Integrating Data Quality Feedback

A Data Provider's Perspective

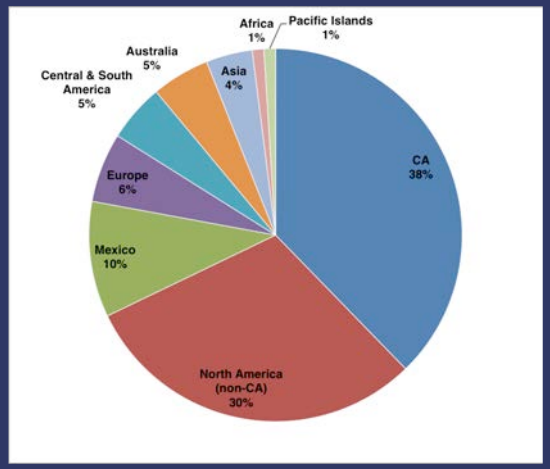
Mare Nazaire
Rancho Santa Ana Botanic Garden
SPNHC + TDWG, Dunedin 2018

Natural history collections have always contained a wealth of data... a preserved organism and its label are a scientific specimen that has great intrinsic value. ... Before the advent of computers, natural history collections were physical databases from which geographic or ecological analyses and reports could be extracted by human visitation and transcription, usually a laborious and time-consuming task. ... Computerization of label data makes such reports on distribution and ecology of species more readily available to potential users; they add value to the data. Interconnecting the databases brings robustness to the information that natural history collections can provide to policy-making bodies; appreciation of robust data will lead in turn to appreciation of the collections from which those data were taken. Interconnectivity [facilitates] a common goal: the discovery and description of the world's biota.

- Meredith A. Lane
  Roles of Natural History Collections
  Ann. Missouri Bot. Gard. 83: 536-545. 1996.

RSA Herbarium

- 1.23 million specimens of vascular plants
- Combined holdings: RSA & POM College
- Curatorial staff: 5.5 FTE

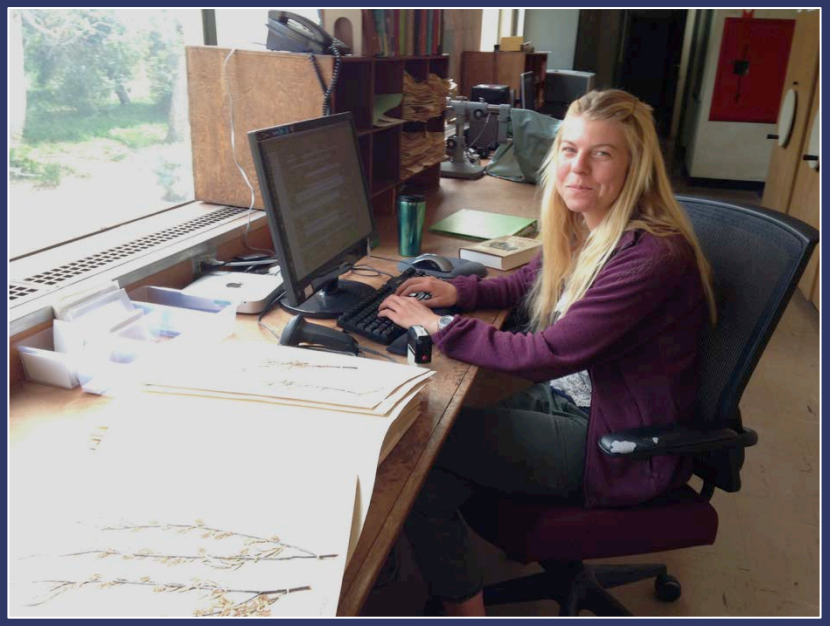


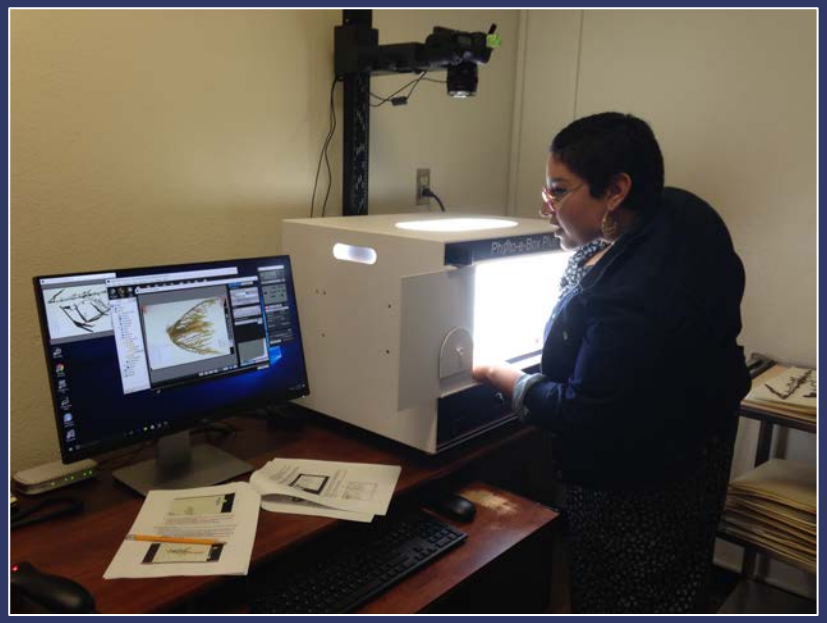
RSA Herbarium

Digitizing efforts

- ~10,000 / yr manual entry
- ~12,000 / yr bulk imports
- ~12,000 / yr images

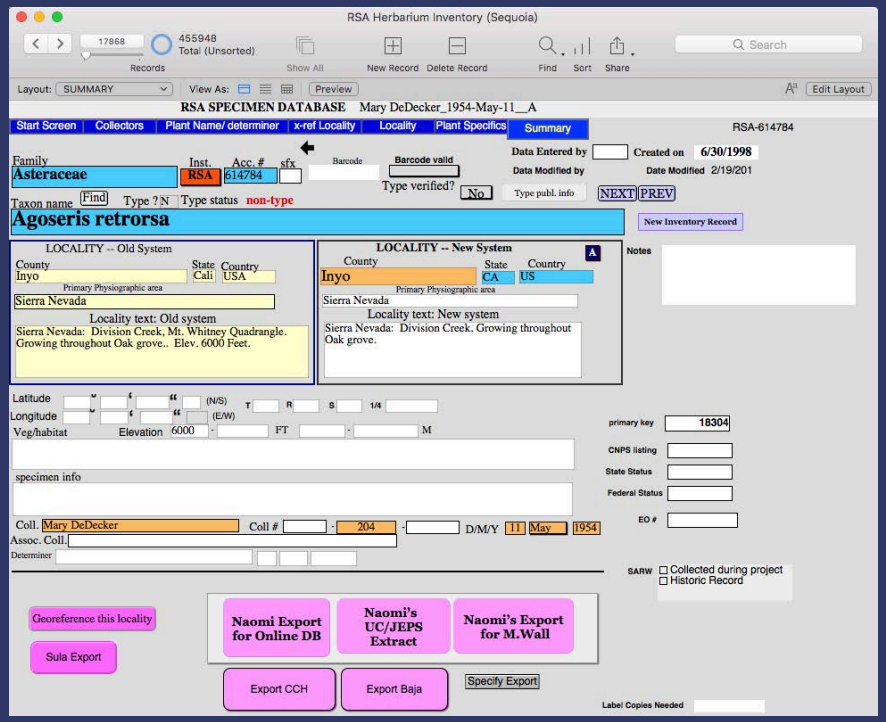
- 43% databased:
  - California
  - Selected taxa / regions
- 25% georeferenced
- 4% imaged





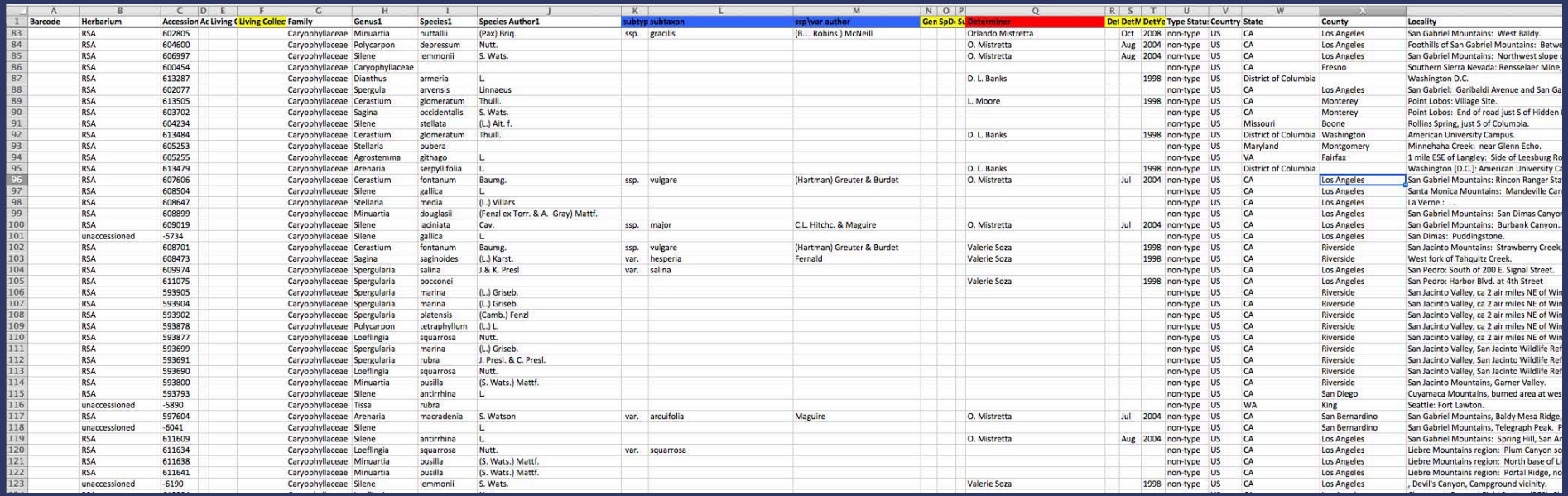
A Brief History of RSA's Databasing

- 1987: databasing type specimens, DBase II – limited fields
- 1993: experimentation with FMP - label making
- 1995: databasing southern CA specimens
  flat files converted to FMP
- 1999: RSA & UCR merge FMP systems
- 2013: FMP crash



A Brief History of RSA's Databasing

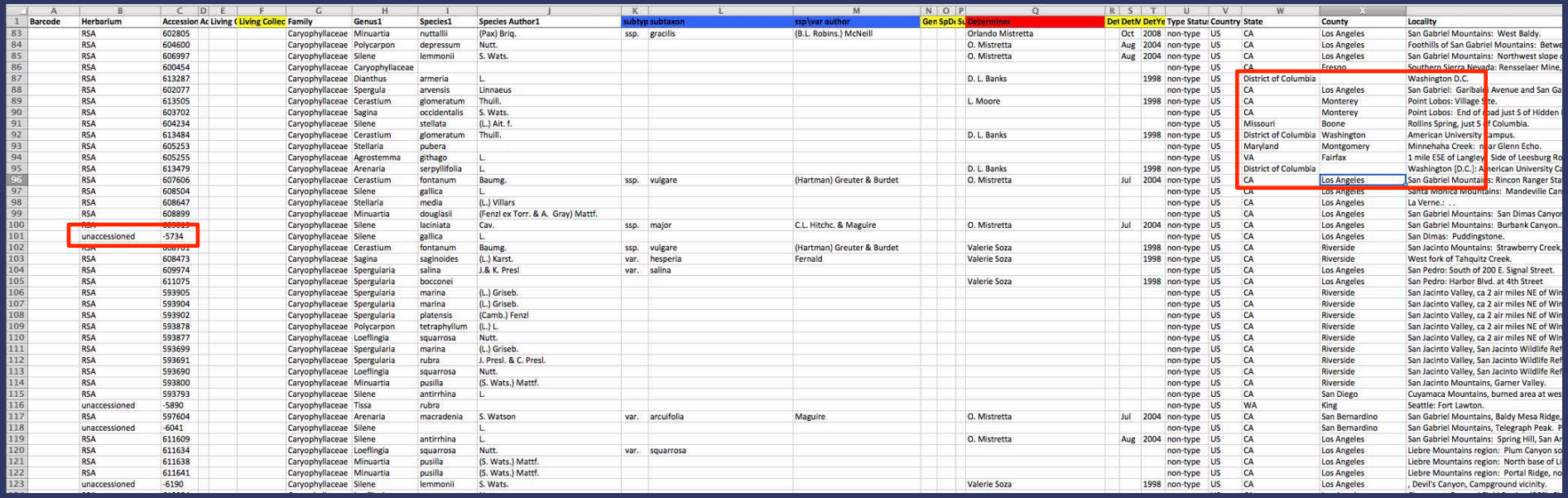
- 2014 – 2017: data migration from FMP to Specify



