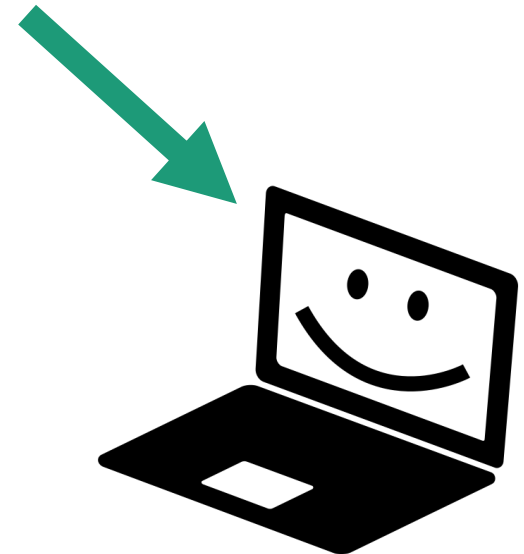


# Use case: rgbif to get a little or a \*lot\* of occurrence data



GBIF.org



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27 March 2019

# Occurrence data tells us about abiotic tolerances



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## Drought frequency predicts life history strategies in *Heliophila*

J. Grey Monroe, Brian Gill, Kathryn Turner, John K McKay

doi: <https://doi.org/10.1101/493270>

This article is a preprint and has not been peer-reviewed [[what does this mean?](#)].

Abstract

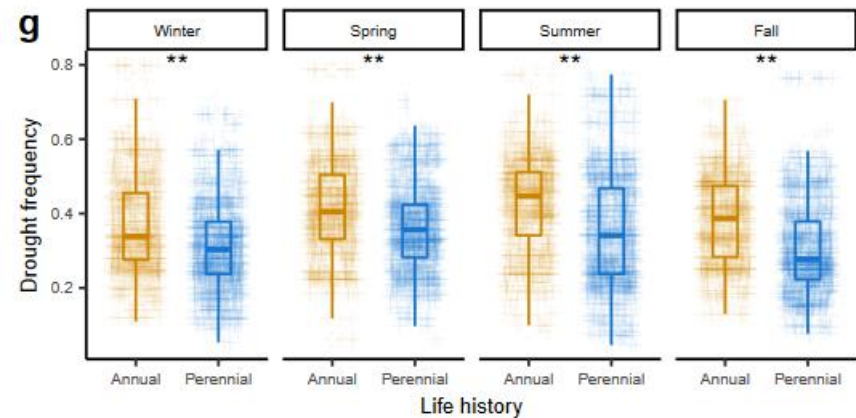
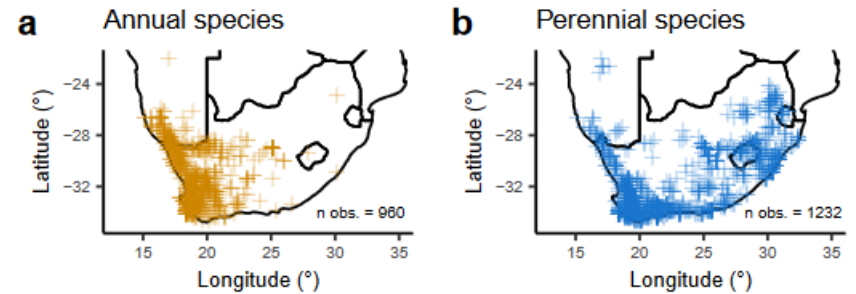
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Metrics

Preview PDF

### Abstract

Explaining variation in life history strategies is a long-standing goal of evolutionary biology. For plants, annual and perennial life histories are thought to reflect adaptation to environments that differ in the frequency of stress events such as drought. Here we test this hypothesis in *Heliophila* (Brassicaceae), a diverse genus of flowering plants native to Africa, by integrating 34 years of satellite-based drought measurements with 2192 herbaria occurrence records. Consistent with predictions from classic life history theory, we find that perennial *Heliophila* species occur in environments where droughts are significantly less frequent compared to annuals.



