UNEP

CMS

CONVENTION ON MIGRATORY SPECIES

Distribution: General

UNEP/CMS/Inf.10.15
29 September 2011

Original: English

TENTH MEETING OF THE
CONFERENCE OF THE PARTIES
Bergen, 20-25 November 2011
Agenda Item 19

REVIEW OF CMS EXISTING INSTRUMENTS AND PROJECTS ON TERRESTRIAL MAMMALS (INCLUDING BATS)

(Prepared by UNEP-WCMC for CMS)

Pursuant to Resolution 9.2 on *Priorities for CMS Agreements*, the CMS Secretariat commissioned UNEP-WCMC to undertake a review in 2011 of CMS instruments and projects on terrestrial mammals. Their report, which discusses options for more effective implementation of CMS existing instruments and priorities for development, is presented in this Information Document in the original form in which it was delivered to the Secretariat. An executive summary is also provided as document UNEP/CMS/Conf.10.44.

Review of CMS existing instruments and projects on terrestrial mammals (including bats)

Produced by UNEP-WCMC

September2011

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CITATION

UNEP-WCMC. 2011. *Review of CMS existing instruments and projects on terrestrial mammals (including bats)*. 10th meeting of the Conference of the Parties to CMS, Bergen, 20-25 November 2011. UNEP/CMS/Inf.10.15. UNEP-WCMC, Cambridge, UK.

PREPARED FOR

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), Bonn, Germany.

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Executive summary

1. This report evaluates existing CMS provisions for the conservation of terrestrial mammals (including bats) listed in the CMS Appendices and identifies options for future action. Itidentifies the main threats and conservation issues (Section 2); evaluates the eight CMS existing instruments and considers the extent to which they address the threats and issues facing those taxa (Section 3); provides an overview of relevant non-CMS instruments/frameworks and how they overlap or complement the CMS existing instruments (Section 3); and proposes options for the effective implementation and further development of CMS instruments, in order to maximise the geographic and taxonomic coverage of CMSand its contribution to the conservation ofterrestrial mammals (Section 4).

2. A total of 43 taxa of terrestrial mammals (including bats) are listed in the CMS Appendices: two at the family level, 39 at the species level (25 of which are globally threatened) and two at the subspecies level. These taxaare subject to many threats, the most common being habitat loss and degradation, hunting/capture, disease and potentially the impacts of climate change. Habitat loss in recent decades has been greatest in tropical and subtropical dry forests and tropical, subtropical and temperate grasslands, with particularly rapid changes in the Amazon basin and Southeast Asia (deforestation and expansion of croplands) and Asia (land degradation in drylands).The ecological impacts of climate change are increasing in all terrestrial ecosystems, with the most severe impacts predicted to occur in Polar and mountain regions, as well as deserts and tropical grasslands and savannas.

3. The eight CMS instruments on terrestrial mammals (the EUROBATS AGREEMENT, Sahelo-Saharan Antelopes Concerted Action, Bukhara Deer MoU, West African Elephant MoU, Saiga Antelope MoU, Gorillas AGREEMENT, South Andean Huemul MoU, and Central Eurasian Aridland Concerted and Cooperative Action) differ in their level of progress towards addressing threats to the species and habitats which they cover. All but the two most recent instruments have an Action Plan addressing the main threats and issues, four have a Medium-Term International Work Programme or equivalent and six have a binding or non-binding instrument (of which four have been signed by all range States).

4. There are a number of non-CMS instruments and frameworks whose work overlaps or compliments that of CMS with regards to terrestrial mammals. For example, the Convention on Biological Diversity, with its National Biodiversity Strategy and Action Plans (NBSAPS), has a number of relevant work programmes and initiatives. CITES regulates international trade in many CMS species, with specific programmes on great apes and elephants and joint work with CMS on the Saiga antelope and elephants in West Africa. European bats are also protected by the Bern Convention and the EU Habitats Directive, which prohibit the capture/killing/possession/trade of bats, as well as protecting important habitats through a network of protected sites. GRASP's Global Strategy for the Survival of Great Apes encourages range States to implement national Action Plans and promote and enforce the legal framework for conserving great apes. More generally, the UNFCCC and UNCCD address the threats of climate change and desertification, respectively, and important habitats are protected under the Ramsar Convention, the World Heritage Convention and COMIFAC. In addition, a multitude of international organisations, NGOs and projects target CMS terrestrial mammals (including bats), and are working with national governments, local communities or implementing conservation activities on the ground.

5. CMS instruments play an important role in the conservation of migratory mammals. Major contributions include facilitating international cooperation, raising international awareness,

harmonisation of research and monitoring, exchange of information and ideas and the production of publications and best-practice guidelines. The main factors contributing to the success of CMS instruments include i) strong support and political will of range States, ii) strong collaborations between governments, international organisations, NGOs and experts, iii) organisation of regular meetings and iv) active discussion on conservation issues and sharing of data and expertise. The main obstacles to success include i) lack of funding and resources, particularly for on the ground conservation projects, community projects or enforcement, ii) limited capacity of range States to achieve all actions specified in the Action Plan, iii) issues with non-compliance, lack of accountability or lack of political will and iv) widespread corruption that hinders conservation efforts in certain regions, making it difficult to tackle threats such as illegal hunting and trade.

6. Options are proposed for strengthening CMS existing instruments, to provide maximum benefit to a large number of threatened migratory mammals and highlight the potential of Multispecies Initiatives.The Central Eurasian Aridland Concerted Action and associated Cooperative Action could be strengthened through formation of an appropriate funding mechanism, development of an MoU or other binding or non-binding instrument, production of an Action Plan and arrangement of a meeting between stakeholders.The Sahelo-Saharan Antelopes Concerted Action could be strengthenedthrough development of an MoU or other binding or non-binding instrument, as well as updating the Action Plan to focus on the highest priorities.

7. Other activities that would strengthen the conservation contributionsand international influence of CMS include *inter alia*: i) strengthening existing Action Plans and providing guidance for their future design, including the development of SMART indicators, ii) developing programmes/initiatives promoting collaboration on cross-cutting issues between CMS instruments and with other MEAs and organisations, iii) further development of the use of online reporting and harmonised reporting, and iv) development of indicators for measuring the overall performance and impact of CMS instruments and their contributions to NBSAPs.

8. Eighteen terrestrial mammal taxa included in the Appendices are not covered by a CMS instrument and five species only have part of their geographic range covered by a CMS instrument. Options for the conservation of these species under CMS instruments, include the geographic or taxonomic expansion of existing instruments, creation of new Multispecies Initiatives, or creation of new single-species initiatives. Priorities to cover the remaining globally threatened taxa include i) development of a Sahelo-Saharan Megafauna Concerted Action (including geographical extension to the Horn of Africa), ii) geographical extension of the Central Eurasian Aridland Concerted Action (to include the Arabian Peninsula), and iii) development of a Subsaharan African Megafauna Initiative. Through establishment/revision of these three Multispecies Initiatives, all but two globally threatened mammals currently listed in the CMS Appendices (Endangered *Lontra provocax* and Critically Endangered *Bos sauveli*) would be covered by an instrument. These three Multispecies Initiatives also cover priority geographic regions.

9. Creating an appropriate instrument to cover elephant populations in Central Africa is also a priority (although the precise choice of instrument should await the outcome of the report commissioned specifically to address this issue). Other new Multispecies Initiatives that could be created if they have the interest and support of range States are new African, Southeast Asian and Pan-American Bat Initiatives, and new South American and South and Southeast Asian Megafauna Initiatives.

1. Introduction

1.1. Background

10. The Convention on the Conservation of Migratory Species of Wild Animals (CMS) was established following the recognition that an international agreement was required to address the special threats faced by terrestrial, marine and avian migratory species, their habitats and migration routes (Box 1). At the 9thMeeting of the Conference of the Parties (CMS COP9), Rome 2008, an inter-sessional process regarding the Future Shape of CMS was initiated to "explore the possibilities of strengthening the contribution of the CMS and the CMS Family to the world wide conservation, management and sustainable use of migratory species over their entire range" (UNEP/CMS/Resolution 9.13). To identify options regarding the potential strategic evolution of CMS and its Family, an Inter-sessional Working Group on the Future Shape of CMS (ISWGoFS) was established (UNEP/CMS/Resolution 9.13/Addendum), and reports were commissioned to conduct an assessment of the current organisation and activities of CMS and the CMS family (Lee *et al.*, 2010) and propose different options that could improve its functioning (Lee *et al.*, 2011).

Box 1. Brief History and Organisational Structure of CMS

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) came into effect in 1983 and has 116 Parties (as of 1st July 2011) (UNEP/CMS Secretariat, 2009a; UNEP/CMS, 2011d). The Secretariat for administration of the Convention is provided by the United Nations Environment Programme (UNEP) and is located in Bonn, Germany, with several offices for agreement coordination including Bangkok (Thailand) and Abu Dhabi (United Arab Emirates). CMS's principal decision-making body is the Conference of the Parties (COP), which meets once every three years, reviews process and sets the budget and priorities for the following three years. It also has a Standing Committee, to oversee the running of the Convention and the Secretariat between Conferences of the Parties (COPs), and a Scientific Council, which provides technical advice (UNEP/CMS Secretariat, 2009a). The Convention is funded by mandatory Party contributions and voluntary contributions pledged by States, institutions (including UNEP and NGOs) and the private sector, including income coming from fundraising activities, such as those coordinated by the German-based non-profit association Friends of CMS (Freunde der Bonner Konvention).

11. This report evaluates the eight CMS existing instruments on terrestrial mammals (including bats)(Box 2) and considers the extent to which they address the threats and issues facing those taxa. With input from stakeholders, options are proposed for the effective implementationand further development of CMS instruments, in order to maximise the geographic and taxonomic coverage of CMS, while enhancing its credibility and influence.

12. Migratory species covered by the Convention may be listed in Appendix I, Appendix II or both (Box 3). The Convention attaches greatest importance to species listed in Appendix I and identifies species deserving of special attention by passing Resolutions for Concerted Actions (UNEP/CMS Secretariat, 2009a). The precise type of legal documents resulting from Concerted Actions is not specified, although it is implied that Action Plans are indispensible (Devillers, 2008). Because the obligations of Concerted Actions are generated by the Convention itself, the responsibility for financing remains with the Convention (Devillers, 2008).

13. Furthermore, UNEP/CMS Recommendation 5.2 recommends that Parties undertake Cooperative Actions to improve the conservation status of Appendix II species or populations. The main instrument through which the conservation and management needs of Appendix II species can be addressed is through Article IV, Paragraph 3 AGREEMENTS, which are inferred as being legally binding. Such AGREEMENTS should have the objective to "restore the migratory species concerned

to a favourable conservation status or to maintain it in such a status", cover the whole range of the migrating species concerned, and, wherever possible, deal with more than one migratory species (CMS, 1979). Less formal Article IV, Paragraph 4 'agreements' are also encouraged in the Convention for "any population or any geographically separate part of the population of any species or lower taxon of wild animals, members of which periodically cross one or more national jurisdictional boundaries." These are normally implemented by a non-legally binding tool (such as a Memorandum of Understanding), but may evolve into formal AGREEMENTS (UNEP/CMS Resolutions 2.6 & 3.5). Financing of agreements of both Article IV, Paragraphs 3 and 4 is provided by range States that are Party to the agreement and is sometimes assisted by non-range States with a conservation interest in the region through voluntary contributions (UNEP/CMS Resolution 2.7).

14. With regards to improving the conservation of migratory species through CMS instruments/frameworks, the Future Shape process includes consideration of the following options: i) creation of new instruments, including CMS Multispecies Initiatives, ii) merging existing instruments with similar species, ecologies or geographic regions, iii) expanding existing instruments to increase geographic or taxonomic scope, and iv) other options to deliver a more integrated conservation programme (UNEP/CMS/Resolution 9.13).

Box 2. CMS existing instruments on terrestrial mammals (including bats)

- Agreement on the Conservation of Gorillas and their Habitats;
- Agreement on the Conservation of Populations of European Bats (EUROBATS);
- Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*);
- Memorandum of Understanding concerning the Conservation and Restoration of the Bukhara deer (*Cervus elaphus bactrianus*);
- Memorandum of Understanding concerning the Conservation, Restoration and Sustainable Use of the Saiga antelope (*Saiga* spp.);
- Memorandum of Understanding concerning the Conservation of the Southern Huemul (*Hippocamelus bisulcus*);
- Action Plan for the Conservation and Restoration of the Sahelo-Saharan Antelopes and their Habitats;
- Concerted Action for Central Eurasian Aridland Mammals.

Box 3. The CMS Appendices

CMS Appendix I contains species for which there is reliable evidence indicating that they are endangered, whereas Appendix II includes species with an unfavourable conservation status that require international agreements for their conservation and management and/or species with a status that would benefit from international cooperation (CMS, 1979). Parties that are range States for Appendix I species should prohibit the taking of Appendix I animals (unless for certain exceptions detailed in Article III, Paragraph 5 of the Convention), as well as endeavour to restore their habitats, prevent/minimise adverse effects of activities that may impede the migration of species and prevent/control factors that are endangering the species. Parties that are range States for Appendix II species shall endeavour to conclude Agreements where these would benefit the species and should give priority to those species with an unfavourable conservation status (CMS, 1979).

1.2. Methodology

15. In order to identify the main threats and issues facing taxa of terrestrial mammals (including bats) listed in the CMS Appendices, a literature review was undertakento compile information from the IUCN Red List, published and unpublished overviews of species' status and threats, recent scientific papers, CMS publications and the most recent national reports of CMS and its daughter agreements. This information was analysed by taxonomic group and geographic region, as well as summarised for each taxon in tabulated format. Only CMS national reports submitted by 10th June 2011 (totalling 68 responses from Parties; noting that the deadline for submission of national reports was 20th May 2011) were used in production of this report.

16. Written enquiries in the form of a questionnaire (Annex III) were compiled and sent to range States and stakeholders to invite their input on the effectiveness of current CMS instruments, their degree of cooperation/collaboration with international organisations and other CMS instruments, and which option they considered most appropriate for increasing the taxonomic and geographic scope of CMS instruments. In total, twenty-two responses to the questionnaire were received (Annex IV).

17. Information about the organisational structure, budgetary information and activities carried out by CMS existing instruments was gathered from meeting documents, Parties' national reports and publications from the CMS website and websites of the respective instruments where applicable. In addition, particular attention was paid to the various reports and meeting documents relating to the Future Shape process of CMS.

18. Methodological limitations included i) the lack of a complete list of range States for all species of terrestrial mammal listed in the CMS Appendices, ii) the lack of publicly-available information on the funding of some CMS instruments, and iii) the difficulty of contacting some range States via email. In addition, a small number of recipients who were sent questionnaires relating to the effectiveness of the Gorillas AGREEMENT and West African Elephant MoU responded that they did not wish to speculate as to the most appropriate option to cover elephants of Central Africa by a CMS instrument, until the outcome of the separate report on 'Analyzing gaps and options for elephants in Central Africa' had been produced.

2. Overview of the main threats and conservation issues affecting terrestrial mammals (including bats) listed in the CMS Appendices

19. This section outlines the main threats and conservation issues affecting terrestrial mammals (including bats) listed in the CMS Appendices. The main threats/issues to terrestrial mammals include i) habitat loss, fragmentation and degradation, ii) hunting/capture, iii) disease, iv) climate change and v) pollution/use of toxic chemicals (Table 1).

20. **Habitat loss, fragmentation and degradation:**Habitat loss, fragmentation and degradation is the most important driver of species extinctions (Baillie*et al*., 2004) and was considered by Parties to be the most important threat to terrestrial mammals and bats, according to the CMS national reports submitted to the Tenth Meeting of the Conference of the Parties (CMS COP10). Globally, the main cause of habitat loss and fragmentation is the conversion of land to agriculture; further causes include the building of infrastructure and urban areas, mining and logging (MEA, 2005; Laurance, 2010).

21. Prior to 1950, the biomes that suffered from the highest rates of habitat loss were Mediterraneanand temperate forests and temperate grasslands, savannas and shrublands, whereas in the latter half of the 20th Century, the highest rates of habitat loss occurred in tropical and subtropical dry forests, flooded grasslands and savannas, and tropical, sub-tropical and temperate grasslands, savannas and shrublands (MEA, 2005; Laurance, 2010). Particularly rapid changes in the last two decades of the

20th Century occurred in the Amazon basin and Southeast Asia (deforestation and expansion of croplands) and Asia (land degradation in drylands) (MEA, 2005). More recently (2000-2005), the highest rates of gross forest cover loss are estimated to have occurred in the boreal forest biome (due to naturally-induced fires, logging and disease), the humid tropics (largely attributable to agro-industrial clearing in Brazil and agro-forestry in western Indonesia and Malaysia) and the dry tropics (mainly in Australia, Brazil, Argentina and Paraguay, in the form of agro-industrial clearing) (Hansen *et al*., 2008, 2010).

22. Although the global rate of agricultural conversion has started to slow down with lack of availability of easily convertible land, and forest cover is increasing in many areas in North America, Europe, Japan and China, high rates of conversion still remain in many tropical areas (MEA, 2005; Laurance, 2010 and references therein). The main driver of land conversion is no longer small-scale farming, but rather industrial, intensive agriculture and biofuel production (MEA, 2005; Laurance, 2010), fuelled by the growing population and consumption rates (MEA, 2005). Regions predicted to be most susceptible to selective logging in the future include the Amazon and Congo Basins (Asner *et al*., 2010), which are also predicted to be at increasing risk from deforestation for agriculture and biofuel production (Fitzherbert *et al*., 2008; Strassburg *et al*., 2009).

23. **Hunting/capture:**Hunting or capture for meat, sport, the pet trade or trade in body parts is a threat to many terrestrial mammals listed in the CMS Appendices (Table 1). Unsustainable harvesting (i.e. overexploitation) occurs when the harvest rate exceeds the rate of natural replacement of a population (Peres, 2010). In the past, overexploitation has led to several extinctions of mammalian species, particularly large-sized species and species dependent on island ecosystems (Peres, 2010). For example elephants, wild cattle and primate species have been hunted to local extinction in many areas in the tropics (Nasi *et al*., 2008). Poaching was considered to be the second most important threat to terrestrial mammals, noted by 16 Parties in the CMS national reports submitted to CMS COP10; furthermore, 13 Parties considered illegal trade to be a major threat to terrestrial mammals.

24. During the past 50-100 years, the impacts of overexploitation have been particularly high in tropical grasslands, savannas and forests, as well as in island ecosystems (MEA, 2005). In many tropical regions, there is a lack of implementation and enforcement of wildlife regulation; for example in Central Africa, hunting and sale of wild animals is often not prohibited by law, and although the use of certain hunting practices may be banned, these bans may not be implemented (Wilkie *et al.*, 2011). Control of capture for trade is particularly challenging for those species that are very highly priced in trade (Bennett and Saunders, 2010). The hunting of 'bushmeat' (i.e. wild forest animals hunted by local people for subsistence or income) is a particular threat to medium or large-sized vertebrates in tropical forests, and is often practiced by poor people that are heavily dependent on wild animals as a source of food and income (Bennett and Saunders, 2010 and references therein; Wilkie *et al.*, 2011). Bushmeat extraction rates are particularly high in Central Africa, where the estimated harvest of up to 3.4 million tons is in average six times higher than the maximum sustainable harvest (Peres, 2010 and references therein). Furthermore, whilst the global rate of overexploitation was estimated to remain relatively stable, the hunting of bushmeat in tropical forests is considered to be increasing (MEA, 2005; Peres, 2010), driven by the diminishing size of the forest areas coupled with the increasing human population, changes in hunting technology and greater access to infrastructure (Bennett, 2002). Another trend is the increased commercialisation of hunting, driven by demand in urban and international markets particularly in East and Southeast Asia (Wilkie *et al.*, 2011). The decline of forest-dwelling animals has affected Asia, is rapidly proceeding throughout Africa and expected to affect the remotest areas of the neotropics in the future (Peres *et al.*, 2010).

25. **Disease:** Although the impact of disease on wildlife is poorly known, diseases have been found to cause significant temporary or permanent declines in local populations (Smith *et al.*, 2009). The impact of disease is particularly strong in populations that are already threatened by habitat loss, overexploitation or other threats. Small, inbred or isolated populations are also particularly susceptible to disease (Smith *et al.*, 2009). Climate change can also affect the distribution of parasites and diseases (Secretariat of the Convention on Biological Diversity, 2009), and increased abundance of domestic animals can increase disease outbreaks in closely related species such as artiodactyls and carnivores (Smith *et al.*, 2009 and references therein). Epidemic outbreaks have also been found to increase during war or conflict (Dudley *et al.*, 2002).

26. **Climate change:**Climate change is already having a significant impact on species and ecosystems, which is compounding additional threats of habitat loss/fragmentation and overexploitation and pollution (MEA, 2005; IPCC, 2007; Campbell *et al.*, 2009; CBD Secretariat, 2009; Lovejoy, 2010; Warren *et al.*, 2011). The effects of climate change on species include changes in distribution (shifting to higher latitudes and altitudes and contractions in range), population status, the timing of life history events (including migration) and species interactions, and an increase in the frequency of pest and disease outbreaks (IPCC, 2007; Rosenzweig *et al.*, 2007; CBD Secretariat, 2009;Lovejoy, 2010 and references therein). Range shifts towards Polar Regions or higher altitudes have been observed in many terrestrial species (Rosenzweig *et al.*, 2007), making mountainous and arctic species particularly vulnerable to the loss of habitat, along with species with limited dispersal abilities or slower life-history traits (MEA, 2005; CBD Secretariat, 2009; Lovejoy, 2010). Furthermore, migratory species are particularly likelyto be affected by climate change, due to travelling large distances, being subject to a wide range of environmental influences and relying on a wide range of natural resources (Robinson *et al.*, 2005; 2008).

27. The most severe ecological impacts of climate change are predicted to occur in tundra, boreal forest, and mountain regions, as well as mangroves and salt marshes, deserts and tropical grasslands and savannas (MEA, 2005; IPCC, 2007); geographic regions most affected include the Arctic, Africa (particularly sub-Saharan Africa), small islands and Asian megadeltas (IPCC, 2007). Changes in precipitation patterns are already affecting several areas; for example Australia, the Argentine pampas and the American southwest have been suffering increasingly from droughts (Lovejoy, 2010). Large-scale droughts are considered a particularly serious threat to biodiversity in southern Africa, where high rates of habitat loss, fragmentation and degradation exacerbate the problem (MEA, 2005). The impacts of climate change in all terrestrial ecosystems are estimated to be increasing rapidly; climate change may become the main driver of species extinctions by the end of the 21st Century (MEA, 2005; IPCC, 2007).

28. **Pollution/use of toxic chemicals:** Toxins released from industrial processes can change the fecundity or survival rates of a population (Smith, 1998). Pollutants such as heavy metals may also negatively affect the immune system of animals, making them more vulnerable to disease (Smith *et al.*, 2009 and references therein). Agricultural pesticides, which are released into the environment in large quantities, are harmful to many animals (Smith, 1998). Pollution by nitrogen and phosphorus, used as fertilizers, is predicted to increase substantially in the near future, lowering plant diversity in terrestrial ecosystems (MEA, 2005) and affecting the suitability of ecosystems for animals. The impacts of nutrient pollution have been considered particularly high in temperate grassland ecosystems during the past 50-100 years (MEA, 2005), and the continuing expansion of biofuel cultivation further adds to the nutrient load (Delucchi, 2010).

29. **Other threats:** Further threats to terrestrial mammals include human disturbance, competition with other animals or human livestock, depletion of wild prey and civil unrest/military conflict (Table 1).

Human disturbance has been linked with reduced breeding success in various species (Beale and Monaghan, 2004). It may limit access to feeding areas and in some cases directly increase mortality (Beale and Monaghan, 2004 and references therein). Competition with livestock may have a negative impact on grazing mammals particularly when there is a scarcity of resources (Dave and Jhala, 2011). Livestock grazing has been found to reduce edible plant material and increase the relative cover of unpalatable species (Wallgren *et al*., 2008). Depletion of wild prey base may be linked to increased livestock grazing or hunting, and increase the likelihood of human conflict (Ray *et al*., 2005; Jackson *et al*., 2008).

30. Hanson *et al.* (2009) estimated that over 80 per cent of the major armed conflicts between 1950 and 2000 took place within biodiversity hotspot areas. During the time of conflict, refugees, local populations, and military and paramilitary troops may be reliant on wild animal and plant resources for subsistence purposes; furthermore, valuable resources such as ivory are sold or traded for weapons or food (Dudley *et al.*, 2002). Occupation of national parks has been found to increase during wartime, with overexploitation of animal populations and degradation of habitats (Dudley *et al.*, 2002). Further negative impacts are caused by the use of chemical weapons, and land mines may be a significant threat particularly to large-bodied mammal species (Dudley *et al.*, 2002).

Table 1. Main threats/issues affecting terrestrial mammals in the CMS Appendices

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	Main threats/issues
CHIROPTERA			
Eidolon helvum **II** (only African populations) African straw-coloured fruit bat	Af	NT ↓	Hunting (for food and medicinal use) (Mickleburgh *et al.,* 2008a; 2008b).
Rhinolophidae spp. **II** (only European populations) Horseshoe bats	Eu	-	Loss and fragmentation of foraging habitats (e.g. woodland, riparian vegetation, tree lines and hedgerows in agricultural areas); increased pesticide use; loss of underground habitats; loss of other roost sites (e.g. conversion of attics); and human disturbance at caves (tourism and caving) (Hutson *et al.,* 2001; 2006a; 2006b; 2006c; 2006d; 2006e).
Otomops madagascariensis **II** Malagasy giant mastiff bat	Af	LC ?	Potentially, human disturbance at roost sites (Andriafidison *et al.,* 2008).
Otomops martiensseni **II** (only African populations) Large-eared giant mastiff bat	Af	NT ↓	Human disturbance at roost caves (e.g. guano mining, blocking of cave entrances, recreational caving and tourism). Potentially also indirect poisoning (use of toxic timber treatment at attic roosts) (Mickleburgh *et al.,* 2008b).
Tadarida brasiliensis **I** Brazilian or Mexican free-tailed bat	SCA	LC →	Locally, persecution (extermination as pest) and disturbance in caves (e.g. due to guano collection and tourism). Potentially also pesticide use (Hutson *et al.,* 2001; Barquez *et al.,* 2008).
Tadarida insignis **II** East Asian free-tailed bat	As	DD ?	Loss of cave habitat (due to tourism and quarrying) (Maeda *et al.,* 2008).
Tadarida latouchei **II** La Touche's free-tailed bat	As	DD ↓	Hunting (for food), at least locally. Potentially also human disturbance at caves (e.g. mining) (Francis and Maeda, 2008).
Tadarida teniotis **II** European free-tailed bat	As, Eu	LC ?	Disturbance and loss of roosts in buildings; and pesticide use. Potentially also localised deforestation and collision with wind turbines (Aulagnier *et al.,* 2008).

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	Main threats/issues
Vespertilionidae spp. **II** (only European populations) Evening bats	Eu	-	Loss and fragmentation of foraging habitats (e.g. hedgerows and copses in agricultural areas, natural forest/woodland, wetlands and riparian vegetation); increased pesticide use; closure and loss of underground habitats (e.g. caves, mines and tunnels); loss of above-ground roost sites (e.g. renovation of older buildings and removal of old trees); human disturbance at caves (tourism and caving); collision with wind turbines; and persecution (e.g. intentional killing) (Hutson *et al.*, 2001; Dubourg-Savage *et al.*, 2011). Potentially also fungal infection ('White Nose Syndrome' / *Geomyces destructans*) (EUROBATS, 2010a).
Miniopterus majori **II** Major's long-fingered bat	Af	LC ?	Potentially, localised human disturbance at caves and hunting (Jenkins and Rakotoarivelo, 2008).
Miniopterus natalensis **II** (only African populations) Natal long-fingered bat	Af	LC ?	Locally, conversion of habitat to agriculture, incidental poisoning with insecticides, and human disturbance at roost/maternity caves (due to tourism) (Jacobs *et al.*, 2008).
Miniopterus schreibersii **II** (only African and European populations) Schreibers's long-fingered bat	Eu, Af	NT ↓	Potentially, loss of underground habitats, human disturbance at caves, and pesticide use. The causes of occasional mass mortality events remain unclear (Hutson *et al.*, 2001; 2008).
PRIMATES *Gorilla beringei* **I** Eastern gorilla	Af	EN ↓	Hunting (for meat); capture of infants (for pet trade); habitat loss and degradation (e.g. due to agriculture, timber/firewood extraction and mining); disease (e.g. from contact with tourists); civil unrest and military conflict (Beudels-Jamar *et al.*, 2008; Robbins and Williamson, 2008; UNEP/CMS, 2009b; 2009d).
Gorilla gorilla **I** Western gorilla	Af	CR ↓	Hunting (for meat); disease (particularly Ebola virus); habitat loss and degradation (due to agriculture, timber extraction, mining and road construction); and capture of infants (for pet trade). Potentially also civil unrest and military conflict (Beudels-Jamar *et al.*, 2008; Walsh *et al.*, 2008; 2009a; UNEP/CMS, 2009g).
CARNIVORA *Acinonyx jubatus* **I** (except populations in Botswana, Namibia and Zimbabwe) Cheetah	Af, As	VU ↓	Habitat loss and fragmentation; depletion of wild prey base (e.g. due to hunting and competition with livestock); persecution by farmers and ranchers (as perceived threat to livestock); and competition with other species (particularly *Panthera leo*). Potentially also illegal trade (in live animals and skins), disturbance from tourism, and disease (e.g. anthrax) (Durant *et al.*, 2008).
Uncia uncia **I** Snow leopard	As, Eu	EN ↓ (as *Panthera uncia*)	Depletion of wild prey base (due to hunting and competition with livestock); hunting (for illegal trade in pelts and body parts for medicinal use); capture of live animals (for zoos and circuses); persecution (retribution for livestock predation); and lack of conservation capacity, policy and awareness. Also habitat degradation and fragmentation, military conflict, and lack of trans-boundary co-operation (Jackson *et al.*, 2008).

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	Main threats/issues
Lycaon pictus **II** African wild dog	Af	EN ↓	Conflict with human activities; and infectious disease. Also habitat fragmentation (increasing contact with humans and domestic dogs), and competition with other species (e.g. *Panthera leo*) (McNutt *et al.*, 2008).
Lontra provocax **I** Southern river otter	SCA	EN ↓	Habitat loss and disturbance (e.g. removal of riparian vegetation, dam construction, river canalisation, drainage for agriculture and dredging); and hunting (for pelts). Potentially also severe flooding and soil deposition in rivers (due to large-scale destruction of forests), and introduction of non-native fish species (Sepulveda *et al.*, 2008).
PROBOSCIDEA *Loxodonta africana* **II** African bush elephant	Af	VU ↑	Habitat loss and fragmentation due to rapid land conversion (driven by human population expansion); and conflict with humans. Also hunting (for ivory and meat) (Blanc, 2008).
Loxodonta cyclotis **II** African forest elephant	Af	VU ↑ (*L. africana*,*sensu lato*)	Hunting (for ivory and meat); habitat loss and fragmentation (due to timber extraction, road construction and agriculture); and conflict with humans (Blake *et al.*, 2007; Blanc, 2008).
PERISSODACTYLA *Equus grevyi* **I** Grevy's zebra	Af	EN →	Reduction of available water (e.g. due to over-abstraction for irrigation schemes); habitat degradation and loss (due to grazing by livestock); hunting (for food and, locally, medicinal use); and disease (e.g. anthrax) (Moehlman *et al.*, 2008a).
Equus hemionus **II** Asiatic wild ass	As	EN ↓	Hunting (mainly for meat); habitat loss and degradation (due to human settlement, cultivation, grazing by livestock, infrastructure development and resource extraction); conflict with humans (due to crop depredation); and competition for water (with humans and livestock). Locally, habitat fragmentation (e.g. by fences and transportation corridors); and war and civil unrest. Potentially also disease, and severe weather (drought) (Moehlman *et al.*, 2008b).
Equus kiang **II** Kiang	As	LC →	Changes in rangeland use policy; competition with livestock (for food and water); fencing of pastures; and hunting. Potentially also disease transmission from livestock; and, locally, resource extraction (e.g. gold mining and oil exploration) (Shah *et al.*, 2008).
ARTIODACTYLA *Camelus bactrianus* **I** Bactrian camel	As	CR ↓ (as *Camelus ferus*)	Hunting (for sport and food); persecution (due to competition with livestock for food and water); habitat degradation by livestock; hybridisation with domestic camels; and severe weather (drought, resulting in increase in predation by *Canis lupus* at remaining oases).Potentially also habitat loss due to mining and proposed gas pipeline (Harris and Leslie, 2008).

