

Pathology for conservation at the Zoological Society of London – a focus on the Partula snail

Thanks to the work of ZSL and partner institutions, 11 species of Partula that were previously extinct in the wild have now returned to their native habitats.

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For nearly 200 years, the Zoological Society of London has studied and protected a wide array of species, from the smallest coral polyps to the largest whales, using pathology as a key tool for conservation. This article explores the use of pathology for the conservation of the tiny Partula snail.

Introduction to ZSL

The Zoological Society of London (ZSL) is a science-driven conservation charity that works to protect and restore wildlife in the UK and around the world. ZSL employs a wide range of pathologists, vets, microbiologists and scientists to perform post-mortem examinations of both captive and free-ranging wildlife to monitor the health of individuals and populations and investigate and respond to disease threats.

ZSL was founded in 1826 by luminaries including Sir Stamford Raffles and Sir Humphry Davy and quickly received a royal charter from King George IV. The Society opened the world's first zoological gardens 2 years later, dedicated not to entertainment but to science – London Zoo. The zoo remained a private scientific collection, accessible only to members, until 1847 when it was opened to the wider public.

In 1931, a second site, Whipsnade Zoo, was opened to provide more space. In 1960, our research institute, the Institute of Zoology, was founded. Over the last 200 years, ZSL has worked to restore wildlife through vital conservation breeding programmes, establishing the first ever Red List of

endangered species, opening the world's first aquarium and reptile house, and discovering species previously unknown to western science, such as the elusive okapi.

Pathology and ZSL

The wildlife health services team provides clinical and pathological services to ZSL's zoo animals and conservation programmes. This includes a diagnostic service that performs approximately 800 post mortems every year, including about 100 mammals, 150 birds, 150 fish, numerous invertebrates and a small scattering of amphibians and reptiles.

The largest animals, such as rhinoceroses and elephants, require many hours, heavy lifting equipment and large teams of pathologists, vets, nurses and technicians. Post mortems on the smallest animals, such as corals or small fish, may be done entirely via histopathology, as a whole carcass can fit on a single slide.

One of the major challenges for the wildlife pathologist is the lack of molecular tests to confirm suspicions of disease; even simple technologies such as immunohistochemistry are extremely difficult in many species owing to the lack of available or reliable antibodies. PCR tests are often not commercially available and must be specially designed for each pathogen of concern.

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