

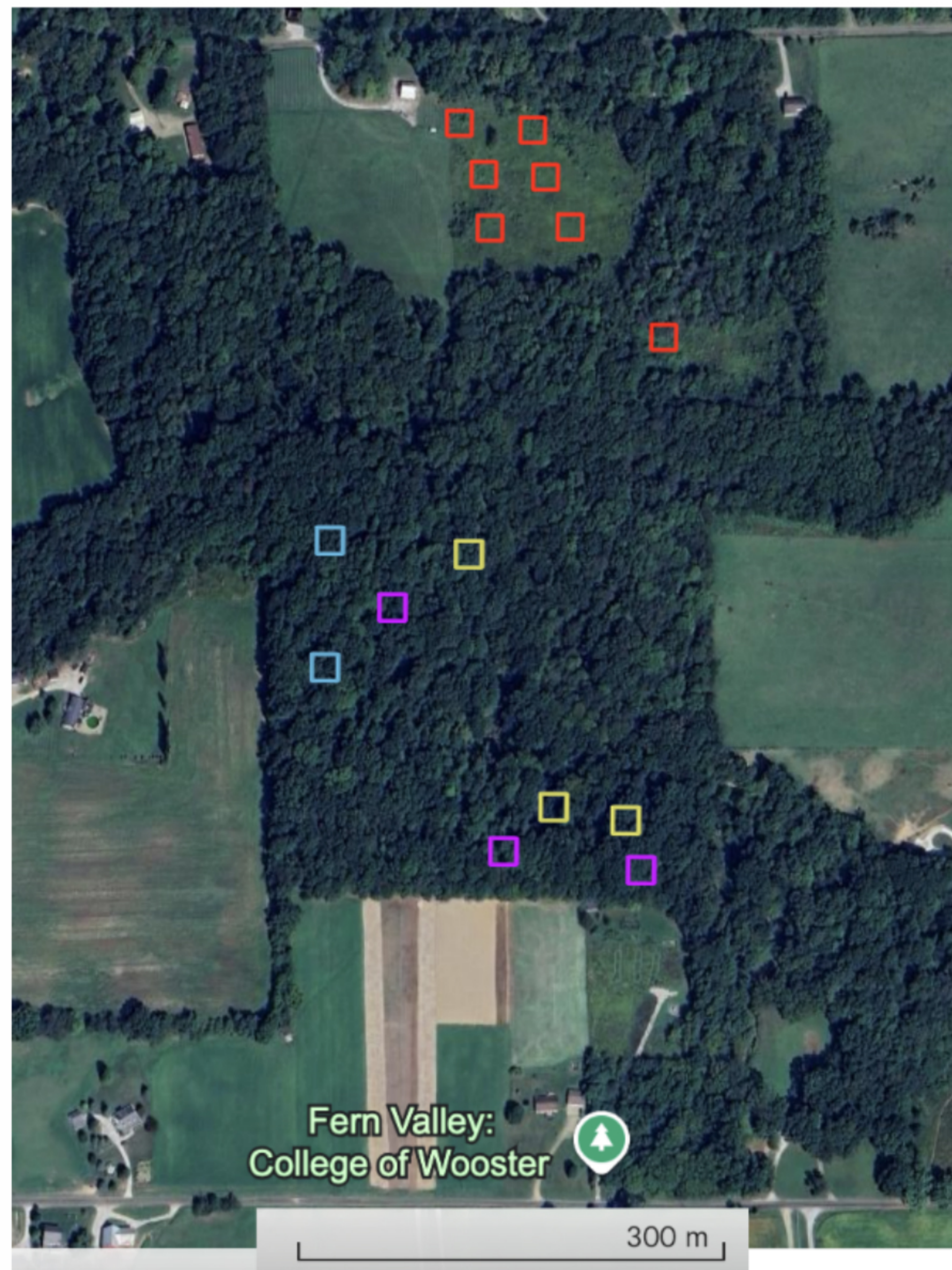
# TINY CREATURES OF GREAT IMPORTANCE: A Survey of Millipede Abundance and Occurance in Second-Growth Forests in Ohio

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## Methods

### Field Site

Fern Valley Field Station in Holmes County, Ohio, is a second-growth forest with both mature and regenerating sections, owned by the College of Wooster.



**Figure 1:** An overview of Fern Valley taken from Google Earth. Red squares indicate the approximate locations of coverboard sets investigated in the regenerating forest. In the mature forest, purple, yellow, and blue squares represent slope, floodplain, and ridgetop microhabitat coverboard locations.

