

## Succession of aquatic macrophytes and their restoration in a marsh of which basin has been urbanized rapidly

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Submerged macrophytes have significant role in controlling aquatic environment in shallow lakes and marshes. They can provide habitat for other species and control water quality by several ways including suppression on bottom sediments resuspension.

Inba marsh is located in Chiba, Japan and its basin has experienced rapid urbanization since 1960's resulting in severe water quality degradation. Part of the marsh area was reclaimed to construct rice field. During this reclamation project, water management was changed dramatically and average water level was raised about twice as deep as previous situation (Kasai, 1993). Following these impacts, submerged macrophytes gradually disappeared and water in Inba marsh became turbid and high in organic matter and nutrients.

Although water quality of inflowing rivers has been improved due to water quality control investment such as the construction of sewage system since 1980's, water quality in Inba marsh has not been improved compared to that of inflow water.

Shallow lakes are considered to have two stable phases. One is macrophyte-dominated clear phase and the other is phytoplankton-dominated turbid phase (Scheffer, 1998). Inba marsh is considered to be still in phytoplankton-dominated turbid phase. Therefore, besides measures to reduce nutrient and organic matter loading from its basin, several measures to try to restore the growth of submerged macrophytes have been started recently. These measures are briefly introduced and water quality changes due to the restoration are discussed by using numerical simulation. Results of numerical simulation suggested that if the area of submerged macrophyte cover can be restored to the magnitude of canopy-forming vegetation in 1988, water quality improvement can be achieved to satisfy environmental standard in Inba marsh.

### References

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