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
1	Barcode	Herbarium	Accession	Ac	Living (	Living Collec	Family	Genus1	Species1	Species Author1	subtyp	subtaxon	ssp\var author	Gen	SpDe	St	Determiner	Det	DetM	DetYe	Type Status	Country	State	County	Locality
83		RSA	602805				Caryophyllaceae	Minuartia	nuttallii	(Pax) Briq.	ssp.	gracilis	(B.L. Robins.) McNeill				Orlando Mistretta		Oct	2008	non-type	US	CA	Los Angeles	San Gabriel Mountains: West Baldy.
84		RSA	604600				Caryophyllaceae	Polycarpon	depressum	Nutt.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	Foothills of San Gabriel Mountains: Betwe
85		RSA	606997				Caryophyllaceae	Silene	lemmonii	S. Wats.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Northwest slope
86		RSA	600454				Caryophyllaceae	Caryophyllaceae													non-type	US	CA	Fresno	Southern Sierra Nevada: Rensselaer Mine,
87		RSA	613287				Caryophyllaceae	Dianthus	armeria	L.							D. L. Banks			1998	non-type	US	District of Columbia		Washington D.C.
88		RSA	602077				Caryophyllaceae	Spergula	arvensis	Linnaeus											non-type	US	CA	Los Angeles	San Gabriel: Garibaldi Avenue and San Ga
89		RSA	613505				Caryophyllaceae	Cerastium	glomeratum	Thuill.							L. Moore			1998	non-type	US	CA	Monterey	Point Lobos: Village Site.
90		RSA	603702				Caryophyllaceae	Sagina	occidentalis	S. Wats.											non-type	US	CA	Monterey	Point Lobos: End of road just S of Hidden
91		RSA	604234				Caryophyllaceae	Silene	stellata	(L.) Ait. f.											non-type	US	Missouri	Boone	Rollins Spring, just S of Columbia.
92		RSA	613484				Caryophyllaceae	Cerastium	glomeratum	Thuill.							D. L. Banks			1998	non-type	US	District of Columbia	Washington	American University Campus.
93		RSA	605253				Caryophyllaceae	Stellaria	pubera												non-type	US	Maryland	Montgomery	Minnehaha Creek: near Glenn Echo.
94		RSA	605255				Caryophyllaceae	Agrostemma	githago	L.											non-type	US	VA	Fairfax	1 mile ESE of Langley: Side of Leesburg Ro
95		RSA	613479				Caryophyllaceae	Arenaria	serpyllifolia	L.							D. L. Banks			1998	non-type	US	District of Columbia		Washington [D.C.]: American University Ca
96		RSA	607606				Caryophyllaceae	Cerastium	fontanum	Baumg.	ssp.	vulgare	(Hartman) Greuter & Burdet				O. Mistretta		Jul	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Rincon Ranger Sta
97		RSA	608504				Caryophyllaceae	Silene	gallica	L.											non-type	US	CA	Los Angeles	Santa Monica Mountains: Mandeville Can
98		RSA	608647				Caryophyllaceae	Stellaria	media	(L.) Villars											non-type	US	CA	Los Angeles	La Verne.: . .
99		RSA	608899				Caryophyllaceae	Minuartia	douglasii	(Fenzl ex Torr. & A. Gray) Mattf.											non-type	US	CA	Los Angeles	San Gabriel Mountains: San Dimas Canyon
100		RSA	609019				Caryophyllaceae	Silene	laciniata	Cav.	ssp.	major	C.L. Hitchc. & Maguire				O. Mistretta		Jul	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Burbank Canyon..
101		unaccessioned	-5734				Caryophyllaceae	Silene	gallica	L.											non-type	US	CA	Los Angeles	San Dimas: Puddingstone.
102		RSA	608701				Caryophyllaceae	Cerastium	fontanum	Baumg.	ssp.	vulgare	(Hartman) Greuter & Burdet				Valerie Soza			1998	non-type	US	CA	Riverside	San Jacinto Mountains: Strawberry Creek,
103		RSA	608473				Caryophyllaceae	Sagina	saginoides	(L.) Karst.	var.	hesperia	Fernald				Valerie Soza			1998	non-type	US	CA	Riverside	West fork of Tahquitz Creek.
104		RSA	609974				Caryophyllaceae	Spergularia	salina	J.& K. Presl	var.	salina									non-type	US	CA	Los Angeles	San Pedro: South of 200 E. Signal Street.
105		RSA	611075				Caryophyllaceae	Spergularia	bocconei								Valerie Soza			1998	non-type	US	CA	Los Angeles	San Pedro: Harbor Blvd. at 4th Street
106		RSA	593905				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
107		RSA	593904				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
108		RSA	593902				Caryophyllaceae	Spergularia	platensis	(Camb.) Fenzl											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
109		RSA	593878				Caryophyllaceae	Polycarpon	tetraphyllum	(L.) L.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
110		RSA	593877				Caryophyllaceae	Loeflingia	squarrosa	Nutt.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
111		RSA	593699				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
112		RSA	593691				Caryophyllaceae	Spergularia	rubra	J. Presl. & C. Presl.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
113		RSA	593690				Caryophyllaceae	Loeflingia	squarrosa	Nutt.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
114		RSA	593800				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Riverside	San Jacinto Mountains, Garner Valley.
115		RSA	593793				Caryophyllaceae	Silene	antirrhina	L.											non-type	US	CA	San Diego	Cuyamaca Mountains, burned area at wes
116		unaccessioned	-5890				Caryophyllaceae	Tissa	rubra												non-type	US	WA	King	Seattle: Fort Lawton.
117		RSA	597604				Caryophyllaceae	Arenaria	macradenia	S. Watson	var.	arcuifolia	Maguire				O. Mistretta		Jul	2004	non-type	US	CA	San Bernardino	San Gabriel Mountains, Baldy Mesa Ridge,
118		unaccessioned	-6041				Caryophyllaceae	Silene		L.											non-type	US	CA	San Bernardino	San Gabriel Mountains, Telegraph Peak. P
119		RSA	611609				Caryophyllaceae	Silene	antirrhina	L.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Spring Hill, San Ar
120		RSA	611634				Caryophyllaceae	Loeflingia	squarrosa	Nutt.	var.	squarrosa									non-type	US	CA	Los Angeles	Liebre Mountains region: Plum Canyon so
121		RSA	611638				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Los Angeles	Liebre Mountains region: North base of Li
122		RSA	611641				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Los Angeles	Liebre Mountains region: Portal Ridge, no
123		unaccessioned	-6190				Caryophyllaceae	Silene	lemmonii	S. Wats.							Valerie Soza			1998	non-type	US	CA	Los Angeles	, Devil's Canyon, Campground vicinity.

