Successful Wildlife Crime Prosecution in Europe.

The Ecological effects of Wildlife Crimes

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1. MAIN IMPACTS ON BIODIVERSITY

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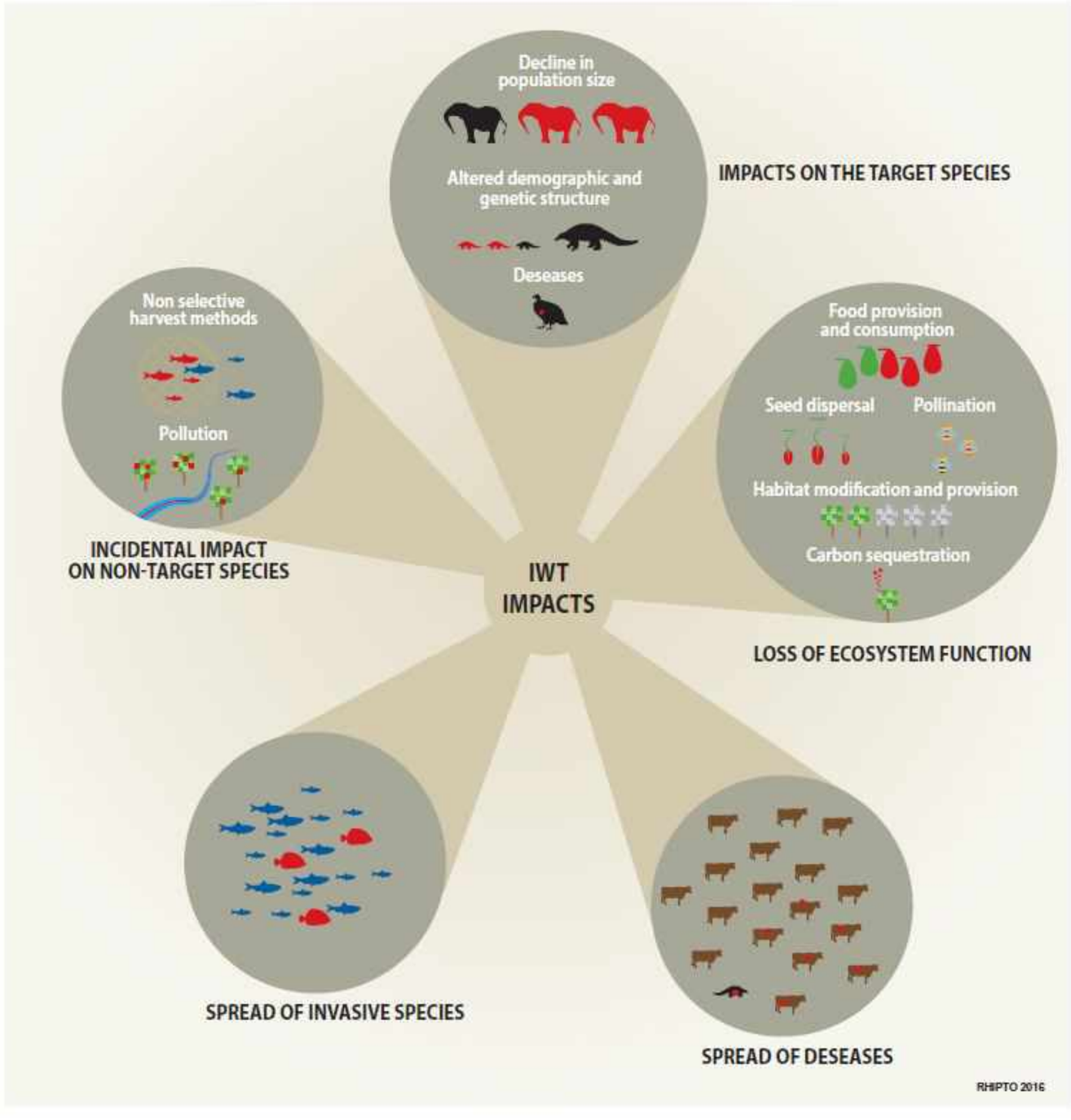
- Immediate **detrimental effect** on the target species (i.e., overexploitation)
- **Incidental loss of non-target species** (i.e., pollution, non-selective harvest method)
- Long-term **deterioration in ecosystem services** (food provision, pollination, seed dispersal, carbon sequestration, etc)
- Spread of **diseases** and risk of spillover
- Spread of **invasive species**



- **Overuse of wild animal and plant species (wild plants, grazing pastures, game animals, fish stocks, forests and the aquifers)**

- **Illegal offtake occurs in addition to legal offtake;**

- **The concern about overexploitation is relatively recent, the phenomenon is not.**

It can lead to:

- **Irreversible loss of species and populations**
- **Ecosystem perturbations,**
- **Economic loss,**
- **Food shortages,**
- **Spread of pathogens.**

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The target species are often already threatened by other pressures and wildlife crimes and trafficking are additional pressures

Poaching sturgeon for the illegal trade in wild caught caviar and meat is one of the leading causes of their demise.

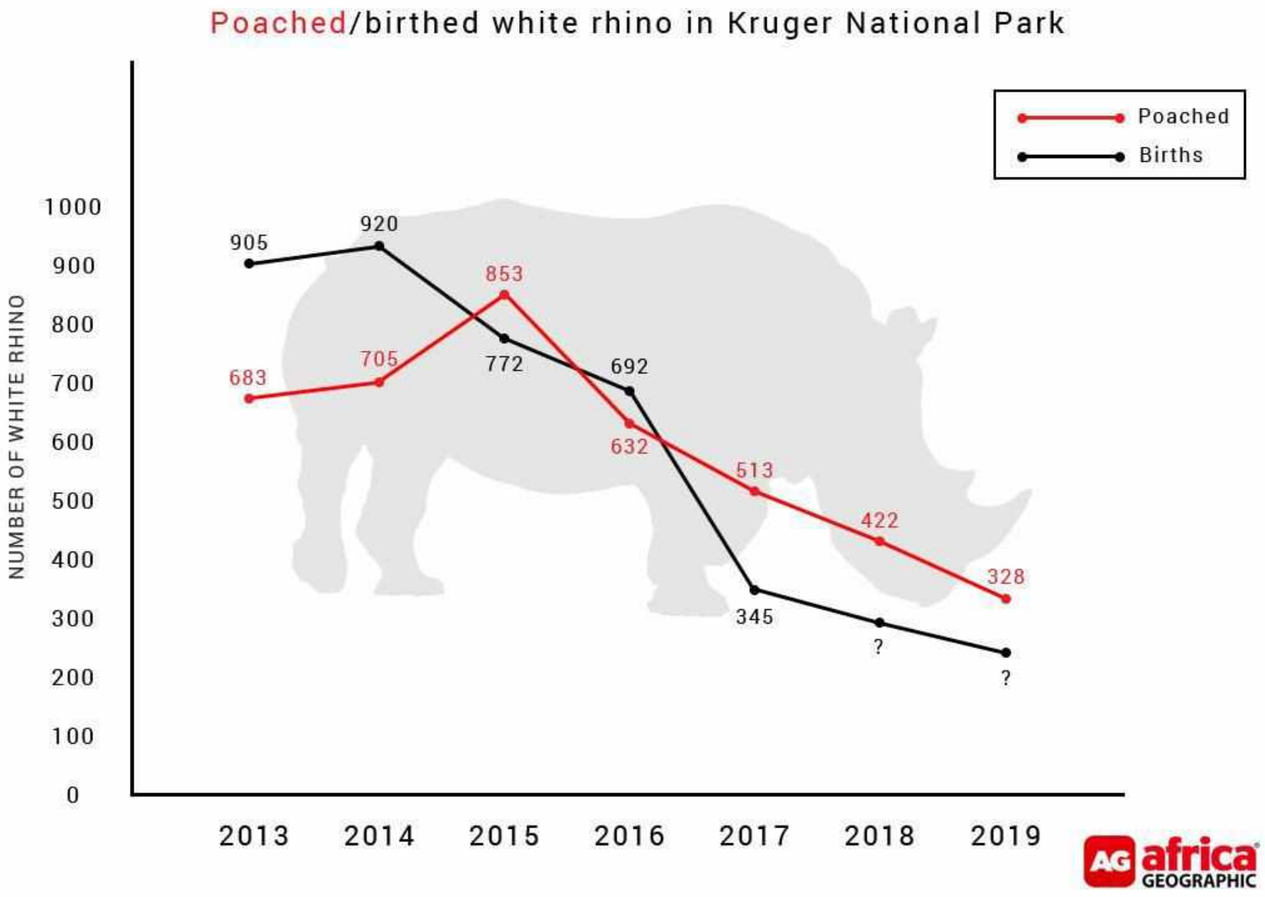
The status of sturgeons continues to worsen across the continent.

