Emslie, R. 2012. Ceratotherium simum. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>.

http://www.iucnredlist.org/details/4185/0

Taxonomy [top]
Kingdom Phylum Class Order Family
ANIMALIA CHORDATA MAMMALIA PERISSODACTYLA RHINOCEROTIDAE

Scientific Name:
Ceratotherium simum
Species Authority: (Burchell, 1817)
Infra-specific Taxa Assessed: See Ceratotherium simum ssp. cottoni
See Ceratotherium simum ssp. simum
Common Name/s: English – Northern White Rhinoceros, Square-lipped Rhinoceros, White Rhinoceros
French – Rhinocéros Blanc Du Nord
Spanish – Rinoceronte Blanco Del Norte

Taxonomic Notes: Two subspecies are recognized: the Southern White Rhino (SWR) C. s. simum in southern Africa, and Northern White Rhino (NWR) C. s. cottoni, with currently only one confirmed population in Ol Pejeta (a Kenyan reserve) that was created in December 2009 following the translocation from the Czech Republic of the last four potentially breeding NWR in captivity.

In April 2010, Colin Groves and co-workers published a paper in which they argued, (based on morphological and genetic differences, estimated time since divergence from a common ancestor and using a phylogenetic species concept), that the Northern White Rhino (NWR) should now be considered as a separate species. Given there are a number of alternative ways to classify species there is unlikely to be universal agreement on the issue. Groves et al. (2010) paper has been criticised by some on a number of grounds and its recommendation has not been universally accepted. A detailed rebuttal of Groves et al. paper is also being prepared by a rhino geneticist. It is thus premature to come to a final conclusion on the issue at this time. It has also been argued that given conservation objectives the issue of whether or not Northern White Rhino should be treated as a species or subspecies is for practical purposes somewhat academic given: 1) the high degree of relatedness of the four remaining Northern White Rhinos at Ol Pejeta (calculated Founder Genome Equivalent of only 1.71); 2) the fact that any pure-bred offspring from remaining animals would be inbred; 3) the need to maximise reproductive output from all these NWR animals (only one of which is young) to try to retain as many adaptive NWR genes as possible (by minimising loss of genetic diversity through genetic drift); and 4) constraints to reproductive output given that the two NWR males are old and there are only two NWR females and only one of these is a young animal. Conservation biologists Bob Lacy and Kathy Traylor-Holzer have advised that given the above situation and overall conservation objective, a stage has been reached where one doesn't really have any choice of achieving medium to longer term conservation goals without trying inter-crossing NWR with Southern White Rhino so as to preserve some NWR

genes within breeding populations that can hopefully later resume evolutionary adaptation to wild habitats. They have advised that even in the total absence of human-caused losses (e.g., to poaching), genetic and demographic modelling of such a small population of inter-related animals shows that the remaining four NWR are unlikely on their own to form a viable population in the longer term because of the negative effects of the severe inbreeding that would most likely occur, and the high probability of chance demographic events significantly reducing or eliminating the remnant population at some time before it has a chance to grow to safer numbers. Thus attempts at only pure breeding of NWR alone under these circumstances seem very likely to fail in the medium to longer term, and are at best might only be able to preserve inbred "museum specimens" that would not appropriately represent the original NWR. There can be no guarantee that this last-ditch attempt to conserve adaptive Northern White Rhino genes will succeed and inter-crossing may end up not being successful and in due course this would provide some support to Groves'proposal that the NWR should be classed as a separate species.

Assessment Information [top]
Red List Category & Criteria: Near Threatened ver 3.1
Year Published: 2012
Assessor/s: Emslie, R.
Reviewer/s: Knight, M.H. & Adcock , K.
Contributor/s:

Justification:
The reason for rating this species as Near Threatened and not Least Concern is due to the continued and increased poaching threat and increasing illegal demand for horn, increased involvement of organised international criminal syndicates in rhino poaching (as determined from increased poaching levels, intelligence gathering by wildlife investigators, increased black market prices and apparently new non-traditional medicinal uses of rhino horn). Current successful protection efforts have depended on significant range state expenditure and effort and if these were to decline (especially in South Africa) rampant poaching could seriously threaten numbers (well in excess of 30% over three generations). Declining state budgets for conservation in real terms, declining capacity in some areas and increasing involvement of Southeast Asians in African range states are all of concern. In recent years poaching levels have increased in major range states South Africa, Zimbabwe, Kenya. Swaziland also recently lost its first rhino to poaching since December 1992. In the absence of conservation measures, within five years the species would quickly meet the threshold for C1 under Vulnerable, and potentially also criterion A3 if poaching rates were to further increase.

