



Benefits and challenges of an iNaturalist-based workflow for field collection



Bergen University Gardens

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Presentation available at <https://doi.org/10.6084/m9.figshare.13187132>

An example: iNaturalist <http://www.inaturalist.org>

The screenshot shows the iNaturalist website homepage. At the top left is the iNaturalist logo with a magnifying glass icon, followed by navigation links for 'Explore', 'Community', and 'More'. At the top right is a 'Log In or Sign Up' link. The main content area features a large background image of a Western Snakeroot plant. On the right side, a purple box displays '301,254 Species Observed' with a tree icon and two buttons: 'SIGN UP' and 'LEARN'. Below the plant image, a circular profile picture of Faerthen Felix is shown next to the text 'Faerthen Felix - Western Snakeroot from Sagehen Creek, California, USA'. At the bottom, there are logos for the California Academy of Sciences and National Geographic, along with a text block stating: 'iNaturalist is a joint initiative of the California Academy of Sciences and the National Geographic Society.'

How It Works



iNaturalist Explore Your Observations Community Identify More Upload

Euonymus verrucosus (Warty-barked Spindle) Research Grade Edit



mikepirie 1,181 observations

Observed: Sep 1, 2019 - 5:36 PM CEST Submitted: Sep 2, 2019 - 1:12 AM CEST



Map Satellite

Rastišće, Serbia

Be the first to favor this observation!

Activity

mikepirie suggested an ID Improving 4mo

Euonymus verrucosus
Warty-barked Spindle Compare

wojciech suggested an ID 3mo

Euonymus verrucosus
Warty-barked Spindle

Comment Suggest an Identification

Leave a comment

Done Mark As Reviewed

Community Taxon

Euonymus verrucosus (Warty-barked Spindle)

Cumulative IDs: 2 of 2

0 2/3rds 2

Agree Compare About

Annotations

Attribute	Value	Agree	Disagree
Plant Phenology	Select -		
Sex	Select -		

Projects (3)

Add to a Project

- Bergen University Gardens
- Bergen University Gardens Serbia trip 2019
- Bergen IrisBG export
Observation Fields

Tags (2)

Add Tag

Euonymus verrucosus HLA266

Observation Fields (3)

associatedCollectorsSymbiota:
Pirie, M.D.; Moe, B.; Golubovic, M.; Lazarević, P.; Zlatković, B.

recordNumberdwc:
266

recordedBySymbiota:
Andersen, H.L.

Choose a field

Names from database;
collaborative identification

Date/time,
geolocality
with place name

Extendable
data entry
(DarwinCore)

✔ Data Quality Assessment ⓘ

Quality Grade: **Research**

The Data Quality Assessment is an evaluation of an observation's accuracy. Research Grade observations may be used by scientists for research. Cast your vote below:

Research Grade Qualification	Yes	No
Date specified	✔	
Location specified	✔	
Has Photos or Sounds	✔	
Has ID supported by two or more	✔	
Date is accurate	✔	
Location is accurate	✔	
Organism is wild	✔	
Evidence of organism	✔	
Recent evidence of an organism	✔	
Community Taxon at species level or lower	✔	
Based on the evidence, can the Community Taxon still be confirmed or improved?		
<input type="checkbox"/> Yes	<input type="checkbox"/> No, it's as good as it can be	

Inappropriate content? [Flag As Inappropriate](#)



This observation is Research Grade! It can now be used for research and featured on other websites.

This observation is featured on 1 site

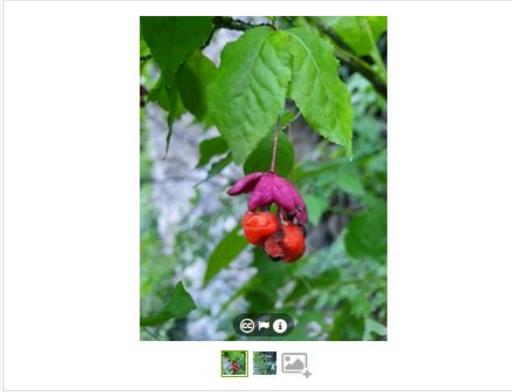


Open science!

The screenshot shows a GBIF observation page for *Euonymus verrucosus* Scop. The page includes a map of the Balkans region, two photographs of the plant, and metadata such as the species name, location (Serbia), and publication details.