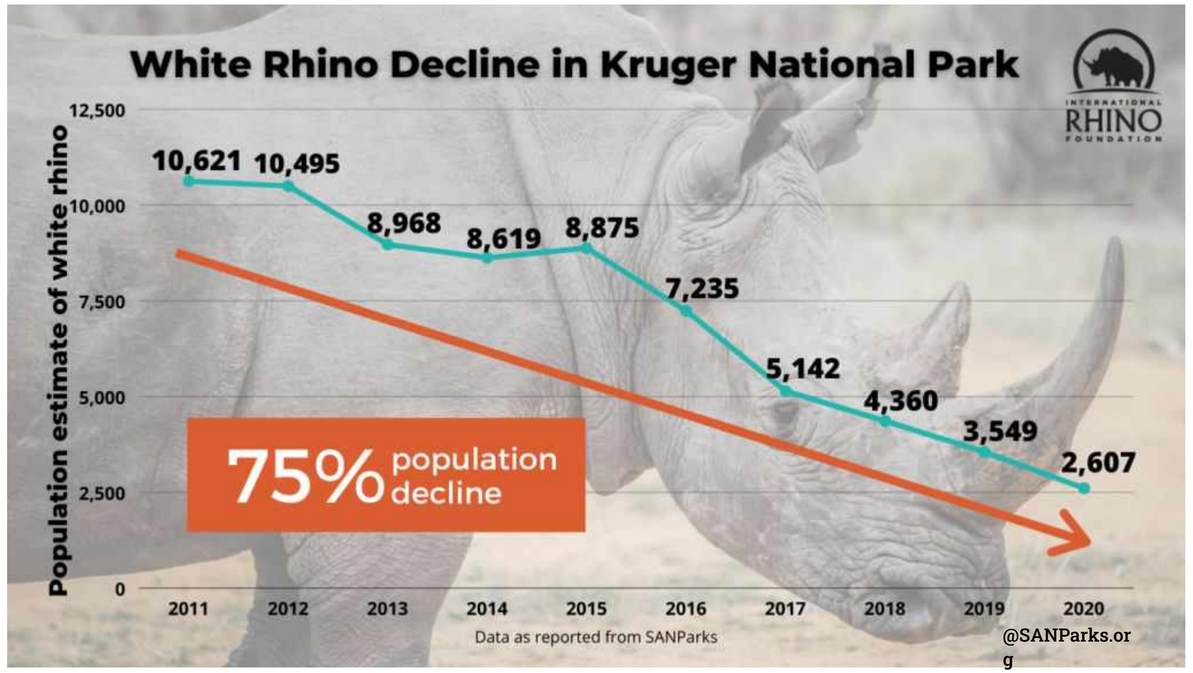
Seven of the eight European species were already listed as critically endangered, and now the sterlet, the smallest, purely freshwater species, has been reclassified from vulnerable to endangered.

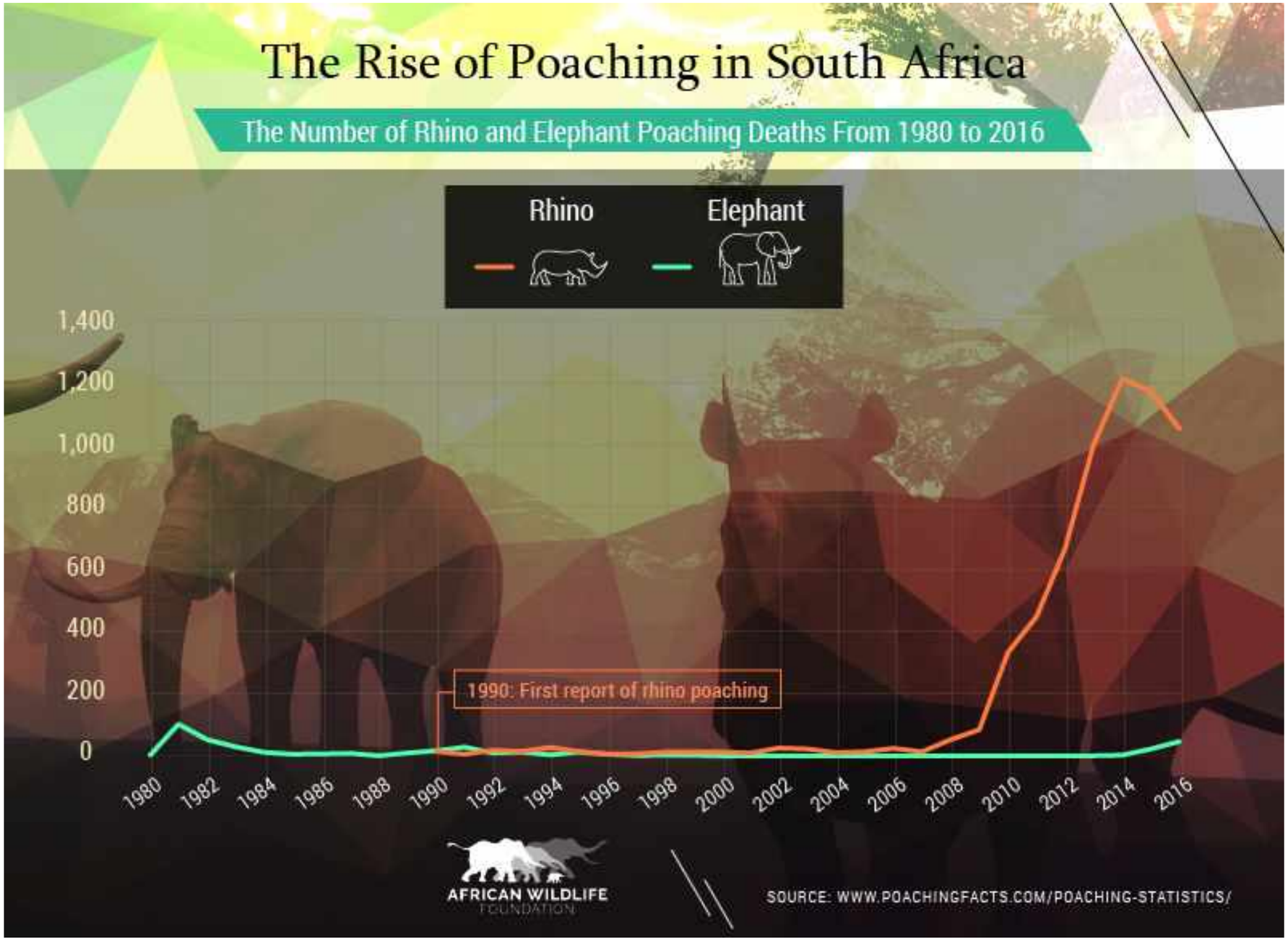
European sturgeon (Acipenser sturio) monitoring in Georgia

