ZS Project: Zoological Science Meets Institutional Repositories

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Table of contents

• Introduction
• Methods
• Results
• Discussion
Objective

• To determine how article deposition in Institutional Repositories (IRs) affects both citations and e-journal usage.
Motivation

• Earlier Studies:
  – Open Access and citations
  – Open Access and e-journal usage
Motivation

• Earlier Studies:
  – Open Access and citations
  – Open Access and e-journal usage

• There has been no sufficient analysis about Institutional Repositories and citations / e-journals usage.
**Project Objectives:**

- To clarify the **details of usage** for articles deposited in IRs
- To verify **whether IR deposit increases the number of article citations**
- To verify **whether IR deposit decreases the number of publisher e-journal full-text downloads**

**Project members:**

- Hokkaido University, Kyoto University, University of Tsukuba and the Zoological Society of Japan
What is *Zoological Science*?

- Leading international journal on Zoology
  - Since 1984 (society formed in 1878)
  - Available via BioOne.2, UniBio Press (Current), and J-stage (through 2009)
  - IF: 0.821 (2009)

- Published by the Zoological Society of Japan
  - One of the oldest societies in Japan
  - 2,700 members
Hokkaido University

- 11,610 Undergraduates
- 3,470 Graduates
- 2,038 faculties

HUSCAP: Hokkaido University Collection of Scholarly and Academic Papers

- Since 2005
- 32,852 items

http://eprints.lib.hokudai.ac.jp/
Kyoto University

- Kyoto University
  - 13,225 Undergraduates
  - 9,319 Graduates
  - 2,865 faculties

- **KURENAI**: Kyoto University Research Information Repository
  - Since 2006
  - 80,103 items
  - [http://repository.kulib.kyoto-u.ac.jp/dspace/](http://repository.kulib.kyoto-u.ac.jp/dspace/)
University of Tsukuba

- 9,032 Undergraduates
- 6,777 Graduates
- 1,638 faculties

Tsukuba Repository

- Since 2007
- 17,117 items
- http://www.tulips.tsukuba.ac.jp/dspace/
Project outline

Total articles: 3,281

1,718 in BioOne.2
1,376 in J-stage

Web of Science

Repository A

Repository B

Repository C

Publisher e-journals (BioOne.2 / J-stage)

171 in IRs

Usage logs

Analyze
Project outline

The log available since 2009

1,718 in BioOne.2
1,376 in J-stage

Logs available since 2008

171 in IRs
Log filtering procedure

(1) IR usage statistics
• Total number of downloads (2008-2009):

- 10,099

• Average: 59.0

• Median: 43.0
Access path to articles deposited in IRs (2008-2009, N = 171)

- Direct access: 7,017, 70%
- Through search engines: 1,760, 17%
- Through other IR pages: 1,012, 10%
- Through other pages: 306, 3%
Types of user groups for articles deposited in IRs (2008-2009, $N = 171$)

- Private users (.ne or .net): 1,911, 30%
- Corporate users (.co or .com): 1,034, 16%
- Academic users (.ac or .edu): 1,070, 17%
- Others: 2,321, 37%

Total: 7,326 articles

- Japanese (\.jp): 993, 16%
- Non-Japanese (not .jp): 5,343, 84%
Top 10 countries that used IRs, J-stage and cited *Zoological Science* \((N = 171)\)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>IR downloads</th>
<th>J-stage downloads</th>
<th>ISI citations</th>
</tr>
</thead>
<tbody>
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<td>Downloads</td>
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(2) IR deposit & publisher downloads
## Descriptive statistics of J-stage full-text downloads

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<th>Deposited in IRs (N=126)</th>
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<td><strong>51.6</strong></td>
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<td><strong>Median</strong></td>
<td><strong>50.5</strong></td>
<td><strong>36.0</strong></td>
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<td><strong>Maximum</strong></td>
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<td><strong>Minimum</strong></td>
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</table>
Descriptive statistics of BioOne.2 full-text downloads

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<th>deposited in IRs ($N=135$)</th>
<th>not deposited in IRs ($N=1,629$)</th>
<th>not deposited in IRs (excluding articles published in 2008, $N=1,476$)</th>
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<tbody>
<tr>
<td>Average</td>
<td>52.4</td>
<td>62.1</td>
<td>54.6</td>
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<tr>
<td>Median</td>
<td>35.0</td>
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<td>Maximum</td>
<td>287</td>
<td>840</td>
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IR full-text downloads and J-stage/BioOne.2 downloads (Plots)

\[ \rho = 0.363 \]

\[ \rho = 0.519 \]
IR full-text downloads and J-stage/BioOne.2 downloads (Plots)

ρ = 0.363

ρ = 0.519
(3) IR deposit & citations
Descriptive statistics of ISI citations between 2008 and 2009

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### Descriptive statistics of ISI citations between 1984 and 2007

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<th>Deposited in IRs (N=171)</th>
<th>Not Deposited in IRs (N=3,144)</th>
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</thead>
<tbody>
<tr>
<td><strong>Average</strong></td>
<td><strong>7.3</strong></td>
<td>6.1</td>
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<tr>
<td><strong>Median</strong></td>
<td><strong>5.0</strong></td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>43</td>
<td>193</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
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<td>0</td>
</tr>
</tbody>
</table>
IR full-text downloads and ISI citations (Plots)

\[ \rho = 0.334 \]
Will IR deposit decrease publisher e-journal usage?

• **No, it won’t.**
  
  – IR registration did not reduce the number of publisher e-journal full-text downloads.

• The reason may be that:
  
  – Articles deposited in IRs were mainly used by **non-researchers** through **search engines**.
  
  – They are thought to be **new readers**.
  
  – Existing readers did not switch to IRs.
Will IR deposit increase the number of citations?

- **We could not determine.**
- The project is still going on and we want to do more studies.
Further analyses

• Another analysis will be needed.

For example:

– Analyze relationships between institutions of IR users and authors who cited *Zoological Science*

– *existing readers : new readers \(\approx\) subscriber : non-subscriber ?*
Conclusion

• Depositing journal articles in IRs, even after a one-year embargo, will do more good than harm to scholarly journal publishers.

  – Existing readers will not switch to IRs.

  – IRs will attract new readers, some of whom read articles that are not read by researchers.
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Thank you for your attention!

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