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EARLY PROFESSIONAL AWARDS

James G. Cooper Young Professional Awards 2017, to Riccardo Ton and Nancy Chen

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The American Ornithological Society (AOS) is pleased to recognize Dr. Riccardo Ton and Dr. Nancy Chen as the 2017 recipients of the James G. Cooper Young Professional Awards. The award recognizes two early-career ornithological researchers (up to three years post-Ph.D.) for their outstanding contributions in any field of ornithology. First awarded in 2009, the Young Professional Awards recognize early-career researchers for their outstanding scientific research and contributions to the ornithological profession.

Riccardo Ton is recognized for work presented in his paper "Proximate effects of temperature versus evolved intrinsic constraints for embryonic development times among temperate and tropical songbirds," written with Tom Martin and published in *Scientific Reports*. The abstract reads: "The relative importance of intrinsic constraints imposed by evolved physiological trade-offs versus the proximate effects of temperature for interspecific variation in embryonic development time remains unclear. Understanding this distinction is important because slow development due to evolved trade-offs can yield phenotypic benefits, whereas slow development from low temperature can yield costs. We experimentally increased embryonic temperature in free-living tropical and north temperate songbird species to test these alternatives. Warmer temperatures consistently shortened development time without costs to embryo mass or metabolism. However, proximate effects of temperature played an increasingly stronger role than intrinsic constraints for development time among species with colder natural incubation temperatures. Long development times of tropical birds have been thought to primarily reflect evolved physiological trade-offs that facilitate their greater longevity. In contrast, our results indicate a much stronger role of temperature in embryonic development time than currently thought."



Riccardo Ton



Nancy Chen

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Riccardo started his first ornithological experiments in his grandmother's garden in Italy at the age of six. Later he explored the major migratory flyways in the Alps north of Venice while getting his M.S. at the University of Padova. He received his Ph.D. in 2016 from the University of Montana, working with Tom Martin. His research examined the effects of metabolism and temperature on embryonic development times and postnatal growth rates in temperate and tropical songbirds. His rooted passion for field biology led him to conduct his research in sites all over the world, including the United States, Venezuela, Malaysia, and South Africa. Riccardo is also actively involved in conservation projects that aim to restore the traditional rural habitats of his native region that are quickly being lost to urbanization and changes in agricultural practices. His work includes first-authored publications in *Functional Ecology* and *Scientific Reports*.

Nancy Chen is recognized for work described in her presentation "Evolutionary genomics of a pedigreed wild population." The abstract reads: "Recent studies have demonstrated evolution on ecological timescales in a number of different organisms. Studying contemporary evolution is the only way to directly test many fundamental questions in evolutionary biology, and understanding the evolutionary processes that shape patterns of genetic variation in short timescales is directly relevant for conserving declining species in the face of rapid environmental change. While much attention has been given to phenotypic evolution on short timescales, investigations of short-term evolutionary dynamics at the genomic level are challenging and rare. A powerful approach for studying short-term evolution of natural populations is to combine evolutionary genomics with long-term demographic and pedigree data. Here, we investigate the genetic basis of rapid evolution using a 25-year genomic, phenotypic, and pedigree dataset in the Florida Scrub-Jay (*Aphelocoma coerulescens*), an iconic species on the U.S. Endangered Species List. A population of Florida Scrub-Jays at Archbold Biological Station has been studied since 1969, resulting in full records of individual lifespans as well as annual fecundity and lifetime fitness measures for thousands of individuals on a 12-generation pedigree. We used custom Illumina Beadchips to genotype every individual in our study population over the past two decades (3,838 individuals total) at 15,416 genome-wide SNPs. We used gene dropping to model drift on the known pedigree and identify SNPs whose frequency dynamics were driven by selection. We then tested for selection acting on specific life-cycle stages by modifying existing selection component analysis frameworks to take full advantage of exhaustive population sampling. We identified a number of loci that clearly exhibited male gametic selection, sexual selection, and viability selection. By combining sensitive pedigree-based inferences of net selection with fine-scale dissection of selection components, this study provides a detailed assessment of the role of selection in perturbing allele frequency dynamics in a rapidly declining population."

Nancy is currently a National Science Foundation Postdoctoral Research Fellow with Graham Coop at the University of California, Davis, and will be starting as an assistant professor at the University of Rochester in July 2018. Before joining the Coop lab, Nancy was a postdoctoral research associate at the Cornell Lab of Ornithology and a Ph.D. student with Andy Clark and John Fitzpatrick. Her research seeks to understand the genomic basis of contemporary evolution in natural populations by combining genomic data with long-term demographic and pedigree data. Nancy's dissertation research concentrated on elucidating the genomic consequences of declining population size and developing bioinformatics tools for analyzing next-generation sequencing data in non-model organisms. Nancy is also interested in promoting diversity in the sciences. She organized a "women in science" discussion group at UC Davis and was one of the organizers of the symposium Birds of Different Feathers: Increasing Diversity in Ornithology at the 2017 AOS Annual Meeting.

The recipients of this award are selected annually for presentation at the AOS Annual Meeting. The two awardees also receive a cash prize and travel support to the meeting, and they are honorary guests at a reception attended by the AOS Executives and the Awards Committee. For information about the award and eligibility criteria, go to http://www.americanornithology.org/content/aos-cooper-award. For a list of previous recipients, go to http://www.americanornithology.org/content/aos-cooper-award-recipients.

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