

KelPy User Manual

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Note: this guide is aimed towards Windows users. The steps may not be the same for installing on Mac/Linux.

It is recommended you have at least 16GB of memory installed on your system to run this program.

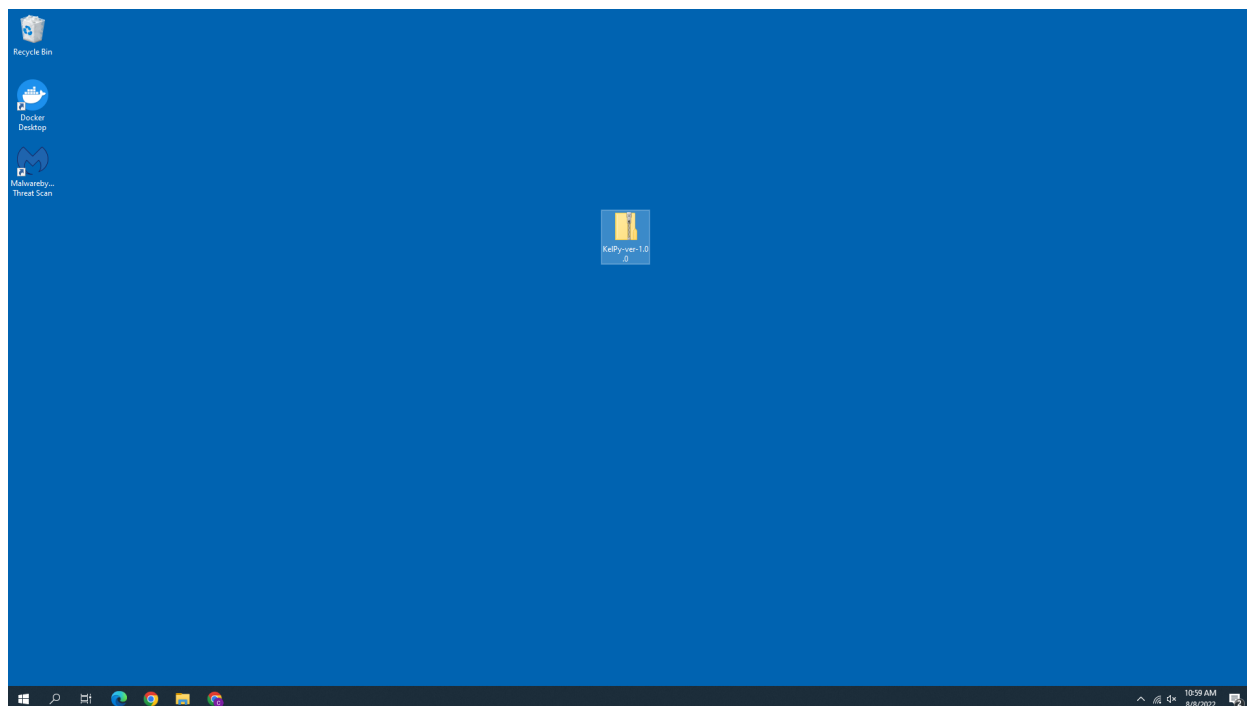
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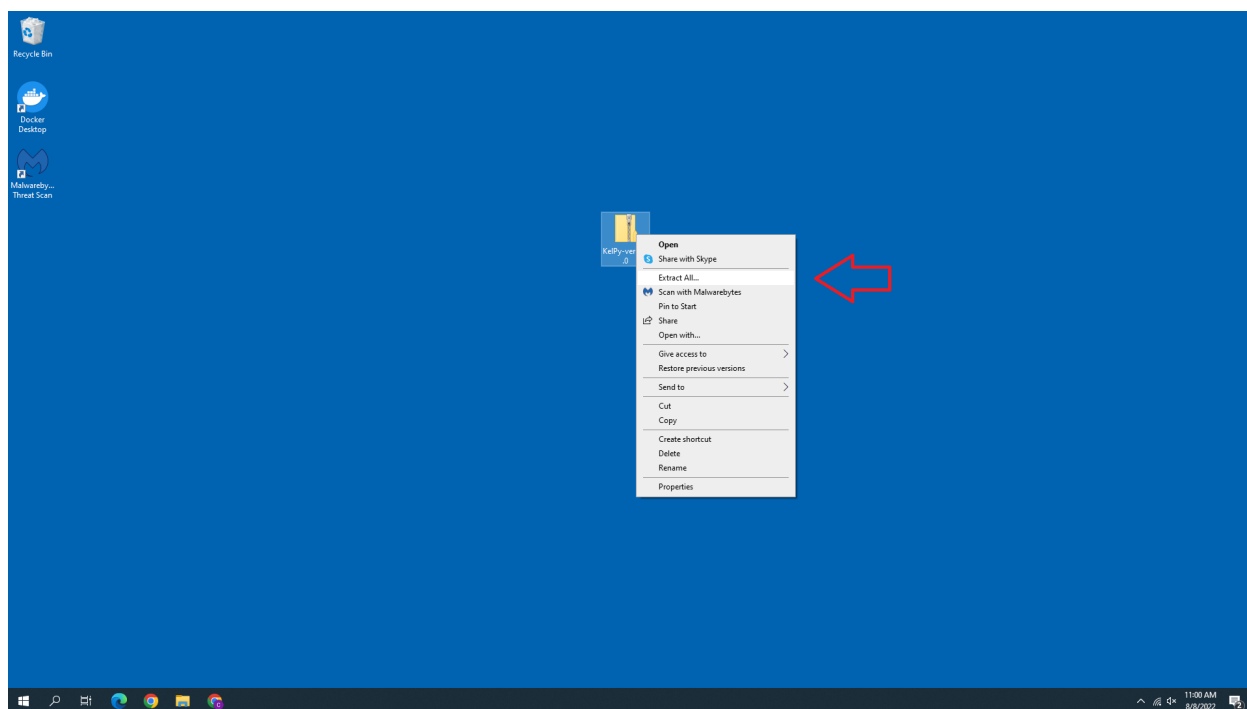
KelPy Installation