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	Main threats/issues
Vicugna vicugna **I** (except Peruvian populations)**/II** Vicugna	SCA	LC ↑	Hunting (e.g. for illegal trade in wool); persecution (due to perceived competition with livestock); habitat loss and degradation (due to grazing by livestock and mining); and lack of sustainable national management plans. Potentially also climate change (impact on habitat), disease (mange/scabies), and commercial breeding of alpaca–vicugna hybrids (Lichtenstein *et al.*, 2008).
Hippocamelus bisulcus **I** South Andean huemul or guemal	SCA	EN ↑	Habitat loss and degradation (e.g. due to livestock grazing, hydroelectric projects, other infrastructure development and tourism); and hunting. Also demographic factors (e.g. subpopulation size and fragmentation). Potentially also disease (e.g. from contact with livestock), and predation by dogs (Jiménez *et al.*, 2008).
Cervus elaphus barbarus **I** Barbary deer	Af	LC ↑ (*C. elaphus*)	Hunting; and habitat loss and degradation (due to human-caused forest fires) (Lovari *et al.*, 2008).
Cervus elaphus yarkandensis **I/II**(populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan) Bukhara deer	As	LC ↑ (*C. elaphus*)	Hunting (for meat and trophies); and habitat loss and degradation (due to logging, conversion of riparian forest to agriculture, livestock grazing and water abstraction). Potentially also contamination with pesticides (UNEP/CMS, 2005c; Lovari *et al.*, 2008).
Gazella cuvieri **I** Cuvier's gazelle	Af	EN ?	Hunting; and habitat loss and degradation (due to charcoal production and conversion to cropland and pasture). Also predation by non-native species (dogs) (Beudels *et al.*, 2006; Mallon and Cuzin, 2008).
Gazella dorcas **I**(only Northwest African populations) Dorcas gazelle	Af	VU ↓	Hunting. Also grazing by livestock and severe weather (drought) (Beudels *et al.*, 2006; IUCN SSC Antelope Specialist Group, 2008a).
Gazella erlangeri **II** Neumann's gazelle	As	VU ↓ (*G. gazella, sensu lato*)	Hunting (for meat); capture of live animals (for pets and private collections); and habitat loss (due to agricultural development, fencing of pasture, road construction and human settlement) (IUCN SSC Antelope Specialist Group, 2008b).
Gazella gazella **II** (only Asian populations) Mountain gazelle	As	VU ↓	Hunting (for meat); capture of live animals (for pets and private collections); and habitat loss (due to agricultural development, fencing of pasture, road construction and human settlement). Locally, also habitat degradation (due to abstraction of groundwater for agriculture); increased predation by native species (*Canis lupus* and *C. aureus*); and demographic factors (e.g. inbreeding) (IUCN SSC Antelope Specialist Group, 2008b).
Gazella leptoceros **I** Slender-horned gazelle	Af	EN ↓	Hunting; and degradation of habitat (particularly erg vegetation) (Beudels *et al.*, 2006; Mallon *et al.*, 2008).
Gazella subgutturosa **II** Goitered gazelle	As	VU ↓	Hunting (for meat and trophies); and habitat loss (due to agricultural development and increase in livestock). Locally, also capture of live animals (for private collections), and severe weather (harsh winters)

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	Main threats/issues
			(Mallon, 2008a).
Nanger dama **I** Dama gazelle	Af	CR ↓	Hunting; expansion of nomadic pastoralism (due to construction of wells) and grazing by livestock; and prolonged drought (Beudels *et al.*, 2006; Newby *et al.*, 2008).
Procapra gutturosa **II** Mongolian gazelle	As	LC ?	Hunting (for meat and hides); and habitat fragmentation (by fencing along railway lines). Also disease outbreaks and severe weather (harsh winters) (Mallon, 2008b).
Saiga borealis **II** Saiga antelope (Mongolia)	As (ex)	EN ↓ (as *S. t. mongolica*)	Habitat degradation (due to livestock grazing); severe weather (harsh winters and summer drought); and hunting (for horns and meat) (Mallon, 2008c; 2008e; UNEP/CMS, 2010e).
Saiga tatarica **II** Saiga antelope	As, Eu	CR ↓ (as *S. t. tatarica*)	Hunting (for horns and meat); severely skewed sex ratios (due to selective hunting of males); loss of habitat and destruction of traditional migration routes; and disease. Locally, encroachment of non-forage plant species following abandonment of grazing land (Mallon, 2008c). Potentially also predation (Mallon, 2008d; 2008e; UNEP/CMS, 2010e).
Bos grunniens **I** Yak	As	VU ↓ (as *B. mutus*)	Hunting (e.g. for meat); loss and degradation of available habitat (due to livestock grazing); hybridisation with domestic yaks; and persecution (due to conflict with pastoralists). Potentially also disease (from livestock) (Harris and Leslie, 2008).
Bos sauveli **I** Kouprey	As	CR ?	Hunting (for meat and trade in body parts). Potentially also disease (from contact with livestock) (Timmins *et al.*, 2008).
Ammotragus lervia **II** Barbary sheep	Af	VU ↓	Hunting; and habitat loss (due to livestock grazing, fuel-wood collection and desertification). Locally, also competition with livestock and feral camels, and severe weather (drought) (Cassinello *et al.*, 2008).
Addax nasomaculatus **I** Addax	Af	CR ↓	Hunting; severe weather (drought); and expansion of nomadic pastoralism (due to increase in wells). Potentially also human disturbance (e.g. from tourism), and demographic factors (e.g. subpopulation size and fragmentation) (Beudels *et al.*, 2006; Newby and Wacher, 2008).
Oryx dammah **I/II** Scimitar-horned oryx	Af	EW	Hunting; and habitat loss and degradation (including competition with grazing livestock and drought) (Beudels *et al.*, 2006; IUCN SSC Antelope Specialist Group, 2008c).

[i]**World Regions in which the CMS-listed population occurs:** Eu = Europe, Af = Africa, As = Asia, Oc = Oceania, SCA = South & Central America & the Caribbean, NA = North America.
[ii]**Global threat status according to the IUCN Red List:** DD = Data Deficient, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, EW = Extinct in the Wild.
[iii]**Global population trend according to the IUCN Red List:**↓ = decreasing population trend, ↑ = increasing population trend, → = stable population trend, ? population trend unknown.

31. **European bats:** Migratory species of the Families Rhinolophidae and Vespertilionidae are listed in CMS Appendix II, along with Tadarida teniotis and Miniopterus schreibersii (Table 1). Hutson *et al*. (2001) identified the loss and degradation of forest/woodland, wetlands and non-

intensive agricultural landscapes, use of pesticides, fires, disturbance and destruction of caves, renovation of buildings and maintenance of bridges as the main threats to Microchiropteran bats within the Palaearctic Region as a whole, noting that artificial lighting and the loss of linear landscape elements (e.g. hedges and treelines) were also concerns. A recent review of bat fatalities at wind turbines within Europe reported that nearly 3,800 fatalities (of 27 species) had been reported from 15 European countries, with most (>98 per cent) relating to open-air species of the genera Pipistrellus/Hypsugo, Nyctalus and Eptesicus (all of the family Vespertilionidae) (Dubourg-Savage *et al*., 2011).

32. Thirty EUROBATS Parties (and two non-Party range States) submitted national reports to the 6th Session of the Meeting of the Parties (MoP6) in 2010. The most frequently reported threat to bat species was the loss and fragmentation of foraging habitats due to: intensification of agriculture and changes to the agricultural landscape (e.g. loss of hedgerows and copses); intensification of forestry; clearance and logging of natural forest; construction of roads and other infrastructure; urbanisation; draining of wetlands and loss of riparian vegetation; and water pollution. Linked to agricultural intensification, a significant number of countries highlighted the threat from increased use of pesticides. The majority of countries also reported the loss and degradation of roosting/breeding habitats as a threat. In the case of above-ground habitats, the most common threats reported were: demolition, maintenance and renovation of older buildings; intensive forest/woodland management (particularly removal of old, hollow and/or dead trees); and the lack of bat-friendly space in modern buildings. In the case of underground habitats, such as caves, mines and tunnels, the main threats reported were: inappropriate closure or blocking of entrances; destruction or filling-in of disused excavations; and their use for purposes such as waste disposal. Human disturbance, particularly visiting of caves for recreational purposes (e.g. tourism and caving), was also reported as a threat by the majority of countries. Other threats reported included (in decreasing order of frequency): wind turbines; persecution (intentional killing and vandalism); lack of knowledge on successful mitigation techniques; collision with road vehicles; light pollution; fires (destroying tree roosts and foraging habitat); extreme weather (e.g. severe winters); and public ignorance of the ecological needs of bats. A few countries also highlighted the potential threat of 'White Nose Syndrome' following the detection nationally of Geomyces destructans, the fungus implicated.

33. **Other bats:** Currently, the Brazilian free-tailed bat *Tadarida brasiliensis* is the only bat species listed in Appendix I of CMS. Barquez *et al*. (2008) reported mining in caves and persecution as localised threats to *T. brasiliensis* and Hutson *et al*. (2001) highlighted persecution (destructive control of house-dwelling populations), use of pesticides (notably DDT) and disturbance in maternity caves (e.g. guano collection and tourism) as threats to the species.

34. Nine other bat species that have populations outside of Europe are listed on Appendix II of CMS. The six species occurring in Africa (*Eidolon helvum, Otomops madagascariensis*, *Otomops martiensseni*, *Miniopterus majori*, *Miniopterus natalensis* and *Miniopterus schreibersii*) are reportedly threatened by: hunting (*E. helvum*); human disturbance at roost caves (e.g. *O. martiensseni*); incidental poisoning (with pesticides and timber treatments in buildings); and conversion of habitat to agriculture (IUCN, 2010). A recent review of the hunting of bats for bushmeat (Mickleburgh *et al.,* 2009) found that consumption of *E. helvum* was reported from at least 11 countries in sub-Saharan Africa, although of these countries, bats were only regularly eaten in Liberia, Nigeria and United Republic of Tanzania (Pemba Island). A study of bats in dry regions of Madagascar considered the greatest threat to be human utilisation of caves including for mineral and guano exploitation, uncontrolled tourist visits and collection for bushmeat (Goodman *et al.,* 2005). More generally, Hutson *et al*. (2001) identified the loss and degradation of forest, grasslands and savanna, and the destruction and disturbance of caves

as the main threats to Microchiropteran bats within the Afrotropical Region, noting that persecution of house-dwelling species and poisoning (e.g. with pesticides) were also concerns.

35. The three species occurring in Asia (*Tadarida insignis*, *Tadarida latouchei* and *Tadarida teniotis*) are potentially also threatened by hunting (*T. latouchei*, at least locally), and the destruction and disturbance of cave habitats (IUCN, 2010). More generally, threats to bats in Southeast Asia include the loss and degradation of forest and wetland habitats, disturbance of caves due to guano collection, tourism and mining, hunting, severe storms and introduced species (Hutson *et al.,* 2001; Wiles and Brooke, 2009; Kingston, 2010).

36. **Eurasian mammals:**The Snow leopard *Uncia uncia,* Bactrian camel *Camelus bactrianus,* Bukhara deer *Cervus elaphus yarkandensis* and Yak *Bos grunniens* are threatened by a variety of factors, notably: hunting (for meat, sport and illegal trade in pelts and body parts); habitat loss and degradation (e.g. due to livestock grazing); persecution or human-wildlife conflict (due to perceived competition with – or, in the case of *U. uncia*, predation of – livestock); and hybridisation with domestic forms (for *C. bactrianus* and *B. grunniens*) (IUCN, 2010). Additional, more specific threats include: depletion of the wild prey base (due to hunting and competition with livestock), capture of live animals for zoos and circuses and military activity in the case of *U. uncia* (Jackson *et al.,* 2008); drought, resulting in increased predation by wolves *Canis lupus* at remaining oases, for *C. bactrianus* (Hare, 2008); logging and clearance of riparian forest for *C. e. yarkandensis* (UNEP/CMS, 2005c); and potentially also diseases from livestock in the case of *B. grunniens* (Harris and Leslie, 2008). The largest populations of *U. uncia* were reported to occur in China and Mongolia (Jackson *et al.,* 2008). *Camelus bactrianus* were reported to be restricted to China and Mongolia (Hare, 2008). Mahmut *et al.* (2001) stated that *C. e. yarkandensis* only occurred in three areas of the XinJiang, China, most of which were in the Tarim basin.

37. Six other species of the arid lands of East–Central Asia are listed in Appendix II of CMS: Asiatic wild ass *Equus hemionus,* Kiang *Equus kiang,*Goitered gazelle *Gazella subgutturosa,* Mongolian gazelle *Procapra gutturosa*, and Saiga antelope*Saiga tatarica*and*Saiga borealis*. These species are threatened by a similar combination of factors, including: hunting (for meat and horns); habitat loss and degradation (e.g. due to livestock grazing, agricultural development and mining); fragmentation of habitat (by fencing, railways and roads); severe weather (harsh winters and summer drought); and disease (IUCN, 2010). Additional, more specific threats include: conflict with humans (due to perceived competition with livestock and crop depredation) for *E. hemionus* (Moehlman *et al.,* 2008b); and severely skewed sex ratios (due to selective hunting of males) in the case of *S. tatarica*, leading to reproductive collapse (Mallon, 2008e).

38. The most abundant subpopulation of *Equus hemionus* (more than 80 per cent of the total number) occurs in the southern part of Mongolia (Feh *et al.,* 2004) and most of the population of *Procapra gutturosa* is found on the eastern Mongolian Steppes (Mallon, 2008b). Mongolia is also thought to contain the largest remaining population of *Gazella subgutturosa*, with the population in Turkmenistan having virtually disappeared, and a drastic decline having occurred in Kazakhstan (Mallon, 2008a and references therein). The remaining populations of *Saiga tatarica* occur in Kazakhstan (Ural, Ustiurt and Betpak-dala populations) and the Precaspian Region of the Russian Federation, with one population from Kazakhstan reaching Uzbekistan and sometimes northern Turkmenistan in winter (Bekenov *et al.,* 1998; Milner-Gulland *et al.,* 2001); whereas *Saiga borealis* only occurs in Mongolia (Milner-Gulland *et al.,* 2001).A mass mortality of 12,000 *S. t. tatarica* from the Ural population in May 2010 and a further 500 in May 2011, thought to be due to disease outbreaks, were reported to have undermined long-term conservation efforts (UNEP/CMS, 2010g).

39. Two other aridland mammal species listed in Appendix II of CMS occur almost exclusively in Western Asia: Neumann's gazelle *Gazella erlangeri* and Mountain gazelle *Gazella gazella*. These two taxa (formerly considered conspecific) are threatened mainly by: hunting (for meat); habitat loss and degradation (due to agricultural development, fencing of pasture, road construction and human settlement); and capture of live animals, for private collections and pets (IUCN SSC Antelope Specialist Group, 2008b). Live capture for private collections was also reported as a localised threat for Western Asian populations of *G. subgutturosa* (Mallon, 2008a).

40. One terrestrial mammal species listed in Appendix I of CMS, the Kouprey *Bos sauveli*,is potentially already extinct, but is (or was) primarily threatened by hunting (for meat and trade in body parts), with diseases from contact with livestock potentially also a threat (Timmins *et al.,* 2008). If extant, the species is considered most likely to occur in eastern Cambodia (Timmins *et al.,* 2008).

41. **African Artiodactyla:** A review of the conservation status of Cuvier's gazelle *Gazella cuvieri*, Dorcas gazelle *Gazella dorcas*, Slender-horned gazelle *Gazella leptoceros*, Dama gazelle *Nanger dama*,Addax *Addax nasomaculatus* and Scimitar-horned oryx *Oryx dammah* identified uncontrolled hunting and poaching (especially since the advent of modern firearms and off-road vehicles) and the degradation and loss of habitat (principally due to severe droughts, grazing by livestock, cutting of woody vegetation and the ongoing expansion of pastoralism, resulting from the construction of wells) as major threats to all six species (Beudels *et al.,* 2006; IUCN, 2010).

42. For *Gazella cuvieri*, which inhabits more mountainous areas, the destruction of natural forest for agriculture and charcoal production was also identified as a key factor (Beudels *et al.,* 2006; Mallon and Cuzin, 2008) and the species was reported to be in sharp decline in Morocco (Beudels *et al.,* 2005). In the case of *A. nasomaculatus*, disturbance and harassment by tourists has been reported as an additional threat(Beudels *et al.,* 2006; Newby and Wacher, 2008). *A. nasomaculatus* was judged to be extinct in most of its range states, and endangered in the four countries in which it remained – Chad, Niger, Mali and Mauritania (Beudels *et al.,* 2005). It has been reintroduced in fenced protected areas in Morocco and Tunisia (Beudels *et al.,* 2005). The population of the Termit-Tin Toumma in Niger and Chad was estimated to be the only remaining viable population, numbering a minimum of 90-100 individuals (Wacher *et al.,* 2004). Its sole protection was claimed to be relative inaccessibility (Wacher *et al.,* 2004). *Oryx dammah* was assessed as extinct in the wild (IUCN SSC Antelope Specialist Group, 2008c); it has been reintroduced in fenced protected areas in Morocco, Tunisia and Senegal (Beudels *et al.,* 2005). The range of *Nager dama* has been reduced to a few residual populations, and prospects for recolonisation were considered to depend upon a sufficient degree of protection against taking and also environmental rehabilitation, including of acacia woodlands (Beudels *et al.,* 2005).

43. **Other African mammals:** Five other taxa of terrestrial mammal listed in Appendix I of CMS occur primarily or exclusively in Africa: Eastern gorilla *Gorilla beringei,* Western gorilla *Gorilla gorilla,* Cheetah *Acinonyx jubatus,* Grevy's zebra *Equus grevyi* andBarbary deer *Cervus elaphus barbarus*.

44. *Gorilla beringei* and *G. gorilla* occur primarily in the forests of central–western Africa, where they are threatened by a combination of factors, including: hunting (for meat); habitat loss and degradation (due to agriculture, timber and firewood extraction, mining and road construction); disease (particularly Ebola virus); capture of infants for the pet trade; and civil unrest and military conflict (Miles *et al.,* 2005; Beudels-Jamar *et al.,* 2008; Robbins and Williamson, 2008; Walsh *et al.,* 2008; UNEP/CMS, 2009a,b,d,g). A series of outbreaks of the Zaire strain of Ebola virus were reported to have devastated Ape populations across Gabon and Republic of Congo (Walsh *et al.,* 2003; Bermejo *et*

al., 2006); the virus was estimated to have killed over 5000 gorillas at a study site in northwest Republic of Congo 2002-2003, representing 90-95 per cent mortality (Bermejo *et al.,* 2006).

45. *Acinonyx jubatus* has a wide, albeit fragmented, distribution across Africa within which it is threatened by a range of factors, including: habitat loss and fragmentation; depletion of its wild prey base (e.g. due to hunting and competition with livestock); persecution by farmers and ranchers (as a perceived threat to livestock); and competition with other species, particularly lions *Panthera leo* (Durant *et al.,* 2008). Illegal trade (in live animals and skins), disturbance from tourism, and disease (e.g. anthrax) have also been identified as potential threats (Durant *et al.,* 2008). The Asiatic cheetah, surviving only in Iran, was estimated at 71-122 individuals (Breitenmoser *et al.,* 2009), which have recently been found to be genetically distinct (Charruau *et al.,* 2011). Emergency protection measures have been implemented to address habitat degradation and other threats in Iran (Breitenmoser *et al.,* 2009). Eradication of Cheetah prey in North Africa was thought to be threatening the small and highly fragmented North Africa populations (Ray *et al.,* 2005; Saleh *et al.,* 2001). The decline of the population in Egypt was attributed to illegal hunting of cheetah and prey species (gazelle) and it was predicted that if trends continued the few remaining cheetahs could not survive for long (Saleh *et al.,* 2001).

46. *Equus grevyi*, which occurs in arid grassland/shrubland in Ethiopia, Kenya and possibly Sudan, is threatened mainly by: reduction of available water supplies (e.g. due to over-abstraction for irrigation schemes); habitat loss and degradation (due to grazing by livestock); hunting (for food and, locally, medicinal use); and disease (e.g. anthrax) (Moehlman *et al*., 2008a). A maximum population decline of 85 per cent was recorded over a 27 year period up to 2003, and in 2008 93 per cent of the population occurred in Kenya (Low *et al.,* 2008). Survey results suggested that the population in Ethiopia declined by 93 per cent between 1980 to 2003 to 110 individuals, largely attributed to killing by pastoral people (Williams *et al.,* 2003).

47. *Cervus elaphus barbarus* is threatened by hunting and habitat loss and degradation due to human-caused forest fires (CITES, 2007; Lovari *et al.,* 2008). Whilst the widespread *C. elaphus* is classified as Least Concern in the global IUCN Red List (Lovari *et al.,* 2008), the subspecies *barbarus* is thought to be threatened with extinction in North Africa, where it currently occurs along a coastal strip of eastern Algeria, extending into Tunisia (CITES, 2007).

48. The main threats to *Lycaon pictus*are conflict with human activities and disease, both of which are exacerbated by habitat fragmentation (which increases contact with humans and domestic dogs) (McNutt *et al*., 2008). Few countries have viable populations of *L. pictus*, with the largest populations occurring in southern Africa and southern East Africa (Woodroffe *et al.,* 2004). Woodroffe *et al.* (2004) reported that protection was rarely enforced, so despite stringent legal protection, wild dogs became extinct in several countries and were virtually eradicated from West Africa and greatly reduced in central Africa and north-east Africa.

49. *Loxodonta africana* and *L. cyclotis* are distributed throughout much of sub-Saharan Africa and are primarily threatened by: habitat loss and fragmentation (due to rapid land conversion for agriculture, timber extraction, illegal logging and road construction); hunting (for ivory and meat); and conflict with humans (e.g. due to crop damage) (Blake *et al.,* 2007; Blanc, 2008; CITES/MIKE *et al.,* 2011). Illegal killing of elephants was reported to have risen to alarming levels in Central Africa and a substantial increase has been found in illicit ivory flows from Africa to East and Southeast Asia, emanating from all four African subregions (CITES/MIKE *et al.,* 2011). Industrial logging and road building is also predicted to increase in Central Africa (Laporte *et al.,* 2007), along with the rate of conversion of forests to agricultural land in response to the increasing global demand for food, fibre

and biofuels (UNEP Global Environmental Alert Service, 2011). The Red List status of African elephants varies considerably across their range, with Central Africa assessed as having the highest threat status (Endangered, though this was based on incomplete data) and Southern Africa the lowest (Least Concern) (Blanc, 2008). Eastern and West African elephants were both assessed as Vulnerable (Blanc, 2008). *Loxodonta cylotis* was considered to be more threatened than *L. africana* due to greater prevalence of poaching in forest habitats (Stephenson, 2007). Major populations of*L. africana*in eastern and southern Africa were reported to be increasing (Blanc *et al.,* 2005; Blanc *et al.,* 2007; in: Blanc, 2008). In their national reports to the First Meeting of the Signatories to the Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant in 2009, at least three range States also reported that the level of protection provided to *L. africana* (*sensu lato*) under their national legislation was currently not sufficient.

50. In the case of *Ammotragus lervia*, the principal threats are: hunting; habitat loss (due to livestock grazing, fuel-wood collection and desertification); severe weather (drought); and, at least locally, competition with livestock and feral camels (Cassinello *et al.,* 2008). *A. lervia* was considered to be possibly extinct in north Tunisia, Western Sahara and Egypt (Shackleton and the IUCN/SSC Caprinae Specialist Group, 1997 and references therein), though representatives of the species were subsequently found in Egypt (Saleh and Cassinello, in press, in: Cassinello *et al.,* 2008). The largest populations were reported to be in Morocco, Niger and Algeria (Cassinello *et al.,* 2008 and references therein).

51. **South American mammals:** *Lontra provocax*, a predominantly freshwater species, is mainly threatened by habitat loss and disturbance (e.g. removal of riparian vegetation, dam construction, river canalisation, drainage for agriculture and dredging) and hunting for pelts (Sepulveda *et al.,* 2008). *Vicugna vicugna* and *H. bisulcus*, two Andean herbivores, are threatened by a range of factors, including: hunting (for illegal trade in wool in the case of *V. vicugna*); habitat loss and degradation (due to grazing by livestock, infrastructure development, mining and tourism); persecution (due to perceived competition with livestock); demographic factors (relating to the fragmentation and small size of subpopulations); and potentially also disease, from contact with livestock (Jiménez *et al.,* 2008; Lichtenstein *et al.,* 2008). In addition, there is concern about the impact of climate change on fragile, high-altitude habitats (Jiménez *et al.,* 2008; Lichtenstein *et al.,* 2008). The populations of*L. provocax*and *H. bisulcus* were considered to be decreasing whereas *V. vicugna* populations are thought to be increasing (Jiménez *et al.,* 2008; Lichtenstein *et al.,* 2008; Sepulveda *et al.,* 2008). Populations of *H. bisulcus* were reported to have declined by more than 99 per cent since aboriginal times (Miller *et al.,* 1983).

3. Coverage and evaluation of existing CMS and non-CMS multilateral instruments/frameworks

52. Terrestrial mammals listed in the CMS Appendices are covered by a range of CMS and non-CMS instruments/frameworks, as well as being targeted by a number of international organisations and projects (Table 2). A summary of the key features of CMS instruments on terrestrial mammals is given in Table 3.

3.1. Coverage of existing CMS and non-CMS multilateral instruments/frameworks

53. **Bats:** European migratory bats (Rhinolophidae, Vespertilionidaeand *Tadarida teniotis*) are covered by the Article IV (3) AGREEMENT on the Conservation of Populations of European Bats (EUROBATS), which came into force in 1994 and currently has 32 of the 49 range States as signatories (EUROBATS, 1991; UNEP/CMS Secretariat, 2010a). The geographic scope of the AGREEMENT originally covered the Western Palearctic region excluding North Africa and Iceland, with the Eastern

boundary drawn at Turkey and the Caucasus countries, and the Southern boundary being the south coast of the continent of Europe, with the addition of the Mediterranean states (Cyprus and Malta), the islands belonging to mainland European states, with the exception of the Canary islands, Madeira and the Azores (EUROBATS Resolution 2.5, 5.11). However, taking into consideration the migratory patterns of European bat species, it was expanded in 2010 to incorporate the Svalbard Archipelago as the northern boundary, north African countries of the Mediterranean Basin as the southern boundary, the Middle East up to longitude 50° East and the Azores at longitude 30° West (EUROBATS Resolution 6.8). The number of European bat species recognised as being covered by the AGREEMENT has been updated following several Meetings of the Parties and currently includes 52 species, both migratory and non-migratory (EUROBATS Resolutions 3.7, 4.8, 5.3 & 6.2).

54. **Artiodactyla:**The development of a Central Eurasian Aridland Concerted Action and associated Cooperative Action was adopted at CMS COP9 in 2008, and is intended, in due course with funds permitting, to cover all threatened migratory large mammals of the temperate and cold deserts, semi-deserts, steppes and associated mountains of Central Asia, the Northern Indian sub-continent, Western Asia, the Caucasus and Eastern Europe (UNEP/CMS Recommendation 9.1; UNEP/CMS, 2010f). While the Secretariat does now have a Junior Professional Officer working on this programme until 2012/13, the required funds and capacity are however still lacking to implement this ambitious programme. Twenty-two range States were reported to be within the geographic scope of the Concerted Action: 11 CMS Parties (Armenia, Georgia, India, Islamic Republic of Iran, Kazakhstan, Mongolia, Pakistan, theSyrian Arab Republic, Tajikistan, Ukraineand Uzbekistan) and 11 additional range States (Afghanistan,Azerbaijan, Bhutan,People's Republic of China, Iraq, Kyrgyzstan, Lebanon, Nepal,Russian Federation, Turkmenistan and Turkey)(Devillers, 2007). The Action will initially be centred on *Camelus bactrianus, Bos grunniens, Uncia uncia*, *Cervus elaphus yarkandensis* and *Acinonyx jubatus* for the Concerted Action and on *Equus hemionus* (*sensu lato*), *Gazella subgutturosa, Procapra gutturosa* and *Saiga tatarica* (*sensu lato*) for the Cooperative Action. UNEP/CMS Recommendation 9.1 encouraged the CMS Scientific Council and the Secretariat to envisage an extension of the Action area to the South-western Eurasian hot deserts and associated biomes. It also encouragedrange States and other interested Parties to prepare proposals for the inclusion in Appendix I or II of other threatened species that would benefit from the Action, as well as to support the development ofan MoU or other binding or non-binding instrument, to complement the Central Eurasian Aridland Concerted Action and its Action Plan.

55. Six African Artiodactyla listed in CMS Appendix I (*Addax nasomaculatus*, *Gazella cuvieri*, *G. dorcas*, *G. leptoceros*, *Nager dama* and *Oryx dammah*) are covered by the Sahelo-Saharan Antelopes Concerted Action and associated Action Plan. The Action entered into force in 1998, following a seminar convened by the CMS Secretariat on the Conservation and Restoration of Sahelo-Saharan Antelopes, and adoption of the Djerba Declaration (UNEP/CMS Secretariat, 1998; UNEP/CMS, 1999). The Action covers nine CMS Parties (Burkina Faso, Chad, Egypt, Mali, Morocco, Niger, Nigeria, Senegal and Tunisia) and five additional range States (Algeria, Ethiopia, Libyan Arab Jamahiriya, Mauritania and Sudan) (UNEP/CMS, 1999).

56. *Cervus elaphus yarkandensis* is covered by the Article IV, Paragraph 4 MoU concerning the Conservation and Restoration of the Bukhara Deer (Bukhara Deer MoU) which came into effect in 2002 following signature byall four Asian range States (Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan) as well as three co-operating organisations (CMS Secretariat, WWF International and the International Council for Game and Wildlife Conservation) (UNEP/CMS, 2002b; UNEP/CMS Secretariat, 2009a). However, it was recently noted that Afghanistan is also a range State of the species (UNEP/CMS, 2011c).The main tool for conservation activities is the Bukhara Deer

Action Plan (UNEP/CMS, 2002a), which is due to be updated after consultations at the forthcoming Meeting of Signatories to the Bukhara Deer MoU (20 November 2011, Norway) and where Afghanistan is likely to join the list of range States.

57. *Hippocamelus bisulcus* is covered by the Article IV, Paragraph 4 MoU between the Argentine Republic and the Republic of Chile on the Conservation of the South Andean Huemul (*Hippocamelus bisulcus*) (South Andean Huemul MoU) which came into effect in 2010.

58. Saiga antelopes are covered by the Article IV, Paragraph 4 MoU concerning the Conservation, Restoration and Sustainable Use of the Saiga Antelope (*Saiga* spp.). When the MoU first came into effect in 2006 it was restricted to *Saiga tatarica tatarica*, but in 2010 it was amended to '*Saiga* spp.' to include saiga antelopes in Mongolia. All eligible range States (Kazakhstan, Mongolia, the Russian Federation, Turkmenistan and Uzbekistan) have signed the instrument (UNEP/CMS Secretariat, 2010a).

