

Program
ConGen Data Analysis Course
Flathead Lake BioStation, 31 Aug-4 Sept 2009

Track 1	Lecture title
Track 2	Type of lecture
Track 3	Software explanation and use hands on
Track 4	Recommended readings (pdf's) available on course web site for participants
Track 5	Subject

MONDAY; August 31, 2009

1:00 pm - 5:00 pm	Participants arrive. Registration (& computer check for your lap top in the Elrod class room) Note: you should have downloaded all computer programs and data sets before arriving (see http://rastafa.icav.up.pt/congen2009/ ; Login & Password in your emails from ConGen). Snacks & drink machine available		
5:00 - 6:00 pm	Drinks & social time on kitchen deck overlooking Flathead Lake. Computer set up for your lap top in the class room		
6:00 - 7:00 pm	Dinner in kitchen area overlooking Flathead Lake. Note: food service lasts only 45 minutes: 6:00 to 6:45 PM (but we can prepare a plate for you if you arrive late)		
7:00 - 7:10 pm	Welcome address and course overview (Elrod class room): Gordon Luikart, Univ. of Porto, and Univ. of Montana		
7:10 - 7:30 pm	Student introductions & presentations (2-3 minutes each, <u>2-4</u> power point slides)		
7:30 - 8:30 pm	Introduction to conservation genetics, and to data analysis (Auditorium)		
7:30 - 8:30 pm	Keynote address: Fred Allendorf, Univ. of Montana		
7:30 - 8:30 pm	The expanding role of genetics in conservation	Concepts / Overview	Chapter 1 from Allendorf & Luikart 2007 Chapter 1 Avise (2008)
8:30 - 8:45 pm	Robin Waples US National Marine Fisheries Service, Seattle EASYPOP: First (10 minute) "homework assignment"		
8:45 - 9:30 pm	Computer set up for your lap top		

TUESDAY, September 1, 2009

7:30 am - 8:00 am	Breakfast		
8:00 am - 8:45 am	Student introductions & presentations (2-3 minutes each, 2-4 power point slides)		
9:00 am - 10:00 am	Overview & introduction to statistical approaches in population genetics		
9:00 am - 10:00 am	Keynote address: Oscar Gaggiotti, University of Grenoble 1, France		
9:00 am - 10:00 am	Frequentist, likelihood, & Bayesian approaches; the coalescent	Concepts / Overview	Appendix 1 from Allendorf and Luikart 2007 Beaumont and Rannala 2004 Rosenberg and Nordborg 2002
10:00 am - 10:15 am	Coffee/snack break		
10:30 am - 12:30 am	Data quality control, non-invasive sampling, & population abundance estimation		
10:30am - 12:30 pm	Keynote address: Mike Schwartz, US Forest Service, Missoula, USA		
10:30am - 12:30 pm	Data quality: Background concepts & overview	Concepts / Background	McKelvey and Schwartz 2004
10:30am - 12:30 pm	Consensus genotype identification, genotyping errors, individual identification, introduction to invasive abundance estimation	Hands on	Drop-out McKelvey and Schwartz 2005
12:30 pm - 1:15 pm	Lunch		

1:30 pm - 3:15 pm	Effective population size estimation			
1:30 pm - 3:30 pm	Keynote Address: Robin Waples			
	N_e estimation: Background & overview	Concepts / Background	Waples 1991	
	N_e estimation and Approximate Bayesian Methods	Hands on	LD-Ne	Waples & Do 2008 Balloux 2001 (EASYPop)
3:30 pm - 3:45 pm	Coffee/snack break			
3:45 pm - 4:30 pm	Bottleneck detection			
3:45 pm - 4:30 pm	Keynote Address: G. Luikart			
	Bottleneck tests	Concepts / Hands on	Bottleneck	Pirey et al. 1999 Luikart and Cornuet 1998
4:30 pm - 5:00 pm	Remaining student presentations			
5:00 pm - 6:00 pm	Free time for data analysis, reviewing of lecture notes & power points etc.			
6:00 pm - 6:45 pm	Dinner			
7:30 pm - 9:30... pm	Hands on data analysis & discussion with Allendorf, Gaggiotti, Luikart, Schwartz & Waples Students are encouraged to bring questions on their data, software, and statistical analyses. Students should have their data set formatted for software programs before arriving.			