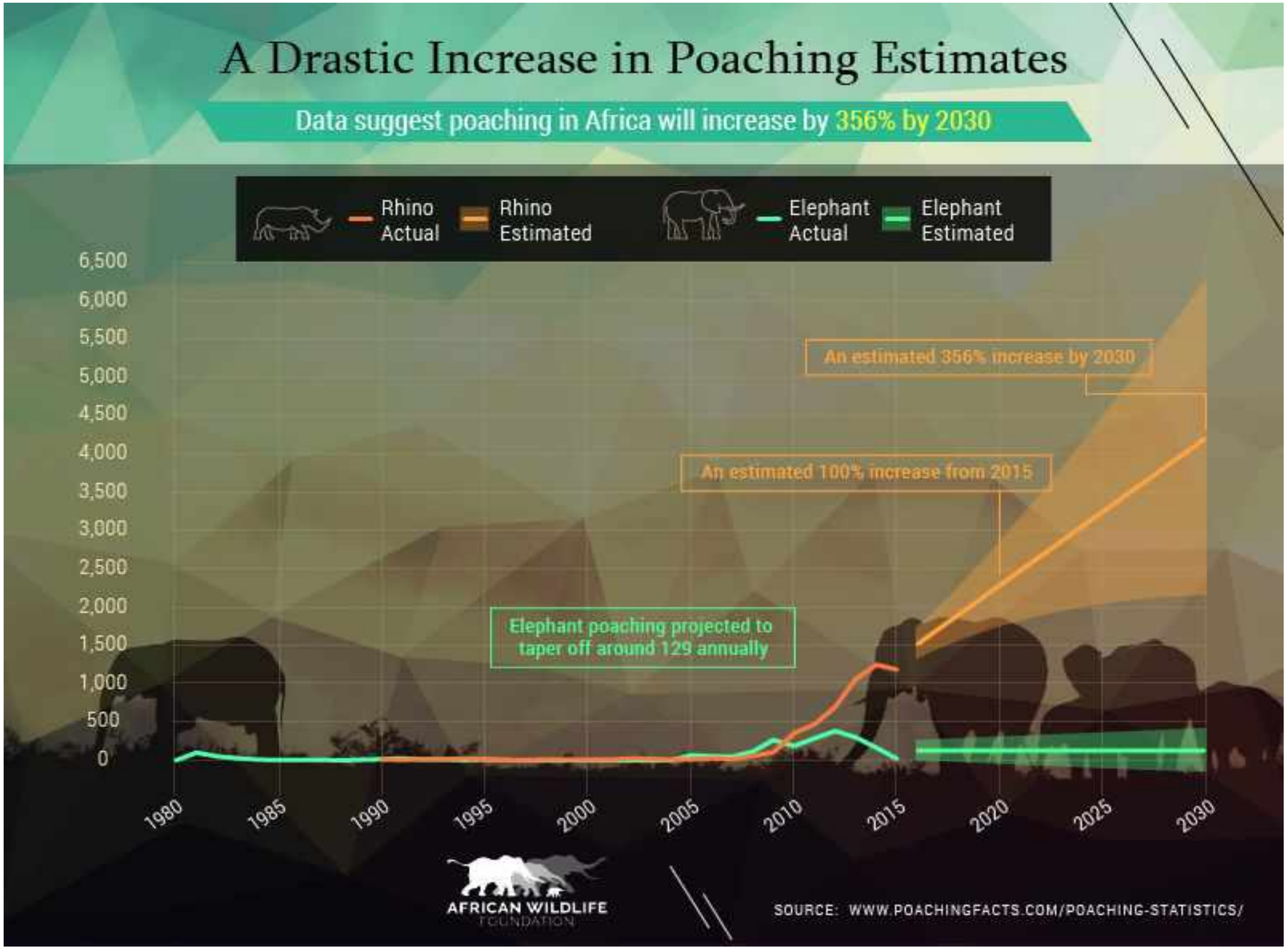
© WWF / Hartmut Jungius

The target species are often already threatened by other pressures and wildlife crimes and trafficking are additional pressures

