

## Planning Water Reservoirs as Complementary Habitats for Waterbirds

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**Abstract :** Small natural freshwater bodies (SNFWBs), which are vital for many waterbird species, are considered endangered habitats due to their progressive loss and extensive degradation. While SNFWBs are becoming extinct, studies have indicated that many waterbird species may greatly benefit from various types of small artificial waterbodies (SAWBs), such as floodwater and treated water reservoirs. If designed and managed with care, SAWBs hold significant potential to serve as alternative or complementary habitats for birds, and thus mitigate the adverse effects of SNFWBs loss. Currently, most reservoirs are built as infrastructural facilities and designed according to engineering best practices and site-specific considerations, which do not include catering for waterbirds' needs. Furthermore, as things stand, there is still a lack of clear and comprehensive knowledge regarding the additional factors that should be considered in tackling the challenge of attracting waterbirds' to reservoirs, without compromising on the reservoirs' original functions. This study attempts to narrow this knowledge gap by performing a systematic review of the various factors (e.g., bird attributes; physical, structural, spatial, climatic, chemical, and biological characteristics of the waterbody; and anthropogenic activities) affecting the occurrence, abundance, richness, and diversity of waterbirds in SNFWBs. The methodical review provides a concise and relatively unbiased synthesis of the knowledge in the field, which can inform decision-making and practice regarding the planning, design, and management of reservoirs with birds in mind. Such knowledge is especially beneficial for arid and semiarid areas, where natural water sources are deteriorating and becoming extinct even faster due to climate change.

**Keywords :** artificial waterbodies, reservoirs, small waterbodies, waterbirds

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