

# The location of the citation:

## Changing practices in how publications cite original data in the Dryad Digital Repository

Christine Mayo, Todd Vision, Elizabeth Hull

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IDCC - 24 February 2016



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# What is data citation, and why is it important?

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## Data citation:

Referencing within a scholarly publication data that is not reported in detail within that publication, but is nonetheless integral to the findings

## Data as a first-class object:

*“...a growing consensus that the **basic building blocks of knowledge** (data, software, algorithms, visualizations, and other outputs of the research process) warrant the **same degree of attention** as the research papers that synthesize and interpret those raw artifacts”*

— Clement G, Schiff L (2015) “Mapping the Landscape of Research Data”

<http://doi.org/10.7710/2162-3309.1279>



# Baseline: Intratextual citation

Journal of Heredity 2011;102(3):269–274  
doi:10.1093/jhered/esr004  
Advance Access publication March 16, 2011

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## Deep Mitochondrial Divergence in Baja California Populations of an Aquilopelagic Elasmobranch: The Golden Cownose Ray

JONATHAN SANDOVAL-CASTILLO AND AXAYÁCATL ROCHA-OLIVARES

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Data deposited at Dryad: <http://dx.doi.org/10.5061/dryad.8437>

### Abstract

Assessing the realized effect of dispersal in the genetic makeup of a species has significant evolutionary, ecological, and economical consequences. Here, we investigate the genetic diversity and population differentiation in the aquilopelagic golden cownose ray *Rhinoptera steindachneri* from the Gulf of California (GC) and the Pacific coast of Baja California (PCBC) using the mitochondrial NADH2 gene. Low levels of genetic diversity were found with only 4 polymerase chain reaction-restriction fragment length polymorphism haplotypes among 76 specimens. Pacific coast organisms were fixed for a unique haplotype not shared with rays from the gulf; 92% of GC rays possessed a single NADH2 haplotype not found in the Pacific. This produced significant differentiation between the GC and the PCBC ( $\Phi_{CT} = 0.972$ ,  $P < 0.001$ ). A pronounced phylogeographic pattern was found in which GC haplotypes were reciprocally monophyletic relative to a very divergent Pacific lineage ( $d = 10\%$ ). Our results indicate that despite high dispersal potential, GC and PCBC golden cownose ray

### Results

Only 4 composite haplotypes were found among 76 golden cownose ray (GenBank accession HQ540559–62) resulting in low average population haplotype ( $h = 0.077$ ) and nucleotide ( $\pi = 0.255\%$ ) diversities (Table 1). Two haplotypes (Rs1 and Rs4) were found in 96% of the specimens. Rs1 predominated among GC fish, whereas all PCBC organisms were fixed for Rs4 (Figure 1), resulting in

# Better: In the references / works cited

*Ecological Monographs*, 82(2), 2012, pp. 221–228  
© 2012 by the Ecological Society of America

## Novel forests maintain ecosystem processes after the decline of native tree species

JOSEPH MASCARO,<sup>1,4</sup> R. FLINT HUGHES,<sup>2</sup> AND STEFAN A. SCHNITZER<sup>1,3</sup>

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<sup>3</sup>*Smithsonian Tropical Research Institute, Apartado 2072, Balboa, Republic of Panama*

**Abstract.** The positive relationship between species diversity (richness and evenness) and critical ecosystem functions, such as productivity, carbon storage, and nutrient cycling, is often used to predict the consequences of extinction. At regional scales, however, plant species richness is mostly increasing rather than decreasing because successful plant species introductions far outnumber extinctions. If these regional increases in richness lead to local

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# Original vs. reuse citation

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## **Original data citation:**

Citing data that have been made available *in coordination* with a publication, *by the same author(s)*; e.g., the raw data underlying the findings of a journal article.

## **Data reuse citation:**

Data being referenced was produced by *other* researchers or reported in a *prior* publication.



# Original vs. reuse citation

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**Greater agreement that this should be in the works cited**



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Citing data that have been made available *in coordination* with a publication, *by the same author(s)*; e.g., the raw data underlying the findings of a journal article.


**What about this?**

## **Data reuse citation:**

Data being referenced was produced by *other* researchers or reported in a *prior* publication.