Euonymus verrucosus (Warty-barked Spindle) Research Grade

Edit



mikepirie
1,181 observations

Observed: Sep 1, 2019 - 5:36 PM CEST
Submitted: Sep 2, 2019 - 1:12 AM CEST



Be the first to love this observation!

Activity

mikepirie suggested an ID Improving 4mo
Euonymus verrucosus
Warty-barked Spindle

wojciech suggested an ID 3mo
Euonymus verrucosus
Warty-barked Spindle

Comment Suggest an Identification
Leave a comment

Done Mark As Reviewed

Community Taxon What's this?

Euonymus verrucosus (Warty-barked Spindle)
Cumulative IDs: 2 of 2
0 2/3rds 2
Agree Compare About

Annotations

Attribute	Value	Agree	Disagree
Plant Phenology	Select -		
Sex	Select -		

Projects (3)
Add to a Project
Bergen University Gardens
Bergen University Gardens Serbia trip 2019
Bergen IrisBG export
Observation Fields

Tags (2)
Add Tag
Euonymus verrucosus HLA266

Observation Fields (3)
associatedCollectorsSymbiota:
Pirie, M.D.; Moe, B.; Golubovic, M.; Lazarević, P.; Zlatković, B.
recordNumberdwc:
266
recordedBySymbiota:
Andersen, H.L.
Choose a field

Add to customizable sub-projects

Projects: collections of observations, such as:

- Bergen University Gardens staff

Bergen University Gardens

6,394 OBSERVATIONS 2,269 SPECIES 507 IDENTIFIERS 7 OBSERVERS

Recent Observations

Image	Species	Common Name	Time
	<i>Phyllodoce caerulea</i>	Blue Mountain-Heath	1d
	<i>Achillea millefolium</i>	Common Yarrow	1 3d
	<i>Succisa pratensis</i>	Devil's-bit Scabious	1 3d
	<i>Solidago virgaurea</i>	European Goldenrod	1 3d

Rank	Profile	Count
1st	beritgehrke	1,641
	torsten	1,515
	mikepirie	1,411
	nannie	1,214
	evakleffelgard	254
	heidilieandersen1	184

Rank	Profile	Count
1st	beritgehrke	844
	torsten	802
	mikepirie	755
	nannie	619
	evakleffelgard	186
	bjoernmoe	161

Rank	Image	Species	Count
		<i>Potentilla erecta</i>	67
		<i>Vaccinium vitis-idaea</i>	40
		<i>Calluna vulgaris</i>	37
		<i>Vaccinium myrtillus</i>	36
		<i>Potentilla argentea</i>	33
		<i>Erica tetralix</i>	30

Projects: collections of observations, such as:

- Bergen University Gardens staff

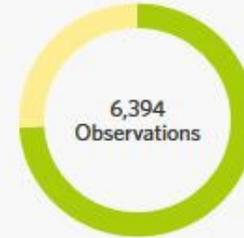
Project Requirements

Stats

Journal

Observations in this project must meet the following criteria:

Taxa	Kingdom Plantae (Plants)
Location	Worldwide
Users	mikepirie, bjoernmoe, nannie, torsten, heldtjelleandersen1, beritgehrke, evakleffelgard
Projects	any
Quality Grade	Research Grade, Needs ID
Media Type	any
Date	any
Establishment	any



- Research Grade
- Needs ID
- Casual

No journal posts yet. Check back soon!

Map of Observations



Projects: collections of observations, such as:

- Bergen University Gardens staff
- Field trips, research projects, local initiatives («Bioblitz»)

About Members 5

Observations and collections made during a field excursion to Western and Eastern Serbia, August/September 2019. A group from the Bergen University Gardens: Heidi Lie Andersen; Michael Pirie; Bjørn Moe; Mladen Golubovic were joined by Predrag Lazarević (coordinator of research at the Institute of Botany and Botanical

[Read More >](#)

[Edit Project](#) NEWS

Bergen University Gardens Serbia trip 2019
AUG 25, 2019 - SEP 3, 2019

Overview **327** OBSERVATIONS **252** SPECIES **33** IDENTIFIERS **3** OBSERVERS [Stats](#)