History:
2011 – Near Threatened
2003 – Near Threatened (IUCN 2003)
2003 – Near Threatened
2003 – Near Threatened (IUCN 2003)
2003 – Near Threatened (IUCN 2003)
2003 – Near Threatened (IUCN 2003)
2002 – Near Threatened
1994 – Vulnerable (Groombridge 1994)
1994 – Vulnerable (Groombridge 1994)
1994 – Vulnerable (Groombridge 1994)
1994 – Vulnerable (Groombridge 1994)

Geographic Range [top]
Range Description: Two subspecies of White Rhinoceros are currently recognized, the northern and the southern, each having a strikingly discontinuous range. The Northern White Rhino used to range over parts of north-western Uganda, southern Chad, south-western Sudan, the eastern part of Central African Republic, and north-eastern Democratic Republic of the Congo (Sydney 1965). The previous only confirmed population in Garamba National Park in north-eastern Democratic Republic of the Congo is now considered probably extinct as despite systematic ground surveys over probable range and additional foot patrols and aerial reconnaissance no live rhinos have been seen since 2006 and no fresh sign since 2007. There have been unconfirmed reports of rhino in southern Sudan, and surveys are planned. The last four potential breeding Northern White Rhino in captivity in Dvur Kralove Zoo in the Czech Republic have been translocated to a private conservancy in Kenya in the hope this will stimulate their breeding. These animals form the only current confirmed population.

The Southern White Rhino is now the most numerous of the rhino taxa, with South Africa remaining the stronghold for this subspecies despite increased poaching. Sizeable populations occur in the greater Kruger National Park (which incorporates additional private and state reserves) and Hluhluwe-iMfolozi Park, but also occur in numerous state protected areas and private reserves (some of which are also well protected) throughout the country. Live sales, limited sport hunting and ecotourism have historically provided incentives which has resulted in a significant expansion of range and numbers on private land in South Africa, to the extent that there are now more white rhino on private land in South Africa than there are rhino in the whole of the rest of Africa. However increased poaching, increased security costs and perceived reduced incentives for their conservation have resulted in reduced white rhino live sale prices and an increasing number of owners seeking to get rid of their rhino. This worrying trend threatens to reverse the expansion of range and has the potential to also significantly reduce conservation budgets (due to declining live sales) and negatively affect metapopulation growth rates in future. There are smaller reintroduced populations within the historical range of the species in Namibia, Botswana, Zimbabwe and Swaziland, while a small number survive in Mozambique. Populations of Southern White Rhino have also been

introduced outside of the known former range of the subspecies to Kenya, Uganda and to Zambia (Emslie and Brooks 1999, Emslie et al. 2007). Uganda was previously a Northern White Rhino range state and so the species has been reintroduced to this country.

While Kenya has not been a White Rhino range state in the last two hundred years; evidence from fossils and cave paintings in Kenya and northern Tanzania suggests that the White Rhinoceros, presumably similar to the northern race (C. s. cottoni), was widespread and a part of the East African savanna fauna until 3,000 years ago or less (M. Leakey pers. comm.), when it was probably displaced by pastoralists who could easily kill such tame animals (Brett RA [ed] 1993). This is based on the White Rhino subfossil documented by Maeve Leakey from 3,000 year from Rift Valley (Lake Nakuru area). Thus at one stage Kenya was once a White Rhino range state (subspecies unknown) and hence the White Rhino as a species but not C. s. simum as a subspecies has probably been reintroduced to Kenya (with the latter being an introduction of a probable out of range subspecies). A recent report of a white rhino hunting trophy from Kenya in an Austrian Museum still has to be confirmed but merits further investigation.

Note: At the request of certain members and countries, the IUCN SSC African Rhino Specialist Group (AfRSG) has a policy of not releasing detailed information on the whereabouts of all rhino populations for security reasons. For this reason, only whole countries are shaded on the map.

Countries: Native:
South Africa
Possibly extinct:
Congo, The Democratic Republic of the; Sudan
Regionally extinct:
Central African Republic; Chad
Reintroduced:
Botswana; Botswana; Kenya; Kenya; Mozambique; Mozambique; Namibia; Namibia; Swaziland; Swaziland; Uganda; Uganda; Zimbabwe; Zimbabwe
Introduced:
Zambia
Range Map: Click here to open the map viewer and explore range.

