

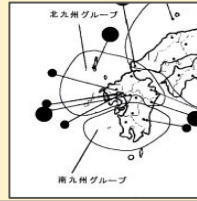
Establishment of Conservation Methods Based on the Luminescence Cycle of *Luciola Cruciata* and its Habitat

W202010-2 Kumamoto Prefectural Amakusa High School



1. Introduction

The luminescence cycle of fireflies in Amakusa has not been clarified.
We would like to clarify which type they belong to.



4. Considerations

The luminescence cycle
• Amakusa's fireflies are 3-second type.

Temperature
• The luminescence cycle shortens as temperature rises.
→ **Negative influence on firefly growth**

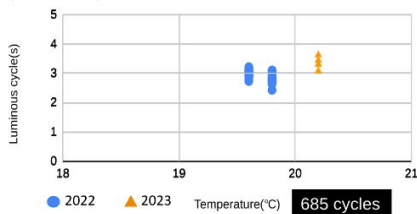
Moonlight
• The brighter the light, the longer the luminescence cycle
→ **Humans have a negative influence on firefly spawning.**

We want to make shelters for fireflies.

~Research~

2. Luminescence

Focused Graph of Fireflies Around 20°C (Kawaura)



The average luminescence cycle is **2.92 seconds**, which is of the **3-second type**.

5. Conservation Activities

A trial shelter

It is far from the best habitat condition...

Grow more plants to verify its protective effect

Our shelters

a new way of protecting the environment with less negative influence.

Achievable!

6. Symposiums

What is the symposium?

- Communicate with people about our activities
 - Share our ideas with others
 - Connect to future activities
- Local people experienced planting of eelgrass

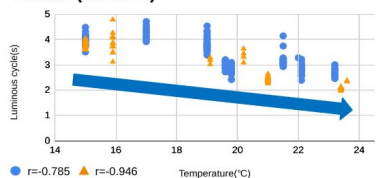
Next

A symposium on global warming



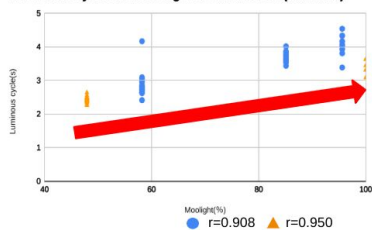
3. Relationship with Temperature and Brightness

Luminous Cycle vs. Temperature of All Fireflies (Kawaura)



The luminescence cycle shortens as temperature rises.

Luminous Cycle vs. Moonlight of All Fireflies (Kawaura)



The brighter the light, the longer the luminescence cycle.



7. Future prospects

- Examine DNA
→ Clarify which type of firefly in Amakusa belongs to; Northern Kyushu or Southern Kyushu
- Environmental DNA survey
→ What is a good habitat for fireflies?
- Measurement of luminescence cycle
→ Measure in two new spots in Amakusa

References

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- ③ Nobuyoshi Ohba (2001). "Geographic variation in morphology and luminescence patterns of *Luciola cruciata*" Japan Association for Fireflies Research
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- ⑤ Yutaka Iguchi (1989). "Emission Patterns of Native Genji Fireflies (*Luciola cruciata*) in Tatsuno Town, Nagano Prefecture, Japan" Japan Association for Fireflies Research
- ⑥ Mamoru Miyashita (2011). "Effects of LED Illumination on the Spawning of Genji Fireflies and Heike Fireflies." Japan Society of Civil Engineers