

## Determine of host-parasitic relationship of freshwater parasites using stable isotope analysis

\*Kei Kinoshita<sup>1</sup>, Keitaro Fukushima<sup>1</sup>, Yuji Onishi<sup>1</sup>, Keisuke Koba<sup>1</sup>

1. Department of biology, Graduate School of Science, Kyoto University

There are ubiquity of parasites all ecosystems, and it is said that they account for more than half of the species on earth. In Lake Biwa, more than 100 species of parasites have been reported, including trematoda, cestoda, acanthocephalans, and crustaceans. These parasites cause behavioral changes and trait changes in the host, directly and indirectly affecting the food web structure and material cycle of ecosystems. Stable carbon and nitrogen isotope measurement is widely used as a method to elucidate the material cycle and food web of ecosystems. It is known that the stable isotope ratio between carbon and nitrogen is enriched as the trophic level increases in the predator-prey relationship. On the other hand, it is suggested that the “host-parasite” relationship may be different from the conventional “predator-prey” relationship, even though the host is used as a resource.

Therefore we will measure the trophic relationship between parasites and host organisms using stable isotopes to elucidate the trophic level of parasites.

Cyprinid fish collected in Lake Biwa were dissected, and parasites were collected from the oral cavity, gills, swimwear, and digestive tract. The gills, swimwear, digestive tract, and muscle were removed from the host. All samples were lyophilized, powdered and measured. The measurement was performed using EA / IRMS, and  $\Delta 13C$  and  $\Delta 15N$  of the sample were measured. In addition, EA-IRMS was partially modified to measure microparasites one.

Crustaceans, monogenea, trematoda (larvae, adults), and acanthocephalans were found in *Opsariichthys uncirostris*.  $\Delta 13C$  and  $\delta 15N$  of the collected crustaceans, trematoda and acanthocephalans were measured. All the measured parasites showed negative values in  $\Delta 13C$  and  $\Delta 15N$ . We discuss these results.