A Brief History of RSA's Databasing

- Data migration: ~450,000 records

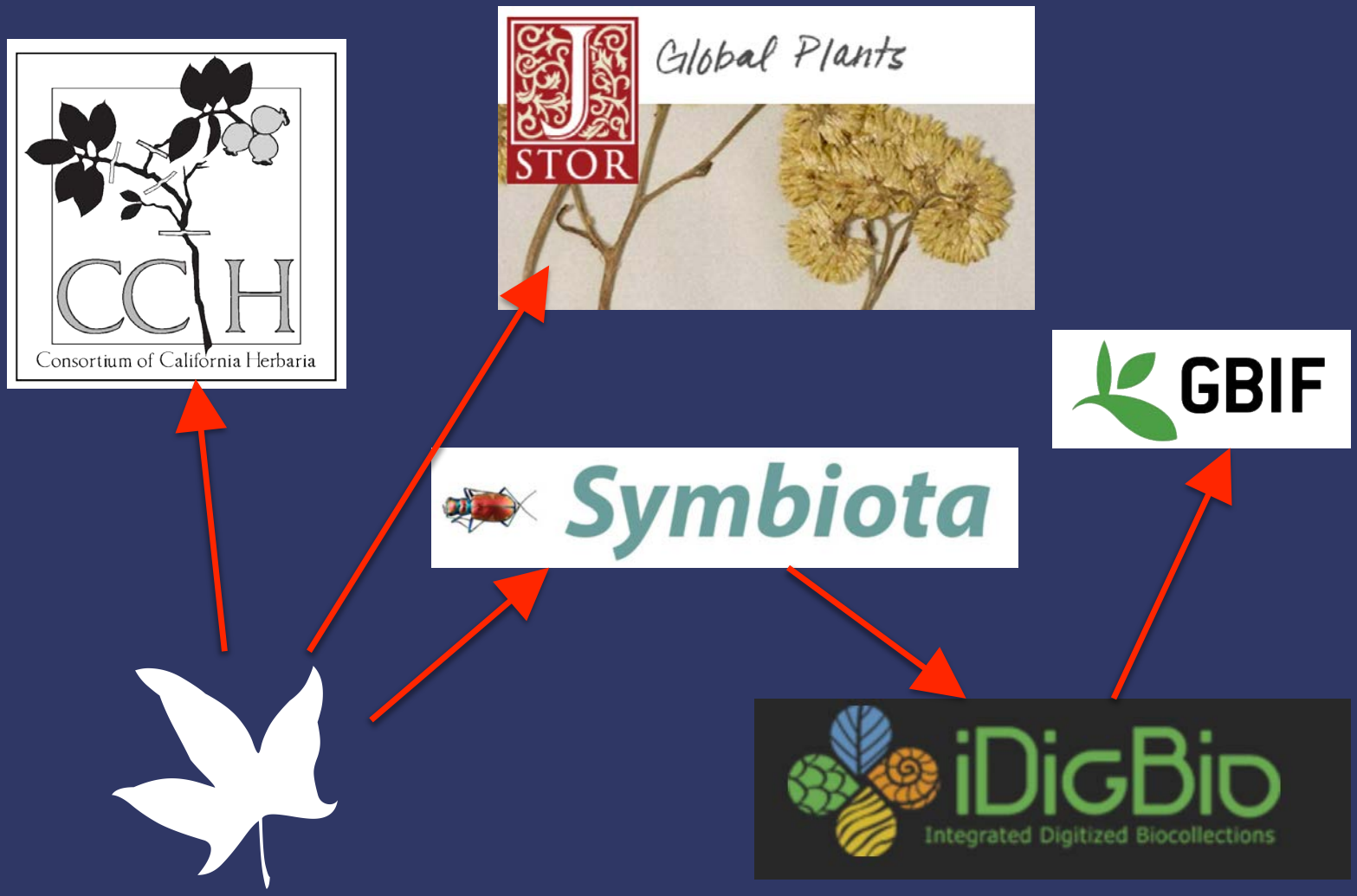


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
1	Barcode	Herbarium	Accession	Ac	Living	Living Collec	Family	Genus1	Species1	Species Author1	subtyp	subtaxon	ssp\var author	Gen	SpDe	St	Determiner	Det	DetM	DetYe	Type Statu	Country	State	County	Locality
83		RSA	602805				Caryophyllaceae	Minuartia	nuttallii	(Pax) Briq.	ssp.	gracilis	(B.L. Robins.) McNeill				Orlando Mistretta		Oct	2008	non-type	US	CA	Los Angeles	San Gabriel Mountains: West Baldy.
84		RSA	604600				Caryophyllaceae	Polycarpon	depressum	Nutt.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	Foothills of San Gabriel Mountains: Betwe
85		RSA	606997				Caryophyllaceae	Silene	lemmonii	S. Wats.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Northwest slope
86		RSA	600454				Caryophyllaceae	Caryophyllaceae													non-type	US	CA	Fresno	Southern Sierra Nevada: Rensselaer Mine,
87		RSA	613287				Caryophyllaceae	Dianthus	armeria	L.							D. L. Banks			1998	non-type	US	District of Columbia		Washington D.C.
88		RSA	602077				Caryophyllaceae	Spergula	arvensis	Linnaeus											non-type	US	CA	Los Angeles	San Gabriel: Garibaldi Avenue and San Ga
89		RSA	613505				Caryophyllaceae	Cerastium	glomeratum	Thuill.							L. Moore			1998	non-type	US	CA	Monterey	Point Lobos: Village Site.
90		RSA	603702				Caryophyllaceae	Sagina	occidentalis	S. Wats.											non-type	US	CA	Monterey	Point Lobos: End of road just S of Hidden
91		RSA	604234				Caryophyllaceae	Silene	stellata	(L.) Ait. f.											non-type	US	Missouri	Boone	Rollins Spring, just S of Columbia.
92		RSA	613484				Caryophyllaceae	Cerastium	glomeratum	Thuill.							D. L. Banks			1998	non-type	US	District of Columbia	Washington	American University Campus.
93		RSA	605253				Caryophyllaceae	Stellaria	pubera												non-type	US	Maryland	Montgomery	Minnehaha Creek: near Glenn Echo.
94		RSA	605255				Caryophyllaceae	Agrostemma	githago	L.											non-type	US	VA	Fairfax	1 mile ESE of Langley, Side of Leesburg Ro
95		RSA	613479				Caryophyllaceae	Arenaria	serpyllifolia	L.							D. L. Banks			1998	non-type	US	District of Columbia		Washington [D.C.]: American University Ca
96		RSA	607606				Caryophyllaceae	Cerastium	fontanum	Baumg.	ssp.	vulgare	(Hartman) Greuter & Burdet				O. Mistretta		Jul	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Rincon Ranger Sta
97		RSA	608504				Caryophyllaceae	Silene	gallica	L.											non-type	US	CA	Los Angeles	Santa Monica Mountains: Mandeville Can
98		RSA	608647				Caryophyllaceae	Stellaria	media	(L.) Villars											non-type	US	CA	Los Angeles	La Verne.: . .
99		RSA	608899				Caryophyllaceae	Minuartia	douglasii	(Fenzl ex Torr. & A. Gray) Mattf.											non-type	US	CA	Los Angeles	San Gabriel Mountains: San Dimas Canyon
100		RSA	609015				Caryophyllaceae	Silene	laciniata	Cav.	ssp.	major	C.L. Hitchc. & Maguire				O. Mistretta		Jul	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Burbank Canyon..
101		unaccessioned	-5734				Caryophyllaceae	Silene	gallica	L.											non-type	US	CA	Los Angeles	San Dimas: Puddingstone.
102		RSA	608701				Caryophyllaceae	Cerastium	fontanum	Baumg.	ssp.	vulgare	(Hartman) Greuter & Burdet				Valerie Soza			1998	non-type	US	CA	Riverside	San Jacinto Mountains: Strawberry Creek,
103		RSA	608473				Caryophyllaceae	Sagina	saginoides	(L.) Karst.	var.	hesperia	Fernald				Valerie Soza			1998	non-type	US	CA	Riverside	West fork of Tahquitz Creek.
104		RSA	609974				Caryophyllaceae	Spergularia	salina	J.& K. Presl	var.	salina									non-type	US	CA	Los Angeles	San Pedro: South of 200 E. Signal Street.
105		RSA	611075				Caryophyllaceae	Spergularia	bocconei								Valerie Soza			1998	non-type	US	CA	Los Angeles	San Pedro: Harbor Blvd. at 4th Street
106		RSA	593905				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
107		RSA	593904				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
108		RSA	593902				Caryophyllaceae	Spergularia	platensis	(Camb.) Fenzl											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
109		RSA	593878				Caryophyllaceae	Polycarpon	tetraphyllum	(L.) L.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
110		RSA	593877				Caryophyllaceae	Loeflingia	squarrosa	Nutt.											non-type	US	CA	Riverside	San Jacinto Valley, ca 2 air miles NE of Win
111		RSA	593699				Caryophyllaceae	Spergularia	marina	(L.) Griseb.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
112		RSA	593691				Caryophyllaceae	Spergularia	rubra	J. Presl. & C. Presl.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
113		RSA	593690				Caryophyllaceae	Loeflingia	squarrosa	Nutt.											non-type	US	CA	Riverside	San Jacinto Valley, San Jacinto Wildlife Ref
114		RSA	593800				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Riverside	San Jacinto Mountains, Garner Valley.
115		RSA	593793				Caryophyllaceae	Silene	antirrhina	L.											non-type	US	CA	San Diego	Cuyamaca Mountains, burned area at wes
116		unaccessioned	-5890				Caryophyllaceae	Tissa	rubra												non-type	US	WA	King	Seattle: Fort Lawton.
117		RSA	597604				Caryophyllaceae	Arenaria	macradenia	S. Watson	var.	arcuifolia	Maguire				O. Mistretta		Jul	2004	non-type	US	CA	San Bernardino	San Gabriel Mountains, Baldy Mesa Ridge,
118		unaccessioned	-6041				Caryophyllaceae	Silene		L.											non-type	US	CA	San Bernardino	San Gabriel Mountains, Telegraph Peak. P
119		RSA	611609				Caryophyllaceae	Silene	antirrhina	L.							O. Mistretta		Aug	2004	non-type	US	CA	Los Angeles	San Gabriel Mountains: Spring Hill, San Ar
120		RSA	611634				Caryophyllaceae	Loeflingia	squarrosa	Nutt.	var.	squarrosa									non-type	US	CA	Los Angeles	Liebre Mountains region: Plum Canyon so
121		RSA	611638				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Los Angeles	Liebre Mountains region: North base of Li
122		RSA	611641				Caryophyllaceae	Minuartia	pusilla	(S. Wats.) Mattf.											non-type	US	CA	Los Angeles	Liebre Mountains region: Portal Ridge, no
123		unaccessioned	-6190				Caryophyllaceae	Silene	lemmonii	S. Wats.							Valerie Soza			1998	non-type	US	CA	Los Angeles	, Devil's Canyon, Campground vicinity.

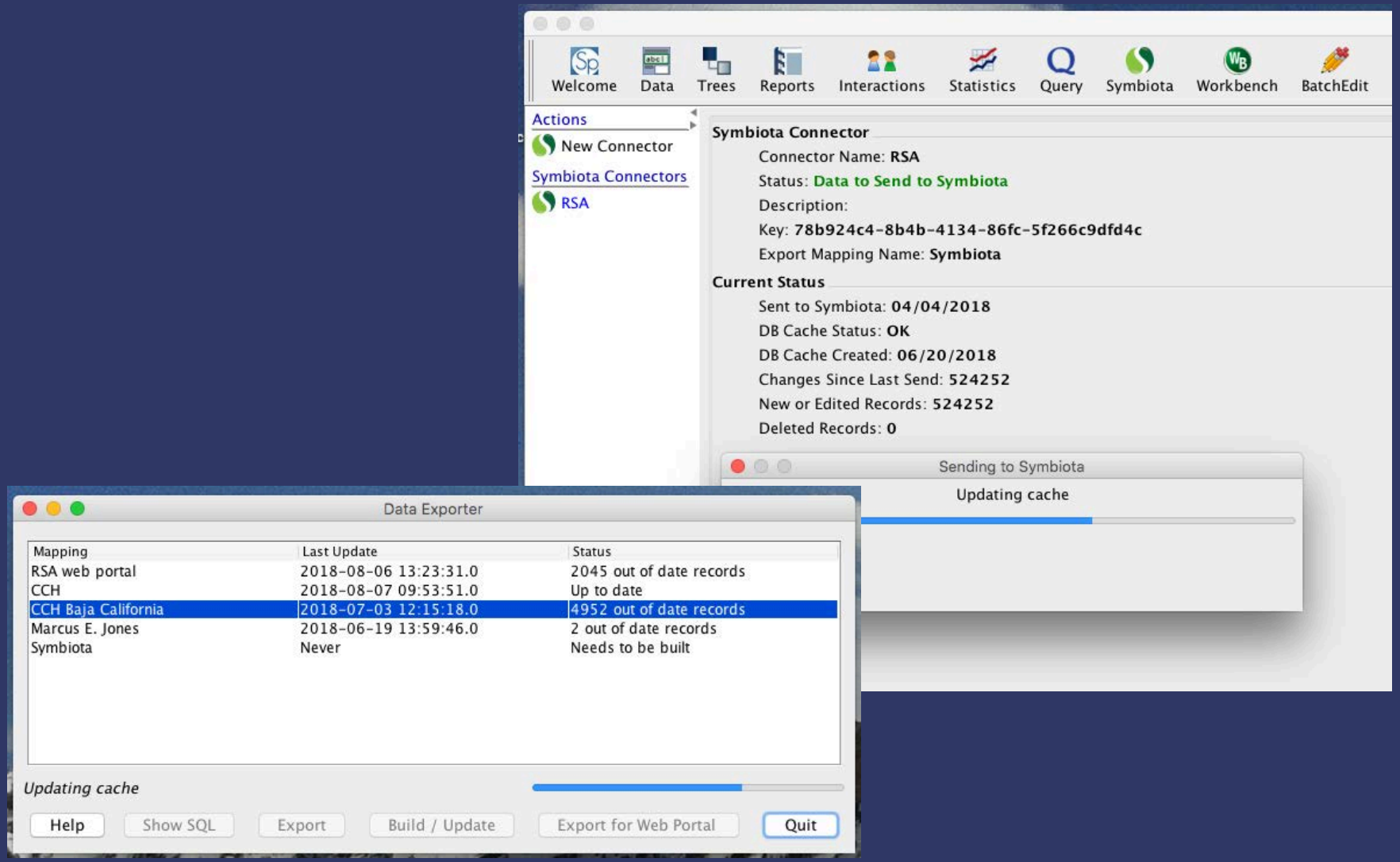
Cleaning, formatting, standardization

- Combining / separating fields
- Removing negative accessions, hidden spaces, odd characters
- Standardizing geography, taxonomy

Publishing Data



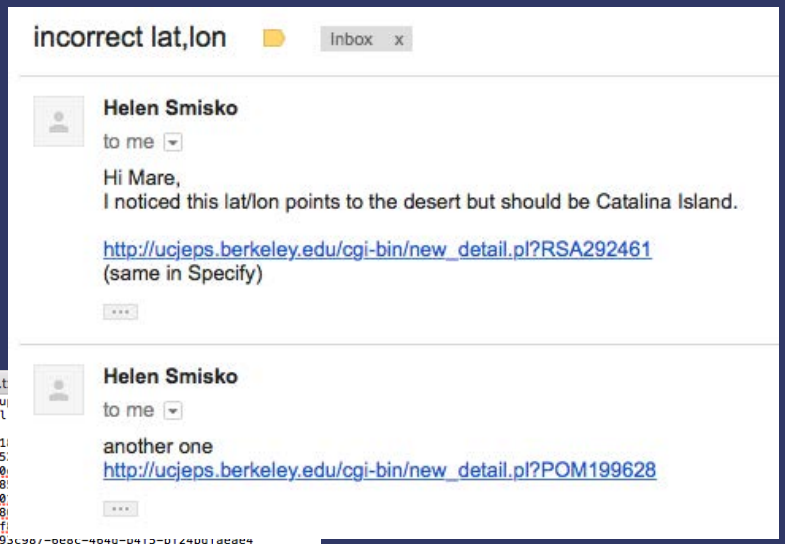
Publishing Data

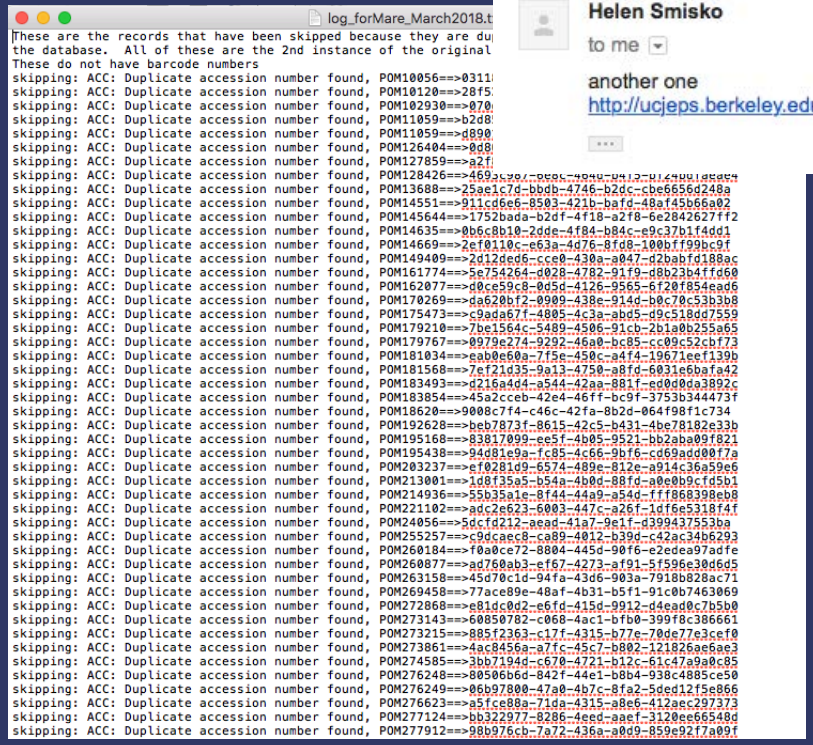


Data Quality Feedback

Sources of feedback

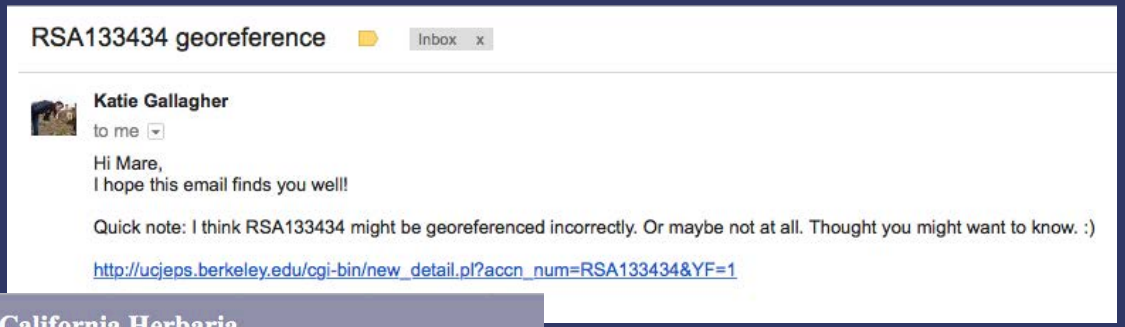
- Individual user (1 – few records)
- Aggregators (large batches)
  - CCH
  - iDigBio





Data Quality Feedback

- Georeferencing errors
  - some can be easy fixes
  - requires re-georeferencing



RSA133434 georeference Inbox x

Katie Gallagher
to me

Hi Mare,
I hope this email finds you well!

