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The fish fauna of headwater streams in Southeastern Korea

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The fish fauna living in an headwater stream are relatively less known than that of mid or large size streams (>3rd order stream). We examined the distribution of fish fauna in shallow streams that have land-water interactions. From 1994 till 1996, 51 streams in Mt. Keum (Namhae), Mt. Keumjung (Pusan), and Ulsan City were examined twice. The collected fish in these examined streams were divided into 28 species, all of which can be classified into 25 genera and 12 families. From 8 sites in Mt. Keum, 14 different species were collected and they belonged to 8 different families. From 10 sites in Mt. Keumjung, 8 species that belong to 6 families were collected. And 20 species of 9 families were collected from 33 sites in Ulsan. *Zacco temmincki* (27.8% of total individuals) was the dominant species and *Moroco oxycephalus* (22.4% of total individuals) was the subdominant species. *Moroco oxycephalus*, *Zacco temmincki*, *Rhinogobius brunneus* were frequently collected and they were the most abundant species. Eight species of those collected were the Korean endemic species: *Rhodeus uyekii*, *Coreoleuciscus splendidus*, *Squalidus chankaensis tsuchigae*, *Cobitis longicorpus*, *Silurus microdorsalis*, *Liobagrus mediadiposalis*, *Coreoperca herzi* and *Odontobutis platycephala*. We found that the method using electric shocker is necessary for the proper sampling because most of headwater stream fish live at the bottom of debris, underneath the rocks, and so on. This study describes that omnivorous species (e.g., *Moroco oxycephalus*, *Zacco temmincki*) dominate the upstream fish fauna.

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The limnological study of Lake Okjung

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The variations of water quality and phytoplankton community in lake Okjung were surveyed at the downstream site near the dam from June 1993 to May 1994 on the monthly basis. And the loading of phosphorus, nitrogen, organic carbon from the watershed to lake water were measured monthly at the main inflowing stream. Secchi disc depth (SD), epilimnetic Chlorophyll a, total nitrogen, total phosphorus concentration and primary production during the study period were in the range of 1.6 ~ 4.0 m, 2.9 ~ 13.6 mgChl/m³, 1.57 ~ 2.70 mgN/l, 9 ~ 41 µgP/l, 1023 ~ 2113 mgC/m²/day, respectively. Annual TN/TP atomic ratios varied from 129 to 443. N/P ratios decreased in summer because phosphorus concentration was higher than in winter, while nitrogen did not vary much. It is obvious from N/P ratio that phosphorus is the limiting nutrient for algal growth in lake Okjung. The phosphorus loading from the watershed was estimated to be 1.1g/m²/yr, which far exceeded the critical loading for eutrophication. The organic carbon loading from the watershed and primary production were determined to be 1481tC/yr, 6759tC/yr respectively. Most of organic carbon was contributed by autochthonous primary production of phytoplankton. The seasonal succession of dominant species was distinct. In winter and spring diatoms were dominant, *Melosira granulata* var. *angustissima*, while cyanobacteria, *Mycrocystis aeruginosa* were dominant in warm seasons.