Recent Observations [View All](#)

RG <i>Amelanchier ovalis</i> Snowy Mespilus 1 4mo	 <i>Acanthus hungaricus</i> 4mo	 <i>Artemisia alba</i> 4mo	 <i>Selaginella helvetica</i> Swiss Clubmoss 4mo
--	---------------------------------------	----------------------------------	---

 Most Observations mikepirie 325 1st	 Most Species mikepirie 247 1st	 Most Observed Species <i>Erica carnea</i> 6
bjoernmoe 1	bjoernmoe 1	<i>Pinus nigra</i> 4
heidilieandersen1 1	heidilieandersen1 1	<i>Rosa pendulina</i> 4
View All View Yours	View All View Yours	<i>Scabiosa columbaria</i> 3
		<i>Salvia glutinosa</i> 3
		<i>Campanula patula</i> 3
		View All View Yours

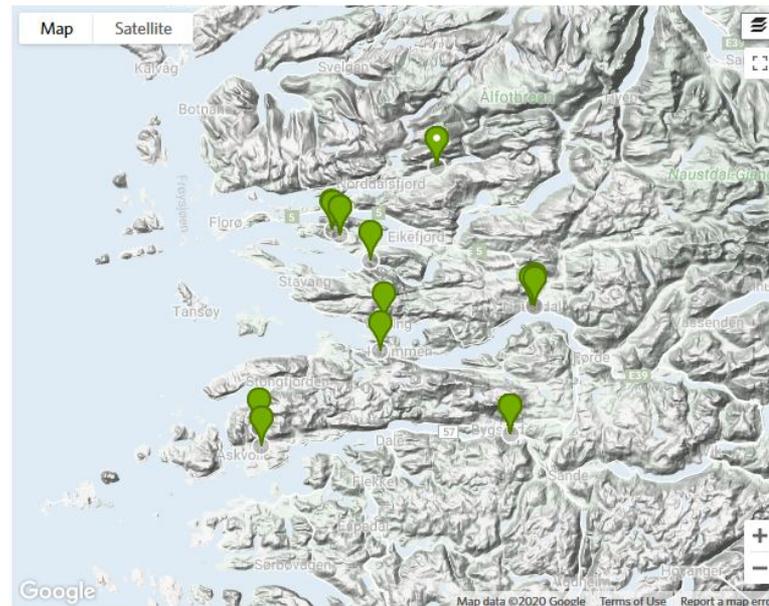


Projects: collections of observations, such as:

- Bergen University Gardens staff
- Field trips, research projects, local initiatives («Bioblitz»)
- Seed collections, living specimens, herbarium vouchers

Stats

Totals	Most Observations	Most Species	Most Observed Species
<p>203 Observations »</p> <p>172 Species »</p> <p>3 People »</p>	<p>mikepirie 197 observations</p> <p>evakleffelgard 5 observations</p> <p>bjoernmoe 1 observation</p>	<p>mikepirie 160 species</p> <p>evakleffelgard 5 species</p> <p>bjoernmoe 1 species</p>	<p>Spring Heath 3 observations</p> <p>Wild Strawberry 2 observations</p> <p>Spoonleaf Sundew 2 observations</p> <p>Cotoneasters 2 observations</p> <p>Wood Cow-Wheat 2 observations</p>



Journal

Your project journal is a tool for communicating with project members. You can use it to make announcements, set priorities, or talk about your project's findings.

To get started, [create a post](#) »

Members 3 members

[View All Members](#) »

Your Membership 197 observations

Export Observations
Atom / CSV

[Usage stats](#)

Project Curator Tools

- [Find Suitable Observations](#)
- [Find Unsuitable Observations](#)
- [Export with Hidden Coordinates](#)
- [Filter by Curator Identification](#)
- [Identify Observations](#)
- [New Journal Post](#)
- [Invite people](#)

About

mikepirie created this project on September 03, 2019

Is this inappropriate, spam, or offensive? [Add a Flag](#)

**Data
export**

Challenges:

1. Trivial formatting/import issues

The screenshot shows Microsoft Excel with a data table containing taxonomic information. The 'Data' ribbon is active, and the 'Text to Columns' button is highlighted with a red box and an arrow pointing to the 'Convert Text to Columns Wizard - Step 1 of 3' dialog box. The dialog box is set to 'Delimited' and shows a preview of the selected data.