59. **Other megafauna:** All species and subspecies of the genus *Gorilla* (*Gorilla g. gorilla*,*Gorilla g. diehli*, *Gorilla berengei berengei* and *Gorilla berengei graueri*) are covered by the Article IV, Paragraph 3 AGREEMENT on the Conservation of Gorillas and their Habitats (Gorillas AGREEMENT), which came into force in 2008 and currently has six of the 10 range States as signatories: Central African Republic, Republic of Congo, Democratic Republic of Congo, Gabon, Nigeria and Rwanda (UNEP/CMS, 2008f; UNEP/CMS Secretariat, 2010a). The remaining four range States (Angola, Cameroon, Equatorial Guinea and Uganda) were reported to have indicated their intention to accede (UNEP/CMS Secretariat, 2009c). The geographic scope of the AGREEMENT is the entire distribution range of all species and subspecies of gorilla (UNEP/CMS, 2008f).

60. *Loxodonta africana* is partly covered by the Article IV, Paragraph 4 MoU concerning Conservation Measures for the West African Populations of the African Elephant (West African Elephant MoU), which came into effect in 2005. By 2007, all 13 range States had become signatories to the MoU (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo), and the first Meeting of the Parties was held in 2009 (UNEP/CMS Secretariat, 2010a). *L. africana*(*sensu lato*) also occurs in East, Central and Southern Africa, which are not covered by this MoU.

Table 2.CMS and non-CMS instruments covering taxa of terrestrial mammals in the CMS Appendices and relevant international organisations/projects.

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	CMS instruments / frameworks	Non-CMS instruments / frameworks	Relevant international organisations and projects[iv]
CHIROPTERA					
Eidolon helvum **II** (only African populations) African straw-coloured fruit bat	Af	NT ↓			African Chiroptera Project, Lubee Bat Conservancy
Rhinolophidae spp. **II** (only European populations) Horseshoe bats	Eu	-	EUROBATS AGREEMENT	Bern Convention **II** EU Habitats Directive **II*/IV**	Bat Conservation Trust, BatLife Europe, Indicator Bats Program, IUCN/SSC Chiroptera Specialist Group
Otomops madagascariensis **II** Malagasy giant mastiff bat	Af	LC ?			Madagasikara Voakajy
Otomops martiensseni **II** (only African populations) Large-eared giant mastiff bat	Af	NT ↓			African Chiroptera Project, Bat Conservation Group
Tadarida brasiliensis **I/II** Brazilian or Mexican free-tailed bat	SCA	LC →			BCI, PCMM
Tadarida insignis **II** East Asian free-tailed bat	As	DD ?			SEABCRU
Tadarida latouchei **II** La Touche's free-tailed bat	As	DD ↓			SEABCRU
Tadarida teniotis **II** European free-tailed bat	As, Eu	LC ?	EUROBATS AGREEMENT	Bern Convention **II** EU Habitats Directive **IV**	
Vespertilionidae spp. **II** (only European populations) Evening bats	Eu	-	EUROBATS AGREEMENT	Bern Convention **II** EU Habitats Directive **II*/IV**	Bat Conservation Trust, BatLife Europe, Indicator Bats Program, IUCN/SSC Chiroptera Specialist Group
Miniopterus majori **II** Major's long-fingered bat	Af	LC ?			Madagasikara Voakajy
Miniopterus natalensis **II** (only African populations) Natal long-fingered bat	Af	LC ?			African Chiroptera Project, Bat Conservation Group
Miniopterus schreibersii **II** (only African and European populations)	Eu, Af	NT ↓	EUROBATS AGREEMENT	Bern Convention **II** EU Habitats Directive **II/IV**	

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	CMS instruments / frameworks	Non-CMS instruments / frameworks	Relevant international organisations and projects[iv]
Schreiber's long-fingered bat					
PRIMATES *Gorilla beringei* **I** Eastern gorilla	Af	EN ↓	Gorillas AGREEMENT	African Convention on Conservation **A** (as *G. gorilla*) CITES **I** COMIFAC Treaty GRASP Kinshasa Declaration on Great Apes	CBFP, DFGFI, Frankfurt Zoological Society, GIZ, Gorilla Organisation, JGI, UNESCO, WCS, Woods Hole Research Centre
Gorilla gorilla **I** Western gorilla	Af	CR ↓	Gorillas AGREEMENT	African Convention on Conservation **A** CITES **I** COMIFAC Treaty GRASP Kinshasa Declaration on Great Apes	CBFP, ECOFAC, Gorilla Organisation, JGI, UNESCO, WCS, Woods Hole Research Centre, WWF
CARNIVORA *Acinonyx jubatus* **I** (except populations in Botswana, Namibia and Zimbabwe) Cheetah	Af, As	VU ↓	Central Eurasian Aridland Concerted Action	African Convention on Conservation **A** CITES **I**	Cheetah Conservation Fund; Cheetah Conservation Botswana
Uncia uncia **I** Snow leopard	As, Eu	EN ↓ (as *Panthera uncia*)	Central Eurasian Aridland Concerted Action	CITES **I**	NABU, Panthera Snow Leopard Program, Snow Leopard Conservancy, Snow Leopard Trust, WCS, WWF
Lycaon pictus **II** African wild dog	Af	EN ↓			AWDC, IUCN/SSC Canid Specialist Group, WCS, WWF, Painted Dog Conservation
Lontra provocax **I** Southern river otter	SCA	EN ↓		CITES **I**	CODEFF, IOSF, IUCN/SSC Otter Specialist Group, FZS
PROBOSCIDEA *Loxodonta africana* **II** African bush elephant	Af	VU ↑	West African Elephant MoU	African Convention on Conservation **B** CITES **I/II** COMIFAC Treaty	CBFP, IUCN/SSC/AfESG MIKE & ETIS, TRAFFIC WWF

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	CMS instruments / frameworks	Non-CMS instruments / frameworks	Relevant international organisations and projects[iv]
Loxodonta cyclotis **II** African forest elephant	Af	VU ↑ (*L. africana,sensu lato*)		African Convention on Conservation **B** (as *L. africana*) CITES **I/II** COMIFAC Treaty	CBFP, IUCN/SSC/AfESG MIKE & ETIS, TRAFFIC WWF
PERISSODACTYLA *Equus grevyi* **I** Grevy's zebra	Af	EN →		African Convention on Conservation **B** CITES **I**	AWF, Grevy's Zebra Trust, IUCN/SSC Equid Specialist Group, Lewa Wildlife Conservancy
Equus hemionus **II** Asiatic wild ass	As	EN ↓	Central Eurasian Aridland Cooperative Action	CITES **I/II**	ACBK, Association GOVIIN KHULAN, WWF Mongolia, WWF Russia
Equus kiang **II** Kiang	As	LC →	Central Eurasian Aridland Cooperative Action	CITES **II**	
ARTIODACTYLA *Camelus bactrianus* **I** Bactrian camel	As	CR ↓ (as *Camelus ferus*)	Central Eurasian Aridland Concerted Action		
Vicugna vicugna **I** (except Peruvian populations)**/II** Vicugna	SCA	LC ↑			
Hippocamelus bisulcus **I** South Andean huemul or guemal	SCA	EN ↑	South Andean Huemul MoU		
Cervus elaphus barbarus **I** Barbary deer	Af	LC ↑ (*C. elaphus*)		African Convention on Conservation **A**	
Cervus elaphus yarkandensis **I/II**(populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan) Bukhara deer	As	LC ↑ (*C. elaphus*)	Bukhara Deer MoU Central Eurasian Aridland Concerted Action and Cooperative Action		CIC, WWF Large Herbivore Initiative, WWF Russia's Programme for Central Asia

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	CMS instruments / frameworks	Non-CMS instruments / frameworks	Relevant international organisations and projects[iv]
Gazella cuvieri **I** Cuvier's gazelle	Af	EN ?	Sahelo-Saharan Antelope Action Plan		SCF, SSIG
Gazella dorcas **I**(only NW African populations) Dorcas gazelle	Af	VU ↓	Sahelo-Saharan Antelope Action Plan	African Convention on Conservation **A** (*G. d. neglecta*& G. *d. massaesyla*) **B** CITES **III**	SCF, SSIG
Gazella erlangeri **II** Neumann's gazelle	As	VU ↓ (*G. gazella, sensu lato*)			
Gazella gazella **II** (only Asian populations) Mountain gazelle	As	VU ↓			
Gazella leptoceros **I** Slender-horned gazelle	Af	EN ↓	Sahelo-Saharan Antelope Action Plan	African Convention on Conservation **A** (*G. L. leprocerus*) CITES **I**	SCF, SSIG
Gazella subgutturosa **II** Goitered gazelle	As	VU ↓	Central Eurasian Aridland Cooperative Action		ACBK
Nanger dama **I** Dama gazelle	Af	CR ↓	Sahelo-Saharan Antelope Action Plan	African Convention on Conservation **A** (*Gazella dama mhorr* &*G. d. lozanoi*)	SCF, SSIG
Procapra gutturosa **II** Mongolian gazelle	As, Eu	LC ?	Central Eurasian Aridland Cooperative Action		WWF Mongolia, WCS
Saiga borealis **II** Saiga antelope (Mongolia)	As	EN ↓ (as *S. t. mongolica*)	Saiga Antelope MoU Central Eurasian Aridland Cooperative Action	CITES **II**	FFI, FZS CIC, IUSN/SSC, SCA, WCS, WWF
Saiga tatarica **II** Saiga antelope	As, Eu	CR ↓ (as *S. t. tatarica*)	Saiga Antelope MoU Central Eurasian Aridland Cooperative Action	CITES **II**	ACBK, FFI, FZS CIC, IUSN/SSC, SCA, WCS, WWF
Bos grunniens **I** Yak	As	VU ↓	Central Eurasian Aridland Concerted Action		

Species, CMS Appendix and common name	World region[i]	Global Status[ii] and population trend[iii]	CMS instruments / frameworks	Non-CMS instruments / frameworks	Relevant international organisations and projects[iv]
		(as *B. mutus*)			
Bos sauveli **I** Kouprey	As	CR ?		CITES **I**	
Ammotragus lervia **II** Aoudad	Af	VU ↓		African Convention on Conservation **B** CITES **II**	
Addax nasomaculatus **I** Addax	Af	CR ↓	Sahelo-Saharan Antelope Action Plan	African Convention on Conservation **B** CITES **I**	FFEM, IRSNB, SCF, SSIG, ZSL
Oryx dammah **I/II** Scimitar-horned oryx	Af	EW	Sahelo-Saharan Antelope Action Plan	CITES **I**	SCF, SSIG

[i] **World Regions in which the CMS-listed population occurs:** Eu = Europe, Af = Africa, As = Asia, Oc = Oceania, SCA = South & Central America & the Caribbean, NA = North America.

[ii] **Global threat status according to the IUCN Red List:** DD = Data Deficient, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, EW = Extinct in the Wild.

[iii] **Global population trend according to the IUCN Red List:** ↓ = decreasing population trend, ↑ = increasing population trend, → = stable population trend, ? population trend unknown

[iv] See Annex I for list of abbreviations

* Applies to certain species only

61. **Non-CMS instruments and projects:**European bats are also protected by the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), which aims to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States (Council of Europe, 1979; 2011a). It gives particular emphasis to endangered and vulnerable species, including migratory species, and includes all Microchiropteran bat species (except *Pipistrellus pipistrellus*) in Appendix II of the Convention (strictly protected fauna species) and *P. pipistrellus* in Appendix III (protected fauna species). The Bern Convention opened for signature in 1979 and entered into force in 1982. It has been ratified by 50 countries (including the 27 EU Member States, the European Union and four African countries), which are required to "take requisite measures to maintain the population of wild flora and fauna [...] while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally", and to report their activities to the Standing Committee (Council of Europe, 1979; 2011b). Particular measures for Appendix II species include: the prohibition of deliberate capture, keeping and killing; damage or destruction of breeding or resting sites; destruction or taking of eggs from the wild; and possession or internal trade in live or dead animals or their parts and derivatives (Council of Europe, 1979). A network of Areas of Species Conservation Interest (the Emerald Network) was launched by the Council of Europe in 1999 under the Bern Convention, which aims to identify and conserve areas of a great ecological value for threatened species and habitat types across Europe (Council of Europe, 2011c). These protected areas were recognised as having special value for the conservation of bats (EUROBATS Res. 6.10).

62. The European Union produced Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora (the EU Habitats Directive), which aims to contribute towards ensuring biodiversity through the conservation of natural habitats and wild fauna and flora throughout the EU (European Council, 1992; European Commission, 2011b). It does this through the Natura 2000 network of protected sites (which constitutes the EU contribution to the Emerald Network) and a strict system of species protection. All Microchiropteran bats are included in Annex IV (Animal and plant species of Community interest in need of strict protection), and thirteen of these species (*Rhinolophus blasii*, *R. euryale*, *R. ferrumequinum*, *R. hipposideros*, *R. mehelyi*, *Barbastella barbastellus*, *Miniopterusschreibersi*, *Myotis bechsteini*, *M. blythi*, *M. capaccinii*, *M. dasycneme*, *M. emarginatus* and *M. myotis*) are additionally listed in Annex II (Animal and plant species of Community interest whose conservation requires the designation of special areas of conservation) (European Council, 1992). Particular measures for Annex IV species include prohibition of deliberate capture, killing or disturbance of species in the wild; damage or destruction of breeding or resting sites; destruction or taking of eggs from the wild; and keeping, transport, sale or exchange of specimens taken from the wild (European Council, 1992). Member States are required to report to the Commission on their conservation measures every six years.

63. The African Convention on Conservation of Nature and Natural Resources entered into force in 1969,under which Contracting Parties aim to "ensure conservation, wise use and development of faunal resources and their environment" through appropriate wildlife management inside and outside protected areas, and the adoption of adequate legislation on hunting (including prohibiting use of poisons, explosives, hunting at night, or any method likely to cause mass mortality) (Government of Independent African States, 1968). Species listed in Class A or B of the Annex to the Convention are also afforded special protection. Species in Class A (including *Gorilla gorilla,Acinonyx jubatus,Cervus elaphus barbarus*, *Gazella dama mhorr*, *Gazella dama lozanoi*, *Gazella dorcas neglecta*, *Gazella dorcas massaesyla* and *Gazella leptocerus leprocerus*) being totally protected throughout the entire territory of the Contracting States, with hunting, killing, capture or collection of specimens permitted only for scientific purposed with authorization of the highest competent

authority, and species in Class B (*Loxodonta africana*,*Equus grevyi* and *Addax nasomaculatus*) being totally protected, but with hunting, killing, capture or collection of specimens permitted under special authorization granted by the competent authority. The Conventionwas revised as the 'Maputo Convention' during the African Union Summit in 2003 (IUCN, 2004). However, it has not yet reached the necessary number of ratifications to enter into force.

64. The Great Apes Survival Partnership (GRASP) is a UNEP project consisting of great ape range States and other interested countries, Multilateral Environmental Agreements (MEAs), UN institutions, NGOs and private sector institutions, which aims to "lift the threat of imminent extinction facing most populations of great apes" (GRASP, 2011). It has a number of objectives based on the Global Strategy for the Survival of Great Apes (UNEP/UNESCO/GRASP, 2005a), including establishing a database of population information, encouraging range States to prepare and implement national Action Plans and to promote and enforce a legal framework for the survival of great apes and their habitat (GRASP, 2011). The Kinshasa Declaration on Great Apes has been signed by 21 range States, and encourages them to affirmtheir commitment to the Global Strategy for the Survival of Great Apes, implement effective measures to counter the threats facing great apes and enhance cooperation among range States and their neighbours to ensure the effective enforcement of legislation and the coordination of efforts to halt activities that have a detrimental effect upon the populations of great apes (UNEP/UNESCO/GRASP, 2005b).

65. Fundamental to the conservation and sustainable management of the Congo Basin's ecosystems is the Central African Forests Commission (COMIFAC), composed of forestry ministers of 10 Central African Member States, who are responsible for directing, harmonising, and monitoring forest and environmental policies in Central Africa. A 'Treaty on the Conservation and Sustainable Management of Forest Ecosystems in Central Africa and to establish the Central African Forests Commission (COMIFAC)' was signed in 2005, to confirm commitments enshrined in the 1999 Yaoundé Declaration and to acquire internationally-recognised legal status for COMIFAC. The COMIFAC Treaty requires State Parties to include the conservation and sustainable management of forests in national priorities, encourage governments to implement priority actions of the Convergence Plan, including identification of priority conservation areas and creation of new protected areas and to speed-up the process of creating trans-border protected areas (COMIFAC, 2005). The Congo Basin Forest Partnership (CBFP), an informal structure consisting of range States, NGOs, international institutions and private sector organisations, works in close collaboration with COMIFAC, to enhance the effectiveness of the technical and financial contributions for the conservation and sustainable management of forest ecosystems, and poverty eradication in Central Africa (CBFP, 2011a; 2011b).

66. The Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora came into force in 1996, and currently has six Parties (the Republic of Congo (Brazzaville), Kenya, the United Republic of Tanzania, Uganda, Zambia and the Kingdom of Lesotho) and three signatories (Republics of South Africa, Ethiopia and the Kingdom of Swaziland) (Lusaka Agreement, 2011). Its main objective is "to reduce and ultimately eliminate illegal trade in wild fauna and flora and to establish a permanent Task Force for this purpose" (Lusaka Agreement, 1994). The Task Force, based in Nairobi, was launched in 1999 to facilitate co-operative activities among the National Bureaus and implement the Agreement's objectives (Lusaka Agreement, 2011).

67. Global conventions relating to the conservation of migratory species and their habitats include the Convention on Biological Diversity (CBD) andthe Convention on Trade in Endangered Species of Fauna and Flora (CITES). The 193 Parties of the CBD are required to regulate or manage biological resources important for the conservation of biological diversity, promote the recovery of threatened species, adopt measures for the recovery, rehabilitation and reintroduction of threatened species, as

well as protecting and restoring habitats and promoting sustainable use (United Nations, 1992a).CITES, with its 175 Parties, aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival (CITES, 1973). The CITES Appendices includemany CMS species (Table 2) and CITES also has specific programmes that focus on great apes and elephants. For example, CITES has two monitoring tools to track illegal activities involving elephants: Monitoring the Illegal Killing of Elephants (MIKE) and the Elephant Trade Information System (ETIS). They were established under the supervision of the CITES Standing Committee following CITES COP10 and have an independent Technical Advisory Group (CITES, 2011).

68. Habitats of various CMS species are covered by many MEAs protecting habitats and ecosystems, including the Convention on Wetlands of International Importance (Ramsar Convention), which currently has 160 contracting Parties (UNESCO, 1971), and the World Heritage List of the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO, 1972; UNESCO World Heritage Centre, 2011), which has 187 State Parties. Other MEAs address major threats to CMS species, such as the United Nations Framework Convention on Climate Change (United Nations, 1992b) and the United Nations Convention to Combat Desertification (United Nations, 1994), both of which are located in Bonn, Germany.

69. There are many more relevant species-specific initiatives and projects which are listed in Table 2.

3.2. Contribution of CMS existing instruments to the conservation of target taxa and their habitats

70. **Bats:** The EUROBATS AGREEMENT has had six Meetings of the Parties (MoPs) since it came into force, and its priorities and actions are laid out in a Conservation and Management Plan, which is updated for each quadriennium (EUROBATS Resolutions 2.8, 3.8, 4.9, 5.10 & 6.16). These Plans include detailed studies of Priority List species and have promoted i) the longterm monitoring of bats across Europe, ii) the collection of information on local and long distance movements of bats, iii) the identification of important feeding areas and roosting sites, iv) public/professional awareness and v) international cooperation and the sharing of information and experiences (EUROBATS Resolutions 2.8, 3.8, 4.9, 5.10 & 6.16). Resolutions have been passed to address the main threats listed in Table 1, along with the publication of a series of Guidelines: conservation of important roosting and foraging sites (including protection of buildings of cultural heritage and working with visitors to caves) (EUROBATS Resolutions 4.3, 4.4, 5.7, 6.7 & 6.12; Mitchell-Jones *et al.*, 2007; Marnell and Presetnik, 2010); harmful chemicals/substances (antiparasitic drugs impacting on bat prey) (EUROBATS Resolution 4.5 & 6.15); roads/infrastructure (EUROBATS Resolution 6.14); wind turbines (EUROBATS Resolution 4.7, 5.6 & 6.11; Rodrigues *et al.*, 2008); and disease (lethal fungal infections/rabies) (EUROBATS Resolutions 5.2 & 6.6). Intersessional Working Groups have also been set up to address the following main threats: conservation and sustainable forest management, conservation and management of critical feeding areas and commuting routes, use of anti-parasitic drugs for livestock, wind turbines, roads and other traffic infrastructures, and light pollution (EUROBATS, 2011d). To raise public awareness and promote bat conservation, EUROBATS declared 2011-2012 to be "Year of the Bat" (EUROBATS Resolution 6.9), and oral reports at the 16thMeeting of the Advisory Committee, indicated that many Parties were organising activities such as lectures, workshops and guided tours, and distributing educational material in the form of posters, leaflets and websites (EUROBATS, 2011c). The EUROBATS Projects Initiative (EPI), launched in 2008 to fund new small to medium-size projects and funded by voluntary contributions from Parties, was reported to have supported many successful projects (EUROBATS, 2011c; EUROBATS Resolution 6.4). Overall,

EUROBATS is considered a successful instrument, for example, Devillers (2008) described it as "a well-established, effective, successful instrument [....] which situates the Convention as an important actor in bat conservation and promotion."

71. **Artiodactyla:** The Central Eurasian Aridland Concerted Action and associated Cooperative Action aims to restore the large mammal fauna of the arid lands of Eurasia and their peripheral biomes, by restoring a network of secure and adequately protected areas, linked in due course by wildlife corridors, and encouraging natural recolonisation whenever possible, or the reinforcement or reintroduction of original material or satisfactory surrogate species, where no original material exists (UNEP/CMS Secretariat, 2008a). It is intended to include an Action Plan and status reports for all species concerned, but will initially be centred on the subsample of nine species listed in section 3.1 (UNEP/CMS, 2010f).To date, progress has been limited, with work focusing on producing an inventory of megafauna and potential partners working in the region, production of draft status sheets for 93 species and data sheets for each range State, and definition of the limits of the region of concern and time baselines for the restoration target (UNEP/CMS Secretariat, 2008a; UNEP/CMS, 2010f). The Conference of the Parties was requested to consider adoption of an implementing instrument under CMS during the triennium 2009-2011 and the Scientific Council and Secretariat were urged to design a global strategy to approach donors and general stakeholders for funding (UNEP/CMS Secretariat, 2008a).

72. The Sahelo-Saharan Antelopes Concerted Action aims to create and reinforce protected areas, support reintroduction programmes, favour local communities' involvement and manage actions for building national capacities (UNEP/CMS Secretariat, 2008a). The Sahelo-Saharan Antelope Action Plan includes objectives to restore species' range and numbers, reduce mortality and enhance international cooperation, a number of species-specific and country-specific programmes and activities, and comprehensive status reports of each species (UNEP/CMS, 1999; Ankouz *et al.,* 2003). The Action Plan was assessed in 2003, when it was noted that illegal hunting was still causing serious harm to wildlife, including species at the brink of extinction. Range States were urged to develop and conclude an Agreement or Memorandum of Understanding in order to provide a framework for the species' long-term conservation and management (UNEP/CMS, 2003). A regional Sahelo-Saharan Antelope project (SSAP I), co-financed by the Fonds Français pour l'Environnement Mondial (FFEM) and covering seven of the 14 range States (Chad, Mali, Mauritania, Morocco, Niger, Senegal, and Tunisia) was launched for the period 2003-2008 (Beudels *et al.,* 2005). Its purpose was to focus on "establishing the presence and precise status, of the different species of Sahelo-Saharan ungulates in their potential distribution ranges; monitoring these populations; identifying favourable habitats; setting up networks of protected areas [...]; reintroducing ungulate populations [...]; the initial development of ecotourism [...]; and support to local communities to obtain their full engagement in monitoring and managing stable antelopes populations" (Beudels *et al.,* 2005). A new project, Cross-border Programme for the Conservation and Sustainable Management of the Sahelo-Saharan Biodiversity of the Termit / Tin Toumma Area, in Niger and West Djourab, in Tchad (SSAP II) entered into force in 2007, focusing on this important border region, where Saharan fauna is still relatively protected and the last populations of wild *Addax nasomaculatus* have been recorded (UNEP/CMS Secretariat, 2008a). There is also a CMS Working Group on Sahelo-Saharan Antelopes, which ensures the good management of the Action Plan (Beudels *et al.,* 2005). A website of information on Sahelo-Saharan Antelopes has been set-up and maintained by the Royal Belgian Institute of Natural Sciences (IRSNB), which facilitates access to information on species status, country and species Action Plans, national reports, publications and distribution maps (IRSNB, 2008). The Saharan Conservation Fund website also contains information on species and programmes, as well as links to various meeting documents and technical reports (SCF, 2011).

73. The CMS/FFEM project has focused on pilot projects in Niger and Tunisia as well as cross-cutting activities in Algeria, Chad, Mauritania, Morocco and Senegal; with concentration in southern Tunisia and the Termit region of the southern Sahara since 2006 (UNEP/CMS Secretariat, 2008a). Progress reported at CMS COP9 included translocations of 20 *A. nasomaculatus* and 10 *Oryx dammah* in southern Tunisia, inventories of the Great Oriental Erg sand dunes in the Sahara desert (to evaluate the status of endangered *Gazelle leptoceros*) and regional training sessions in the Northern part of the range (UNEP/CMS Secretariat, 2008a). In the Southern part of the range, activities have concentrated on the Termit region in Niger, including inventories in Termit/Tin Toumma 2006-2007, a start-up workshop in 2006 and a proposal led by the Sahara Conservation Fund (SCF) in partnership with CMS, to create the Termit-Tin Toumma Protected Area (UNEP/CMS Secretariat, 2008a). An update at the 16th meeting of the Scientific Council in June 2010 considered the work in Niger to be a success, with "a team in place and fully functional, excellent cooperation with nomads and tribal leaders, a proposal for a protected area submitted to government, a wildlife monitoring system in place, and a project website designed and online (www.ass-niger.org)", although remaining challenges were recognised in terms of strengthening government capacity and reviving the Chad component of the transboundary approach (UNEP/CMS, 2010f). The project in the Niger-Chad cross-border region faced difficulties working in Chad 2006-2007 due to political instability, hence the programme had to be revised and the budget correspondingly reduced in 2007 (UNEP/CMS Secretariat, 2008a). An aerial inventory conducted in November 2007 led to an estimated population of about 200 *A. nasomaculatus*, and action on the ground focused on establishing dialogue with local people, training and capacity-building, setting-up partnerships with local and international universities and NGOs, and establishing the Termit-Tin Toumma Protected Area (UNEP/CMS Secretariat, 2008a). Activities in 2009-2011 were reported to include i) administering the ongoing activities of SSAP I and SSAP II, ii) strengthening collaboration with other range states, iii) preparing to enlarge the CMS 'Sahelo-Saharan Antelope's Concerted Action' to a 'Sahelo-Saharan Megafauna' Concerted Action and iv) organisation of a third meeting of range States in 2009 (UNEP/CMS Secretariat, 2008a).

74. The Saiga MoU recognises that the threats of uncontrolled hunting, illegal trade in horns and other products and destruction of habitats have contributed to recent population declines. The MoU aims to "(a) restore numbers of the Saiga antelope to ecologically and biologically appropriate levels, (b) restore range and habitats of Saiga antelope to ecologically and biologically appropriate levels and (c) enhance transboundary and international cooperation through *inter alia* a regional conservation and management strategy" (UNEP/CMS, 2006b). The associated Action Plan details activities and agents and collaborators responsible for reaching the above aims (UNEP/CMS, 2006a). To support the implementation of the MoU/Action Plan activities and review progress, a Medium-Term International Work Programme (MTIWP) for the periods 2007-2011 and 2011-2015 was adopted at Meetings of the Signatories in 2006 and 2010 respectively. In order to focus most attention on the areas of highest conservation concern, activities were categorized by Urgency and Timescale, with i) development of an emergency protocol in case of a disease outbreak or mass mortality episode, ii) development of anti-poaching strategies, iii) funding of anti-poaching units, iv) establishment of captive breeding and reintroduction facilities in Mongolia and v) research and analysis of Saiga movements amongst the range-wide activities categorized as Urgent (crucial for preventing population extirpation) and Immediate (1-2 years)(UNEP/CMS, 2010c). Two workshops have been held to discuss implementation of the Saiga MoU, one in China and one in Kazakhstan (UNEP/CMS, 2010h; 2011c). The Saiga Conservation Alliance (SCA) supports implementation of the MoU, including publication of 'Saiga News' in 6 languages, creation of a database of experts and projects and provision of technical support to the UNEP/CMS Secretariat (UNEP/CMS, 2011c).

75. Oral reports on progress by range States at the 2nd Meeting of the Signatories in 2010 included i) creation of new protected areas and expansion of existing ones, ii) reinforcing national bans on Saiga hunting, iii) the signing of bilateral agreements, iv) captive breeding and v) the fitting of satellite collars (UNEP/CMS, 2010g). Based on a synthesis of national reports, a number of achievements were recognised including: an increase in conservation interventions and improved collaboration between governmental and non-governmental organisations; an increase in the arrest and successful prosecution of saiga poachers and traders range-wide; improvements in monitoring and captive breeding techniques and an increase in public awareness (IUCN/SSC Antelope Specialist Group and Saiga Conservation Alliance, 2010). The conservation status of four out of five Saiga populations was reported to be stable or increasing (with sharp declines in the Ustiurt population), although population levels were still depleted compared with several years ago (UNEP/CMS, 2010g; 2010h). Population-specific priorities identified from the MTIWP at the workshop in China included: conducting aerial surveys and establishing mobile anti-poaching units for the North-West Pre-Cambrian population;conducting epidemiological research for the Ural population; strengthening anti-poaching activities for the Ustiurt population; developing/implementing programmes for local community involvement for the Betpak-Dala population and conducting research on saiga-livestock interactions for the Mongolian population (UNEP/CMS, 2010h).At the recent workshop in Astana, Kazakhstan (February, 2011), it was confirmed that Kazakhstan and Uzbekistan had signed a bilateral agreement to coordinate and strengthen transboundary conservation activities, and that the corresponding Action Plan was being approved (UNEP/CMS, 2011c). In response to the recent increase in poaching across Kazakhstan (with 1,822 horns confiscated in 2010 compared with 129 horns in 2009), the death of 12,000 saigas in the Ural population in May 2010 and a further 500 in 2011 due to a disease outbreak, and poor status of the Ustiurt population, a number of priority measures were identified for the 2011-2015 MTIWP, including i) enhancing the capacity of agencies involved in the prevention of illegal trade and export of horns and horn products, ii) creating economic incentives for local people to engage in saiga protection, iii) development of a project on saiga diseasesto inform mitigation, control and action in the event of a disease outbreak and iv) conducting further research into the ecology and behaviour of Saiga antelopes in order to improve conservation effectiveness in the long-term (UNEP/CMS, 2011c).

