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Herbarium Specimens

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Sabine St-Jean¹

¹Université de Sherbrooke

Canadian Airborne Biodiversity Observatory
Tech. support email: jocelyne.ayotte@umontreal.ca



Sabine St-Jean

Université de Sherbrooke

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Protocol status: In development

We are still developing and optimizing this protocol

Created: November 20, 2019

Last Modified: April 02, 2020

Protocol Integer ID: 30048

Keywords: canadian airborne biodiversity observatory, store herbarium specimen, herbarium specimen, vegetation survey, vegetation crew, priority of the vegetation crew, identification of species, species, many species

Abstract

Here we describe the standardised protocol used by the **Canadian Airborne Biodiversity Observatory** (CABO) to collect, press and store herbarium specimens. The goal of this protocol is to validate the identification of species that were identified during the vegetation surveys, for as many species as possible, but with the priority of the vegetation crew always remaining to complete all the vegetation surveys.

Guidelines

The aim of the collection and pressing of herbarium specimens is to validate the identification of species done during the vegetation surveys (see Open Vegetation Survey Protocol).

Materials

Equipment	
new equipment	NAME
Identification guides	BRAND
-	SKU
See Open Vegetation Survey Protocol → Guidelines → Site Specific Information. ^{SPECIFICATIONS}	

Equipment	
new equipment	NAME
Gardening shovel	BRAND
-	SKU

Equipment	
new equipment	NAME
Stake wire flags	BRAND
-	SKU
https://www.homedepot.com/p/Empire-3-5-in-x-2-5-in-Pink-Stake-Flags-100-Pack-78-003/301387971	LINK
About 50 cm long, 3.5" x 2.5" pink or orange vinyl flags on wire stakes	SPECIFICATIONS

Equipment	
new equipment	NAME
Permanent marker	BRAND
-	SKU

Equipment	
new equipment	NAME
Ziploc bags	BRAND
-	SKU

Equipment

new equipment	NAME
Ice packs	BRAND
-	SKU

Equipment

new equipment	NAME
Cooler	BRAND
-	SKU

Equipment

new equipment	NAME
Plant press and newspaper	BRAND
-	SKU

Equipment	
new equipment	NAME
CAT S41 fieldwork cellphone	BRAND
-	SKU
https://www.catphones.com/en-us/cat-s41-smartphone/	LINK

Equipment	
new equipment	NAME
Trimble Catalyst GPS, NTRIP precision subscription	BRAND
-	SKU

Troubleshooting



Specimen Collection

- 1 Select a plant specimen to be collected outside the plots.

Note

The species has to be identified in at least one of the vegetation surveys. One herbarium specimen per species is sufficient. Collect enough specimens to fill a newspaper page if the specimens are small.

Collect herbarium specimens for as many surveyed species as possible, per site, but the priority of the vegetation crew always remains to complete all of the vegetation surveys.

Also follow this procedure to collect samples of unknown plants.

- 2 Create the plant record in *Fulcrum*.

Equipment

new equipment

NAME

Permanent marker

BRAND

-

SKU



Equipment

new equipment

NAME

Stake wire flags

BRAND

-

SKU

<https://www.homedepot.com/p/Empire-3-5-in-x-2-5-in-Pink-Stake-Flags-100-Pack-78-003/301387971>

LINK

About 50 cm long, 3.5" x 2.5" pink or orange vinyl flags on wire stakes

SPECIFICATIONS

Equipment

new equipment

NAME

Identification guides

BRAND

-

SKU

See Open Vegetation Survey Protocol → Guidelines → Site Specific Information.

SPECIFICATIONS

Equipment

new equipment

NAME

CAT S41 fieldwork cellphone

BRAND

-

SKU

<https://www.catphones.com/en-us/cat-s41-smartphone/>^{LINK}

Equipment

new equipment

NAME

Trimble Catalyst GPS, NTRIP precision subscription^{BRAND}

-

SKU

- 2.1 In *Fulcrum*, under Plants → Metadata, select the appropriate project (see Open Vegetation Survey Protocol → Guidelines → Site Specific Infos).



✕

Plants *(editing)*

✓

44918127, Sarracenia purpurea Linnaeus

⚙

Metadata

⌵

Created (device)	25/07/2019 à 09:16:24 4 months ago by Sabine St-Jean
Updated (device)	25/07/2019 à 09:16:45 4 months ago by Sabine St-Jean
Created (web)	25/07/2019 à 09:16:55 4 months ago by Sabine St-Jean
Updated (web)	25/07/2019 à 09:16:55 4 months ago by Sabine St-Jean
Duration	3 minutes, 2 seconds (Total Time) 2 minutes, 41 seconds (Most Recent Update) 21 seconds (First Creation)
Source	Fulcrum Android 2.33.2 / Android 8.0.0 / BullittGroupLimited S41
Location	45.409094, -75.517551 Change
Created Location	45.409088, -75.517559 (3m accuracy, 0.9m from the record)
Updated Location	45.408840, -75.517643 (4m accuracy, 29.2m from the record)
Record Status	<div>Pending Verification</div>
Project	<div>2019-MerBleue</div>

- 2.2 Under Plants → Site and Plot, select the appropriate site (see Open Vegetation Survey Protocol → Guidelines → Site Specific Infos) and plot, if applicable.

