Reconstruction of the charophyte community of Lake Shinji by oospore collection

Submerged aquatic vegetation (SAV) aids in maintaining a clear stable state in shallow lakes. However, charophytes are more effective in increasing transparency compared to angiosperms. Lake Shinji was more transparent prior to the beginning of herbicide use for rice weed control in the mid-1950s, because its bottom was covered by SAV up to 3 m depth. Although Chara braunii C.C. Gmelin and Nitella hyaline (De Candolle) C. Agardh were recorded in the 1960s, there are no reports on SAV in the 1950s. Therefore, in the present study, we aimed to show that the SAV of Lake Shinji was mostly composed of charophytes prior to the 1950s, by conducting a seed analysis. We obtained charophyte oospores from the sediment, but seeds of angiosperms were not identified. In addition to C. braunii that was previously recorded in Lake Shinji, we also found two newly identified species, Chara corallina Willdenow and Chara fibrosa C. Agardh ex Bruzelius. Overall, this study indicates that seed analysis is helpful in reconstructing the former flora of Lake Shinji.

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