Population [top]
Population: As of 31 December 2010, there were an estimated 20,170 White Rhino in the wild (see Table 1 in the attached pdf). As of Dec 2008 there were an estimated 750 in captivity worldwide. The majority (98.8%) of White Rhino occur in just four countries (South Africa, Namibia, Zimbabwe and Kenya) (AfRSG data 2011).

Once widespread in the bushveld areas of southern Africa south of the Zambezi river, the Southern White Rhino was on the brink of extinction by the end of the 19th century having been reduced to just one small population of approximately 20-50 animals in KwaZulu-Natal, South Africa. However, by the end of 2010, after years of protection and many translocations, the subspecies has grown to 20,160 wild animals. South Africa remains the stronghold for

this subspecies (93.2%) conserving 18,800 individuals in 2010. Smaller reintroduced populations occur within former range states in Botswana, Namibia, Swaziland, and Zimbabwe; populations of free-ranging Southern White Rhino have also been established outside their historical range in Kenya, Zambia (Emslie and Brooks 1999) and more recently Uganda although Uganda is a former C. s. cottoni range state and an ~3,500 year old White Rhino subfossil indicates at one stage Kenya was also once a white rhino range state. Numbers of White Rhino under private ownership continue to increase, numbering at least 5,500 in 429+ populations by the end of 2010. The bulk of White Rhino (14,529 or 72.1%) continue to be conserved on state land. In 2007 Namibia, Zimbabwe and Kenya were the only other countries with over 300 wild Southern White Rhino, but following increased poaching numbers in Zimbabwe had dropped to 290 by the end of 2010. Together these three countries conserve 82.1% of the subspecies outside of South Africa.

In the only confirmed surviving wild population in Garamba National Park, Democratic Republic of the Congo, Northern White Rhino (C. s. cottoni) numbers declined rapidly from 30 in April 2003 due to an upsurge in poaching, and surveys in 2006 confirmed the presence of only four rhinos (Emslie et al. 2006). Numbers are believed to have stood at around 2,360 in 1960 (Emslie and Brooks 1999). However based largely on extensive and systematic foot surveys which failed to sight live rhino and find any signs (spoor and dung) this population is now considered probably extinct. Reports of a few possible Northern White Rhino surviving in a remote part of Southern Sudan have yet to be confirmed although surveys are planned. The last four potential breeding Northern White Rhino in captivity have been moved to a private conservancy in Kenya in the hope that a move to more wild conditions will stimulate them to breed.

For further information about this species, see Mammals/4185_Ceratotherium simum.pdf.
A PDF viewer such as Adobe Reader is required.
Population Trend: Increasing

Habitat and Ecology [top]
Habitat and Ecology: The species is found in grassland in bushveld savanna habitats.
Systems: Terrestrial

Threats [top]
Major Threat(s): One of the main threats to the population is illegal hunting (poaching) for the international rhino horn trade. Rhino horn has two main uses: traditional use in Chinese medicine, and ornamental use (for example, rhino horn is a highly prized material for making ornately carved handles for ceremonial daggers (jambiyas) worn in some Middle East countries). Until recently, at the continental species level, poaching of White Rhinos has not had a serious impact on overall numbers of White Rhinos in Africa, with poaching losses in parts of the range being surpassed by encouraging growth rates in others. From detected and reported figures, the annual average poaching incidents during 2003 to 2005 represented just 0.2 % of the total number of White Rhinos at the end of 2005 (Emslie et al. 2007). However poaching levels have increased dramatically in recent years (Milliken et al. 2009).

However poaching has escalatated dramatically in recent years in South Africa, Zimbabwe and Kenya in response to significant increases in black market prices for horn. For example the total numbers of rhinos poached annually in the major range state South Africa has increased from 13, to 83, 122, 333 and 448 over the period 2007-2011. At the time of writing the rate of poached has continued to increase in 2012 with projections of the numbers poached in South Africa could reach 600 by the end of 2012. While still less than the net growth in numbers due to breeding the continued escalation in poaching threatens to soon reverse the gains achieved if it cannot be stalled or reversed. If current trends continue numbers in South Africa could start to decline by 2016. As a proportion of total numbers poaching levels in the major range states have been highest in Zimbabwe. As described above the significantly increased and escalating poaching, increased protection costs, declining live sale prices and reduced incentives are leading to increasing numbers of private owners in South Africa seeking to get rid of their rhino. If this worrying trend continues this threatens to reverse the expansion of range and has the potential to also significantly reduce conservation budgets (due to declining live sales).

