Benthic-Macro Invertebrates in Streams of South Korea in Different Levels of Pollution and Patterning of Communities by Implementing the Self-Organizing Mapping

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Species richness and biological water quality indices were analyzed in community data of benthic macroinvertebrates collected from the twenty-five published papers in Korea from 1984 to 2000. A total of 34 streams in 2nd 3rd orders were reported. A break point was observed in the profile of species richness and EPT richness at the clean sites, reflecting a stronger impact of disturbances at higher species richness. In contrast BMWP indices showed gradual changes in representing water quality. TBI showed a relatively longer clean zone and produced higher values of water quality estimation. The community data were further trained with the Kohonen network, and the self-organizing maps were produced through unsupervised learning. The sample sites were classified according to the impact of pollution and to the topography of streams and rivers. Groupings were also conducted on taxa through the self-organizing mapping. The important indicator families for weak organic pollution, such as Baetidae, Hydropsychidae and Chironomidae, appeared in groups. Also families in low densities and low frequencies in clean sites tended to be grouped on the same node. Families in Plecoptera, Trichoptera and Ephemeroptera were classified characteristically in different levels of pollution.