KelPy will be located in a zip file:

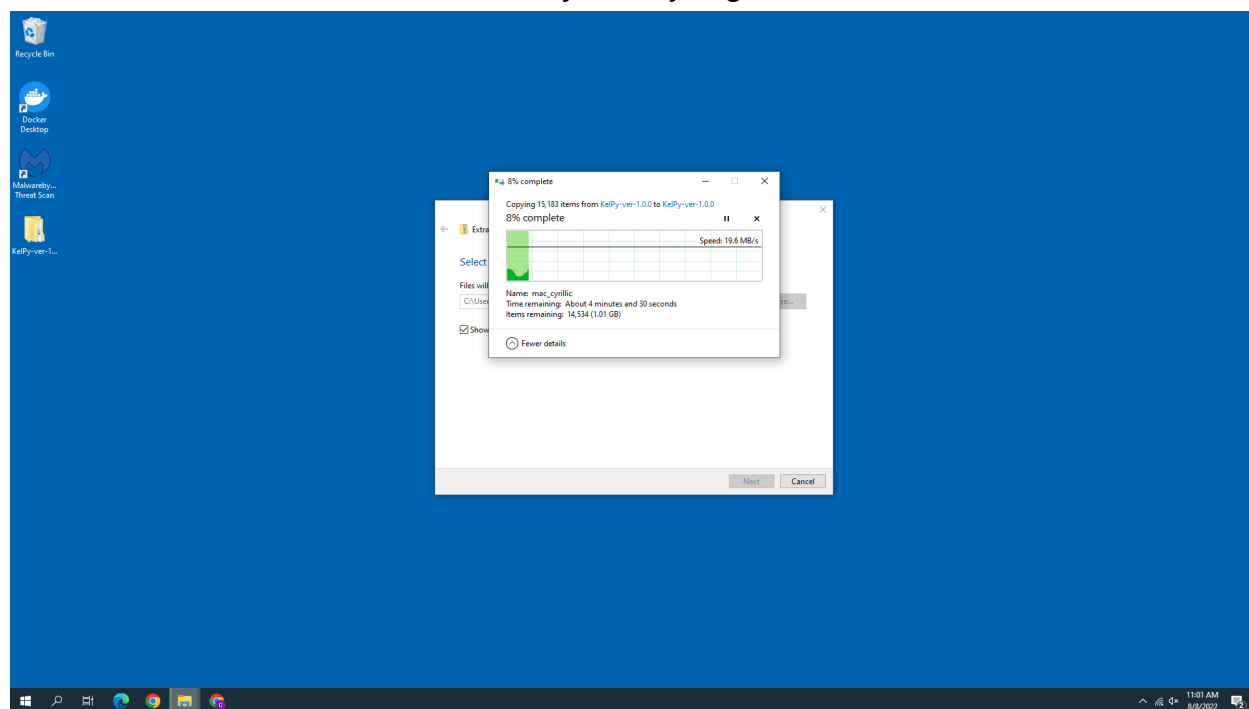


You will want to extract this zip file to use KelPy. Right click KelPy and click the “Extract All”

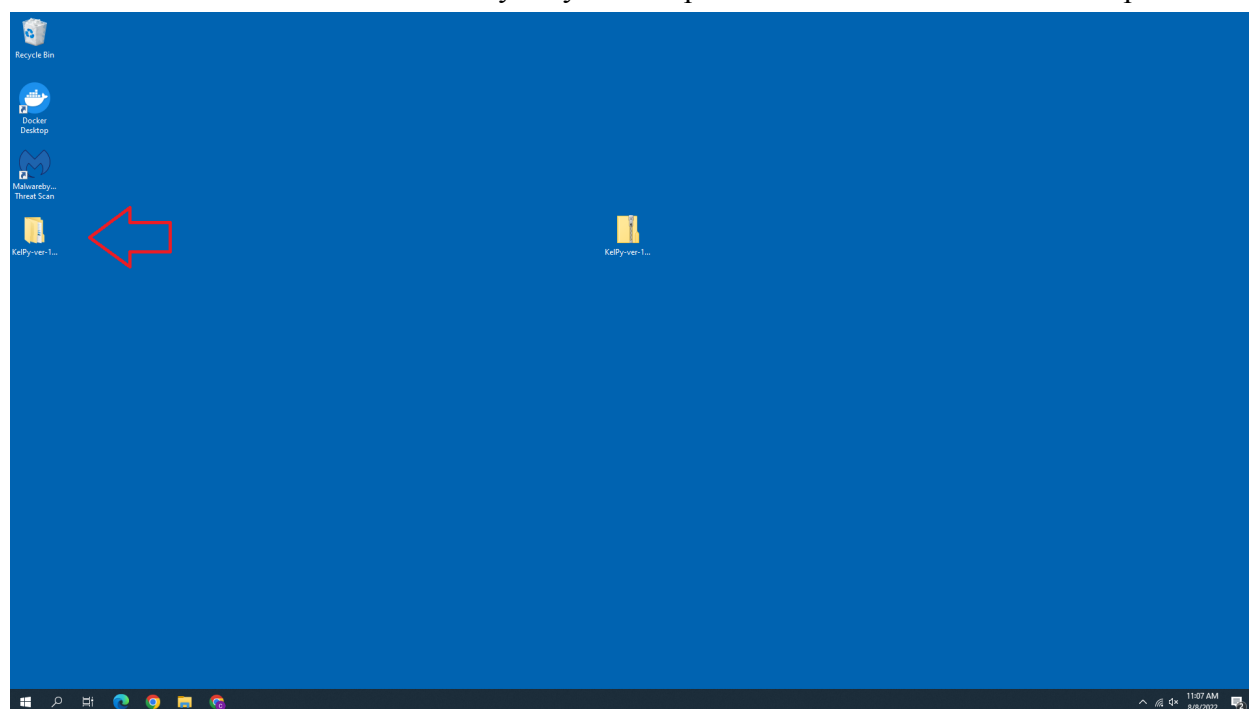
button:



This should take a bit of time because KelPy is fairly large.



