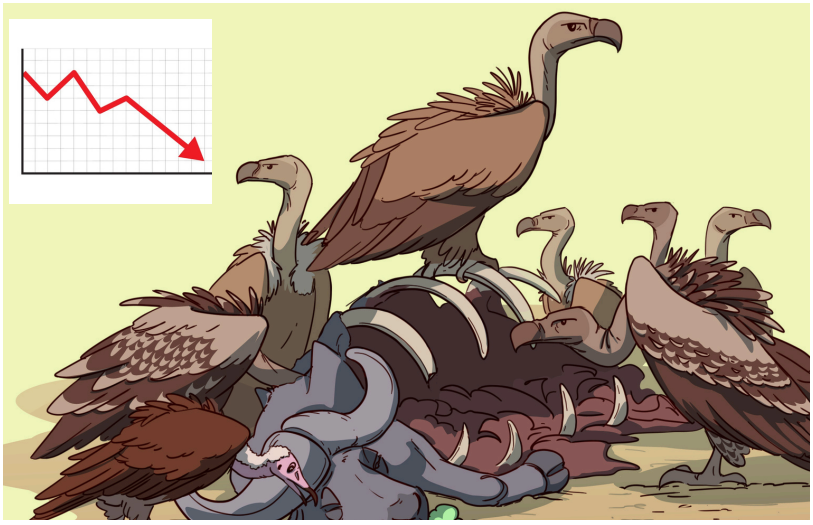
PROTECT VULTURES PROTECT PUBLIC HEALTH

01. Why Vultures matter?

Vultures are perfectly built for scavenging with their large size, bald heads, long necks, powerful eyesight, highly acidic stomachs, and strongly social behavior. Soaring and gliding, they can cover over 160 km in a day, survive up to 15 days without food, and gorge on a third of their body weight when available. As nature's clean-up crew, vultures provide vital ecosystem services, preventing disease that would otherwise result from rotting carcasses.

02. Vultures on the brink

- The only obligate vertebrate scavengers that feed solely on dead animals and never kill.
- 23 vulture species worldwide, Nine found in India.
- Four vulture species in the Indian subcontinent, White-rumped, Long-billed, Red-headed, and Slender-billed Vultures are now Critically Endangered. Populations have collapsed by 97–99.9% since the 1990s, primarily due to exposure to veterinary drugs.



03. The Main Cause: Diclofenac

- Drugs such as diclofenac, nimesulide, aceclofenac, ketoprofen, and flunixin are highly toxic to vultures.
- Vultures feeding on carcasses of recently treated cattle develop visceral gout and die from kidney failure.

ONE DOSE IS DEADLY: DICLOFENAC AND OTHER NSAIDS

04 How Diclofenac Kills Vultures

- **Metabolism issue**: Vultures cannot efficiently metabolise diclofenac due to variations in cytochrome P450 enzymes, leading to prolonged drug persistence.
- **Kidney damage:** Diclofenac interferes with organic anion transporters (OATs) and multidrug resistance proteins (MRPs) that normally expel uric acid. This results in urate crystal deposition, giving rise to visceral gout symptoms.
- **Mitochondrial toxicity:** Diclofenac directly targets mitochondria, causing reactive oxygen species (ROS) build-up and impaired ATP synthesis, leading to cell death.
- **Fatal dose:** As little as 0.8 mg/kg diclofenac is lethal for vultures

Only vulture-safe NSAIDs (Meloxicam, Tolfenamic Acid) should be used.

05.

Why This Matters for Vets

Every unsafe injection given to cattle can indirectly kill dozens of vultures, weakening a critical ecosystem service. Vultures are essential in carcass disposal, disease control, and public health protection.

