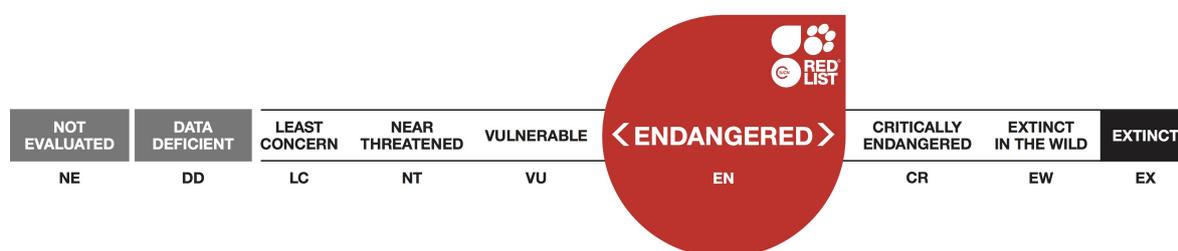




Panthera tigris, Tiger

Assessment by: Goodrich, J., Lynam, A., Miquelle, D., Wibisono, H., Kawanishi, K., Pattanavibool, A., Htun, S., Tempa, T., Karki, J., Jhala, Y. & Karanth, U.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Carnivora	Felidae

Taxon Name: *Panthera tigris* (Linnaeus, 1758)

Synonym(s):

- *Felis tigris* Linnaeus, 1758

Regional Assessments:

- [Mediterranean](#)

Infra-specific Taxa Assessed:

- [Panthera tigris ssp. altaica](#)
- [Panthera tigris ssp. amoyensis](#)
- [Panthera tigris ssp. balica](#)
- [Panthera tigris ssp. corbetti](#)
- [Panthera tigris ssp. jacksoni](#)
- [Panthera tigris ssp. sondaica](#)
- [Panthera tigris ssp. sumatrae](#)
- [Panthera tigris ssp. tigris](#)
- [Panthera tigris ssp. virgata](#)

Common Name(s):

- English: Tiger
- French: Tigre

Taxonomic Source(s):

Luo, S.J., Kim, J.H., Johnson, W.E., Van Der Walt, J., Martenson, J., Yuhki, N., Miquelle, D.G., Uphyrkina, O., Goodrich, J.M., Quigley, H., Tilson, R., Brady, G., Martelli, P., Subramaniam, V., Mcdougal, C., Hean, S., Huang, S.Q., Pan, W., Karanth, U.K., Sunquist, M., Smith, J.L.D. and O'Brien, S.J. 2004. Phylogeography and genetic ancestry of tigers (*Panthera tigris*). *PLoS Biology* 2: 2275-2293.

Taxonomic Notes:

Taxonomy is currently under review by the IUCN SSC Cat Specialist Group. We currently follow Luo *et al.* (2004), who confirmed the division of Tiger into six extant subspecies on the basis of distinctive molecular markers:

Amur Tiger *P. t. altaica*: Russian Far East and northeastern China

Northern Indochinese Tiger *P. t. corbetti*: Indochina north of the Malayan Peninsula

Malayan Tiger *P. t. jacksoni*: Peninsular Malaysia

Sumatran Tiger *P. t. sumatrae*: Sumatra

Bengal Tiger *P. t. tigris*: Indian sub-continent

South China Tiger *P. t. amoyensis* (although this subspecies has not been directly observed in the wild since the 1970s and is possibly extinct)

Three subspecies previously recognized on the basis of morphology are extinct:

Bali Tiger *P. t. balica* Schwarz, 1912: Bali

Javan Tiger *P. t. sondaica* (Temminck, 1844): Java

Caspian Tiger *P. t. virgata* (Illiger, 1815): dry river valleys of the Takla Makan, western slopes of the Tianshan mountains, Amudarya and Syrdarya river valleys, shores of the Caspian sea, Elburz mountains, eastern Turkey, Tigris and Euphrates river valleys.