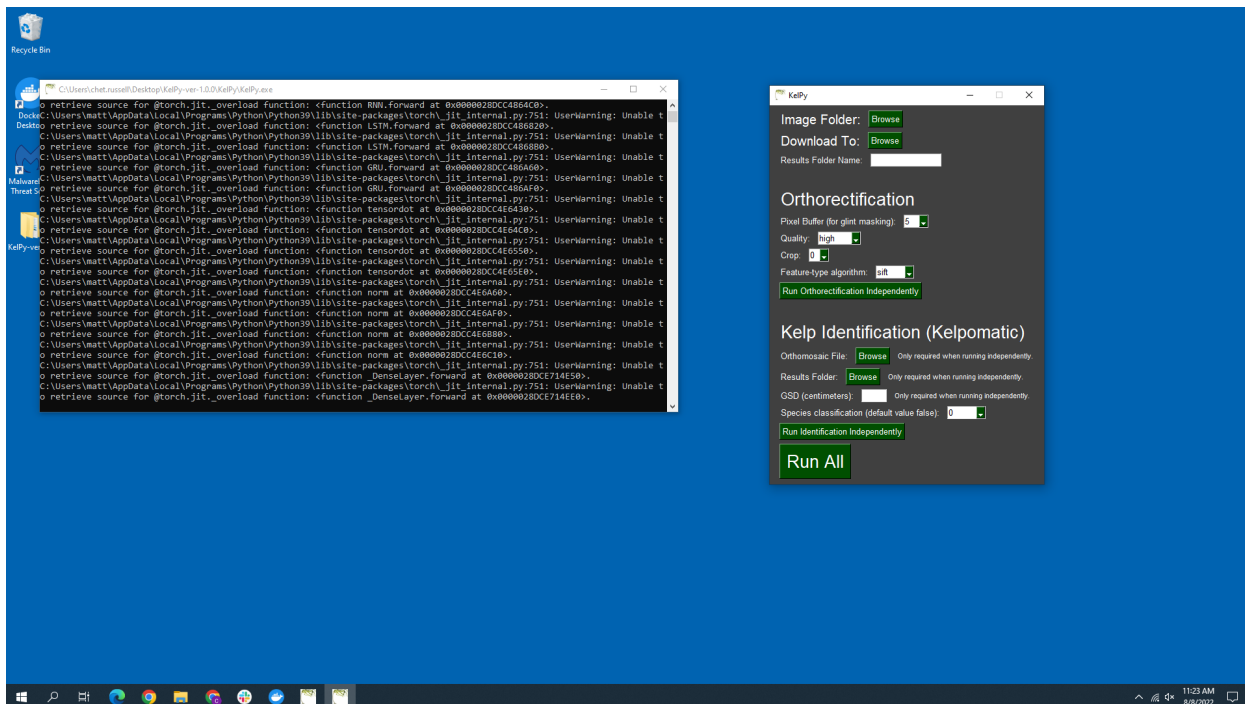
You should now see an extracted KelPy on your computer. Double click this folder to open it:



You should now see this:

