP14_final_web.pdf)
- WWF (1997). *Conserving Africa's Elephants: Current Issues and Priorities for Action*. WWF, Gland, Switzerland.
- WWF (1998). *Elephants in the Balance: Conserving Africa's Elephants*. WWF, Gland, Switzerland.
- WWF (2002). *WWF Factsheet for 12th Meeting of the Conference of the Parties to CITES Santiago, 3-15 November 2002. Asian elephant (Elephas maximus)*. WWF International. 2002