✕

Plants *(editing)*

✓

44918127, Sarracenia purpurea Linnaeus

⚙

Site and Plot

⌵

Site	* MBP_veg_crew	✕	i
Plot	<div>Select</div>		i

- 2.3 Under Plants → Site Plot Information, select the appropriate site ID (see Open Vegetation Survey Protocol → Guidelines → Site Specific Infos).

✕

Plants *(editing)*

✓

44918127, Sarracenia purpurea Linnaeus

⚙

Site Plot Information

⌵

Site ID	MBP_veg_crew
---------	--------------

- 2.4 Under Plants → Plant, answer to Plant Tagged?.

- Answer Yes if the precise georeferencing of the plant is not done right away (for example, if the Trimble GPS is not available). Mark the location of the plant specimen using a stake with labelled flagging tape (format: [InitialLastNameResearcher]-[SpeciesLatinName]). In *Fulcrum*, enter the Tag ID (same format) and select the tag type (stake at plant base).
- Answer No if the precise georeferencing of the plant is done right away. In that case, no stake has to be installed.

If desired, take a photo of the plant and upload it next to Plant Photos.

Plants (editing)

44918127, BY geo, Sarracenia purpurea Linnaeus

Plant

Plant ID: 44918127

Plant Tagged?:

Tag ID: BY geo

Tag Type: stake at plant base

Tag Remarks:

Plant Photos:

Close-Up Photos:

Plant Remarks:

- 2.5 Under Plants → Plant First Occurrence, enter the name of the observer and the date of the observation.

Note

The default entries are the name of the person logged into *Fulcrum* and the current date.

Plants *(editing)*

44918127, Sarracenia purpurea Linnaeus

Plant First Occurrence

First Observed By

Alizée Girard
Anna Crofts
Antoine Mathieu
Alexandra Massey
Charlotte Taillefer
Clément Robert-Bigras
Deep Inamdar
Etienne Laliberté
Florence Blanchard
Guillaume Tougas
Isabelle Gareau
Kathryn Elmer
Madeleine Trickey-Massé
Margaret Kalacksa
Maria Juliana Pardo Losada
Mark Vellend
Myriam Cloutier
Oliver Lucanus
Pablo Arroyo
Paul Hacker
Rime Néron
Rosalie Beauchamp-Rioux
Sabine St-Jean
Sabrina Demers-Thibault
Xavier Guilbeault-Mayers
Other

Date First Observed

25 / 07 / 2019

First Occurrence Remarks

2.6 Under Plants → Location, use the Trimble connected to your cellphone (or your cellphone GPS if the Trimble GPS is not available right away) to georeference the plant by clicking on Update Location with GPS - coordinates will automatically be imported to the Latitude and Longitude fields.

Location

Latitude (degrees)

48,807631

Longitude (degrees)

-123,6320338

Horizontal Accuracy (m)

0,02

Altitude (m)

41,54

Vertical Accuracy (m)

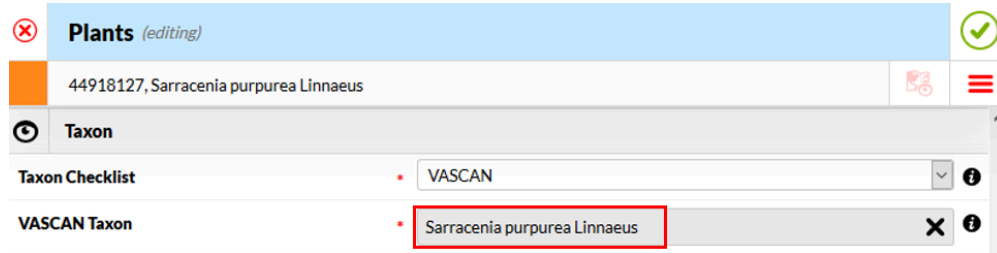
Current GPS Information

Your GPS is not accessible. No Location Available

Update Location with GPS

Update Location with GPS

2.7 Under Plants → Taxon, select the species of the plant.



Plants (editing)

44918127, Sarracenia purpurea Linnaeus

Taxon

Taxon Checklist * VASCAN

VASCAN Taxon * Sarracenia purpurea Linnaeus

- 2.8 Under Plants → Taxonomic Identification, indicate the name of the person identifying the plant as well as the date of the plant identification and the followed identification protocol.

Note

The default entries are the name of the person logged into *Fulcrum* and the current date.