Quick note: I think RSA133434 might be georeferenced incorrectly. Or maybe not at all. Thought you might want to know. :)

http://ucjeps.berkeley.edu/cgi-bin/new_detail.pl?accn_num=RSA133434&YF=1

Consortium of California Herbaria

Participants News Search About Help Donate

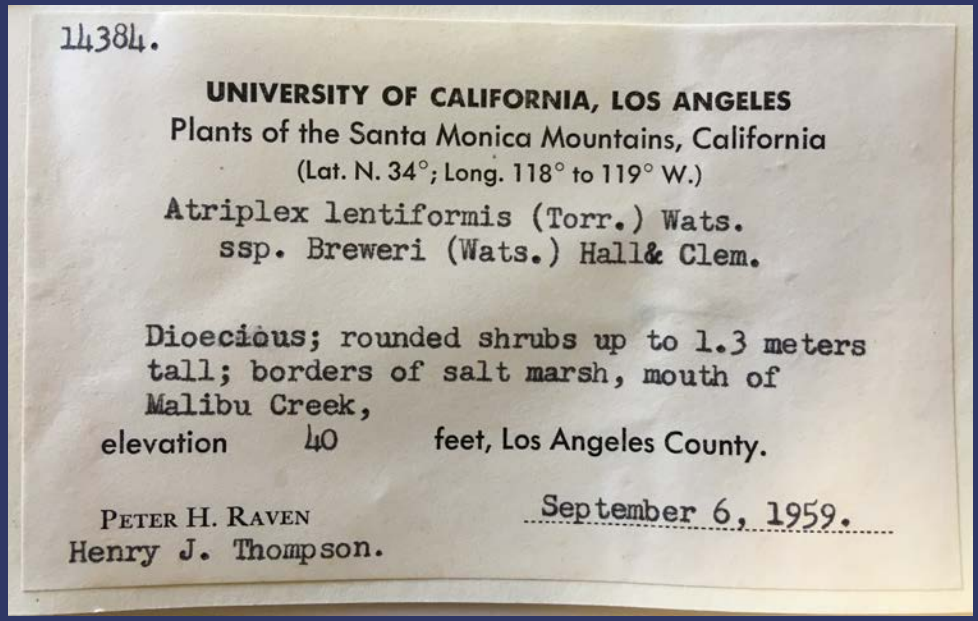
RANCHO SANTA ANA BOTANIC GARDEN **Accession Detail Results**

RSA is the home institution for this record
Please cite data retrieved from this page: Data provided by the participants of the Consortium of California Herbaria (ucjeps.berkeley.edu/consortium/; Tue Jul 17 12:31:44 2018).
Records are made available under the CCH Data Use Terms.

Specimen number	RSA133434
Determination	*Atriplex lentiformis subsp. breweri* More information: Jepson Online Interchange
Collector, number, date	P. H. Raven, H. J. Thompson, 14384, 1959-9-6
Verbatim date	1959-09-06
County	Los Angeles
Locality	At mouth of Malibu Creek
Elevation	12m
Habitat	Borders of salt marsh
Coordinates	34.00000 -118.00000 BerkeleyMapper [or without layers, here]
Datum	not recorded
Coordinate source	Not recorded
Voucher information	*other label numbers* 50c5ecb2-cd15-4592-be5c-17cb20778fb8 *verbatim elevation* 40 ft
Annotations and/or curatorial actions	current determination (uncorrected): Atriplex lentiformis subsp. breweri
Notes	Dioecious; rounded shrubs up to 1.3 meters tall.;
Comment	

Data Quality Feedback

- Georeferencing errors
  - some can be easy fixes
  - requires re-georeferencing



14384.

UNIVERSITY OF CALIFORNIA, LOS ANGELES
Plants of the Santa Monica Mountains, California
(Lat. N. 34°; Long. 118° to 119° W.)

Atriplex lentiformis (Torr.) Wats.
ssp. Breweri (Wats.) Hall& Clem.

Dioecious; rounded shrubs up to 1.3 meters tall; borders of salt marsh, mouth of Malibu Creek,
elevation 40 feet, Los Angeles County.

PETER H. RAVEN
Henry J. Thompson.

September 6, 1959.

Search Results – 12

Country	State	County	Locality	Locality continued	Latitude1	Longitude1
United States	California	Los Angeles County	Salt marsh at mouth of Malibu Creek.			
United States	California	Los Angeles County	Salt marsh at mouth of Malibu Creek.			
United States	California	Los Angeles County	Salt marsh at mouth of Malibu Creek.			
United States	California	Los Angeles County	At mouth of Malibu Creek			
United States	California	Los Angeles County	Borders of salt marsh at mouth of Malibu Creek.			
United States	California	Los Angeles County	At mouth of Malibu Creek		34.0000000000	-118.0000000000
United States	California	Los Angeles County	At mouth of Malibu Creek		34.0000000000	-118.0000000000
United States	California	Los Angeles County	At mouth of Malibu Creek,			
United States	California	Los Angeles County	At mouth of Malibu Creek.		34.0000000000	-118.1190000000
United States	California	Los Angeles County	At mouth of Malibu Creek.		34.0000000000	-118.0000000000
United States	California	Los Angeles County	At mouth of Malibu Creek.		34.0000000000	-118.0000000000
United States	California	Los Angeles County	At mouth of Malibu Creek.		34.0000000000	-118.0000000000

Data Quality Feedback

- Georeferencing errors
  - requires locating physical specimen

specimen record with error

Inbox x

Joy England <jengland@rsabg.org> Mar 28

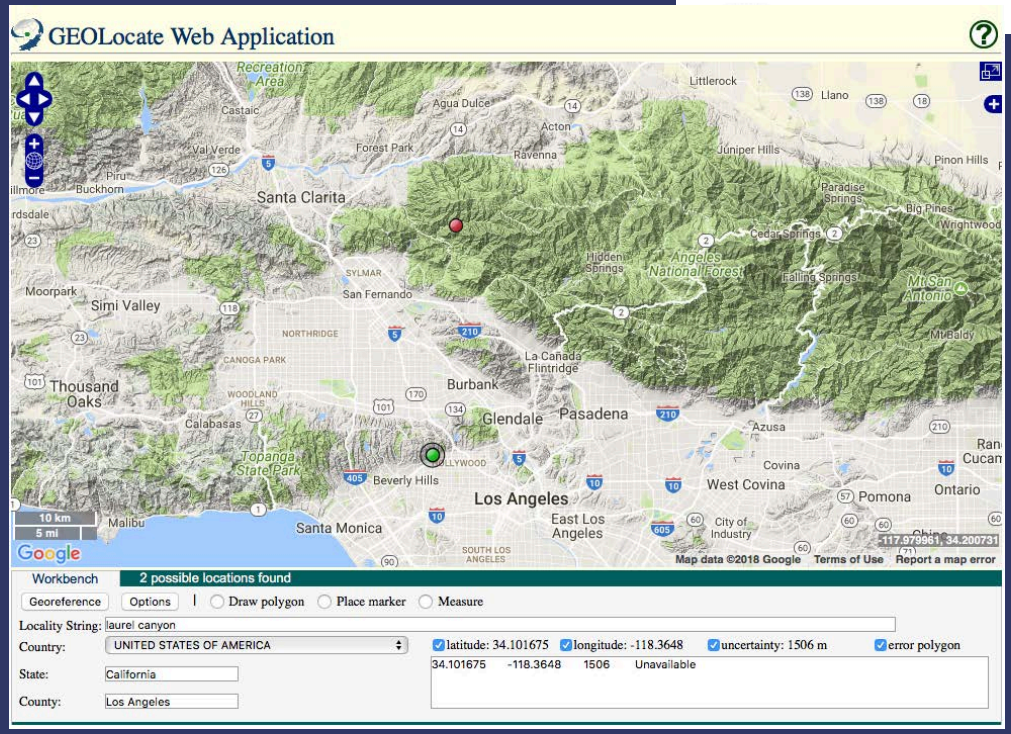
to me

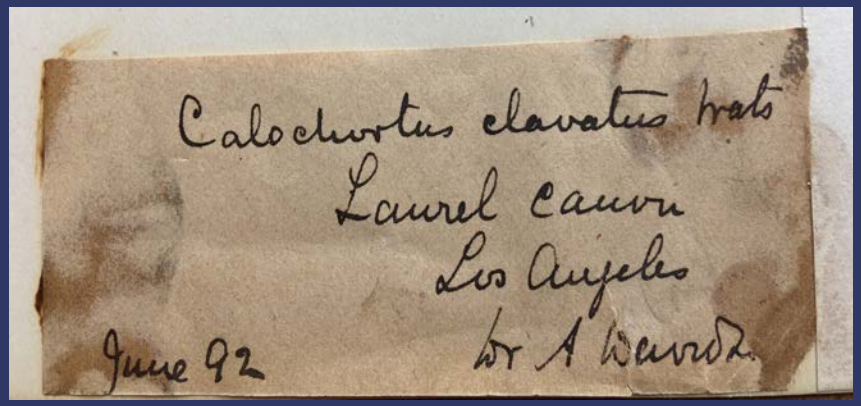
Hi Mare,

I found this record for a CNPS listed species that was mapped wrong:
http://ucjeps.berkeley.edu/cgi-bin/new_detail.pl?RSA377334

Better coordinates for the locality are 34.1112, -118.3733 (error radius 1500m). Also it appears that the databaser believed the locality was on the Angeles National Forest which appears in brackets with the person's initials and date. That note should be deleted from the locality field because it is an inaccurate interpretation of the original locality description, which is not on National Forest land.

Thanks!





Data Quality Feedback

- Duplicate accessions

log_forMare_March2018.txt

```
These are the records that have been skipped because they are duplicates that have already been found in
the database.  All of these are the 2nd instance of the original RSA POM accession
These do not have barcode numbers
skipping: ACC: Duplicate accession number found, POM10056==>03118c00-30a5-4336-807f-c383b46144ab
skipping: ACC: Duplicate accession number found, POM10120==>28f52e93-2c01-4c94-80f6-40874fa31c52
skipping: ACC: Duplicate accession number found, POM102930==>070eb4de-6470-4347-ab7b-71ec47a3b149
skipping: ACC: Duplicate accession number found, POM11059==>b2d85817-b529-4074-9071-a9a58c876f58
skipping: ACC: Duplicate accession number found, POM11059==>d89019e7-4716-4568-bb54-8ec6edcafa0a
skipping: ACC: Duplicate accession number found, POM126404==>0d86d602-66a6-44fc-a832-56d5144ef697
skipping: ACC: Duplicate accession number found, POM127859==>a2f8f7f6-b34d-4ff6-b40c-6e63d43c02d9
skipping: ACC: Duplicate accession number found, POM128426==>4693c987-6e8c-464d-b4f5-bf24bdfaeae4
skipping: ACC: Duplicate accession number found, POM13688==>25ae1c7d-bbdb-4746-b2dc-cbe6656d248a
skipping: ACC: Duplicate accession number found, POM14551==>911cd6e6-8503-421b-bafd-48af45b66a02
skipping: ACC: Duplicate accession number found, POM145644==>1752bada-b2df-4f18-a2f8-6e2842627ff2
skipping: ACC: Duplicate accession number found, POM14635==>0b6c8b10-2dde-4f84-b84c-e9c37b1f4dd1
skipping: ACC: Duplicate accession number found, POM14669==>2ef0110c-e63a-4d76-8fd8-100bff99bc9f
skipping: ACC: Duplicate accession number found, POM149409==>2d12ded6-cce0-430a-a047-d2babfd188ac
skipping: ACC: Duplicate accession number found, POM161774==>5e754264-d028-4782-91f9-d8b23b4ffd60
skipping: ACC: Duplicate accession number found, POM162077==>d0ce59c8-0d5d-4126-9565-6f20f854ead6
skipping: ACC: Duplicate accession number found, POM170269==>da620bf2-0909-438e-914d-b0c70c53b3b8
skipping: ACC: Duplicate accession number found, POM175473==>c9ada67f-4805-4c3a-abd5-d9c518dd7559
skipping: ACC: Duplicate accession number found, POM179210==>7be1564c-5489-4506-91cb-2b1a0b255a65
skipping: ACC: Duplicate accession number found, POM179767==>0979e274-9292-46a0-bc85-cc09c52cbf73
skipping: ACC: Duplicate accession number found, POM181034==>eab0e60a-7f5e-450c-a4f4-19671eef139b
skipping: ACC: Duplicate accession number found, POM181568==>7ef21d35-9a13-4750-a8fd-6031e6bafa42
skipping: ACC: Duplicate accession number found, POM183493==>d216a4d4-a544-42aa-881f-ed0d0da3892c
skipping: ACC: Duplicate accession number found, POM183854==>45a2cceb-42e4-46ff-bc9f-3753b344473f
skipping: ACC: Duplicate accession number found, POM18620==>9008c7f4-c46c-42fa-8b2d-064f98f1c734
skipping: ACC: Duplicate accession number found, POM192628==>beb7873f-8615-42c5-b431-4be78182e33b
skipping: ACC: Duplicate accession number found, POM195168==>83817099-ee5f-4b05-9521-bb2aba09f821
skipping: ACC: Duplicate accession number found, POM19543B==>94d81e9a-fc85-4c66-9bf6-cd69add00f7a
skipping: ACC: Duplicate accession number found, POM203237==>ef0281d9-6574-489e-812e-a914c36a59e6
skipping: ACC: Duplicate accession number found, POM213001==>1d8f35a5-b54a-4b0d-88fd-a0e0b9cfd5b1
skipping: ACC: Duplicate accession number found, POM214936==>55b35a1e-8f44-44a9-a54d-fff868398eb8
skipping: ACC: Duplicate accession number found, POM221102==>adc2e623-6003-447c-a26f-1df6e5318f4f
skipping: ACC: Duplicate accession number found, POM24056==>5dcfd212-aead-41a7-9e1f-d39943753ba
skipping: ACC: Duplicate accession number found, POM255257==>c9dcaec8-ca89-4012-b39d-c42ac34b6293
skipping: ACC: Duplicate accession number found, POM260184==>f0a0ce72-8804-445d-90f6-e2edea97adfe
skipping: ACC: Duplicate accession number found, POM260877==>ad760ab3-ef67-4273-af91-5f596e30d6d5
skipping: ACC: Duplicate accession number found, POM263158==>45d70c1d-94fa-43d6-903a-7918b828ac71
skipping: ACC: Duplicate accession number found, POM269458==>77ace89e-48af-4b31-b5f1-91c0b7463069
skipping: ACC: Duplicate accession number found, POM272868==>e81dc0d2-e6fd-415d-9912-d4ead0c7b5b0
skipping: ACC: Duplicate accession number found, POM273143==>60850782-c068-4ac1-bfb0-399f8c386661
skipping: ACC: Duplicate accession number found, POM273215==>885f2363-c17f-4315-b77e-70de77e3cef0
skipping: ACC: Duplicate accession number found, POM273861==>4ac8456a-a7fc-45c7-b802-121826ae6ae3
skipping: ACC: Duplicate accession number found, POM274585==>3bb7194d-c670-4721-b12c-61c47a9a0c85
skipping: ACC: Duplicate accession number found, POM276248==>80506b6d-842f-44e1-b8b4-938c4885ce50
skipping: ACC: Duplicate accession number found, POM276249==>06b97800-47a0-4b7c-8fa2-5ded12f5e866
skipping: ACC: Duplicate accession number found, POM276623==>a5fce88a-71da-4315-a8e6-412aec297373
skipping: ACC: Duplicate accession number found, POM277124==>bb322977-8286-4eed-aaef-3120ee66548d
skipping: ACC: Duplicate accession number found, POM277912==>98b976cb-7a72-436a-a0d9-859e92f7a09f
```