Assessment Information

Red List Category & Criteria: Endangered A2abcd; C1 [ver 3.1](#)

Year Published: 2015

Date Assessed: April 20, 2014

Justification:

The Tiger is listed as Endangered under criterion A2abcd. Comparing a breeding recent range estimate (42 “source sites” totalling 90,000 km² : Walston *et al.* 2010b) to a 2006 total range estimate (1.1 million km² : Dinerstein *et al.* 2007) suggests a range decline much greater than 50% over the last three generations (7 x 3 = 21 years). As per IUCN guidelines (Nowell *et al.* 2007, IUCN 2013), we calculated generation length at seven years based on approximate age of maturity (four years) plus half the length of the reproductive lifespan (six years) (based on Smith and McDougal 1991 and unpublished information). This decline continues and at least two of the source populations listed in Walston *et al.* (2010b) have apparently been lost (one from Lao PDR and one from Thailand). In 2006, it was believed that breeding populations existed in 13 countries, but now known breeding Tiger populations occur only in eight (Bangladesh, Bhutan, India, Indonesia, Malaysia, Nepal, Thailand and Russia).

In 1998, the global Tiger population was estimated at 5,000 to 7,000 Tigers (Seidensticker *et al.* 1999). A comparison of these population estimates of the 1990s (many with little scientific rigour) to similar current ones (many of better quality; see Table 1 in attached Supporting Material) suggests a decline of about 50% (taking the upper bound of 7,000 as the number of mature individuals in 1993, using a precautionary approach, declining to approximately 3,500 in 2014), but differences in methodologies and accuracy make such comparisons uncertain. This declining trend is likely to persist in the face of continuing threats such as direct poaching, prey depletion and habitat degradation which continue in all range states. Although several sites in India and Nepal have indeed reported recent recoveries, population reductions may not be reversible in other areas where Tiger habitat itself has been lost. Given the uncertainties about future declines, criterion A4bcd is no longer used.

The Tiger is also listed as Endangered under criterion C1 because the population of mature individuals may be fewer than 2,500 individuals. Walston *et al.* 2010a estimated 2,154 tigers in 42 protected source sites where there is evidence of breeding (two populations are since known to have been lost, as described above), and the numbers in Table 1 (see Supporting material) could be overestimated. Generally Tiger status outside the source sites is poor and large breeding populations are unlikely to exist. To ensure tiger persistence, large population sizes (implying highest possible densities) and high survival rates of breeding adult females are critical. Although well-protected tiger populations may achieve recruitment rates that can sustain annual losses from mortality and emigration of 20% or more

(Karanth *et al.* 2006), some theoretical models suggest declines to extinction when annual mortality of breeding females exceeds 15% (Chapron *et al.* 2008). Population declines in recent years have been most pronounced outside protected areas (Walston *et al.* 2010b). For the purposes of Red List assessment, the estimated population in Source Sites is a good proxy for the breeding population of adult Tigers. This population has declined by over 20% during the last two generations (14 years); the decline continues and may not be reversible in all sites.

Previously, Tigers were also listed under criterion C2a(i), but we have removed this criterion because the population in the Western Ghats in India has increased to >250 adults (Karanth unpublished data). Other subpopulations in Terai, Central India, and Russia may also have >250 adults (Karanth *et al.* 2010).

See attached Supporting Material for alternative depictions of range and population details.

Previously Published Red List Assessments

2011 – Endangered (EN)

2010 – Endangered (EN)

2008 – Endangered (EN)

2002 – Endangered (EN)

1996 – Endangered (EN)

1994 – Endangered (E)

1990 – Endangered (E)

1988 – Endangered (E)

1986 – Endangered (E)

Geographic Range

Range Description:

The Tiger once ranged widely across Asia, from Turkey in the west to the eastern coast of Russia (Nowell and Jackson 1996). Over the past 100 years Tigers have disappeared from southwest and central Asia, from two Indonesian islands (Java and Bali) and from large areas of Southeast and Eastern Asia. Tigers inhabit less than 6% of their historic range (Sanderson *et al.* 2006, Walston *et al.* 2010b), with a 42% decline since 2006. Breeding populations of Tigers are currently found in eight range states: Bangladesh, Bhutan, India, Indonesia, Malaysia, Nepal, Russia, and Thailand. There is evidence of breeding in China and Myanmar between 2009 and 2014, though these populations are likely dependent on immigration from neighbouring countries. Tigers may still persist in North Korea, although there has been no recent confirmed evidence.