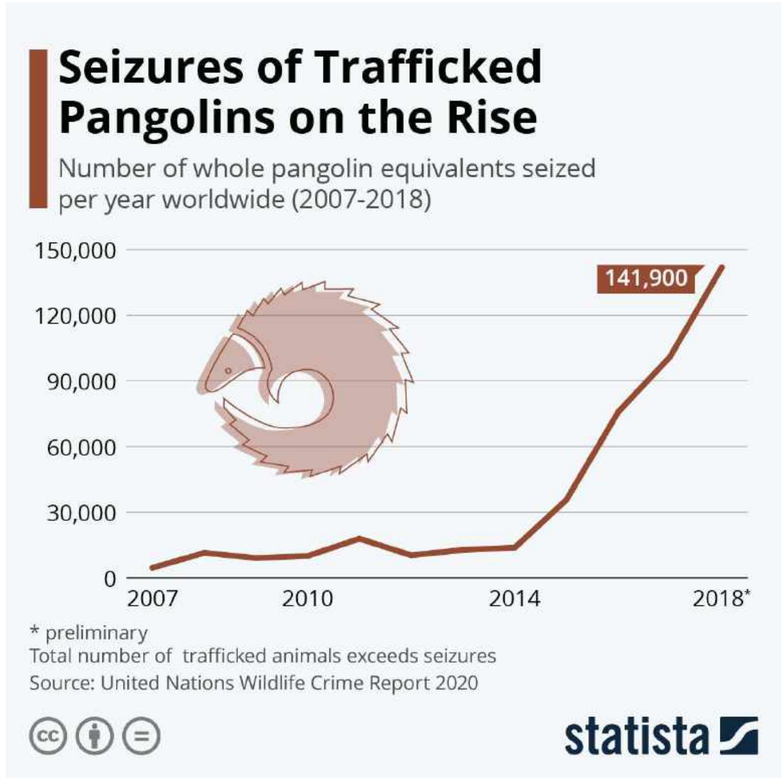


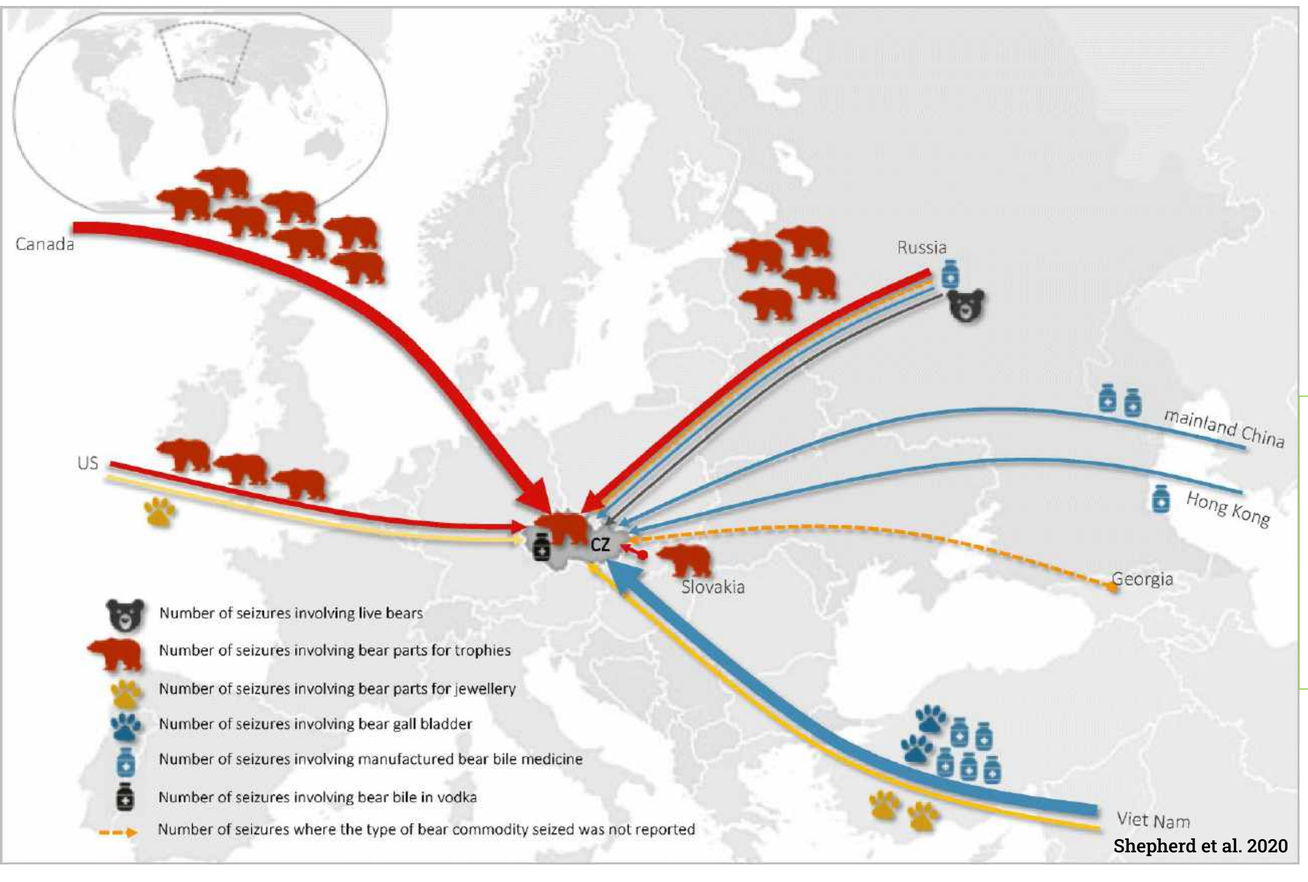



The Rise of Poaching in South Africa
The Number of Rhino and Elephant Poaching Deaths From 1980 to 2016
Rhino
Elephant
1,400
1,200
1,000
800
600
400
200
0
1990: First report of rhino poaching
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
AFRICAN WILDLIFE FOUNDATION
SOURCE: WWW.POACHINGFACTS.COM/POACHING-STATISTICS/


A Drastic Increase in Poaching Estimates
Data suggest poaching in Africa will increase by 356% by 2030
Rhino Actual
Rhino Estimated
Elephant Actual
Elephant Estimated
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
An estimated 356% increase by 2030
An estimated 100% increase from 2015
Elephant poaching projected to taper off around 129 annually
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
AFRICAN WILDLIFE FOUNDATION
SOURCE: WWW.POACHINGFACTS.COM/POACHING-STATISTICS/

Pangolins are declining in Asia as a result of illegal hunting and trade for their meat and scales (Challender et al., 2014a and b); the demand in China alone has been estimated at over 150,000 pangolins per year (UNODC, 2013a).





Shepherd et al. 2020

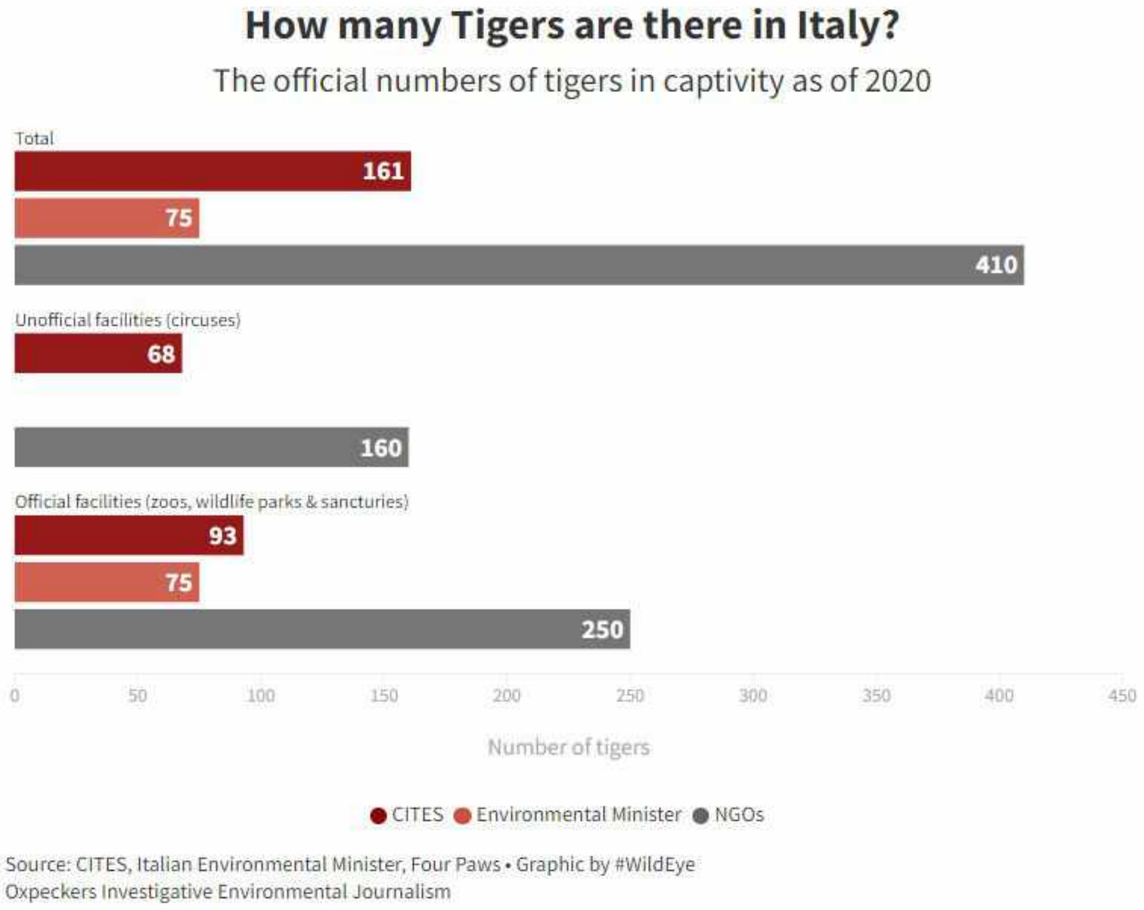
From 2010 to 2018, the **Czech Republic** reported legal imports of 495 bear parts, mostly as trophies from Canada and Russia. From January 2005 to February 2020, **36 seizures involving bears**, their parts and derivatives, were made totaling 346 items (Shepherd et al., 2020).

- **Big cats are subject to illegal hunting and trade for pelts and for the use of their derivatives in traditional medicines.**

 Figures reported include the seizure of 1,452 tigers (Endangered in Nature - EN) between 2000 and 2012, with the actual volume of illegal trade believed to be much higher (Stoner and Pervushina, 2013).

The illegal trade in tigers and their products was believed to have increased in the last 10 years, particularly in Southeast Asia (CITES, 2014), yet only 3,200 wild tigers may remain worldwide (TRAFFIC, 2011)

A lack of data about the tiger trade in Europe is stimulating illegal trafficking in this endangered species – and Italy and France are two of the major hotspots



- **Tendency to target individuals having specific characteristics within a population**

- **Reducing genetic diversity and long-term viability of populations**

Reproductive collapse in saiga antelope (*Critically Endangered - CR*) has been attributed to a strong sex ratio bias resulting from **selective illegal hunting of adult males for their horns** (Milner-Gulland et al., 2003).

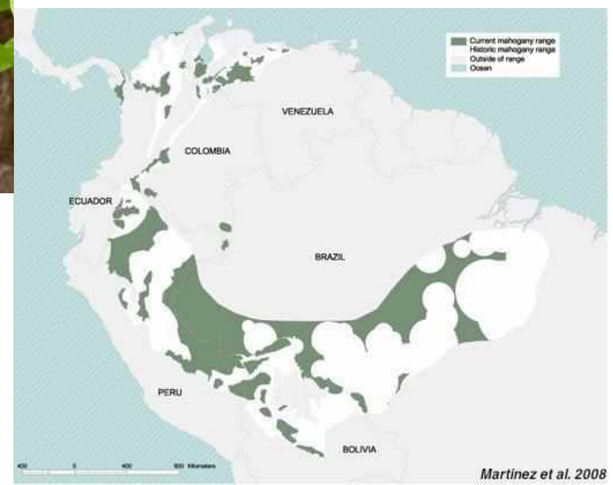
- **Tendency to remove the largest and most reproductively valuable trees**

- **Disproportionately negative impacts on regeneration**

This effect has been documented in big-leaf mahogany (*Vulnerable - VU*) and contributes to the high vulnerability of this species to logging (Snook, 1996).
Internationally agreed trade regulations for big-leaf mahogany entered into force in 2003.
Over 100 million dollars a year in export sales,
One of the world's most valuable forest products

Historical range

Current range



- **Loss of genetic diversity, such as that resulting from over-harvesting**

- **Increase the susceptibility of populations to disease in situ (e.g. Spielman et al., 2004)**

Parasite loads were found to be higher in those populations of Galapagos hawk *(Vulnerable - VU)* with the lowest genetic diversity and highest inbreeding (Whiteman et al., 2006).

