IMAGES OF OPPORTUNITY IN ALGONQUIN PARK

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Images of Opportunity (IoOs) focus on the fascinating aspects of plant, animal, and fungus located in the area. Connections between increased vegetation and weather, along with animal sightings and their evidence were crucial. Vegetation was the most extensively recorded, with the amount of animal evidence being second, illustrating an increase in animals. After the analysis of data from the entirety of the Algonquin Park Expeditions, there was confirmation of the effective preservation of flora and fauna, as the amount of images for these topics were consistent with previous years.

I: INTRODUCTION

Throughout the Algonquin Park (AP) excursions, students conducted a variety of experiments regarding the soil, water, rock, tree, and animal characteristics in the park. One of these experiments was to take photographs of anything they found of interest on the trails or in sample stations. These photographs, known as Images of Opportunity (IoO), reflect upon the diverse plant, animal, and fungus life present in the park. They also show evidence of natural phenomena present in the wilderness. This paper examines the IoOs taken on the trips from AP 8 to AP 19, excluding AP 14 (due to lack of data available). It separates the IoOs into 6 categories and analyzes the correlation between the images taken in different years, focusing specifically on AP 19.

II: TASK PROCEDURE AND EXPECTATIONS

The documentation of IoOs have a few specific requirements to allow for easier analysis and categorization of the images. Each Field Investigation Team (FIT) was instructed to take a minimum of four IoOs at or on the trail leading to each sample station. The IoOs may be any natural object or organism that the team deems to be of interest, such as fungi or animal feces. No evidence of humans or human-made objects should be present in the image, except for a colour block. While the images may not be of the highest caliber, they must be in focus on a single specific object, and have no glare or angle. The only exception to these requirements is if the image is of a living organism, where it may be difficult to capture a clear shot before movement. To preserve the images, the IoOs must be saved onto the SD card of each FIT's camera. A description of the IoOs should be written in the "Notes" section of the Sample Station Report Form (SSRF) as well as the image number.

III: Categorization And Analysis Of Images

The IoOs have been sorted into six different categories: trees (including large holes in trees, dead logs etc.), vegetation (including fungi, moss, plants etc.), rocks, evidence of animals (including animal feces, footprints, fur etc.), live sightings of animals and insects, and miscellaneous images.The following images show examples of IoOs taken in AP 19.


Fig 1: Evidence of animals IoO A pile of white-tailed deer feces on the ground. Colour block included in IoO. Image taken in AP 19 by FIT 1 (Foxtrot Trail- Traverse 3, Sample Station 3)

Fig 2: Vegetation IoO Red Belt Conk (Fomitopsis pinicola) fungi growing on a log. Colour block included in IoO. Image taken in AP 19 by FIT 6 (Mizzy Lake Trail- Traverse 3, Sample Station 5)

Categorization Analysis Of AP 19

After counting and sorting all of the IoOs for the AP 19 trip, the following graph was made to display the percentage composition of each category:
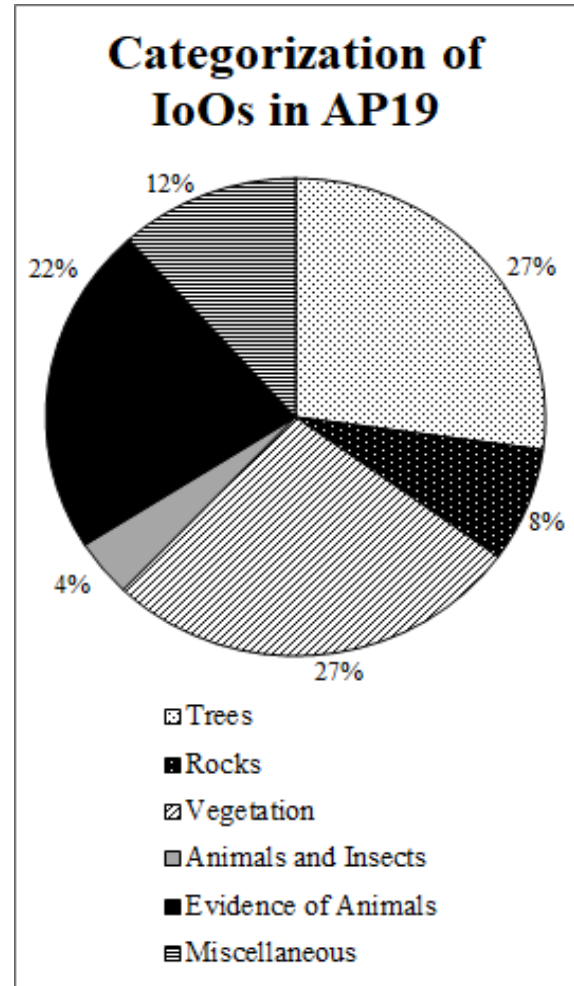
Fig 3: AP 19 Categorizations Pie graph displaying the percentage of each type of IoO taken on the AP 19 trip. As shown in the legend, each pattern represents a different categorization of IoO in the graph.

