

# Dissertation Notes

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## 1 Project List

### 1. Simulation of ecological network evolution

- (a) When do interactions increase the community level genetic effects of a foundation species?
- (b) IBM <http://www.railsback-grimm-abm-book.com/index.html>

### 2. Bark Lichen Co-occurrence

- (a) Enter data from last Spring
- (b) Analyze data
- (c) Write

### 3. Rock Lichen Co-occurrence

- (a) Waiting for Rikke
- (b) Analyze co-occurrence patterns
- (c) Summary for Rikke

#### 4. Arthropod Co-occurrence

- (a) Get data from leaves (senescing and litter)
- (b) Enter data
- (c) Analyze

## **2 2013 Mar 27**

"Try to learn something about everything and everything about something."

- Thomas Henry Huxley (1825-1895)

## **3 2013 Mar 15**

Pringle Lab Meeting Discussion on scientific journalism

1. selling science
2. Cohn's law: new hope and no hope
3. data-mining for journalism
4. freelancing
5. tips for interviewing:
6. metaphors
7. explicitly state importance
8. ask to re-phrase

9. look for press releases
10. Harvard Box Center communication courses

## 4 2013 Mar 13

Axelrod's The Evolution of Cooperation may be useful for community genetics simulations.

<http://www-personal.umich.edu/~axe/research/Software/ComplexCoop.html>

## 5 2013 Mar 6

Here's why the journal is worthy of your attention:

- 1) AoB PLANTS is owned by a non-profit organization that has over 100 years of experience publishing plant research;
- 2) The journal has distinguished Advisory and Editorial Boards composed of scientists from around the world;
- 3) It has published influential and widely cited articles since its establishment in 2009, with ~6,000 article downloads/month;
- 4) Submitted manuscripts are assessed rapidly using double-blind peer review, aiming for first decisions in 30 days;
- 5) Papers are published online within days of acceptance;
- 6) Articles are published under the most widely-accepted form of open-access license (CC-BY); and
- 7) The journal has one the lowest open-access fees for a journal in

the biological sciences, and they have been waived entirely for 2013.

Here's what people are saying about AoB PLANTS:

the long-term experience and reputation of Oxford University Press."

Osvaldo Sala - Julie A. Wrigley Chair & Foundation Professor, Arizona State University

With broad coverage of the plant sciences and an intensifying focus on environmental biology, AoB PLANTS publishes articles of great interest and embraces an open-access policy that ensures they are widely read.

Daniel Simberloff - Nancy Gore Hunger Professor of Environmental Science, University of Tennessee; Editor-in-Chief, Biological Invasions

AoB PLANTS has commissioned the following review articles for publication in 2013:

Floral precision and speciation in flowering plants  
Scott Armbruster (University of Portsmouth)

Early angiosperm evolution viewed through an ecophysiological prism  
Taylor Feild (James Cook University)

Hitting the right target: taxonomic challenges of and for biological invasions

Petr Pysek (Academy of Sciences of the Czech Republic), Philip  
E. Hulme (Lincoln University), David M. Richardson (University of  
Stellenbosch) and others

Phenological niches and the future of invaded ecosystems with climate  
change

Elizabeth M. Wolkovich (University of British Columbia) and Elsa  
[E. Cleland (University of California, San Diego)

Why find the genes for ecologically important traits? A rationale for  
the QTN program

Young Wha Lee, Billie A. Gould, John R. Stinchcombe (University of  
Toronto)

If you are interested in ecological and evolutionary research with a  
plant focus, please check out AoB PLANTS at  
[www.aobplants.oxfordjournals.org](http://www.aobplants.oxfordjournals.org).

Many thanks,

Hall Cushman

Chief Editor, AoB PLANTS

## 6 2013 Feb 10

Look into modeling phenology data: <http://cran.r-project.org/web/packages/phenology/index.html>

## 7 2013 Feb 04

Career Thoughts

- Primary Skill Set:
  - Quantitative skills (stats, math, networks, modeling)
  - Computer skills (R, python, bash, linux, unix, AWS, servers)
  - Teaching skills (ecology, R)
- Possible Tracks:
  - Big data in ecology (information)
  - Ecological information theory (merging community genetics and ecosystem theory)
  - The evolution of ecosystems and the control of information (as an ecosystem develops, how is information stored and how does it flow)

Markov Chains as a model for community dynamics

- Transition probabilities determined by interactions
- In a 2 species community the transition matrix would be 2x2

- In an  $n$  species community the maximum size of the transition matrix would be the square of the number of unique combinations of  $n$  species
- In reality the number of actual interactions that matter to the transition matrix is extremely small