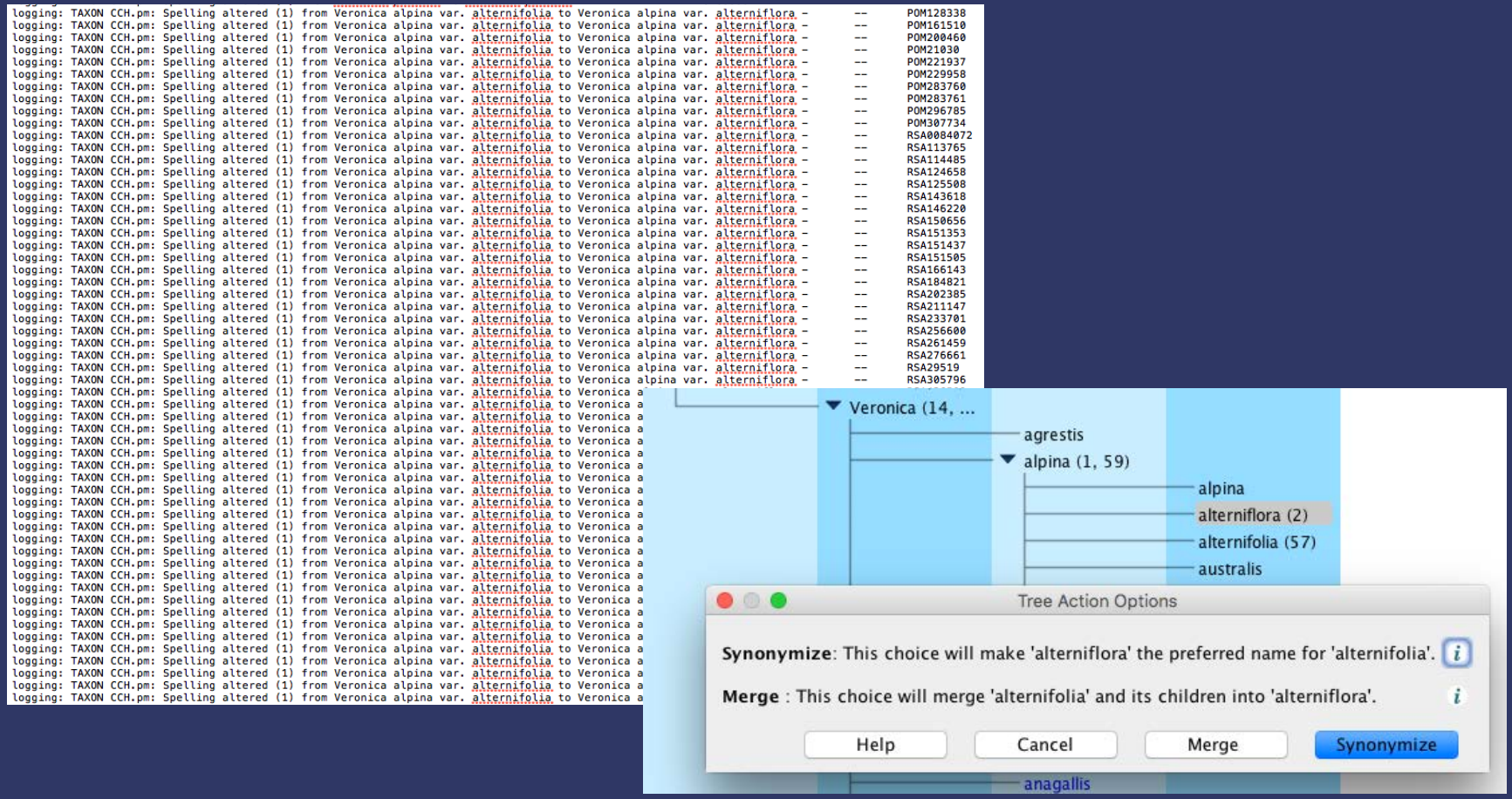
Data Quality Feedback

- Duplicate accessions
  - replace barcode as identifier


```
These are the records that the parser has switched to using the barcode instead of the original
RSA/POM accession
logging: ACC: Barcode field not NULL, using barcode for ID 817804==>RSA0036212<
logging: ACC: Barcode field not NULL, using barcode for ID POM100029B==>RSA0076363<
logging: ACC: Barcode field not NULL, using barcode for ID POM100168==>RSA0003896<
logging: ACC: Barcode field not NULL, using barcode for ID POM100169==>RSA0003976<
logging: ACC: Barcode field not NULL, using barcode for ID POM100315==>RSA0000492<
logging: ACC: Barcode field not NULL, using barcode for ID POM100316==>RSA0000491<
logging: ACC: Barcode field not NULL, using barcode for ID POM10034==>RSA0081600<
logging: ACC: Barcode field not NULL, using barcode for ID POM10047==>RSA0066543<
logging: ACC: Barcode field not NULL, using barcode for ID POM1005==>RSA0112486<
logging: ACC: Barcode field not NULL, using barcode for ID POM100674==>RSA0029864<
logging: ACC: Barcode field not NULL, using barcode for ID POM100675==>RSA0029866<
logging: ACC: Barcode field not NULL, using barcode for ID POM10067==>RSA0081597<
logging: ACC: Barcode field not NULL, using barcode for ID POM100691==>RSA0008946<
logging: ACC: Barcode field not NULL, using barcode for ID POM10070==>RSA0114414<
logging: ACC: Barcode field not NULL, using barcode for ID POM100719==>RSA0102439<
logging: ACC: Barcode field not NULL, using barcode for ID POM10074==>RSA0016428<
logging: ACC: Barcode field not NULL, using barcode for ID POM100816==>RSA0013865<
logging: ACC: Barcode field not NULL, using barcode for ID POM100818==>RSA0009430<
logging: ACC: Barcode field not NULL, using barcode for ID POM100819==>RSA0009431<
logging: ACC: Barcode field not NULL, using barcode for ID POM100820==>RSA0009447<
logging: ACC: Barcode field not NULL, using barcode for ID POM100821==>RSA0009448<
logging: ACC: Barcode field not NULL, using barcode for ID POM10082==>RSA0016946<
logging: ACC: Barcode field not NULL, using barcode for ID POM10084==>RSA0016907<
logging: ACC: Barcode field not NULL, using barcode for ID POM10090==>RSA0076245<
logging: ACC: Barcode field not NULL, using barcode for ID POM10091A==>RSA0076246<
logging: ACC: Barcode field not NULL, using barcode for ID POM10093==>RSA0008280<
logging: ACC: Barcode field not NULL, using barcode for ID POM1009==>RSA0112487<
logging: ACC: Barcode field not NULL, using barcode for ID POM100==>RSA0008293<
logging: ACC: Barcode field not NULL, using barcode for ID POM10115==>RSA0091276<
logging: ACC: Barcode field not NULL, using barcode for ID POM101185==>RSA0097662<
logging: ACC: Barcode field not NULL, using barcode for ID POM101244==>RSA0041047<
logging: ACC: Barcode field not NULL, using barcode for ID POM10131==>RSA0078861<
logging: ACC: Barcode field not NULL, using barcode for ID POM101426==>RSA0045086<
logging: ACC: Barcode field not NULL, using barcode for ID POM101427==>RSA0057703<
logging: ACC: Barcode field not NULL, using barcode for ID POM101430==>RSA0057701<
logging: ACC: Barcode field not NULL, using barcode for ID POM101444==>RSA0045087<
logging: ACC: Barcode field not NULL, using barcode for ID POM101448==>RSA0057639<
```

Data Quality Feedback

- Misspelled taxon names



Data Quality Feedback

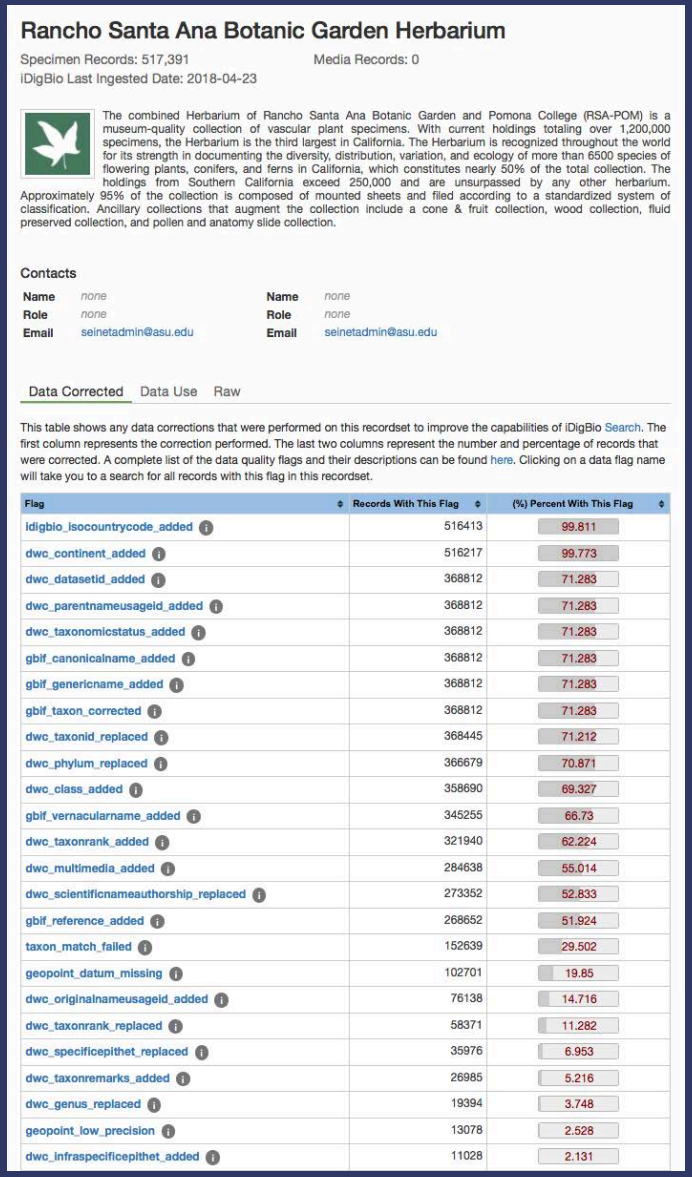
- Discrepancies in elevation
  - requires locating the physical specimen

```
logging: ELEV: Sierra   9901 ft. (3018 m.) greater than Sierra maximum (8850  ft.): discrepancy=
1051    RSA78542
logging: ELEV: Sierra discrepancy= 1051  greater than 500 ft, elevation changed to NULL RSA78542

logging: ELEV: Siskiyou 14927 ft. (4550 m.) greater than Siskiyou maximum (14170  ft.):
discrepancy= 757        POM44448
logging: ELEV: Siskiyou 17716 ft. (5400 m.) greater than Siskiyou maximum (14170  ft.):
discrepancy= 3546       RSA790239
logging: ELEV: Siskiyou 21850 ft. (6660 m.) greater than Siskiyou maximum (14170  ft.):
discrepancy= 7680       RSA789814
logging: ELEV: Siskiyou 21850 ft. (6660 m.) greater than Siskiyou maximum (14170  ft.):
discrepancy= 7680       RSA789826
logging: ELEV: Siskiyou discrepancy= 3546  greater than 500 ft, elevation changed to NULL
RSA790239
logging: ELEV: Siskiyou discrepancy= 757  greater than 500 ft, elevation changed to NULL
POM44448
logging: ELEV: Siskiyou discrepancy= 7680  greater than 500 ft, elevation changed to NULL
RSA789814
logging: ELEV: Siskiyou discrepancy= 7680  greater than 500 ft, elevation changed to NULL
RSA789826
```

Data Quality Feedback

iDigBio



Rancho Santa Ana Botanic Garden Herbarium

Specimen Records: 517,391 Media Records: 0
iDigBio Last Ingested Date: 2018-04-23

The combined Herbarium of Rancho Santa Ana Botanic Garden and Pomona College (RSA-POM) is a museum-quality collection of vascular plant specimens. With current holdings totaling over 1,200,000 specimens, the Herbarium is the third largest in California. The Herbarium is recognized throughout the world for its strength in documenting the diversity, distribution, variation, and ecology of more than 6500 species of flowering plants, conifers, and ferns in California, which constitutes nearly 50% of the total collection. The holdings from Southern California exceed 250,000 and are unsurpassed by any other herbarium. Approximately 95% of the collection is composed of mounted sheets and filed according to a standardized system of classification. Ancillary collections that augment the collection include a cone & fruit collection, wood collection, fluid preserved collection, and pollen and anatomy slide collection.