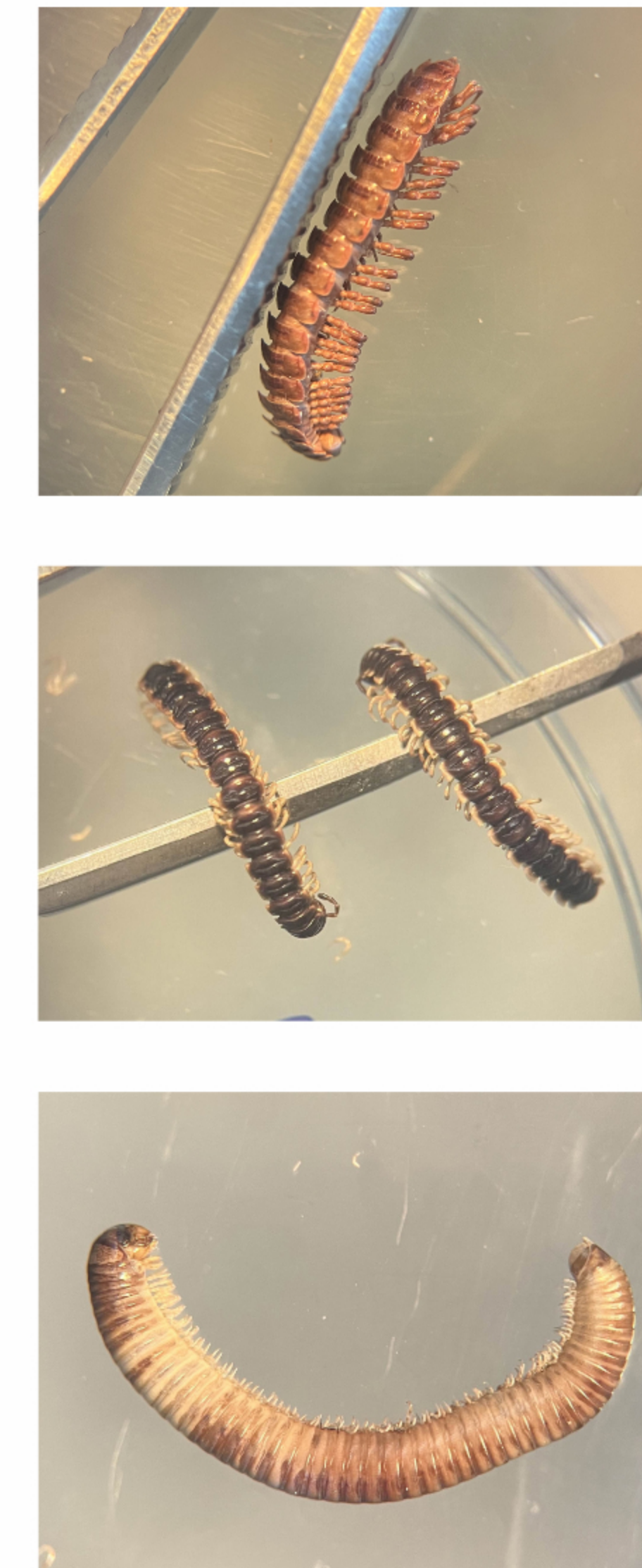
### Collection

Millipedes were sampled on-site on four occasions throughout October of 2024. Specimens were found by inspecting both natural (logs, foliage, etc.) and artificial (planks of untreated pine wood) cover objects. Millipedes found were collected by hand and placed into bottles of ethanol, brought to lab to be identified under a microscope using field guides and keys, and catalogued by date, location, and taxonomy in order to create a list of the taxa found on-site.

## Findings: Millipede Taxa

Total of Individuals Found Between Forest Types		
Taxon	Mature Forest	Regenerating Forest
<i>Cleidogona</i> sp.	3	4
<i>Ophiulus pilosus</i>	20	4
<i>Abacion</i> sp.	1	-
<i>Cylindroiulus</i> sp.	1	37
<i>Cylindroiulus punctatus</i>	2	5
<i>Oxidus gracilis</i>	2	4
<i>Petaserpes cryptocephalus</i>	2	-
<i>Trichopetalum lunatum</i>	1	-
<i>Ptyiulus impressus</i>	1	-
<i>Polydesmus inconstans</i>	-	1
<i>Pseudopolydesmus serratus</i>	-	2
<i>Conotylidae</i> sp.	-	1

**Figure 2:** A list of all taxa sampled at Fern Valley, and pictures of collected specimen examples. From top to bottom, millipedes shown are a pink flat-back millipede (*Pseudopolydesmus serratus*), greenhouse millipedes (*Oxidus gracilis*), and a blunt-tailed barrel millipede (*Cylindroiulus punctatus*).



