

# Workshop on R and movement ecology:

Hong Kong University, Jan 2018



*Eric Dougherty, Dana Seidel, Wayne Getz*



## Lecture 1

### Introductions & Logistics



DEPARTMENT of ENVIRONMENTAL  
SCIENCE, POLICY, AND MANAGEMENT

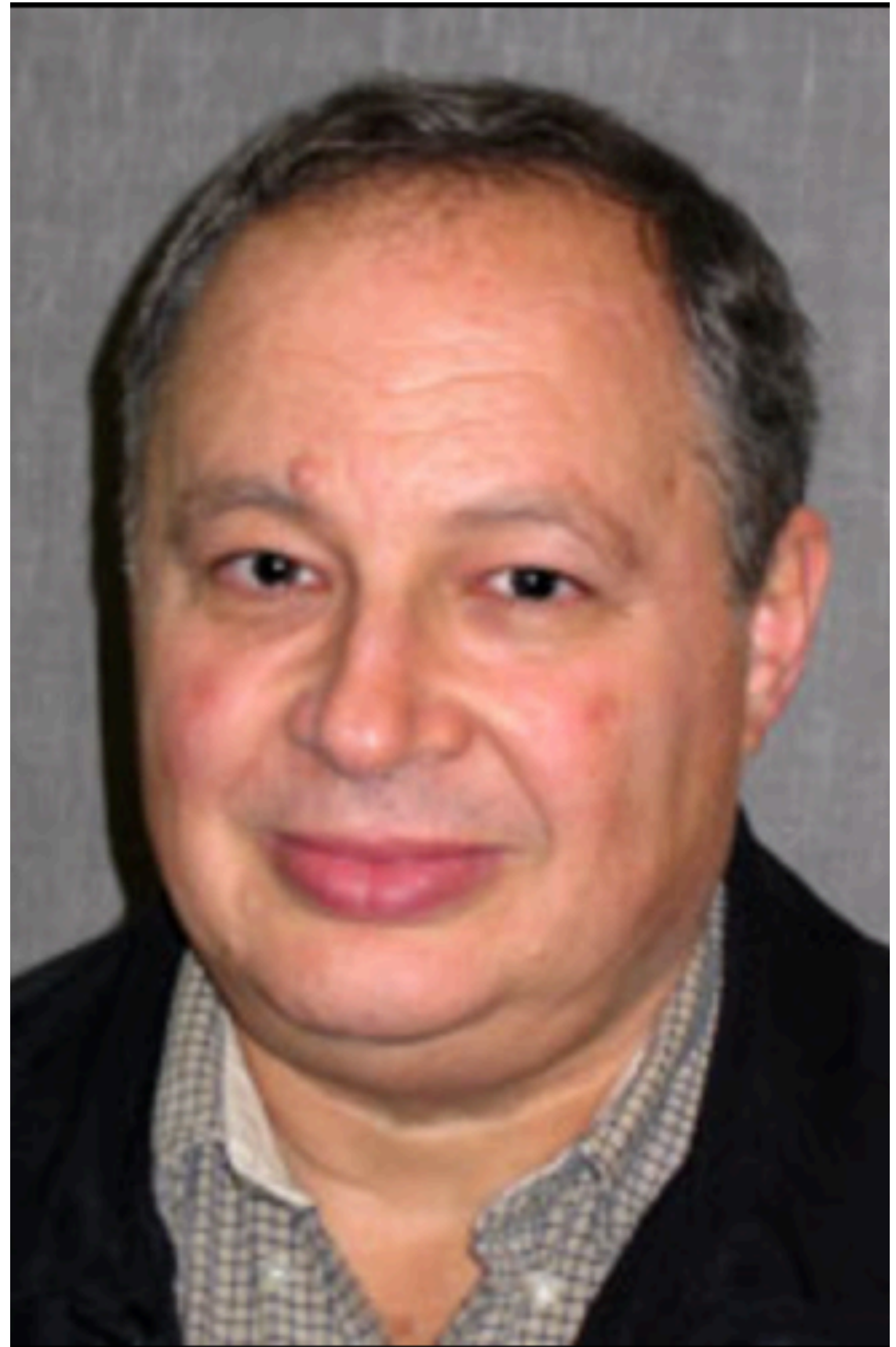
Berkeley  
UNIVERSITY OF CALIFORNIA

College of  
Natural Resources

# Wayne Getz

Prof. Getz has been a professor at UC Berkeley since 1979. Having trained over 50 graduate and post graduate students, his specific research interests include population modeling epidemiology and resource wildlife management.