Contacts

Name	*none*	**Name**	*none*
Role	*none*	**Role**	*none*
Email	seinetadmin@asu.edu	**Email**	seinetadmin@asu.edu

Data Corrected | Data Use | Raw

This table shows any data corrections that were performed on this recordset to improve the capabilities of iDigBio Search. The first column represents the correction performed. The last two columns represent the number and percentage of records that were corrected. A complete list of the data quality flags and their descriptions can be found here. Clicking on a data flag name will take you to a search for all records with this flag in this recordset.

Flag	Records With This Flag	(%) Percent With This Flag
idigbio_isocountrycode_added	516413	99.811
dwc_continent_added	516217	99.773
dwc_datasetid_added	368812	71.283
dwc_parentnameusageid_added	368812	71.283
dwc_taxonomicstatus_added	368812	71.283
gbif_canonicalname_added	368812	71.283
gbif_genericname_added	368812	71.283
gbif_taxon_corrected	368812	71.283
dwc_taxonid_replaced	368445	71.212
dwc_phylum_replaced	366679	70.871
dwc_class_added	358690	69.327
gbif_vernacularname_added	345255	66.73
dwc_taxonrank_added	321940	62.224
dwc_multimedia_added	284638	55.014
dwc_scientificnameauthorship_replaced	273352	52.833
gbif_reference_added	268652	51.924
taxon_match_failed	152639	29.502
geopoint_datum_missing	102701	19.85
dwc_originalnameusageid_added	76138	14.716
dwc_taxonrank_replaced	58371	11.282
dwc_specificepithet_replaced	35976	6.953
dwc_taxonremarks_added	26985	5.216
dwc_genus_replaced	19394	3.748
geopoint_low_precision	13078	2.528
dwc_infraspecificepithet_added	11028	2.131

Data Quality Feedback

iDigBio

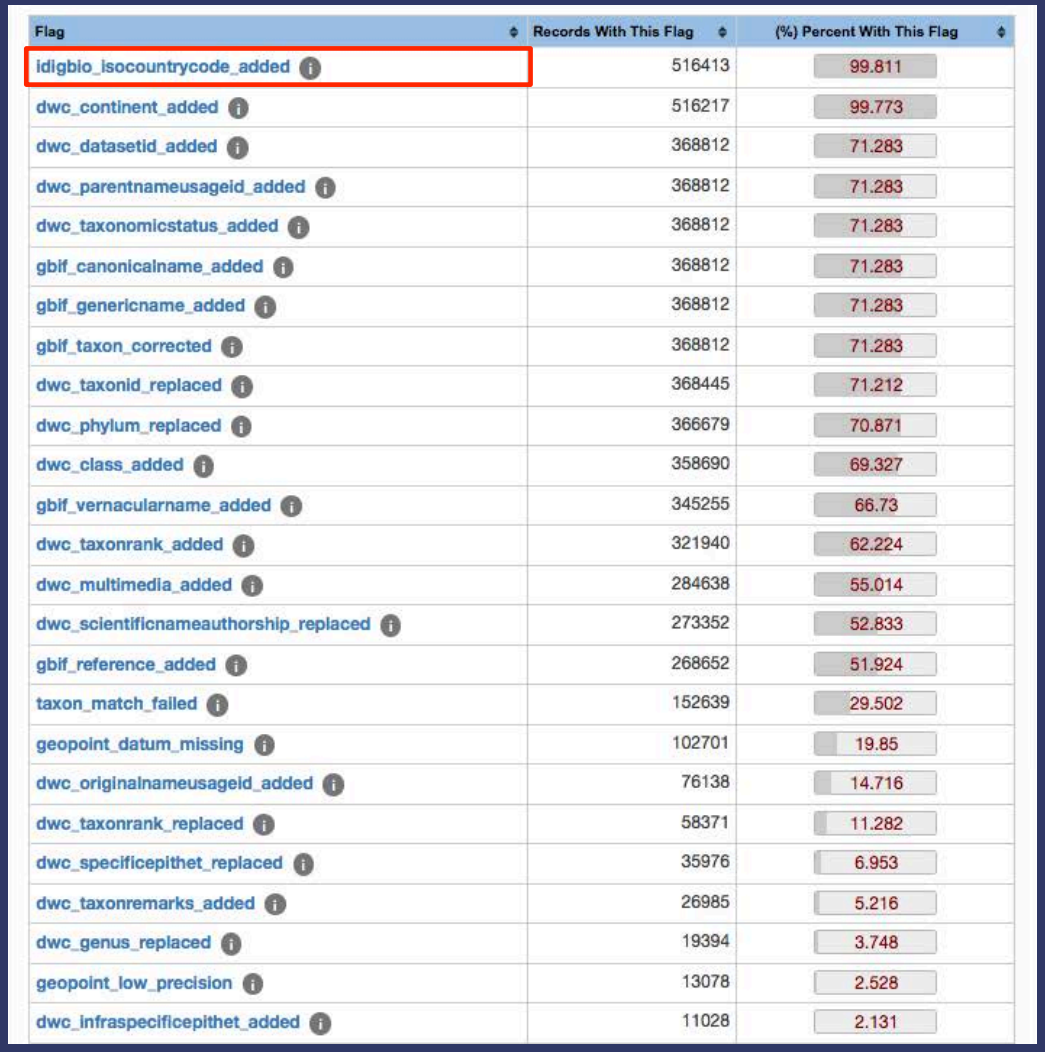
- formatting

Flag	Records With This Flag	(%) Percent With This Flag
idigbio_isocountrycode_added	516413	99.811
dwc_continent_added	516217	99.773
dwc_datasetid_added	368812	71.283
dwc_parentnameusageid_added	368812	71.283
dwc_taxonomicstatus_added	368812	71.283
gbif_canonicalname_added	368812	71.283
gbif_genericname_added	368812	71.283
gbif_taxon_corrected	368812	71.283
dwc_taxonid_replaced	368445	71.212
dwc_phylum_replaced	366679	70.871
dwc_class_added	358690	69.327
gbif_vernacularname_added	345255	66.73
dwc_taxonrank_added	321940	62.224
dwc_multimedia_added	284638	55.014
dwc_scientificnameauthorship_replaced	273352	52.833
gbif_reference_added	268652	51.924
taxon_match_failed	152639	29.502
geopoint_datum_missing	102701	19.85
dwc_originalnameusageid_added	76138	14.716
dwc_taxonrank_replaced	58371	11.282
dwc_specificepithet_replaced	35976	6.953
dwc_taxonremarks_added	26985	5.216
dwc_genus_replaced	19394	3.748
geopoint_low_precision	13078	2.528
dwc_infraspecificepithet_added	11028	2.131

Data Quality Feedback

iDigBio

- formatting
- may require Specify tech



Flag	Records With This Flag	(%) Percent With This Flag
idigbio_isocountrycode_added	516413	99.811
dwc_continent_added	516217	99.773
dwc_datasetid_added	368812	71.283
dwc_parentnameusageid_added	368812	71.283
dwc_taxonomicstatus_added	368812	71.283
gbif_canonicalname_added	368812	71.283
gbif_genericname_added	368812	71.283
gbif_taxon_corrected	368812	71.283
dwc_taxonid_replaced	368445	71.212
dwc_phylum_replaced	366679	70.871
dwc_class_added	358690	69.327
gbif_vernacularname_added	345255	66.73
dwc_taxonrank_added	321940	62.224
dwc_multimedia_added	284638	55.014
dwc_scientificnameauthorship_replaced	273352	52.833
gbif_reference_added	268652	51.924
taxon_match_failed	152639	29.502
geopoint_datum_missing	102701	19.85
dwc_originalnameusageid_added	76138	14.716
dwc_taxonrank_replaced	58371	11.282
dwc_specificepithet_replaced	35976	6.953
dwc_taxonremarks_added	26985	5.216
dwc_genus_replaced	19394	3.748
geopoint_low_precision	13078	2.528
dwc_infraspecificepithet_added	11028	2.131

Data Quality Feedback

iDigBio

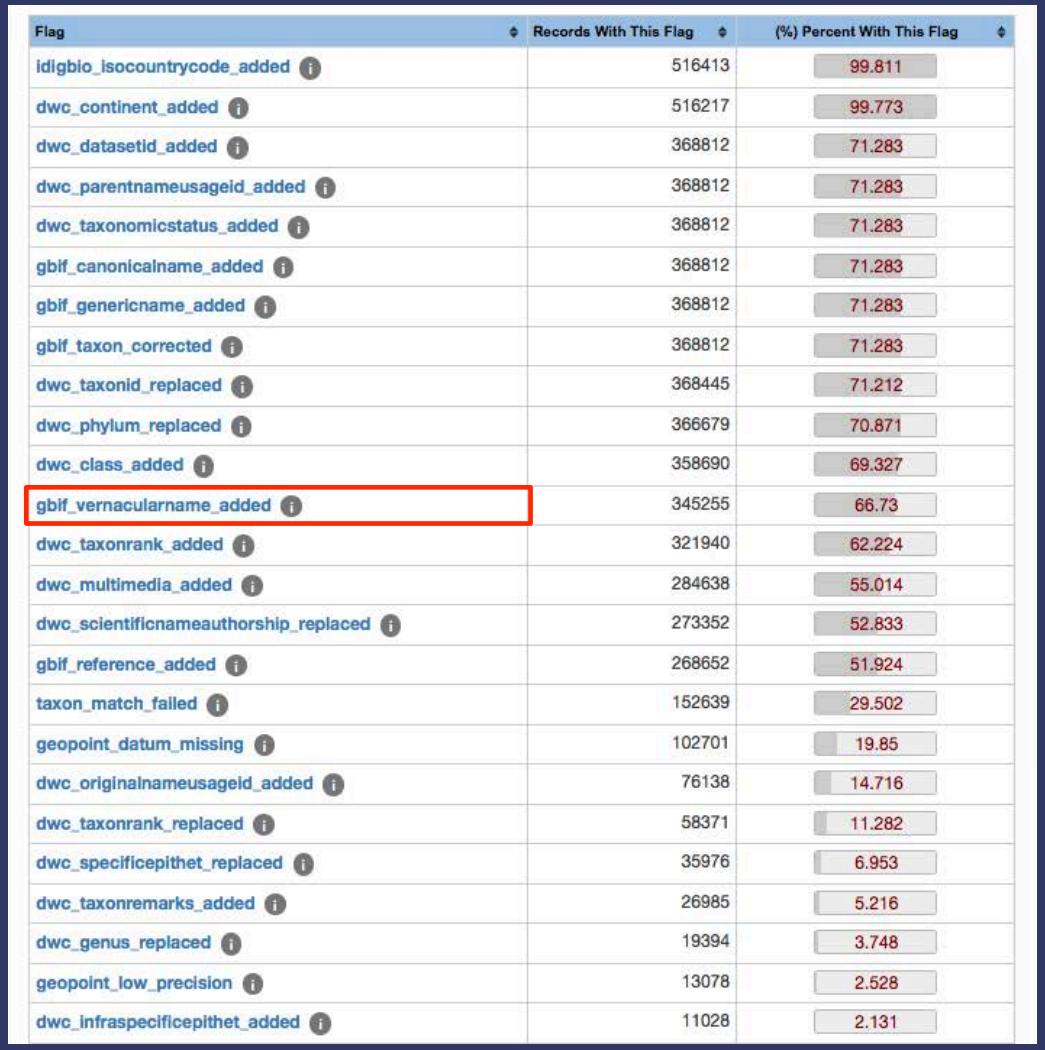
- formatting
- may require Specify tech
- still need explanation

Flag	Records With This Flag	(%) Percent With This Flag
idigbio_isocountrycode_added	516413	99.811
dwc_continent_added	516217	99.773
dwc_datasetid_added	368812	71.283
dwc_parentnameusageid_added	368812	71.283
dwc_taxonomicstatus_added	368812	71.283
gbif_canonicalname_added	368812	71.283
gbif_genericname_added	368812	71.283
gbif_taxon_corrected	368812	71.283
dwc_taxonid_replaced	368445	71.212
dwc_phylum_replaced	366679	70.871
dwc_class_added	358690	69.327
gbif_vernacularname_added	345255	66.73
dwc_taxonrank_added	321940	62.224
dwc_multimedia_added	284638	55.014
dwc_scientificnameauthorship_replaced	273352	52.833
gbif_reference_added	268652	51.924
taxon_match_failed	152639	29.502
geopoint_datum_missing	102701	19.85
dwc_originalnameusageid_added	76138	14.716
dwc_taxonrank_replaced	58371	11.282
dwc_specificepithet_replaced	35976	6.953
dwc_taxonremarks_added	26985	5.216
dwc_genus_replaced	19394	3.748
geopoint_low_precision	13078	2.528
dwc_infraspecificepithet_added	11028	2.131

Data Quality Feedback

iDigBio

- formatting
- may require Specify tech
- still need explanation
- worth correcting?

