

Apr 08, 2020

Small Drone Photos - Open Vegetation Protocol

 In 1 collection

DOI

<https://dx.doi.org/10.17504/protocols.io.9zch72w>

Sabine St-Jean¹, Etienne Laliberté²

¹Université de Sherbrooke; ²Université de Montréal

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



Anna L Crofts

Université de Sherbrooke

 MAVIC 2

Learn more about your local regulations and policies before takeoff.



Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.9zch72w>

External link: <http://caboscience.org/>

Protocol Citation: Sabine St-Jean, Etienne Laliberté 2020. Small Drone Photos - Open Vegetation Protocol. **protocols.io**
<https://dx.doi.org/10.17504/protocols.io.9zch72w>



License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: In development

We are still developing and optimizing this protocol

Created: December 02, 2019

Last Modified: April 08, 2020

Protocol Integer ID: 30468

Keywords: DJI drone, vegetation inventories, open vegetation, canadian airborne biodiversity observatory, open vegetation survey, open vegetation protocol, small drone pictures of the plot, small drone photo, small drone picture, distribution of plant species, plant species, québec, such picture, parc national des île, picture, parc, mer bleue bog

Abstract

Here we describe the standardised protocol used by the **Canadian Airborne Biodiversity Observatory** (CABO) to take small drone pictures of the plots and subplots in open vegetation surveys. In 2019, such pictures were taken at the Mer Bleue Bog (Ontario) and Parc national des Îles-de-Boucherville (Québec) sites. These pictures are to be classified later (see **the Post Processing protocol**) to obtain the abundance and distribution of plant species through every subplot.

Materials

Equipment	
Mavic Air	NAME
Drone	TYPE
DJI	BRAND
-	SKU
https://store.dji.com/product/mavic-air?vid=38961	LINK

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

Equipment	
Go 4	NAME
App	TYPE
DJI	BRAND
-	SKU
The application used to connect your cellphone to the drone controller. Your cellphone then becomes the screen interface to control the drone.	
	

Equipment	
Wood pannel for take-off and landing	NAME
-	TYPE
-	BRAND
-	SKU

Safety warnings

 Carry with you your Transport Canada permit as well as the required insurance documentation.

Before start

Ensure all batteries are charged.

Picture-Taking

- 1 Fly the small drone to take photos of the plots and subplots.

Equipment

Mavic Air	NAME
Drone	TYPE
DJI	BRAND
-	SKU
https://store.dji.com/product/mavic-air?vid=38961	LINK

Equipment

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

Equipment

Go 4

NAME

App

TYPE

DJI

BRAND

-

SKU

The application used to connect your cellphone to the drone controller. Your cellphone then becomes the screen interface to control the drone.

SPECIFICATIONS



Equipment

Wood pannel for take-off and landing

NAME

-

TYPE

-

BRAND

-

SKU

- 1.1 Turn on the drone and the controller. Connect the controller to your phone and open the DJI Go 4 App. Press Go Fly. Adjust the settings to Speed = 1:1000 and Iso = 400. If it is very sunny, set the Iso to a lower value; if darker, to a higher value. Activate the Grid option to view lines of the center of the image.



1.2 Take off.

Note

Before taking each picture, make sure:

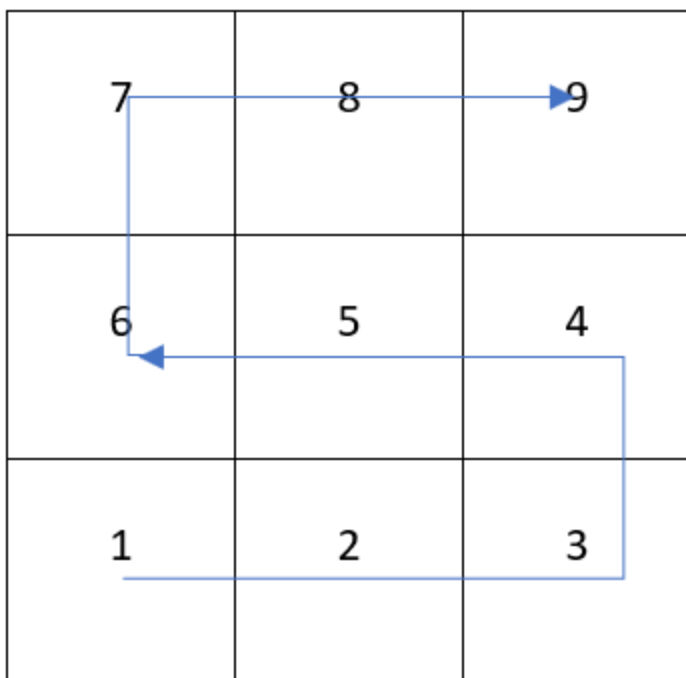
- the camera is at a 90° angle (facing down completely),
- the plot or subplot is centered and its sides are visible,
- and the drone is still.