<https://nature.berkeley.edu/getzlab/>



# Eric Dougherty

Eric Dougherty is a 5<sup>th</sup> year PhD student interested in the transmission of infectious disease in wildlife, particularly when pathogens are environmentally-borne. Using agent-based modeling methods, he attempts to determine the mechanisms by which disease is maintained in populations and communities, and explore the conditions that result in large outbreaks.





# Dana Seidel

Dana is a 4<sup>th</sup> year PhD student with a background as a movement ecologist and data scientist. In 2016, Dana completed a 2 year data science fellowship with the NSF. At UC Berkeley, she has taught courses including Data Science for Global Change Biology and Introduction to Ecological Data Analysis both using R. Her research focuses on the movement of large mammals and their diseases, especially those with environmental reservoirs.



# Let us know about you!

- Name
- Affiliation
- Research topic or interest
- Experience in R or other programming languages (please specify)

# Ice Breaker

# Some logistics...

<https://github.com/dpseidel/MovEco-R-Workshop>

# Goals & Structure

- This workshop is aimed to take movement researchers from introductory data manipulation in R to agent based movement simulation in 8 days.
- Most days will be structured around a single lecture on movement ecology theory or research, 2 live-coding sessions where we introduce the practical steps to assess certain movement metrics in R, and a hands on session where we will provide activities and be available to help you work with your own movement data.
- See our full schedule in the github repo.



# Content

- Basics in R
- Spatial data in R
- Extracting movement path metrics
- Home Range Estimation
- Selection Analysis
- SpaceTime metrics
- Behavioral State Analysis
- Movement “syndrome” classification
- Simulating movement
- Agent based models

# Software

Throughout this workshop we will be using both:

- R: <https://www.r-project.org/>
- Rstudio: <https://www.rstudio.com/>



# R packages we'll need

- devtools
- rgdal
- rgeos
- tidyverse
- sf
- sp
- ggplot2 (developer's version)
- mapview (developer's version)
- adehabitat
- adehabitatLT
- adehabitatHR
- move
- raster

Use:

``install.packages()`` function  
inside R.

For more instruction, see  
installation tips on the front  
page of our github repo.

# Github

- All our materials are hosted on Github  
<https://github.com/dpseidel/MovEco-R-Workshop>
- You don't need an account, you can simply download the materials one at a time, or the whole repo at once

Scripts and Code for the Movement Ecology & R Workshop. Hong Kong University Jan3-12, 2018

Edit

[Add topics](#)

69 commits

1 branch

0 releases

2 contributors

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

Step 1

dpseidel wayne's lectures

Materials

wayne's lectures

images

images

.gitignore

images

README.md

spelling error

Clone with HTTPS ?

[Use SSH](#)

Use Git or checkout with SVN using the web URL.

<https://github.com/dpseidel/MovEco-R-W>



Open in Desktop

Download ZIP

21 hours ago

Step 2

# Github, continued

- If you do have an account, you may choose to fork our repo to your own github account and commit your own progress along with the workshop.

*Note: As this is the first run of this workshop, we may make subtle changes to the files as we progress. If this is the case, we will let you know if you need to update your fork as we go along*





# Github, last thoughts

Given the time available, we will not be teaching version control, git, or github in this workshop, however if you're interested in exploring more, and do most of your work in R, we highly recommend using Rstudio as a simple git client and would refer you to <http://happygitwithr.com/> for more information.

Also worth noting, if you are a student, you should qualify for the github student developer pack.

<https://education.github.com/pack>



# Additional Resources

- [The R for DataScience book](#)
- [Rstudio Cheatsheets!](#)
- [Jamie Afflerbach's Spatial Analysis in R tutorials and repo](#)
- [Geocomputation with R book](#)
- [The r-spatial blog & website](#)
- [The Tidyverse website/blog](#)
- Join the [#Rstats](#) community!