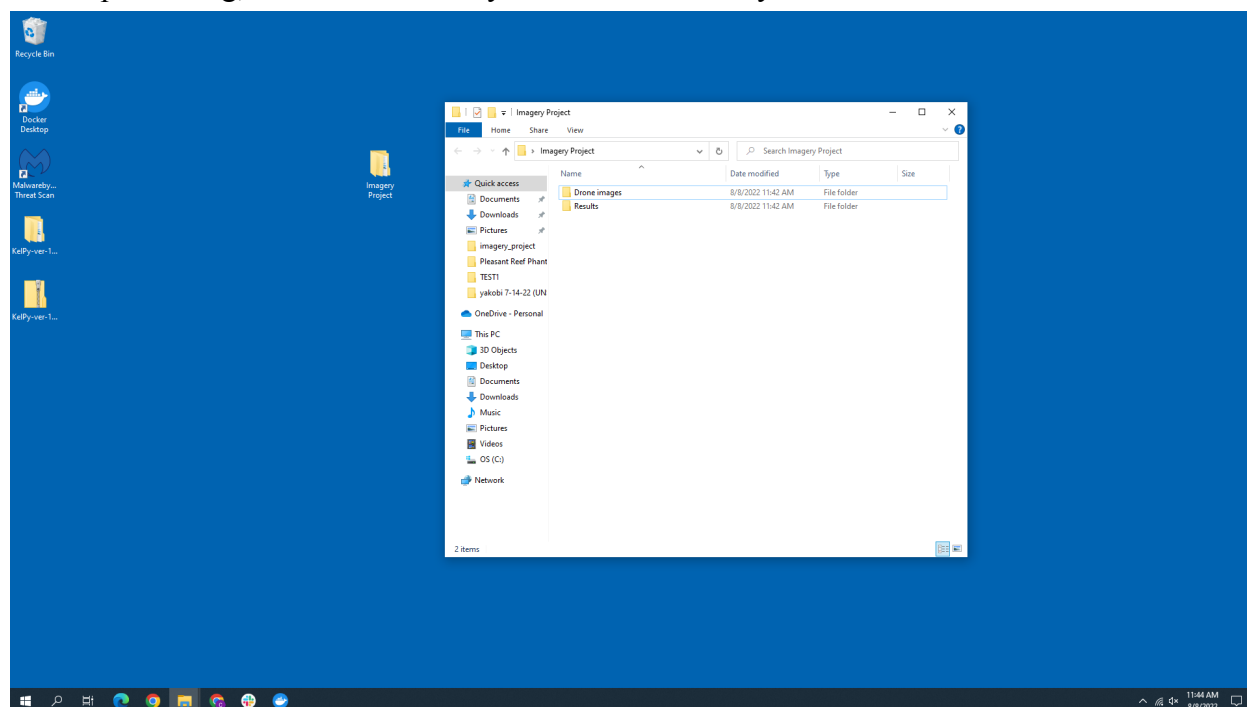
Name	Date modified	Type
attrs-23.1.0.dist-info	6/20/2023 1:17 PM	File folder
certifi	6/20/2023 1:17 PM	File folder
charset_normalizer	6/20/2023 1:17 PM	File folder
functorch	6/20/2023 1:17 PM	File folder
graphics	6/20/2023 1:17 PM	File folder
kelp_o_matic	6/20/2023 1:17 PM	File folder
markupsafe	6/20/2023 1:17 PM	File folder
numpy	6/20/2023 1:17 PM	File folder
PIL	6/20/2023 1:17 PM	File folder
rasterio	6/20/2023 1:17 PM	File folder
rasterio.libs	6/20/2023 1:17 PM	File folder
scipy	6/20/2023 1:17 PM	File folder
scipy.libs	6/20/2023 1:17 PM	File folder
setuptools-65.5.0.dist-info	6/20/2023 1:17 PM	File folder

Scroll down and double click on the executable. KelPy will start and look like this:

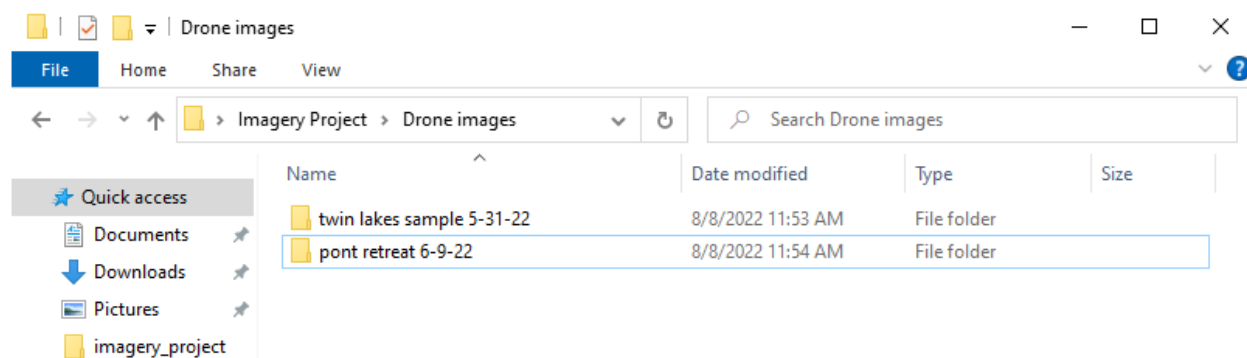


On launch, KelPy may have a console window accompanying it. This is a good way to check in on the progress of KelPy.

