Abstracts of oral presentations on the 64 Annual Meeting of

Ecological Society Japan (2017, March, Waseda University, Tokyo)

- **Can we detect distribution and quantify biomass of Itou (*Parahucho perryi*) by using eDNA?**
- *Hiroki MIZUMOTO（Laboratory of Animal Ecology Research Faculty of Agriculture, Hokkaido University）, Hitoshi Araki（Laboratory of Animal Ecology Research Faculty of Agriculture, Hokkaido University）, Hirokazu Urabe（Hokkaido Research Organization, Fisheries Research Department, Salmon and Freshwater Fisheries Research Institute）, Michio Fukushima（Center for Environmental Biology and Ecosystem Studies, National Institute for Environmental Studies, Japan）
- An environmental DNA (eDNA) technique, which utilizes DNA from water samples to identify vertebrate species in the wild, was first reported in 2008. Since then, the technology has developed drastically all over the world. This new technique provides for strong detectability of rare or alien species. It is especially useful because the basic information (ex. habitats, behaviors, or niches) of these kinds of species is often unclear. Furthermore, this eDNA technique reduces sampling efforts, making it easier to take replicates or track seasonal changes. Despite these benefits, there are some problems for quantifying the biomass of target species using this technique, so it is still an impractical tool for detecting the distribution and biomass at the same time.
  In the Sarufutsu river, we collected water samples and set-up sonar equipment for counting adult Sakhalin taimen (*Parahucho perryi*) during their spawning seasons. For this presentation, we will show the results of stationary sampling for Sakhalin taimen in this river and we will discuss the applicability of eDNA techniques for monitoring temporal distribution and biomass simultaneously by comparing the amount of detected eDNA and the number of fish.

Environmental DNA as an ecological tool for salmonid fish distribution

- *ARAKI, Hitoshi（Hokkaido University）, Kanbe, Takashi（Hokkaido University）, Mizumoto, Hiroki（Hokkaido University）, Takahara, Teruhiko（Shimane University）, Minamoto, Toshifumi（Kobe University）
- Environmental DNA (e-DNA) is an emerging tool for species detection in natural waters. This method has been utilized to identify rare species of fish, amphibians, etc. For understanding fish distribution and their biomass in natural environments, however, there are many uncertainties around the new method yet. In this presentation, I will briefly summarize the current status of the e-DNA method, and discuss its limitations. I also introduce our own studies for detecting salmonid species in Japan as case studies, arguing that the spatio-temporal variations of fish abundance would be captured by this method at the specific ranges. Limiting factors for the e-DNA detection range will be discussed.