In 1994, the first comprehensive assessment to delineate Tiger range was carried out (Dinerstein *et al.* 1997). Priority areas for Tiger conservation were estimated to total 1.64 million km² in 159 Tiger Conservation Units (TCUs), roughly equivalent to discrete meta-populations, not including Russia (later estimated at 270,000 km²: Sanderson *et al.* 2006) and China. While this was generally considered

representative of current distribution, Tiger presence was confirmed in just 47% the TCUs, and 89% were scored as undergoing medium to high levels of poaching of Tigers and their prey.

This exercise was revised and updated ten years later, and in delineating Tiger Conservation Landscapes (TCLs), greater emphasis was placed on actual records of Tiger presence and breeding (Sanderson *et al.* 2006). TCLs were defined as areas where there is sufficient habitat to conserve at least five Tigers, and Tigers have been confirmed to occur in the past decade. Tiger range was estimated at 1.1 million km² in 76 TCLs (again, roughly equivalent to discrete meta-populations). This represented a 41% decline from the range described a decade earlier (in South and Southeast Asia, a drop from 1.55 million km² to 914,000 km²: Sanderson *et al.* 2006: 63), attributed primarily to poaching pressure (Dinerstein *et al.* 2007). Habitat loss due to deforestation was also to blame, notable particularly in Sumatra and Myanmar (Wikramanayake *et al.* 2010). In India, landscapes with Tigers found to be much smaller and more fragmented than in the original assessment (Sanderson *et al.* 2006: 63 and Figure 4.12).

Records of Tigers were collected over a ten-year period (1995–2004), a period which may have been too liberal for places like Cambodia which underwent a sharp rise in poaching pressure in the 1990s (Sanderson *et al.* 2006: Appendix 6). While 53% of the TCU survey respondents reported evidence of Tiger breeding in the time period 1995–2004, out of over 2,500 point records collected in 2005, just 8% had confirmed evidence of breeding Tigers (Sanderson *et al.* 2006: 11-17). Large areas of habitat were defined as Tiger landscapes based on suitability, but given data paucity on Tiger presence there were often few records of breeding and actual Tiger occupancy to substantiate these (Sanderson *et al.* 2006: Figures 2.3 and 4.8).

A review of land management within Tiger Conservation Landscapes described the TCLs as “potential habitat for Tigers” and found only 21% of their area to be legally protected. Management effectiveness was generally poor in the protected areas, with regulatory, budgetary and enforcement constraints, and hunting cited as the main threat. Significant portions of the TCLs are designated concessions for resource extraction (timber, oil and gas, minerals, etc.) (Forrest *et al.* 2011).

Tiger range was revisited again in 2009, by which time the extent of the Tiger’s range collapse had become evident. “Vast areas of Southeast Asia [were] recently found to be void of Tigers and depleted of prey by hunters” (Walston *et al.* 2010a: 5). The exercise used a different methodology to prioritize areas for Tiger conservation. Source Sites were defined as areas with confirmed current presence of Tigers and evidence of breeding, population estimates of >25 breeding females, legal protection, and embedded in a larger habitat landscape with the potential to hold >50 breeding females. An extensive review of scientific literature as well as correspondence with Tiger scientists and protected area managers resulted in the identification of just 42 source sites totalling approximately 90,000 km². Many Southeast Asian countries, previously considered to have large areas with Tigers, were found, on the basis of extensive survey effort over the past decade or more, to have no healthy breeding populations. Since this publication, Lao PDR has lost its only source site, but Bhutan, originally listed as a country not containing source sites, has documented breeding populations. [See Figures 1 and 2 in supplementary material].

