

Wildlife Forensics As Investigative Science to Stop Crocodile Trafficking in India

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Myvets Charitable Trust and Research Centre (Myvets Trust) has been fortunate to be involved in a collaboration with the Wildlife Crime Control Bureau for Wildlife Forensics in the case of rescued crocodile babies recovered from wildlife traffickers in Mumbai, India. The Bureau is investigating the increase in crocodile trafficking in the Mumbai area, and we are gratified to know that based on our expertise with wildlife, the Bureau carried out DNA mapping on two baby crocodiles.

In 2014 Myvets Trust began working to conserve endangered species of wildlife. With the National Institute of Technology and Research, Jaipur, we want to expand research on crocodile genomics and form a complete genomic database for rescued as well as captive crocodiles in India zoos. We want to contribute to wildlife forensic science which can be used to track and identify criminals by the use of evidentiary analysis. Evidence might be DNA; trace evidence such as hair or feathers; animal tracks; classification of animal products or imported, exported or traded goods; or the simple recognition of what constitutes indisputable demonstrative evidence.

Traffickers in India are interested in crocodiles because of their use in traditional medicine, leather goods, prized commodities, as wild meat by tribal communities, and for keeping as pets despite their governmental protection. Trade in the in-



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igenous species of crocodiles has increased in major Indian cities because of huge public demand. Already, several endangered species are being pushed to extinction due to poaching and wildlife trafficking. We have taken the first difficult step against trafficking, particularly of mugger crocodiles and even gharials, which are critically endangered. I am certain that a more investigative and pragmatic approach will be established to better combat it in metro areas. Genome research can provide essential tools, and the data should be easily accessible by the Wildlife Crime Control Bureau.

Myvets Trust suggested the use of DNA resources in investigations, matching the DNA of rescued crocodile babies with that of captive crocodiles whose information is in the genome database. Database material could be from any of the following:

1. Captive crocodiles/muggers in Indian zoos
2. Crocodiles/muggers captured during crocodile-human conflicts
3. Eggs of crocodiles/muggers found near river beds

If a match with 100% homology exists between the test sample and the reference sample from the genomic database, the test sample is very likely of the same species. It is possible that the match occurs by chance and that the test sample comes from an unknown species that just happens to have the same DNA sequence. Still, the DNA information can help narrow the search for crocodile trafficking centers in major cities.

Genetic mapping is a valuable resource for wildlife crime control in India, and it is also valuable for characterizing the captive crocodile genome and identifying complex traits in zoo populations. New methods of DNA sequencing can be used for the following:

1. Identification of the species of crocodile
2. Identification of species morphology and microscopy
3. Identification of a biological sample which can be taken for further investigation (blood, tissue, skin, nails)



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Case Report:

In a joint raid with the Maharashtra Forest Department, the western region of the Wildlife Crime Control Bureau seized two live baby crocodiles, which are listed in Schedule I of the Wildlife Protection Act, 1972. Trade, possession, transport, sale or offer of sale of an animal species listed in Schedule I can result in a minimum of 3 years and maximum of 7 years of punishment, which may extend another 3 years. To determine the exact source of the baby crocodiles, authorities had to narrow the following possibilities:

1. Crocodile eggs stolen and harvested privately
2. Pet crocodiles kept as breeding parents by hobbyists
3. Baby crocodiles stolen from lakes and rivers of the city
4. Baby crocodiles from zoos



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Specimen collection for DNA mapping:

Sample	Collection Site	Quantity	DNA Mapping Centre
A. Baby Crocodile	Ventral Coccygeal Vein	0.5 ml	CCMB
B. Baby Crocodile	Ventral Coccygeal Vein	0.5 ml	CCMB

It is essential to develop a well-integrated and well-equipped wildlife forensics laboratory in every state in India, and to collect samples and specimens for further analysis and diagnostics during wildlife crime investigations. The key to success of investigations is a continuous training programme for bureau officers and inspectors and accessibility to information without any "Red Tapism".

Acknowledgement:

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