# Data Availability Statement

 PLOS ONE

RESEARCH ARTICLE


## Religion Does Matter for Climate Change Attitudes and Behavior

Mark Morrison<sup>1,2†</sup>, Roderick Duncan<sup>3\*</sup>, Kevin Parton<sup>1,2\*‡</sup>

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‡ MM is the senior author.  
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These authors contributed equally to this work.

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**OPEN ACCESS**

**Citation:** Morrison M, Duncan R, Parton K (2015) Religion Does Matter for Climate Change Attitudes and Behavior. PLoS ONE 10(8): e0134868. doi:10.1371/journal.pone.0134868

**Editor:** Kristie L Ebi, University of Washington, UNITED STATES

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**Data Availability Statement:** The data for this study are available from Dryad with the following DOI:10.5061/dryad.vr315.

**Funding:** The authors have no support or funding to report.

**Competing Interests:** The authors have declared that no competing interests exist.

PLOS ONE | DOI:10.1371/journal.pone.0134868 August 6, 2015 1/16

## OPEN ACCESS

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**Funding:** The authors have no support or funding to report.

**Competing Interests:** The authors have declared that no competing interests exist.





# Recommendations: Where to cite?

## In the works cited



## No specific location




# Are the recommendations working?

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Silva G, Roxo F, Lujan N, Tagliacolo V, Zawadzki C, Oliveira C (2016) Data from: Transcontinental dispersal, ecological opportunity and origins of an adaptive radiation in the Neotropical catfish genus *Hypostomus* (Siluriformes: Loricariidae). *Molecular Ecology* <http://dx.doi.org/10.5061/dryad.c8q11>

Bonanomi S, Overgaard Therkildsen N, Retzel A, Berg Hedeholm R, Wæver Pedersen MW, Meldrup D, Pampoulie C, Hemmer-Hansen J, Grønkjær P, Nielsen E (2016) Data from: Historical DNA documents long distance natal homing in marine fish. *Molecular Ecology* <http://dx.doi.org/10.5061/dryad.4b3qn>

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# Dryad Digital Repository

Data from: Towards a worldwide wood economics spectrum



**1:1 relationship between the publication and the data**

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Additionally, please cite the Dryad data package:

Zanne AE, Lopez-Gonzalez G, Coomes DA, Ilic J, Jansen S, Lewis SL, Miller RB, Swenson NG, Wiemann MC, Chave J (2009) Data from: Towards a worldwide wood economics spectrum. Dryad Digital Repository. [doi:10.5061/dryad.234](https://doi.org/10.5061/dryad.234)

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# Dryad Digital Repository

Data from: Towards a worldwide wood economics spectrum



Dryad assigns a DOI

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Zanne AE, Lopez-Gonzalez G, Coomes DA, Ilic J, Jansen S, Lewis SL, Miller RB, Swenson NG, Wiemann MC, Chave J (2009) Data from: Towards a worldwide wood economics spectrum. Dryad Digital Repository. [doi:10.5061/dryad.234](https://doi.org/10.5061/dryad.234)

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# Location of the citation: Study details

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- Conducted as master's project of Christine Mayo, former Dryad curator
- Are Dryad DOIs being treated like accession numbers, or are authors citing data as recommended, in the works cited?



- Is there evidence of a temporal trend?



# Location of the citation: Methods

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1. recorded Dryad and article DOIs for all data packages published 2011-2014 (6,834)
2. retrieved XML full text for all available via EuropePMC Open Access API (1,125 or **16.5%** of above)

