

OFFICIAL ABSTRACT and CERTIFICATION

Decomposition of Polystyrene with Mealworms

Nicole Bennett

Saginaw Arts and Sciences Academy, Saginaw, MI, USA

There is an estimated 150 million metric tons that currently circulate our marine environments. Every year, 8 million metric tons of plastics enter our ocean. By 2050 there will be more plastic in the oceans than there are fish. One of the significant plastics is expanded polystyrene, or EPS. This is very commonly used due to it being useful for food containers, as well as insulation. It also is extremely difficult to break down. Scientists from Stanford University discovered that mealworms can break down the EPS. This study was performed to find the effectiveness of mealworms decomposing the EPS.

Two different species of mealworm, Tenebrio molitor and Zophobas morio were put under different conditions, with one gram of EPS. The conditions were the following: dark, light, 20°C, and 13°C. There were in total eight different combinations of conditions with the different species. The mealworms were then left for ten days, and the EPS was massed every day to record the change in mass.

An ANOVA test of the mass indicates that there was no significance between the different variables and species. However, there was a significant difference between the cost-effectiveness of Tenebrio molitor and Zophobas morio.

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