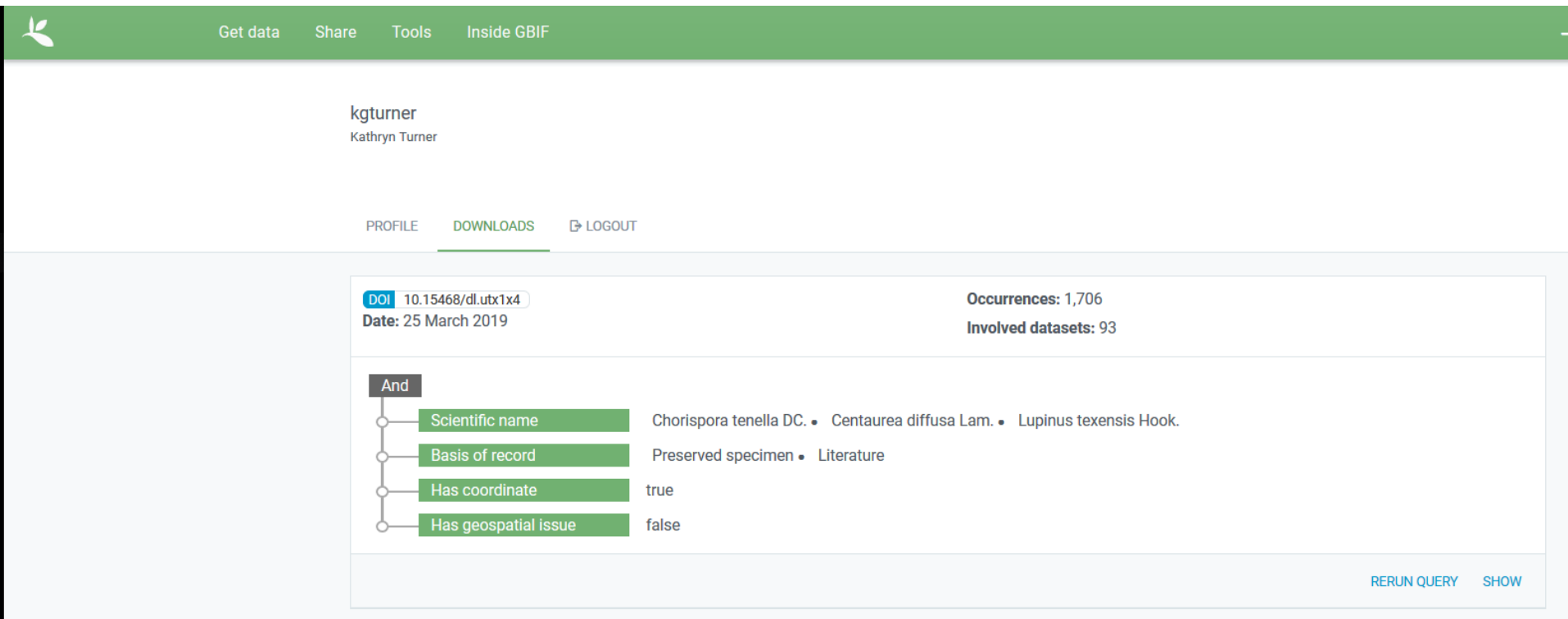
<https://www.biorxiv.org/content/10.1101/493270v1>

# Get occurrence data for a few spp.

```
> smallList <- c("Chorisporea tenella", "Centaurea diffusa", "Lupinus texensis")
> smallList_key <- sapply(smallList, function(x) name_suggest(x)$key[1], USE.NAMES=FALSE)
> occ_download(paste0("taxonKey = ", paste0(smallList_key, collapse = ".")).
+             "basisOfRecord = PRESERVED_SPECIMEN,LITERATURE",
+             "hasCoordinate = true",
+             "hasGeospatialIssue = false",
+             user = "kgturner",
+             pwd = "****",
+             email = "kathryn.g.turner@gmail.com"
+ )
<<gbif download>>
  Username: kgturner
  E-mail: kathryn.g.turner@gmail.com
  Download key: 0003753-190320150433242
> occ_download_meta(key="0003753-190320150433242")
<<gbif download metadata>>
  Status: RUNNING
  Format: DWCA
  Download key: 0003753-190320150433242
  Created: 2019-03-27T15:49:34.457+0000
  Modified: 2019-03-27T15:49:54.754+0000
  Download link: http://api.gbif.org/v1/occurrence/download/request/0003753-190320150433242.zip
  Total records: 1706
  Request:
    type: and
    predicates:
      > type: or
        predicates:
          - type: equals, key: TAXON_KEY, value: 3044349
          - type: equals, key: TAXON_KEY, value: 3128962
          - type: equals, key: TAXON_KEY, value: 2963880
      > type: or
        predicates:
          - type: equals, key: BASIS_OF_RECORD, value: PRESERVED_SPECIMEN
          - type: equals, key: BASIS_OF_RECORD, value: LITERATURE
      > type: equals, key: HAS_COORDINATE, value: true
      > type: equals, key: HAS_GEOSPATIAL_ISSUE, value: false
> |
```

You will need a GBIF account/login to do this part!