- **Transport of wildlife within or between countries provides a pathway for transmission of pathogens that are a threat beyond the target species to biodiversity, agricultural production and human health (Smith et al., 2009).**

Seized mountain hawk-eagle (Near Threatened - NA) which had been smuggled from Thailand to Belgium were diagnosed with a highly pathogenic avian influenza A/H5N1 virus, a disease that poses a **threat to wild and domestic birds and to humans** (van Borm et al., 2005).

- **The methods used by poachers to kill or capture animals and the way animals are handled are often extremely cruel and fail to comply with animal welfare standards.**

- **Furthermore, many transportation and concealment methods are harmful to animals and many specimens fall ill, are injured, starve or die otherwise in transit (Rosen & Smith, 2010).**

- **Trafficking live animals can result in high fatality rates for the specimens involved, especially if animals are stored and fed inadequately (see further, Baker, 2013).**

- **As mentioned above, indiscriminate methods used to catch animals, such as cyanide fishing, can also harm and kill non-target species, deplete fishing populations, and damage ecosystems (see further, Dee, 2014).**

- **Animal rights and ethical perspectives advocate more broadly against the killing, use, and consumption of (wild) animals.**

- **Poachers and hunters are frequently armed with guns** or other weapons that are used not only to kill, capture, or collect wildlife, but are also employed against rangers, conservation officials, police, and local people who protect or live near endangered animals or plants.

- **Rangers around the world are killed** at a high rate.

- **Over the last decade, some 1,000 rangers have died** in the line of duty in Africa alone.

- **Threats and violence can often escalate** - along with the scale of depletion - if organized criminal groups become involved in wildlife, forest, and fisheries crime. This also heightens the risk of corruption at many stages of the illegal wildlife trade (Rosen & Smith, 2010).

- **Increased militarization of anti-poaching efforts can sometimes lead to 'shoot first' policies** that can ultimately lead to more deaths of potential offenders and escalate violence between those on the frontline and locals (Moreto & Pires, 2018).

Many harvest methods have been banned or restricted in some areas due to their lack of selectivity; in these cases, the impacts on non-target species can be directly linked to the illegal use of these methods.

Case study: African Vulture

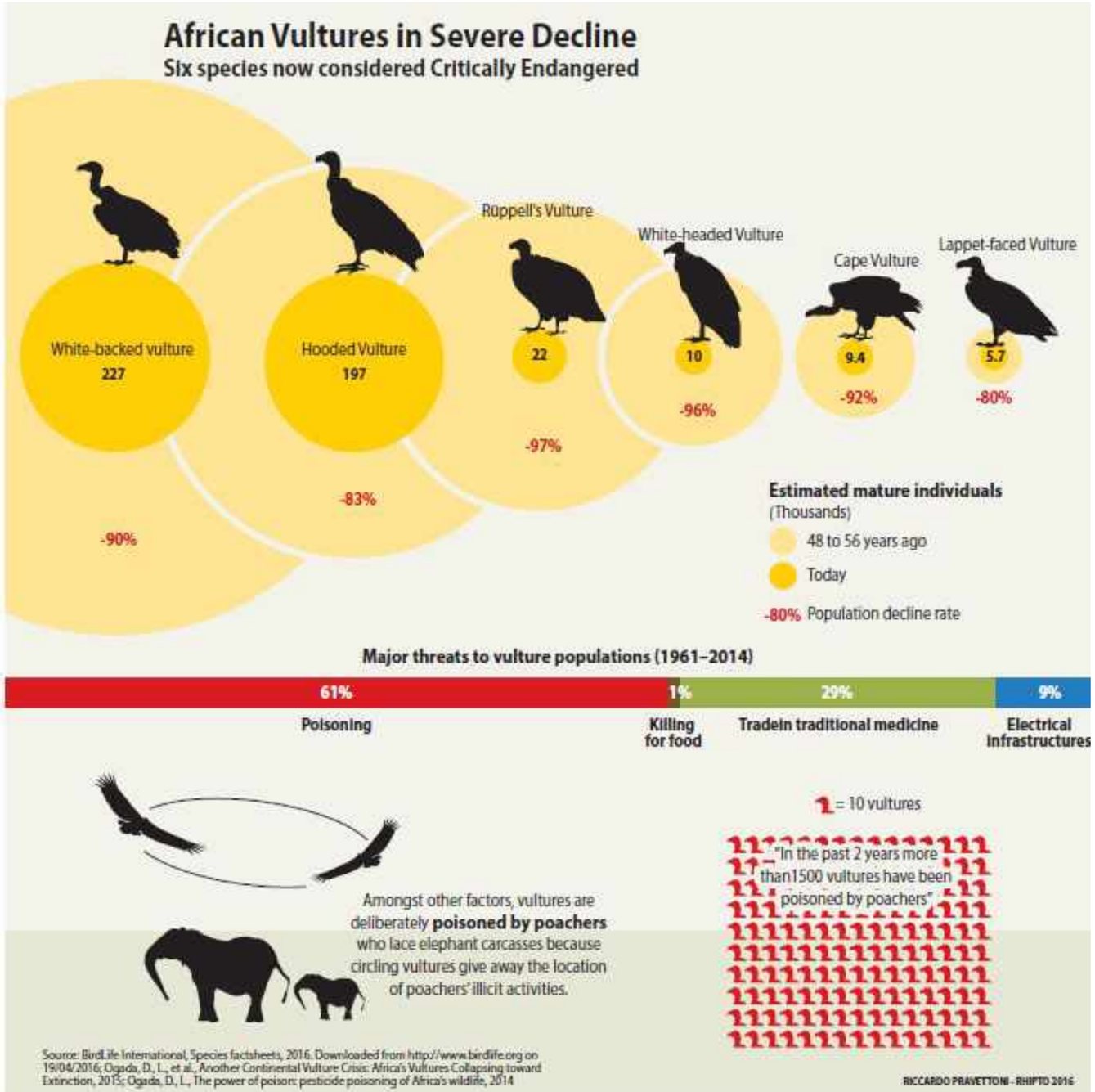
- Vultures are widely hunted and traded in Africa for use in traditional medicine (Amezian & El Khamlichi 2015).

- In West Africa, particularly Nigeria where the trade is most active, annual offtake was recently estimated at around 4,000 – 6,000 raptors per year (for the period 2008-2013), including an estimated 1,341-2,011 raptors per year from four Critically Endangered vulture species (Buij et al. 2015).

- In Southern Africa, as ivory poachers use poison to kill elephants or to contaminate their carcasses specifically to eliminate vultures, whose overhead circling might otherwise reveal the presence of the carcass.