The map for this effort (Figure 1 in supplementary material) differentiates areas where breeding has been detected in the past five years (2009-2014), where Tigers, but no breeding have been detected in the past five years, areas surveyed where no Tigers were detected and areas not surveyed. Data include

camera trap photos, DNA, and observations of Tigers and Tiger sign detected during scientific surveys. Unsurveyed areas were excluded from Tiger range. Figure 2 (attached Supporting Material) documents a 42% range decline since 2006, reflecting both real decline and improved knowledge from new and better surveys.

For further information about this species, see [Supplementary Material](#).

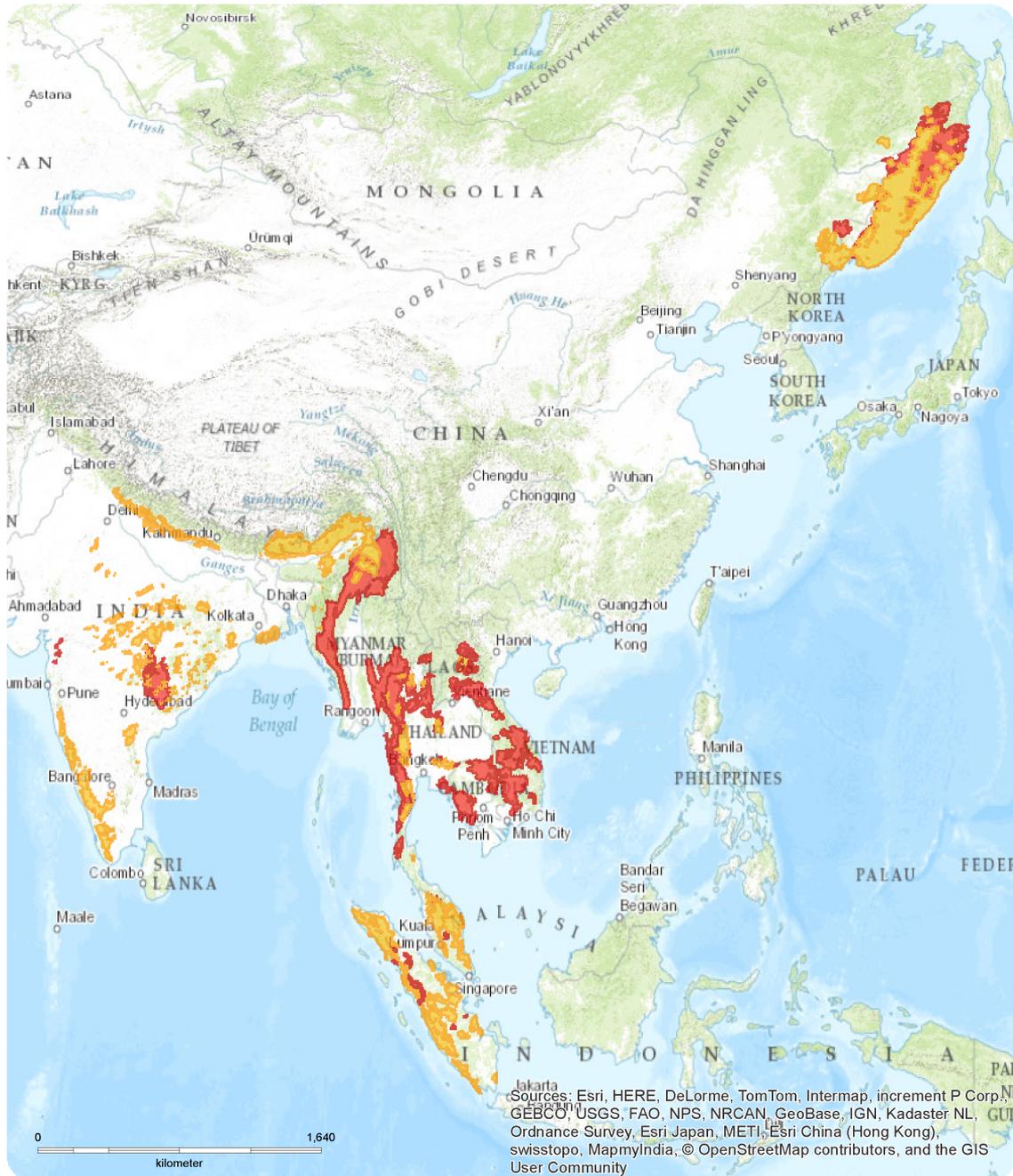
Country Occurrence:

