The Condition That *Lepidostoma Rambur* Make Their Houses

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Introduction

Lepidostoma Rambur is a kind of *Trichoptera*, *Lepidostomatidae*. The larvas live around fallen leaves in the river. They make their nests(called "case") using dead leaves, wood chips and so on. The choice depends on the species.

Purpose

Two years ago, I did research on *Lepidostoma Rambur*. The theme was "Observing If *Lepidostoma Rambur* Repair Nests or Not". At that time, I was not able to observe how to repair because they repaired while I slept. So I knew that *Lepidostoma Rambur* can repair their cases very quickly and have been interested in *Lepidostoma Rambur*. I decided to do two researches to understand *Lepidostoma Rambur* more. The first is "What Kind of Material Does *Lepidostoma Rambur* Use to Make Nests" and second is "When They Lost Their Nests, If They Rob Other Individual of Nests or Not".

Methods

EXPERIMENT 1

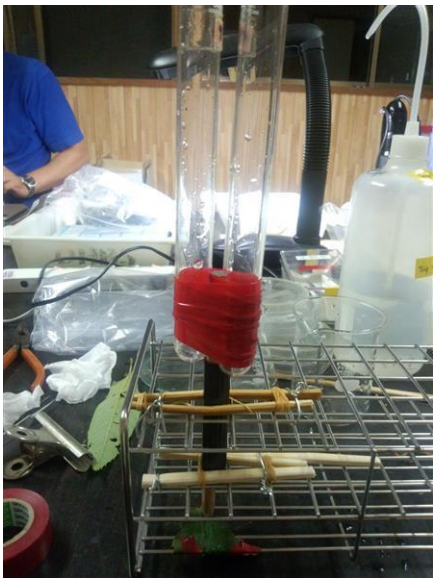
1.Measure strength and weight of materials

I selected four materials and cut them in 1cm×1cm.

Leaves:Chestnut(green, dead), Walnut

Plastic(PET bottle lavel)

※I saw a larva using artificial thing to make a case.



How to measure strength.(use the equipment of a previous page)

①set a material under the pencil

②power water until the pencil pierces materials

③measure total weight

How to measure weight.

①measure 5 pieces of materials

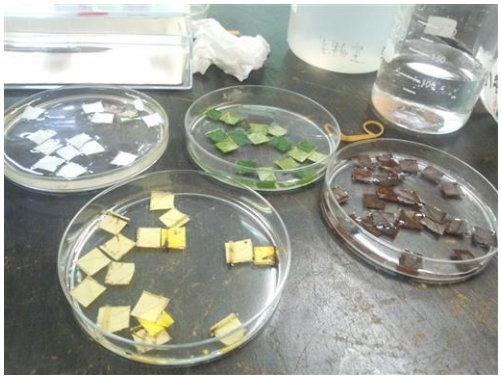
②take average

2.prepare twelve shales as the chart

	shale 1,2	shale 2,3	shale 5,6	shale 7,8	shale 9~12
30~40% destroy	G	B	Y	W	G B Y W
100% destroy	G	B	Y	W	G B Y W

※G(reen)→chestnut, B(rown)→dead chestnut, Y(ellow)→dead walnut, W(hite)→PET changed a level of destraction of cases

3.observed several hours



materials(1cm×1cm)

EXPERIMENT 2

1.prepare four larvae (two big one, and two small one)

2.put them as next chart

3.observe several hours

Shale 13	shale 14
Big(destroy)	Big
small	small (destroy)

.

Hypothesis

EXPERIMENT 1

I thought that soft material is weak but too hard material is difficult to design, so *Lepidostoma Rambur* chooses materials considering these condition.

EXPERIMENT 2

I thought *Lepidostoma Rambur* could not rob other's case at any time. But if it happens, it is very interesting, so I tried.

Result

EXPERIMENT 1

1.material data

	strengs(g)	weight(g)
chestnut	121.32	0.028
chestnut(dead)	102.26	0.012
walnut(dead)	61.61	0.022
plastic	over260	0.004

was not able to measure strength of plastic because it was too strong

2. Built cases or not

1 G 30~40 %	2 G 100 %	3 B 30~40 %	4 B 100 %	5 Y 30~40 %	6 Y 100 %	7 W 30~40 %	8 W 100 %	9 GB YW 30~40 %	10 GB YW 30~40 %	11 GB YW 100 %	12 GBY W 100 %
×	×	×	×	○	○	×	×	×	×	×	×

Shale 5

Shale 6

Lepidostoma Rambur

EXPERIMENT 2

shale 13	shale 14
×	×

Conclusion

1.strength of materials

walnut(dead)<chestnut(dead)<chestnut(green)<<plastic

2.weight of materials

plastic<walnut(dead)<chestnut(dead)<chestnut(green)

3.Walnut leaves can be used as a material of case.

4.I think that *Lepidostoma Rumbar* doesn't rob other's cases.

Why *Lepidostoma Rambur* didn't repair their cases except two larvae? I think two reasons. The first is they didn't have enough time to build their houses. It is certain that a larva of *Lepidostoma Rambur* can make case quickly, but not all individuals can. The second reason is that plastic and green leaves are too hard to use. They ware able to use walnut leaves. Walnut leaves are very fragile. And *Lepidostoma Rambur* was not able to rob other's case. I think *Lepidostoma Rambur* don't have to use other's case because they can easily make another case in natural environment. There are species that can use other individual's case, but they are predator. *Lepidostoma Rambur* is a shredder. Their position may be related.