- Between 2012 and 2014, Ogada et al. (2015b) reported 11 poaching-related incidents in seven African countries, in which 155 elephants and 2,044 vultures were killed

- Vulture mortality associated with ivory poaching accounted for one-third of all vulture poisonings recorded since 1970, implying a surge in the illegal use of toxic chemicals


African Vultures in Severe Decline
Six species now considered Critically Endangered
White-backed vulture
227
-90%
Hooded Vulture
197
-83%
Rüppell's Vulture
22
-97%
White-headed Vulture
10
-96%
Cape Vulture
9.4
-92%
Lappet-faced Vulture
5.7
-80%
Estimated mature individuals
(Thousands)
48 to 56 years ago
Today
-80% Population decline rate
Major threats to vulture populations (1961–2014)
61%
Poisoning
1%
Killing for food
29%
Tradein traditional medicine
9%
Electrical infrastructures
Amongst other factors, vultures are deliberately poisoned by poachers who lace elephant carcasses because circling vultures give away the location of poachers' illicit activities.
1 = 10 vultures
"In the past 2 years more than1500 vultures have been poisoned by poachers"
Source: BirdLife International, Species factsheets, 2016. Downloaded from http://www.birdlife.org on 19/04/2016; Ogada, D., L., et al., Another Continental Vulture Crisis: Africa's Vultures Collapsing toward Extinction, 2015; Ogada, D., L., The power of poison: pesticide poisoning of Africa's wildlife, 2014
RICCARDO PRAVETTONI - RHIPTO 2016

- **All species perform a functional role within the ecosystem of which they are a component (Kaiser and Jennings, 2001).**

- **The impacts of the loss of individual species are not well understood but can be considerable.**

- **The time scales within which effects become evident, however, can vary substantially (Gascon et al., 2015).**

- **Even relatively small proportional declines in the abundance of common species can result in significant disruption to ecosystem function** (Gaston and Fuller, 2008);

- **Equally, species that are rare are not necessarily less functionally significant than those that are common (Lyons et al., 2005; Mouillot et al., 2013).**

- **'Empty forest syndrome'** leads to apparently intact forests systems that have, however, become **devoid of species through overharvest** (Redford, 1992); the effects of the loss of some of their ecological functions, such as **seed dispersal** and **predation** may only become evident **decades later** (Robertson et al., 2006).

Case study: Medicinal plants

- Over **70,000 plant species**, the majority collected from the wild, are used for medicinal properties globally (Schippmann et al., 2006).
- **Source of raw materials** for local use and for the manufacture of a wide variety of pharmaceutical, herbal, food, cosmetic and fragrance products.
- **Critical source** of household income, particularly for the rural poor
- Illegal and unsustainable harvesting and trade has an **impact on local livelihoods** and national economies, as well as the conservation of forests and individual species.
- Estimating the levels of illegal trade in plant is **challenging**.
- **Little control** and enforcement of legality and sustainability, and a lack of management planning (Laird et al., 2009).
- Over **60 medicinal plant species** are listed in the CITES Appendices.
- Unsustainable and illegal harvest and trade in medicinal plants **are health options** (the long-term availability of ingredients of traditional medicine as well as potential drug discovery) and livelihoods (from trade in plants).
- Wild plants also provide an important **source of food and nutrition**, in times of climate stress e.g. when crops fail (Romanelli et al., 2015).

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Ecosystem services are the direct and indirect contributions of ecosystems to human well-being.

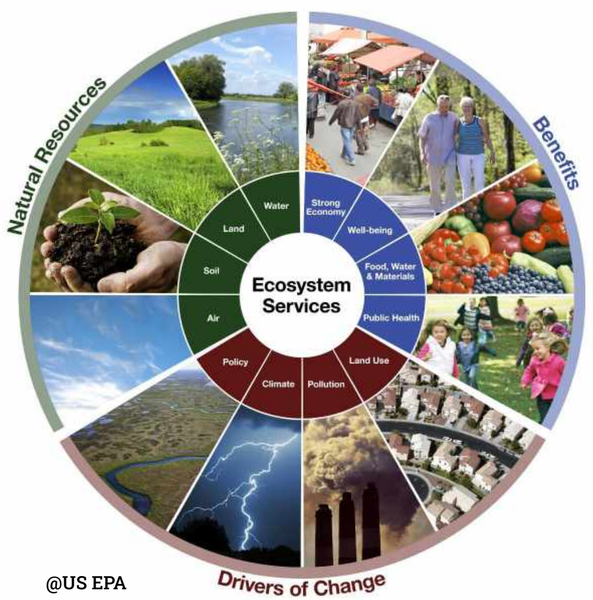
Provisioning Services are ecosystem services that describe the material or energy outputs from ecosystems. They include food, water, and other resources.

Regulating Services are the services that ecosystems provide by acting as regulators eg. regulating the quality of air and soil or by providing flood and disease control.

Habitat or Supporting Services underpin almost all other services. Ecosystems provide living spaces for plants or animals; they also maintain a diversity of different breeds of plants and animals

Cultural Services include the non-material benefits people obtain from contact with ecosystems. They include aesthetic, spiritual and psychological benefits.

@earthwiseaware



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Loss of Ecosystem Services in Europe

Land-use change is the major direct driver of the loss of both biodiversity and ecosystem services in Europe

The impact of climate change on biodiversity and nature's contributions to people is increasing rapidly and is likely to be one of the most important drivers in the future

Trends in natural resource extraction, pollution and invasive alien species have led to considerable declines in biodiversity and ecosystem services, and are likely to continue to pose considerable threats, particularly in combination with climate change

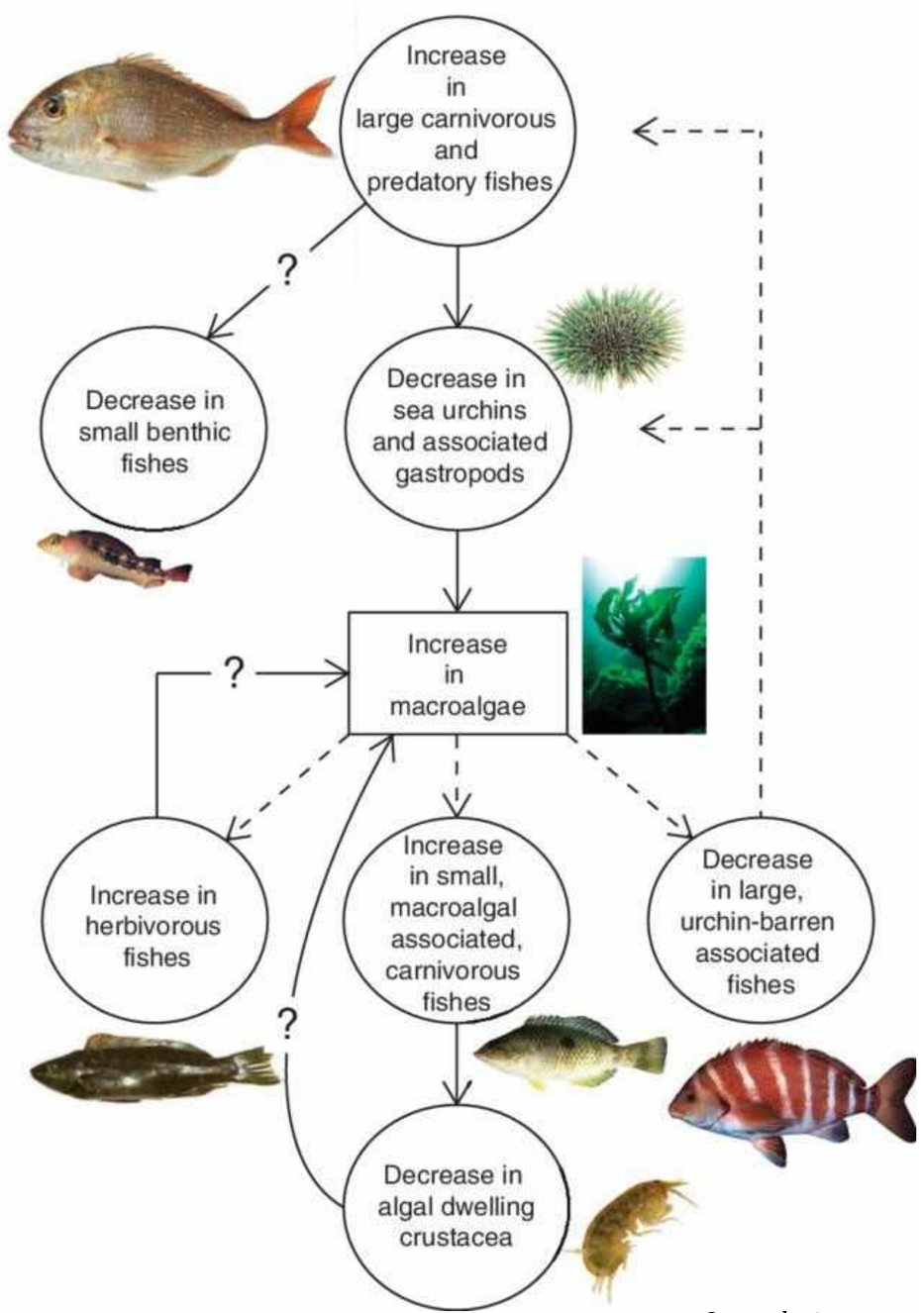
Economic growth is generally not decoupled from environmental degradation. This decoupling would require a transformation in policies and tax reforms across the region

Trends in nature's contributions to people (1960–2016) for Europe and Central Asia and the subregions.