Native: Bangladesh; Bhutan; China (Anhui - Regionally Extinct, Beijing - Regionally Extinct, Chongqing - Regionally Extinct, Fujian - Possibly Extinct, Guangdong - Possibly Extinct, Guangxi - Regionally Extinct, Guizhou - Regionally Extinct, Hebei - Regionally Extinct, Heilongjiang, Henan - Regionally Extinct, Hubei - Regionally Extinct, Hunan - Possibly Extinct, Jiangsu - Regionally Extinct, Jiangxi - Possibly Extinct, Jilin, Liaoning - Regionally Extinct, Shaanxi - Possibly Extinct, Shandong - Regionally Extinct, Shanghai - Regionally Extinct, Shanxi - Regionally Extinct, Sichuan - Regionally Extinct, Tianjin - Regionally Extinct, Tibet [or Xizang], Xinjiang - Regionally Extinct, Yunnan, Zhejiang - Possibly Extinct); India; Indonesia (Bali - Regionally Extinct, Jawa - Regionally Extinct, Sumatera); Lao People's Democratic Republic; Malaysia (Peninsular Malaysia); Myanmar; Nepal; Russian Federation; Thailand

Possibly extinct: Cambodia; Korea, Democratic People's Republic of; Viet Nam

Regionally extinct: Afghanistan; Iran, Islamic Republic of; Kazakhstan; Kyrgyzstan; Pakistan; Singapore; Tajikistan; Turkey; Turkmenistan; Uzbekistan

Distribution Map



Panthera tigris

Range

- Extant (resident)
- Possibly Extinct

Compiled by:
Panthera



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

The thirteen Tiger Range Countries came together in an unprecedented pledge to double the world's Tiger population by 2022, the next Year of the Tiger on the Asian lunar calendar, with a goal of achieving at least 6,000 Tigers. This figure was based on a baseline global population of 3,200, agreed upon at a preparatory workshop held in Kathmandu, Nepal in October 2009; 3,200 Tigers was the IUCN Red List population estimate at that time. Since then, Tiger Range Countries have adjusted their baseline national Tiger estimates, finalized in the Global Tiger Recovery Program adopted at the International Tiger Forum in St Petersburg, Russia in November 2010 (GTRP 2010).

The global Tiger estimate published in the 2010 Red List assessment of 2,154 tigers was an updated version of the estimate of Tiger numbers in source sites (Walston *et al.* 2010a). This was not a complete estimate of global Tiger numbers (for example, most Amur Tigers in Russia are found in unprotected areas), but justified because Tiger status outside the source sites is generally poor and poorly known. IUCN Guidelines (IUCN Standards and Petitions Subcommittee 2010) define population as the number of mature individuals, defined as "individuals known, estimated or inferred to be capable of reproduction." While in general this refers to all reproductive-age adults in the population, the Guidelines also "stress that the intention of the definition of mature individuals is to allow the estimate of the number of mature individuals to take account of all the factors that may make a taxon more vulnerable than otherwise might be expected." Tigers require large populations to persist, and the survival rate of breeding adult females is a key parameter, with models suggesting population declines when mortality of breeding females rises over 15% (Chapron *et al.* 2008). Population declines in recent years have been most pronounced outside protected areas (Walston *et al.* 2010b). The IUCN Guidelines advise that "mature individuals that will never produce new recruits should not be counted." Thus, for the purposes of the Red List assessment in 2010, the estimated population in the Source Sites was used as a proxy for the breeding population of adult Tigers.