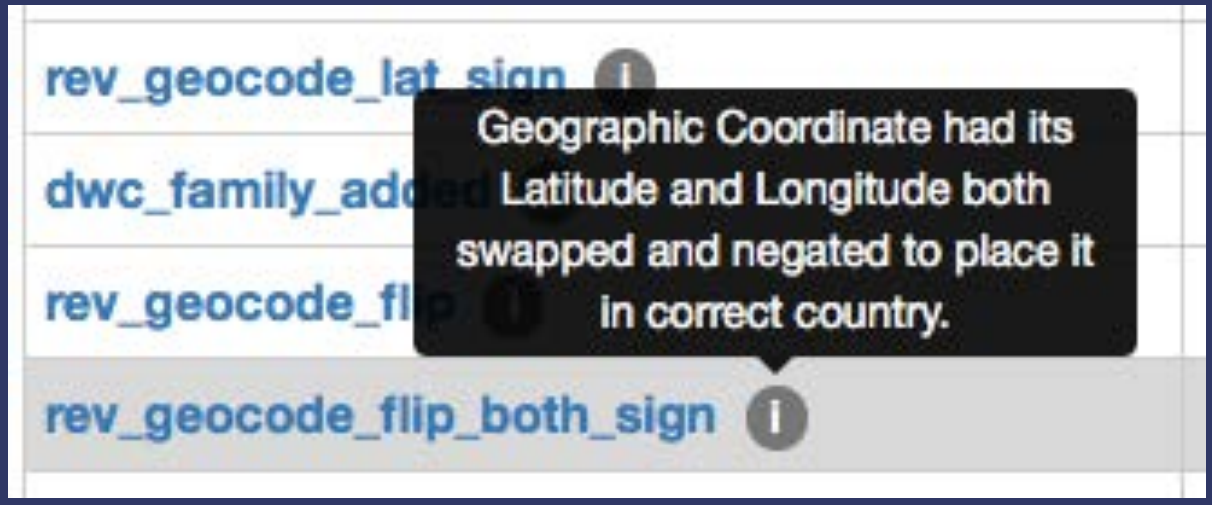


Flag	Records With This Flag	(%) Percent With This Flag
idigbio_isocountrycode_added	516413	99.811
dwc_continent_added	516217	99.773
dwc_datasetid_added	368812	71.283
dwc_parentnameusageid_added	368812	71.283
dwc_taxonomicstatus_added	368812	71.283
gbif_canonicalname_added	368812	71.283
gbif_genericname_added	368812	71.283
gbif_taxon_corrected	368812	71.283
dwc_taxonid_replaced	368445	71.212
dwc_phylum_replaced	366679	70.871
dwc_class_added	358690	69.327
gbif_vernacularname_added	345255	66.73
dwc_taxonrank_added	321940	62.224
dwc_multimedia_added	284638	55.014
dwc_scientificnameauthorship_replaced	273352	52.833
gbif_reference_added	268652	51.924
taxon_match_failed	152639	29.502
geopoint_datum_missing	102701	19.85
dwc_originalnameusageid_added	76138	14.716
dwc_taxonrank_replaced	58371	11.282
dwc_specificepithet_replaced	35976	6.953
dwc_taxonremarks_added	26985	5.216
dwc_genus_replaced	19394	3.748
geopoint_low_precision	13078	2.528
dwc_infraspecificepithet_added	11028	2.131

Data Quality Feedback

When the data quality feedback you're receiving is wrong:

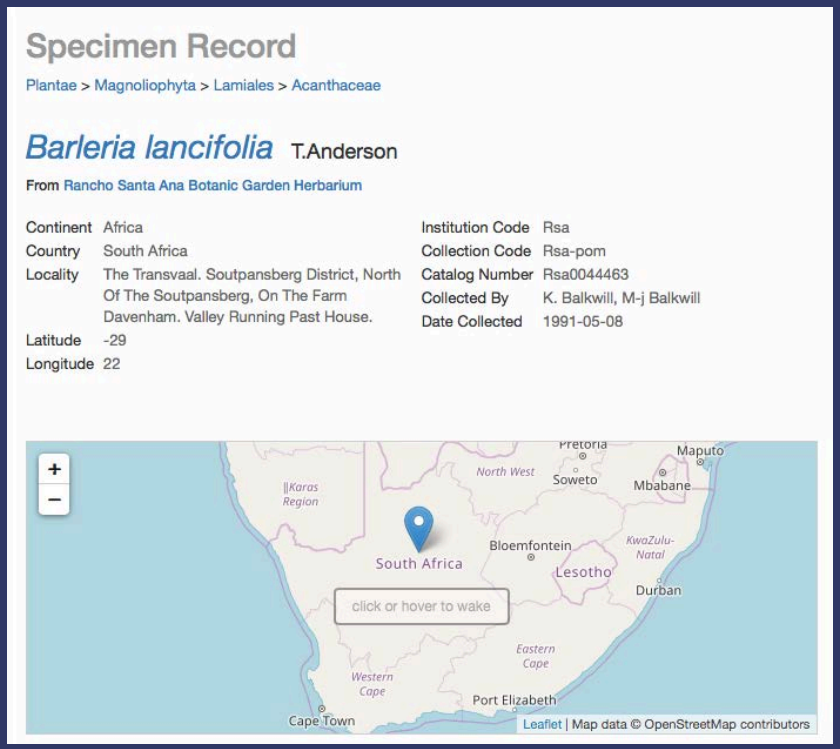
- Example – rev_geocode_flip_both_sign



Data Quality Feedback

When the data quality feedback you're receiving is wrong:

- Example – rev_geocode_flip_both_sign



Lat: -29, Long: 22

Lat: -22, Long: 29

South Africa. The Transvaal. Soutpansberg District, North of the Soutpansberg.

Data Quality Feedback

When the data quality feedback you're receiving is wrong:

- Example – rev_geocode_flip_both_sign

List | Labels | Media | Recordsets — Total: 5

Family	Scientific Name	Date Collected	Country	Institution Code	Basis of Record	Columns
Acanthaceae	Barleria lancifolia	1991-05-08	South Africa	RSA	PreservedSpecimen	view
Convolvulaceae	Dichondra occidentalis	1990-03-10	Mexico	RSA	PreservedSpecimen	view
Acanthaceae	Barleria heterotricha	1991-05-08	South Africa	RSA	PreservedSpecimen	view
Acanthaceae	Barleria galpinii	1995-04-29	South Africa	RSA	PreservedSpecimen	view
Acanthaceae	Barleria bremekampii	1995-04-29	South Africa	RSA	PreservedSpecimen	view

- Only 1 of 5 records flagged indicated an actual error

Other Issues with Data Quality

CCH

- georeferencing and re-ingesting coordinates back into home institution database

Consortium of California Herbaria

Participants News Search About Help

Use this page to provide coordinates for records that lack them

THE BERKELEYMAPPER INTERFACE AND FUNCTIONALITY HAVE CHANGED. More modifications are expected. The circle drawing tool and the line drawing tool are now in the top center of the displayed map.
This is what needs to be copied from the circle tool, for example: "Coordinate: 36.84680 / -120.53314 (500 meters radius)" You can triple-click to select the line.
Select the map type at the upper right of the map.
Display the individual record markers by deselecting the Marker clusterer.
Control the zoom with the slider or the box-drawing magnifier below the slider.
Comments/questions to dbaxter at berkeley.edu

NOTA BENE: Try to choose records that have error radius estimates for cloning.

Scientific Name

Source (1 or more; default is all sources)
All sources
NY (New York Botanical Garden)
A, AMES, ECON, GH (Harvard University Herbaria)
UC (University Herbarium, UC Berkeley)
JEPS (Jepson Herbarium, UC Berkeley)
UCSB (UC Santa Barbara)
UCSC (UC Santa Cruz)
IRVC (UC Irvine)
UCR (UC Riverside)
DAV (UC Davis)
SBBG (Santa Barbara Botanic Garden)
CHSC (Chico State Herbarium, CSU Chico)
RSA (Rancho Santa Ana Botanic Garden Herbarium)
POM (Pomona Herbarium in RSA)

County (1 or more; default is all counties)
All
Alameda
Alpine
Amador
Butte
Calaveras
Colusa
Contra Costa
Del Norte
El Dorado
Fresno
Glenn
Humboldt
Imperial

Collector (last name only)

Geographic Locality

Collection Number (numerical part only)

When multiple words are searched for, only records that contain both words (in any order) will be returned. Words may be truncated. Wild card characters are not used in searches.

Collection Date(s)
Month Day Year

Only return records of *target taxa* that lack coordinates (may return a superabundance of records)

Return records of *all taxa* that lack coordinates

Help with cloning coordinates
Help with adding coordinates
Look up and map locations using GeoLocate
Get coordinates from Google Maps: Itouch maps
Store and share geographic insights: WikiMapia

Submit Query Reset Form

Please cite data retrieved from this page: *Data provided by the participants of the Consortium of California Herbaria.*

Problems, comments? Contact dbaxter at berkeley.edu
(Modified Aug 30 2012)

Data Quality Feedback

Steps involved to correct errors (often with individual records)

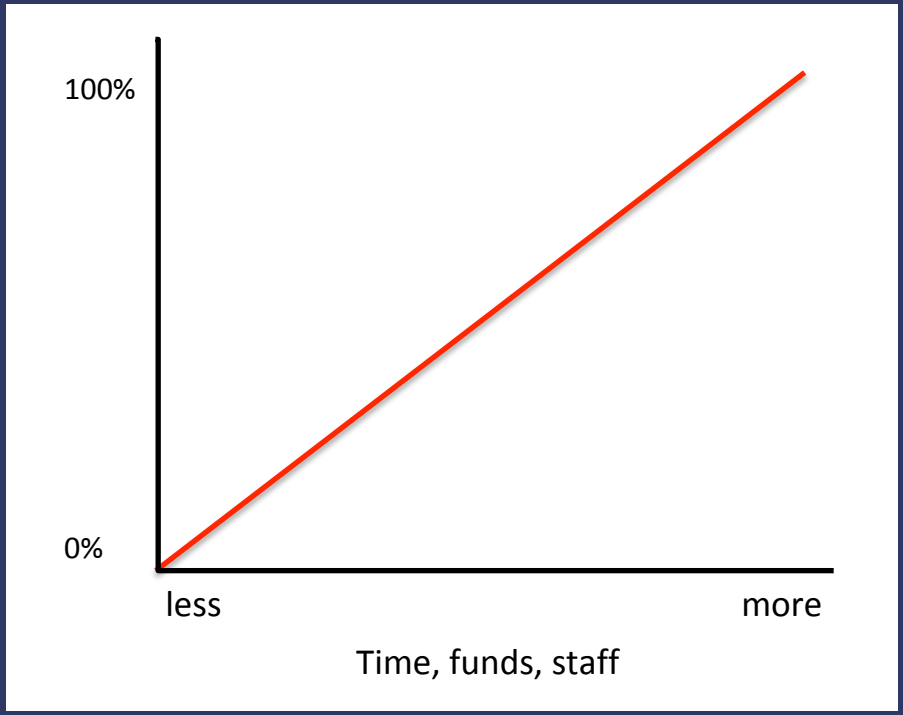
- Review specimen record in database
- Verify the source of the error: Is it a data entry error or an error on label?
  - Often entails pulling the specimen from the collection
- Check feedback against other sources
  - Georeferencing (GEOLocate, Google Earth)
  - Taxonomy (Tropicos, TNRS, IPNI)
- Make the correction **IF** the feedback is correct

Total time involved: 5 – 30 minutes / specimen

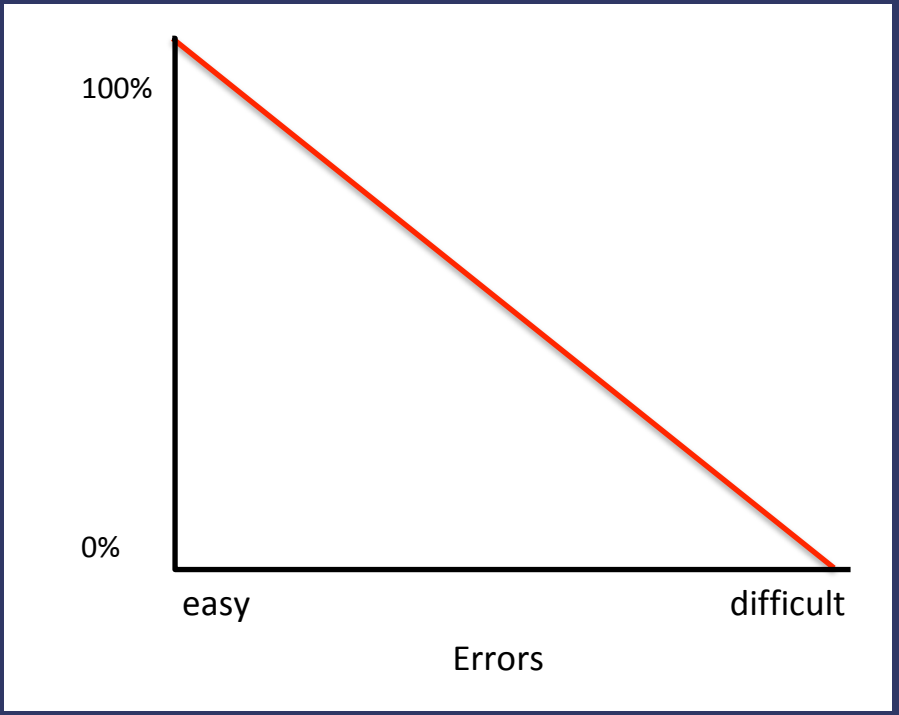
Data Quality Feedback

% chance of correcting feedback

Availability of resources



Level of difficulty



Challenges & Issues

- Lack of resources:
  - time
  - funds
  - staff
- Determinations: require expertise
- Specimen is missing!