WEDNESDAY, September 2

7:30 am - 8:00 am	Breakfast {PACK YOUR SACK LUNCH!}			
8:00 am - 10:00 am	Population viability analysis			
8:00 am - 10:00 am	Keynote Address: Bob Lacy, Dept. of Conservation Biology, Chicago Zoological Society			
	PVA and genetics	Concepts / Background	Lacy 2000.	
	PVA	Hands on	VORTEX	VORTEX user's manual
10:00 am - 10:15 am	Coffee/snack break			
10:15 am - 10:30 am	Prep for Glacier Park hiking trip			
10:30 am - 8:30 pm	Glacier National Park Vans leave at 10:30 AM from the parking area; Lunch in van (bring your sack lunch you made a breakfast, water, rain gear etc) Dinner at Lake McDonald Students are encouraged to introduce questions on their data, software, and statistical analyses during the van rides and hike			
12:00 pm - 12:30 pm	DNA based estimation of population size: Lessons from the NCDE (Northern Continental Divide Ecosystem) grizzly bear study			
12:00pm - 12:30 pm	At Glacier Park Headquarters: Keynote Address: Kate Kendall, US Geological Survey			
	Sample quality, data quality, and field studies	Concepts / Background	Kendall et al. 2008, 2009 See also: http://www.nrmisc.usgs.gov/research/NCDEbeardna.htm	
12:30 pm - 5:30 pm	Drive to and hike the Marias Pass loop			
7:00pm - 7:30 pm	Dinner at Lake McDonald Students are encouraged to introduce questions on their data, software, and statistical analyses during the dinner and van ride home			
9:00 pm - 10:00 pm	Class room open			

THURSDAY, September 3

7:30 am - 8:00 am	Breakfast			
8:00 am - 12:00 am	Population structure, evolutionarily significant units, and management units			
8:00 am - 9:00 am	Keynote Address: Robin Waples, US National Marine Fisheries Service, Seattle			
	Background concepts & overview	Waples and Gaggiotti 2006		
9:00 am to 1:00 am	Keynote Address: Jonathan Pritchard, Dept. of Human Genetics, University of Chicago			
	Background concepts & overview	Pritchard et al. 2000		
10:00 am - 10:15 am	Coffee & snacks			
	Jonathan Pritchard,	continued	Pritchard et al. 2000	
11:15 am - 12:00 am	Robin Waples Structure exercise using simulated data	Theoretical & Hands on		
12:30 - 1:15 pm	Lunch			
1:30 am - 3:30: pm	Landscape genetics and spatial statistics			
1:30 am - 3:30: pm	Keynote address: Sam Cushman, US Forest Service, Missoula, MT			
	Landscape genetics & hypothesis testing	Concepts / Background	Manel et al. 2003 Cushman et al. 2006	
	Barrier detection	Hands on	CDPOP	Landguth & Cushman 2009
3:30 pm - 3:45 pm	Coffee/snack break			
3:45 pm - 5:30 pm	Combining genetics and demography to assess dispersal (and detect selection)			
3:45 pm - 5:30 pm	Keynote address: Oscar Gaggiotti			
	Dispersal & colonization: Background concepts & overview	Concepts / Background	Gaggiotti et al. 2002 Foll and Gaggiotti 2006	
	Estimating dispersal & colonization	Hands on	GESTE; HelpGESTEv1.rtf	
5:00 pm - 6:00 pm	Free time			
6:00 pm - 6:45 pm	Dinner			
6:45 pm - 7:30 pm	General discussion among all instructors and participants overlooking the Lake. Take home messages? Future needs and directions for population genetic data analysis?			
7:30 pm - 9:30 pm	Hands on data analysis with Luikart, Pritchard, Cushman Gaggiotti, Students are encouraged to introduce questions on their data, software, and statistical analyses			

FRIDAY, September 4

7:30 am - 8:00 am	Breakfast			
8:00 am - 10:00 am	Short read (illumina) sequence analysis & SNP detection			
8:00 am - 10:00 am	Keynote address: Ted Cosart, Computer Science and NSF-Ecology of Infectious Disease Ph.D. Trainee, University of Montana			
8:00 am - 10:00 am	Example exon capture & analysis using high-throughput sequencing	Concepts / Background	TBA	
	Sequence data analysis and quality scores	Hands on	MAQ or Pangea	MAQ or PANGEA users guide
10:00 pm - 10:15 pm	Coffee/snack break			

10:15 pm - 12:00 pm	Detecting selection: F_{ST} -outliers & local adaptation		
10:15 pm - 12:00 pm	Keynote address: G. Luikart & Tiago Antao,		
	<i>Fst</i> - outlier detection	Concepts / Background	Beaumont & Balding 2004 Beaumont 2005
	Detecting outliers	Hands on	LOSITAN & <i>Fdist</i> Antao et al. 2008
12:30 pm - 1:15 pm	Lunch		
1:30 pm - 3:30 am	Hands on data analysis with Cosart, Luikart & Antao Students are encouraged to introduce questions on their data, software, and statistical analyses		
3:30 pm - 6:00 pm	Classroom & computers available Free time Departures begin Transportation to airports or hotels		
6:00 pm - 6:45 pm	Dinner		
E v e n i n g	Classroom & wireless still available Free time		

SATURDAY, September 5

5:00 am - 12:30 am	All Depart
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