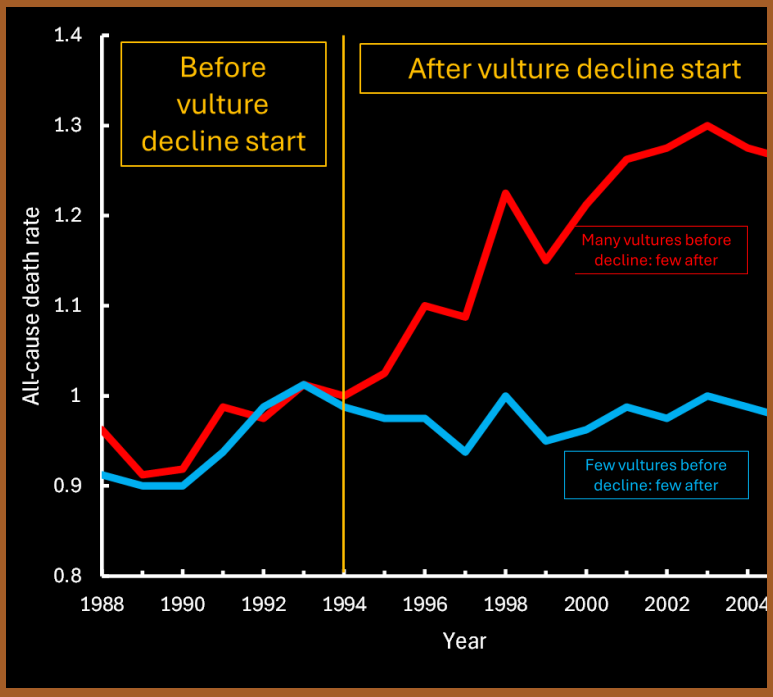
06.

Other equally toxic drugs

Every unsafe injection given to cattle can indirectly kill dozens of vultures, weakening a critical ecosystem service. Vultures are essential in carcass disposal, disease control, and public health protection.

WHEN VULTURES DISAPPEAR, HUMANS SUFFER

All-cause annual human death rates in parts of India with many vultures before the decline and with few vultures before the decline



This graph shows that all-cause annual death rates of people in parts of India where vultures were very numerous before the mid-1990s rose very sharply when vultures disappeared (red line). But death rate did not change in other parts of India where vultures were never very numerous because of regional differences in their food supply.

Frank, E. and Sudarshan, A., (2024). The social costs of keystone species collapse: evidence from the decline of vultures in India. American Economic Review, 114(10), pp.3007-3040."

What you can do?

- **Join the fight against unsafe NSAIDs - Only use safe drugs, meloxicam and tolfenamic acid, or non-NSAID options**
- **Influence policy – Call for safety testing of drugs before they are introduced for veterinary use.**
- **Help find and advocate for alternative therapies (e.g. ayurveda)**
- **Donate time/effort/money to the cause of Vulture conservation**

Only use Safe NSAIDs – The Situation in India

Drug name (& Status in India)	Threat / Safety	Known effect
Meloxicam	**Confirmed Safe**	Demonstrated safe for vultures (Swarup D. *et al*. 2007)
Tolfenamic acid	**Confirmed Safe**	Demonstrated safe for vultures (Chandramohan *et al*. 2022)
Carprofen	**Toxic at high doses**	Toxic around injection site (Fourie *et al*. 2015)
Flunixin	**Toxic**	Toxic and multiple wild vulture deaths. Safety testing in process. (Zorrilla *et al*. 2014, Eleni *et al*. 2019)
Nimesulide **[Banned Dec 2024]**	**Confirmed Toxic**	IVRI demonstrated toxicity and now banned. (Galligan *et al*. 2022, Karikalan *et al*. 2023).
Aceclofenac **[Banned Aug 2023]**	**Confirmed toxic**	Metabolises into diclofenac in cattle so equivalent effect to diclofenac (Galligan *et al*. 2016, Sharma 2012)
Ketoprofen **[Banned Aug 2023]**	**Confirmed toxic**	Now banned following toxicity testing (Naidoo *et al*. 2009).
Diclofenac **[Banned 2006]** **+ Vial size restriction of human formulations to <3ml 2015**	**Confirmed toxic**	Confirmed highly toxic in 2003 (Oaks *et al*. 2004), and main cause of recent Asian vulture declines.

Other NSAIDs not yet safety-tested may pose similar risks so should be avoided until tested include: phenyl butazone, metamizole, piroxicam, ibuprofen.

Help Spread Awareness

Full details, references available: www.save-vultures.org

Please scan the QR Code to find the link to the Article resources

SAVING ASIA'S VULTURES FROM EXTINCTION