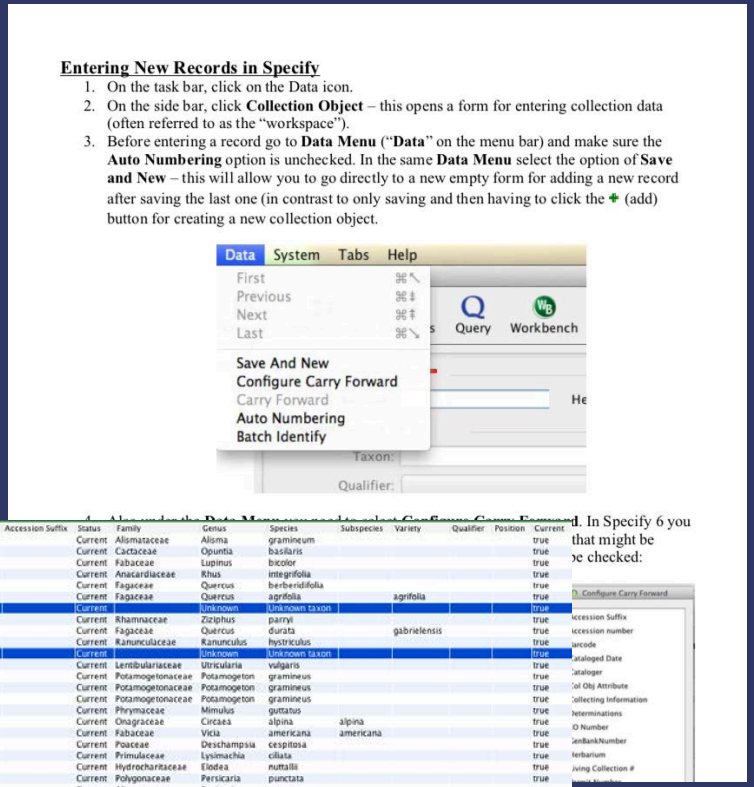
Solutions to Improving Data Quality

Minimize errors:

- Detailed data entry protocols
- Data entry training sessions
- QC checks for first few weeks
- Monthly QC checks on all data entry

DQ Feedback:

- Group errors into type
- Designated time to address errors



Entering New Records in Specify

1. On the task bar, click on the Data icon.
2. On the side bar, click **Collection Object** – this opens a form for entering collection data (often referred to as the "workspace").
3. Before entering a record go to **Data Menu** ("**Data**" on the menu bar) and make sure the **Auto Numbering** option is unchecked. In the same **Data Menu** select the option of **Save and New** – this will allow you to go directly to a new empty form for adding a new record after saving the last one (in contrast to only saving and then having to click the + (add) button for creating a new collection object.

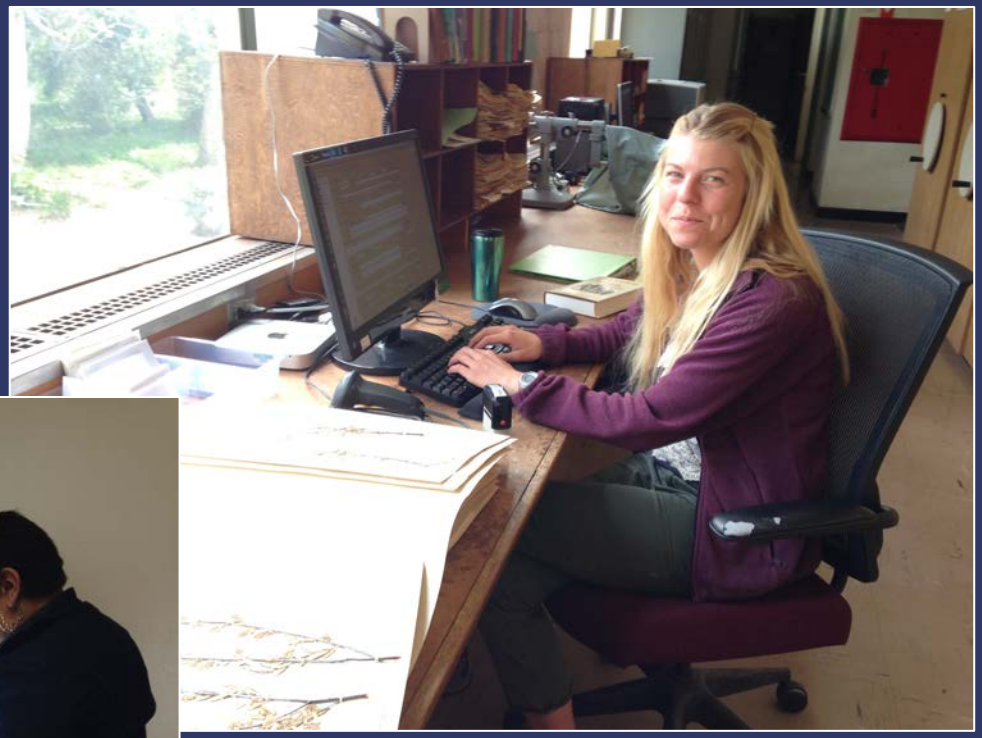
Barcode	Herbarium	Accession number	Accession Suffix	Status	Family	Genus	Species	Subspecies	Variety	Qualifier	Position	Current
RSA0121112	POM	293529		Current	Alismataceae	Alisma	gramineum					true
RSA0135469	RSA	86790		Current	Cactaceae	Opuntia	basilaris					true
RSA0121094	POM	295544		Current	Fabaceae	Lupinus	bicolor					true
RSA0121096	POM	293234		Current	Anacardiaceae	Rhus	integrifolia					true
RSA0140233	RSA	868481		Current	Fagaceae	Quercus	berberidifolia					true
RSA0140232	RSA	868480		Current	Fagaceae	Quercus	agrifolia		agrifolia			true
RSA0145408	POM	316994		Current		Unknown	Unknown taxon					true
RSA0140238	RSA	868486		Current	Rhamnaceae	Ziziphus	parryi					true
RSA0140231	RSA	868479		Current	Fagaceae	Quercus	durata		gabrielensis			true
RSA0140230	RSA	868478		Current	Ranunculaceae	Ranunculus	hystriculus					true
RSA0145405	POM	317020		Current		Unknown	Unknown taxon					true
RSA0121108	POM	293611		Current	Lentibulariaceae	Utricularia	vulgaris					true
RSA0121106	POM	293402		Current	Potamogetonaceae	Potamogeton	gramineus					true
RSA0121105	POM	293403		Current	Potamogetonaceae	Potamogeton	gramineus					true
RSA0121104	POM	293399		Current	Potamogetonaceae	Potamogeton	gramineus					true
RSA0121103	POM	293578		Current	Phrymaceae	Mimulus	guttatus					true
RSA0121102	POM	294075		Current	Onagraceae	Circaea	alpina	alpina				true
RSA0121100	POM	294785		Current	Fabaceae	Vicia	americana	americana				true
RSA0121098	POM	296330		Current	Poaceae	Deschampsia	cespitosa					true
RSA0126832	POM	294380		Current	Primulaceae	Lysimachia	ciliata					true
RSA0126830	POM	293267		Current	Hydrocharitaceae	Elodea	nuttallii					true
RSA0126827	POM	296026		Current	Polygonaceae	Persicaria	punctata					true
RSA0121113	POM	293531		Current	Alismataceae	Sagittaria	cuneata					true
RSA0121107	POM	296607		Current	Balsaminaceae	Impatiens	ecalcarata					true
RSA0140235	RSA	88483		Current	Plantaginaceae	Mecardonia						true
RSA0126829	POM	293272		Current	Hydrocharitaceae	Elodea	canadensis					true
RSA0140239	RSA	868487		Current	Pinaceae	Picea						true
RSA0145409	POM	316971		Current	Cactaceae	Mammillaria						true
RSA0121116	POM	293956		Current	Asteraceae	Gaillardia	aristata					true
RSA0140236	RSA	868484		Current	Adoxaceae	Viburnum	edule					true
RSA0135651	RSA	867192		Current	Cactaceae	Coryphantha	vivipara		deserti			true
RSA0121093	POM	295502		Current	Fabaceae	Lupinus	bicolor					true
RSA0140237	RSA	868485		Current	Bignoniaceae	Tecoma	stans		angustatum			true
RSA0145406	POM	316968		Current	Cactaceae	Mammillaria						true
RSA0145407	POM	316970		Current	Cactaceae	Mammillaria						true
RSA0140234	RSA	868482		Current	Fagaceae	Quercus						true
RSA0135493	RSA	867191		Current	Cactaceae	Echinocereus						true
RSA0145411	POM	300552		Current	Cactaceae	Cereus						true
RSA0145410	POM	300552		Current	Cactaceae	Cereus						true
RSA0121097	POM	295540		Current	Fabaceae	Hosackia	oblongifolia		oblongifolia			true
RSA0145404	POM	293947		Current		Unknown	Unknown taxon					true
RSA0121109	POM	293967		Current	Asteraceae	Senecio	triangularis					true
RSA0121115	POM	293724		Current	Ericaceae	Phyllodoce	glandulliflora					true
RSA0121114	POM	295375		Current	Saxifragaceae	Micranthes	hyallii					true
RSA0126828	POM	293506		Current	Orobanchaceae	Castilleja	occidentalis					true
RSA0126826	POM	307793		Current	Lycopodiaceae	Diphasiastrum	alpinum					true
RSA0121111	POM	294627		Current	Liliaceae	Calochortus	apiculatus					true
RSA0121101	POM	293262		Current	Orchidaceae	Platanthera	stricta					true
RSA0126831	POM	295233		Current	Salicaceae	Salix	arctica					true
RSA0121099	POM	294636		Current	Amaryllidaceae	Allium	cernuum					true
	POM	294635		Current	Amaryllidaceae	Allium	cernuum					true
RSA0126825	POM	295362		Current								true
RSA0121095	POM	295522		Current	Fabaceae	Lupinus	polyphyllus		burkei			true

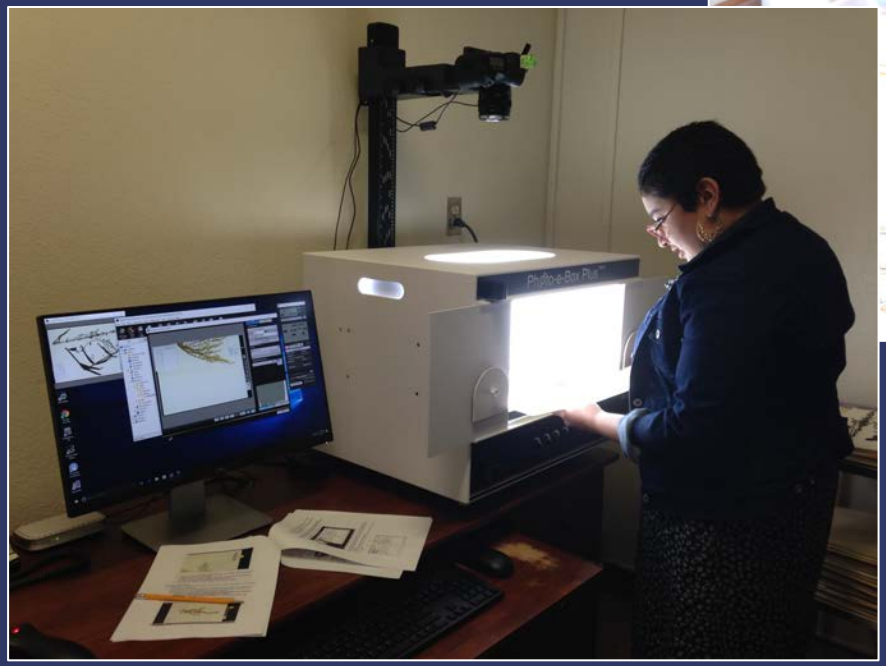
d. In Specify 6 you that might be e checked:

Solutions to Improving Data Quality

Barcoding Bonanza with Cal Poly Pomona students

Solutions to Improving Data Quality





Acknowledgements

RSA curatorial staff: Erin Berkowitz, Sierra Sutton, Lauren Tucker, Christina Varnava, Grace Rice, LeRoy Gross, Carrie Baldwin, Brandy Watts

Deb Paul, iDigBio

Joanna McCaffrey, iDigBio

Gil Nelson, iDigBio

Theresa Miller, Specify

Ed Gilbert, Symbiota

Specify Software Project

iDigBio Integrated Digitized Biocollections

CCH Consortium of California Herbaria

Symbiota Promoting Bio-Collaboration