

CONSERVATION AND MANAGEMENT OF RICE FIELD BIODIVERSITY

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Rice fields are the most widely distributed wetlands in Japan. After World War II, chemical fertilizers, herbicides and pesticides rapidly came into widespread use. Traditional small, irregular fields were converted into large, dry square fields for mechanized farming. Planted acreage has decreased continually since 1970, when the Japanese government started its set-aside program. Rural landscape and wildlife have been dramatically affected. Many species previously common in rural areas are now on the Red List.

In this paper, I will describe the flora and vegetation of wet fields in an area called Nakaikemi in central Japan, discussing also the conservation and management of rice field biodiversity.

Nakaikemi is a 25-hectare basin with deep peat beds cultivated as rice fields for 200 to 300 years. Most of these fields were extremely muddy and wet, making them difficult to develop into large dry fields with concrete ditches. Abandoned fields began increasing around 1970. Though inconvenient for modern agriculture, these fields provide good habitat for aquatic and wetland life. Nakaikemi's biota includes many rare or threatened species.

More than 30 Red List plants have been confirmed in Nakaikemi, half of them once considered harmful rice weeds. Diverse flora developed on recently abandoned or fallow fields, but in areas without management, many rare plants disappeared as tall reedy invaders took over.

To experimentally conserve and restore rice field biodiversity, management and monitoring surveys were conducted in a 4-hectare area in Nakaikemi. Local farmers performed the management tasks based on usual practices. Many Red List plants quickly grew in planted fields weeded by hand and in fallow fields plowed but not planted. The diverse species characteristic of cultivated and recently abandoned fields germinated in old abandoned fields after surface vegetation was removed.

Our findings demonstrated that appropriate management is required to conserve the biodiversity of secondary wetlands and that rich species diversity can be restored in species-poor abandoned fields from existing seed banks.

Intensive management in Nakaikemi was effective but required manpower and money. Effective, practical management and monitoring methods will be required nationwide if we are to conserve our valuable plant heritage.