

Enhancing frog species richness at continental scales through farm dam management

Martino E. Malerba¹, Jodi Rowley², Peter Macreadie³, James Frazer⁴, Nicholas Wright⁵, Nayyar Zaidi¹, Asef Nazari¹, Dhananjay Thiruvady¹, and Don Driscoll⁶

¹Deakin University

²Australian Museum

³Deakin University School of Life and Environmental Sciences

⁴Melbourne Water

⁵WA Department of Primary Industries and Regional Development

⁶Australian National University

March 30, 2023

Abstract

Artificial waterbodies can help tackle the ongoing freshwater biodiversity crisis by providing new habitat for aquatic wildlife. Farm dams are among the most abundant artificial waterbodies in agricultural landscapes, yet general guidelines for maximising their ecological potential are yet to emerge. Here we used a continental-scale dataset of frog species near 8,800 Australian farm dams to ask: What characteristics promote higher frog species richness at farm dams? The highest values of species richness were at older (>20 years) farm dams of intermediate sizes (0.1 ha in surface area), with smaller rainfall catchments (<10 ha), and near other freshwater systems or conservation sites. By identifying quantifiable features improving the ecological value of farm dams, this work helps identify “win-win” outcomes for agricultural productivity and conservation. In the future, “biodiversity credit” policies could promote large-scale implementation by rewarding farmers who invest in improving the condition of their farm dams.

Hosted file

MS.docx available at <https://authorea.com/users/601448/articles/632656-enhancing-frog-species-richness-at-continental-scales-through-farm-dam-management>