76. The Bukhara deer MoU recognises that the subspecies' population size and range have diminished considerably due to the combined threats of artificial regulation of the water regime, destruction of habitats, and illegal hunting and poaching (UNEP/CMS, 2002b). Its associated Action Plan aims to i) restore range and numbers, ii) reduce mortality, and iii) enhance transboundary and international cooperation, detailing specific programmes of work, activities and the responsible agents and collaborators (UNEP/CMS, 2002a). Although the Bukhara deer MoU came into force in 2002, its implementation has been less active than the Saiga MoU (UNEP/CMS, 2011c), with the first Meeting of the Signatories planned for November 2011. To date, little information has been received from Signatories regarding their national activities, although the joint saiga/Bukhara deer workshop held in Astana, Kazakhstan (February, 2011), was a first step to initiate dialogue and improve implementation (UNEP/CMS, 2011c). At this meeting, a representative of the WWF project 'Restoration of the Bukhara Deer in Central Asia 1999-2000' reported that this project is the only project to contribute to implementation of the MoU, with active involvement from Kazakhstan (UNEP/CMS, 2011c). Progress included construction of enclosures, release of captive deer, awareness raising in neighbouring communities and provision of technical and financial assistance. Difficulties included disruption of activities in Turkmenistan due to military operations and donors not wanting to finance projects in the country, and lack of permission from Zaravshan reserve management administration in Uzbekistan to release captive deer from an overcrowded enclosure (UNEP/CMS, 2011c). Nevertheless, systematic efforts of governments and non-governmental groups

are reportedlyalready showing significant results (UNEP/CMS, 2011a), with the global population size of *Cervus elephus yarkandensis* increasing from 350 in 1999 to 1,600 by 2010 (Pereladova, 2011; UNEP/CMS, 2011c).

77. The South Andean Huemul MoU between Argentina and Chile (which became effective on 4th December 2010) specifies that "the Parties shall identify and monitor the factors and processes which have a detrimental effect on the conservation status of the species (e.g. illegal hunting, degradation of habitats, introduction of diseases) and shall recommend appropriate measures to regulate, manage and/or control the said factors and processes" (UNEP/CMS, 2010d). It also specifies that Parties will elaborate a Bilateral Action Plan within one year, and hold annual meetings to evaluate progress and plan actions for the following year. It is too early to report on implementation of these measures.

78. **Other megafauna:** The Gorillas AGREEMENT aims to conserve and restore the highly threatened gorilla populations of Central and West Africa through Action Plans, which were produced by the Royal Belgian Institute for Natural Sciences (IRSNB), drawing on existing IUCN plans, for each of the four subspecies and adopted at the first Meeting of the Parties in November 2008 (UNEP/CMS Secretariat, 2008b; 2008f). The Action Plans detail the existing activities, legislation, threats and important areas of ape occurrence in each range State and include general and country/site-specific needs and recommended priority actions (UNEP/CMS, 2009a; 2009b; 2009d; 2009g). Resolutions on monitoring and reporting on gorilla population dynamics and law enforcement activities (UNEP/CMS/GOR-MOP1/Res.1 Rev.1) and establishment of a Technical Committee (UNEP/CMS/GOR-MOP1/Res.2 Rev.1) were also adopted at MoP1. A symposium on gorilla conservation was held in Frankfurt Zoo, Germany in 2009 to mark the "UN Year of the Gorilla 2009", in which a series of recommendations, intentions and actions were set out, including those addressing law enforcement, monitoring and research and awareness raising, as well as the main threats of illegal hunting and capture, deforestation, mining, armed conflict and disease (BMU, 2009). Whilst the Gorillas AGREEMENT is relatively new, the first national reports for the AGREEMENT indicate progress, and the collaboration with many institutions working towards gorilla conservation is encouraging.

79. The West African Elephant MoU acknowledges that the expansion of human populations, habitat conversion, poaching and ivory trade are believed to have fragmented and compromised the long-term viability of most of West Africa's elephant populations (UNEP/CMS Secretariat, 2005). The MoU builds on the Strategy for the Conservation of West African Elephants, developed by the IUCN/SSC African Elephant Specialist Group (AfESG) with support from WWF in 1999, and a number of national elephant strategies. The revised Strategy aims to i) evaluate the status of elephants in the West African subregion, ii) maintain and increase elephant populations, and iii) improve elephant habitats, with the overall goal "to ensure the conservation of the elephant and its habitats in West Africa" (AfESG and WWF, 2005). The first stage of prioritisation will focus on remaining elephant populations exceeding 100 individuals, as these have the greatest chance of survival. To monitor success of the Strategy, each of the three objectives has a set of associated activities which produce results, and progress at each level is evaluated by targets (AfESG and WWF, 2005). At the First Meeting of the Signatories in 2009, oral reports on progress by range States included development of national strategies and legislation, strengthened bilateral collaborations to manage transboundary populations and discussion on problems with human/elephant conflict, lack of financing, equipment and training and the greater need for awareness raising (UNEP/CMS, 2009e). A Medium Term International Work Programme was adopted for the period 2009-2011, prioritizing the

various activities and identifying the Party and partners responsible (UNEP/CMS, 2009c). A Second Meeting of the Signatories was held in June 2011.

3.3. Cooperation of CMS existing instruments with international/regional organisations and other interested partners

80. The majority of CMS MoUs and Agreements contain wording that recognises the contribution of other Multilateral Environmental Agreements (such as CITES or CBD) and/or stipulates cooperation with these MEAs on matters of common interest (UNEP/CMS Secretariat, 2005; UNEP/CMS, 2006b; UNEP/CMS, 2008f; UNEP/CMS, 2010d). Many MoUs were also established in collaboration with international organisations or have them as signatories.For example, Fauna and Flora International, the Frankfurt Zoological Society, the International Council for Game and Wildlife Conservation (CIC), the IUCN Species Survival Commission, the Wildlife Conservation Society, WWF International, the Association for the Conservation of Biodiversity of Kazakhstan (ACBK) and the Saiga Conservation Alliance (SCA) are all signatories to the Saiga antelope MoU (UNEP/CMS, 2006b; UNEP/CMS Secretariat, 2010c), WWF International and the International Council for Game and Wildlife Conservation are signatories to the Bukhara Deer MoU (UNEP/CMS, 2002b) and the IUCN/SSC African Elephant Specialist Group worked in close collaboration with CMS to launch the West African Elephant MoU (UNEP/CMS Secretariat, 2005). In addition, many Action Plans name specific collaborators for various activities, for example, the Sahelo-Saharan Antelope Action Plan lists the American Zoological Association, the European Zoological Associationand the IUCN Antelope Specialist Group, Captive Breeding Specialist Group and Reintroduction Specialist Group (UNEP/CMS, 1999) and the Saiga Antelope Action Plan lists CITES and WWF International (UNEP/CMS, 2006a). The national reports for various CMS instruments (e.g. EUROBATS) also indicate close collaboration between Parties/range States and close collaboration with local and national organisations in implementing their Action Plans.

81. Liaison with relevant international organisations is one of the key functions of the CMS Secretariat, as mandated in Article IX of the Convention (CMS, 1979). The CMS Strategic Plan 2006-2011 states that "The goals and aims of CMS and other biodiversity-related conventions – notably the Convention on Biological Diversity (CBD), the Convention on Wetlands of International Importance and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) are mutually reinforcing" and two of its Operational Principles specify close cooperation with MEAs, key partners and institutions (UNEP/CMS, 2005a). A 'Report on CMS Activities with Partners' produced for CMS COP9 listed 25 formal partners (including the Bern Convention, CBD, CITES, Ramsar, UNCCD and UNESCO), many of which have MoUs and joint programmes of work with CMS (UNEP/CMS Secretariat, 2008c). CMS is also a member of the Liaison Group of Biodiversity-Related Conventions, which brings together six MEAs to enhance coherence, cooperation and synergies between conventions and reduce inefficiencies (UNEP/CMS, 2008b; CBD, 2011a). UNEP/CMS Resolution 9.6 reaffirmed the importance for CMS in developing effective and practical cooperation with other instruments and international organisations, and agreed the priority for 2009-2011 was to consolidate and develop existing partnerships.

82. At CBD COP10,the Secretary General of CITES delivered a joint statement on behalf of the Secretariats of the Ramsar Convention, World Heritage Convention, CMS and CITES, stressing the complementary mandates of these MEAs towards achieving the same objectives as the CBD and reiterating the agreement that the Strategic Plan for Biodiversity 2011-2020 be inclusive, and that the National Biodiversity Strategy and Action Plans (NBSAPs) should cover the full range of activities needed to implement all biodiversity-related conventions, including CMS (UNEP/CMS; 2011f).

83. CMS and its instruments have had particularly strong collaborations with CITES, CBD and the Bern Convention. For example, the West African Elephant MoU has had several meetings with CITES, including a back-to-back meeting of MIKE with the first MoP of the West African Elephant MoU (CMS and CITES, 2009) and a joint meeting of the West African Elephant MoU and the CITES MIKE programme on the conservation of trans-boundary elephant populations in June 2011.CITES and CMS have also worked closely together on the saiga antelope, such as at the meeting in Almaty, which culminated in signature of the Saiga Antelope MoU (UNEP/CMS, 2006c), and a workshop organized together with CITES and the CITES Management Authority of China, on conservation and sustainable use of saiga (UNEP/CMS, 2010h).CITES also co-convened the 2nd Saiga Antelope Meeting of the Signatories in Ulaanbaatar (UNEP/CMS, 2010g).Joint activities of CMS and CITES 2008-2010 had the principle themes of i) harmonization of taxonomy and nomenclature, ii) joint actions for the conservation and sustainable use of shared species and iii) administrative and fundraising cooperation (UNEP/CMS, 2008a). UNEP/CMS Resolution 9.6 also specifically requested the CMS Secretariat, Scientific Council and daughter agreements to enhance engagement with CITES processes and committees, including the CITES Secretariat, Animals Committee, and meetings of the Conference of the Parties.

84. CMS also has a joint programme of work with the CBD, and the CBD recognises CMS as the lead partner for migratory species (UNEP/CMS Secretariat, 2002; 2004a). The CBD/CMS joint work programme 2002-2005 identified links between CMS species and the CBD work programmes, such as the importance of bats, gorillas and elephants to forest biodiversity, and the relevance to Sahelo-Saharan antelopes of the programmes on agricultural biodiversity and biodiversity of dry and sub-humid lands (UNEP/CMS Secretariat, 2002). There was a call for the CBD/CMS joint work programme to be updated at CBD COP10 (CBD X/20 Paragraph 11;UNEP/CMS, 2011f).

85. The Bern Convention has a joint action plan with CMS (UNEP/CMS, 2008c) and EUROBATS considers itself to be "an appropriate platform for international exchange of knowledge and experience in bat conservation, which is essential to meet the targets of the Habitats Directive and the Berne Convention" (EUROBATS, 2010d).

86. In addition, in 2003 the CMS signed a Memorandum of Cooperation with the United Nations Convention to Combat Desertification (UNCCD),with a view to cooperate on the conservation and sustainable use of dryland migratory species (UNEP/CMS Secretariat, 2008c). However, it appears that little joint action has been taken to date.

87. Many CMS instruments work closely with international or national organisations that have been central to the creation, implementation and success of those instruments. For example, the IUCN/SSC AfESG has been instrumental to the West African Elephant MoU, developing the strategy on which the MoU is based, as well as acting as the technical advisor to the MoU and working on behalf of the CMS Secretariat as the MoU's coordinator (UNEP/CMS Secretariat, 2009b; UNEP/CMS, 2011e). The Gorillas AGREEMENT is underpinned by cooperation between the CMS Secretariat and GRASP, as well as more than 30 governments, UN agencies and numerous voluntary bodies (UNEP/CMS Secretariat, 2009a). Likewise, the SCAand ACBK jointly provide technical coordination of the Saiga Antelope MoU, and the SCAalso monitors the MoU's achievements in the "Saiga News" bulletin (UNEP/CMS, 2010g; 2011c). The Sahelo-Saharan Concerted Action was reported to buildon a large network of partnerships including "the French Ministry for Ecology and Sustainable Development (MEDD), the FFEM, the Institut Royal des Sciences Naturelles de Belgique, the Sahara Conservation Fund (SCF), the Museum National d'Histoire naturelle, the Office National de la Chasse et de la Faune Sauvage (ONCFS), the African Parks Foundation (AFP), all the administrations of the protected areas, forests and natural resources of the range States for the species, situated in or around the Sahara desert, the Flemish Region of Belgium, the Sahelo-Saharan Interest Group (SSIG), and the

World Conservation Union (IUCN)" (Beudels *et al.*, 2005), and the Bukhara Deer Action Plan indicates its collaboration with many organisations, including the International Council for Game and Wildlife Conservation (CIC), the International Association for the promotion of cooperation with scientists from the independent States of the former Soviet Union (INTAS), and various WWF programmes and offices(UNEP/CMS, 2002a).

88. The EUROBATS AGREEMENT has particularly strong involvement of national NGOs, which is evident from information submitted in their national reports (particularly in support to the annual European bat night) and their importance is recognised in EUROBATS Resolution 4.11. Many Parties reported that Year of the Bat events were being organised in collaboration with national NGOs, for example, a lecture by the Croatian Biospeleological Society, press releases co-ordinated by two NGOs in Finland (the Finnish Association for Nature Conservation and the Finnish Chiropterological Society), and national events organised by the German NGO NABU, Bat Conservation Ireland, the Dutch Mammal Society, the French Mammal Society (SFEPM) and the Bat Conservation Trust (UK) (EUROBATS.AC16.Record).

3.4. Strengths, weaknesses and gaps of CMS existing instruments and overlaps with non-CMS multilateral instruments/frameworks

89. **Strengths:** Questionnaire responses clearly indicated that range States and international organisations considered that CMS instruments play an important role in the conservation of migratory mammals, particularly due to their ability to facilitate international collaboration between Parties, international organisations, NGOs and other key stakeholders, and due to the formal commitment of range States to undertake conservation action (Annex VI). Whether considering legally-binding AGREEMENTS or non-binding MoUs, respondents noted that range States were under a stronger obligation when signing CMS instruments (compared with signing agreements tied to particular NGOs or single countries), due to higher scrutiny by the international community on their compliance.

90. A major success of CMS and its associated instruments/frameworks is their ability to raise awareness at local, national and international levels, particularly through events like the 2009 Year of the Gorilla and 2011/2012 Year of the Bat (UNEP/CMS, 2009f; UNEP/CMS, 2010b). An independent assessment of the various 'Year of the ...' campaigns found that the Year of the Gorilla had been particularly successful in attracting media attention and promoting public awareness and education, through the use of dedicated campaign websites, press conferences, campaign ambassadors, recreational and educational events, lecture tours, a two-day Gorilla Symposium and priority projects (UNEP/CMS, 2010b). The campaign also contributed to capacity building and the conservation of target species (through its priority projects) and to increased synergy with stakeholders, including numerous conservation and zoological organisations brought through campaign partners GRASP and the World Association of Zoos and Aquariums (UNEP/CMS, 2010b).

91. Another strength of CMS and its various instruments is the production of numerous publications such as the CMS Technical Series (which includes Action Plans, status reports, workshop and seminar proceedings) and the EUROBATS Publication Series (best-practice guidelines for conservation of bats and their habitats), which has helped transform the AGREEMENT into concrete action (UNEP/CMS, 2008d). Many respondents to the EUROBATS questionnaire considered the EUROBATS guidelines to be a major contribution to the success of the AGREEMENT, promoting the use of internationally agreed guidelines and consistent methodologies for monitoring and bat research/conservation, and supporting the establishment of national guidelines. The Executive Secretary of EUROBATS reported that the publication series had been so successful that it was necessary to continue reprinting to meet demand (EUROBATS, 2011c).

92. CMS has been particularly successful working in aridlands, for example with the Sahelo-Saharan Antelopes Concerted Action, where the Convention was reported to have acquired considerable experience addressing the specific requirements of these impoverished lands and their uniquely adapted migratory mammals (UNEP/CMS Secretariat, 2008a; UNEP/CMS, 2008e). This work is considered to be a "specialised domain of activity for CMS", as many organisations and funding agencies focus their attention on richer biodiversity biomes, such as tropical forests (UNEP/CMS Secretariat, 2008a; UNEP/CMS, 2008e).

93. **Weaknesses:** Questionnaire responses indicated that the main weaknesses of CMS instruments relating to terrestrial mammals were considered to be i) the lack of funding and resources(particularly for on the ground conservation projects, community projects or enforcement), ii) the lack of accountability for Parties not complying with their conservation commitments and iii) the widespread corruption that hinders conservation efforts in certain regions, making it difficult to tackle threats such as illegal hunting and trade (Annex VI).

94. The lack of adequate funding is widely reported to hinder implementation of CMS instruments, for example: for all range States of the Saiga Antelope MoU it seriously constraining the type and scope of conservation programmes and associated field projects undertaken (UNEP/CMS, 2010h); for the West African Elephant MoU there was difficultyin coordinating the first Meeting of the Signatories (UNEP/CMS Secretariat, 2009b); for the Bukhara Deer MoU key element of its Action Plan were unable to be met (Lee *et al.*, 2010); anda meeting between range States and other interested Parties of the Central Asian Aridland Concerted Action to discuss development of an MoU or other binding or non binding instrument had been planned but has not yet taken place, mainly due to a lack of financial resources (UNEP/CMS, 2010f).

95. Differences in the level of success of the various CMS instruments may partly be due to the way they are financed. The success of the EUROBATS AGREEMENT, for instance, may be due to the fact that annual Party contributions are obligatory, and due to the comparative wealth of European signatories in relation to CMS instruments in poorer regions of the world. Funding for EUROBATS appears to be comparatively successful as the majority of obligatory annual payments from Parties are received (EUROBATS Secretariat, 2010; EUROBATS, 2010b); a number of Parties were reported to make regular voluntary contributions (EUROBATS, 2011b; EUROBATS Resolution No. 6.1); and the Trust Fund was reported to be healthy (EUROBATS, 2010c; 2011a). In addition, the 2011-2014 budget contained the introduction of a minimum contribution of € 1000, to be phased in starting at € 500 in 2011, to redress the issue that four Parties out of 32 were covering 74 per cent of the budget (EUROBATS, 2010b; 2010c). Unlike the obligatory payments of AGREEMENTS, the funding of MoUs is generally voluntary, and for instruments in poorer regions of the world, funding is largely reliant on voluntary contributions from donor States or organisations outside the region covered by the MoU. For example, the West African Elephant MoU was reported to have received contributions from France, Japan, the Netherlands, the Principality of Monaco and the United States Fish and Wildlife Service (USFWS) (UNEP/CMS Secretariat, 2009b). However, a major limit of this type of funding is its uncertainty and lack of continuity, as well as the fact that funding donors tend to show a preference towards supporting activities of limited duration (such as individual projects or meetings) rather than longer term activities of an institutional or administrative nature (UNEP/CMS Secretariat, 2009b; Lee *et al.*, 2011).

96. Other weaknesses of the CMS Family identified in the Future Shape process included: i) inadequate staffing levels of the CMS Secretariat and some Agreements; ii) challenges in reporting such as missing deadlines and lack of harmonised reporting systems and iii) issues with data collection and harmonization (Lee *et al.*, 2010; 2011).

97. **Gaps:** Of the 18 terrestrial mammal taxa included in the Appendices not covered by a CMS instrument, eight are globally threatened (*Lontra provax*, *Acininyx jubatus*, *Lycaon pictus*, *Loxodonta cyclotis*, *Equus grevyi, Bos sauveli, Gazella erlangeri* and *Ammotragus lervia*) and six have all or part of their populations listed in Appendix I (*Lontra provax*, *Acinonyx jubatus*, *Equus grevyi, Vicugna vicugna, Bos sauveli* and *Cervus elaphus barbarus*) (Table 3). Eleven taxa occur primarily in Africa, three in South and Central America, three in Asia and one in the Middle East. In addition, five species only have part of their geographic range covered by a CMS instrument: *Tadarida teniotis* and *Miniopterus schreibersii* (EUROBATS AGREEMENT); *Loxondonta africana* (*sensu lato*) (West African Elephant MoU); *Cervus elaphus yarkendensis* (Bukhara Deer MoU) and*Gazella gazella* (Central Asian Aridland Concerted Action). If the Sahelo-Saharan Antelopes Concerted Action were to be extended to include Sahelo-Saharan Megafauna (as proposed in UNEP/CMS Recommendation 9.2), this would include *Ammotragus lervia* and part of the ranges of *Acinonyx jubatus* and *Lycaon pictus.* Options for the protection of species not covered or only partially covered by CMS existing instruments are included in Appendix VII and explored further in Section 4.

98. Through analysis of the Action Plans of CMS existing instruments and from feedback on the questionnaires sent to range States and key stakeholders, the main threats identified for taxa covered by CMS existing instruments (Table 1) appear to be addressed in their Action Plans and work programmes (see Section 3.2). Possible conservation issues not being addressed or inadequately addressed, as indentified by questionnaire respondents, were noise pollution and advice on the management of bats in buildingsfor the EUROBATS AGREEMENT, the need for transboundary patrolling and monitoring for the Saiga Antelope MoU and widespread corruption/lack of political will and a greater need to conduct population inventories for the Gorillas AGREEMENT (Annex VI). The South Andean Huemul MoU and the Central Eurasian Aridland Concerted Action and associated Cooperative Action do not yet have Action Plans, hence it is too early to assess whether they address the main threats to the species covered.

99. In their national reports, Parties are asked to suggest any additional migratory species of unfavourable conservation status occurring in their country which might benefit from listing in the CMS Appendices and conclusion of an Agreement for their conservation. In Parties' national reports submitted for CMS COP10, only Mongolia suggested the listing of new terrestrial mammal species – *Capra sibirica*, *Ovis ammon*, *Rangifer tarandus* and *Cervus elaphus* (of which *Ovis ammon* is being formally proposed for listing in Appendix II at COP10 by the Republic of Tajikistan and Republic of Kazakhstan). At the 16th meeting of the Scientific Council, Georgia suggested the listing of *Capra caucasica* and *Capra cylindricornis* in Appendix II (so that it might benefit from the Central Eurasian Aridland Cooperative Action), the Working Group was reported to have prepared a draft proposal for the listing of *Panthera tigris* on Appendix I (so that they might benefit from the Central Eurasian Aridland Concerted Action), and the Republic of Congo suggested the listing of *Panthera leo* in Appendix II (UNEP/CMS. 2010f). Of these species, both *Panthera tigris* and *Capra caucasica* are Endangered and *Panthera leo* is Vulnerable, all with decreasing population trends (Annex VIII). Many more non-CMS threatened mammal taxa were reported to be within the geographic scope of the Central Eurasian Aridland Concerted Action and Associated Cooperative Action, including the Critically Endangered Batrician camel *Camelus ferus*, the Endangered Asiatic wild dog *Cuon alpinus,* Tibetan antelope*Pantholops hodgsoni*,Przewalski's gazelle *Procapra przewalskii* and Asian elephant *Elephas maximus*, and the Vulnerable Indian rhinoceros *Rhinoceros unicornis* and European bison *Bison bonasus* (Devillers, 2007).

100. Whilst Parties that are range States for Appendix I species should prohibit the taking of animals (CMS, 1979), analysis of Parties' national reports submitted for CMS COP10 revealed that taking of

Appendix I terrestrial mammals (excluding bats) was not prohibited by the national legislation of three countries (Angola, Chad and Mali), and that taking of Appendix I bats (i.e. *Tadarida brasiliensis*) was not prohibited by the national legislation of three countries (Ecuador, Panama and Paraguay).Chad and Mali are range States of several Appendix I listed Artiodactyla covered by the Sahelo-Saharan Antelopes Action Concerted Action and Angola is a range State of *Gorilla gorilla* (Appendix I) covered by the Gorillas AGREEMENT.

101. For two CMS instruments on CMS terrestrial mammals, there are still some range States that are not signatories: EUROBATS AGREEMENT(30 range States including Austria, Cyprus, Greece and Spain in the European Union) and the Gorillas AGREEMENT (Angola, Cameroon, Equatorial Guinea and Uganda).

102. **Overlaps:**As indicated in Table 2 and Section 3.1, there are a number of non-CMS instruments and frameworks whose work overlaps that of CMS with regards to terrestrial mammals; these include i) overlaps in the threats/issues addressed, ii) the species or habitats targeted, and iii) overlaps in reporting requirements of Parties or Signatories. For example, the Convention on Biological Diversity (CBD) has identified 'cross-cutting issues' on Climate Change and Biodiversity and Invasive Alien Species (CBD, 2011b), UNESCO has a 'special theme' on Climate Change (UNESCO, 2011), the Bern Convention has a group of experts on Invasive Alien Species and Biodiversity and Climate Change (Council of Europe, 2011a), and the EU is currently developing a strategy to combat Invasive Alien Species (European Commission, 2011a) and has a White Paper on Adapting to Climate Change (European Commission, 2009). The CBD also has a 'cross-cutting issue' on Sustainable Use of Biodiversity(CBD, 2011b),CITES is the key international instrument addressing international trade and sustainable use (including many CMS-listed terrestrial mammals), and the Lusaka Agreement addresses illegal trade in certain African range States.

103. The CBD has 'thematic programmes' covering important habitats of CMS instruments on terrestrial mammals, including Dry and Sub-humid Lands Biodiversity, Forest Biodiversity, Agricultural Biodiversity and Mountain Biodiversity (CBD, 2011b). The UNCCD's Regional Action Programme to combat desertification in Africa has a number of 'thematic programme networks' including Promotion of Sustainable Agricultural Farming Systems and Rational Use of Rangelands and Promotion of Fodder Crops Development and its Regional Action Programme for Asia includes 'thematic programme networks' on Desertification Monitoring and Assessment and Rangeland Management in Arid Areas including the Fixation of Sand Dunes (UNCCD, 2010). In addition, COMIFAC and CBFP address the conservation and management of the Congo Basin's forests.CITES has specific programmes on elephants (MIKE and ETIS) andGRASP and the Kinshasa Declaration on Great Apes focus on gorillas.

104. EUROBATS, the Bern Convention and the EU Habitats Directive all prohibit deliberate capture/killing of Microchiropteran bats and damage/destruction of breeding or resting sites, as well as conservation of important habitats, with Parties required to make periodic reports on their progress. Parties are required to submit periodic reports on their National Action Plans to combat desertification under the UNCCD, theirNational Biodiversity Strategies and Action Plans under the CBD, andtheirNational Adaptation Programmes of Action under the UNFCCC, all of which may have overlaps with Action Plans and reporting requirements of CMS and the CMS Family, particularly between CMS's instruments on African and Eurasian aridlands and commitments under the UNCCD and UNFCCC.

105. Amongst the plethora of multilateral instruments/frameworks that address threats, habitats or species of relevance to CMS terrestrial mammals, CMS instruments are crucial for the conservation,

management and sustainable use of terrestrial mammals, in that: i) their focus is at the species level; ii) their Action Plans and MTIWPs include conservation activities on the ground that are specifically targeted towards priority threats and sites of particular importance to individual populations and species; iii) they bring together experts and conservation practitioners to identify priorities, establish international research and monitoring methods and advise on best practice; and iv) collaboration with local NGOs enables CMS instruments to raise awareness and address issues at the local level as well as operating at the policy level. The collective expertise, knowledge and experience of the CMS Family can make significant contributions to the overlapping activities and policies of other instruments, to ensure they provide maximum benefit to migratory mammals.

4. Options for more effective implementation of CMS existing instruments and priorities for development

4.1. Strengthening or revision of CMS existing instruments

106. A number of CMS existing instruments would benefit from strengthening. The Central Eurasian Aridland Concerted Action and associated Cooperative Action, covering a huge geographic area that has among the lowest density of protected areas of any global ecoregion (Coad *et al.,* 2009) and a unique megafauna (including nine CMS terrestrial mammals), needs to be strengthened through the formation of an appropriate funding mechanism, development of an MoU or other binding or non-binding instrument and production of an Action Plan. Arrangement of a meeting between range States and other interested Parties should be a priority to push this forward. This Concerted/Cooperative Action has already been recognised as having a very broad scope in terms of the geographical region covered and the range of species and types of threats (UNEP/CMS, 2010f); hence for this ambitious project to be successful it is of upmost importance to collaborate with international organisations and projects already operating in this vast landscape, as well as identifying clear priorities, activities, partners timescales and goals. The Large Herbivore Network (formed in 2010 when the Large Herbivore Foundation joined the European Centre for Nature Conservation), WWF's Programme for Central Asia, WCS's projects in Central Asia and Mongolia and ZSL's Steppe Forward Programme are among the projects of relevance to this instrument. It should also be a priority to engage the countries covered by the Concerted Action that are not Party to CMS.

107. Whilst the Sahelo-Saharan Antelopes Concerted Action has achieved a number of successes (see Section 3.2), it could be strengthened by development of an MoU or other binding or non-binding instrument to compliment the Action Plan (as encouraged in UNEP/CMS Recommendation 9.2), as well as updating the Action Plan itself (UNEP/CMS Secretariat, 2010b). One questionnaire respondent noted that the Action Plan was too broad to achieve success across all species and range States, with many activities having received no action, and that what was needed was a well-funded Action Plan focussing on the very highest priorities. Another respondent suggested that it would be useful to hold a workshop with range States and partners to measure the achievements of the Concerted Action and re-orientate specific actions where necessary. The potential benefits of establishing an Agreement or MoU include i) better access to international/bilateral funding and other types of support from Developed countries, ii) creation of a link between the Action Plan and the authority of the CMS Convention, iii) establishment of the legal and institutional structure needed for the CMS Secretariat to support the Concerted Action, iv) creation of the longterm stability needed to develop the Action Plan, and v) access to other MEAs and international organisations with which CMS is associated (UNEP/CMS Secretariat, 2003). A recent update on progress reported that i) a first draft of an MoU concerning conservation measures for Sahelo-Saharan megafauna had been prepared, ii) attention should be focused on identification of the most appropriate instrument and the

appropriate financial/institutional arrangement that would ensure its longterm sustainability, and iii) that next steps should include convening of a meeting of range States, which was estimated to cost € 75,000 (UNEP/CMS Secretariat, 2010b).

108. A weakness identified in the West African Elephant MoU and the Gorillas AGREEMENT was the lack of accountability or a mechanism to ensure compliance and the lack of political will among range States to prosecute against wildlife crimes (Annex VI). The introduction of a compliance mechanism to CMS was proposed as an activity in the Phase II report of the Future Shape process, but drawbacks identified were that it would be a complicated and lengthy process to negotiate a compliance Resolution and reach agreement on it at the COP, and that it would dissuade new members in becoming a Party to CMS, unless incentives for compliance were more attractive than the sanctions (Lee *et al*., 2011). The issue of range State governments not adhering to obligations and failing to implement existing wildlife laws could be addressed to some extent by exploring ways in which international organisations could work more closely with national governments and local NGOs to encourage greater compliance, as well as ensuring the support of every CMS Party in combating issues such as poaching and illegal international trade. One questionnaire respondent suggested that a first step would be to require wildlife prosecutions to be recorded in CMS national reports, possibly enlisting the help of WCS, WWF, the Last Great Ape Organisation (LAGA) law enforcement NGO in Cameroon, and its associated projects in the Republic of Congo (PALF), Central African Republic (RALF) and Gabon (AALF), to verify prosecution summaries provided by each country.

