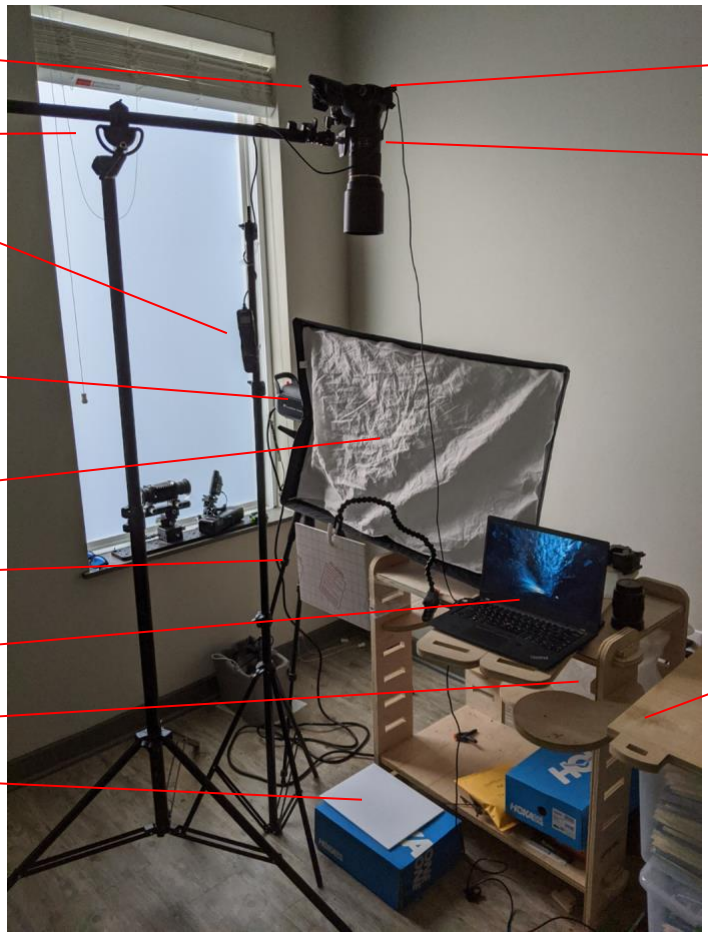

Pocket Wizard
Boom light
Separate light
Flashpoint
Primary diffuse
Diffuse reflector
Laptop for
Rear diffuse
Photo
Tamron 180mm
macro at f/25
Lichen


