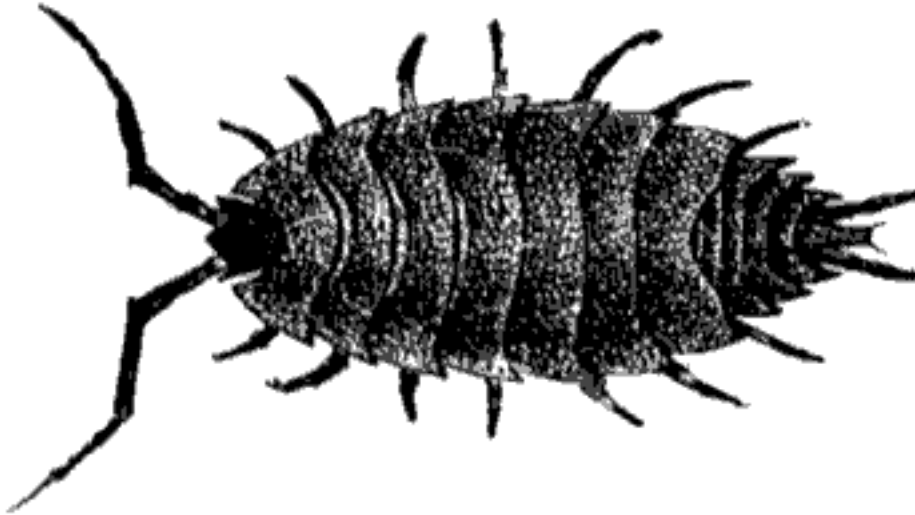


Hypothesis: Leaf litter with introduced sow bugs (isopods) will lose greater mass than leaf litter without the introduced sow bugs present because this shredder breaks down leaf litter, creating more surface area for bacteria and fungi, facilitating further breakdown processes.



Introduction: The soil nutrient cycle is affected by fallen leaves. While fungi and bacteria, microbiota, do the most work towards leaf litter breakdown, arthropoda shredders have a role as well. This study investigates to what extent shredders aid that process. A leaf litter study has been ongoing at the Andrews Experimental Forest LTER site for several years, including cross-site litter experiments between other LTER sites. Middle and High school teachers added the Forest Park site this year. Forest Park, located in Portland, Oregon city limits, is a tract of forested land covering 5100 acres, steep terrain, mixed conifer and deciduous forest. This was the only site to use the introduced sow bugs(isopods) into the leaf litter bags. (protocol on Ecoplexity.org)

Discussion: Two leaf types were in the study, red alder and Douglas fir.

Some leaf litter was placed on top of the soil and other samples were placed under the duff layer. Through *anova* tests conducted, the difference between above ground and below the duff layer was shown to have no correlation in mass loss. However, the difference between the two species of leaves was significant, with a *P-value* of 0.50. A subsequent *anova* test was administered to all the Douglas fir and red alder samples that were placed with and without sow bugs. No significance was seen, a *P-value* of 0.0079 showing little correlation.

Anova: Two-Factor With Replication

SUMMARY	df	alder	Total
<i>present</i>			
Count	6	6	12
Sum	68.317	134.5958	202.9128
Average	11.38617	22.43263	16.9094
Variance	10.91328	81.70885	75.38033

<i>above</i>			
Count	6	6	12
Sum	73.41813	149.9421	223.3602
Average	12.23635	24.99035	18.61335
Variance	1.977164	295.9414	179.7805

<i>Total</i>			
Count	12	12	
Sum	141.7351	284.5379	
Average	11.81126	23.71149	
Variance	6.056423	173.4434	

ANOVA

Source of Variat	SS	df	MS	F	P-value	F crit
Sample	17.42075	1	17.42075	0.178427	0.677235	4.351243
Columns	849.6925	1	849.6925	8.702729	0.007916	4.351243
Interaction	4.373497	1	4.373497	0.044794	0.834525	4.351243
Within	1952.704	20	97.63518			
Total	2824.19	23				

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Several problems were noted with the original experiment design. Four adult sow bugs (*armadillidium vulgarios*) were placed in six of each leaf litter types. These are European sow bugs, widely present in the Pacific Northwest. These adults were too large to get out of the 4mm netting bag, but upon opening the bags, several were no longer in the bags. No way to

know where they went, eaten by other predacious organisms, or what. Some offspring were present, but it is not known whether they lived for any length of time, how many were hatched or got out as they were little enough to escape the mesh. Also, how many sow bugs entered the bags, as there was a large adult sow bug in one of the litter bags at the HJA site that had not had any sow bugs placed inside prior to being put into the field, is unknown.

Conclusion: A much more controlled study needs to be conducted to see which leaves are preferred by the sow bugs and how much their shredding enhances the leaf litter decomposition cycle. This will have to be done in a controlled lab setting to get some baseline data before a field study can be conducted. Adding the sow bugs to the leaf litter did not show any significant difference in leaf litter decomposition rates based on mass loss. Species of leaves showed the only significant difference in decomposition rates.