K	L	M	N	O	P	Q	R	S	T
species_guess	scientific_name	taxon_id	taxon_genus_name	taxon_species_name	taxon_hybrid_name	taxon_subspecies_name	taxon_variety_name	field:associatedcollectorssymbiota	field:identifi
1	scientific_name	taxon_id	taxon_genus_name	taxon_species_name	taxon_hybrid_name	taxon_subspecies_name	taxon_variety_name	field:associatedcollectorssymbiota	field:identifi
2	Ramonda serbica	442891	Ramonda	Ramonda serbica					
3	Campanula lingulata	465859	Campanula	Campanula lingulata					
4	Scabiosa fumarioides	471229	Scabiosa	Scabiosa fumarioides					
5	common dogwood	155124	Cornus	Cornus sanguinea					
6	Clematis vitalba	160697	Clematis	Clematis vitalba					
7	Digitalis lanata	147321	Digitalis	Digitalis lanata					
8	Eryngium campestre	162699	Eryngium	Eryngium campestre					
9	Pyrus spinosa	335885	Pyrus	Pyrus spinosa					
10	common hawthorn	51147	Crataegus	Crataegus monogyna					
11	Fumana procumbens	448090	Fumana	Fumana procumbens					
12	Malus sylvestris	61223	Malus	Malus sylvestris					
13	Potentilla cinerea	544665	Potentilla	Potentilla cinerea					
14	apples	54500	Malus	Malus					
15	Scorpion Senna	208964	Hippocrepis	Hippocrepis emerus					
16	Cornelian cherry	55858	Cornus	Cornus mas					
17	Wild strawberry	50298	Fragaria	Fragaria vesca					
18	Spleenwort	75609	Asplenium	Asplenium trichomanes					
19	Parietaria lusitanica serbica	415198	Parietaria	Parietaria lusitanica					
20	Wayfaring-tree	124741	Viburnum	Viburnum lantana					
21	Downy Woundwort	82989	Stachys	Stachys germanica					
22	Purple Gromwell	546520	Aegonychon	Aegonychon purpurocaeruleum					
23	Wild Service-tree	198879	Sorbus	Sorbus torminalis					
24	Hollyhock	62205	Alcea	Alcea rosea					
25	Ornithogalum pyramidale	489989	Ornithogalum	Ornithogalum pyramidale					
26	Potentilla	53186	Potentilla	Potentilla					
27	Salad Burnet	55736	Sanguisorba	Sanguisorba minor					
28	Rose campion	485191	Silene	Silene coronaria					
29	Ironwort	168946	Sideritis	Sideritis montana					
30	Satureja kitaibelii	909023	Satureja	Satureja kitaibelii					
31	Veronica austriaca jacquini	738839	Veronica	Veronica austriaca					
32	Achillea clypeolata	465494	Achillea	Achillea clypeolata					
33	Small Yellow Onion	367138	Allium	Allium flavum					
34	Blackthorn	55811	Prunus	Prunus spinosa					
35	St Lucie Cherry	126808	Prunus	Prunus mahaleb					
36	Allium rubriflorum	931075	Allium	Allium rubriflorum					
37	Arum maculatum	61318	Arum	Arum maculatum					
38	Digitalis grandiflora	123625	Digitalis	Digitalis grandiflora					
39	Dipsacus	53030	Dipsacus	Dipsacus					

Convert Text to Columns Wizard - Step 1 of 3

The Text Wizard has determined that your data is Delimited.

If this is correct, choose Next, or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

Delimited - Characters such as commas or tabs separate each field.

Fixed width - Fields are aligned in columns with spaces between each field.

Preview of selected data:

- 1 taxon_species_name
- 2 Ramonda serbica
- 3 Campanula lingulata
- 4 Scabiosa fumarioides
- 5 Cornus sanguinea
- 6 Clematis vitalba
- 7 Digitalis lanata

Cancel < Back Next > Finish

Challenges:

1. Trivial formatting/import issues
2. Non-trivial taxonomy conflicts/ambiguity

This screenshot shows the iNaturalist observation page for *Callitriche brutia*. The page includes a photo of the plant, a seasonality graph showing peaks in spring and autumn, and a 'Taxonomy' section. A red box highlights the 'Taxonomy Details' link in the taxonomy list.