Duke

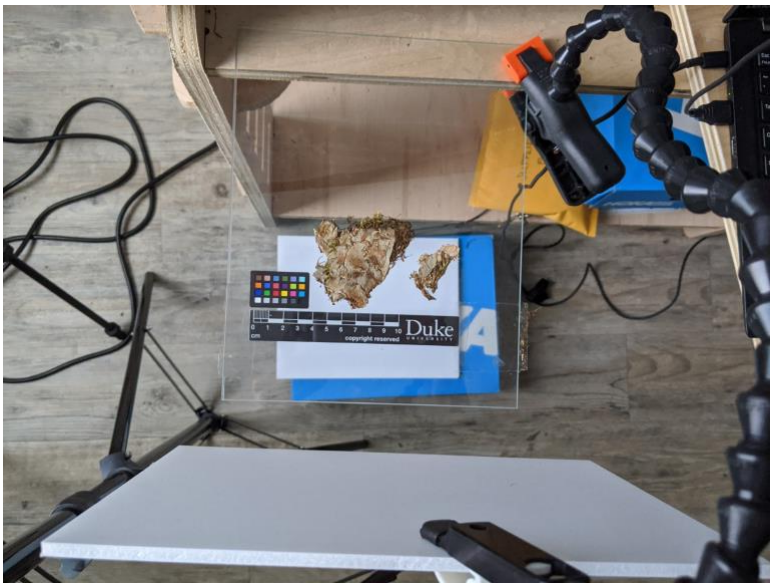
Step 1: Photograph barcode behind glass



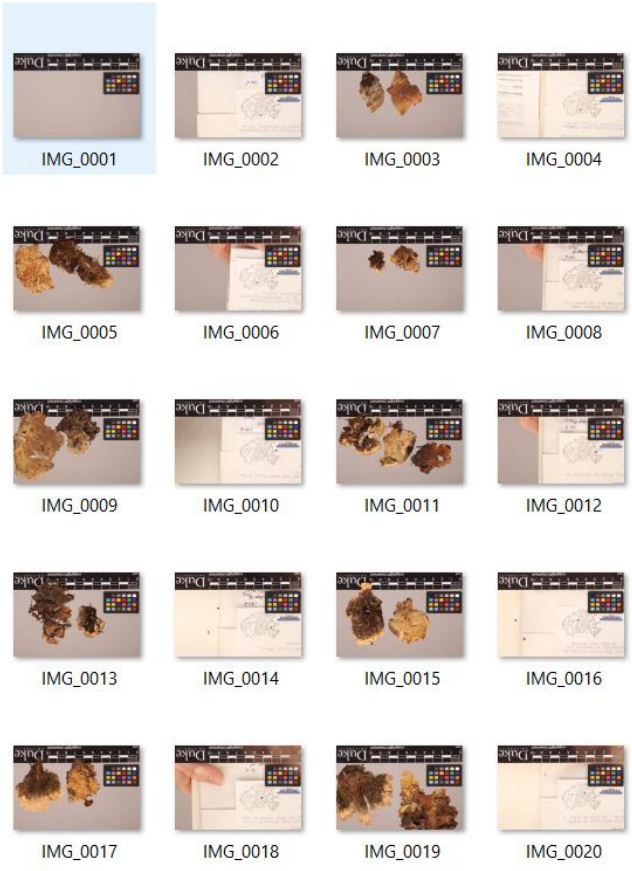
Step 2: select specimens from envelope



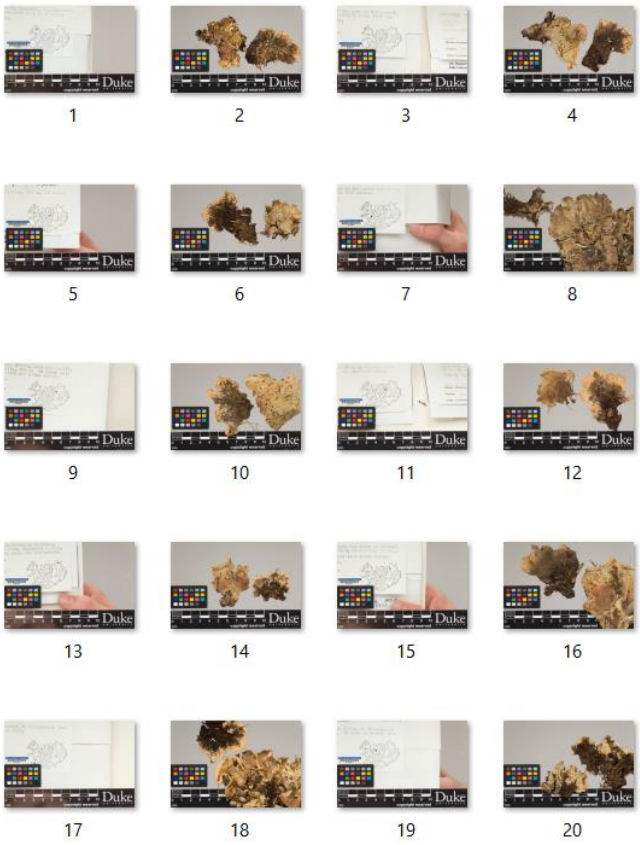
Step 3: photograph specimen on glass



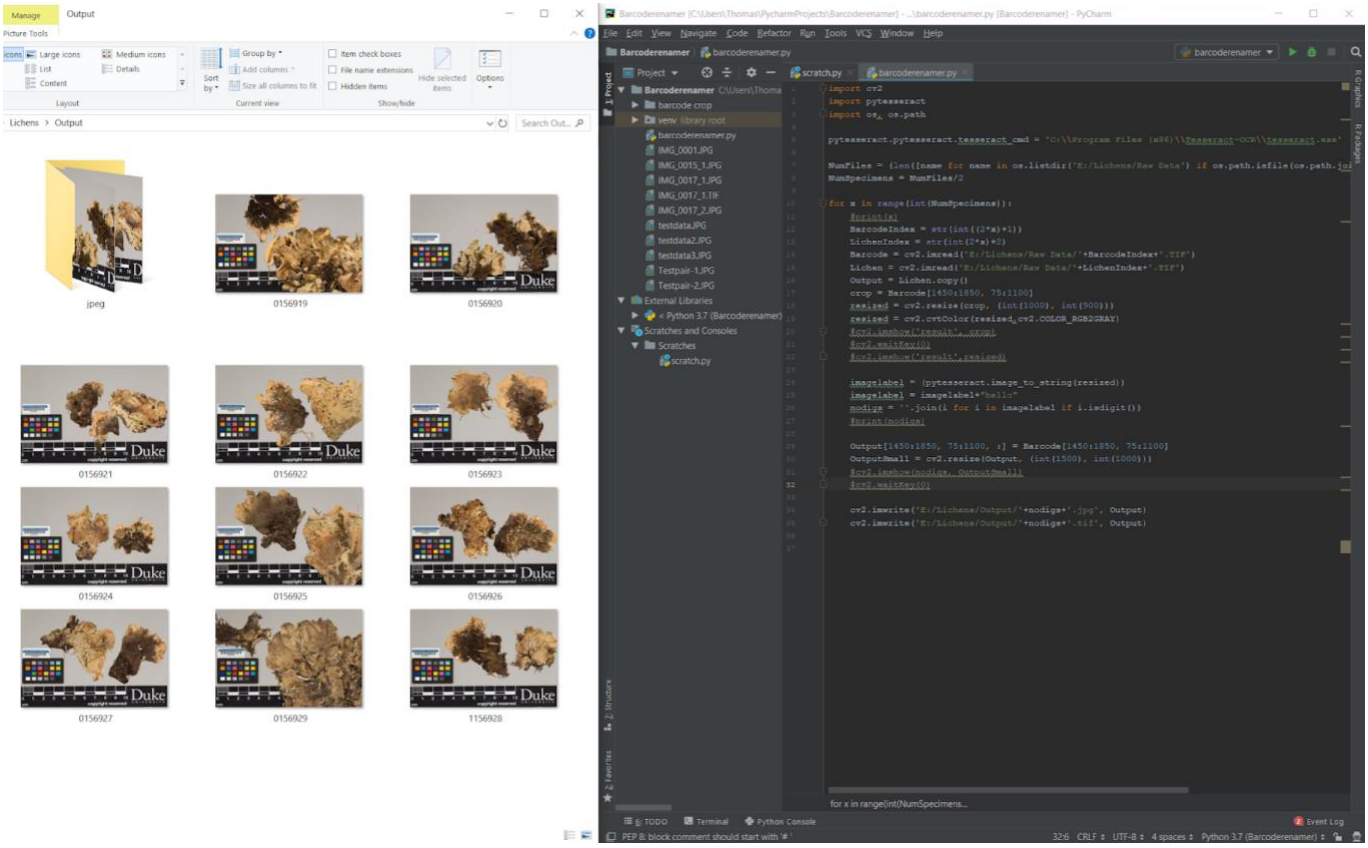
Raw data is alternating lichens and barcodes



Step 4: All photos imported into Lightroom for color correction, re-exported



Step 5: Using CV2 and Tesseract (Python), barcode superimposed on specimen, photograph renamed to specimen number, and image saved as both Tiff and Jpeg



Here is the Python script (written by Duke student who is doing this work) that transfers the barcode image to the specimen images, and then renames the image as the barcode number:

```
import cv2
import pytesseract
import os, os.path

pytesseract.pytesseract.tesseract_cmd = 'C:\\Program Files (x86)\\Tesseract-OCR\\tesseract.exe'
#pytesseract needs to be installed seperately

NumFiles = (len([name for name in os.listdir('E:/Lichens/2020_09_21 3/doubles/Export') if
os.path.isfile(os.path.join('E:/Lichens/2020_09_03/doubles/Export', name))]))
NumSpecimens = NumFiles/2

for x in range(int(NumSpecimens)):
    #print(x)
    BarcodeIndex = str(int((2*x)+1))
    LichenIndex = str(int(2*x)+2)