WE = Western Europe, CE = Central Europe, EE = Eastern Europe, CA = Central Asia @IPBES, 2018

A key function of a species within its ecosystem is its role as a food source for other species, and/or as a consumer of other species.

A decline in the population size of a particular species therefore has the potential to result in a chain of effects across the whole food chain, and there are several well-documented examples of these so-called 'trophic cascades' (Pace et al., 1999; Mumby and Harborne, 2010; Ruppert et al., 2013).



Flow diagram summarising hypothesised role of fishes in trophic cascades (top-down effects) and the effects of biotic habitat structure on rocky reef fishes (bottom-up effects). Solid arrows represent effects resulting from consumption. Dashed arrows represent effects resulting from availability of habitat (Jones, 2013)

Elimination of cod from marine ecosystems in North America, due to illegal fishing

- **increase of number of grazers (crabs, lobsters)**
- **disappearance of kelp forest in Maine (Jackson et al., 2001)**

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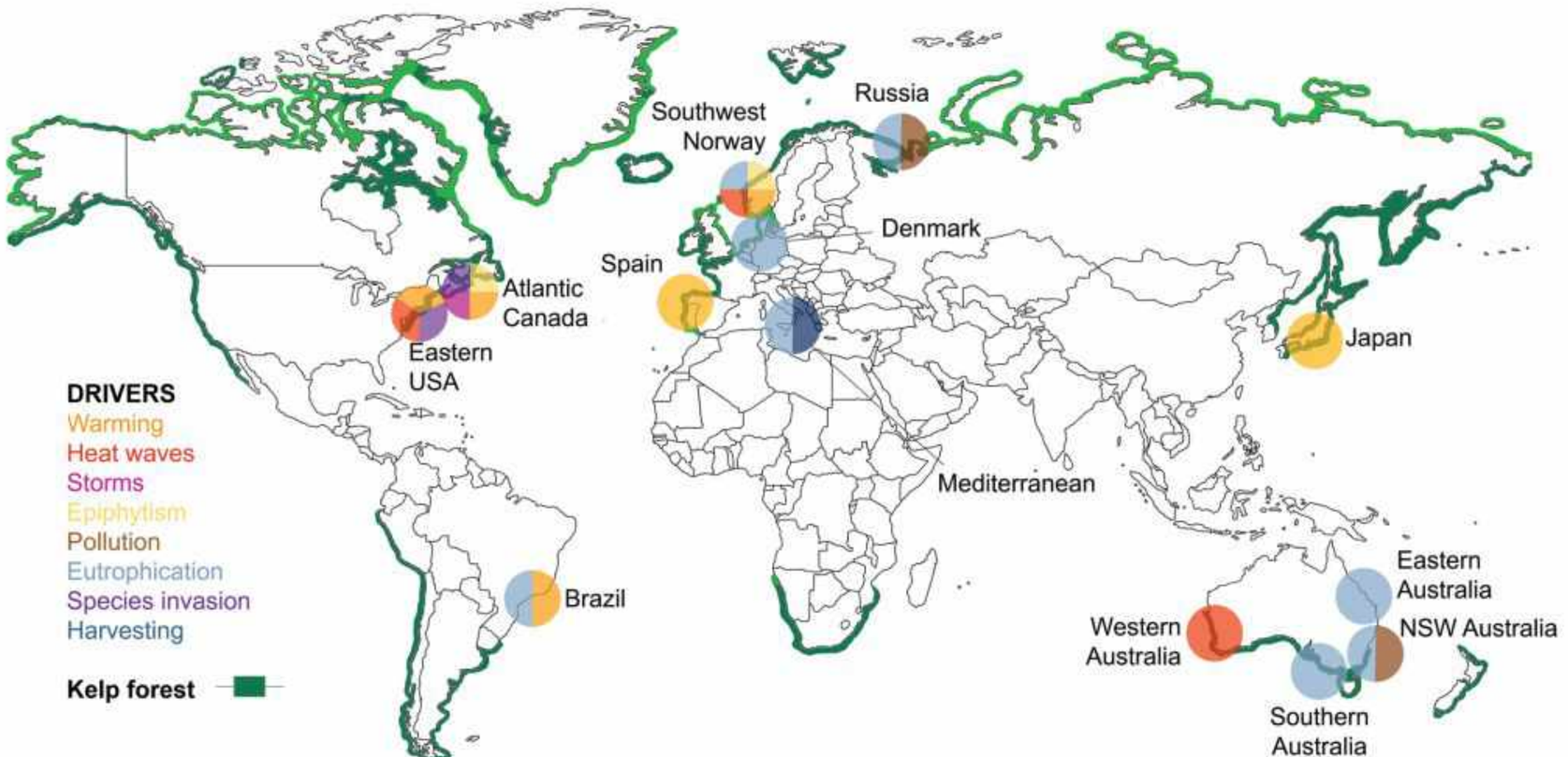

Filbee-Dexter and Wernberg, 2018

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In the Western Mediterranean, overfishing affects 80% of demersal fish stocks
High catches of demersal fish account for 81-97% of the total volume of landings in Italy, Spain and France.
Discarded fish account for more than 40% of the total catch on average with that figure rising to 60% in shallow waters
(Oceana, 2018)

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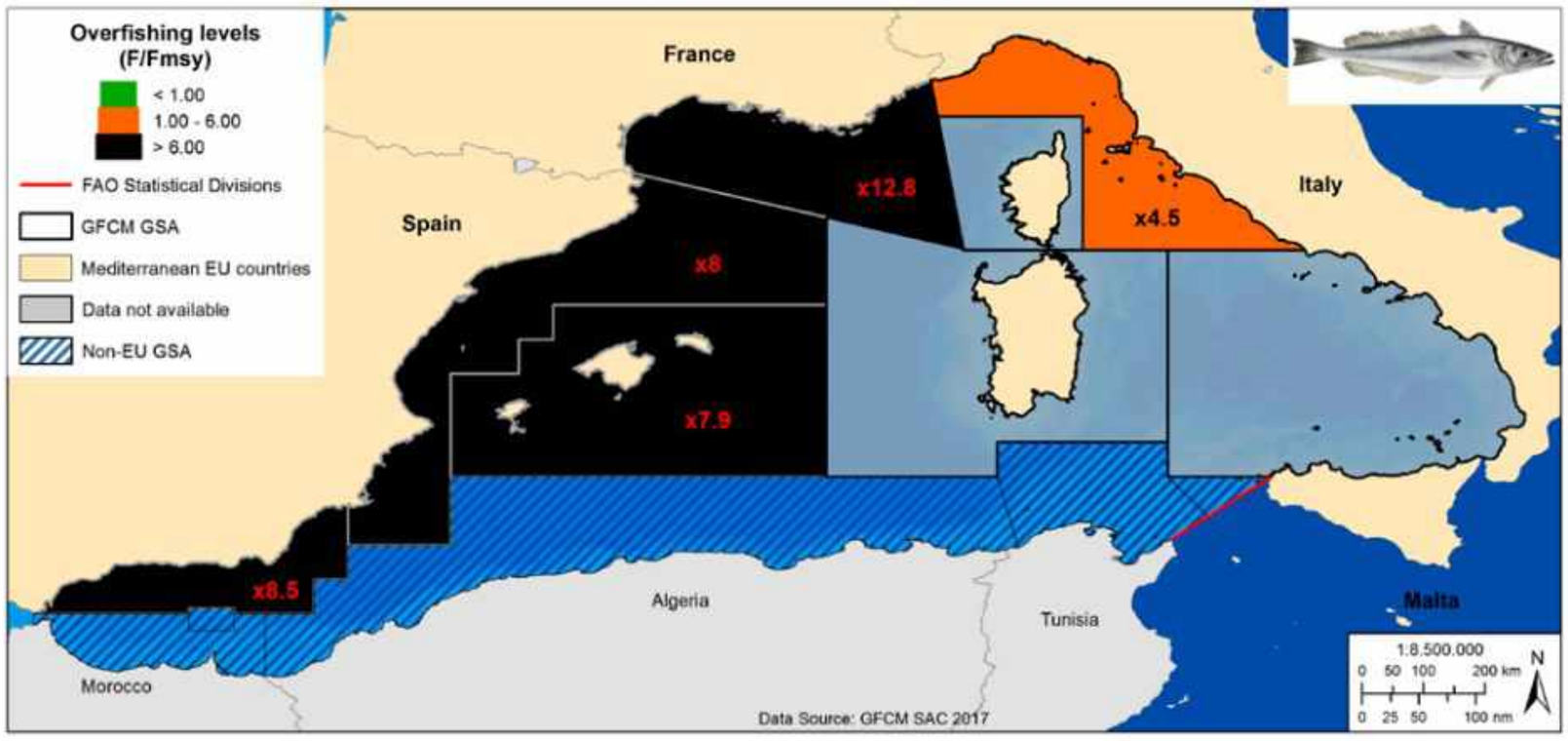
HOW MANY TIMES FISHING MORTALITY OF HAKE IS ABOVE SUSTAINABLE LEVELS