Life > Kingdom Plantae > Genus *Callitriche* > *Callitriche brutia*

Callitriche brutia (Pedunculate Water-Starwort)

TOP OBSERVER: tigrx (Leaderboard 2)

TOP IDENTIFIER: No Identifica...

LAST OBSERVATION: October 11, 2019 (View Observation)

TOTAL OBSERVATIONS: 6 (View All, Yours)

Seasonality: History Plant Phenology

Map About **Taxonomy** Status Similar Species Curation

This screenshot shows the 'Taxonomy details for *Callitriche brutia*' page. It displays the taxonomic relationship between 'Plants of the World Online' and 'iNaturalist'. A red box highlights the 'Plants of the World Online' entry in the relationship table.

Back to *Callitriche brutia*

Taxonomy details for *Callitriche brutia* (Pedunculate Water-Starwort)

Covered by a taxon framework for Class Magnoliopsida Sourced to Plants of the World Online

Relationship: Match	
Plants of the World Online	iNaturalist
Species <i>Callitriche brutia</i> (parent: Genus <i>Callitriche</i>)	Match Species <i>Callitriche brutia</i> (parent: Genus <i>Callitriche</i>)

This screenshot shows the 'Plants of the World Online' entry for *Callitriche brutia*. It includes the taxonomic classification, a distribution map, and a legend for native and introduced species.

Kewscience | Plants of the World online

Family: Plantaginaceae Juss.
Genus: *Callitriche* L.
Callitriche brutia Petagna

This species is accepted, and its native range is Canary Islands, N. & W. Europe to Medit. and Iran.

Distribution Accepted Infraspecifics Other Data Bibliography Sources

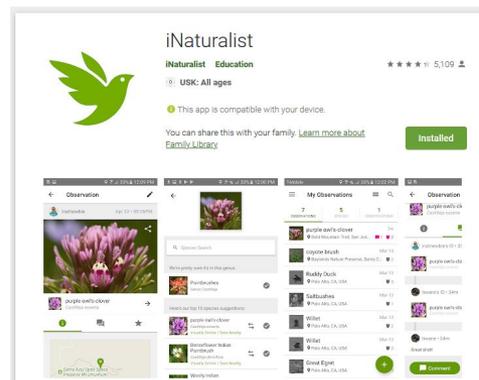
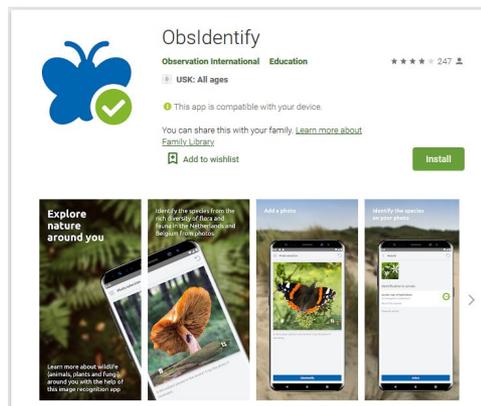
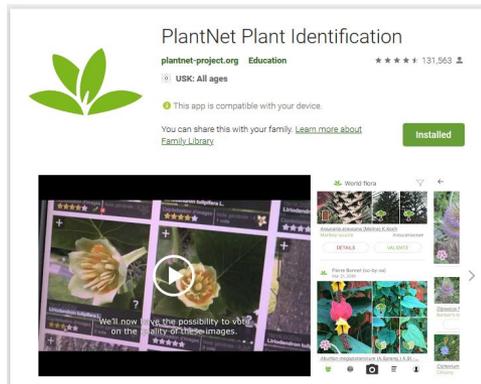
▼ Distribution

■ KBD

Map showing distribution of *Callitriche brutia* (Native and Introduced).