1.3 Take a photo of the whole plot, with the southwest corner of the grid being in the lower-left corner of the picture.



Fly at a sufficient height to see the whole plot.

- 1.4 Take the photos of each subplot, in the same order as the subplots numbers.





Fly at a sufficient height to see the whole subplot. The ideal height of the drone should be set so that the sides of the subplot can be seen in the image, and otherwise as close to the vegetation as possible without wind created by the drone causing movement of the vegetation (which blurs the image).

- 1.5 Land the drone on the platform.
- 1.6 From the DJI Go 4 App → Editor → Album → Photo, download all of the original pictures to your cellphone. Turn off the drone and the controller and put them back in their case until the next flight.



Photo Import

- 2 Import the photos.

Equipment

new equipment

NAME

CAT S41 fieldwork cellphone

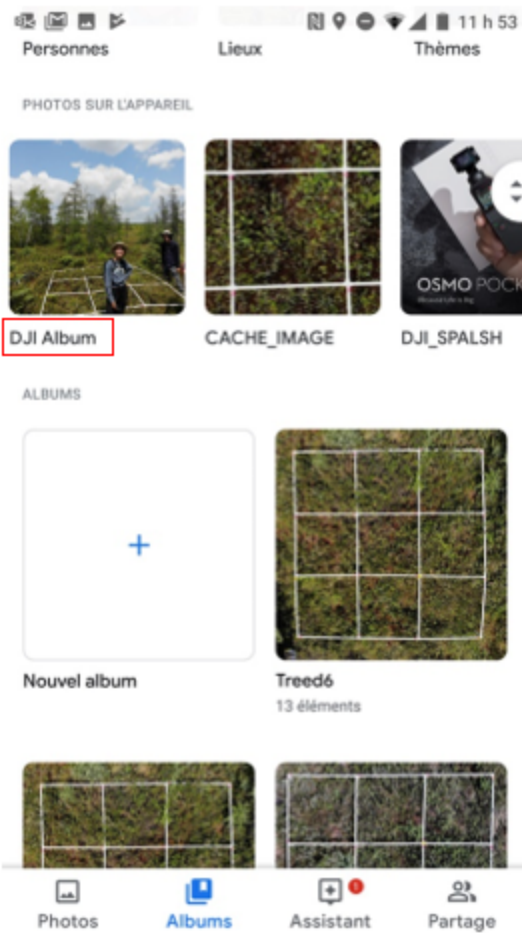
BRAND

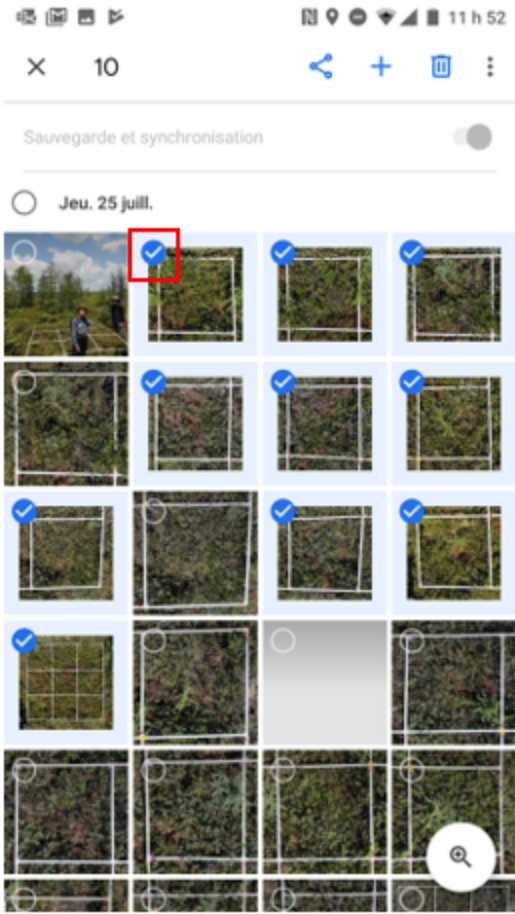
-

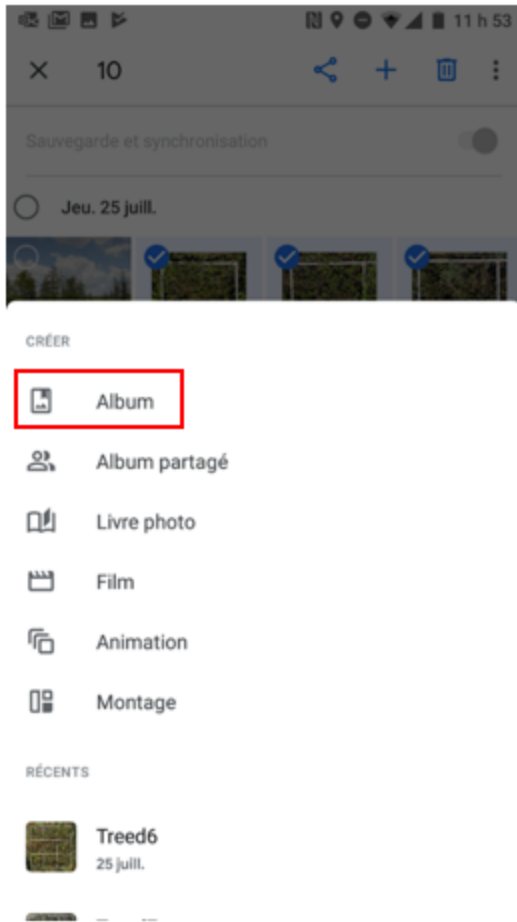
SKU

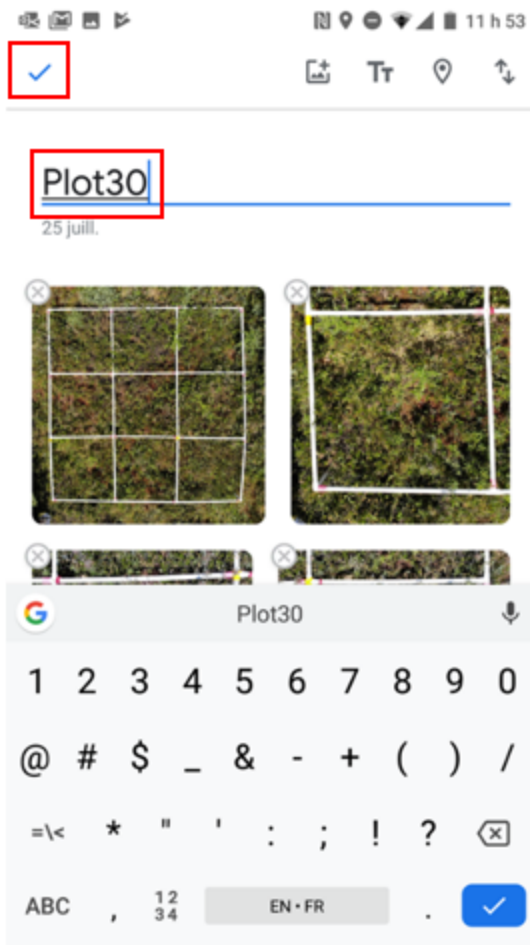
<https://www.catphones.com/en-us/cat-s41-smartphone/>^{LINK}

- 2.1 From your cellphone Photo App → DJI album, move the 10 pictures from the plot (1 for the plot and 9 for the subplots) to a new album titled with the plot name.









- 2.2 Crop each picture to limit the area outside the plot or subplots' perimeter. The edges of the PVC pipes forming the plot or subplot of interest should remain visible.