Before processing, I recommend that you create a folder layout similar to this:



As you can see, I have my Imagery Project folder on my Desktop, and within it I have two folders: Drone images and Results. The drone images folder holds the drone images and the results folder contains the results of KelPy. This is what my drone images folder looks like after I have placed 2 datasets in it:



KelPy Options

Image Folder

Image Folder:

This is how you select your drone images. Make sure that the only images in the folder are the drone images from the bed you want to process. Do not put in any other files in this folder besides images.

Download To

Download To:

This is how you designate a folder to hold your results to.

Results Folder Name

Results Folder Name:

This is what the results folder is called. KelPy will use this name for the download folder, inside the results folder specified with the “Download To” option.

Orthorectification options

Pixel buffer

Pixel Buffer (for glint masking):

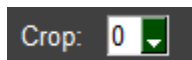
This is the pixel buffer selector. The default is 5. The higher the pixel buffer, the longer the processing.

Quality

Quality:

This is the quality selector. Higher quality orthomosaics will take more time to process. The default is high.

Crop


 A dark grey rectangular button with the text "Crop:" followed by a white box containing the number "0" and a small green downward arrow icon.


This is the crop option. Ideally, it will crop the orthomosaic to make it look nice and clean. Unfortunately, it tries to crop out all the water in a photo, including the kelp. Use at your own risk. The default is 0.

Feature-type algorithm


 A dark grey rectangular button with the text "Feature-type algorithm:" followed by a white box containing the word "sift" and a small green downward arrow icon.

This determines which algorithm is used when processing orthomosaics. Default is sift.

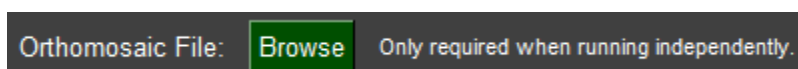
Run Orthorectification Independently Button


 A green rectangular button with the text "Run Orthorectification Independently" in white.

This will run the orthomosaic generator independently from kelp identification using the selected settings.

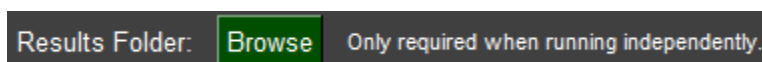
Kelp Identification (Kelpomatic) options

Orthomosaic File


 A dark grey rectangular button with the text "Orthomosaic File:" followed by a green "Browse" button and the text "Only required when running independently."

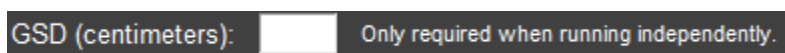
The orthomosaic file selector. Use this when you want to run kelp identification on an orthomosaic. As the text implies, this is only necessary when you are running identification independently.

Results Folder


 A dark grey rectangular button with the text "Results Folder:" followed by a green "Browse" button and the text "Only required when running independently."


The results folder selector. Use this as the place to store the data generated by kelp identification. As the text implies, this is only necessary when you are running identification independently.

GSD


 A dark grey rectangular button with the text "GSD (centimeters):" followed by a white input box and the text "Only required when running independently."

The GSD selector. GSD stands for ground sampling distance. This is the metric used when calculating surface area. If flying at 120 meters, GSD will be around 3.3 cm.

Species Classification

Species classification (default value false): 

The selector to determine whether the species classification should run during kelp identification. Red = Bull Kelp, Green = Giant Kelp.

Run Identification Independently

Run Identification Independently

This will run kelp identification with kelpomatic using the selected settings.

Run All

Run All

This button will run both orthorectification and identification back to back with the options selected. This is the most reliant way to get data from KelPy.

Addendum

Frequently Asked Questions

After running KelPy for many sessions, my computer starts to slow down/crash. Why does this happen?

This happens because the processing node does not have memory hard-cap. To hard-cap the memory usage of the processing node, go here: <https://github.com/Barnacle-Foods/KelPy/issues/3>

Error-Checking

If any errors occur, the best way to guarantee you are doing everything correctly is by going through a checklist.

1. Does your image folder only contain drone images and nothing else?
2. Have you selected the correct processing options in KelPy?

If you experience errors in processing, you have three options:

1. Go through the checklist to make sure there are no problems on your end.
2. Restart KelPy and try again. This can fix many problems encountered.
3. Check if your error is logged at:
<https://github.com/Barnacle-Foods/barnacle-imagery/issues>. If it is not, create a new issue. You can copy/paste the errors logged in the console to this issue tracker.