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Computational Methods for Detecting Changes in Spatial Distribution of *Daphnia magna* with the Treatments of Insecticide at Low Concentration

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The spatial distribution of *Daphnia magna* was continuously observed for 2 hours (1 hour before treatment and 1 hour after treatment) in the observation aquarium (7cm×7cm and 1.5 cm) with the treatments of diazinon 0.001 mg/L. The time varying and averaged i-indices indicating the spatial distribution were measured on 1 hr segment of the movement tracks. After treatments, the slope of frequency distribution of i-index was characteristically increased, while the time averaged i-index was decreased. Differences in indices appeared to be caused by inter-specimen interaction after the specimens had been exposed to the insecticide. We additionally investigated frequency in changes in behavior such as circular motion and vortex motion.

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The Feeding Strategy of *Micropterus Salmoides* in a Regulated River System (the Nakdong River)

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In this study, the predatory strategy of the large mouth bass (*Micropterus salmoides*) was investigated through its gut analysis. Samples were collected from the longitudinally selected 30 sites in the Nakdong River system from July 1999 to March 2002. Among four exotic fish species, the population of *M. salmoides* was dominant (74.4% of four exotic species). In this population, 0 to 1 yr fishes (16 cm Total Length (TL)) were abundant. This indicated the population was being under stabilization and slightly adapted to the native habitat in the river. The results of food items analyses exhibited that *M. salmoides* population has typical and omnivorous character on selecting food items. The preference on the prey seemed to be changed according to the TL variations from the Costello method. The individuals under TL 10 cm generally consumed Insecta, while over 10 cm of TL individuals, 'Teleostei' was specifically fed to this population. In the case of other fish species, *M. salmoides* predated usually Cyprinidae but no specialization could be observed. These results of feeding strategy would be due to the age class of *M. salmoides*. As the population is stabilized in the river system, possibly large impact on the native fauna could be expected.

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The Impacts of the Fire and Landslide of the Mountain Streams on the Fish Fauna in the Northeastern Part of S. Korea

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The impact of the fire and landslide on the stream fish fauna was investigated in Goseong-gun area (Gangwondo Province). The morphology of catchments and streams were significantly modified by fire and/or heavy rainfall (August 2002; about 600 mm in 2 days). The three samplings before the impacts were conducted at 11 sites (5 streams) from September 2001 to March 2002. We visited the same sites in May 2003, and evaluated habitat condition and fish fauna. Proportion of sand in the substratum composition was increased over 3-4 times after the heavy rainfall. The morphologies of the lower part of the streams were heavily modified, and channel improvements and bank reconstructions were in progress. In 2001, 28 species classified into 12 families were collected. Dominant species was *Rhyncocypris steindachneri* (relative abundance (RA) 43.8%), and sub-dominant species was *Pungitius sinensis* (RA 34.2%). After heavy rainfall, collected fishes were classified into 10 families including 20 species. Dominant species was *R. steindachneri* (RA 65.3%), and subdominant species was *Onchorhynchus masou masou* (RA 8.0%). Even though the number of collected species varied depending on the combination of fire and/or rainfall impact, 10 to 70% of species reductions were observed at five streams. In particular, endangered and rare species (*P. sinensis* and *L. reissneri*) were not collected. Further study should be conducted for the understanding of recovery dynamics of the fish community after the disturbance.

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울산 외황강 하구의 동물플랑크톤의 군집 및 수질특성의 계절적 변화

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신항만 건설 예정지인 울산 외황강 하구의 동물플랑크톤 군집 및 수질특성 등의 기본적인 생태연구가 항만건설 후 물리적인 변화에 따른 생태적 변화를 알아보는 데 중요한 자료가 되리라 판단하여 본 연구를 실시하였다. 울산외황강 하구의 동물플랑크톤 군집 및 수질특성의 계절적 변화를 알아보기 위하여 2000년 5월부터 2001년 2월까지 6개 정점에서 3개월 간격으로 4계절에 걸쳐 동물플랑크톤 채집 및 수심 3 m 간격으로 채수를 실시하였다. 동물플랑크톤은 총 9문 14강 17목 34과 39속 90분류군이 동정되었다. 동물플랑크톤의 현존량은 평균 28.33 ind./l로 나타났으며, 계절별로는 여름이 39.56 ind./l로 가장 높게 나타났고, 겨울이 평균 27.14 ind./l, 가을이 24.90 ind./l, 봄이 가장 낮은 21.93 ind./l로 나타났다. 동물플랑크톤의 계절별 우점종을 살펴 보면 봄에는 환형동물문의 다모류 유생(polychaetes)이 55.4%, 여름에는 윤형동물문의 *Synchaeta* sp.가 41.5%, 가을에는 절지동물문의 요각류 유생(copepodite, nauplius)이 57.3%, 겨울에는 원생동물문의 *Tintinnopsis lohmanni*가 59.6%로 나타났다. 분석된 이화학적 특성의 범위는 수온이 12.2~29°C, 용존산소량(DO)이 5.84~12.19 mg/l, 수소이온농도(pH)가 8.15~8.8, 투명도(SD)가 0.70~5.00 m, 염분도가 32.0~34.5, 엽록소 a가 0.85~82.78 mg/m<sup>3</sup>, 화학적산소요구량(COD)가 0.96~5.99 mg/l로 나타났다.