The categories with the most photos are trees and vegetation with 27% each, with the evidence of animals and insects being a close second at 22%. Due to the sheer size of many trees in the park and the forest habitats of the trails and sample stations, it was easy for students to document large hollows in trees or decaying logs—the two

most common image types within the tree category.

As shown in Figure 1, evidence of animals were also a prevalent type of IoOs. The main form of evidence that the students documented were animal feces—namely the white-tailed deer and the Eastern wolf. The white-tailed deer is the most widespread species of large mammal in southwestern Ontario, and they tend to give birth during May (Upper Thames River Conservation Authority, n.d.). This explains the amount of evidence for this species. The Eastern wolf populations are abundant in deciduous and mixed forest habitats and in areas where their main prey, the white-tailed deer, is common (Government of Ontario, 2014). Both of these factors are characteristic of the Algonquin Park area.

There was only one IoO taken of animal footprints (namely a moose). This may be due to environmental factors that could conceal animal tracks (e.g. rainfall). In addition, large animals have the tendency to avoid areas frequented by humans, such as a park trail.

IV: COMPARISON TO PREVIOUS AP TRIPS

All IoOs from AP 8 to AP 19 were categorized to draw connections between the percentage composition of each category over the years. The following stacked column graph was created in order to compare the data found.
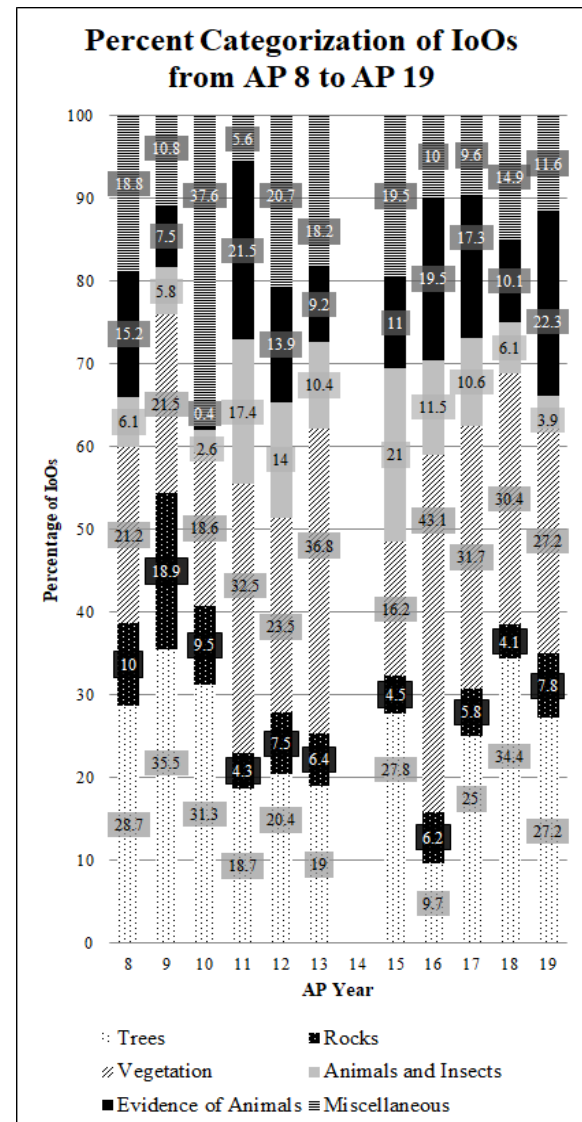
Fig 4: Comparison of categorizations Stacked bar graph comparing and contrasting the percentage composition of IoO categories from AP 8 to 19. Note that there is no data shown for AP 14 due to the insufficient amount of information available.

