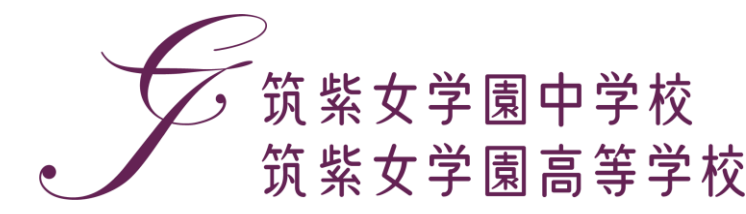


IDENTIFICATION OF OTTER FEEDING HABITS AND CONFLICTS WITH PADDY FIELD STAKEHOLDERS IN PERAK, MALAYSIA

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Introduction

- Paddy fields in Perak, Malaysia, are used for multiple purposes other than cultivation. Irrigation for aquaculture; Catching fish for consumption
- Two species of otters live in Paddy field of Perak.
 - smooth-coated otter *Lutrogale perspicillata*
 - Asian small-clawed otter *Aonyx cinereus*
- Otters prey on small animals like fish, crustaceans, and mollusks. So, they have potentially conflict over food resources between humans and otters
- Otters may also prey on golden apple snails (*Pomacea canaliculate*) which make damage for rice. Also, they have potentially as beneficial animals for rice cultivation

Objective

To understand the feeding habit of otters such as fish, shellfish, and mollusk
Clarifying whether otters are beneficial or harmful to us.

Results and Discussion

Experiment 1

- We collected 25 fish, 2 crustacean, and 3 shellfish species: total 30 species for local DNA database (Fig. 2)

