

## PI-14

# The fish fauna of mountain streams in the Chiri and Seorak National Parks, S. Korea and its significance to conservation of regional freshwater fish biodiversity

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## Introduction

Conservation of biodiversity and ecosystems can be approached using a protective system that includes a few large reserves of high diversity, combined with many smaller preserves that protect specific habitat (Allan, 1995). National parks and protected areas possess a relatively rich ecological inventory data set, and are focal points for scientific research, allowing comparative analyses with surrounding areas, and can be used for long-term monitoring programs, as well as protecting various elements of biodiversity (Zorn *et al.*, 2001). The total area of 14 national parks in the mountain area (2,994 km<sup>2</sup>) is about 3% of South Korea (99,373 km<sup>2</sup>) and the natural ecosystem conservation area (100 km<sup>2</sup>) covers about 0.1% of S. Korea. Currently, flora and fauna in national parks and natural ecosystem conservation areas have been relatively well conserved by environmental laws and an increase in awareness of their importance. In this study, the fish faunas in the streams of the Chiri and Seorak National Parks was investigated and compared with those of all national parks and large river systems on the Korean peninsula. Finally, the long-term management and conservation strategy for fish diversity in the Korean national parks is considered.

## Materials and method

A three monthly sampling was conducted at 32 sites within the Mt. Chiri area (Site A-1 ~ A-32) from September 1998 to September 1999 and at 17 sites

within the Mt. Seorak area (Site B-1~B-17) from June 2000 to June 2001. Physico-chemical parameters (water temperature, dissolved oxygen, conductivity, pH, turbidity, and stream width and water depth) were measured at the sampling sites. Fish were collected with a scoop-net (mesh 5×5 mm) and cast nets (mesh 7×7 mm). Collected specimens were preserved in 10% formalin solution until counting, after which they were stored in 5% formalin solution. All specimens were identified according to Choi *et al.* (1990) and the classification system of Nelson (1994).

## Results and discussion

A total of 5,979 fish individuals were collected and classified into 22 families and 60 species from both national parks. At Mt. Chiri, 3,422 fish individuals, classified into 30 species and 12 families were collected. At Mt. Seorak, 2,557 fish were collected and classified into 17 families and 42 species. *Zacco temmincki* (RA 47.9%) was dominant at both parks. Subdominant species were *Moroko kumkangensis* (10.8%), *Zacco platypus* (RA 9.4%), and *Pungtungia herzi* (RA 5.3%). A total of 20 species (33.3% of those recorded in this study) were found to be Korean endemic species, representing 7 families (21.7% of those recorded). The relative abundance of Korean endemic species was higher at Mt. Seorak (30.5%) than Mt. Chiri (18.5%). One exotic (*Oncorhynchus mykiss*) and two introduced species (*Hypomesus olidus* and *Coreoperca herzi*) were collected in this survey. The proportion of Korean endemic species in both parks (33.3%) was higher than the average of Korean rivers (25.9%). Even though the total number of species and endemic species of streams in 14 Korean national parks are not clearly proportional to the area of a particular park, bigger parks tend to have higher fish diversity. From this study, we conclude that Korean national park areas are very important for fish diversity and conservation, especially for the Korean endemic and endangered species.

## Reference

Choi, K.C., Jeon, S.R., Kim, I.S., Son, Y.M., 1990. Colored illustrations of the freshwater fishes of Korea. Hyangmoon Publishing Company.