



Consuming the iDigBio API in R

A technical exploration of iDigBio's API offerings and R

Please take a text poll to help us guide this session!

Text an answer number (1-4) to: (928) 232-1975

How would you rate your basic understanding of what a web API is?

1. Errrr, what's a web API?
2. I've heard about web APIs before
3. Pretty good
4. I program against APIs on a daily basis



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Today's Session

- A few *very* brief slides
- Examples:
 - questions answered via API + R
 - Overview of methods and packages
- Discussion, Q&A



Briefly: What is an 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

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...

Family	Scientific Name	Date Collected	Country	Insti
"	"	1997-11-14	Brasil	IAC
Plantae	Passiflora foetida	1997-11-14	United States	US

	A	B	C	D
1	coreid	idigbio:associa	idigbio:barcode	dwc:basisOfRe
2	339de871-6d36-4d7f-82af-249ee327174			preservedspec
3	44a2dcaa-c35e-4e8b-8c8b-9b38f928579e			preservedspec
4	5295dd2c-ef39-4e59-b8bd-967c20f41b71			preservedspec
5				
6				
7				
8				



Talking With an API

What is a 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...”



Browser address bar: <https://search.idigbio.org/v2/search>

JSON | Raw Data | Headers

Save | Copy | Collapse All | Filter JSON

```

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"
    doc: 0 5217301304347826
  
```

<https://search.idigbio.org/v2/search/records?rq={%22stateprovince%22:%22Florida%22}&limit=1000>



<https://github.com/iDigBio/idigbio-search-api/wiki>

- How to access all the endpoints
 - Search, media, mapping
 - Summaries (top-n)
- Examples!
- Also a list of fields, or:
- Get request to:
 - <https://search.idigbio.org/v2/meta/fields/records>



(Example #1)



(Example #2)



APIs at iDigBio

Search API (previously covered)

Download API:

- https://www.idigbio.org/wiki/index.php/IDigBio_Download_API



Helpful Tools

Postman: build, run, save, share API queries

▶ request query by quality flag (multiple) Copy Comments (0)

GET https://search.idigbio.org/v2/search/records?rq={"flags":"rev_geocode_both_sign"}&limit=50 Send

Params ● Authorization Headers (7) Body Pre-request Script Tests Settings

Query Params

	KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/>	rq	{"flags":"rev_geocode_both_sign"}	
<input checked="" type="checkbox"/>	limit	50	
	Key	Value	Description

Body Cookies Headers (6) Test Results Status: 200 OK Time: 323ms Size: 569.97 KB

Pretty Raw Preview Visualize BETA JSON ≡

```

1 {
2   "itemCount": 3024,
3   "lastModified": "2019-09-23T00:44:25.212Z",
4   "items": [
5     {
6       "uuid": "2b240e13-b1a1-4609-93ce-178917c53397",
7       "type": "records",
8       "etag": "6d0b9a7d73042d0c93c2a80be61676039a2b23bf",
9       "data": {
10        "dwc:startDayOfYear": "330",
11        "dwc:specificEpithet": "fucata",
12        "dwc:countryCode": "KM",
13        "dwc:kingdom": "Animalia",

```

<https://www.getpostman.com/>



A Few Other Thoughts

Don't re-invent the wheel:

- Check the API documentation
 - <https://github.com/iDigBio/idigbio-search-api/wiki>
- 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/ekrimmel/idigbio-api-dq-geo>
- You can find more links in the project READMEs



Thank you!



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