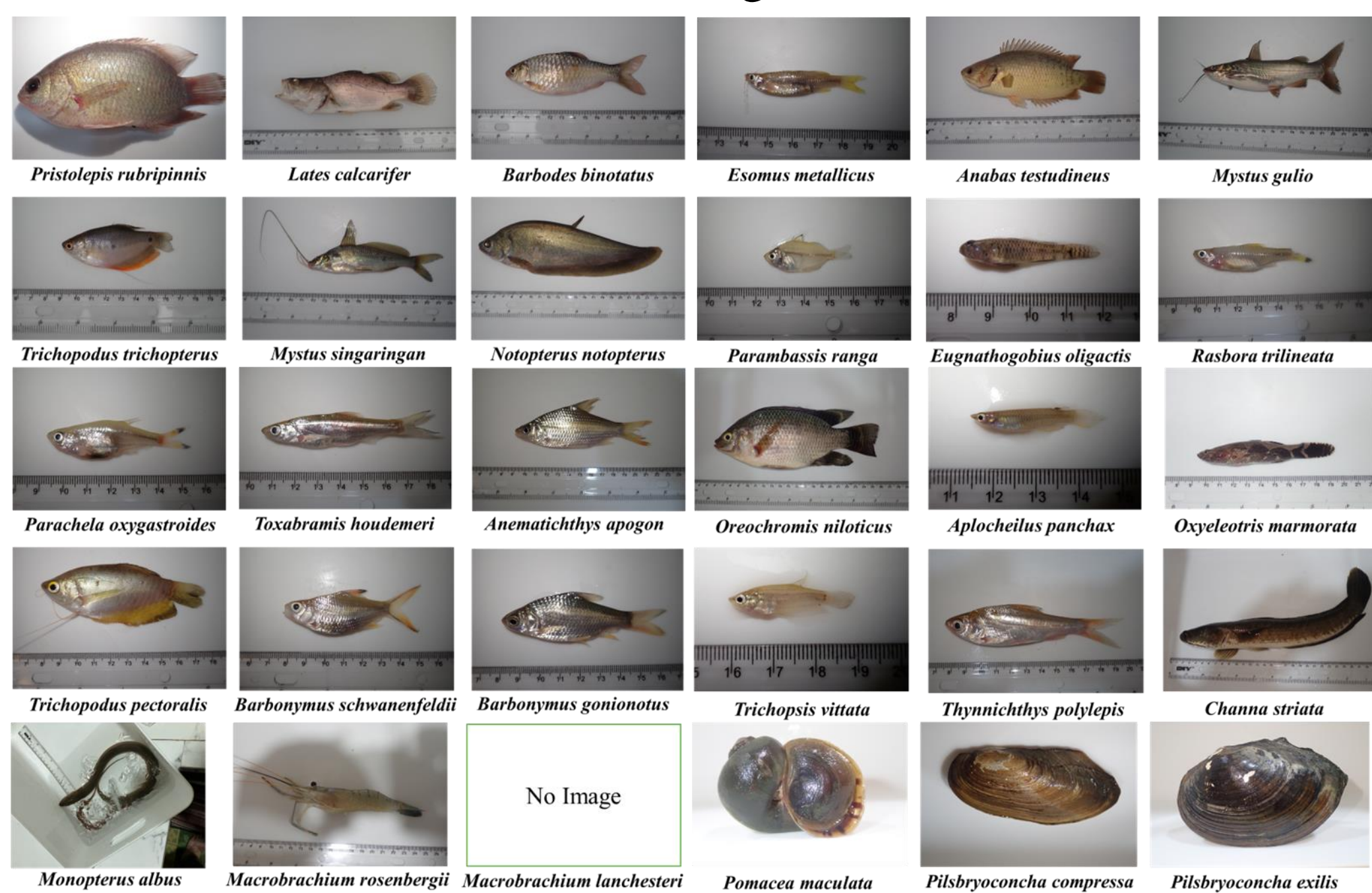


Fig. 2 List of Collected Small Animals

Discussion

- Otters eat fish as their staple diet (highly piscivorous)
- Based on the dietary analysis, it is suggested that the majority of otters in the study area are smooth-coated otter
- Approximately 66% of the detected reads were from common edible fish, indicating potential conflict

Materials and Methods

Study Period and Study Sites

- Experiment 1: total 7 days December 2023 and August 2024
- Experiment 2: total 33 days covering both the rainy and dry seasons
- Study sites is Fig. 4



Fig. 4 Study Sites of Perak, Peninsula Malaysia

Primer Pairs

Table. 1. Primer information

| Set | Primer name | Sequence 5'-3' | Target Region | Target Animal | Amplicon Size (bp) | Reference |
|--------|-------------|-----------------------------|---------------|------------------|--------------------|----------------------|
| Set. 1 | MiFish-U_F | GTCGGTAAAACTCGTGCCAGC | 12S rRNA | Fish | 163 - 185 | Miya et al. (2015) |
| | MiFish-U_R | CATAGTGGGGTATCTAATCCCAGTTTG | | | | |
| Set. 2 | MiDeca_F | GGACGATAAGACCCATAAAA | 16S rRNA | Crustacean | 210 | Komai et al. (2019) |
| | MiDeca_R | TGAAATCCCTATTGTCGCA | | | | |
| Set. 3 | MOL16S_F | RRWRGACRAGAAGACCCT | 16S rRNA | Mollusk | 183 - 310 | Klymus et al. (2017) |
| | MOL16S_R | ARTCCAACATCGAGGT | | | | |
| Set. 4 | SPH16S_F | TAGGGGAAGGTATGAATGGTTTG | 16S rRNA | sphaeriid mussel | 183 - 310 | Klymus et al. (2017) |
| | SPH16S_R | ACATCGAGGTCGCAACC | | | | |