109. **Strengthen Action Plans to specify priority actions and targets with indicators tomonitor performance:** Central to the implementation of most CMS instruments are their respective Action Plans. Through evaluating the CMS existing instruments on terrestrial mammals (Section 3), it is clear that there is considerable variation between instruments in terms of the format of Action Plans, whether they are accompanied by Medium Term International Work Programmes (MTIWP) or equivalent, whether they define priority actions, timelines and targets, and the ease with which performance can be evaluated. The Saiga Antelope and Bukhara Deer MoUs, and the six species targeted by the Sahelo-Saharan Antelope Concerted Action follow the same tabular format for their Action Plans, with the key objectives broken down into specific programmes and activities, naming the organisation responsible and collaborators for each activity, with the Saiga Antelope and Bukhara Deer MoUs having additional columns to record results/progress and further activities (UNEP/CMS, 1999; UNEP/CMS, 2002a; UNEP/CMS, 2006a). The Saiga Antelope MoU has a MTIWP 2011-2015 which prioritises many activities of the Action Plan by urgency and timescale, as well as giving an overall goal "That saiga populations show an increasing trend or their decline is halted over the next five years", to be assessed through a time-series of population estimates accompanied by an associated estimate of uncertainty (UNEP/CMS, 2010c). The Action Plan for the West African Elephant MoU contains a 'logical framework' breaking down the three objectives into seven results/outputs, and many activities required to produce each result (AfESG and WWF, 2005). Progress in attaining each objective and result is evaluated through measurable targets which must be attained within set periods of time (e.g. the objective to 'evaluate the status of elephants' includes the targets 'All populations >100 surveyed in 5 years' and 'All populations >50 surveyed in 10 years'). The MTIWP 2009-2011 then prioritises the various activities and identifies the Party and partners responsible (UNEP/CMS, 2009c). Unlike the hierarchical approach of more recent instruments, the EUROBATS AGREEMENT updates its Conservation and Management Plan every four years with a substantial list of goals directed to Parties and the Advisory Committee, each referring to relevant Resolutions and information documents. These Conservation and Management Plans do not list specific organisations as responsible for (or collaborators in) the various goals, nor are there specific measurable targets or timescales. However, Party national reports are submitted to each MoP to

assess progress on implementation. Whilst the status of Sahelo-Saharan Antelopes has been evaluated since production of the Action Plan in 1998 (Ankouz *et al.*, 2003; Beudels *et al.*, 2005), the Action Plans themselves have not been updated, nor priorities identified. The four gorilla Action Plans differ slightly in their format but generally identify priority sites for ape conservation and regional/country/site-specific priority actions, some within specified timeframes (UNEP/CMS, 2009a; 2009b; 2009d; 2009g). However, who is responsible for achieving each activity is not specified, nor is how success towards each activity will be measured.

110. Whilst imposing the same format for Action Plans and MTIWPs across all CMS instruments may not be desirable (given the independence of many daughter Agreements and MoUs), it might be beneficial to undertake an evaluation of their different forms across all CMS instruments (not just terrestrial mammals) and to produce some best-practice guidelines upon which future Action Plans and MTIWPs could be based. Clearly defining the overall goal and objectives from the outset, presenting activities, outputs, purpose and goals in a Logial Framework, prioritising each activity, specifying who is responsible for achieving the activity, setting measurable targets with associated timescales and funding needs for each activity and using SMART Indicators (i.e. Specific, Measureable, Achievable, Relevant and Time-bound) to monitor progress, may be desirable components in terms of directing limited funds and resources to the highest priority activities and facilitating the assessment of performance. Action Plans and MTIWPs could also be strengthened and gain wider exceptance by the international community by ensuring at least six months of drafting and range-State consultation for their preparation, as well as expert review (e.g. by the IUCN Specialist Groups). Best-practice guidelines could also consider how best to structure national reports to facilitate the measurement of progress. Activities such as 'development of policy whereby all MOUs have a monitoring mechanism' and 'external assessment to monitor effectiveness' were classified as essentials by the ISWGoFS (UNEP/CMS Secretariat, 2011a). Well-designed Action Plans and MTIWPs will facilitate the monitoring and evaluation of their performance.

4.2. Merging or extension of CMS existing instruments or the development of new CMS instruments

111. There are a number of factors to take into account when considering the main options for maximising the geographic and taxonomic coverage of CMS instruments on terrestrial mammals. The advantages of merging or extension of existing instruments based on similar species/geography/ecology include i) utilisation of existing infrastructure, ii) development of common conservation programmes, iii) benefitting from the best practices of existing agreements, iv) consolidation of funds and resources, allowing effort to be focused on improved implementation, v) minimising institutional overlap and duplication of effort, and vi) facilitating the development of synergies to maximise conservation outcomes for target species (Lee *et al.*, 2011). However, it would also involve complex renegotiation and ratification of those instruments, could be time-consuming and costly in the short term, and could delay work of the existing agreements during the renegotiation period (UNEP/CMS, 2010a; Lee *et al.*, 2011). There is also concern that instruments could lose their individual identity and there could be competing and conflicting priorities. Respondents to the questionnaires noted that merging of existing instruments would not be desirable in cases where species have different ecologies, geographic ranges or threats, and that it could even be counterproductive. For example, several questionnaire respondents noted that merging the Saiga Antelope and Bukhara Deer MoUs would be detrimental to saigas, as the success of the existing instrument was dependent on the hard work and commitment (often voluntary) of individuals with a keen interest in saigas, and it would reduce the visibility of the species and its role as a flagship species. At the second meeting of the Inter-sessional Working Group on the Future Shape, it was noted that existing instruments should not be forced into mergers and that attention should focus on

closer working relationships between instruments dealing with similar species or on issues of common concern (UNEP/CMS, 2010a).

112. It is important that best practice and lessons learned from existing agreements be considered in the creation of new instruments (UNEP/CMS, 2010a; Lee *et al.*, 2011). Given the large number of existing instruments in the CMS Family, many of which are underfunded, there is concern that adoption of new MoUs without an increase in funding would further stretch the capacity of CMS and its Family (UNEP/CMS, 2007; Lee *et al.*, 2010). Respondents to the questionnaires also expressed reluctance to adopt new single-species or multispecies instruments unless it was certain that they could be fully resourced. Respondents also appeared to favour focusing on priority issues and species rather than attempting to cover all species.

113. Whilst single-species instruments may be appropriate in certain cases, CMS is moving towards delivering a more integrated conservation programme, through the use of 'Multispecies Initiatives' (UNEP/CMS, 2007). These regional initiatives focusing on large taxonomic groups and broad ecological zones are conceived as acting as a broad umbrella under which a variety of conservation actions (binding Agreements, non-binding MoUs, partnerships, Action Plans and projects) for Appendix I and II species, as well as species not currently listed in CMS, could sit (UNEP/CMS, 2007; Devillers, 2008). This integrated approach is expected to facilitate co-ordination of activities and minimise duplication of effort, whilst allowing existing Agreements to retain their legal and institutional independence should they so desire (UNEP/CMS, 2007). Multispecies Initiatives focusing on particular ecosystems/regions may also increase engagement with MEAs such as CBD or UNCCD and conservation organisations favouring an ecosystem approach. Nevertheless, stand-alone single-species Agreements, Concerted Actions and Initiatives continue to be important for particularly emblematic and seriously threatened taxa, to avoid a loss of visibility or dilution of focus through inclusion in Multispecies Initiatives (Devillers, 2008).

114. **Bats:** Globally, 24 per cent of the world's 1,001 bat species are thought to be threatened (Critically Endangered, Endangered or Vulnerable), with a further 21 per cent categorised as Near Threatened (Mickleburgh *et al.*, 2002). Of particular conservation concern are countries with a high proportion of endemic bat species (such as Madagascar, Japan, Australia, Indonesia and Papua New Guinea) (Mickleburgh *et al.*, 2002), and species occurring on islands (Mickleburgh *et al.*, 2002; Wiles and Brooke, 2009). A report on the feasibility of creating additional bat agreements under CMS was considered at the 12th meeting of the CMS Scientific Council (UNEP/CMS Secretariat, 2004b). It considered four regions within which a CMS-initiated bat instrument could contribute significantly to bat conservation: South America, southern Africa, South Asia and Southeast Asia. In support of developing new regional bat instruments, South America and South Asia were found to have a formal network of bat specialists, southern Africa was found to have an informal network of bat specialists and all four regions were found to have appropriate NGOs (UNEP/CMS Secretariat, 2004b). Respondents to the EUROBATS questionnaire generally considered that further extension of the EUROBATS AGREEMENT would negatively affect its performance, but that there was a strong need to protect bat species in other geographic regions through the creation of new Multispecies Initiatives similar to EUROBATS. In contrast, Devillers (2008) considered that single-species initiatives may be more appropriate for certain African bat communities with species-specific threats.

115. Five bat species in Africa, two in Asia and one in South and Central America are listed in the CMS Appendices but are not covered by any instrument (Annex VII). All five African bat species occur in Sub-Saharan Africa, *Eidolon helvum*, *Otomops martiensseni* and *Miniopterus natalensis* with wide geographic ranges and *Otomops madagascariensis* and *Miniopterus majori* endemic to Madagascar.

Eidolon helvum is the only species to be specifically targeted for food and medicinal use, particularly in West and Central Africa (Section 2), hence it may require a single-species instrument to target its specific threats. However, the species is widespread and adaptable and common throughout much of its range (Mickleburgh *et al.*, 2008a), therefore creation of a separate instrument for this species may be a low priority. The remaining four species face similar threats of human disturbance at roost sites, incidental poisoning and localised habitat loss (Table 1), hence a Multispecies Initiative on African bats may be suitable (under which MoUs or Action Plans for specific species could sit). Whilst none of the species currently listed in the CMS Appendices are globally threatened, (and the two species endemic to Madagascar, formerly listed as *Otomops martiensseni* and *Miniopterus majori*, are not strictly in need of international cooperation for their conservation), species like *E. helvum* are known to migrate large distances across Africa and hence would benefit from international cooperation, and creation of an African Bat Initiative may stimulate research into species whose distribution, ecology and migration patterns are still poorly documented, as well as encourage Parties to suggest the listing of additional species (UNEP/CMS Secretariat, 2004b). Many African countries are Party to CMS and its daughter agreements (UNEP/CMS Secretariat, 2009a), which should facilitate engagement in creation of a new instrument, and a new African Bat Initiative could draw on the successes of the EUROBATS AGREEMENT, such as the benefit of producing best-practice guidelines for bat monitoring/research and habitat management. Timing of a new instrument may also be ideal, given the global awareness of bat conservation raised through the 2011-2012 Year of the Bat. However, success of the EUROBATS AGREEMENT is likely to be in part due to the comparative wealth and scientific/technical expertise of this geographic region, and respondents to the EUROBATS questionnaire noted that the lack of financial and human resources, as well as arrangement of a new Secretariat, were likely to be difficulties in establishing new bat initiatives elsewhere.

116. Interest in creating an instrument for Sub-Saharan and African bats was expressed at the 13th meeting of the Scientific Council and has been on the CMS Agenda since COP8 (UNEP/CMS, 2005b). An update from the CMS Secretariat on progress for the 37th meeting of the Standing Committee reported that the CMS and EUROBATS Secretariats were organising sub-regional workshops on bats in Sub-Saharan Africa 2010-2011 (in collaboration with FAO), where the level of interest and preference for the type of instrument would be explored (UNEP/CMS Secretariat, 2010b).

117. The two bat species in southeast Asia not covered by a CMS instrument (*Tadarida insignis* and *T. latouchei*) are classified as Data Deficient, with little known about their population status and ecology, and their taxonomy in need of revision (Francis and Maeda, 2008; Maeda *et al.*, 2008). However, given that none of their range States are Party to CMS (Annex VII) and that CMS and its Family have so far been largely inactive in this part of the world, this is likely to hinder establishment of a Southeast Asian Bat Initiative. Nevertheless, if CMS did chose to prioritise increasing its presence in southeast Asia, development of a Southeast Asian Bat Initiative should be a priority, given that bats are a critical component of southeast Asia's threatened fauna and that southeast Asia supports nearly 30 per cent of the world's bat fauna (Kingston, 2010). The islands of the Indo-Pacific region have also been identified as having a high regional bat diversity, with 70 species globally threatened, and many regional threats stemming from the expanding human populations and increasing pressure on natural ecosystems (Wiles and Brooke, 2009). Hence an initiative focussing on the Pacific and Southeast Asia may be appropriate. The Southeast Asian Bat Conservation Research Unit (SEABCRU), an informal collaboration among institutes, NGOs and individuals, would be an important organisation with which to collaborate (Kingston, 2010).

118. Given that *Tadarida brasiliensis* is the only CMS-listed bat species to occur in the Americas, and that it is listed in Appendix I, a new single-species instrument may be appropriate. However, this species

has a wide distribution range from the United States to Chile and Argentina and is classified as Least Concern with a stable population trend and no major threats throughout its range (although with local persecution and disturbance at caves) (Barquez *et al.,* 2008), hence creation of a single-species instrument is of a low priority. Given that the species does not appear to be under serious threat and perspectives for a CMS instrument are weak, the possibility of de-listing may also be an option.Creation of a Pan-American Bat Initiative has also been suggested(UNEP/CMS Secretariat, 2004b), which may encourage Parties to propose additional species for listing in the Appendices. If persued, the Program for the Conservation of Migratory Bats of Mexico and the United States would be an important organisation with which to collaborate (UNEP/CMS Secretariat, 2004b; PCMM, 2011).

119. According to the CMS list of range States, one species covered by the EUROBATS AGREEMENT, *Tadarida teniotis* (Least Concern), occurs in Uzbekistan, which falls outside the geographic scope of the AGREEMENT (UNEP/CMS, 2011b; Annex VII).This would imply that it might be desirable to extend the geographic scope of the EUROBATS AGREEMENT to ensure that the entire population of *T. teniotis* is covered by a single instrument. However, the IUCN Red List also lists the species' occurrence in Afghanistan, Bangladesh, Bhutan, India, Kyrgyzstan, Myanmar, Nepal, Tajikistan and Turkmenistan and Uzbekistan (Aulagnier *et al*., 2008) which are also outside the geographic scope of EUROBATS. Therefore, as many questionnaire respondents indicated that further extension would negatively affect the performance of EUROBATS, it may be more desirable for this species to be covered by a new Central and South Asian Bat Initiative.

120. **Eurasian mammals:** If the Central Eurasian Aridland Concerted Action is complemented by development of an MoU or other binding or non-binding instrument, then 12 species already listed in the CMS Appendices would be included within its geographic scope (Table 2), as well as many other threatened taxa not yet listed in the CMS Appendices (Devillers, 2007), including the four species suggested by Mongolia for listing in Appendix II (*Capra sibirica*, *Ovis ammon*, *Rangifer tarandus* and *Cervus elaphus*). The remaining CMS species not covered by an instrument are *Gazella erlangeri* (occurring in Saudi Arabia and Yemen) and *Bos sauveli* from Southeast Asia. Additionally, *Gazella gazella* is only partially covered by the Central Eurasian Aridland Concerted Action (Annex VII). Given that *G. erlangeri* and *G. gazella* inhabit desert and semi-desert habitats and have similar threats to Eurasian antelopes (hunting and habitat loss/degradation) (Table 1), extension of the Central Eurasian Aridland Concerted Action to cover the Arabian Peninsula would appear to be the most appropriate option (UNEP/CMS, 2008e).On the other hand, the forest and grassland habitat of the Kouprey *Bos sauveli* is outside the biogeographic scope of the Central Eurasian Aridland Concerted Action. This Critically Endangered (and possibly extinct) southeast Asian ox, last observed in the 1960s (Timmins *et al.,* 2008), is listed in Appendix I, hence is a priority for Concerted Action. However, none of its range States are Party to CMS, hence development of an instrument to protect megafauna in southeast Asia is unlikely to be successful, unless CMS decides to make substantial efforts to increase its presence and resources in this region of the world. Devillers (2008) also noted the possibility of a South and Southeast Asian Initiative, noting that it could address concerns about the Asian elephant (*Elaphus maximus*).

121. Following recognition that the *Cervus elaphus yarkandensis* occurs in Afghanistan, as well as the four existing range States that are signatories to the Bukhara Deer MoU (UNEP/CMS, 2011c), it may be desirable to expand the geographic scope of the MoU. Indeed, expanding the Memorandum's geographic scope is on the agenda for the upcoming 1st Meeting of the Signatories in November 2011, but the meeting document is not yet available.

122. **African mammals:** At present, *Equus grevyi*, *Cervus elaphus barbarus*, *Ammotragus lervia* and African populations of *Acinonyx jubatus* are not covered by any CMS existing instruments, and *Loxodonta africana* (*sensu lato*) is only covered by an instrument in West Africa (Annex VII). All taxa are globally threatened or, in the case of *C. elaphus barbarus*, thought to be so, and *Acinonyx jubatus*, *Equus grevyi* and *C. elaphus barbarus* are listedin Appendix I. *Acinonyx jubatus* was approved as a species for Concerted Action at CMS COP9 and *Ammotragus lervia* has been suggested for Concerted/Cooperative Action by Niger (UNEP/CMS, 2010f). The extension of the Sahelo-Saharan Antelope Concerted Action, both geographically to cover the entire arid and sub-arid zone of north Africa (by including the Horn of Africa), and taxonomically to cover all megafauna has already been proposed for consideration from the Scientific Council (UNEP/CMS/Recommendation 9.2; UNEP/CMS Secretariat, 2008a).This Sahelo-Saharan Megafauna Concerted Action would then include the entire range of *E. grevyi*, the desert and semi-desert range of *Ammotragus lervia* (but not the mountainous areas of northern Morocco and Algeria), the small, highly fragmented populations of *A. jubatus* in northwest Africa, and any remaining populations of*L. pictus* in this region (although it is known to have gone extinct from a number of countries) (UNEP/CMS Secretariat, 2008a; UNEP/CMS, 2010f). UNEP/CMS Recommendation 9.2 also encouraged range States and other interested Parties to prepare proposals for the inclusion in Appendix I or II of other threatened species that would benefit from the Action.

123. Falling outside the geographic range of the Sahelo-Saharan Megafauna Concerted Action is the Barbary deer *C. elaphus barbarus*, which occurs in forest habitat of northeast Algeria and Tunisia and is thought to be threatened with extinction (CITES, 2007). Given its occurrence in just two range States, which are both Party to CMS (and two of its of daughter Agreements), a single-species instrument may be an appropriate option for this taxon.

124. The only current CMS instrument for terrestrial mammals in Central or southern Africa is the Gorillas AGREEMENT. However, this region also contains *Acinonyx jubatus*, *Lycaon pictus*, *Loxodonta africana* and *Loxodonta cyclotis*. Development of a new Subsaharan African Megafauna Initiative was suggested by Devillers (2008), and was the favoured option of several range States that responded to the questionnaires. Reasons given for favouring this option were that it would i) help range States conserve multiple species with the limited resources available, ii) facilitate cooperation/collaboration on transboundary issues, iii) help to prioritise the allocation of resources/funding between range States and iv) direct funds towards cross-cutting issues that affect multiple species. The main difficulties in choosing this option were reported to be i) finding sufficient funding and ii) disagreement between range States on the allocation of scare resources between the different species and activities.

125. Given the high profile and increasing threats to the survival of forest elephants in Central Africa, there is keen interest in development or extension of an appropriate instrument to cover them (UNEP/CMS Resolution 9.2; UNEP/CMS Recommendation 9.5). The Central African range States haverequested the support of the CMS Secretariat for the development of an appropriate instrument (UNEP/CMS, 2009e). Meanwhile, development of an instrument on elephants in Central Africa is on the joint program of work for CMS and CITES (CMS/StC37/4/rev1), a document analysing the gaps and options for enhancing elephant conservation in Central Africa is being prepared for discussion at CMS COP10, and there are also plans to establish a working group (UNEP/CMS Secretariat, 2010b). One option is to extend the existing MoU on West African Elephants, however, initial discussions at the 1st Meeting of the Signatories revealed a preference for developing a separate instrument (UNEP/CMS Secretariat, 2010b; UNEP/CMS, 2010f)supported by the IUCN/SSC AfESG, given the different threats faced by elephants in West and Central Africa (Devillers, 2008). Lee *et al.* (2010)

surmised that the preference towards separate instruments for West and Central Africa may be more a reflection of the geographic location of the lead Parties to the West African Elephant MoU, rather than a taxonomic distinction. Recent taxonomic studies indicate that African elephants form two phylogenetically distinct species, and that elephants of West and Central African belong to the same species, *Loxodonta cyclotis* (Rohland *et al.,* 2010; Ishida *et al.,* 2011), strengthening the argument for extending the West African Elephant MoU to include the entire geographic range of *L. cyclotis*.

126. Given the similar threats (hunting, illegal trade, habitat loss) faced by elephants and gorillas in Central Africa (Table 1), another possibility would be to extend the Gorilla Agreement. This would seem sensible given that many of the research and monitoring activities carried out by organisations such as WCS, WWF, Smithsonian Tropical Research Institute are focussed on elephants and gorillas (Huijbregts *et al.,* 2003; Blom *et al.,* 2004; Laurance *et al.,* 2006; Clark *et al.,* 2009; Stokes *et al.,* 2010), and many park rangers and law enforcement officers are responsible for both elephants and gorillas (UNEP/CMS Secretariat, 2009c). However, again this might be costly, time consuming and may draw attention and resources away from existing activities on gorillas.

127. A new instrument on Elephants in Central Africa would avoid hampering the progress of the existing West African Elephant MoU and Gorilla AGREEMENT. However, whilst this option may be more appealing in the short term, it could prove more costly in the longterm due to the duplication of effort involved in organisation of separate meetings and production of separate national reports, whereas they might benefit more from the sharing of ideas and experiences and pooling of resources.

128. **South American mammals:** In South America, the Southern river otter *Lontra provocax* and *Vicugna vicugna* are currently not covered by a CMS instrument. Both species occur in Argentina and Chile (where an MoU for the South Andean huemul *Hippocamelus bisulcus* came into effect in 2010), whilst *V. vicugna* also occurs in Bolivia and Peru. Given that*L. provocax* has a very different ecology and habitat to *V. vicugna*and*H. bisulcus*(i.e. it occurs in freshwater lakes and rivers and along rocky coasts), and that *V. vicugna* and *H. bisulcus* do not have overlapping habitats and suffer different threats (Jiménez *et al.,* 2008; Lichtenstein *et al.,* 2008; Sepulveda *et al.,* 2008), there is no clear reason to extend the existing MoU on South Andean Huemul. Therefore, two new single-species instruments may be more appropriate, with priority given to *L. provocax* which is Endangered and listed in Appendix I. Whilst the fact that *V. vicugna*is classified as Least Concern globally with an increasing population trend may indicate that de-listing is an option, poaching is considered a problem in all four range States and climate change may have a detrimental impact on its habitat (Lichtenstein *et al*., 2008), hence de-listing may be premature. If there was interest and commitment from range States, a South American Megafauna Initiative could be considered, under which any existing single-species MoUs could sit (UNEP/CMS, 2008e).

4.3. Additional options for effective implementation

129. **Strengthening the membership base of the CMS:** Achieving broader membership of CMS and its instruments remains one of the key conditions for improving implementation of the CMS Family of instruments for terrestrial mammals. Tables 3 and 5 highlight some key gaps for terrestrial mammals, including bats, in this regard.

130. **Increased collaboration between CMS instruments:** Questionnaire respondents were generally not aware of collaboration between CMS instruments, so this could be improved. Potential examples include: exchange of experience in addressing similar conservation issues, sharing of data and information, organisation of joint meetings, funding support, as well as administrative benefits such as sharing of budget planning, technical equipment, conference services or office space. One

questionnaire respondent suggested holding a brainstorming workshop to identify areas where greater cooperation between instruments would be beneficial.

131. **Developing work on cross-cutting initiativesto address threats:**A series of programmes/initiatives across CMS instruments based on common threats/issues has been identified as an opportunity to provide greater integration across the CMS family, as well as reducing duplication and improving economies of scale (Lee *et al.,* 2010; 2011). Within the CMS Family, cross-cutting issues which would benefit from collaboration between CMS instruments include addressing: habitat loss/degradation, poaching and illegal trade, wildlife diseases and mass mortality events, climate change, Invasive Alien Species, wind turbines, pesticides, and advice for operating in countries affected by corruption, war or civil unrest (Table 1). These programmes might include i) organisation of joint workshops and meetings across multiple CMS instruments, ii) compilation of successful case studies, iii) organisation of joint research projects across CMS instruments,and iv) development of practical guidelines on how to tackle specific issues at regional/national/local levels. Individual CMS instruments could also be encouraged to contribute any lessons learned when dealing with these cross-cutting issues, specifically how results for one site/species could be applied more broadly.

132. **Harmonised national reporting:** National reports are essential to assess the implementation and performance of CMS instruments, yet the Future Shape process has highlighted the issue of reporting problems, such as missing deadlines, a high percentage of non-compliance and lack of harmonised reporting systems (Lee *et al.,* 2010; 2011). UNEP/CMS Resolution 9.4 welcomes "the development of the specifications for online reporting which would make significant advances both in the reporting process and harmonization of reports within the CMS Family" and "requests the Secretariat to advance harmonization of reporting with other international biodiversity agreements through the development of common reporting modules, via the framework of the Biodiversity Liaison Group and in consultation with UNEP-WCMC." In addition, the Biodiversity Liaison Group was also invited to continue giving consideration to the harmonisation of national reporting at CBD CoP10 (UNEP/CMS Secretariat, 2011c). The increasing number of CMS instruments and national obligations to other biodiversity-related Conventions is placing a reporting burden on Range States and may also deter potential signatories. Given that much of the same information is required by, or relevant to, different Conventions (or instruments within the CMS Family), the move towards harmonisation of reporting (and possibly joint reporting) should be a priority, starting with efforts to move towards a joint online reporting system across the CMS Family. IOSEA already leads the way in its online reporting facility and other MEAs are moving towards online reporting, such as the PRAIS portal of UNCCD (PRAIS, 2010). An Online Reporting Tool engine being developed by UNEP-WCMC (in collaboration with CMS and AEWA) is designed to address specific reporting requirements of MEAs, such as the ability to i) create national reports online easily; ii) delegate different modules to different national focal points or experts, iii) carry forward answers from previous reporting cycles iv) selectively offer questions to different Parties, and v) make changes to the online report quickly and without the need for technical know-how. Future developments may include an analytical module, which would make it even easier to analyse responses from parties, all integrated in one tool.

133. **Shared administrative services between instruments:** Provision of common administrative and capacity-building services across CMS and the CMS family could achieve greater efficiencies. These services could include: arrangement of meetings; information technology services; coordinated fundraising activities; training programmes; gap analysis; and communication, organised through the CMS Secretariat based in Bonn (UNEP/CMS, 2007; Lee *et al.,* 2011). Although initially costly, provision of common services could potentially lead to medium to long-term financial savings and a reduction of duplication of effort, as well as encouraging greater integration across the CMS Family

and sharing of experiences and expertise (Lee *et al.*, 2011). An alternative (but not necessarily mutually exclusive option) was to encourage a greater regional presence of the CMS Family through closer collaboration with UNEP regional offices, sharing of offices/personnel/resources between CMS instruments working in the same region, or the development of regional hubs to identify synergies and linkages between MEAs (UNEP/CMS, 2007; Lee *et al.*, 2011). This would facilitate synergies and joint work programmes with regional stakeholders and partners, lead to resource efficiencies between co-located instruments and greater presence on the ground, avoid duplication of effort between CMS instruments and other regional activities, tap into regional expertise and improve understanding of regional issues (UNEP/CMS, 2010a; Lee *et al.*, 2011). However, the choice of which range States to locate regional offices could alienate certain countries (although this could be circumvented by co-location with UNEP Regional Offices), it would not resolve duplication of effort across the whole CMS family and there is concern over the increasing remoteness from the CMS Secretariat in Bonn.

134. The Secretariat of the EUROBATS AGREEMENT is already co-located with the CMS Secretariat in Bonn and the CMS Secretariat is also responsible for the Gorillas AGREEMENT and provides basic Secretariat services to the terrestrial mammal MoUs. The co-location of CMS and EUROBATS Secretariats (along with AEWA and ASCOBANS Secretariats) was reported to be successful, particularly with regard to sharing meetings, personnel and experiences, and mutual assistance with IT issues (Lee *et al.*, 2010; 2011). Options to co-locate offices or share personnel and administrative resources between CMS instruments in the same region could achieve many of the advantages of merging instruments, without the drawbacks mentioned above. Possibilities for developing regional hubs might include expanding on success of the IOSEA Marine Turtle Secretariat co-located with the UNEP Regional Office for Asia-Pacific in Bangkok, by basing other Asian CMS instruments here, such as the Central Eurasian Aridland Concerted Action, the Saiga Antelope and Bukhara Deer MoUs, and any future instruments. As well as benefiting from shared administrative services, this would hopefully increase the regional presence of CMS in Asia, facilitate greater interaction with regional organisations/projects and encourage more Asian Range States to become Party to CMS and signatories to its instruments.

135. Given the three existing CMS terrestrial mammal instruments in Africa (and the possibility of new instruments on bats, elephants or all megafauna in Sub-saharan Africa), an African-based CMS regional office, perhaps based at the UNEP Office in Nairobi, could provide administrative services and support to the growing number of African CMS instruments and perhaps help tackle the issues of giving more support to NGOs conducting projects on the ground, and encourage greater compliance of range States by increasing the regional visibility of CMS. Co-location of the Sahelo-Saharan Antelopes Concerted Action and the West African Elephant MoU at the UNCCD Regional Coordination Unit for Africa, hosted by the African Development Bank in Abidjan, Côte d'Ivoire could also be explored.

136. **Shared provision of data and information services:** Acentralised service for the collection, management and storage of data has also been considered under the Future Shape process. Whilst initial investment may be costly (such as recruiting an Information Management officer), creation of a migratory species scientific data hub would:i) improve access to data, ii) facilitate identification of data gaps, iii) reduce duplication of effort, and iv) encourage greater integration across the CMS Family (Lee *et al.*, 2011). CMS instruments could also benefit from the use of online forums to discuss issues, share information and experiences, which could perhaps be provided through development of the existing Information Management System orthe Global Register of Migratory Species (GROMS).

137. **Increased collaboration with other institutions/frameworks:** Working more closely with partner organisations and developing further collaboration and synergies with MEAs, NGOs and relevant international organisations has been a key objective of the Future Shape process (UNEP/CMS/Res.9.13/Rev.2; Lee *et al.*, 2010; 2011; UNEP/CMS Secretariat, 2011a) and is recognised in the CMS Strategic Plan 2006-2011 (UNEP/CMS, 2005a). Responses to the questionnaires clearly indicated that close collaboration between government departments, NGOs, international organisations and experts was seen as a key factor in the success of existing instruments (Annex VI). Benefits of cooperation/collaboration were reported to include: shared information, skills and expertise; coordination of activities; standardised conservation methods; contribution to technical workshops and action plans; implementation on the ground; funding support; consultancy and capacity building; and minimising duplication of effort. Provision of technical coordination of CMS instruments (such as that provided by the SCA and ACBK for the Saiga Antelope MoU) appears to be a successful example of collaboration with institutions which also reduces workload of the CMS Secretariat. A respondent to the Sahelo-Saharan Antelope questionnaire commented that close collaboration between CMS and international NGOs, then between international NGOs and national governments was a particularly successful model to ensure longterm success of Action Plans. Given that CMS is heavily reliant on NGOs to run projects in the field, one respondent requested that CMS be more proactive in supporting projects and helping to secure funding.

138. Whilst CMS instruments have a strong history of collaboration with conservation or environmental institutions/frameworks, the analysis of threats to terrestrial mammals (Section 2) and responses to the questionnaires indicate that CMS and its associated instruments need to strengthen their collaboration with a wider range of institutions, in order to address threats such as illegal hunting and trade, wildlife diseases and issues such as widespread corruption and war/civil unrest more effectively. For example, questionnaire respondents suggested increased cooperation with the Traditional Chinese Medicine industry and veterinary institutions for the Saiga Antelope MoU, increased collaboration with INTERPOL and the World Customs Organisation, CITES, TRAFFIC, Lusaka Agreement International Consortium Combating Wildlife Crime (ICCWC) and possible future collaboration with the IUCN Veterinary Group, WCS Field Veterinary Programme and Ministries for Justice/Interior (in addition to Environment/Forestry Ministries) for the Gorillas AGREEMENT.