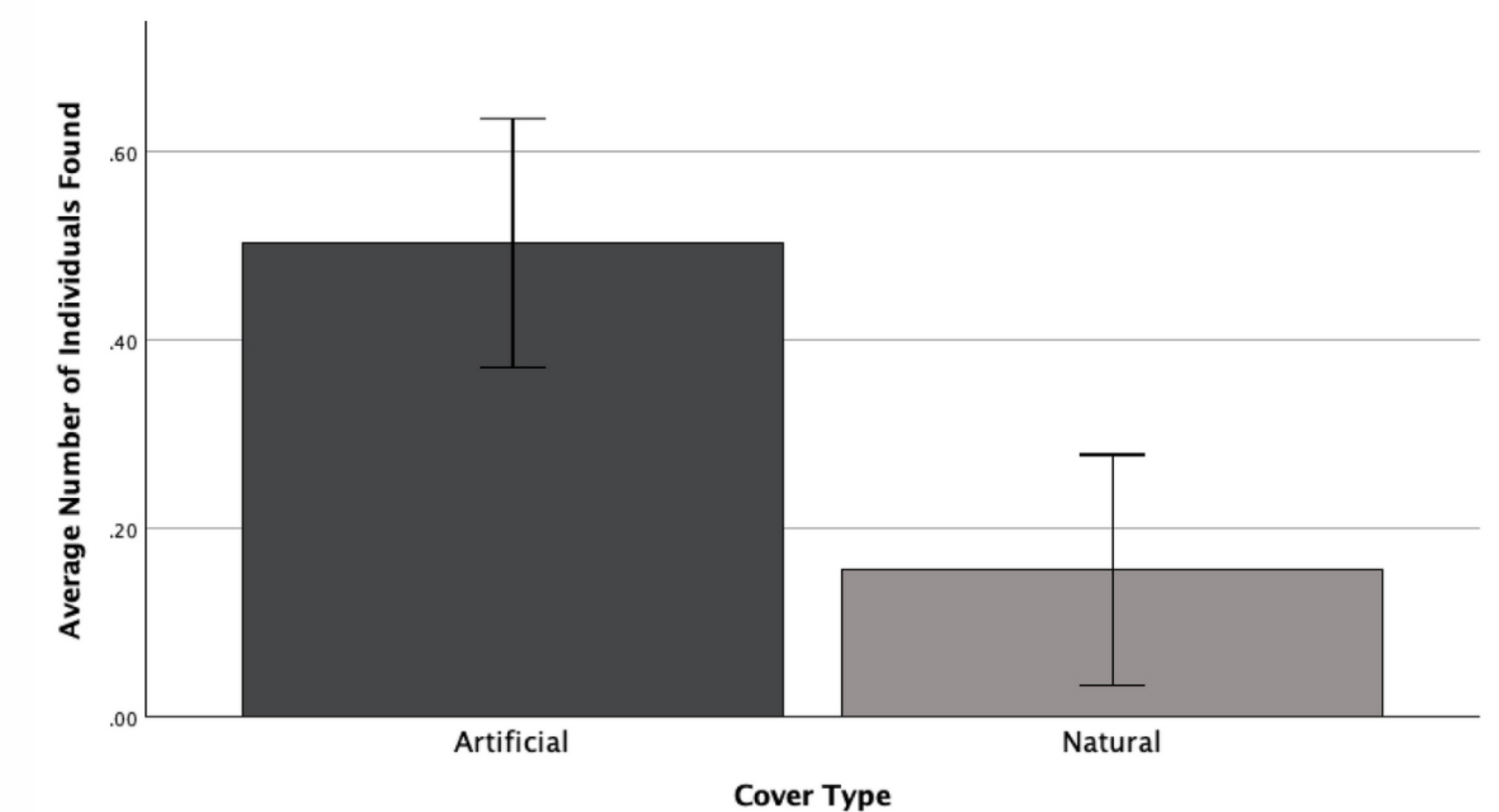
### Takeaways

- The species richness and abundance of millipede taxa were not found to be statistically significant between the mature and regenerating forest sections.
  - An average of 3.25 unique taxa were found in the mature forest compared to an average of 4.25 unique taxa found in the regenerating forest.
  - An average of 8.50 individual specimens were found in the mature forest compared to an average of 15.0 individual specimens found in the regenerating forest.
- While millipedes overall did not display a preference for mature or regenerating second-growth forests, some specific taxa were more common in one or the other.
- It appears that the implementation of cover boards could be a useful collection method for slow-moving arthropods such as millipedes, as seen by a higher collection rate than hand collection from natural cover.
- Based on the number of new species found on each day of sampling, it appears very likely that more millipede species are yet to have been found on-site.

