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## Study on conservation ecology of endangered freshwater animal species

Many native species of freshwater animals are endangered due to factors such as the negative effects of river or agricultural channel improvements and predation or competitive exclusion by invasive species. To conserve such endangered native freshwater animals, we have to clarify the basic ecology (e.g., reproductive behavior and habitat preference) and then develop effective conservation methods. In our recent studies, we clarified the habitat preference of the endangered bitterling fish species (*Rhodeus atremius suigensis*; Fig. 1) in agricultural channels, and wintering site environment of the endangered Nagoya Daruma Pond Frog (*Pelophylax porosus brevipodus*) inhabiting paddy fields. Also, we have studied the effectiveness of restoration methods in agricultural channels for freshwater fish conservation.



Fig. 1 An endangered bitterling fish (*R. atremius suigensis*).

## Study on ecology of invasive crayfish species and development of effective eradication methods



Fig. 2 An endangered Japanese crayfish (*C. japonicus*) being preyed on by an invasive crayfish (*P. leniusculus*).

Invasive freshwater animal species have a negative impact on native species. Especially, the impact of invasive crayfish is strong. In our previous studies, the invasive North American crayfish species (*Pacifastacus leniusculus*) was shown to be able to cause species replacement for the endangered native Japanese crayfish species (*Cambaroides japonicus*) due to direct predation (Fig. 2) or in competition for preferred sized shelters. In the present study, we have tried to clarify the life cycle of the North American invasive crayfish species *Procambarus clarkii* inhabiting water areas in Japan and also to develop effective eradication methods.