



# Wildlife Forensic Science: Bridging the Gap between Conservation Research and the Courtroom.



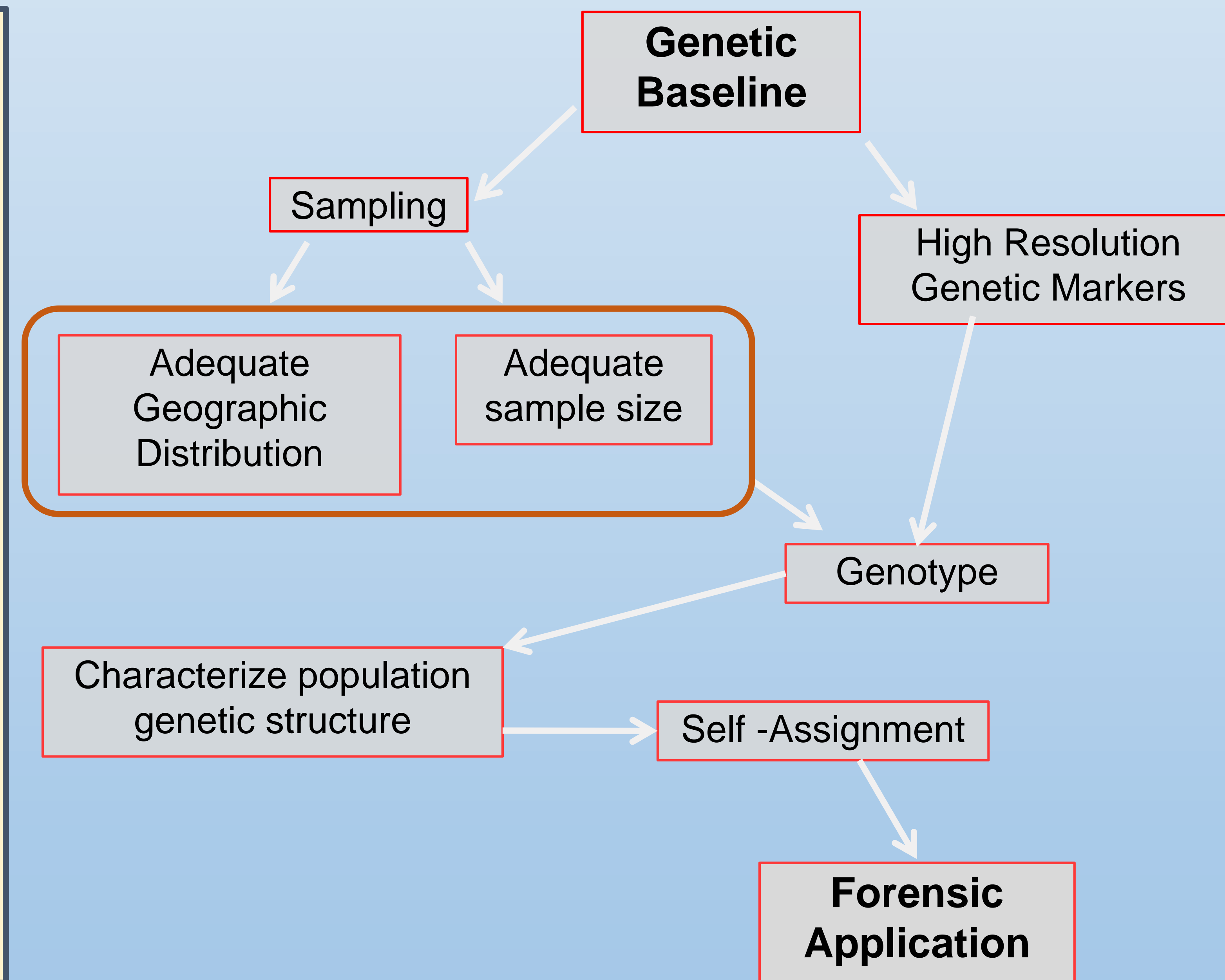
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## INTRODUCTION

Wildlife Forensic Scientists are increasingly being tasked with identifying specimens from a wide variety of species to specific geographic locations. Due to the length of time needed to gather the specimens, develop databases, and validate protocols for each species, Wildlife Forensic Scientists often must rely on data collected by conservation researchers who can spend years devoted to studying a species of interest. One such example occurred in the fall of 2018, when a Special Agent for the U.S. Fish and Wildlife Service (USFWS) suspected that a group of individuals had taken wood turtles from the wild and was attempting to sell the individuals as captive animals. The Agent facilitated the communication between prominent conservation researchers studying wood turtles and forensic scientists at the USFWS forensic lab in Ashland, Oregon. The researchers provided the necessary database, markers and comparison samples for standardization to the forensics lab, an ISO 17025 accredited laboratory. Laboratory accreditation, along with scientists certified in forensic casework, facilitate the process of presenting evidence in court. Working in concert this way, the case was completed quickly, without the need to duplicate the data the researchers had already published. The 2019 Spotted, Blanding's and Wood Turtle Conservation Symposium provides an excellent opportunity for forensic scientists to share information with academic and conservation researchers about the types of data best suited for a law enforcement case, as well as create partnerships between the two communities. This poster explains why samples are sent to a Wildlife Forensics Laboratory, and outlines suggestions to consider when conservation research has a high probability to be used in a forensic context.

### What makes good Forensic Data?

- Reference samples should be described as thoroughly as possible, including exact geographic information, whenever possible\*
  - \*Concerns regarding location information that may be obtained through FOIA or Discovery processes can be addressed by communications between the research scientist and the forensic scientist. Location information is extremely important for law enforcement as many laws are State and/or population (geographic) specific laws.
- When using museum samples, reference museum accession numbers
- Thorough description of the quality control measures (how samples were chosen for the study, sample identification procedures and spatial resolution of the samples)
- If there are closely related sympatric species, a detailed description on the methods used to ensure that samples were correctly identified to species. In cases where possible hybridization can occur, suspected individuals should be labeled as a possible hybrids
- Microsatellite markers should be clearly defined with little to no microvariants alleles. In the absence of an allelic ladder, difficulty ensuring that allele calls are consistent between research laboratories and the forensic laboratory can call into question the validity of the evidentiary conclusions
- E-DNA data is a good investigative tool, but currently not suggested for casework



### Why use a Wildlife forensics Laboratory?

- Accreditation is a rigorous process by which laboratories must demonstrate competency in all areas of workflow in the laboratory.
- Accreditation also expedites the acceptance of the scientific data in the courtroom.
- Forensic Scientists also serve as an expert witness in a court of law.
- Forensic scientists are trained in evidence handling, chain of custody, rules of evidence, and courtroom procedures, as well as criteria necessary to qualify as an expert in court testimony.
- Qualifying as an expert allows the forensic scientist to provide his or her opinions and interpretations about the evidence analysis, where a lay witness is only able to speak facts.

### Courtroom

#### Casework

Evidence Submission; Data collection; Analysis; Reporting

#### Technical Requirements

(Personnel requirements; Security req., Method Validation; Data control, Equipment control; Traceability; Reporting control...)

#### Management Requirements

(Document control; Ref. standards; Technical record (case note) control; Instrument validation; Reagent Validation.....)

ISO 17025



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