Due to extensive surveys using improved methodologies since this analysis, our understanding of tiger distribution and numbers is much improved, e.g., extensive camera trapping in Bhutan has demonstrated significant populations. Further, Walston *et al.* (2010a) ignored some important Tiger areas, e.g., thousands of square kilometres in Kerinci and Leuser National Parks known to contain breeding Tiger populations. Hence, the current estimate of 3,159 Tigers (Table 1 in supplementary material) is based on data collected in scientific surveys conducted over the past five years (i.e. since 2009). This is a minimum estimate because some important areas (e.g. the Russian Far East) did not have current estimates. However, because of differences in methodology, this can by no means be interpreted as an increase over the 2010 estimate of 2,154. Rather, it is a more complete counting. While Tiger numbers have increased in some areas in India (e.g. Western Ghats, Central India, and Corbett Landscapes in India), they have also declined in key areas, especially in mainland SE Asia (e.g. Nam Et-Phou Louey in Lao PDR is no longer considered a potential source site).

In 1998, the global Tiger population was estimated, less rigorously, at 5,000 to 7,000 Tigers (Seidensticker *et al.* 1999). Although to some extent the new numbers represent improved knowledge, it is clear that there have been substantial population declines, with Tigers all but eliminated from much of their recent forest range, particularly in Southeast Asia.

See the supplementary material for further information about national Tiger population estimates.

For further information about this species, see [Supplementary Material](#).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Tigers are found mainly in the forests of tropical Asia, although they historically occurred more widely in drier and colder climes. One subspecies, the Amur Tiger *P. t. altaica*, persists in the Russian Far East. Photos of Tigers up to 4,500 m have been obtained in Bhutan (Wang 2008).

Availability of a sufficient prey base of large ungulates is the Tiger's major habitat requirement: "wild pigs and deer of various species are the two prey types that make up the bulk of the Tiger's diet, and in general Tigers require a good population of these species in order to survive and reproduce" (Hayward *et al.* 2012, Sunquist and Sunquist 2002). Tigers need to kill 50-60 large prey animals per year (Karanth *et al.* 2004, Miller *et al.* 2013). Tigers are opportunistic predators, however, and their diet includes birds, fish, rodents, insects, amphibians, reptiles in addition to other mammals such as primates and porcupines. Tigers can also take ungulate prey much larger than themselves, including large bovids (Water Buffalo, Gaur, Banteng), elephants and rhinos (Nowell and Jackson 1996). However, like many large carnivores, preferred prey are key to successful reproduction and are those species that are approximately the same weight as Tigers themselves (Hayward *et al.* 2012).

Tigers are generally solitary, with adults maintaining exclusive territories, or home ranges. Adult female home ranges seldom overlap, whereas male ranges typically overlap from 1–3 females, a common felid pattern of social organization. Tiger home ranges are small where prey is abundant - e.g., female home ranges in Chitwan averaged 20 km², while in the Russian Far East they are much larger at about 400 km² (Goodrich *et al.* 2010, Sunquist and Sunquist 2002). Similarly, reported Tiger densities range from a maximum of 17-19 Tigers per 100 km² where prey are abundant (India's Kaziranga and Corbett National Parks) to as low as 0.13–0.45 per 100 km² where prey is more thinly distributed, as in Russia's Sikhote Alin Mountains (Jhala *et al.* 2011, Soutyrina *et al.* 2012).

Systems: Terrestrial

Use and Trade (see Appendix for additional information)

In the early 1990s, it was feared that poaching of Tigers for the use of their bones in traditional Asian medicine would drive the Tiger to extinction (Nowell 2000). Despite strong international action to eliminate it, illegal trade persists (Nowell 2007). Tiger bone has long been considered to hold anti-inflammatory properties, with some support from Chinese medical research, but many consider the effect to be more psychological than pharmacological (Nowell and Xu 2007). Although all countries have banned use and manufacture of Tiger bone, illegal production persists in several Asian countries, especially in China, Malaysia, and Viet Nam (Nowell 2007). In China there are several operations engaged in intensive breeding ("farming" of Tigers), with the captive population reportedly reaching over 6,000. They are pressuring the government to allow them to produce Tiger products, and several have already engaged in illegal production of Tiger bone wine. Market surveys indicate that medicinal use of Tiger bone has decreased since China banned Tiger bone in 1993. Tiger farming perpetuates and threatens to re-ignite consumer demand (Nowell and Xu 2007). In 2008 the Convention on International Trade in Endangered Species (CITES) adopted a Decision stating that "Tigers should not be bred for trade

in their parts and derivatives” (CITES 2008).