# Get occurrence data for a few spp.



kgturner  
Kathryn Turner

PROFILE DOWNLOADS LOGOUT

DOI: 10.15468/dl.utx1x4  
Date: 25 March 2019

Occurrences: 1,706  
Involved datasets: 93

And

- Scientific name: *Chorispota tenella* DC. • *Centaurea diffusa* Lam. • *Lupinus texensis* Hook.
- Basis of record: Preserved specimen • Literature
- Has coordinate: true
- Has geospatial issue: false

RERUN QUERY SHOW

- Call `occ_download()` once for up to 100 species
- Call `occ_download()` up to 3 times for 300 species
- For more species...

# Get occurrence data for >300 spp.

```
> output <- occ_download_queue(
+   occ_download('taxonKey = 3119195', "year = 1976",
+     user = "kgturner",
+     pwd = "****",
+     email = "kathryn.g.turner@gmail.com"),
+   occ_download('taxonKey = 3119195', "year = 2001", "month <= 8",
+     user = "kgturner",
+     pwd = "****",
+     email = "kathryn.g.turner@gmail.com"),
+   occ_download("country = NZ", "year = 1999", "month = 3",
+     user = "kgturner",
+     pwd = "****",
+     email = "kathryn.g.turner@gmail.com"),
+   occ_download("catalogNumber = Bird.27847588", "year = 1998", "month = 2",
+     user = "kgturner",
+     pwd = "****",
+     email = "kathryn.g.turner@gmail.com")
+ )
kicking off first 3 requests
> 3 requests, waiting for completion

> |

+ )
kicking off first 3 requests
> 3 requests, waiting for completion

0003779-190320150433242: succeeded
0003780-190320150433242: succeeded
running 4 of 4
0003781-190320150433242: succeeded
0003782-190320150433242: succeeded
> lapply(output, occ_download_get)
Download file size: 0.01 MB
On disk at E:\rtemp\0003779-190320150433242.zip
Download file size: 0.01 MB
On disk at E:\rtemp\0003780-190320150433242.zip
Download file size: 0.89 MB
On disk at E:\rtemp\0003781-190320150433242.zip
Download file size: 0.01 MB
On disk at E:\rtemp\0003782-190320150433242.zip
$F9e884084b84794d762a535f3facec85
<<gbif downloaded get>>
  Path: ./0003779-190320150433242.zip
  File size: 0.01 MB

$F9e884084b84794d762a535f3facec85
<<gbif downloaded get>>
  Path: ./0003780-190320150433242.zip
  File size: 0.01 MB

$F9e884084b84794d762a535f3facec85
<<gbif downloaded get>>
  Path: ./0003781-190320150433242.zip
  File size: 0.89 MB

$F9e884084b84794d762a535f3facec85
<<gbif downloaded get>>
  Path: ./0003782-190320150433242.zip
  File size: 0.01 MB

> |
```

# Get occurrence data for a \*lot\* of spp.

```
####run gbif queueing for really large spp. list####  
#loop through many occ_download() calls  
#input name of list of short key lists, i.e. chunktest above  
  
for (i in chunkList[1:n]){  
  output <- occ_download_queue(  
    occ_download(paste0("taxonKey = ", paste0(i, collapse = ",")),  
                "basisOfRecord = PRESERVED_SPECIMEN,LITERATURE",  
                "hasCoordinate = true",  
                "hasGeospatialIssue = false",  
                user = "kgturner",  
                pwd = "****",  
                email = "kathryn.g.turner@gmail.com"  
  )  
  print(output)  
}  
  
lapply(output, occ_download_meta)
```

See gist for more details:

<https://gist.github.com/kgturner/f44a9dc6e3417794ed1f433a96a2cc7a>