

## Why Avian Forensic?

- ❏ To aid the implementation of criminal laws
- ❏ To identify birds involved in bird-aircraft hit

## Questions we can answer

- ❏ Identification of bird species through DNA and feather microstructure
- ❏ Sex of the bird

## Samples for Forensic Analysis

- ❏ **Blood** - Cotton swab, Ethanol, FTA card, Blood preserving fluid
- ❏ **Tissue**- Salt, Ethanol, Tissue preserving fluid
- ❏ **Skin**- Ethanol, Dry skin
- ❏ **Feather**- Entire feather in zip lock bags with silica beads
- ❏ **Egg shell** - Ethanol, Dry condition
- ❏ **Claw** - Entire claw in zip lock bag with silica beads
- ❏ **Bones**- Dry bones in zip lock bags/fresh bones in salt

## Agencies who can benefit from Avian Forensic

- ❏ State Forest Departments
- ❏ Wildlife Crime Control Bureau
- ❏ Airports/Ports Authority of India
- ❏ Indian Air Force
- ❏ Central Zoo Authority (CZA)
- ❏ Institutions involved in biodiversity conservation



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## National Avian Forensic Laboratory



### Sálim Ali Centre for Ornithology and Natural History

(A Centre of Excellence under the Ministry of Environment,  
Forest and Climate Change, Govt. of India)  
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## Laboratory at a glance

SACON, being a premier centre working on ornithology, has established a State-of-the-Art Avian Forensic Laboratory with the help of Ministry of Environment, Forest and Climate Change, Govt. of India. The National Avian Forensic Laboratory (NAFL) of SACON is equipped with all required instruments, and is formally dedicated to the nation by Shri C.K. Mishra, IAS, Secretary, MoEFCC on 28<sup>th</sup> December, 2018.

## Facilities at NAFL

- Nucleic acid isolation facility
- Nucleic acid quantification facility
- Qualitative and quantitative analysis of nucleic acids
- Microscopy and imaging facility
- Electrophoresis and gel imaging facility
- Automated fragment analysis facility
- Low temperature/cryopreservation facility
- Sanger sequencing facility
- Next generation sequencing facility
- Feather repository and feather microstructure analysis facility



## Services at NAFL

- Bird species identification using single mitochondrial gene
- Bird sex identification by CHDW and CHDZ gene
- Nucleic acid QC using Nanodrop, Qubit and Fragment analyzer
- Sanger sequencing
- Microsatellite discovery using NGS
- NGS sequencing using Illumina NextSeq 550
- Individual identification
- On demand training for sample collection



Field Sampling Kit

## Combating Illegal Trade

Illegal trade in wildlife and wildlife products has had a devastating effect on biodiversity world over, with an estimated monetary value between \$8 and \$10 billion US dollars. Of the 1300 species of birds that occur in India, 350 species are reported to be traded illegally in international and domestic markets. Despite this, the conviction rate is very low and estimated at less than 10%, with some reports suggesting a rate lower than 1%. One of the major reasons stated for such low conviction rates is the paucity of rapid technique for species identification from body parts.

## Bird and aircraft collisions

Collisions between birds and aircrafts, both civilians and military, are serious cause of concern due to loss of lives and economies. Most collisions in India happens in the vicinity of airports during taxiing, take-off and landing manoeuvres. It is crucial to identify the species involved in such accidents to resolve the problem.

NAFL at SACON provides services for species identification from any biological remain including feathers from bird-aircraft hit cases. This service has been provided to the Indian Air Force on several occasions