There are other illegal markets for Tiger products, especially skins, but also teeth and claws (particularly in Sumatra: Ng and Nemora 2007), contributing to poaching pressure. But many Tigers are also killed by people seeking to protect life and livestock. Conflict-killed Tigers can also feed into the illegal trade. Many Tiger products in trade are faked, a legal "grey area" in several countries which also perpetuates consumer demand (Nowell 2000).

Tiger poaching is driven by less by poverty and more by wealth (TRAFFIC 2008), which is putting expensive illegal Tiger products within reach of a rapidly growing group of potential consumers. TRAFFIC has documented rising levels of recent illegal trade within the Tiger range countries, with seizures and confiscations in 2007–2009 averaging the equivalent of approximately 150 Tigers per year (Verheij *et al.* 2010). Interdictions represent just a fraction of the true level of illegal trade, indicating that Tigers are gravely imperilled by black market demand.

Threats (see Appendix for additional information)

Poaching for illegal trade in high-value Tiger products including skins, bones, meat and tonics is a primary threat to Tigers, which has led to their recent disappearance from broad areas of otherwise suitable habitat, and continues at unsustainable rates. That there are roughly one million square kilometres of unoccupied Tiger habitat is a clear indication that poaching is the greatest threat to Tigers range-wide.

Asia is a densely populated and rapidly developing region, bringing huge pressures to bear on the large wild areas required for viable Tiger populations. Conversion of forest land to agriculture and silviculture, commercial logging, and human settlement are the main drivers of Tiger habitat loss. With their substantial dietary requirements, Tigers require a healthy large ungulate prey base, but these species are also under heavy human subsistence hunting pressure and competition from domestic livestock.

Tiger attacks on livestock and people can lead to intolerance of Tigers by neighbouring communities and presents an ongoing challenge to managers to build local support for Tiger conservation and can lead to high rates of retaliatory killing of Tigers. In some areas there have been many human deaths - for example, about 40 people were killed by Tigers in the Sundarbans mangrove forest of Bangladesh and India 2000-2010 (Barlow *et al.* 2013).

Conservation Actions (see Appendix for additional information)

At a “Tiger Summit” held in St Petersburg, Russia in November 2010, the 13 Tiger Range Countries adopted a Global Tiger Recovery Program (GTRP 2010). The goal is to effectively double the number of wild Tigers by 2022 through actions to:

- i) effectively preserve, manage, enhance and protect Tiger habitats;
- ii) eradicate poaching, smuggling and illegal trade of Tigers, their parts and derivatives;
- iii) cooperate in transboundary landscape management and in combating illegal trade;
- iv) engage with indigenous and local communities;
- v) increase the effectiveness of Tiger and habitat management; and
- vi) restore Tigers to their former range.

The Tiger Summit was attended by Heads of State including Russia, China, Lao PDR, Nepal and Bangladesh, and represented significant government commitment to Tiger conservation.

The future of Tiger range depends upon the Asian governments creating effective Tiger landscapes by conserving large areas of suitable habitat. Within these landscapes, the most urgent need is to first secure the source sites—protected areas with viable Tiger populations—where most of the global Tiger population is now clustered, and many of which are currently too threatened to deliver their potential as the demographic sources for species recovery (Walston *et al.* 2010b).

Countries that do not currently support known breeding populations (Myanmar, Cambodia, Viet Nam and Lao PDR) but still have large landscapes with suitable habitat, Tigers might still be recovered if government commitment to Tigers, staff capacity for law enforcement and legal frameworks for Tiger protection can be established (Lynam 2010), though reintroduction may be needed in some places.