Over the years, the percentage of IoOs that have been classified as animal evidence have remained relatively stable with some fluctuations. This suggests that the amount of animals in the park continue to remain constant. This can be accredited to how Algonquin Park is a conservation area created to protect biodiversity in the region. Policies also ensure that recreation

performed within the park is ecologically sustainable. (Algonquin Provincial Park, n.d.)

Throughout the years, the percentages of live animal images have always been quite low compared to the other categories. As animals move quickly and generally evade humans, it is difficult to capture an image of them. Finding insects on a trail or during a sample station is also difficult as they are often too small to be noticed.

A category that has continuously had a large amount of IoOs each year is vegetation. Images of vegetation are easy to capture, and there are a large variety of fungi and moss that grow throughout the park.

CLIMATE AND VEGETATION

INDEX	AP YEAR	AVERAGE TEMPERATURE (°C)	PRECIPITATION
1	9	11.73	Heavy rain
2	10	18.68	Light rain
3	11	14.67	None
4	12	22.56	None
5	13	14.25	Light rain
6	15	17.50	Light rain
7	16	23.95	None
8	17	21.00	None
9	18	14.25	None
10	19	19.75	Light rain

Fig 5: Climate from AP 9 to 19 (excluding AP 14) Table listing the average temperature (°C) and precipitation during the AP Trips. Note that there is no data shown for AP 14 due to the insufficient amount of information available.
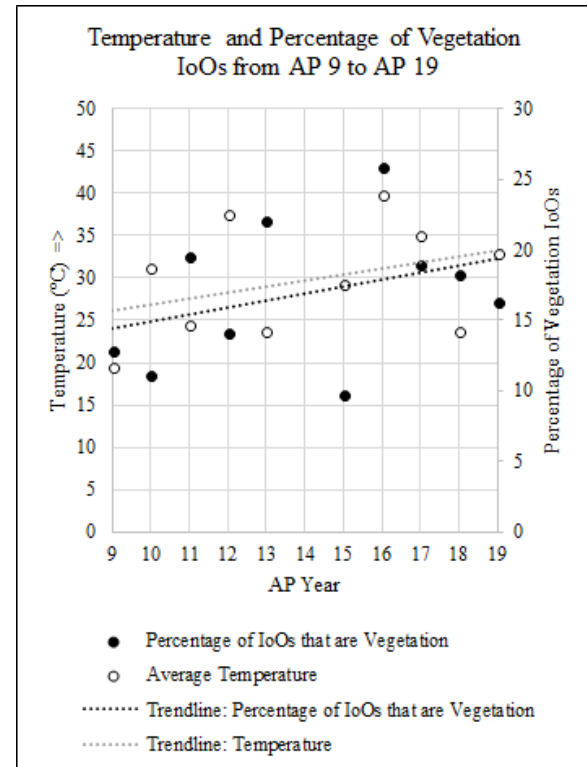
Fig 6: Percentage of Vegetation IoOs vs Temperature Scatter plot graph showing relations between average temperature of a trip and percentage of vegetation. Each circle represents a year, and the trend line best illustrates the correlation of the two factors.

The correlation between the average temperature and the number of vegetation images illustrate a trend. As the amount of vegetation images increase, so does the average temperature.

The high amount of vegetation photographs also can be attributed to the large number of fungi pictures that were taken at the park. This may be due to how the ideal growing conditions for fungi are moist and approximately at or above 20°C (Farson, 2010). The temperature in the Algonquin region during the AP 19 trip averaged 19.75°C, with some warm days at a temperature of over 20°C. There was also a small amount of precipitation (Fig 3). To contrast, the temperatures during AP 9 were much lower at an average of 11.73°C. There

was also heavy rainfall, leading to the smaller amount of documented fungi.