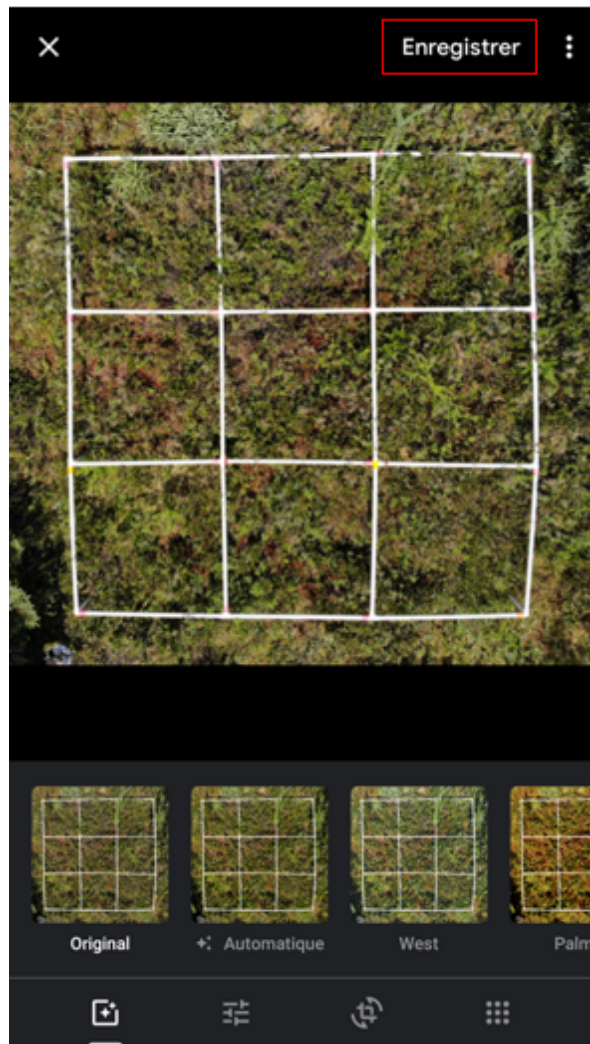
Note

Once the photos of a given plot have been put in a specific album (step 2.1), steps 2.2 to 2.4 can be done later (i.e., outside the field) to maximize efficiency on the field.









- 2.3 Upload the picture of the plot to *Fulcrum*, under Vegetation Surveys: Herbs and Shrubs
→ Survey Event → Vegetation Photos: Plot.

✕

Vegetation Surveys: Herbs and Shrubs



1 record, July 16, 2019





Sampling Plot

Plot

• 44077962, TreeD1, MBP_veg_crew



Survey Within a Subplot?

• Yes





Survey Event

Surveyed By

• Charlotte Taillefer, Guillaume Tougas, Sabine St-Jean



Date Surveyed

• July 16, 2019



Event Remarks



Audio Remarks



Vegetation Photos: Plot





2.4 Upload the picture of the subplots to Vegetation Surveys: Herbs and Shrubs → Cover Estimates: Subplot → Subplots → Record item [1 to 9] → Vegetation Photos: Subplot.

✕

Vegetation Surveys: Herbs and Shrubs



1 record, July 16, 2019





Species List



Plant Taxa



List of scientific names available:

- *Rhododendron groenlandicum* (Oeder) Kron & Judd
- *Chamaedaphne calyculata* (Linnaeus) Moench
- *Kalmia angustifolia* Linnaeus
- *Aronia melanocarpa* (Michaux) Elliott
- *Vaccinium myrtilloides* Michaux
- *Sphagnum magellanicum* Brid.
- *Sphagnum fallax* H. Klinggr.
- *Polytrichum strictum* Menzies ex Brid.
- *Sphagnum papillosum* Lindb.
- *Vaccinium corymbosum* Linnaeus



Cover Estimates: Subplot



Subplots





Vegetation Surveys: Herbs and Shrubs	
1 record, July 16, 2019 / Subplots (9 Items)	
1 record	View >
1 record	View >
1 record	View >
1 record	View >
1 record	View >
1 record	View >
1 record	View >
1 record	View >
1 record	View >

Subplots	
1 record	
Created Location	45.400112, -75.517101 (0m accuracy, 0m from the record)
Updated Location	45.397880, -75.698075 (11m accuracy, 14023.4m from the record)
Subplot	44077962-44097938, Treed1_1
Cover Estimates 3 Items	
Total Canopy Cover (%): Subplot	
Bare Ground Cover (%): Subplot	
Leaf Litter Cover (%): Subplot	
Total Cover (%): Subplot	
Vegetation Photos: Subplot	