

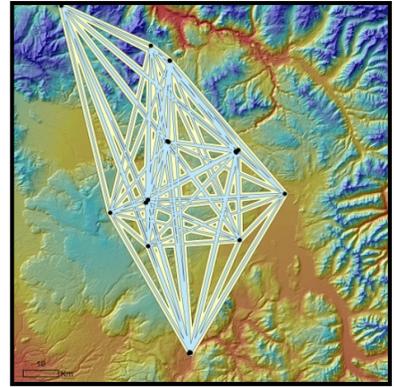
Spring 2016 - Landscape Genetics WLF 561

Wednesday 8:30-10:30

Instructors: Lisette Waits, Kim Andrews

2 Credits with optional 1 credit lab section (WLF 562) – online option also available

Co-Instructors: Niko Balkenhol, Sam Cushman, Rodney Dyer, Andrew Eckert, Brad Fedy, Marie-Josée Fortin, Caren Goldberg, Nusha Keyghobadi, Erin Landguth, Stephanie Manel, Melanie Murphy, Thomas Schoville, Kim Selkoe, Steve Spear, Helene Wagner



Course description

This course on *Landscape Genetics* provides a unique opportunity for interdisciplinary training and provides an overview of the field of landscape genetics. The course caters to students in both basic and applied ecology, especially conservation/population genetics, landscape ecology and conservation biology. A key objective of landscape genetics is to study how landscape modification and habitat fragmentation affect organism dispersal and gene flow across the landscape. Landscape genetics requires highly interdisciplinary specialized skills making intensive use of technical population genetic skills and spatial analysis tools (spatial statistics, GIS tools and remote sensing). Even when students receive disciplinary training in these areas, educational programs often lack the necessary linkage and synthesis among disciplines. This linkage can only be accomplished after experts from each discipline work together to develop guiding principles for this new research area.

Landscape Genetics will be taught by multiple experts and concurrently offered at multiple universities in North America and Europe giving students the opportunity to learn from international experts and work with peers from outside institutions. Each course meeting will start with a live web-cast lecture (no special software required) by an expert on the topic that introduces foundations and methods and highlights points for discussion in local seminar groups. After breaking out into local course group discussion (including a discussion group for online course students), a web-based discussion across campuses will wrap up the weekly topic. Students who are unable to make it to live-cast of lectures can view taped lectures. In addition, students can choose to participate in an optional lab section in R and interdisciplinary group team projects with web-based collaboration across institutions. The final two options are provided to help students develop analytical skills in Landscape Genetics. Students who participate in group projects will have the option of applying to attend a project synthesis meeting in Coeur d'Alene, Idaho in May/early June 2016.

Course topics

- Landscape genetics framework, Measuring gene flow, Alternative views of landscapes
- Spatial analysis framework, Identifying discrete populations
- Incorporating landscape data, Matrix resistance approaches in landscape genetics
- Distance-based methods, Model selection and validation
- Role of simulation modeling, Network-based methods
- Landscape genetics of adaptive variation

Course Textbook: *Landscape genetics: Concepts, methods, applications*. 2015. Balkenhol, Cushman, Storfer, Waits, eds, Blackwell.