## Supplementary Information

### Publications and identifiers

Get count of number of published works for each year, and number of works with identifiers.

PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT ?work\_date (COUNT(?w) as ?c) (COUNT(?doi) as ?c\_doi) (COUNT(?biostor) as ?c\_biostor) (COUNT(?jstor) as ?c\_jstor) (COUNT(?pdf) as ?c\_pdf)

WHERE

{

?w <http://schema.org/datePublished> ?work\_date .

# just articles

?w <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://schema.org/ScholarlyArticle> .

# DOI?

OPTIONAL {

?w <http://schema.org/identifier> ?doi .

?doi <http://schema.org/propertyID> "doi" .

}

# BioStor?

OPTIONAL {

?w <http://schema.org/identifier> ?biostor .

?biostor <http://schema.org/propertyID> "biostor" .

}

# JSTOR?

OPTIONAL {

?w <http://schema.org/identifier> ?jstor .

?jstor <http://schema.org/propertyID> "jstor" .

}

# PDF?

OPTIONAL {

?w <http://schema.org/encoding> ?pdf .

?pdf <http://schema.org/fileFormat> "application/pdf" .

}

FILTER regex(?work\_date, "^[0-9]{4}$")

#FILTER (xsd:integer(?work\_date) > 1980)

}

GROUP BY ?work\_date

ORDER BY ?work\_date

Data in publications.tsv

### Journal ranks

Query to retrieve top 10 journals for a given decade (in this case 1910)

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

PREFIX tc: <http://rs.tdwg.org/ontology/voc/TaxonConcept#>

SELECT ?journal ?issn (COUNT(?journal) AS ?count) WHERE

{

?work <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://schema.org/ScholarlyArticle> .

?work <http://schema.org/isPartOf> ?container .

?container <http://schema.org/name> ?journal .

?work <http://schema.org/datePublished> ?year .

OPTIONAL {

?container <http://schema.org/issn> ?issn .

}

FILTER ((xsd:integer(?year) >= 1910) && (xsd:integer(?year) < " . ($year + 9) . "))

}

GROUP BY ?journal ?issn

ORDER BY DESC(?count)

LIMIT 10

Repeat this query for all decades, aggregate results, then filter for journals with > 200 articles.

Data in journals.tsv

### Citation patterns

Find all pairs of citing articles and get dates they were published.

PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

SELECT ?cited\_identifier\_type (xsd:integer(?w\_year) as ?from) (xsd:integer(?work\_year) as ?to)

WHERE

{

?w <http://schema.org/identifier> ?identifier .

?w <http://schema.org/name> ?w\_name .

?w <http://schema.org/datePublished> ?w\_year .

# Identifier (e.g., DOI) for work we are displaying

?identifier <http://schema.org/value> ?identifier\_value .

?citing\_identifier <http://schema.org/value> ?identifier\_value .

?citing <http://schema.org/identifier> ?citing\_identifier .

# What does this work cite (typically from CrossRef data)

?citing <http://schema.org/citation> ?cited .

# Translate the citing work\'s DOI (or other identifier) into AFD identifier

# Get identifier (typically a DOI) for citing work

?cited <http://schema.org/identifier> ?cited\_identifier .

?cited\_identifier <http://schema.org/value> ?cited\_identifier\_value .

?cited\_identifier <http://schema.org/propertyID> ?cited\_identifier\_type .

# Get work(s) with this identifer (may have > 1 if we have CrossRef record in our triple store

?work\_identifier <http://schema.org/value> ?cited\_identifier\_value .

?work <http://schema.org/identifier> ?work\_identifier .

?work <http://schema.org/name> ?name .

?work <http://schema.org/datePublished> ?work\_year .

# Just include citing records that are also in ALA

FILTER regex(str(?work),\'biodiversity.org.au\') .

FILTER regex(str(?w),\'biodiversity.org.au\') .

FILTER regex(?w\_year, "^[0-9]{4}$")

FILTER regex(?work\_year, "^[0-9]{4}$")

}

Data in cites.tsv

### Weevils

Number of accepted taxon names per year.

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?year (COUNT(?taxonName) AS ?count)

WHERE

{

VALUES ?root\_name {"CURCULIONOIDEA"}

?root <http://schema.org/name> ?root\_name .

?child rdfs:subClassOf+ ?root .

?child rdfs:subClassOf ?parent .

?child <http://schema.org/name> ?child\_name .

?parent <http://schema.org/name> ?parent\_name .