ANIMAL SIGHTINGS

There is a noticeable connection between the percentage of IoOs that indicate evidence of animals and the percentage of IoOs that are of either animals or insects. This illustrates that when evidence increased, it directly correlated with the greater amount of animals in the area.
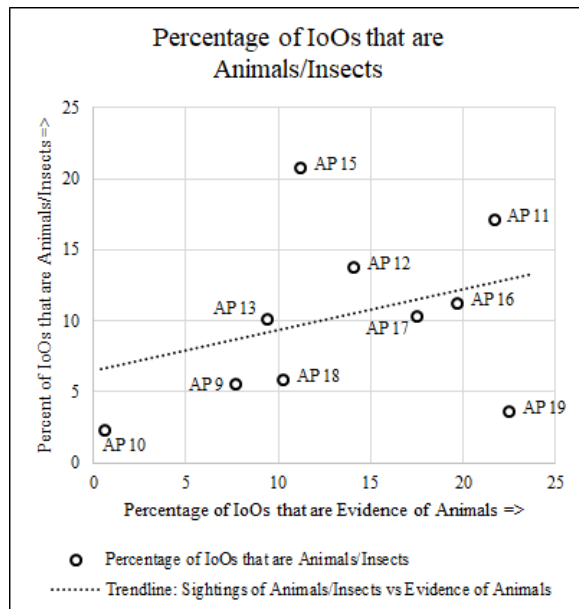
Fig 7: Percentage of Animal/Insect IoOs vs Evidence IoOs Scatter plot graph showing relations between the amount of animal and animal evidence images. Each circle represents the specified year, and the trend line best illustrates the correlation of the two factors.

However, significant outliers were AP 10, AP 15, and AP 19, as there were either high percentages of images that were evidence of animals and less of actual animals or insects, or vice versa. As it is impossible to prevent slight discrepancies with nature, factors mentioned previously like temperature or precipitation may have impacted the number of animals visible in the area.

CONNECTIONS TO THE AVERAGE AP TRIP
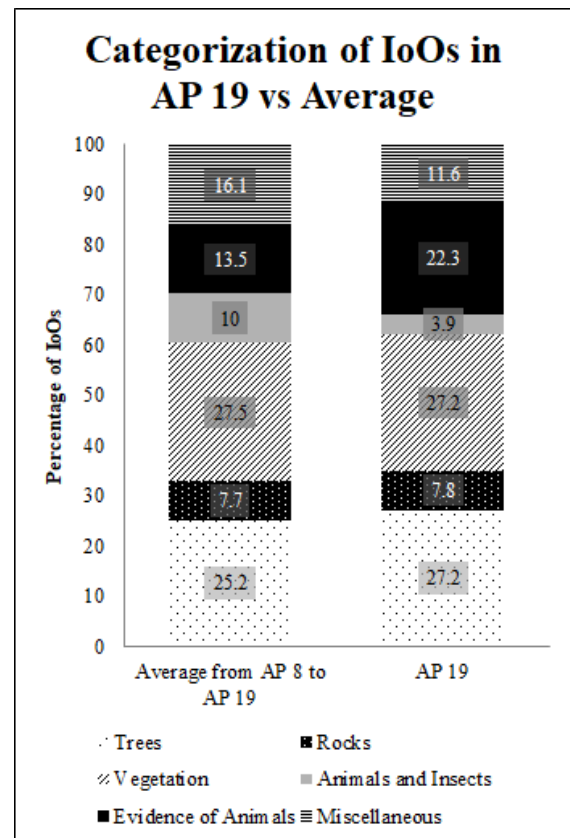
Fig 8: Comparison of categorizations Stacked bar graph comparing the percentage composition of each category in AP 19 and the average percentage composition of each category over all the AP expeditions.

The similarities between the AP 19 and previous years show that the IoOs closely reflect the average distribution per category of IoO. There is no clear explanation for the slight variations, as there are a abundance of both natural and human factors that could have caused them.

V: ERRORS AND RECOMMENDATIONS

A major issue was the lack of data from AP 14, as this may have affected the conclusions drawn from the information throughout the years. Furthermore, with the weather and percentage of certain types of IoOs constantly altering, the interpretation of data may have slight inconsistencies due

to natural occurrences.

In addition, in the images themselves, there was glare or blurriness present. Specifically, images from AP 15 which lacked colour blocks, along with the problems previously stated, may have led to possible misinterpretation of data. This issue can be resolved by having an increased number of practice sample stations and further feedback for future excursions.

VI: CONCLUSION

Similar to past years, AP 19 had the most IoOs that focused on images of vegetation, as the amount of flora tend to stay constant. Another significant factor was the immense evidence of animals. Although there were few IoOs of actual animals or insects, the animal evidence images illustrate a slight increase in the amount of animals present in Algonquin Park. The least common IoOs were animals or insects, which may be due to the constant rain during the excursion and their general avoidance of humans. Overall, in comparison to previous years, the data stayed consistent, and this signified that Algonquin Park's efforts for conservation were successful.

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