



Seewiesen Colloquia

Speaker invited by: Goerlitz Research Group

Thursday, January 19, 2017, 13h, in House 4, Lecture Room

Multimodal Ecology: making sense in a changing world

Wouter Halfwerk
VU University Amsterdam

Animals evolved sexual displays to attract partners, but these communication signals can also attract unwanted eavesdroppers imposing substantial costs that may outweigh their benefits. Furthermore, the production of many signals generates additional cues that can be picked up through a wide range of sensory systems, which needs to be taken into account when trying to understand how signals evolved and how they will respond to environmental changes. I study the sexual advertisement call of the tungara frog (*Physalaemus pustulosus*), a species that calls while floating in shallow puddles in the Panamanian rainforest. Calling behaviour is under strong sexual selection from females as well as natural selection from multiple eavesdroppers. Additionally, the production of these calls is associated with a large vocal sac which movements generates visual cues, as well as water surface waves or ripples that travel throughout the puddle. I will show how eavesdroppers, such as rival males or predators can use these additional cues to locate a calling male. Furthermore, I will highlight the different sensory systems used as well as the role of the environment in driving selection pressures on production and transmission of signals and their by-product cues. Finally, I will discuss the concept of multimodal ecology and its importance when trying to understand the role of sensory pollution in an urbanizing world.

Who is Wouter Halfwerk?

- 2012 PhD Leiden University, NL
- 2012 NWO Rubicon research fellowship, Smithsonian Tropical Research Institute, PA
- 2014 Smithsonian research fellowship, STRI/University of Texas, US
- 2015 Marie Curie training fellowship, Animal Ecology, VU Amsterdam University, NL
- 2015 Assistant Professor at Animal Ecology, VU Amsterdam University, NL

Selected publications:

- Halfwerk, W., P. Jones, R. C. Taylor, M. J. Ryan, and R. A. Page. 2014b. Risky ripples allow bats and frogs to eavesdrop on a multisensory sexual display. *Science* 343: 413-416.
- Halfwerk, W., R.A. Page, R. C. Taylor, P. S. Wilson, and M. J. Ryan. 2014c. Crossmodal comparisons of signal components allow for relative distance assessment. *Current Biology* 24: 1751-1755.
- Halfwerk, W., and H. Slabbekoorn. 2015. Pollution going multimodal: the complex impact of the human-altered sensory environment on animal perception and performance. *Biology Letters* 11: e20141051.
- Gomes, D. G. E., R. A. Page, I. Geipel, R. C. Taylor, M. J. Ryan, and W. Halfwerk. 2016. Bats perceptually weight prey cues across sensory systems when hunting in noise. *Science* 353: 1277-1280.