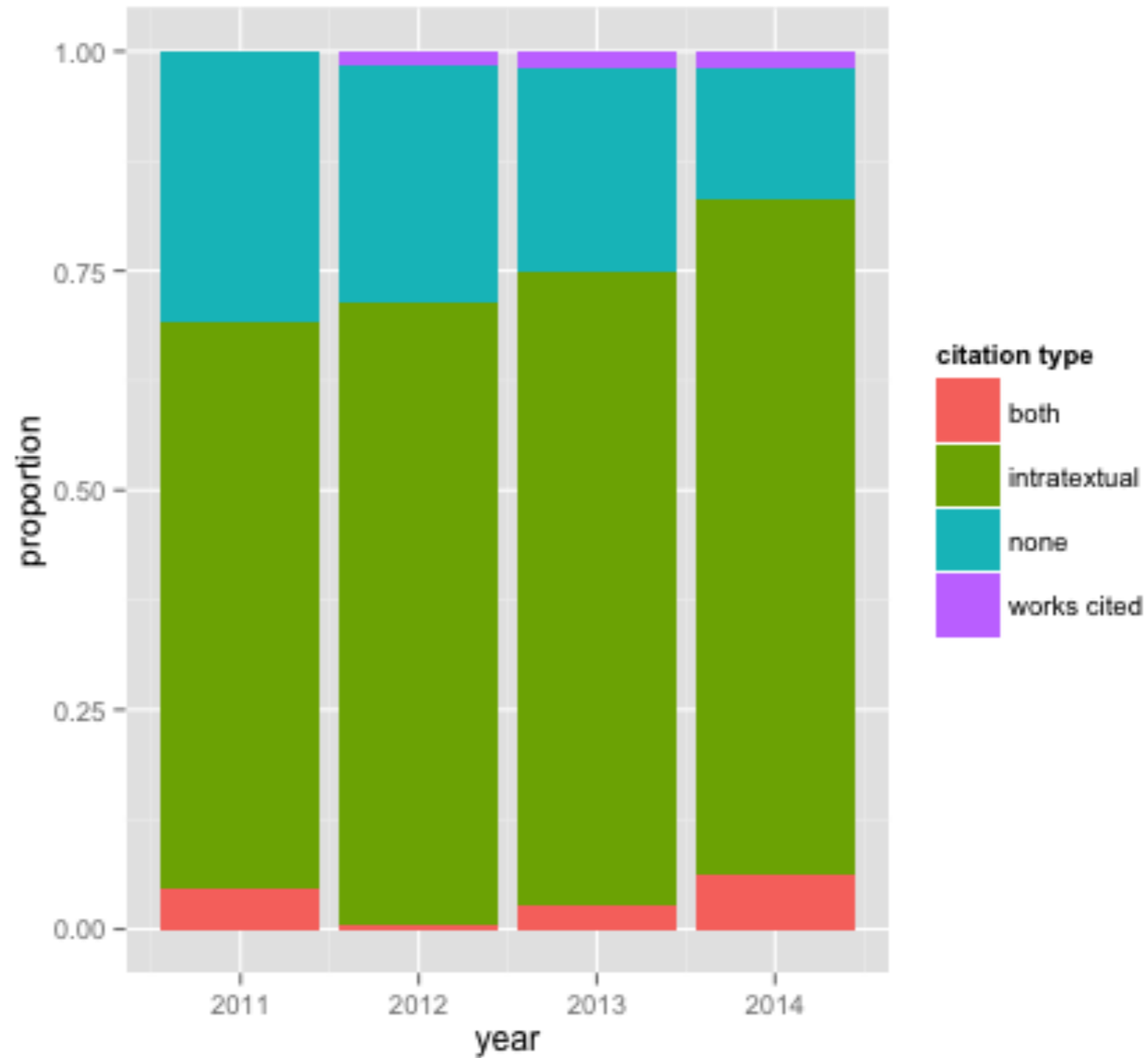


3. searched for the Dryad DOI and using XML tags, classified hits as :
  1. **within the body (intratextual)\***
  2. **within the works cited**
  3. **within both**
  4. **within neither (no citation)**