?child <http://taxref.mnhn.fr/lod/property/hasReferenceName> ?taxonName .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#rankString> "species" .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#year> ?year .

}

GROUP BY ?year

ORDER BY ?year

Sum these to generate cumulative total.

Number of weevil names published each year:

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?year (COUNT(DISTINCT ?name) AS ?c)

WHERE

{

VALUES ?root\_name {"CURCULIONOIDEA"}

?root <http://schema.org/name> ?root\_name .

?child rdfs:subClassOf+ ?root .

?child rdfs:subClassOf ?parent .

?child <http://schema.org/name> ?child\_name .

?parent <http://schema.org/name> ?parent\_name .

?child <http://taxref.mnhn.fr/lod/property/hasReferenceName>|<http://taxref.mnhn.fr/lod/property/hasSynonym> ?taxonName .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#rankString> "species" .

?taxonName <http://schema.org/name> ?name .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#year> ?year .

}

GROUP BY ?year

ORDER BY ?year

Combined data in weevils.tsv

### Snails

Number of accepted taxon names per year

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?year (COUNT(?taxonName) AS ?count)

WHERE

{

VALUES ?root\_name {"CAMAENIDAE"}

?root <http://schema.org/name> ?root\_name .

?child rdfs:subClassOf+ ?root .

?child rdfs:subClassOf ?parent .

?child <http://schema.org/name> ?child\_name .

?parent <http://schema.org/name> ?parent\_name .

?child <http://taxref.mnhn.fr/lod/property/hasReferenceName> ?taxonName .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#rankString> "species" .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#year> ?year .

}

GROUP BY ?year

ORDER BY ?year

Sum these to generate cumulative total.

Number of snail names published each year:

PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT ?year (COUNT(DISTINCT ?name) AS ?c)

WHERE

{

VALUES ?root\_name {"CAMAENIDAE"}

?root <http://schema.org/name> ?root\_name .

?child rdfs:subClassOf+ ?root .

?child rdfs:subClassOf ?parent .

?child <http://schema.org/name> ?child\_name .

?parent <http://schema.org/name> ?parent\_name .

?child <http://taxref.mnhn.fr/lod/property/hasReferenceName>|<http://taxref.mnhn.fr/lod/property/hasSynonym> ?taxonName .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#rankString> "species" .

?taxonName <http://schema.org/name> ?name .

?taxonName <http://rs.tdwg.org/ontology/voc/TaxonName#year> ?year .

}

GROUP BY ?year

ORDER BY ?year

Combined data in snails.tsv

### Authors and ORCIDs

How many authors of works with DOIs post 2011?

SELECT (COUNT(DISTINCT ?creator) as ?c)

WHERE

{

GRAPH <https://biodiversity.org.au/afd/publication> {

?work <http://schema.org/identifier> ?identifier .

?identifier <http://schema.org/propertyID> "doi" .

?identifier <http://schema.org/value> ?doi .

?work <http://schema.org/datePublished> ?datePublished .

?work <http://schema.org/creator> ?role .

?role <http://schema.org/roleName> ?roleName .

?role <http://schema.org/creator> ?creator .

?creator <http://schema.org/name> ?name .

}

FILTER (xsd:integer(?datePublished) > 2011)

}

How many authors of works with DOIs post 2011 had an ORCID?

SELECT DISTINCT ?orcid\_creator

WHERE

{

GRAPH <https://biodiversity.org.au/afd/publication> {

?work <http://schema.org/identifier> ?identifier .

?identifier <http://schema.org/propertyID> "doi" .

?identifier <http://schema.org/value> ?doi .

?work <http://schema.org/datePublished> ?datePublished .

?work <http://schema.org/creator> ?role .

?role <http://schema.org/roleName> ?roleName .

?role <http://schema.org/creator> ?creator .

?creator <http://schema.org/name> ?name .

}

GRAPH <https://orcid.org>

{

?orcid\_identifier <http://schema.org/value> ?doi .

?orcid\_work <http://schema.org/identifier> ?orcid\_identifier .

?orcid\_work <http://schema.org/creator> ?orcid\_role .

?orcid\_role <http://schema.org/roleName> ?orcid\_roleName .

?orcid\_role <http://schema.org/creator> ?orcid\_creator .

?orcid\_creator <http://schema.org/name> ?orcid\_name .

}

FILTER(?roleName = ?orcid\_roleName)

FILTER (xsd:integer(?datePublished) > 2011)

}