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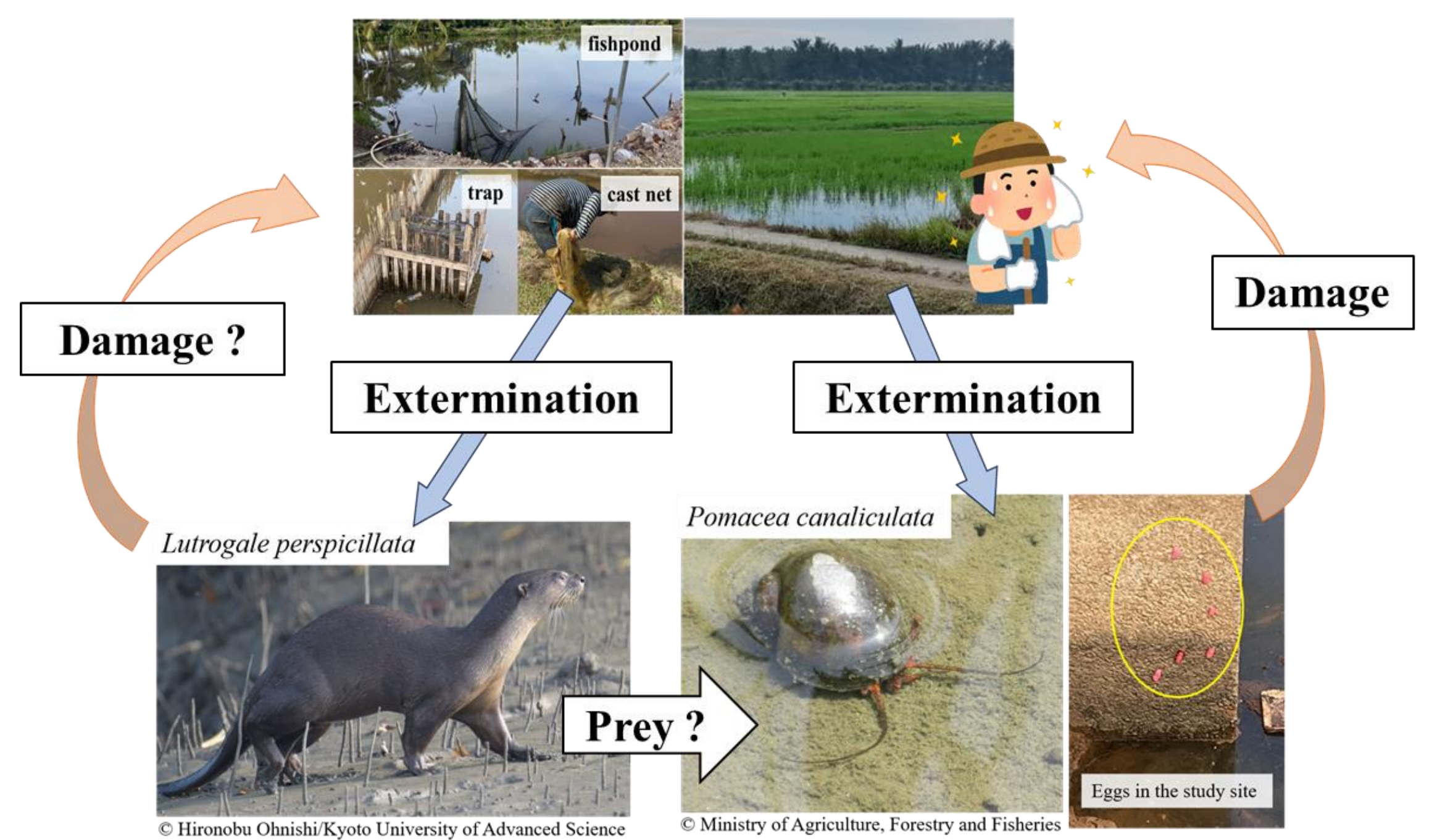


Fig. 1 Stakeholders' Relationships in the Rice Paddy field of Perak, Malaysia

Experiment 2

- 72 fecal samples were collected
- Only 15 fish species exceeded a total of 4,000 reads. (Fig. 3)
- Feces near fish farms: 100% from tilapia (*Oreochromis niloticus*)
- Feces in rivers: Dominated by *Trichopodus trichopterus*