Credits

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External Resources

For [Supplementary Material](#), and for [Images and External Links to Additional Information](#), please see the Red List website.

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
1. Forest -> 1.1. Forest - Boreal	-	Suitable	Yes
1. Forest -> 1.4. Forest - Temperate	-	Suitable	Yes
1. Forest -> 1.5. Forest - Subtropical/Tropical Dry	-	Suitable	Yes
1. Forest -> 1.6. Forest - Subtropical/Tropical Moist Lowland	-	Suitable	Yes
1. Forest -> 1.7. Forest - Subtropical/Tropical Mangrove Vegetation Above High Tide Level	-	Suitable	Yes
1. Forest -> 1.9. Forest - Subtropical/Tropical Moist Montane	-	Marginal	-
3. Shrubland -> 3.5. Shrubland - Subtropical/Tropical Dry	-	Suitable	Yes
3. Shrubland -> 3.6. Shrubland - Subtropical/Tropical Moist	-	Suitable	Yes
4. Grassland -> 4.5. Grassland - Subtropical/Tropical Dry	-	Marginal	-
4. Grassland -> 4.6. Grassland - Subtropical/Tropical Seasonally Wet/Flooded	-	Marginal	-

Use and Trade

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

End Use	Local	National	International
Food - human	No	Yes	Yes
Medicine - human & veterinary	No	Yes	Yes
Handicrafts, jewellery, etc.	No	Yes	Yes
Pets/display animals, horticulture	No	Yes	Yes
Establishing ex-situ production *	No	No	No

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity	Impact Score
1. Residential & commercial development -> 1.1. Housing & urban areas	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
1. Residential & commercial development -> 1.2. Commercial & industrial areas	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
1. Residential & commercial development -> 1.3. Tourism & recreation areas	Ongoing	-	-	-

	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.1. Shifting agriculture	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.1. Small-holder plantations	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.2. Wood & pulp plantations -> 2.2.2. Agro-industry plantations	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
2. Agriculture & aquaculture -> 2.4. Marine & freshwater aquaculture -> 2.4.3. Scale Unknown/Unrecorded	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
3. Energy production & mining -> 3.2. Mining & quarrying	Ongoing	- - -
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.1. Intentional use (species is the target)	Ongoing	- - -
	Stresses:	2. Species Stresses -> 2.1. Species mortality

5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.3. Persecution/control	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
6. Human intrusions & disturbance -> 6.2. War, civil unrest & military exercises	Ongoing	-	-	-
	Stresses:	2. Species Stresses -> 2.2. Species disturbance		
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.3. Trend Unknown/Unrecorded	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.11. Dams (size unknown)	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation		
8. Invasive & other problematic species & genes -> 8.2. Problematic native species	Ongoing	-	-	-
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation		

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Systematic monitoring scheme: Yes
In-Place Land/Water Protection and Management
Occur in at least one PA: Yes
Area based regional management plan: Yes
In-Place Species Management
Harvest management plan: Yes
Subject to ex-situ conservation: Yes
In-Place Education
Subject to recent education and awareness programmes: Yes
Included in international legislation: Yes
Subject to any international management/trade controls: Yes

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.3. Habitat & natural process restoration
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
3. Species management -> 3.2. Species recovery
3. Species management -> 3.3. Species re-introduction -> 3.3.1. Reintroduction
3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation
3. Species management -> 3.4. Ex-situ conservation -> 3.4.2. Genome resource bank
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.1. International level
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.1. International level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level
6. Livelihood, economic & other incentives -> 6.1. Linked enterprises & livelihood alternatives

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
2. Conservation Planning -> 2.1. Species Action/Recovery Plan

Research Needed
3. Monitoring -> 3.1. Population trends

Additional Data Fields

Distribution
Estimated extent of occurrence (EOO) (km ²): 1184911
Number of Locations: 76
Lower elevation limit (m): 0
Upper elevation limit (m): 4500
Population
Number of mature individuals: 2154-3159
Continuing decline of mature individuals: Yes
Population severely fragmented: Yes
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 6.5-10

The IUCN Red List Partnership



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