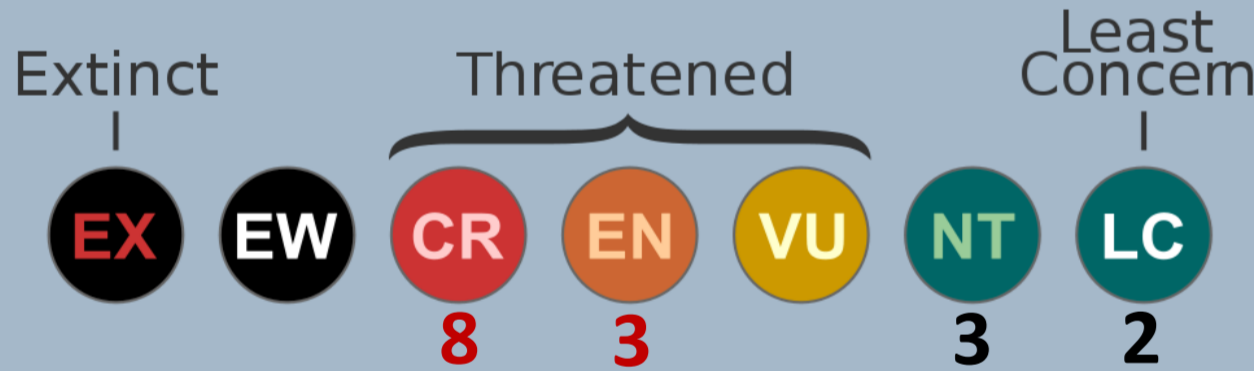




The Old World Vulture Crisis

African Vultures **declined > 60% in 3 generations** (Ogada *et al.* 2016)



IUCN Conservation statuses of African & Eurasian vultures (IUCN 2017)

Main Causes of Declines

Poison

- Illegal wildlife control & retaliation
- Targeted by poachers as sentinels of fresh poaching sites
- Bushmeat hunting with pesticides
- Legal pest control
- Hunting with lead bullets
- Veterinary drugs e.g. Diclofenac

Hunting

- Belief-based uses & bush medicine
- Fetishes & captive vultures believed lucky

Reduced food availability

- Wild ungulate population declines
- Changing livestock farming methods
- Stricter sanitation & carcass disposal regulations

Energy infrastructure

- Wind turbine collisions—injury and death
- Power line electrocution

Habitat loss & human disturbance

Culture Multi-species Action Plan

Convention on Migratory Species, 2017

1 of 17 Essential Actions = Objective 11.3.1.

“Conduct a **Total Economic Value (TEV)** study of vultures which includes their role as providers of ecosystem services and in generating eco-tourism attraction.”

MULTI-SPECIES ACTION PLAN TO CONSERVE AFRICAN-EURASIAN VULTURES (VULTURE MSAP)



Project Aim
To assess current knowledge of the ecosystem and socio-economic services provided by vultures in Africa.



Benefits to human well-being:

- > **mental** - knowing healthy vulture populations remain
- > **physical** - experiencing healthy ecosystems and wild places

Tourism attraction - part of the African savannah experience

Spirituality - watching vultures in flight is uplifting for many people

Future generations can inhabit sustainable, functional, resilient ecosystems.

Farmed and other anthropogenic landscapes and will continue to meet growing human demands for food and materials.

Humans will continue to be able to inhabit rural areas away from cities, without suffering serious health risks.

Existence Values

Bequest Values

Non-use Values

Total Economic Value of Vultures

Use Values

Option Values

Direct uses

Indirect uses

Free Carcass Disposal

- Rapid consumers of waste from human communities, trophy hunting by-products and livestock industries
- Facilitate cleaning and drying of bones and hides

Tourism

- Bird watching
- Ecotourism
- Trophy hunting

Food

- Bushmeat

Fetishes & Bush-medicine

- Belief-based uses and witchcraft
- Bush medicines (no clinically proven medical benefit)
- Captive vultures and parts believed to bring good luck

Scientific study

- Much remains to be understood about vulture ecology and biology
- Humans may learn important lessons from research into vultures, e.g. about the roles of scavengers in the spread and dynamics of diseases



Project Collaborators



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Future research needs:

Quantify Ecological Functions

e.g. waste & carcass disposal

Calculate/measure each benefit to humans in economic and locally-relevant terms

Long-term studies comparing ecosystems

WITH VULTURES



VS.

WITHOUT



Human studies exploring the social & cultural significance of vultures

Maintain healthy environments

- Reduce water contamination
- Less accumulation of toxins from breeding micro-organisms in carrion
- Support efficient nutrient re-cycling
- Support efficient energy flow through ecosystems

Pest control

- Suppress populations of potential livestock predators around human dumps , e.g. jackals, hyenas, feral dogs
- Consume carcasses before invertebrate pest species can hatch eggs in rotting meat

Disease suppression

- Reduce time for micro-organisms to reproduce in carcasses so lower risk of infection spreading livestock or humans
- Reduce infection risk to humans, domestic and wild animals from mammalian scavengers acting as vectors to pathogens, e.g. dogs carrying rabies, rats carrying plague
- Neutralise some pathogens when digesting infected meat

Cultural significance

- Consume corpses during Sky Burials and at Towers of Silence (Parsee funeral sites)
- Important in the mythology and tribal heritage of many African cultures
- Inspiration for art, music and creativity

Conservation, environmental & human health management

- Umbrella species for scavenger communities
- Indicator guild for ecosystem health (easily surveyed)
- Flagship species for goal to develop ecologically-sound approaches to restore carrion availability across African landscapes
- Flagship species for tackling pesticide misuses as poison to supply bushmeat, trade in wild species as delicacies or superstitious fetishes, or for bush medicine and belief-based rituals—a serious and poorly understood human health issue

Sentinel behaviours mark carcass locations

- Help law enforcement locate fresh poaching sites
- Apex carnivores of conservation priority follow vultures to new carrion locations, which can form large percentage of diet in some seasons
- Livestock farmers can locate dead/injured animals lost in bush
- Local communities can locate fresh carcasses to scavenge for bushmeat
- Travellers and locals lost in the bush can locate villages and towns by vultures circling rubbish dumps