139. The CBD Strategic Plan for Biodiversity 2011-2020 was adopted at CBD CoP10, October 2010, with a call for "partnerships between the Convention [CBD] and other conventions" that "will be essential to support implementation of the Strategic Plan at the national level" (Decision CBD X/2, paragraph 17). With new or revised National Biodiversity Strategies and Action Plans (NBSAPs) being the key mechanism for national implementation of the Strategic Plan for Biodiversity, the CMS Secretariat in 2011 has issued a call to CMS Parties to get involved with the NBSAP process in their countries, in order "to ensure their objectives and obligations are equally incorporated into the new and/or revised and updated NBSAPs" (letter by the CMS Executive Secretary to National Focal Points, 20 January 2011; UNEP/CMS Secretariat, 2011b). Such collaboration might open new opportunities to strengthen the implementation of CMS instruments, not least as substantial funding is expected to be made available for the national implementation of NBSAPs. Liaising with the NBSAP process and national or regional implementation of the Strategic Plan for Biodiversity might also ease access to funds from the Global Environment Facility (UNEP/CMS Secretariat, 2011b).

140. A closer collaboration with the UNCCD in implementing the 2003 Memorandum of Cooperation between CMS and UNCCD could trigger an improved understanding of the concerns over migratory

species within the development community and might help with fundraising, for example for projects on dryland antelopes.

141. **Strengthened external collaborations on cross-cutting issues:** CMS programmes/initiatives on cross-cutting issues could also facilitate a coordinated approach in enabling the CMS family to participate in relevant events organised by other MEAs and international organisations (such as those indentified in Section 3.4, Overlaps), as well as enabling CMS to take a more active role on certain issues that are not currently widely addressed by other MEAs and international organisations, such as poaching and illegal trade, wildlife diseases and operating in countries affected by corruption, war or civil unrest. This would help enhance the role of CMS in cross-cutting issues as well as creating further synergies and reducing duplication of effort between the various treaties, as per the CMS Strategic Plan 2006-2011 (UNEP/CMS, 2005a). The high profile and wider relevance of these cross-cutting issues may also help to attract additional funding, as well as raising the commitment of CMS Parties to addressing these issues.

142. **Development of indicators:** For an increasing number of MEAs, developing indicators to measure their performance and impacts has become a key component of their work areas (2010 Biodiversity Indicators Partnership, 2010; Orr, 2011). Through UNEP/CMS/Resolution 9.4, the CMS COP requested "the CMS Secretariat to continue to liaise with the CBD Secretariat and the other biodiversity-related conventions and relevant institutions with a view to adopting suitable indicators to measure the achievement of the 2010 target". With the CBD Strategic Plan for Biodiversity 2011-2020 increasingly regarded an umbrella for implementation of a wider range of biodiversity-related agreements, the next years might be an opportune time for CMS instruments not only to develop indicators to measure their own performance and impacts but also to place their indicators under the framework of the emerging indicators for National Biodiversity Strategy Action Plans (NBSAPS) and the Aichi Biodiversity Targets.

4.4. Priorities for development

143. Criteria to identify priorities for establishing new CMS instruments include i) the degree to which the species are threatened by issues that require international cooperation, ii) the likelihood of success (such as significant interest from range States and NGOs and the ability to raise funds) and iii) whether the new instrument has other benefits to the CMS Family (such as increasing the presence of CMS in regions of the world with few Parties to CMS, addressing threats/issues that affect multiple CMS species or opportunities for CMS to increase synergies with other MEAs and organisations). In this regard, the Endangered elephant populations of Central Africa, which are seriously threatened by poaching, illegal trade and rapid conversion of forests to agricultural land, and are recognised by range States and NGOs as needing cooperation of the international community, are clearly a high priority. Elephants can also act as an 'umbrella species' for other threatened terrestrial mammals of the Congo Basin.

144. To provide maximum benefit to a large number of threatened migratory mammals and encourage the movement towards Multispecies Initiatives, priority should be given to forming the Sahelo-Saharan Megafauna Concerted Action (including geographical extension to the Horn of Africa), geographical extension of the Central Eurasian Aridland Concerted Action (to include the Arabian Peninsula), and development of a Subsaharan African Megafauna Initiative. Through establishment/revision of these three Multispecies Initiatives, all but two globally threatened mammals currently listed in the CMS Appendices (Endangered *Lontra provocax* and Critically Endangered *Bos sauveli*) would then be covered by an instrument. These three Multispecies Initiatives also occur in priority geographic regions (based on the analysis of threats in Section 2), as the Congo Basin is under increasing risk

from selective logging and land clearance for agriculture and biofuels,Asia's drylands have suffered from land degradation, and the deserts, tropical grasslands and savannas of Africa and Asia are among the biomes that will be most severely impacted by climate change.

145. Other proposed Multispecies Initiatives occurring in priority geographic regions include the South and Southeast Asian Megafauna Initiative, Southeast Asian Bat Initiative, South American Megafauna Initiative and Pan-American Bat Initiative (as Southeast Asia and the Amazon basin have suffered high rates of deforestation and expansion of croplands); however, these regions have few Parties to CMS and these instruments would cover fewer globally threatened CMS mammals, hence they are of lower priority.

146. Priority activities that would strengthen the contribution of CMS to the conservation, management and sustainable use of migratory mammals and enhance the influence of CMS among other biodiversity-related Conventions and international environmental organisations would be to i) strengthen existing Action Plans and provide guidance for their future design, including specification of targets and development of indicators, ii) develop programmes/initiatives promoting collaboration on cross-cutting issues (such as poaching and illegal trade, wildlife diseases and climate change) between CMS instruments and with other MEAs and organisations, iii) further development of the use of online reporting and harmonised reporting, and iv) development of indicators for measuring the performance and impact of CMS instruments and their contributions to NBSAPs.

5. Conclusions and recommendations

147. CMS instruments play an important role in the conservation of migratory mammals, particularly due to their ability to facilitate international collaboration between Parties, international organisations and other key stakeholders to develop conservation action on the ground, and due to the formal commitment of range States. Major contributions of existing instruments included raising international awareness, harmonisation of research and monitoring, exchange of information and ideas and the production of publications and best-practice guidelines. The main factors contributing to the success of CMS instruments include i) strong support and political will of range States, ii) strong collaborations between governments, international organisations, NGOs and experts, iii) organisation of regular meetings and iv) active discussion on conservation issues and sharing of data and expertise. The main obstacles to success include i) lack of funding and resources, particularly for on the ground conservation projects, community projects or enforcement, ii) limited capacity of range States to achieve all actions specified in the Action Plan, iii) issues with non-compliance, lack of accountability or lack of political will and iv) widespread corruption that hinders conservation efforts in certain regions, making it difficult to tackle threats such as illegal hunting and trade.

148. CMS instruments on terrestrial mammals (including bats) differ in their level of progress towards addressing threats to the species and habitats which they cover. To strengthen CMS existing instruments, several actions are proposed. For the Central Eurasian Aridland Concerted Action and associated Cooperative Action renewed efforts are needed to ensure the development of an MoU or other binding or non-binding instrument and production of an Action Plan (including arrangement of a meeting between range States, other interested Parties, relevant international organisations and other stakeholders andformation of an appropriate funding mechanism). Sahelo-Saharan Antelopes Concerted Action could also be strengthened through development of an MoU or other binding or non-binding instrument, as well as updating the Action Plan to focus on the highest priorities. A weakness identified in the West African Elephant MoU and Gorillas AGREEMENT was the issue of range State governments not adhering to obligations and failing to implement existing wildlife laws, which could be addressed to some extent by exploring ways in which international organisations

could work more closely with national governments and local NGOs to encourage greater compliance, requiring wildlife prosecutions to be recorded in CMS national reports, as well as establishing a greater regional presence of CMS and ensuring the support of every CMS Party in combating issues such as poaching and illegal international trade.

149. Other activities that would strengthen the conservation contributionsand international influence of CMS are: i) provision of best-practice guidelines on key elements for Action Plans and Medium Term International Work Programmes, including specification of targets and timescales and the development of SMART indicators to monitor performance; ii) development of collaborative programmes/initiatives on cross-cutting issues (such as poaching and illegal trade, wildlife diseases and climate change) to strengthen collaboration across CMS instruments and with other multilateral instruments/frameworks; iii) strengthened collaboration between CMS instruments and a wider range of institutions, in order to better address issues such as illegal hunting and trade and wildlife diseases; iv) shared administrative and capacity-building services between CMS instruments (such as coordinated fundraising activities and training workshops); v)consideration of establishing an African-based and Southeast Asian-based regional office to support terrestrial mammal instruments and encourage a greater regional presence of CMS; vi) increase efforts towards harmonisation of national reporting between CMS instruments (including the adoption of online reporting) and harmonisation of information provision across MEAs; vii) development of indicators for measuring the overall performance and impact of CMS instruments and their contributions to NBSAPs.

150. The outcome of consultations with range States and stakeholders highlighted that many considered that attention should be focused on making the existing instruments a success, and that the adoption of any new CMS instruments should only proceed if there is strong interest and support from range States and if they can be adequately funded and resourced.

151. Eighteen terrestrial mammal taxa included in the Appendices are not covered by a CMS instrument and five species only have part of their geographic range covered by a CMS instrument. Priorities to cover the remaining globally threatened taxa include i) the development of a Sahelo-Saharan Megafauna Concerted Action, including geographical extension to the Horn of Africa (thereby including the entire range of *Equus grevyi*and part of the ranges of *Ammotragus lervia*, *Acinonyx jubatus* and *Lycaon pictus*), ii) geographical extension of the Central Eurasian Aridland Concerted Action to include the Arabian Peninsula (thereby including *Gazella erlangeri* and *Gazella gazella*), and iii) development of a Subsaharan African Megafauna Initiative (thereby including part of the ranges of*Acinonyx jubatus*,*Lycaon pictus, Loxodonta cyclotis* and *Loxodonta africana*). Through establishment/revision of these three Multispecies Initiatives, all but two globally threatened mammals currently listed in the CMS Appendices (Critically Endangered*Bos sauveli* andEndangered *Lontra provocax*) would be covered by an instrument. In addition, strengthening the Central Eurasian Aridland Concerted Action would protect many additional threatened mammals not yet listed in the CMS Appendices, including four species proposed in Mongolia's 2011 national report.

152. Given the high conservation interest of African elephants, the increasing threats to forests of the Congo Basin and that the illegal trade in ivory requires international cooperation, establishing a CMS instrument for Central Africa's elephants is a clear priority. Various options include extension of the West African Elephant MoU or the Gorillas AGREEMENT, creation of a new single-species instrument or inclusion under a new Subsaharan African Megafauna Initiative. However, the chosen option should await the outcome of the separate study on 'Analysing gaps and options for elephants in Central Africa', in order to establish the most feasible solution.

153. Five bat species in Africa, two in Asia and one in South and Central America are listed in the CMS Appendices but are not covered by an instrument, although none are globally threatened. However, around one quarter of the world's bat species are thought to be globally threatened, and development of new Multispecies Initiatives could encourage Parties to suggest the listing of additional species and stimulate research and action. A new African Bat Initiative may have the greatest chance of success, given that many African countries are already Party to CMS or signatory to its agreements. There is uncertainty over the level of interest in establishing a new Pan-American Bat Initiative, a Southeast Asian Bat Initiative or a Central and South Asian Bat Initiative, given that CMS has typically been less active in these regions.

154. Options suggested for the remaining species not yet coved by a CMS instrument were: extension of the Bukhara Deer MoU to include Afghanistan (which appears to be already in motion); development of a South and Southeast Asian Megafauna Initiative for *Bos sauveli* (Critically Endangered and possibly extinct); development of two single-species instruments or a South American Megafauna Initiative for *Lontra provocax*(Endangered)and*Vicugna vicugna* (Least Concern); and development of a single-species instrument for *Cervus elaphus barbarus* (Least Concern).

6. References

AfESG and WWF. 2005. *Strategy for the conservation of West African Elephants. Updated March 2005*.First Meeting of the Signatories to the Memorandum of Understanding Concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*). Accra, Ghana, 30-31 March 2009. UNEP/CMS/WAE1/Inf.1.

Andriafidison, D, Cardiff, S. G., Goodman, S. M, Hutson, A. M., Jenkins, R. K. B., Kofoky, A. F., Racey, P. A, Ranivo, J., Ratrimomanarivo, F. H., and Razafimanahaka, H. J. 2008. *Otomops madagascariensis*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2011.

Ankouz, M., Müller-Helmbrecht, A., Beudels-Jamar, R. C., and de Smet, K. 2003. *Proceedings of the second regional seminar on the conservation and restoration of Sahelo-Saharan Antelopes*. Agadir, Morocco, May 2003. CMS Technical Series Publication No. 8. UNEP/CMS Secretariat, Bonn, Germany, pp. 333.

Asner, G. P., Knapp, D. E., Broadbent, E. N., Oliveira, P. J. C., Keller, M., and Silva, J. N. 2005. Selective logging in the Brazilian Amazon.*Science*, 310 (5747): 480-482.

Aulagnier, S., Paunovic, M., Karatas, A., Palmeirim, J., Hutson, A. M., Spitzenberger, F., Juste, J., and Benda, P. 2008. *Tadarida teniotis*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2011.

Baillie, J. E. M., Hilton-Taylor, C., and Stuart, S. N. 2004.*2004 IUCN Red List of threatened species: a global species assessment*.IUCN Species Survival Commission, Cambridge.

Barquez, R., Diaz, M., Gonzalez, E., Rodriguez, A., Incháustegui, S., and Arroyo-Cabrales, J. 2008. *Tadarida brasiliensis*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2011.

Bauer, H., Nowell, K. and Packer, C. 2008. *Panthera leo*. In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1.URL: www.iucnredlist.org Accessed: 13-9-2011.

Bekenov, A. B., Grachev, I. A., and Milner-Gulland, E. J. 1998. The ecology and management of the Saiga antelope in Kazakhstan.*Mammal Review*, 28 (1): 1-52.

Bennett, E. L. (2002). Is there a link between wild meat and food security? *Conservation Biology* 16: 590–592.

Bennett, A.F. and Saunders, D.A. 2010. *Habitat fragmentation and landscape change*. In Sodhi, N.S. and Ehrlich, P.R., Conservation Biology for All.Oxford University Press. Pp. 88-106.

Bermejo, M., RodrÆguez-Teijeiro, J. D., Illera, G., Barroso, A., Vila, C., and Walsh, P. D. 2006. Ebola outbreak killed 5000 gorillas. *Science*, 314 (5805): 1564.

Beudels, R. C., Devillers, P., Lafontaine, R.-M., Devillers-Terschuren, J., and Beudels, M.-O. 2005. *Sahelo-Saharan antelopes. Status and perspectives. Report on the conservation status of six Sahelo-Saharan Antelopes*. CMS SSA Concerted Action. 2nd edition.CMS Technical Series Publication No. 11.UNEP/CMS Secretariat, Bonn, Germany.

Beudels, R. C., Devillers, P., Lafontaine, R.-M., Devillers-Terschuren, J., and Beudels, M.-O. 2006. *Sahelo-Saharan Antelopes. Status and perspectives*.Second edn.UNEP/CMS Secretariat , Bonn, Germany.

Beudels-Jamar, R. C., Lafontaine, R.-M., Devillers, P., Redmond, I., Devos, C., and Beudels, M.-O. 2008. *Gorilla. Report on the conservation status of Gorillas.*CMS Technical Series Publication No. 17.UNEP/CMS Secretariat, Bonn, Germany.

Blake, S., Strindberg, S., Boudjan, P., Makombo, C., Bila-Isia, I., Ilambu, O., Grossmann, F., Bene-Bene, L., De Semboli, B., and Mbenzo, V. 2007. Forest elephant crisis in the Congo Basin.*PLoS Biology*, 5 (4).

Blanc, J. 2008. *Loxodonta africana*. In: IUCN 2010, IUCN Red List of threatened species. Version 2010.4. URL: www.iucnredlist.org Accessed: 19-5-2011.

Blanc, J. J., Barnes, R. F. W., Craig, G. C., Douglas-Hamilton, I., Dublin, H., Hart, J. A., and Thouless, C. R. 2005. Changes in elephant numbers in major savanna populations in eastern and southern Africa.*Pachyderm*, 38: 19-28.

Blanc, J. J., Barnes, R. F. W., Craig, G. C., Dublin, H. T., Thouless, C. R., Douglas-Hamilton, I., and Hart, J. A. 2007. *African Elephant status report 2007: an update from the African Elephant Database*. Occasional paper series of the IUCN Species Survival Commission, No. 33. IUCN/SSC African Elephant Specialist Group. IUCN, Gland, Switzerland. URL: www.african-elephant.org/aed/aesr2007.html .

Blom, A., van Zalinge, R., Mbea, E., Heitkonig, I. M. A., and Prins, H. H. T. 2004. Human impact of wildlife populations within a protected Central African forest.*African Journal of Ecology*, 42: 23-31.

BMU. 2009. *Gorillas - gentle giants in need. Frankfurt Declaration on Gorilla Conservation*. Ed: Federal Ministry for the Environment,Nature Conservation and Nuclear Safety (BMU). Bonn, Germany.

Breitenmoser, U., Alizadeh, A., and Breitenmoser-Wuersten, C. 2009. *Conservation of the asiatic cheetah, its natural habitat and associated biota in the I.R. of Iran*. CACP. Tehran, Iran. Project Number IRA/00/G35.Terminal Evaluation Report.44 pp.

Campbell, A., Kapos, V., Scharlemann, J. P. W., Bubb, P., Chenery, A., Coad, L., Dickson, B., Doswald, N., Khan, M. S. I., Kershaw, F., and Rashid, M. 2009. *Review of the Literature on the Links between Biodiversity and Climate Change: Impacts, Adaptation and Mitigation.*Secretariat of the Convention on Biological Diversity. Montreal.

Cassinello, J., Cuzin, F., Jdeidi, T., Masseti, M., Nader, I., and de Smet, K. 2008. *Ammotragus lervia*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 18-5-2011.

CBD. 2011a. Liaison Group of Biodiversity-related Conventions URL: www.cbd.int/blg/ Accessed: 15-6-2011.

CBD 2011b.Thematic programmes and cross-cutting issues. URL: www.cbd.int/programmes/ Accessed: 12-7-2011.

CBD Secretariat. 2009. Connecting biodiversity and climate change mitigation and adaptation: Report of the Second Ad Hoc Technical Expert Group on biodiversity and climate change,Montreal. Convention on Biological Diversity Technical Series No. 41.

CBFP. 2011a. Objectives and working structure URL: http://www.pfbc-cbfp.org/objectifs_en.html Accessed: 8-6-2011a.

CBFP. 2011b. Three complementary institutions: COMIFAC-CBFP-CBFP Facilitation URL: http://www.pfbc-cbfp.org/three-complementary-institutions.html Accessed: 8-6-2011b.

Charruau, P., Fernandes, C., Orozco-ter Wengel, P., Peters, J., Hunter, L., Ziaie, H., Jourabchian, A., Jowkar, H., Schaller, G., Ostrowski, S., Vercammen, P., Grant, C. C. H. B., Schlötterer, C., Kotze, A., Geigl, E.-M., Walzer, C., and Burger, P. A. 2011. Phylogeography, genetic structure and population divergence time of cheetahs in Africa and Asia: evidence for long term geographic isolates. *Molecular Ecology*, 20: 706-724.

Chundawat, R.S., Habib, B., Karanth, U., Kawanishi, K., Ahmad Khan, J., Lynam, T., Miquelle, D., Nyhus, P., Sunarto, S., Tilson, R. and Sonam Wang 2010.*Panthera tigris.* In: IUCN 2011. IUCN Red List of Threatened Species.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

CITES. 1973. *Convention on International Trade in Endangered Species of Wild Fauna and Flora.* Washington D.C.

CITES. 2007. *Consideration of proposals for amendment of Appendices I and II: Inclusion of Cervus elaphus barbarus (Atlas deer) in Appendix I*. Fourteenth meeting of the CITES Conference of the Parties, The Hague, Netherlands, 3-15 June 2007. COP14 Prop. 9.

CITES. 2011. MIKE and ETIS URL: http://www.cites.org/eng/prog/mike_etis.shtml Accessed: 8-6-2011.

CITES/MIKE, TRAFFIC, and UNEP-WCMC. 2011. *Status of elephant populations, levels of illegal killing and the trade in ivory: a report to the Standing Committee of CITES*. 61st meeting of the CITES Standing Committee, Geneva, Switzerland, 15-19 August 2011. SC61 Doc. 44.2 Annex 1.

Clark, C. J., Poulsen, J. R., Malonga, R., and Elkan, P. W. 2009. Logging concessions can extend the conservation estate for Central African tropical forests. *Conservation Biology*, 23 (5): 1281-1293.

CMS. 1979. *Convention on the Conservation of Migratory Species of Wild Animals*. Bonn, Germany. UNEP/CMS/Inf.10.1.E.

CMS and CITES. 2009. *Joint meeting of the Memorandum of Understanding under the Convention on Migratory Species (CMS) concerning Conservation Measures for the West African Populations of the African Elephant (Loxodonta africana) and the Steering Committee of the Monitoring the Illegal Killing of Elephants Programme (CITES/MIKE) for West Africa. Declaration (summary) of the meeting*. Accra, Ghana, 1 April 2009.

Coad, L., Burgess, N. D., Loucks, C., Fish, L., Scharlemann, J. P. W., Duarte, L., and Besançon, C. 2009. *The ecological representativeness of the global protected areas estate in 2009: progress towards the CBD 2010 target.*UNEP-WCMC, WWF-US and ECI, University of Oxford.

COMIFAC. 2005. *Treaty on the conservation and sustainable management of forest ecosystems in Central Africa and to establish the Central African Forests Commission*. Brazzaville, Republic of Congo.

Council of Europe. 1979. *Convention of the Conservation of European Wildlife and Natural Habitats*.

Council of Europe. 2011a. Bern Convention on the Conservation of European Wildlife and Natural Habitats URL: http://www.coe.int/t/dg4/cultureheritage/nature/bern/default_en.asp Accessed: 10-5-2011a.

Council of Europe.2011b. Convention on the Conservation of European Wildlife and Natural Habitats. CETS No. 104 URL: http://conventions.coe.int/Treaty/Commun/ChercheSig.asp?NT=104&CM=8&DF=&CL=ENG Accessed: 8-6-2011b.

Council of Europe 2011c.*The Emerald Network: a tool to protect Europe's natural habitats*. URL: http://www.coe.int/t/dg4/cultureheritage/nature/EcoNetworks/ID9306_Plaquette_OK_AN_BD.pdf

Delucchi, M.A. 2010. Impacts of biofuels on climate change, water use, and land use. *Annals of the New York Academy of Sciences* 1195: 28-45.

Devillers, P. 2007. *Central Eurasian Aridland Concerted Action*. 14th meeting of the CMS Scientific Council, Bonn, Germany, 14-17 March 2007. CMS/ScC14/Doc.24.

Devillers, P. 2008. *Operational instruments of the Convention on Migratory Species*. Ninth meeting of the Conference of the Parties, Rome, 2008. UNEP/CMS/Conf.9.16.

Dubourg-Savage, M.-J., Rodrigues, L., Santos, H., Georgiakakis, P., Papadatou, E., Bach, L., and Rydell, J. 2011.*Pattern of bat fatalities at wind turbines in Europe comparing north and south*.Poster presentation at the Conference on Wind energy and Wildlife impacts, May 2011, Trondheim, Norway

Dudley, J.P., Ginsberg, J.R., Plumptre, A.J., Hart, J.A. and Campos, L.C. 2002. Effects of war and civil strife on wildlife and wildlife habitats.*Conservation Biology* 16(2): 319-329.

Durant, S., Marker, L., Purchase, N., Belbachir, F., Hunter, L., Packer, C., Breitenmoser-Wursten, C., Sogbohossou, E., and Bauer, H. 2008. *Acinonyx jubatus*. In: IUCN 2010, IUCN Red List of Threatened Species. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

EUROBATS. 1991. *Agreement on the conservation of bats in Europe*. Treaty Series No. 9, 1994, HMSO Publications Centre, London.

EUROBATS 2010a.*Guidelines for the prevention, detection and control of lethal fungal infections in bats*.Resolution 6.6 of the Sixth Session of the Meeting of the Parties to The Agreement on the Conservation of Populations of European Bats. EUROBATS.MoP6.Record.Annex9.

EUROBATS.2010b. *Record of the Advisory Committee Meeting*.4th meeting of the Standing Committee and 15thMeeting of the Advisory Committee. Bonn, Germany, 3-6 May 2010. EUROBATS.StC4-AC15.Record-AC.

EUROBATS. 2010c. *Record of the meeting*. 6th session of the Meeting of Parties, Prague, Czech Republic, 20-22 September 2010.EUROBATS.MoP6.Record.

EUROBATS.2010d. *Resolution 6.10.Synergies between the Agreement and other European treaties for nature conservation*.6thsession of the Meeting of Parties. Prague, Czech Republic, 20-22 September 2010. EUROBATS/MoP6/Record/Annex13.

EUROBATS. 2011a. *General Trust Fund for the conservation of European Bats (BT) and earmarked (counterparts) contributions in support of EUROBATS Secretariat (XF)*. 6thmeeting of the Standing Committee, Bonn, Germany, 22 March 2011. Doc.EUROBATS.StC6.8.

EUROBATS. 2011b. *Overview on voluntary contributions received in the financial year 2010*. 6thMeeting of the Standing Committee, Bonn, Germany, 22 March 2011. Doc.EUROBATS.StC6.7.

EUROBATS. 2011c. *Record of the meeting*. 16th meeting of the Advisory Committee, Tbilisi, Georgia, 4-6 April 2011.EUROBATS.AC16.Record.

EUROBATS. 2011d. *Updated list of Intersessional Working Groups*. 16th meeting of the Advisory Committee, Tbilisi, Georgia, 4-6 April 2011.Doc.EUROBATS.AC16.6.

EUROBATS Secretariat. 2010. *Report on income and expenditure for the financial year 2010 (in EUR)*. 6th Meeting of the Standing Committee, Bonn, Germany, 22 March 2010. Doc.EUROBATS.StC6.6.

European Commission. 2009. White Paper. Adapting to climate change: towards a European framework for action. Commission of the European Communities, Brussels.COM/2009/0147 final.

European Commission.2011a. Invasive Alien Species. URL: http://ec.europa.eu/environment/nature/invasivealien/index_en.htm Accessed 5-6-2011.

European Commission. 2011b. The Habitats Directive URL: http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm Accessed: 10-5-2011.

European Council. 1992. *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora*. Official Journal L 206, 22/07/1992. 0050 pp.

Feh, C., Shah, N., Rowen, M., Reading, R., and Goyal, S. P. 2004. Status and action plan for the asiatic wild ass (*Equus hemionus*), in Moehlman, P. D., (ed.), *Equids, zebras, asses and horses. Status survey and conservation action plan*.IUCN, Gland, Switzerland and Cambridge, UK.62-71.

Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., hl, C. A., Donald, P. F., and Phalan, B. 2008. How will oil palm expansion affect biodiversity? *Trends in Ecology and Evolution*, 23 (10): 538-545.

Francis, C. and Maeda, K. 2008. *Tadarida latouchei*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2011.

Goodman, S. M., Andrifidison, D., Antrianaivoarivelo, R., Cardiff, S. G., Ifticene, E., Jenkins, R. K. B., Kofoky, A., Mbohoahy, T., Rakotondravony, D., Ranivo, J., Ratrimomanarivo, F., Razafimanahaka, J., and Racey, P. A. 2005. The distribution and conservation of bats in the dry regions of Madagascar.*Animal Conservation*, 8: 153-165.

Government of Independent African States. 1968. *African Convention on the Conservation of Nature and Natural Resources*.

GRASP. 2011. Great Apes Survival Partnership URL: http://www.unep.org/grasp/index.asp Accessed: 8-6-2011.

Hansen, M. C., Stehman, S. V., Potapov, P. V., Loveland, T. R., Townshend, J. R. G., DeFries, R. S., Pittman, K. W., Arunarwati, B., Stolle, F., Steininger, M. K., Carroll, M., and DiMiceli, C. 2008. Humid tropical forest clearing from 2000 to 2005 quantified by using multitemporal and multiresolution remotely sensed data.*Proceedings of the National Academy of Sciences of the United States of America*, 105 (27): 9439-9444.

Hansen, M. C., Stehman, S. V., and Potopov, P. V. 2010. Quantification of global forest cover loss. Proceedings of the Natural Academy of Sciences 107 (19): 8650-8655.

Hanson, T., Brooks, T.M., Da Fonseca, G.A.B., Hoffmann, M., Lamoreux, J.F., Machlis, G., Mittermeier, C.G., Mittermeier, R.A. and Pilgrim, J.D. 2009.Warfare in biodiversity hotspots.*Conservation Biology* 23(3): 578-587.

Hare, J. 2008.*Camelus ferus*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2008.

Harris, R. B. and Leslie, D. 2008.*Bos mutus*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 18-5-2011.

Harris, R.B. and Reading, R. 2008. *Ovis ammon*.In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

Henttonen, H. and Tikhonov, A. 2008.*Rangifer tarandus*. In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

Huijbregts, B., De Wachter, P., Sosthène, L., Obiang, N., and Akou, M. E. 2003. Ebola and the decline of gorilla *Gorilla gorilla* and chimpanzee *Pan troglodytes* populations in Minkebe Forest, north-eastern Gabon. *Oryx*, 4: 1-7.

Hutson, A., Spitzenberger, F., Aulagnier, S., and Nagy, Z. 2006a. *Rhinolophus blasii* [Regional assessment], in IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 31-5-2011a.

Hutson, A., Spitzenberger, F., Juste, J., Aulagnier, S., Fernandes, M., and Alcaldé, J. T. 2006b. *Rhinolophus euryale* [Regional assessment]. In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 31-5-2011b.

Hutson, A., Spitzenberger, F., Juste, J., Aulagnier, S., Fernandes, M., and Alcaldé, J. T. 2006c. *Rhinolophus ferrumequinum* [Regional assessment].In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 31-5-2011c.

Hutson, A., Spitzenberger, F., Juste, J., Aulagnier, S., Fernandes, M., and Alcaldé, J. T. 2006d. *Rhinolophus hipposideros* [Regional assessment].In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 31-5-2011d.

Hutson, A., Spitzenberger, F., Juste, J., Aulagnier, S., Fernandes, M., and Alcaldé, J. T. 2006e. *Rhinolophus mehelyi* [Regional assessment], in IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 31-5-2011e.

Hutson, A. Aulagnier S., Benda, P., Karatas, A., Palmeirim, J., and Paunovic, M. 2008. *Miniopterus schreibersii*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org

Hutson, A. M., Mickleburgh, S. P., and Racey, P. A. 2001.*Microchiropteran bats: global status survey and conservation action plan*. IUCN/SSC Chiroptera Specialist Group. Gland, Switzerland and Cambridge, UK.

IPCC 2007.*Climate Change 2007: Impacts, Adaptation and Vulnerability*. Cambridge University Press, Cambridge.

IRSNB. 2008. Sahelo-Saharan antelopes - Concerted Action - CMS URL: http://www.kbinirsnb.be/cb/antelopes/index.htm Accessed: 10-6-2011.

Ishida, Y., Oleksyk, T. K., Georgiadis, N. J., David, V. A., Zhao, K., Stephens, R. M., Kolokotronis, S.-O., and Roca, A. L. 2011. Reconciling apparent conflicts between mitochondrial and nuclear phylogenies in African elephants.*PLoS Biology*, 6 (6): e20642.

IUCN. 2004. *An introduction to the African Convention on the Conservation of Nature and Natural Resources*. IUCN, Gland, Switzerland.

IUCN. 2010. *IUCN Red List of Threatened Species*. Version 2010.4. URL: www.iucnredlist.org Accessed: 2011.