```

```
Date = str(2020_09_14)
Barcode = cv2.imread('E:/Lichens/2020_09_21 3/doubles/Export/'+BarcodeIndex+'.TIF')
Lichen = cv2.imread('E:/Lichens/2020_09_21 3/doubles/Export/'+LichenIndex+'.TIF')
Output = Lichen.copy()
crop = Barcode[1450:1850, 75:1100]
resized = cv2.resize(crop, (int(1000), int(900)))
resized = cv2.cvtColor(resized,cv2.COLOR_RGB2GRAY)
#Cropping, recoloring, and stretching the barcode seems to help pytesseract recognize the numbers

#cv2.imshow('result', crop)
#cv2.waitKey(0)
#cv2.imshow('result',resized)

imagelabel = (pytesseract.image_to_string(resized))
#imagelabel = imagelabel+"hello"
nochars = ''.join(i for i in imagelabel if i.isdigit())
#This removes all non-number characters from the pytesseract output
#print(nodigs)

Output[1450:1850, 75:1100, :] = Barcode[1450:1850, 75:1100]
#This moves the barcode onto the lichen photograph
#OutputSmall = cv2.resize(Output, (int(1500), int(1000)))

#cv2.imshow(nodigs, OutputSmall)
#cv2.waitKey(0)

cv2.imwrite('E:/Lichens/2020_09_21 3/doubles/Output/' + str(x) +" " + nochars + '.jpg', Output)
cv2.imwrite('E:/Lichens/2020_09_21 3/doubles/Output/' + str(x) +" " + nochars + '.tif', Output)
#save as tif and jpg

#rotated = cv2.rotate(resized, cv2.cv2.ROTATE_90_CLOCKWISE)
```

Typical output:

