

Vulture decline

Key Stage 5

Learning objectives

To identify why 3 vulture species in south east Asia are declining.

To recall what ZSL are doing to conserve vultures in Pakistan, India and Nepal.

Session content

This 40 minute session introduces a current biological issue – the vulture decline in south east Asia and gives students the opportunity to investigate the cause of the decline. Students will be asked to discuss possible causes of the decline in vultures and using information from scientific studies try to deduce the most likely cause. The session ends with a brief look into what organisations, like ZSL, are doing to conserve these species in situ.

Learning outcomes

At the end of this session...

- Most students will be able to recall why vulture populations in south east Asia are declining and describe how the drug diclofenac gets into the vulture's system. They will also be able to describe 2 ways in which ZSL is helping to conserve vultures in the wild.
- Some students may have progressed further and will be able to describe in detail why the vulture populations are declining and give a brief account of how the drug diclofenac causes death. They will also be able to describe how ZSL is conserving these birds in the wild.
- Some students may not have progressed as far and will be able to recall why vultures are declining and give 1 way in which ZSL is helping to conserve them in the wild.

A-level specification links

- **AQA Biology Unit 4** – Variation in population size: the effect of abiotic factors.
- **AQA Environmental Science Unit 1**
 - How humans threaten wildlife by accidental harm from human activities.
 - Conservation methods including captive breeding and release programmes.
- **Edexcel Biology Unit 3 part 2** – Visit or issue report



Other links: Edexcel A-level Biology (Unit 6), BTEC National in Applied Science.

Assessment opportunities

During the session students' understanding can be assessed through questioning and listening to discussions during group activities.

Session suitability

This session is suitable for students that have prior knowledge of how human activities can impact other species; however they do not need prior knowledge of this particular case study. The talk will be supported using text and images projected onto a screen. During parts of the session students will be

asked to work in small mixed ability groups to investigate the problem using written materials. It is possible to provide individual copies of images if members of your class are partially sighted.

Additional information

We would like to know in advance if any members of your class have learning, physical or sensory difficulties, allergies or illness which might affect their enjoyment of the session. It is usually possible to tailor the session should your group have any special requirements. Please call 01582 871330 at least 2 weeks in advance of your visit to discuss the best way to do this.

Suggested activities:

Before the visit

- Students should have a basic knowledge of how humans impact different environments and the affect this has on a range of species. There are lots of areas they could look at e.g. global warming, the use of pesticides, pollution, habitat loss etc.

During the visit

- Many of the endangered species we have at the Zoo are threatened because of humans. Give students an opportunity to visit endangered species at the Zoo to find out other ways in which humans are impacting the environment. The following animal species have particularly useful information on why they are endangered and what ZSL is doing to conserve them:
 - Chimpanzees
 - White rhino
 - Greater one-horned rhino
 - Lions

After the visit

- Please complete a feedback sheet (available at the session or from our website) to help improve the education provision at Whipsnade Zoo.
- Students could write an article about diclofenac poisoning in south east Asia and how organisations are working together to conserve the vultures. This report could be written for a specific audience e.g. general public or KS3 and 4 pupils.

Useful items for following up work

Websites

ZSL Whipsnade Zoo conservation programmes – www.zsl.org/conservation

Vulture rescue - www.vulturerescue.org

The Peregrine fund – www.peregrinefund.org

RSPB - www.rspb.org.uk/supporting/campaigns/vultures

Bird life - www.birdlife.org/action/science/species/asia_vulture_crisis/vulture_manifesto.html

Arkive - www.arkive.org

The Bombay Natural History Society - www.bnhs.org

Journal articles

Oaks, J.L., Gilbert, M., Virani, M.Z., Watson, R.T., Meteyer, C.U., Rideout, B.A., Shivaprasad, H.L., Ahmed, S., Chaudhry, M.J.I., Arshad, M., Mahmood, S., Ail, A. and Khan, A.A., (2004) Diclofenac residues as the cause of vulture population decline in Pakistan. *Nature*. **427**, 630 – 633.

Arun, P.R., and Azeez, P.A. (2004) Vulture population decline, Diclofenac and avian gout. *Current Science*. **87** (5), 565-568.

Green, R.E., Newton, I., Shultz, S., Cunningham, A.A., Gilbert, M., Pain, D.J., and Prakash, V., (2004) Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. *Journal of Applied Ecology*. **41**, 793 – 800.

Green, R.E., Taggart, M.A., Das, D., Pain, D.J., Kumar, C.S., Cunningham, A.A., and Cuthbert, R. (2006) Collapse of Asian vulture populations: risk of mortality from residues of the veterinary drug diclofenac in carcasses of treated cattle. *Journal of Applied Ecology*. **43**, 949 – 956.