IUCN SSC Antelope Specialist Group. 2008a. *Gazella dorcas*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 18-5-2011a.

IUCN SSC Antelope Specialist Group. 2008b. *Gazella gazella*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 18-5-2011b.

IUCN SSC Antelope Specialist Group. 2008c. *Oryx dammah*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011c.

IUCN/SSC Antelope Specialist Group and Saiga Conservation Alliance. 2010. *Revised overview report*. Second Meeting of the Signatories to the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope, Ulaanbaatar, Mongolia, 9-10 September 2010.UNEP/CMS/SA-2/Report Annex 4.

Jackson, R., Mallon, D., McCarthy, T., Chundaway, R. A., and Habib, B. 2008.*Panthera uncia*.In IUCN 2010, *IUCN Red List of Threatened Species*.Version 2010.4. URL: www.iucnredlist.org Accessed: 17-5-2011.

Jacobs, D., Cotterill, F. P. D., Taylor, P. J., and Griffin, M. 2008. *Miniopterus natalensis*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Jenkins, R. K. B. and Rakotoarivelo, A. R. 2008.*Miniopterus majori*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Jiménez, J., Guineo, G., Corti, P., Smith, J. A., Flueck, W., Vila, A., Gizejewski, Z., Gill, R., McShea, B., and Geist, V. 2008. *Hippocamelus bisulcus*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 30-5-2011.

Kingston, T. 2010. Research priorities for bat conservation in Southeast Asia: a consensus approach. *Biological Conservation*, 19 (2): 471-484.

Laporte, N., Stabach, J. A., Grosch, R., Lin, T. S., and Goetz, S. J. 2007.Expansion of industrial logging in Central Africa.*Science*, 316: 1451.

Laurance, W. F., Croes, B. M., Tchignoumba, L., Lahm, S. A., Alonso, A., Lee, M. E., Campbell, P., and Ondzeano, C. 2006. Impacts of roads and hunting on Central African rainforest mammals.*Conservation Biology*, 20 (4): 1251-1261.

Laurance, W.F. 2010.*Habitat destruction: death by a thousand cuts*. In Sodhi, N.S. and Ehrlich, P.R., Conservation Biology for All.Oxford University Press. Pp. 73-87.

Lee, R., Filgueira, B., Caddell, R., and Frater, L. 2010. *Review of the current organisation and activities of CMS and the CMS Family. First step of the Inter-Sessional Future Shape Process*. Environmental Regulation and Information Centre Ltd.

Lee, R., Filgueira, B., and Frater, L. 2011. *Convention on Migratory Species: Future Shape phase II options report*. Environmental Regulation and Information Centre Ltd (ERIC), UK.

Lichtenstein, G., Baldi, R., Villalba, L., Hoces, D., Baigún, R., and Laker, J. 2008. *Vicugna vicugna*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Lovari, S., Herrero, J., Conroy, J., Maran, T., Giannatos, G., Stubbe, M., Aulagnier, S., Jdeidi, T., Masseti, M., Nader, I., de Smet, K., and Cuzin, F. 2008.*Cervus elaphus*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Lovejoy, T.E. 2010.*Climate change*.In Sodhi, N.S. and Ehrlich, P.R., Conservation Biology for All.Oxford University Press. Pp. 153-162.

Low, B., Muoria, P., Parker, G., and Sundaresan, S. 2008. *Report on the national survey of Grevy's Zebra in Kenya. 24-29 November 2008*. Grevy's Zebra Technical Committee.29 pp.

Lusaka Agreement. 1994. *Lusaka Agreement on Co-operative Enforcement Operations directed at Illegal Trade in Wild Fauna and Flora. Adopted at Lusaka on 8 September 1994*.Accessed 8-6-2011.

Lusaka Agreement. 2011. Lusaka Agreement on Co-operative Enforcement Operations directed at Illegal Trade in Wild Fauna and Flora URL: http://www.lusakaagreement.org/about.html Accessed: 8-6-2011.

Maeda, K., Sano, A., Smith, A. T., and Johnston, C. H. 2008.*Tadarida insignis*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Mahmut, H., Ganzorig, S., Onuma, M., Masuda, R., SUZUKI, M., and Ohtaishi, N. 2001. A preliminary study of the genetic diversity of Xinjiang Tarim red deer (*Cervus elaphus yarkandensis*) using the microsatellite DNA method. *Japanese Journal of Veterinary Research*, 49 (3): 231-237.

Mallon, D. P. 2008a. *Gazella subgutturosa*. In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011a.

Mallon, D. P. 2008b. *Procapra gutturosa*. In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011b.

Mallon, D. P. 2008c. *Saiga tatarica* ssp.*mongolica*. In IUCN 2010, *IUCN Red List of Threatened Species* URL: www.iucnredlist.org Accessed: 19-5-2011c.

Mallon, D. P. 2008d. *Saiga tatarica* ssp.*tatarica*. In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 19-5-2011d.

Mallon, D. P. 2008e. *Saiga tatarica*. In: IUCN 2009. IUCN Red List of Threatened Species.Version 2010.4. URL: www.iucnredlist.org Accessed: 19-5-2011e.

Mallon, D. P. and Cuzin, F. 2008. *Gazella cuvieri*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Mallon, D. P., Cuzin, F., de Smet, K., and Hoffmann, M. 2008.*Gazella leptoceros*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Marnell, F. and Presetnik, P. 2010. *Protection of overground roosts for bats (particularly roosts in buildings of cultural heritage importance)*. UNEP/EUROBATS Secretariat, Bonn, Germany, pp. 57. EUROBATS Publication Series No. 4.

MEA. 2005. *Ecosystems and human well-being: Biodiversity synthesis*. Millennium Ecosystem Assessment, World Resources Institute, Washington, DC.

McNutt, J. W., Mills, M. G. L., McCreery, K., Rasmussen, G., Robbins, R., and Woodroffe, R. 2008. *Lycaon pictus*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Mickleburgh, S., Hutson, A. M., Bergmans, W., Fahr, J., and Racey, P. A. 2008a.*Eidolon helvum*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 16-5-2011a.

Mickleburgh, S., Hutson, A. M., Bergmans, W., Fahr, J., and Taylor, P. J. 2008b.*Otomops martiensseni*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011b.

Mickleburgh, S., Waylen, K., and Racey, P. 2009. Bats as bushmeat: a global review. *Oryx*, 43 (02): 217-234.

Mickleburgh, S. P., Hutson, A. M., and Racey, P. A. 2002.A review of the global conservation status of bats.*Oryx*, 36 (1): 18-34.

Miles, L., Caldecott, J., and Nellemann, C. 2005. Challenges to great ape survival, in Caldecott, J. & Miles, L., (eds.), *World atlas of great apes and their conservation*.UNEP World Conservation Monitoring Centre.University of California Press, Berkeley, USA.217-241.

Miller, S. D., Rottmann, J., Raedeke, K. J., and Taber, R. D. 1983. Endangered mammals of Chile: status and conservation. *Biological Conservation*, 25 (4): 335-352.

Milner-Gulland, E. J., Kholodova, M. V., Bekenov, A., Bukreeva, O. M., Grachev, I. A., Amgalan, L., and Lushchekina, A. A. 2001. Dramatic declines in saiga antelope populations. *Oryx*, 35 (04): 340-345.

Mitchell-Jones, A. J., Bihari, Z., Masing, M., and Rodrigues, L. 2007.*Protecting and managing underground sites for bats*. UNEP/EUROBATS Secretariat, Bonn, Germany, pp. 38. EUROBATS Publication Series No. 2.

Moehlman, P. D., Rubenstein, D. I., and Kebede, F. 2008a.*Equus grevyi*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011a.

Moehlman, P. D., Shah, N., and Feh, C. 2008b.*Equus hemionus*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org

Nasi, R., Brown, D., Wilkie, D., Bennett, E., Tutin, C., van Tol, G. and Christophersen, T. 2008. *Conservation and use of wildlife-based resources: the bushmeat crisis*. Secretariat of the Convention on Biological Diversity, Montreal, and Center for International Forestry Research (CIFOR), Bogor.Technical Series no. 33.

Newby, J. and Wacher, T. 2008. *Addax nasomaculatus*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Newby, J., Wacher, T., Lamarque, F., Cuzin, F., and de Smet, K. 2008. *Nanger dama*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Orr, B. J. 2011. *Scientific review of the UNCCD provisionally accepted set of impact indicators to measure the implementation of strategic objectives 1, 2 and 3*. White Paper Version I, 04 February 2011. Office of Arid Lands Studies, University of Arizona.

PCMM. 2011. Program for the Conservation of Mexican Bats URL: http://pcmm.bioconciencia.org.mx/eng/eng_index.html Accessed: 5-6-2011.

Pereladova, O. 2011.*Restoration of Bukhara deer in Central Asia, 1999-2010: Uzbekistan, Turkmenistan, Tajikistan, Kazakhstan*. WWF Central Asia Programme. URL: http://www.largeherbivore.org/assets/Trip-documents-and-photos/CMS-Bukhara-Deer-present2011.pdf .

Peres, C.A. 2010.*Overexploitation*.In Sodhi, N.S. and Ehrlich, P.R., Conservation Biology for All.Oxford University Press. Pp. 107-130.

PRAIS. 2010. UNCCD PRAIS (Performance Review and Assessment of Implementation System) portal URL: http://www.unccd-prais.com/ Accessed: 6-7-2011.

Purchase, G., Marker, L., Marnewick, K., Klein, R., and Williams, S. 2007. Regional assessment of the status, distribution and conservation needs of cheetahs in southern Africa. *Cat News*: 44-46.

Ray, J. C., Hunter, L., and Zigouris, J. 2005. *Setting conservation and research priorities for larger African carnivores*.Wildlife Conservation Society. New York, U.S.A. WCS Working Paper No. 24. 216 pp.

Reading, R. & Shank, C. 2008.*Capra sibirica*.In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

Robbins, M. and Williamson, L. 2008.*Gorilla beringei*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 18-5-2011.

Robinson, R. A., Learmonth, J. A., Hutson, A. M., Macleod, C. D., Sparks, T. H.; Leech, D. I.; Pierce, G. J.; Rehfisch, M.M. and Crick, H. Q. P. 2005. Climate change and migratory species.British Trust for Ornithology, Thetford, UK.

Robinson, R. A., Crick, H. Q. P., Learmonth, J. A., Maclean, I. M. D., Thomas, C. D., Bairlein, F., Forchhammer, M. C., Francis, C. M., Gill, J. A., Godley, B. J., Harwood, J., and Hays, G. C. 2008. Travelling through a warming world: climate change and migratory species.*Endangered Species Research*.

Rodrigues, L., Bach, L., Dubourg-Savage, M.-J., Goodwin, J., and Harbusch, C. 2008.*Guidelines for consideration of bats in wind farm projects*. UNEP/EUROBATS Secretariat, Bonn, Germany, pp. 51. EUROBATS Publication Series No. 3.

Rohland, N., Reich, D., Mallick, S., Meyer, M., Green, R. E., Georgiadis, N. J., Roca, A. L., and Hofreiter, M. 2010. Genomic DNA sequences from mastodon and woolly mammoth reveal deep speciation of forest and savanna elephants. *PLoS Biology*, 8 (12): e1000564.

Rosenzweig, C., Casassa, G., Karoly, D.J., Imeson, A., Liu, C., Menzel, A., Rawlins, S., Root, T.L., Seguin, B. and Tryjanowski, P. 2007. Assessment of observed changes and responses in natural and managed systems. In Parry, M.L., Canziani, O.F., Palutikof, J.P., vander Linden, P.J. and Hanson, C.E. (eds) *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*.Cambridge University Press, Cambridge, United Kingdom.

Saleh, M. A., Helmy, I., and Giegengack, R. 2001. The Cheetah, *Acinonyx jubatus* (Schreber, 1776) in Egypt (Felidae, Acinonychinae).*Mammalia*, 65 (2): 177-194.

SCF. 2011. *Sahara Conservation Fund*. Saharan Conservation Fund, Switzerland. URL: http://saharaconservation.org/ Accessed 20-6-2011a.

Sepulveda, M., Franco, M., Medina, G., Fasola, L., and Alvarez, R. 2008. *Lontra provocax*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Shackleton, D. M. and the IUCN/SSC Caprinae Specialist Group 1997.*Wild sheep and goats and their relatives.Status survey and conservation action plan for Caprinae*.IUCN, Gland, Switzerland and Cambridge, UK.390 pp.

Shah, N., St.Louis, A., Huibin, Z., Bleisch, W., van Gruissen, J., and Qureshi, Q. 2008.*Equus kiang*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

Smith, R.H. 1998. Terrestrial mammals.In Calow, P. (Ed.), Handbook of ecotoxicology.Blackwell Science. Pp. 339-352.

Smith, K.F., Acevedo-Whitehouse, K. and Pedersen, A.B. 2009.The role of infectious diseases in biological conservation.*Animal Conservation* 12: 1-12.

Stephenson, P. J. 2007. *WWF species action plan: African elephant, 2007-2011*. WWF. Gland, Switzerland.

Stokes, E. J., Strindberg, S., Bakabana, P. C., Elkan, P. W., Iyenguet, F. C., Madzoké, B., Malanda, G.-A.F., Mowawa, B. S., Moukoumbou, C., Ouakabadio, F. K., and Rainey, H. J. 2010. Monitoring Great Ape and elephant abundance at large spatial scales: measuring effectiveness of a conservation landscape. *PLoS Biology*, 5 (4): e10294.

Strassburg, B., Creed, A., and Ashton, R. 2009. *Estimating Tropical Forest Carbon at Risk of Emission from Deforestation Globally*. Policy Brief 3,TheTerrestrial Carbon Group Project.

Timmins, R. J., Hedges, S., and Duckworth, J. W. 2008. *Bos sauveli*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 17-5-2011.

UNCCD. 2010. *UNCCD Action Programmes*. URL: http://www.unccd.int/actionprogrammes/menu.php Accessed 10-07-2011.

UNEP Global Environmental Alert Service. 2011. *The rush for land and its potential environmental consequence*. UNEP Global Environmental Alert Service, July 2011. URL: http://na.unep.net/geas/archive/pdfs/Jul_11_Land_Rush.pdf .

UNEP/CMS. 1999. *Conservation measures for Sahelo-Saharan antelopes: Action Plan and status reports*. CMS Technical Series Publication No. 4, UNEP/CMS Secretariat. Bonn, Germany.

UNEP/CMS. 2002a. *Action Plan concerning conservation and restoration of the Bukhara Deer (Cervus elaphus bactrianus)*. Bonn, Germany.

UNEP/CMS. 2002b. *Memorandum of Understanding concerning Conservation and Restoration of the Bukhara Deer (Cervus elaphus bactrianus)*. Bonn, Germany.

UNEP/CMS. 2003. *Second seminar on the conservation and restoration of Sahelo-Saharan antelopes and their habitats*. Agadir, Kingdom of Morocco, 1-5 May 2003.

UNEP/CMS. 2005a. *Convention on the Conservation of Migratory Species of Wild Animals: Strategic Plan 2006-2011*. Eighth meeting of the Conference of the Parties, Nairobi, 20-25 November 2005.UNEP/CMS/Resolution 8.2 Annex.

UNEP/CMS.2005b. *Implementation of existing agreements and development of future agreements*. Adopted at the Eighth meeting of the Conference of the Parties, Nairobi, Kenya, 20-25 November 2005. UNEP/CMS/Resolution 8.5.

UNEP/CMS 2005c.Proposals for amendment of Appendices I and II for consideration by the Eighth Meeting of the Conference of the Parties. (UNEP/CMS/Conf. 8.16.)

UNEP/CMS. 2006a. *Action Plan concerting Conservation, Restoration and Sustainable Use of the Saiga Antelope (Saiga tatarica tatarica)*. Bonn, Germany.

UNEP/CMS. 2006b. *Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (Saiga tatarica tatarica), amended 10 September 2010*. Bonn, Germany.

UNEP/CMS. 2006c. *Report of the first meeting of the signatories*. First Meeting of the Signatories to the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (*Saiga tatarica tatarica*). Almaty, Kazakhstan, 25-26 September 2006. CMS/SA-1/Report.

UNEP/CMS. 2007. *Towards the Future Shape of CMS: a discussion paper by the Executive Secretary*. 32nd meeting of the Standing Committee, Bonn, 8-9 November 2007.CMS/StC32/7.

UNEP/CMS. 2008a. *Cooperation between CMS and CITES*. Thirty fourth Standing Committee Meeting, Rome, 30 November 2008.UNEP/CMS/StC34/3.

UNEP/CMS.2008b. *Liaison Group of Biodiversity-Related Conventions*.Ninth meeting of the Conference of the Parties, Rome, 1-5 December 2008. UNEP/CMS/Conf.9.12.

UNEP/CMS. 2008c. *Proceedings of the ninth meeting of the Conference of the Parties Part I*. Conference of the Parties to the Convention on the Conservation of Migratory Species of Wild Animals, ninth meeting, Rome, Italy, 1-5 December 2008. UNEP/CMS/COP9/REPORT.

UNEP/CMS. 2008d. *Review of Article IV Agreements already concluded*. Ninth meeting of the Conference of the Parties, Rome, 1-5 December 2008. UNEP/CMS/Inf/9.15.4.

UNEP/CMS.2008e. *Terrestrial mammals and CMS*.Ninth meeting of the Conference of the Parties, Rome, 1-5 December 2008. UNEP/CMS/Conf.9.28.

UNEP/CMS.2008f. *Text of the Agreement on the Conservation of Gorillas and their Habitats (Gorilla Agreement)*.First meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats, 29th November 2008, Rome, Italy. UNEP/CMS/GOR-MOP1/INF.1.

UNEP/CMS.2009a. *Cross river gorilla Gorilla gorilla diehli. Gorilla Agreement Action Plan*, Revised version of document prepared for the First Meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats. UNEP/CMS/GOR-MOP1/Doc.7b.

UNEP/CMS.2009b. *Eastern lowland gorilla Gorilla beringei graueri. Gorilla Agreement Action Plan*, Revised version of document prepared for the First Meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats. UNEP/CMS/GOR-MOP1/Doc.7c.

UNEP/CMS.2009c. *Medium Term International Work Programme*.First Meeting of the Signatories to the Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*). Accra, Ghana, 30-31 March 2009. UNEP/CMS/WAE1/Report Annex 6.

UNEP/CMS.2009d. *Mountain gorilla Gorilla beringei beringei. Gorilla Agreement Action Plan*, Revised version of document prepared for the First Meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats. UNEP/CMS/GOR-MOP1/Doc.7d.

UNEP/CMS. 2009e. *Report on the First Meeting of the Signatories*. First Meeting of the Signatories to the Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*). Accra, Ghana, 30-31 March 2009. UNEP/CMS/WAE1/Report.

UNEP/CMS.2009f. *Status report of the Year of the Gorilla 2009*. 36thmeeting of the Standing Committee, Bonn, 2-3 December 2009. CMS/StC36/9.

UNEP/CMS.2009g. *Western lowland gorilla Gorilla gorilla gorilla. Gorilla Agreement Action Plan* , Revised version of document prepared for the First Meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats. UNEP/CMS/GOR-MOP1/Doc.7a.

UNEP/CMS.2010a. *2nd meeting of the Inter-Sessional Working Group on the Intersessional Process Regarding the Future Shape of CMS (IWGoFS)*. UN Campus, Langer Eugen, 1-2 July 2010. UNEP/CMS/Inf.10.14.6.

UNEP/CMS. 2010b. *Evaluation of the annual global species campaigns: "Year of the..."*.37th meeting of the Standing Committee, Bonn, 23-24 November 2010.CMS/StC37/20.

UNEP/CMS. 2010c. *Medium term international work programme for the Saiga antelope (2011-2015)*. 2nd Meeting of the Signatories to the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope, Ulaanbaatar, Mongolia, 9-10 September 2010. UNEP/CMS/SA-2/Report Annex 5.

UNEP/CMS.2010d. *Memorandum of Understanding between the Argentine Republic and the Republic of Chile on the Conservation of the South Andean Huemul*. Mar del Plata, Argentina.

UNEP/CMS. 2010e. *Overview report*, Document prepared for the Second Meeting of the Signatories to the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (*Saiga* spp.).UNEP/CMS/SA-2/Doc/6/Add/1/Rev.1.

UNEP/CMS. 2010f. *Report of the Working Group on terrestrial mammals*. 16th meeting of the CMS Scientific Council, 28-30 June 2010. Bonn, Germany. UNEP/CMS/ScC16/Report Annex IX.

UNEP/CMS. 2010g. *Report on the Second Meeting of the Signatories*. Second Meeting of the Signatories to the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope, Ulaanbaatar, Mongolia, 9-10 September 2010.UNEP/CMS/SA-2/Report.

UNEP/CMS. 2010h. *Workshop on the conservation and sustainable use of Saiga antelope: summary report and recommendations*. Urumqi, Xinjiang Uygur Autonomous Region, China, 27-29 September 2010.

UNEP/CMS. 2011a. Bukhara deer MoU: Introduction URL: http://www.cms.int/species/bukhara_deer/bukhara_deer_intro.htm Accessed: 13-6-2011a.

UNEP/CMS. 2011b. *List of range states of migratory species included in the CMS Appendices (as of March 2011)*. URL: http://www.cms.int/pdf/en/CMS_Range_States_by_Species.pdf .

UNEP/CMS. 2011c. *Meeting report: workshop on the implementation and coordination of the Saiga Antelope (Saiga spp.) Memorandum of Understanding (MoU) and other CMS instruments for migratory ungulates in Kazakhstan*. Astana, Kazakhstan,17-18 February 2011.

UNEP/CMS. 2011d. *Parties to the Convention on the Conservation of Migratory Species of Wild Animals and its Agreements as at 1 July 2011*. URL: http://www.cms.int/about/Partylist_eng.pdf .

UNEP/CMS. 2011e. West African elephants URL: www.cms.int/species/elephants/index.htm Accessed: 15-6-2011e.

UNEP/CMS, 2011f.*Outcomes of the 10th Conference of the Parties to the Convention on Biological Diversity (and Decisions relevant to CMS and its Parties)*. Tenth meeting of the Conference of the Parties, Bergen, 20-25 November 2011. UNEP/CMS/Conf.10.26.

UNEP/CMS Secretariat. 1998. *Djerba Declaration.*Seminar on the conservation and restoration of Sahelo-Saharan antelopes, 19-23 February 1998, Djerba, Tunisia.UNEP/CMS Secretariat, Bonn, Germany.

UNEP/CMS Secretariat. 2002. *Cooperation with other bodies: CBD/CMS Joint Work Programmes (2002-2005)*. Seventh meeting of the Conference of the Parties, Bonn, 18-24 September 2002. UNEP/CMS/Inf.7.13.

UNEP/CMS Secretariat 2003. Accords ou Memorandum d'Accord (MdA) au titre de la CMS pour les Antilopes Sahelo-Sahariennes: advantages et désavantages, in*Proceedings of the second regional seminar on the conservation and restoration of Sahelo-Saharan Antelopes.* CMS Technical Series Publication No. 8 Ed. UNEP/CMS Secretariat, Bonn, Germany, pp. 333, Agadir, Morocco, May 2003. 235-242.

UNEP/CMS Secretariat. 2004a. *Options for enhanced cooperation among the biodiversity-related conventions*. Eighth meeting of the Conference of the Parties, Nairobi, 20-25 November 2005. UNEP/CMS/Conf.8.15.

UNEP/CMS Secretariat. 2004b. *Report on a feasibility study on additional bats agreements under CMS*. Twelfth meeting of the Scientific Council. Glasgow, Scotland, United Kingdom, 31 March-3 April 2004. CMS/ScC12/Doc.13.

UNEP/CMS Secretariat. 2005. *Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (Loxodonta africana)*. Bonn, Germany.

UNEP/CMS Secretariat. 2008a. *Major species projects including concerted actions*. 9thmeeting of the Conference of the Parties, 1-5 December 2008, Rome. UNEP/CMS/Conf.9.14/Rev.1.

UNEP/CMS Secretariat. 2008b. *Report of the first Meeting of the Parties to the Agreement on the Conservation of Gorillas and their Habitats*. Rome, Italy, 29 November 2008.

UNEP/CMS Secretariat. 2008c. *Report on CMS activities with partners*. Ninth meeting of the Conference of the Parties, Rome, 1-5 December 2008. UNEP/CMS/Conf.9.23.

UNEP/CMS Secretariat. 2009a. *CMS family guide: the encyclopaedia of the Convention on the Conservation of Migratory Species of Wild Animals. 3rd edition*.UNEP-CMS Secretariat. Bonn, Germany.

UNEP/CMS Secretariat. 2009b. *Financial matters related to coordination of the implementation of the MoU*. First Meeting of the Signatories to the Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*). Accra, Ghana, 30-31 March 2009. UNEP/CMS/WAE1/Doc.8.

UNEP/CMS Secretariat. 2009c. *Report of the Ad hoc meeting of the Gorilla Agreement*. Frankfurt am Main, 11 June 2009, Germany.

UNEP/CMS Secretariat.2010a. *CMS Agreement Summary Sheets*.Convention on Migratory Species. Bonn, Germany.

UNEP/CMS Secretariat. 2010b. *Progress in the development of new agreements*. 37th meeting of the Standing Committee, Bonn, 23-24 November 2010. CMS/StC37/4/Rev.1.

UNEP/CMS Secretariat.2010c.*Report of the Secretariat*.Second Meeting of the Signatories to the Memorandum of Understanding conserning conservation, restoration and sustainable use of the Saiga antelope (Saiga tatarica tatarica), Ulaanbaatar, Mongolia, 7-10 September 2010.UNEP/CMS/SA-2/Doc/4.

UNEP/CMS Secretariat.2011a. *3rd Meeting of the Intersessional Working Group of the process regarding the Future Shape of CMS (ISWGoFS)*.3-4 February 2011, Bonn, Germany.

UNEP/CMS Secretariat.2011b. *Guidelines on the integrations of migratory species into National Biodiversity Strategies and Action Plans (NBSAPs)*. Tenth meeting of the Conference of the Parties, Bergen, 20-25 November 2011. UNEP/CMS/Conf.10.27.

UNEP/CMS Secretariat.2011c. *Outcomes of the 10th Conference of the Parties to the Convention on Biological Diversity (and Decisions relevant to CMS and its Parties)*. Tenth meeting of the Conference of the Parties, Bergen, 20-25 November 2011. UNEP/CMS/Conf.10.26.

UNEP/UNESCO/GRASP.2005a. *Global strategy for the survival of great apes and their habitat*.Great Ape Survival Project.

UNEP/UNESCO/GRASP.2005b. *Kinshasa Declaration on Great Apes*.Kinshasa, Democratic Republic of Congo.

UNESCO. 1971. *The Convention on Wetlands of International Importance especially as Waterfowl Habitat*. 2 February 1971, Ramsar, Iran.UN Treaty Series No. 14583.

UNESCO. 1972. *Convention Concerning the Protection of the World Cultural and Natural Heritage*. 17th Session of the General Conference, Paris, 16 November 1972.

UNESCO. 2011. UNESCO Special themes. URL: www.unesco.org/new/en/unesco/themes/ Accessed 10-7-2011.

UNESCO World Heritage Centre. 2011. World Heritage List URL: http://whc.unesco.org/en/list Accessed: 8-6-2011.

United Nations.1992a. *Convention on Biological Diversity*.

United Nations.1992b. *United Nations Framework Convention on Climate Change*.

United Nations. 1994. *United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*. Paris.

Wacher, T., Newby, J., Houston, P., Spevak, E., Barmou, M., and Issa, A. 2004.*Sahelo-Saharan Interest Group Wildlife Surveys.Tin Toumma & Termit (February–March 2004).* ZSL Conservation Report No. 5. The Zoological Society of London, London.70 pp.

Walsh, P. D., Abernethy, K. A., Bermejo, M., Beyers, R., De Wachter, P., Akou, M. E., Huijbregts, B., Mambounga, D. I., Toham, A. K., Kilbourn, A., Lahm, S. A., Latour, S., Maisels, F., Mbina, C., Mihindou, Y., Obiang, N., Effa, E. N., Starkey, M., Telfer, P., Thibault, M., Tutin, C. E. G., White, L. J. T., and Wilkie, D. S. 2003. Catastrophic ape decline in western equatorial Africa.*Nature*, 422 (6932): 611-614.

Walsh, P. D, Tutin, C. E. G, Oates, J. F., Baillie, J. E. M., Maisels, F., Stokes, E. J., Gatti, S., Bergl, R. A., Sunderland-Groves, J., and Dunn, A. 2008. *Gorilla gorilla*.In IUCN 2010, *IUCN Red List of Threatened Species*. Version 2010.4 URL: www.iucnredlist.org Accessed: 30-5-2011.

Warren, R., Price, J., Fischlin, A., Santiago de la Nava Santos, and Midgley, G. 2011. Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise. *Climate change*, 106 (2): 141-177.

Weinberg, P. 2008a. *Capra caucasica*. In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

Weinberg, P. 2008b.*Capra cylindricornis*. In: IUCN 2011. *IUCN Red List of Threatened Species*.Version 2011.1. URL: www.iucnredlist.org Accessed: 13-9-2011.

Wiles, G. J. and Brooke, A. P. 2009. Conservation threats to bats in the tropical Pacific Islands and Insular Southeast Asia, in Flemming, T. H. & Racey, P. A., (eds.), *Island bats: evolution, ecology and conservation.*University of Chicago Press.

Wilkie, D.S., Bennett, E.L., Peres, C.A. and Cunningham, A.A. 2011. The empty forest revisited. *Annals of the New York Academy of Sciences* 1223: 120-128.

Williams, S., Nelson, A., and Kebede, F. 2003.*Grevy's Zebra Survey.Interim Report*.Grevy's Zebra Survey. Addis Ababa, Ethiopia. 19 pp.

Woodroffe, R., McNutt, J. W., and Mills, M. G. L. 2004. African wild dog *Lycaon pictus* (Temminck, 1820), in Sillero-Zubiri, C., Hoffman, M., & MacDonald, D. W., (eds.), *Canids: foxes, wolves, jackals and dogs. Status survey and conservation action plan.*IUCN/SSC Canid Specialist Group, Gland, Switzerland and Cambridge, UK.174-183.

Annex I – List of abbreviations

ACBK	Association for the Conservation of Biodiversity in Kazakhstan
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas
AWDC	African Wild Dog Conservancy
BCI	Bat Conservation International
CBD	Convention on Biological Diversity
CBFP	Congo Basin Forest Partnership
CIC	International Council for Game and Wildlife Conservation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CODEF	Comité nacional pro defensa de la fauna y flora
COP	Conference of the Parties
COMIFAC	Central African Forests Commission
DDT	Dichlorodiphenyltrichloroethane (a synthetic pesticide)
DFGFI	Dian Fossey Gorilla Fund International
ECOFAC	Conservation et utilisation rationelle des Ecosystèmes Forestiers en Afrique Centrale
ETIS	Elephant Trade Information System
EU	European Union
EUROBATS	Agreement on the Conservation of Populations of European Bats
FFEM	Fonds Français pour l'Environnement Mondial (French World Environment Fund)
FFI	Fauna and Flora International
FZS	Frankfurt Zoological Society
GIZ	German overseas development agency
GRASP	Great Apes Survival Partnership
INTERPOL	International Crime Police Orangisation
IRSNB	Royal Belgian Institute of Natural Sciences
IOSEA	Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia
IOSF	International Otter Survival Fund
ISWGoFS	Inter-sessional Working Group on the Future Shape of CMS
IUCN	World Conservation Union
IUCN SSC	IUCN Species Survival Commission
IUCN/SSC AfESG	IUCN/SSC African Elephant Specialist Group
JGI	Jane Goodall Institute
MEDD	French Ministry for Ecology and Sustainable Development
MIKE	Monitoring of Illegal Killing of Elephants
MoP	Meeting of the Parties
MoS	Meeting of the Signatories
MoU	Memorandum of Understanding
MTIWP	Medium-Term International Work Programme
MEA	Multilateral Environmental Agreement
NABU	Naturschutzbund Deutschland (Nature and Biodiversity Conservation Union, Germany)
NBSAPs	National Biodiversity Strategy and Action Plans
NGO	Non Governmental Organisation
ONCFS	Office National de la Chasse et de la Faune Sauvage

PCMM	Programa para la Conservación de Murciélagos Migratorios de México y Estados Unidos de Norteamérica (Program for the Conservation of Mexican Bats)
PRAIS	Performance Review and Assessment of Implementation System
SCA	Saiga Conservation Alliance
SCF	Sahara Conservation Fund
SEABCRU	South East Asian Bat Conservation Research Unit
ONCFS	the French Global Environment Fund
SSIG	Sahelo-Saharan Interest group
TRAFFIC	Wildlife Trade Monitoring Network
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
WCS	Wildlife Conservation Society
WWF	formerly World Wildlife Fund
ZSL	Zoological Society of London

Annex II –Terms of Reference

The contractor is to undertake an evaluation of the operation of instruments and projects on species of terrestrial mammals (including bats) developed under the aegis of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). The array of CMS initiatives consists of Agreements, Memoranda of Understanding (MoUs) and concerted and cooperative actions.

