NWRC Research Scientists: Dr. Antoinette (Toni) J. Piaggio, PhD

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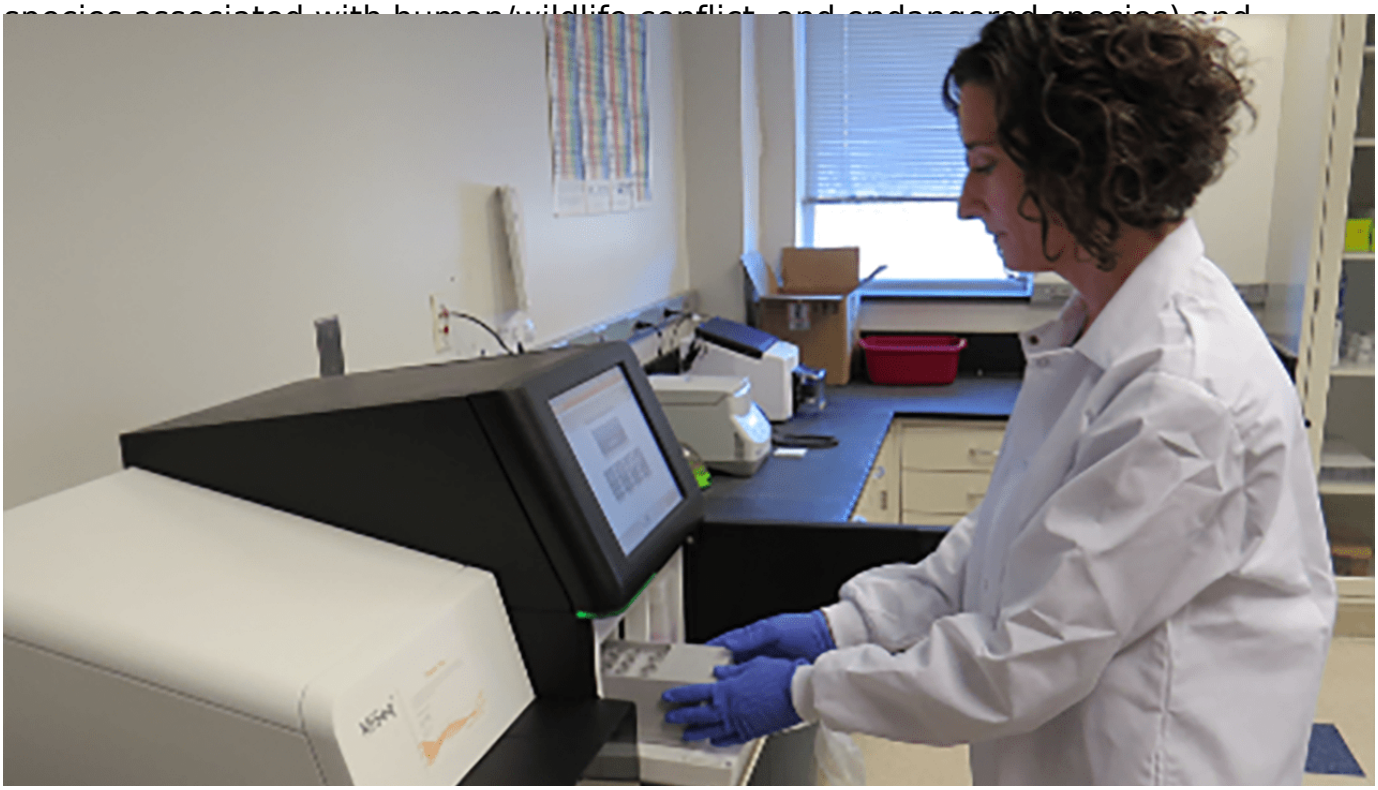
Dr Antoinette (Toni) J. Piaggio is a Supervisory Research Biologist and Project Leader employed by the USDA APHIS Wildlife Services, National Wildlife Research Center (NWRC) in Fort Collins, CO. Her research studies focus on developing genetic approaches to inform wildlife damage management efforts.

Population-level investigations can determine geographical boundaries of populations, gene flow between populations (population connectivity), and genetic diversity within populations. Phylogenetic studies can test hypotheses of taxonomic definitions and evolutionary relationships. Genomic data gathered in any of these areas can enhance effectiveness of management efforts. Because wildlife genetics data can elucidate population dynamics in host populations, they are also useful in the management of wildlife diseases.

Through her work, continuing education, and professional contacts, Dr. Piaggio stays current with the latest developments in her field, ensuring that the NWRC wildlife genetics lab will always be a leader in the use of exciting, cutting-edge tools and techniques and the application of robust scientific methods for the investigation of wildlife-human conflicts. Lab results will allow wildlife managers not only to use the best genetic tools available but also to maintain genetic diversity and evolutionary potential of the wildlife species under investigation.

Wildlife Genetics

The goal of this project is to develop and implement genetic methods to detect, monitor, and inform management of wildlife species (including invasive species, species associated with human/wildlife conflict, and endangered species) and



Current Research

- Develop environmental DNA assays and field-based tools to detect invasive species, specifically terrestrial species.
- Monitor for invasive mice, rats, and nutria using eDNA methods.
- Investigate genetic biocontrol methods for control of invasive vertebrate species.
- Conduct various forensic studies to identify predators involved in depredation events
- Conduct genetic analyses of invasive species to identify sources and invasion pathways.

- Conduct genetic analyses of wildlife species involved in human- wildlife conflict
- Investigate the gene VKORC1 in mice and rats to assess rodenticide resistance and susceptibility.
- Use genomic diet analyses of invasive species and predators to understand impacts.
- Apply metagenomics to reduce efforts and costs of vector-borne pathogen surveillance.
- Develop large genetic archives of target species involved in human-wildlife conflict for robust analyses to aid and inform management.
- Investigate the potential for Chronic Wasting Disease in the endangered Columbia white-tailed deer populations.

Products/Techniques Developed or Tested

- Environmental DNA assays to detect terrestrial species from water and swabbed soil and plant samples - single species assays and metabarcoding
- Metabarcoding for diet analysis
- Metagenomic of bulk insect traps to identify pathogen, insect species, and blood meal origins
- Forensic investigations
- SNP marker development
- Species identification from fecal, hair, saliva, etc.
- Individual animal identification from fecal, hair, saliva, etc.
- Microsatellite and single-nucleotide polymorphism (SNP) panel development for multiple species
- Population genetics/genomics studies
- Phylogenetic studies

Publications

- View Dr. Toni Piaggio’s publications

International Experience

- Mexico (Vampire bats)
- China (Avian Influenza)

- Belize (Vampire bats)

Education

- Ph.D., University of Colorado Boulder, CO
- M.S., San Francisco State University SF, CA
- B.A., Mills College, Oakland CA

Contact

Wildlife Genetics

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