

Preserving Akahiretabira

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Team 03

Background

Akahiretabira (*Acheilognathustabira subsp.R*)



Fig 1. Akahiretabira

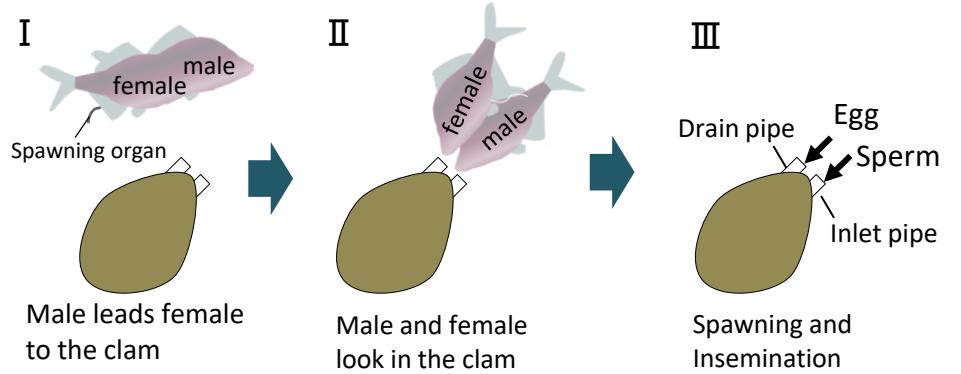
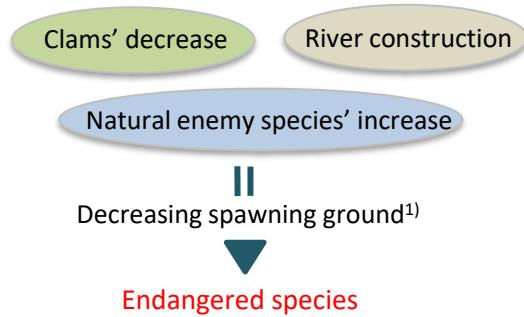


Fig 2. Spawning action of Akahiretabira

Purpose

To discover the condition of spawning action and Inventing the artificial spawning ground

- ▶ Have Akahiretabira spawn, and preserve

Materials and Methods

[Structure]

- Refer to real spawning and the previous study⁴⁾

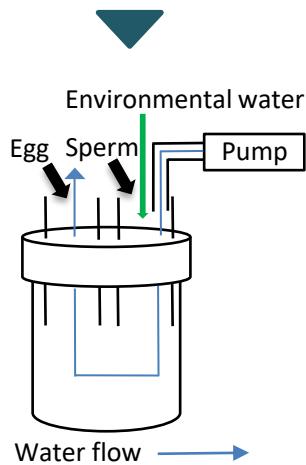


Fig 3. Artificial spawning ground

[Experiment target]



Fig4. Tairikubaratanago

- Tairikubaratanago 1male/4female
- Substitute of Akahiretabira
 - ① Easy to get
 - ② Spawning term is long
 - ③ Same spawning action

[Environment]

- Light/Dark cycle : 12h
- Temperature : 22~25°C⁴⁾
- Set clam to lead spawning³⁾

[Experiment 1]

Decrease water level to promote spawning action⁴⁾ ▶ Decrease water pressure

- Control pump by this program
- move: 7.0 s stop: 5.7 s (clam's breath pattern³⁾)

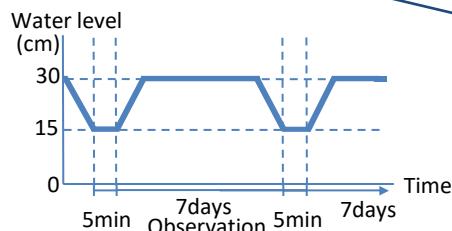


Fig5. Time schedule of water level

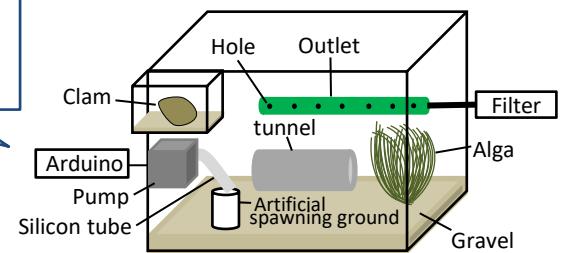


Fig 6. Water Tank (experiment 1)

- Decrease water level to half once a week (Keep the temperature)
- Back to the original water level 5 minutes later

[Experiment 2]

We discovered 4 eggs in the filter's outlet

- ▶ Filter always discharges water
- ▶ Control is unnecessary

- Without control (No Arduino)
- Observed 2 weeks

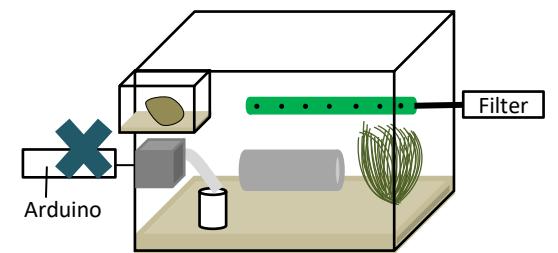


Fig 7. Water Tank (experiment 2)

Experiment 1

[Result] Table 1. Relationship between spawning organ and spawning

Experiment No.	1	2	3	4	5
Spawning organ observed	○	○	○	×	○
Spawning action	II	II	II	×	II
Spawning egg	×	×	×	×	×

- → Yes
- × → No
- II → figure2

- We observed spawning action around five.
- We didn't get spawn eggs.

[Discussion]

- They look into the clam (Fig.2,2nd action) when their spawning organ appears and water pressure decreases.

Experiment 2

[Result]



Fig 8. Egg of Tairikubaratanago

We got 8 eggs in our spawning ground

[Discussion]

- They spawn without interval of water incoming and outgoing.
- Outgoing water flow only is required

Conclusions

1. It effect for leading spawning action only when spawning organ appears

2. About condition of spawning
Not need: Interval of water incoming and outgoing

Need: right amount of water flow

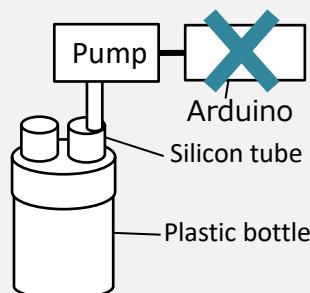


Fig 9. Schematic diagram of new device

Future work

- Making a simpler and more efficient device
- Making a hatching device
- Discovering the new condition of spawning action

To complete the device of artificial spawning ground
To increase the percentage of spawning

References

- 1) タナゴ類における新たな性ホルモンの同定と繁殖行動の解析 川端孝一
- 2) タナゴ大全 赤井裕, 秋山信彦, 上野輝彌, 葛島一美, 鈴木伸洋, 増田修, 藪本美孝
- 3) Preserving Akahiretabira Ito Gen, Tumuraya syuhei
- 4) Preserving Akahiretabira Furukawa Keito, Onoki Tomoya, Sakurada Taiga, Takahashi Kotarou, Miyazaki Mikihito