

- ### Some applications of evolutionary biology
- Fighting antibiotic and pesticide resistance
  - Controlling emerging diseases
  - Using evolutionary strategies to design better drugs and vaccines
  - Informing health care through a better understanding of human origins
  - Improving quality and productivity for agriculture
  - Helping to conserve biodiversity
  - Predicting the effects of environmental change

### Our mission



- To address grand challenge questions in evolutionary biology
- We do this by
  - Identifying areas ripe for conceptual synthesis
  - Supporting scholars pursuing synthetic research
  - Catalyzing collaborations among disciplines and institutions
  - Allowing the wealth of existing data and analytic tools to be fully utilized



## NESCent activities



- Science and Synthesis
  - Host resident scholars
  - Host working groups and conferences
- Education and Outreach
  - Promote K-college evolution education
  - Disseminate the science from NESCent
- Informatics
  - Software development and promotion of interoperability
  - Provide training and support in evolutionary bioinformatics
  - Digital data sharing



## Society of Systematic Biologists

Home of Systematic Biology

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### Systematic Biology

- ▼ Appendices and data
  - ▶ Volume 53
  - ▶ Volume 54
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    - 55(1) February 2006
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    - 55(5) October 2006
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- ▶ Editorial information
  - Online
  - Teaching aides

### Membership

- Access Journal online
- Benefits of membership
- Join
- Membership Directory

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#### View articles in this issue online

Data sets and supplementary material for articles this issue can be downloaded here. Files are (typically) in NEXUS, Word, or HTML formats. Note that the authors may also have deposited their data in GenBank and TreeBASE, or have additional data on their own web sites.



#### Phylogeny of Eunicida (Annelida) and Exploring Data Congruence Using a Partition Addition Bootstrap Alteration (PABA) Approach

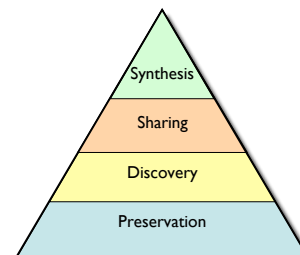
Torsten H. Struck, Günter Purschke, Kenneth M. Halanych  
doi:10.1080/10635150600354910

4 Genes data  
165 data  
185 data  
COI data

## Data sharing position paper

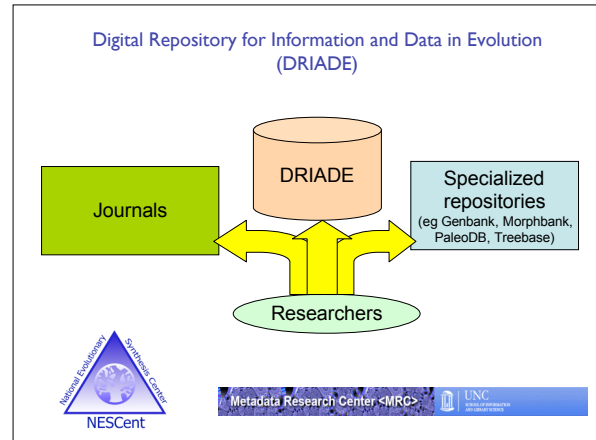
- Drafted by Michael Whitlock (editor, Am. Nat.)
- Proposes for journals to simultaneously require data sharing upon publication in a shared repository
- Current signatories
  - American Naturalist
  - Evolution
  - Journal of Evolutionary Biology
  - Molecular Ecology

## A digital repository for published evolutionary biology data



## Unique challenges of small science

- Data are heterogeneous and idiosyncratically structured
- Extensive and specialized metadata are required to understand the data
  - Metadata are not easily captured automatically
  - Burden rests on researcher
- Growth of specialized repositories (Genbank, Treebase, Morphbank, PaleoDB)



## Journals represented to date

- American Naturalist\*
- Evolution\*
- Integrative & Comparative Biology\*
- Journal of Evolutionary Biology\*
- Molecular Biology and Evolution\*
- Molecular Ecology
- Molecular Phylogenetics and Evolution
- Systematic Biology\*

\* *society journals*

## The charge from stakeholders

- Preserve published data ASAP
  - Primary purpose should be to allow repeated analysis
  - Accept all formats and filetypes, including software code and simulation results
  - Require minimal metadata for ease of deposition
- Respect intellectual property
  - Creative commons licensing: "Some rights reserved"
  - Allow embargo at editors discretion
  - Require citations
- Be financially self-sustaining
  - Cannot be fully dependent on NSF or page charges

## DRIADE project phases

- Phase I
  - Immediate preservation
- Phase II
  - Ease of deposition
  - More sophisticated retrieval
  - Integration into the journal submission process
  - Handshaking with specialized repositories
- Phase III
  - Incorporate emerging technologies for community-added value and data reuse

## Digital data preservation, sharing, and discovery: Challenges for small science communities in the digital era

- Community adoption
- Financial sustainability
- Intellectual property
- Technical infrastructure
- Data lifecycle management
- Emerging technologies

## Plan for the morning

- 1-2 minute introductions
  - Only for those not giving background talks
  - What brings you here?
- Lightning talks
  - Ahrash Bissell, Leesa Brieger, Paul Jones, Michael Nelson, Oya Rieger, Gail Reinhardt, Stuart Weibel
- Charges to breakout groups
  - Jane Greenberg