Alignment Search results: Total 1.55 million Reads from fish

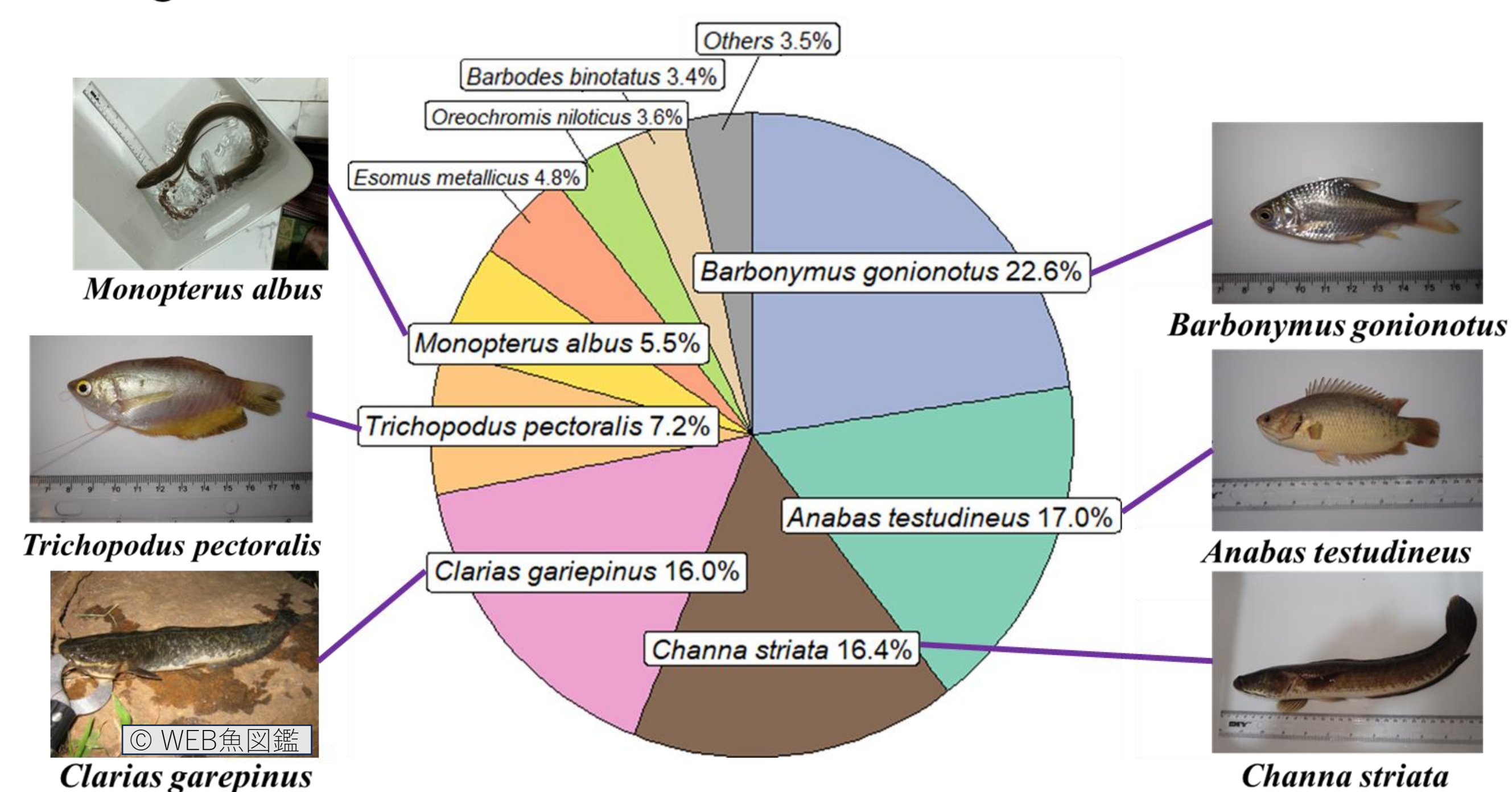
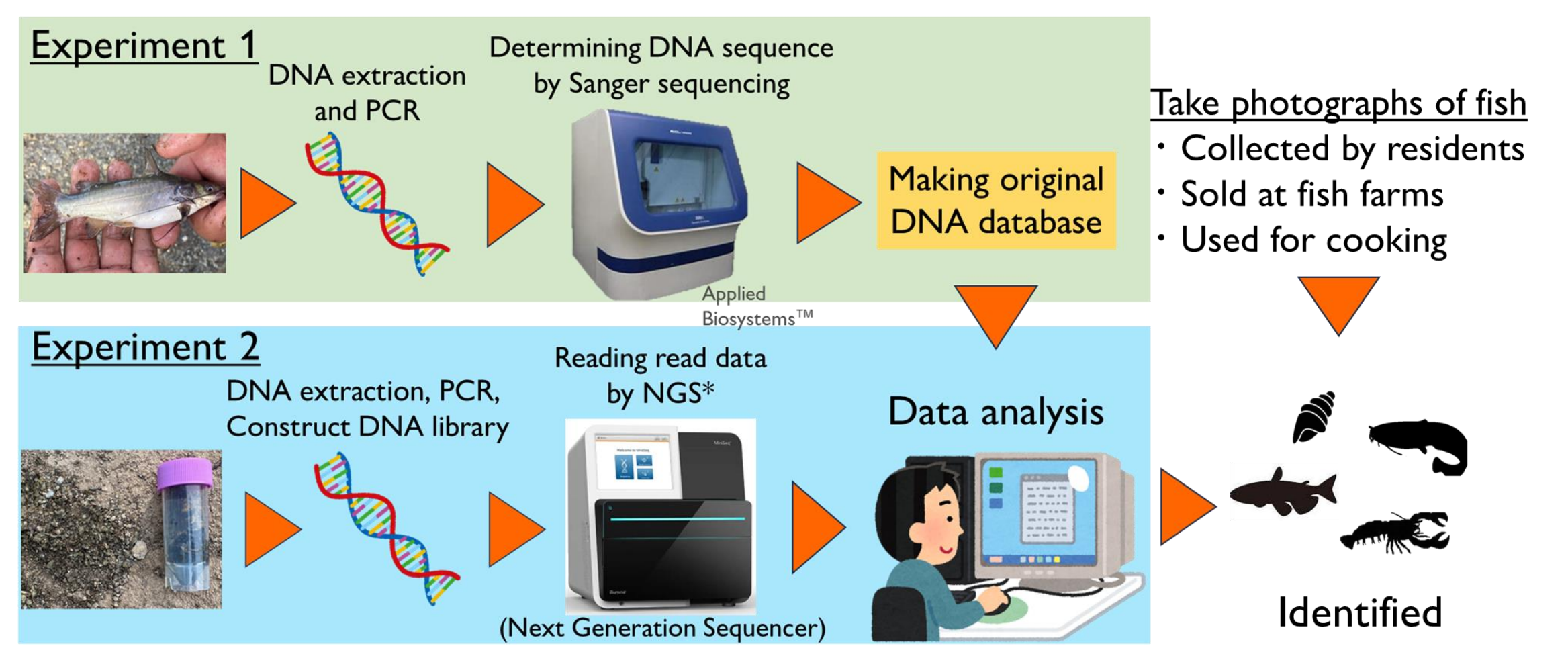
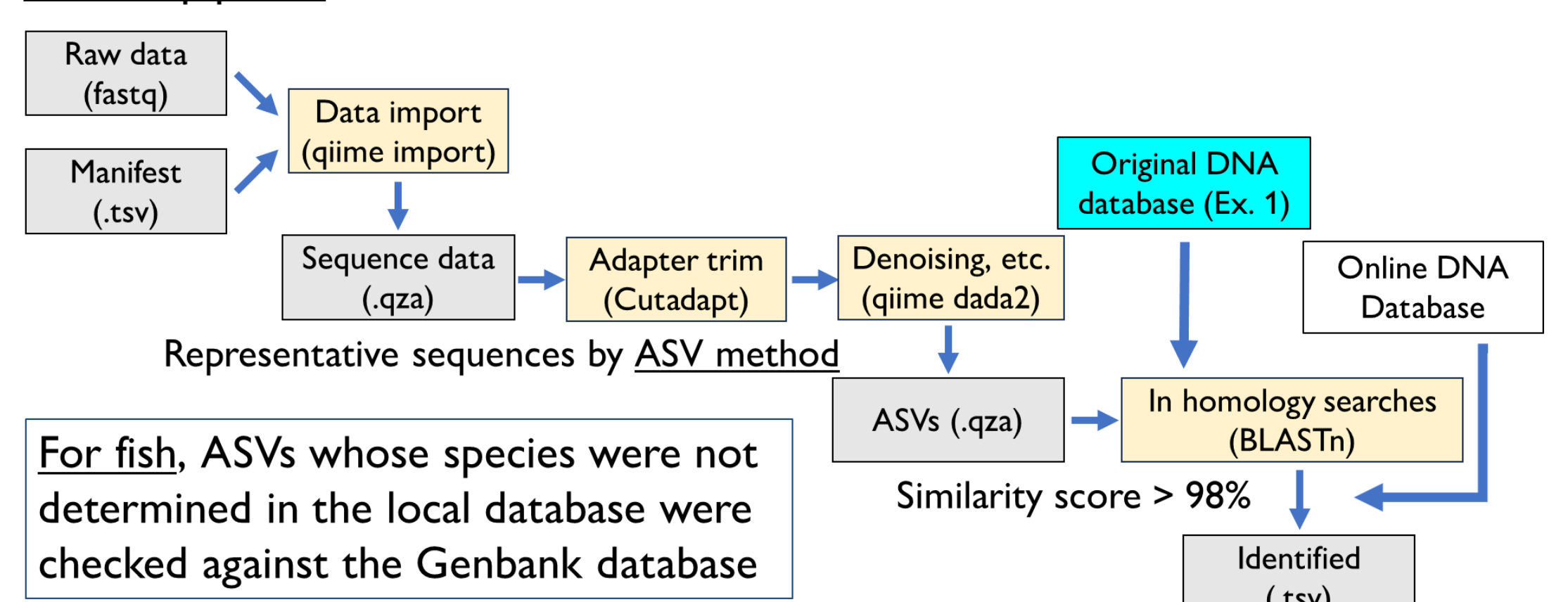


Fig. 3 Proportion of Reads for Each Fish Species out of a Total of 1,557,947 Reads

Methods



QIIME2 pipeline



For fish, ASVs whose species were not determined in the local database were checked against the Genbank database