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The impact of changes in irrigation practices on the distribution of foraging egrets and herons (Ardeidae) in the rice fields of central Japan

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Abstract

Traditionally rice *Oryza sativa* fields in Japan are irrigated by diverting river water through shallow earth ditches using sluices and weirs. However this 'old-style' method is being replaced rapidly by a 'new-style' system in which water is pumped into paddy fields via taps and drained into deep concrete-sided canals. Concern has been expressed that the changes may cause paddy fields to decline in value as foraging habitats for egrets and herons, Ardeidae, because their aquatic prey are unable to move easily into new-style fields. We tested this hypothesis by comparing numbers of Ardeidae and their prey in paired old- and new-style areas at six sites in central Japan from May to August

1995.

Few grey herons *Ardea cinerea*, great egrets *Egretta alba* or little egrets *E. garzetta* were recorded at our sites and no differences were observed in their use of old-and new-style areas. In contrast cattle *Bubulcus ibis* and intermediate *E. intermedia* egrets were common but only the latter preferred old-style areas. With respect to prey animals, we found greater numbers and biomasses of frogs, crayfish *Procambarus clarkii*, loach *Misgurnus anguillicaudatus*, and other fish in old-style paddy fields, and in old-style ditches we found more frogs, tadpoles and fish, but generally fewer crayfish. There were no differences in the numbers or biomass of terrestrial invertebrates between the two types of paddy field. Reason for these observations are discussed. We suggest other topics which require investigation in order that effective wildlife management strategies for rice fields may be formulated.



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Keywords

amphibians; Ardeidae; fish; foraging; irrigation methods; Japan; rice fields

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