

SEEWIESEN

# LECTURE SERIES

FALL/WINTER 2019/2020



THURSDAY | September 26th, 2019 | 13.00 | HOUSE 4 LECTURE ROOM

## XIANG-YI LI

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### Theory models inspired by the life history and ecology of birds

Theory models have been playing an important role in aiding our understanding of the complex ecological and evolutionary dynamics in populations of birds, such as male competition, female mate choice, extra-pair paternity, bi-parental care, and dispersal. They can help explain the observed phenomena, and/or make predictions to be tested in future empirical investigations. Previous theory models, however, often ignore a number of biological factors that can substantially affect the interactions in bird populations, particularly those between males and females. In this talk, I will use a few models my collaborators and I recently developed to illustrate that, the explanation and prediction power of theory models can be enhanced by considering relevant biotic factors. For example, by considering resource competition between sexes, we could better explain the pattern of sex-biased dispersal, and the rarity of large sexual dimorphism in resource use, like the case in the now extinct Huia bird. In addition, by considering the genotype-by-environment interactions and intralocus sexual conflict, we could identify conditions under which females evolve to prefer low-quality males over high-quality ones. In an on-going study in collaboration with Wolfgang Goymann, we found conditions where a highly cooperative outcome (with high levels of female fidelity and male help stably coexist even at the absence of mate guarding) can be produced from totally selfish optimizations of individual fitness by males and females, when intralocus sexual conflict is taking into consideration.

#### WHO IS XIANG-YI LI?

2013	PhD, MPI for Evolutionary Biology, Germany
2016	Postdoc, University of Zürich, Switzerland
2019	Principal Investigator (SNF Ambizione grant), University of Neuchâtel, Switzerland

#### SELECTED PUBLICATIONS

- Xiang-Yi Li, Hanna Kokko. Intersexual resource competition and the evolution of sex-biased dispersal. *Frontiers in Ecology and Evolution*, 7: 111, 2019. [Link]
- Xiang-Yi Li, Hanna Kokko. Sex-biased dispersal: a review of the theory. *Biological Reviews*, 94: 721–736, 2019. [Link]
- Xiang-Yi Li, Luke Holman. Evolution of female choice under intralocus sexual conflict and genotype-by-environment interactions. *Philosophical Transactions of the Royal Society B*, 373: 20170425, 2018 [Link]
- Xiang-Yi Li, Jussi Lehtonen, and Hanna Kokko. Sexual reproduction as bet-hedging. In Joe Apaloo and Bruno Viscolani, editors, *Advances in Dynamic and Mean Field Games, Annals of the International Society of Dynamic Games*. Birkhäuser Verlag, 2017. [Link]
- Xiang-Yi Li, Shun Kurokawa, Stefano Giaimo, Arne Traulsen. How life history can sway the fixation probability of mutants. *Genetics*, 203:1297–1313, 2016. [Link]

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