## Findings: Future Work

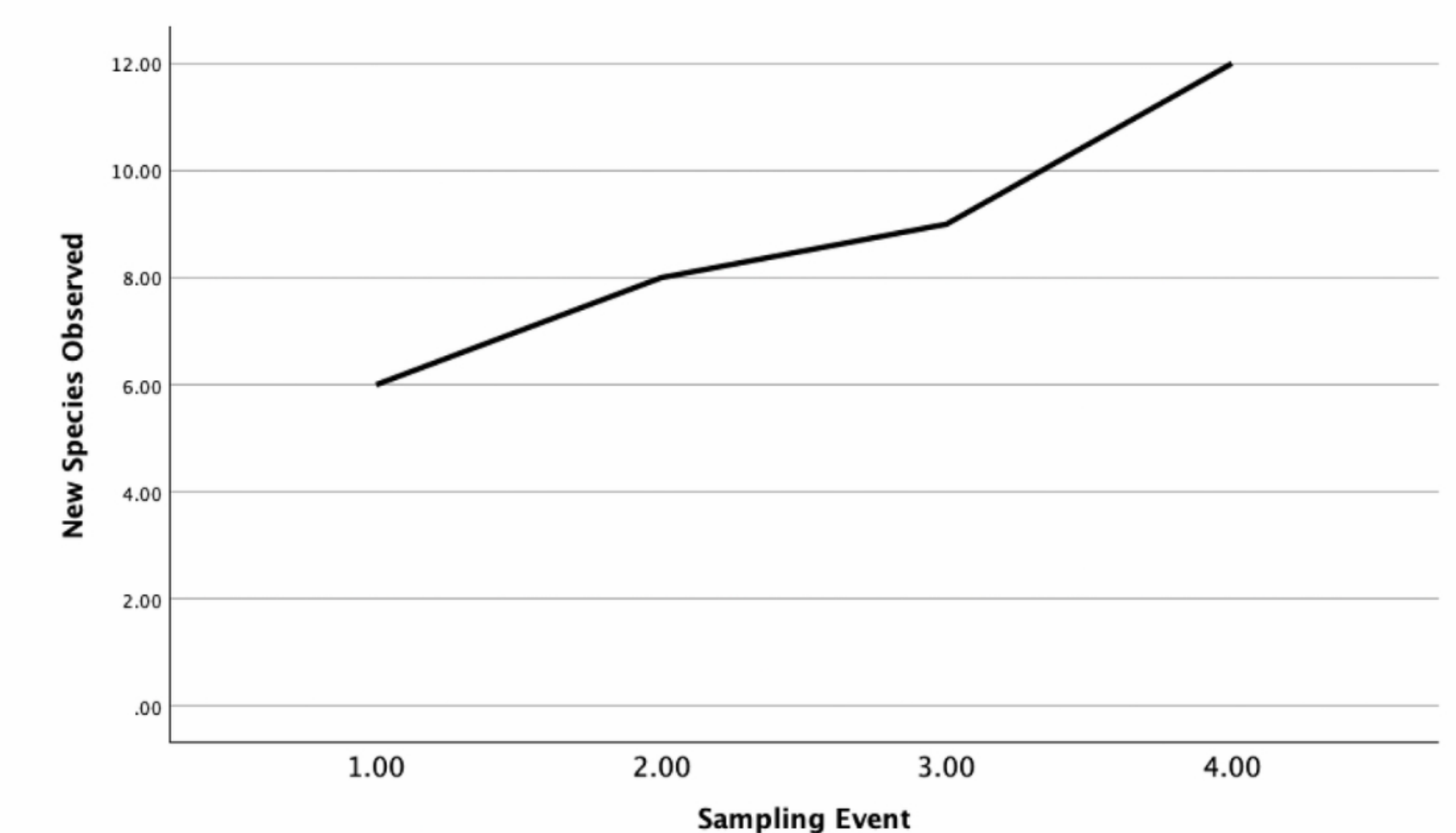
### Artificial Coverboards Compared to Natural Cover

The difference between the number of individuals found under natural cover compared to those found under artificial cover was found to be statistically significant ( $t = 3.554$ , degrees of freedom = 247,  $p < .001$ ). More individuals were found under artificial cover objects than natural ones.



**Figure 3:** For every piece of cover inspected, there was an average of 0.50 individual specimens found under artificial cover boards and an average of 0.16 individual specimens found under natural cover objects. Error bars shown represent a 95% CI.

### Species Accumulation Curve



**Figure 4:** During the first date of sampling (Oct. 1st), six taxa were found in total, taking data from both forest types. The next date (Oct. 16th) had two additional taxa found, the third date (Oct. 22nd) had one additional taxon found, and the last date of sampling (Oct. 31st) concluded with three additional taxa, totaling twelve over the course of the study.