R and the iDigBio API: Enabling Exploration and Discovery

A non-technical overview of the iDigBio Application Programming Interface (APIs) and example use cases
R and the iDigBio API: Enabling Exploration and Discovery

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This Session Today

- Some very brief slides about APIs in general
- Not focusing on code itself
- 3 technical terms (and 3 only)
- Demos / Examples
- Questions / Discussion
Briefly: What is an API?

Ron’s tech term #1: API

Application Programming Interface
● An organization has a system...
● That they would like to allow others to interact with...
● And so they make it available on the web via an “endpoint”
● Some will require an account, others won’t
Endpoint: Odd Name, Same Thing

Ron’s tech term #2: *endpoint*

- An *endpoint* is a web address for the API

For instance, iDigBio:
- https://search.idigbio.org/v2/search/
- https://search.idigbio.org/v2/mapping/

National Park Service:
- https://developer.nps.gov/api/v1/alerts
A point of comparison...
Talking With an API

Ron’s tech term #3: request

A human or a computer makes a request to the API
- Asking for an interaction
- “Please search for these terms and return the results…”
- “Please download this file…”
- “Please count how many results match my query…”
itemCount: 2962007
lastModified: "2019-09-23T00:44:42.997Z"

items:
  0:
    uuid: "c4cb63b8-7726-4bbe-ac97-471103071026"
    type: "records"
    etag: "01924f8b387a8c4984d2b4897f8b78e126bd537f"
    data: 
        indexTerms:
            individualcount: 1
            geopoint: 
            family: "scarabaeidae"
            recordset: "77e77e52-6927-46bc-b3e8-b1b043f2f3c7"
            ds: "52173913454783"
API and R: What Is It Good For?

AUTOMATE ALL THE THINGS!

API and R: What Is It Good For?

Besides automation, there are other benefits:

- Self-documenting procedures
- Repeatable for yourself
- Reproducible for others!
- Bring your own programming language
- More coming up later...
(Example #1)
(Example #2)
API and R: What (Else) Is It Good For?

You don’t have to wait for iDigBio to implement features you need

You can bring data from different sources together:
- Multiple APIs
- Downloaded data sets
- Your own data
A Few Other Thoughts

Don’t re-invent the wheel:
  • Check the API documentation
  • Email data@idigbio.org*
A Few Other Thoughts

How to learn more?

- Software and Data Carpentries
  - https://carpentries.org/
- Hadley Wickham’s books online:
  - http://hadley.nz/
- Your community!
A Few Other Thoughts

Links to the projects shown today

- [https://github.com/roncanepa/idigbio-results-in-national-parks](https://github.com/roncanepa/idigbio-results-in-national-parks)
- [https://github.com/ekrimmel/idigbio-api-dq-geo](https://github.com/ekrimmel/idigbio-api-dq-geo)
- You can find more links in the project READMEs
Thank you!

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vimeo.com/idigbio
idigbio.org/rss-feed.xml
webcal://www.idigbio.org/events-calendar/export.ics

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