Discussion points:

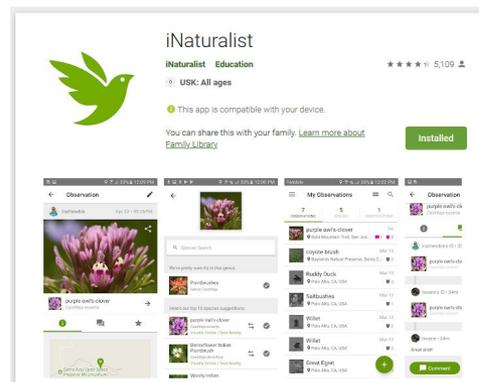
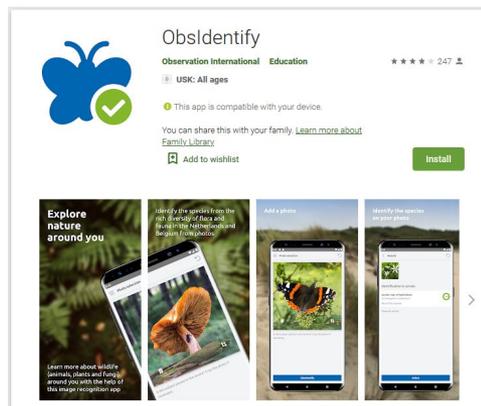
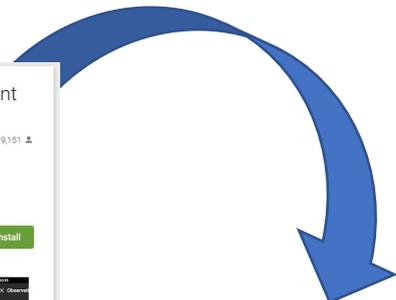
1. Pros and cons of different platforms?



Heberling, J. M., & Isaac, B. L. 2018. iNaturalist as a tool to expand the research value of museum specimens. *Appl. Plant Sci.*, 6: e01193. <https://doi.org/10.1002/aps3.1193>

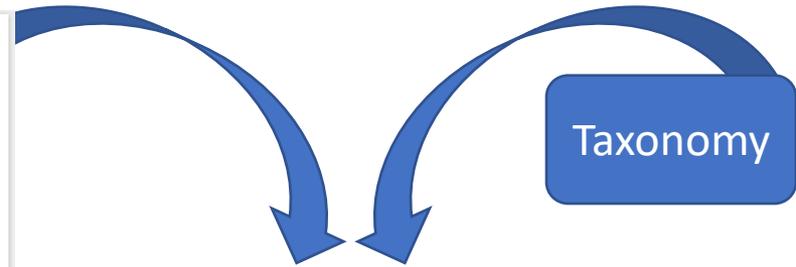
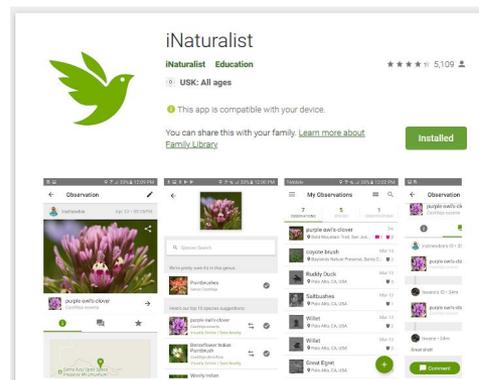
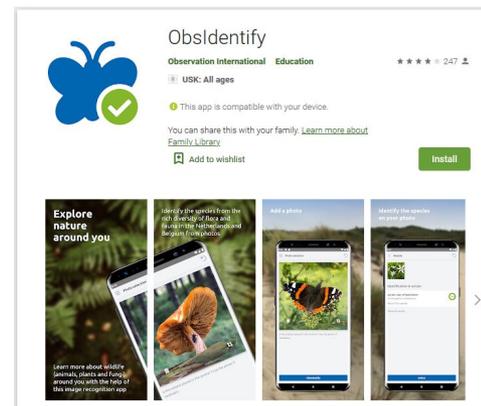
Discussion points:

1. Pros and cons of different platforms?
2. Demand for IrisBG import tool(s)?



Discussion points:

1. Pros and cons of different platforms?
2. Demand for IrisBG import tool(s)?
3. Protocols for incorporating new names?



Taxonomy

IrisBG - Collection Management

Discussion points:

1. Pros and cons of different platforms?
2. Demand for IrisBG import tool(s)?
3. Protocols for incorporating new names?
4. Need for a common taxonomy database?



 **IrisBG - Collection Management**


Catalogue of Life