*\* including Data Availability Statements*

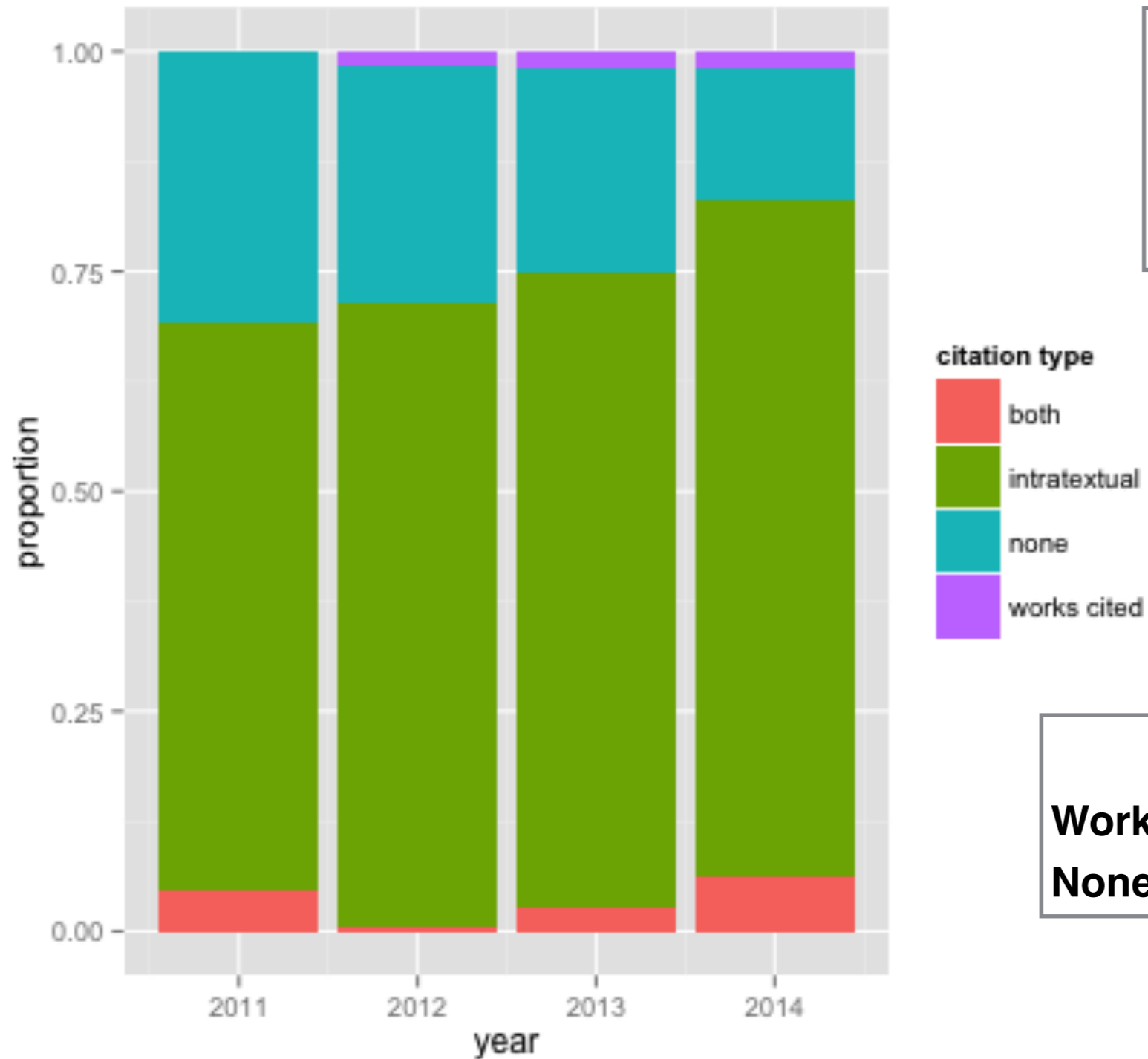


# Location of the citation: Results





# Location of the citation: Results



**% of total**  
Works cited = 68 or **6%**  
Intra = 833 or **75%**  
None = 224 or **20%**

**Temporal trend**  
Works cited = incr. from **5% to 8%**  
None = declined from **31% to 15%**



# Location of the citation: Results

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- The total percentage of articles in which the Dryad DOI was present in any section has been rising steadily, from **69%** of articles in 2011 to **85%** in 2014.
- Authors and journals **appreciate the importance of data citations**, even if there is not consensus about where they belong.



- At the current rate of growth, the proportion of articles with data citations in the works cited section would not exceed **90%** until **2031**.
- Current efforts to promulgate best practice are working, but **very slowly**.



# Speeding the positive trend

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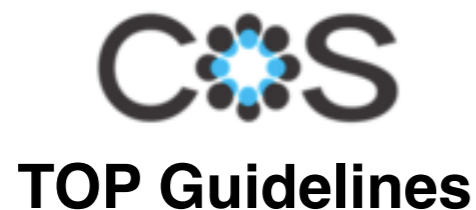
Researcher education

Publisher/funder policies

- CODATA int'l workshop series

Guidance from repositories

<JATS> (Journal Article Tag Suite) and other emerging standards



# Complicating factors - for discussion



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- This study did not distinguish data availability sections from other intratextual citations
- Authors may not distinguish between citing the *article* reporting original data and citing the *data itself*
- Different attitudes toward original data citation versus data reuse citation?
- Role of publisher and funder policies and guidelines?
- Are the recommendations the right way to go?



# Learn more

- Repository home: <http://datadryad.org>
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