✕

Plants *(editing)*

✓

44918127, Sarracenia purpurea Linnaeus

🕒

Taxonomic Identification

⬆

Identified By

*

Alizée Girard

Anna Crofts

Antoine Mathieu

Alexandra Massey

Charlotte Taillefer

Clément Robert-Bigras

Deep Inamdar

Etienne Laliberté

Florence Blanchard

Guillaume Tougas

Isabelle Gareau

Kathryn Elmer

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Margaret Kalacksa

Maria Juliana Pardo Losada

Mark Vellend

Myriam Cloutier

Oliver Lucanus

Pablo Arroyo

Paul Hacker

Rime Néron

Rosalie Beauchamp-Rioux

Sabine St-Jean

Sabrina Demers-Thibault

Xavier Guilbeault-Mayers

Other

⬆

📘

Date Identified

*

25 / 07 / 2019

✕

📘

Identification Protocol

*

botanical knowledge only

field guide, flora or other published source

comparison with herbarium specimen

Other

⬆

📘

Identification Qualifier

⬆

📘

Identification Remarks

⬆

📘

Identification Audio Remarks

Select File

📘

2.9 Save your record.

✕

Plants *(editing)*

✓

44918127, Sarracenia purpurea Linnaeus

- 3 Collect the plant specimen with its roots and store it in a Ziploc bag labelled with the species latin name, the plant ID and the date. Remove the tag once the specimen has been collected.

Equipment

new equipment

NAME

Gardening shovel

BRAND

-

SKU

Equipment

new equipment

NAME

Ziploc bags

BRAND

-

SKU

Equipment

new equipment

NAME

Permanent marker

BRAND

-

SKU

- 4 Store the specimen in a cool environment between collection and pressing.

Equipment

new equipment	NAME
Ice packs	BRAND
-	SKU

Equipment

new equipment	NAME
Cooler	BRAND
-	SKU

Specimen Pressing

- Press the collected plant specimens. Label the newspaper with the site and date of collection, the name of the species, and the plant ID. No need to mount the specimens.

Equipment

new equipment	NAME
Plant press and newspaper	BRAND
-	SKU

Note

Follow the guidelines indicated here:
https://www.herbier.ulaval.ca/en/a_propos/confectionner_un_herbier/.

Pressed Specimen Record

6 Create an entry for each herbarium specimen in *Fulcrum* under Pressed Specimens.

6.1 Under Metadata → Project, select the appropriate project; under Site and Plant → Plant, select the appropriate plant.

Pressed Specimens (editing)

46236888, Sarracenia purpurea Linnaeus

Metadata

Created (device)	09/08/2019 à 15:35:46 4 months ago by Sabine St-Jean
Updated (device)	09/08/2019 à 15:37:31 4 months ago by Sabine St-Jean
Created (web)	09/08/2019 à 15:38:02 4 months ago by Sabine St-Jean
Updated (web)	09/08/2019 à 15:38:02 4 months ago by Sabine St-Jean
Duration	1 minute, 33 seconds (First Creation)
Source	Fulcrum Android 2.33.3 / Android 8.0.0 / BullittGroupLimited S41
Location	45.398002, -71.915123 (12m accuracy) Change
Created Location	45.398002, -71.915123 (12m accuracy, 0.0m from the record)
Updated Location	45.397957, -71.915076 (3m accuracy, 6.2m from the record)
Record Status	Pending Verification
Project	2019-MerBleue

Site and Plant

Plant	44918127, Sarracenia purpurea Linnaeus
Plant ID	44918127

6.2 Under Collection Event, select the collector's name and the date that the plant was collected.



✕

Pressed Specimens *(editing)*

✓

46236888, Sarracenia purpurea Linnaeus

🕒

Collection Event

⬆

Collected By

*

Alizée Girard

Anna Crofts

Antoine Mathieu

Alexandra Massey

Charlotte Taillefer

Clément Robert-Bigras

Deep Inamdar

Etienne Laliberté

Florence Blanchard

Guillaume Tougas

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Pablo Arroyo

Paul Hacker

Rime Néron

Rosalie Beauchamp-Rioux

Sabine St-Jean

Sabrina Demers-Ithibault

Xavier Guilbeault-Mayers

Other

⬆

📘

Date Collected

*


25 / 07 / 2019


🔄

📘



6.3 All other fields are optional.




 **Pressed Specimens** *(editing)*




46236888, Sarracenia purpurea Linnaeus




 **Specimen**

Specimen ID


46236888



Specimen Barcode




Specimen Remarks





Deposited in Herbarium?

Yes

No




 **Habitat**

 **Dominant Plant Species**

0 Items


Vegetation Type




Vegetation Type Definitions

<http://cnvc-cnvc.ca/search.cfm>


Enter a URL



Soil Moisture Class




Habitat Remarks




Audio Remarks

Select File





Habitat Photos

Select File





6.4 Save your record.

 **Pressed Specimens** *(editing)*



46236888, Sarracenia purpurea Linnaeus



7 Bring the pressed specimens to Montréal's Botanical Garden in order for them to be mounted and stored at the Marie-Victorin Herbarium.