Poaching and civil wars in both Democratic Republic of the Congo and neighbouring Sudan have had a devastating impact on Northern White Rhino. Whilst poaching pressure initially increased during civil unrest and war in the late 1990s, good reproduction enabled the population to remain relatively stable. However, since 2003, poaching escalated and the population declined rapidly with 11 carcasses found in a three-month period between March and May 2004. Confirmed numbers of Northern White Rhino fell from 30 individuals in April 2003 to just four in August 2005. No live rhino have been seen since 2006 or signs of live rhino (spoor or dung) reported since 2007 despite intensive systematic foot surveys. It is believed that the Northern White Rhino has probably gone extinct in the Democratic Republic of the Congo.

Conservation Actions [top]

Conservation Actions: Effective field protection of rhino populations has been critical. Many remaining rhino are now concentrated in fenced sanctuaries, conservancies, rhino conservation areas and intensive protection zones where law enforcement effort can be concentrated at effective levels. Monitoring has also provided information to guide biological management decision-making aimed at managing rhino populations for rapid population growth. This has resulted in surplus animals being translocated to set up new populations both within and outside the species' former ranger. However increasing black market prices for rhino horn, and increased poaching of rhino and involvement of criminal syndicates in recent years pose a significant threat to rhino populations. Increasing efforts are also being made to integrate local communities into conservation efforts. Strategically, White Rhinos are now managed by a range of different stakeholders (private sector and state) in a number of countries increasing their long-term security. In Southern Africa live sale of White Rhinos on auction (and limited sport hunting of surplus males) has also created incentives for private sector conservation and generated much needed funds which can help pay the high cost of successfully monitoring, protecting and managing rhino. Over 5,500 White Rhino across Africa are now managed by the private sector throughout Africa with the majority in South Africa (AfRSG 2011). However as discussed above incentives are declining while protection

costs and risks have increased resulting in increased numbers of South African owners looking to get rid of their white rhino.

By 1977, all African rhino species were listed on CITES Appendix I, and all international commercial trade in rhinos and their products was prohibited. However, following a continued increase in numbers, the South African population of Southern White Rhino was downlisted in 1994 to Appendix II, but only for trade in live animals to “approved and acceptable destinations” and for the (continued) export of hunting trophies. Numbers have almost trebled since then. In 2004, Swaziland’s Southern White Rhino were also downlisted to CITES Appendix II, but only for live export and for limited export of hunting trophies according to specified annual quotas. To help reduce illegal trade, and complement CITES international trade bans, domestic anti-trade measures and legislation were implemented in the 1990s by a number of the major consumer states and law enforcement effort has been stepped up in many consumer countries. In addition to local, national, international and continental initiatives, there are a number of regional African rhino conservation initiatives: the South African Development Community (SADC) Rhino Management Group , recently formed East African Rhino Management Group and the Southern African Rhino and Elephant Security Group/Interpol Environmental Crime Working Group. IUCN SSC African Rhino Specialist Group is the continental coordinating body for rhino conservation in Africa.

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White Rhinoceros (*Ceratotherium simum*)

Table 1. Updated and final numbers of African rhino by country (as of December 2010).

Species	White rhino				Black rhino					Total
Subspecies	*C.s.cottoni* (northern)	*C.s.simum* (southern)	Total WR	Trend	*D.b.bicornis* (south-western)	*D.b.michaeli* (eastern)	*D.b.minor* (southern-central)	Total BR	Trend	*Total B&W*
South Africa		18,796	**18,796**	Up	171	60	1,684	**1,915**	Up	**20,711**
Namibia		469	**469**	Up	1,750			**1,750**	Up	**2,219**
Kenya	4	361	**365**	Up		594		**594**	Up	**959**
Zimbabwe		290	**290**	Down			431	**431**	Down	**721**
Botswana		135	**135**	Up			7	**7**	Stable	**142**
Tanzania						88	25	**113**	Up/Down?	**113**
Swaziland		88	**88**	Up			17	**17**	Stable	**105**
Zambia		7	**7**	Enhanced			27	**27**	Stable+In	**34**
Malawi							24	**24**	Up	**24**
Uganda		9	**9**	Up						**9**
Mozambique		6	**6**	Down?			1	**1**	Min	**7**
Angola					1			**1**	Min	**1**
Totals	**4**	**20,161**	**20,165**		**1,922**	**742**	**2,216**	**4,880**		**25,045**
Rounded	**4**	**20,160**	**20,170**		**1,920**	**740**	**2,220**	**4,880**		**25,050**