Aims and Objectives

The main objectives of this exercise are to

1. Briefly review the main threats and conservation issues affecting taxa of terrestrial mammals (including bats) included in CMS appendices;

2. Summarize coverage of existing CMS and non-CMS multilateral instruments/frameworks relevant to the taxa referred to in 1. above;

3. Review the extent to which existing CMS and non-CMS multilateral instruments/frameworks are addressing or not addressing threats/issues identified under 1;

4. Undertake an analysis of strengths, gaps and overlaps between CMS instruments and non-CMS instruments/frameworks, (highlighting strengths of CMS instruments and relationships with non-CMS instruments);

5. Propose options for the better and effective implementation and further development of existing CMS instruments, (including their revision where appropriate and opportunities for collaboration and synergies with other instruments/frameworks);

6. Propose priorities for development, if any, of new CMS instruments or other relevant arrangements or mechanisms to cover major identified gaps.

In the context of this review, the following CMS instruments are to be considered:

- Agreement on the Conservation of Gorillas and their Habitats;
- Agreement on the Conservation of Populations of European Bats (EUROBATS);
- Memorandum of Understanding concerning Conservation Measures for the West African Populations of the African Elephant (*Loxodonta africana*);
- Memorandum of Understanding concerning the Conservation and Restoration of the Bukhara deer (*Cervus elaphus bactrianus*);
- Memorandum of Understanding concerning the Conservation, Restoration and sustainable use of the Saiga antelope (*Saiga* spp.);
- Memorandum of Understanding concerning the Conservation of the Southern Huemul (*Hippocamelus bisulcus*);
- Action Plan for the Conservation and Restoration of the Sahelo-Saharan Antelopes and their Habitats;
- Concerted Action for Central Eurasian Aridland Mammals.

The results are expected to identify advantages and drawbacks of the design and functioning of these initiatives, lessons to be learnt and options, as appropriate, for improvement in achieving their conservation objectives, including possibilities to apply different approaches such as the "Multispecies Initiatives" by grouping the existing initiatives and/or developing new ones under main migratory species groups, or addressing the conservation need via alternative mechanisms and instruments.

Annex III – Template of the questionnaire sent to range States and key stakeholders of CMS existing instruments

Questionnaire on the *Instrument Name* for the 'Review of CMS existing instruments and projects on terrestrial mammals' undertaken by UNEP-WCMC on behalf of the CMS Secretariat.

Name.....**Organisation**.....

Instrument Name
1) What do you consider the major contributions of *Instrument Name* to the conservation of its target species and their habitats?
2) What factors do you consider most important in contributing to the overall successes of *Instrument Name*?
3) Please describe any areas of weakness or any major conservation issues that *Instrument Name* is not currently addressing, and what would be needed to resolve them.
4) In what ways does *Instrument Name* benefit from cooperation/collaboration with other international/regional organisations or other interested partners?
5) Are there any additional international/regional organisations which *Instrument Name* would benefit from collaborating with in the future?

6) In what ways does *Instrument Name* benefit from cooperation/collaboration with other instruments within the CMS family?
7) Do you think *Instrument Name* would benefit from a greater level of cooperation/collaboration with other instruments within the CMS family (or with the CMS Secretariat), and how might this best be achieved?
8) In order to effectively conserve all CMS-listed taxon name/megafauna throughout their entire range/continent name, how do you consider this might best be achieved?* ____ [please give a number from the options below]
1. extend the number of species covered by CMS existing instruments 2. extend the geographic scope of CMS existing instruments 3. merge existing CMS instruments covering similar species/ecosystems/regions 4. create new single-species CMS instruments 5. create new multi-species CMS instruments 6. Other(such as collaborating with non-CMS instruments or projects)
9) Please explain the reasons for your chosen option and what you consider to be the main advantages and difficulties of achieving this option?

***** This question and the possible options were adjusted depending on the each CMS instrument.

Annex IV – Acknowledgements

The following people at UNEP-WCMC contributed to the production and review of the text: Elizabeth White, Mari Bieri, Robert Pople, Jane Kloda, Kelly Malsch, Pablo Sinovas, Peter Herkenrath and Alison Rosser.

We thank representatives from the following countries and organisations for responding to the questionnaires:

EUROBATS AGREEMENT – Belgium, Estonia, Finland, Germany, Ireland, Poland, Portugal, Romania, Slovenia, the Ukraine and the United Kingdom.

Sahelo-Saharan Antelopes Concerted Action – Saharan Conservation Fund, Termit Niger.

West African Elephant MoU – Liberia

Gorillas AGREEMENT – Gabon, Uganda, GRASP, WCS, WWF.

Saiga Antelope MoU – Saiga Conservation Alliance, Altyn Dala Conservation Initiative, IUCN/SSC Antelope Specialist Group, Flora and Fauna International.

In addition, we thank members of the CMS Secretariat for reviewing and providing comments on the draft report.

Annex V – Overview of key features of CMS instruments on terrestrial mammals.

CMS Instrument	Year came into force / entered into effect	No. of range States covered (no. of Signatories)	Institutional structure	Main implementation instruments	Financing	Resources/publications
EUROBATS AGREEMENT	1994	63 (33)	EUROBATS Secretariat Meetings of the Parties (MoP 1-6) Advisory Committee (AC 1-16) Standing Committee (SC 1-6) 13 Intersessional Working Groups	Conservation and Management Plans 1995-1998, 1998-2001, 2003-2006, 2007-2010, 2011-2014.	Funded by annual Party contributions, voluntary contributions from Parties (including accommodation for the Secretariat provided by the German Government), non-Party range States and organisations, and the EUROBATS Trust Fund. Estimated budget 2011-2014 €1,409,611	Dedicated website (www.eurobats.org) EUROBATS Publication Series 1-5
Sahelo-Saharan Antelopes Concerted Action	1998	14	CMS Secretariat, CMS COPs and CMS Working Group	Species Action Plans and Status Reports.	Initially funded centrally by CMS through Party contributions.Also voluntary contributions from Parties and organisations (inc. IRSNB, the FFEM, ONCFS, SCF and the European Commission). SSAP I had a total budget of €1,754,000 (not inc. partners matching funds). SSAP II had a total budget of €2,875,000, which was later reduced to €2,375,000.	Dedicated website (www.kbinirsnb.be/cb/antelopes/index.htm) CMS Technical Series No. 3, 4, 8 & 11
Bukhara Deer MoU	2002	4 (all)	CMS Secretariat Meeting of the Signatories (MoS1 Nov. 2011)	Action Plan. Medium Term International Work Programme 2009-2011.		

CMS Instrument	Year came into force / entered into effect	No. of range States covered (no. of Signatories)	Institutional structure	Main implementation instruments	Financing	Resources/publications
West African Elephant MoU	2005	13 (all)	CMS Secretariat Meeting of the Signatories (MoS 1-2) Technical Advisor: IUCN/SSC AfESG	Strategy for the Conservation of West African Elephants 2009-2011. (Plan to develop national strategies)	Funded by voluntary contributions and voluntary subscriptions from range States. Three-year budget for co-ordinating the MoU valued at €85,000 (inc. €30,000 provided by the Secretariat)	
Saiga Antelope MoU	2006	5 (all)	CMS Secretariat Meeting of the Signatories (MoS 1-2)	Action Plan. Medium-Term International Work Programme 2007-2011 & 2011-2015.		Saiga News (biannual news letter of SCA)
Gorillas AGREEMENT	2008	10 (6)	CMS Secretariat Meeting of the Parties (MoP1) Technical Committee (TC1)	Action Plans for each subspecies.	Funded by Party and range State annual contributions, voluntary contributions from donor States and organisations and personnel provided by CMS and GRASP. Estimated budget 2009-2011 €1,083,260	Dedicated website (www.kbinirsnb.be/en/science/projects/gorilla) CMS Technical Series No. 17
South Andean Huemul MoU	2010	2 (all)	(Plan to hold annual meetings)	(Intend to produce an Action Plan)		
Central Eurasian Aridland Concerted and Cooperative Action	Adopted in 2008 (COP9)			Draft species status reports (Intend to produce an Action Plan)		

Annex VI – Strengths and weaknesses of CMS existing instruments/frameworks, based on questionnaire responses.

CMS Instrument	Major contributions of the existing instrument	Factors most important for success of the instrument	Weaknesses or conservation issues not currently being addressed
EUROBATS AGREEMENT	-The only international agreement to cover all populations of European bat. -Coordinated approach to bat conservation and research. -Resolutions supporting the establishment of national legislation. -Resolutions and publications supporting the compilation of national guidelines. -Establishment of internationally agreed best practice guidelines and methods for bat conservation/research. -Support to bat protection in land-use planning and EIA. -Transboundary cooperation beyond EU Member States within Europe and bordering areas. -Creation of a network of key bat specialists in Europe. -Exchange of contacts, information, knowledge, ideas and solutions between representatives and experts. -Provides a forum to highlight specific issues that need to be addressed at the policy level. -Facilitation of cooperation and links between science and policy at national and international levels. -Allocation of funds and coordinated support for bat-related projects. -Awareness-raising of bats and their conservation among the general public, especially in non-EU countries. -Practical conservation examples using field trips. -Year of the Bat campaign and annual European	-Organisation of regular meetings. -Good use of intersessional working groups. -Good mix of Government, academics and NGOs at Advisory Committee meetings. -Support and political will of range States. -A high degree of European-wide participation. -Enthusiasm of focal points. -Active discussion of conservation issues and collaborative spirit. -Coordination of international research. -The fact that any position, recommendations or guidelines are scientifically backed and reviewed. -Development of expertise and capacity within countries with less resources or expertise. -Effective support and co-ordination from the CMS and EUROBATS Secretariats and national focal points. -Ensuring Resolutions are kept and followed by the Parties and implemented in practice. -Awareness-raising campaigns such as Year of the Bat campaign and annual European Bat Night.	-Lack of funds to fully implement tasks and targets. -Shortage of staff. -Implementation in some countries could be better. -National capacity for implementation is stretched due to the obligations to several international legal agreements (e.g. CBD, Habitats Directive and Birds Directive). -Need for sister Agreements to cover species/regions outside Europe. -Limited cooperation with other agreements, perhaps due to the specialist nature of EUROBATS. -Possibly need research into noise pollution and more guidance on the topic of bats in buildings. -Important to ensure that MoPs and the Standing Committee respect the scientific conclusions of the Advisory Committee. -EUROBATS would benefit from fewer, but more clearly-defined Recommendations. -Important to ensure that Recommendations can be easily translated into policies by communities or range States.

CMS Instrument	Major contributions of the existing instrument	Factors most important for success of the instrument	Weaknesses or conservation issues not currently being addressed
	Bat Night.		
Sahelo-Saharan Antelopes Concerted Action	-Its international policy framework. -Assistance with raising funds. -Assistance promoting issues and communications. -Ongoing creation of the Termit /Tin Toumma nature reserve. -Reintroductions of *Oryx dammah* and *Addax nasomaculatus* in Tunisia. -Increased interest and awareness of Sahelo-Saharan wildlife in range States, facilitating reintroduction and conservation projects and important wildlife surveys.	-Combined efforts of international NGOs, conservation institutions and governmental departments of range States. -Lobbying governments for high-level support and resolution of conflicts. -Finding funds for on-site conservation action. -Support from CMS to NGOs implementing projects on the ground.	-Slow to act and weak in addressing issues directly with governments. - Lacking proactivity in looking for resources. -Need for a workshop involving all range States and relevant organisations, to measure progress, define priorities etc
West African Elephant MoU	-The instrument is successful in bringing together all West African range States to discuss common challenges and reach a common goal.	-Sharing of information between Parties. -Collaboration between Parties, particularly those with transboundary populations. -Capacity building.	-No mechanism to ensure compliance of range States.
Saiga Antelope MoU	-Commits signatory governments to action. -Provides a framework for action by all partners. -Provides an international platform and prominence for saigas in international conservation. -Raises awareness internationally and exerts pressure on range States and consumer States of saiga products. -Improved communication and coordination between stakeholders. -Access to information and sharing of different approaches. -A targeted action plan (MTIWP) which prioritises actions and is agreed by all stakeholders. -An officially agreed overview of Saiga status.	-An Action Plan (MTIWP) agreed by all, with set targets. -Regular meetings to monitor implementation of action plans and provide support. -Hard work and dedication of individuals within the CMS Secretariat and within the saiga conservation community. -Collaboration between state agencies and NGOs.	-Lack of funding for conservation measures and field action. -Capacity limitations of State institutions to implement Action Plans needs to be addressed. -Future management systems need to be sustainable (currently trade in Kazakhstan is only banned until 2021). -Need for harmonisation of land use and regional development plans. -Need for transboundary conservation actions such as patrolling and monitoring the Ustyurt region.

CMS Instrument	Major contributions of the existing instrument	Factors most important for success of the instrument	Weaknesses or conservation issues not currently being addressed
Gorillas AGREEMENT	-Legally binding instrument with strong institutional backing. -Harmonisation of research and monitoring programmes and gorilla conservation policies across Member States. -Exchange of information and results from research, monitoring and conservation programmes. -Platform for sharing of challenges and best practice. -Provision of logistical support to the national administration in charge of wildlife. -Facilitated work on awareness raising.	-Whether range State governments adhere to the existing obligations, including existing wildlife laws. -Cooperation of range States and other partners in the exchange of information and results. -Financial stability of the various implementation activities.	-AGREEMENT does not adequately address the widespread corruption or lack of political will to prosecute. -There is currently no mechanism of accountability. -There is greater need to conduct inventories of gorilla populations. -Encouraging all range States to become Party to the AGREEMENT. -Ensuring that membership financial obligations are kept to a minimum.

Annex VII –Terrestrial mammals listed in the CMS Appendices but not covered (or whose ranges are only partially covered) by a specific CMS instrument, and suggested options for coverage.

Species, CMS Appendix and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Options for coverage by a CMS instrument[iv]
CHIROPTERA			
Eidolon helvum **II** (only African populations) African straw-coloured fruit bat	NT ↓	ANGOLA; BENIN; Botswana; BURKINA FASO; Burundi; CAMEROON; Central African Republic; CHAD; CONGO (BRAZAVILLE);THE DEMOCRATIC REPUBLIC OF THE CONGO; CÔTE D'IVOIRE;EQUATORIAL GUINEA; ETHIOPIA; GABON; GAMBIA; GHANA; GUINEA; GUINEA-BISSAU;KENYA; Lesotho; LIBERIA; Malawi; MALI; MAURITANIA; MOZAMBIQUE; Namibia; NIGER; NIGERIA; RWANDA; SAO TOMÉ AND PRINCIPE; SAUDI ARABIA; SENEGAL; Sierra Leone; SOUTH AFRICA; Sudan; Swaziland; UNITED REPUBLIC OF TANZANIA;TOGO; UGANDA; YEMEN; Zambia; Zimbabwe	New African Bat Initiative
Otomops madagascariensis **II** Malagasy giant mastiff bat	LC ?	MADAGASCAR	New African Bat Initiative
Otomops martiensseni **II** (only African populations) Large-eared giant mastiff bat	NT ↓	ANGOLA; Central African Republic; COTE D'IVOIRE; DEMOCRATIC REPUBLIC OF THE CONGO; DJIBOUTI; ETHIOPIA; GHANA; KENYA; MADAGASCAR; Malawi; RWANDA; SOUTH AFRICA; UNITED REPUBLIC OF TANZANIA; UGANDA; YEMEN; Zambia; Zimbabwe	New African Bat Initiative
Tadarida brasiliensis **I** Brazilian or Mexican free-tailed bat	LC →	ANTIGUA AND BARBUDA; ARGENTINA; Bahamas; Belize; PLURINATIONAL STATE OF BOLIVIA; Brazil; CHILE; Colombia; COSTA RICA; CUBA; Dominica; Dominican Republic; ECUADOR; El Salvador; FRANCE (Guadeloupe, Martinique); Guatemala; Haiti; HONDURAS; Jamaica; Mexico; NETHERLANDS (Aruba, Saba, Sint Eustatius, Sint Maarten); Nicaragua; PANAMA; PARAGUAY; PERU; Saint Kitts and Nevis; Saint Lucia; UNITED KINGDOM (Montserrat); United States of America (including Puerto Rico); URUGUAY; Bolivarian Republic of Venezuela	New Pan-American Bat Initiative

Species, CMS Appendix and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Options for coverage by a CMS instrument[iv]
Tadarida insignis **II** East Asian free-tailed bat	DD ?	China, Japan, Republic of Korea, Taiwan, Province of China	New Southeast Asian Bat Initiative
Tadarida latouchei **II** La Touche's free-tailed bat	DD ↓	China, Japan, Lao People's Democratic Republic, Thailand	New Southeast Asian Bat Initiative
Tadarida teniotis **II** European free-tailed bat	LC ?	ALBANIA; ARMENIA; Bosnia and Herzegovina; BULGARIA; CROATIA; EUROPEAN UNION; FRANCE; GREECE; ITALY; MONTENEGRO; PORTUGAL; ROMANIA; SERBIA; SPAIN; Turkey; UZBEKISTAN	New Central and South Asian Bat Initiative
Miniopterus majori **II** Major's long-fingered bat	LC ?	MADAGASCAR	New African Bat Initiative
Miniopterus natalensis **II** (only African populations) Natal long-fingered bat	LC ?	ANGOLA; Botswana; DEMOCRATIC REPUBLIC OF THE CONGO; ETHIOPIA; KENYA; Lesotho; Malawi; MOZAMBIQUE; Namibia; SAUDI ARABIA; SOUTH AFRICA; Swaziland; UNITED REPUBLIC OF TANZANIA; UGANDA; YEMEN; Zambia; Zimbabwe.	New African Bat Initiative
Miniopterus schreibersii **II** (only African and European populations) Schreiber's Long-fingered Bat	NT ↓	ALBANIA; ALGERIA; ANGOLA; AUSTRIA; Bosnia and Herzegovina; Botswana; BULGARIA; CAMEROON; Central African Republic; CROATIA; DEMOCRATIC REPUBLIC OF THE CONGO; ETHIOPIA; FRANCE; GAMBIA (?); GERMANY; GHANA; GREECE; GUINEA; HUNGARY; KENYA; MADAGASCAR; Malawi; MALTA; MONTENEGRO; MOROCCO; MOZAMBIQUE; Namibia; PORTUGAL; ROMANIA; RWANDA (?); SERBIA; Sierra Leone; SLOVAKIA; SLOVENIA; SOMALIA (?); SOUTH AFRICA; SPAIN; Sudan; SWITZERLAND; THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA; TUNISIA; UGANDA; UNITED KINGDOM (Gibraltar); UNITED REPUBLIC OF TANZANIA; Zambia; Zimbabwe	New African Bat Initiative
CARNIVORA			
Acinonyx jubatus **I** (except populations in Botswana, Namibia and Zimbabwe)	VU ↓	ALGERIA; ANGOLA; BENIN; BURKINA FASO; CAMEROON; Central African Republic; DEMOCRATIC REPUBLIC OF THE CONGO; EGYPT; ETHIOPIA;	Geographic and taxonomic extension of Sahelo-Saharan Antelope Concerted Action to include all megafauna and the Horn of Africa, and

Species, CMS Appendix and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Options for coverage by a CMS instrument[iv]
Cheetah		GAMBIA; ISLAMIC REPUBLIC OF IRAN; KENYA; LIBYAN ARAB JAMAHIRIYA; Malawi; MALI; MAURITANIA; MOZAMBIQUE; NIGER; PAKISTAN (?); SENEGAL; SOMALIA; SOUTH AFRICA; Sudan; UNITED REPUBLIC OF TANZANIA; TUNISIA; UGANDA; Zambia	New Subsaharan African Megafauna Initiative
Lycaon pictus **II** African wild dog	EN ↓	ANGOLA; BENIN; Botswana; BURKINO FASO; CAMEROON; Central African Republic; CHAD; CONGO (BRAZZAVILLE) (Ex); DEMOCRATIC REPUBLIC OF THE CONGO (Ex); COTE D'IVOIRE (Ex); ERITREA (Ex); ETHIOPIA; GABON (Ex); GHANA (Ex); GUINEA; KENYA; Malawi; MALI (Ex); MOZAMBIQUE; Namibia; NIGER: NIGERIA; RWANDA (Ex); SENEGAL; Sierra Leone (Ex); SOMALIA (?); SOUTH AFRICA; Sudan; Swaziland (Ex); UNITED REPUBLIC OF TANZANIA; TOGO (Ex); UGANDA (Ex); Zambia; Zimbabwe	Geographic and taxonomic extension of Sahelo-Saharan Antelope Concerted Action to include all megafauna and the Horn of Africa, and New Subsaharan African Megafauna Initiative
Lontra provocax **I** Southern river otter	EN ↓	ARGENTINA; CHILE	New single-species instrument, or New South American Megafauna Initiative
PROBOSCIDEA			
Loxodonta africana **II** African elephant	VU ↑	ANGOLA; BENIN; Botswana; BURKINA FASO; Burundi (Ex); Central African Republic; CAMEROON; CHAD; CONGO (BRAZZAVILLE); DEMOCRATIC REPUBLIC OF THE CONGO; COTE D'IVOIRE; EQUATORIAL GUINEA; ERITREA; ETHIOPIA; GABON; GAMBIA (Ex); GHANA; GUINEA; GUINEA-BISSAU (Ex); KENYA; Lesotho (Ex); LIBERIA; Malawi; MALI; MAURITANIA; MOZAMBIQUE; Namibia; NIGER; NIGERIA; RWANDA; SENEGAL; Sierra Leone; SOMALIA; SOUTH AFRICA; Sudan; Swaziland; UNITED REPUBLIC OF TANZANIA; TOGO; UGANDA; Zambia; Zimbabwe	Geographic extension of the West African Elephant MoU, or Taxonomic extension of the Gorillas AGREEMENT, or New instrument for Elephants in Central Africa, or New Subsaharan African Megafauna Initiative
Loxodonta cyclotis **II** African forest elephant	VU ↑	(Species taxonomic status is uncertain but it occurs primarily in Central and West Africa)	Geographic extension of the West African Elephant MoU, or Taxonomic extension of the Gorillas AGREEMENT, or

Species, CMS Appendix and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Options for coverage by a CMS instrument[iv]
	(*L. africana,sensu lato*)		New instrument for Elephants in Central Africa, or New Subsaharan African Megafauna Initiative
PERISSODACTYLA			
Equus grevyi **I** Grevy's zebra	EN →	ERITREA; ETHIOPIA; KENYA; SOMALIA (Ex); Sudan (?)	Geographic and taxonomic extension of Sahelo-Saharan Antelope Concerted Action to include all megafauna and the Horn of Africa
ARTIODACTYLA *Vicugna vicugna* **I** (except Peruvian populations)**/II** Vicugna	LC ↑	ARGENTINA; PLURINATIONAL STATE OF BOLIVIA; CHILE; PERU	New single-species instrument, or New South American Megafauna Initiative
Cervus elaphus barbarus **I** Barbary deer	LC ↑ (*C. elaphus*)	ALGERIA; MOROCCO (Ex); TUNISIA	New single-species instrument
Cervus elaphus yarkendensis **I/II** Bukhara deer	LC ↑ (*C. elaphus*)	Afghanistan; KAZAKHSTAN; TAJIKISTAN; Turkmenistan; UZBEKISTAN	Geographic extension of the Bukhara Deer MoU
Gazella erlangeri **II** Neumann's gazelle	VU ↓ (*G. gazella, sensu lato*)	SAUDI ARABIA; YEMEN	Geographic extension of the Central Eurasian Aridland Concerted Action to cover the Arabian Peninsula
Gazella gazella **II** (only Asian populations) Mountain gazelle	VU ↓	Iraq; ISRAEL; JORDAN; Lebanon (Ex); Oman; SAUDI ARABIA; SYRIAN ARAB REPUBLIC; United Arab Emirates; YEMEN	Geographic extension of the Central Eurasian Aridland Concerted Action to cover the Arabian Peninsula
Bos sauveli **I** Kouprey	CR ?	Cambodia; Lao People's Democratic Republic (?); Thailand; Viet Nam	New South and Southeast Asian Megafauna Initiative
Ammotragus lervia **II** Barbary sheep	VU ↓	ALGERIA; CHAD; LIBYAN ARAB JAMAHIRIYA; MALI; MOROCCO; NIGER; Sudan; TUNISIA	Taxonomic extension of Sahelo-Saharan Antelope Concerted Action to include all megafauna

[i]**Global threat status according to the IUCN Red List:** DD = Data Deficient, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, EW = Extinct in the Wild.

[ii]**Global population trend according to the IUCN Red List:**↓ = decreasing population trend, ↑ = increasing population trend, → = stable population trend, ? population trend unknown.

[iii]Range States in capital letters are CMS Parties and range States in grey are covered by an existing CMS instrument. Range States were taken from UNEP/CMS (2011b) where available, or from IUCN (2010).

[iv]Priorities for creation of new instruments or extending existing instruments are discussed in the text.

Annex VIII - Species identified by Parties which might benefit from listing in the CMS Appendices

Species and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Threats
CARNIVORA *Panthera leo* African lion	VU↓	Afghanistan (ex); ALGERIA (ex); ANGOLA; BENIN; Botswana; BURKINA FASO; BURUNDI (?); CAMEROON; Central African Republic; CHAD; CONGO (?);DEMOCRATIC REPUBLIC OF THE CONGO; CÔTE D'IVOIRE; DJBOUTI (ex); EGYPT (ex); ERITREA (ex); ETHIOPIA; GABON (ex?); GAMBIA (ex); GHANA; GUINEA; GUINEA-BISSAU; INDIA; ISLAMIC REPUBLIC OF IRAN (ex); Iraq (ex); ISRAEL (ex); JORDAN (ex); KENYA; Kuwait (ex); Lebanon (ex); Lesotho (ex); LIBYAN ARAB JAMAHIRIYA (ex); Malawi; MALI; MAURITANIA (ex); MOROCCO (ex); MOZAMBIQUE; Namibia; NIGER; NIGERIA; PAKISTAN (ex); RWANDA; SAUDI ARABIA (ex); SENEGAL; Sierra Leone (ex); SOMALIA; SOUTH AFRICA; Sudan; Swaziland; SYRIAN ARAB JAMAHIRIYA (ex); UNITED REPUBLIC OF TANZANIA; TUNISIA (ex); Turkey (ex); UGANDA; Zambia; Zimbabwe	Indiscriminate killing (to protect people and livestock), persecution and disease. Concerns that trophy hunting may be unsustainable (Bauer *et al*., 2008).
Panthera tigris Tiger	EN↓	Afghanistan (ex); BANGLADESH; Bhutan; Cambodia; China; INDIA; Indonesia; ISLAMIC REPUBLIC OF IRAN (ex); KAZAKHSTAN (ex); Democratic People's Republic of Korea (ex?); Kyrgyzstan (ex); Lao People's Democratic Republic; Malaysia; Myanmar; Nepal; PAKISTAN (ex); Russian Federation; Singapore (ex); TAJIKISTAN (ex); Thailand; Turkey (ex); Turkmenistan (ex); UZBEKISTAN (ex); Viet Nam.	Habitat loss and fragmentation, poaching and illegal trade and depletion of their prey base (Chundawat *et al*., 2010).
ARTIODACTYLA *Capra caucasica* Western tur	EN↓	GEORGIA; Russian Federation	Livestock grazing and poaching. Also severe winters and habitat loss/degradation (Weinberg, 2008a).
Capra cylindricornis Eastern Tur	NT ↓	Azerbaijan; GEORGIA; Russian Federation	Livestock grazing and poaching. Also severe winters and habitat loss/degradation(Weinberg, 2008b).

Species and common name	Global Status[i] and population trend[ii]	Distribution[iii]	Threats
Capra sibirica Asiatic Ibex	LC ?	Afghanistan; China; INDIA; KAZAKHSTAN; Kyrgyzstan; MONGOLIA; PAKISTAN; Russian Federation; TAJIKISTAN; UZBEKISTAN	Poaching and subsistence hunting. Also competition with livestock (Reading & Shank, 2008)
Ovis ammon Asian Wild Sheep	NT ↓	Afghanistan; Bhutan (?); China; INDIA; KAZAKHSTAN; Kyrgyzstan; MONGOLIA; Nepal; PAKISTAN; Russian Federation; TAJIKISTAN; UZBEKISTAN	Overhunting and poaching, competition, displacement and possibly disease transmission by domestic livestock and habitat loss (Harris & Reading, 2008).
Cervus elaphus Red Deer	LC ↑	Afghanistan; ALBANIA (ex); ALGERIA; ARMENIA; AUSTRIA; BELARUS; BELGIUM; Bhutan; Bosnia and Herzegovina; BULGARIA; Canada; China; CROATIA; CZECH REPUBLIC; DENMARK; ESTONIA; FRANCE; GEORGIA; GERMANY; HUNGARY; INDIA; ISLAMIC REPUBLIC OF IRAN; ISRAEL (ex); IRELAND; ITALY; JORDAN (ex); Democratic People's Republic of Korea; Republic of Korea; Kyrgyzstan; LATVIA; Lebanon (ex); LITHUANIA; LUXEMBOURG; the former Yugoslav Republic of Macedonia; Mexico (ex); Moldova; MONGOLIA; MONTENEGRO; Nepal (ex); NETHERLANDS; NORWAY; PAKISTAN; POLAND; ROMANIA; Russian Federation;REPUBLIC OF SERBIA; SLOVAKIA; SLOVENIA; SYRIAN ARAB REPUBLIC (ex); SWEDEN; SWITZERLAND; TAJIKISTAN; TUNISIA; Turkey; Turkmenistan (ex); UKRAINE; UNITED KINGDOM; United States; Uzbekistan	Intermixing of subspecies and introduction of parasites and diseases. Also overhunting and habitat loss in some areas (Lovari *et al*., 2008).
Rangifer tarandus Reindeer	LC →	Canada; FINLAND; Greenland; MONGOLIA; NORWAY; Russian Federation; SWEDEN (ex); United States	Onshore petroleum exploration in Canada, poaching in the Russian Federation and habitat loss in Finland (Henttonen & Tikhonov, 2008).

[i]**Global threat status according to the IUCN Red List:** DD = Data Deficient, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, EW = Extinct in the Wild.

[ii]**Global population trend according to the IUCN Red List:**↓ = decreasing population trend, ↑ = increasing population trend, → = stable population trend, ? population trend unknown.

[iii]Range States in capital letters are CMS Parties. Range States were taken from IUCN (2010).