Speciation in Cicada Populations: Data Management in Ecology & Evolutionary Biology

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Speciation in Cicada Populations

Data Management in Ecology & Evolutionary Biology

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Introduction
This case study was developed for the Scientific Research Data Management course at Simmons College, and focuses on research led by an ecology & evolutionary biology laboratory at a reputable research university in New England.

Research Goals
To understand the effects of landscape & climate changes on speciation in New Zealand cicadas.

Case Study Method
An interview instrument was developed using the Johns Hopkins University DMP template and the New England Collaborative Data Management Curriculum simplified DMP template to interview a postdoctoral researcher over Skype, and twice more over email. A case study and DMP were subsequently written.

Data Management Modules

<table>
<thead>
<tr>
<th>Data Management Modules</th>
<th>Current</th>
<th>Proposed Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 2: Data Types &amp; Products</td>
<td>Specimens, DNA, JPGs, SHPs, RAW Audio</td>
<td>+ Use archival-quality TIFF</td>
</tr>
<tr>
<td>Module 3: Contextual Details (Metadata)</td>
<td>Specimen code applied at each stage</td>
<td>+ Apply metadata schema as well</td>
</tr>
<tr>
<td>Module 4: Data Storage, Backup &amp; Security</td>
<td>Hard drive &amp; Cloud storage &amp; backups</td>
<td>+ Migrate from paper to ELNs as well</td>
</tr>
<tr>
<td>Module 5: Legal &amp; Ethical Concerns</td>
<td>No anonymization or animal welfare concerns</td>
<td></td>
</tr>
<tr>
<td>Module 6: Data Sharing &amp; Reuse</td>
<td>Data available for sharing and reuse</td>
<td>+ Reduce amount of embargoed data</td>
</tr>
<tr>
<td>Module 7: Data Archiving &amp; Preservation</td>
<td>Dryad, Genbank, museum repositories &amp; lab website databases</td>
<td>+ Migrate from website to IR &amp; Dryad</td>
</tr>
</tbody>
</table>

Conclusion
Metadata and the storage and preservation of research data are critical to sharing and reuse for future research, as stipulated by the DMP.

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