Oceana, 2018

Bushmeat (wild animals' consumption)

- Important **source of animal protein** and income for many forest-living people globally.

- Illegal due to the targeting of protected species (e.g. **elephants, great apes**)

- Large-scale commercial hunting and trade often **disregard customary community hunting rights** and violate any established hunting quotas.

- The scale of commercial bushmeat hunting has become a serious threat to many rainforest species (Fa et al., 2002), leading to **local extirpations of species**, with West and Central Africa particularly hard hit (Milner-Gulland et al., 2003).

- Regeneration in hunted forests has been shown to **favor faster-growing plants with lower wood density**, and result in lower overall tree species diversity (e.g., Harrison et al., 2013).

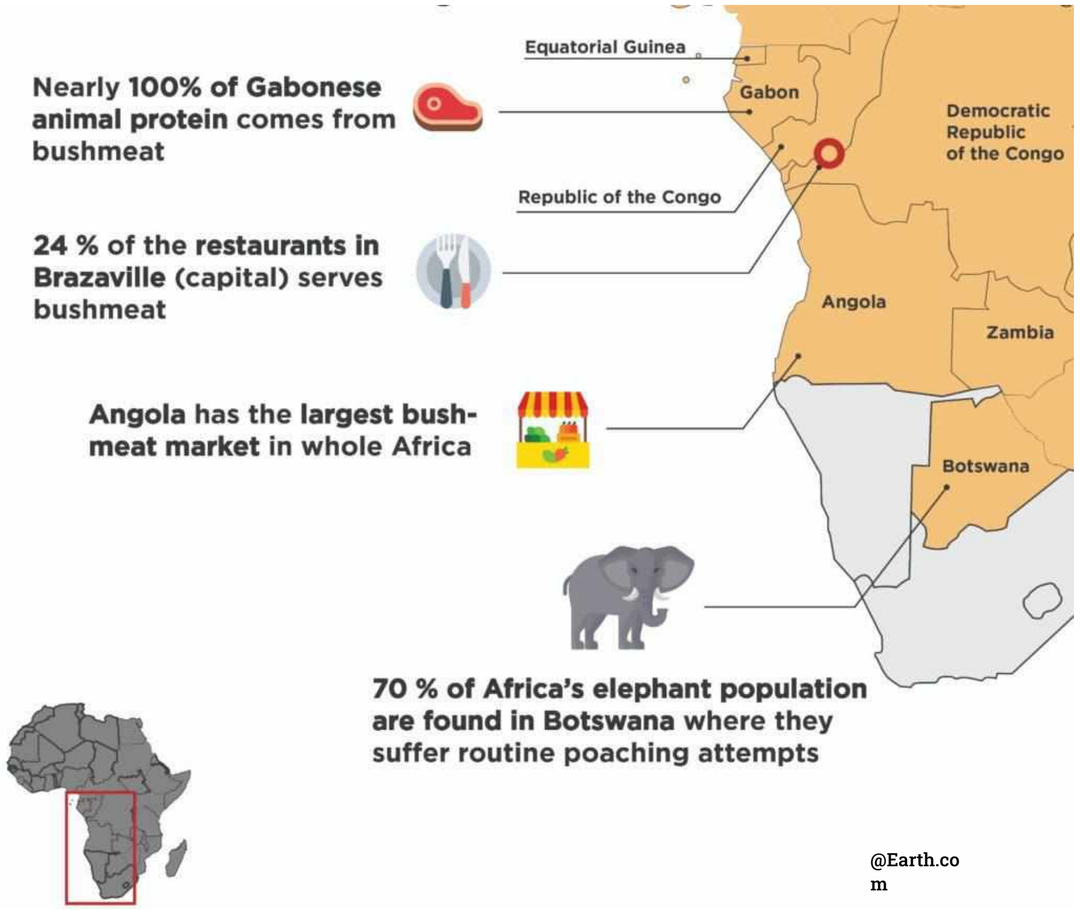
- **Decrease the carbon storage** capacity of the forest (Brodie and Gibbs, 2009).

Most tree species' seeds are dispersed by animals

The loss of these animals has a **direct impact** on tree species diversity and composition

Bushmeat trade is recognized as a major threat to forest biodiversity in Central and West Africa; it also poses a significant problem in other ecosystems, including savannas (Lindsey et al., 2012).

The annual extraction of animals (predominantly mammals) in the Amazon and Congo basins alone, for example, was estimated at 6 million tonnes (Nasi et al., 2011).



- African forest elephants play a very significant role in seed dispersal;
- They may consume more seeds from more species than any other large seed-dispersing vertebrate (Campos-Arceiz and Blake, 2011).
- The removal of certain forest vertebrates ('**defaunation**', see Dirzo et al., 2014) will impoverish the functional ecology of tropical rainforests.
- Such species perform a range of ecological roles – as browsers, as predators and prey, as seed dispersers.

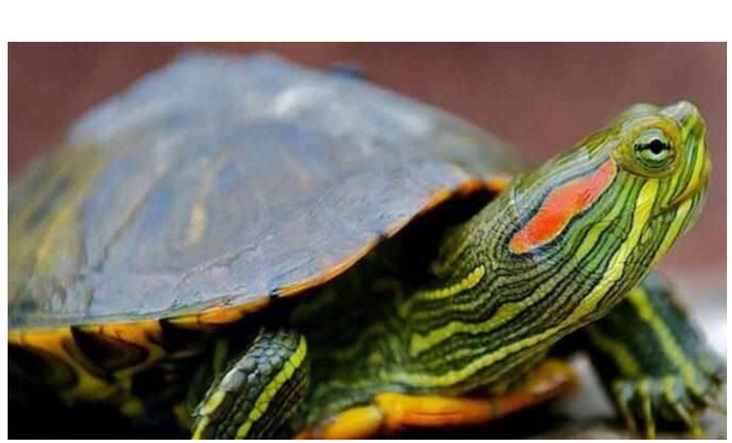
Invasive species are a leading cause of declines and extinctions (Clavero and García-Berthou, 2005), particularly on islands.
Worldwide, recent rates of invasion by non-native species are several orders of magnitude higher than historic rates (Ricciardi, 2007), facilitated by increasing globalization of international trade in wildlife and other products (Hulme, 2009).

Release of unwanted exotic pets is a frequent source of invasive species (Wittenberg and Cock, 2001).

The red-eared terrapin (*Trachemys scripta elegans* - Least Concern - LC) is native to North America and very popular in the pet trade

It is now subject to import bans in many countries due to its invasive potential.

In Europe, the species has been associated with high mortality of native turtle species (*Emys orbicularis)* due to competition for resources (Cadi and Joly, 2004).



@reptile talk