

# The Importance of the Management of Small Reed Patches for the Conservation of Endangered Passerine Birds Linked to Wetlands

## Abstract

Reed patches around wetlands have been proved to be important to enhance dispersal of vertebrates, particularly medium-size birds. However the importance for small size endangered passerine birds, some of them totally or partially endangered (e.g. *Acrocephalus paludicola*, *Acrocephalus melanopogon*, *Emberiza schoeniclus*, *Panurus biarmicus*) is not completely assessed. This mini-review highlights some physiological mechanisms used for reed bed specialists to move in reed patches and emphasizes the importance of management peripheral areas of wetlands to ensure dispersal.

**Keywords:** Endangered passerines; Management; Small reed patches; Wetlands

## Mini Review

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## Introduction

Wetlands are complex systems where the interaction among biotic and a biotic components provides a surplus of values, functions and environmental services. The value of wetlands has evolved from certain species, communities and habitats, towards a global scenario which reflects in similar importance the group of components and the relationship of these with the ecosystem [1,2].

From the particular case of birds linked to wetlands a great amount of research effort and monitoring has been focused mainly towards birds of medium size (e.g. Anatidae, Ardeidae, and Charadriidae: [3-7]. Regarding general studies focused on management of wetlands, the orientation has mainly favored those actions directed towards aquatic birds linked to the interphase among water and reed [8,9] and the research and experimentation of the reed management and other emergent plants seem to be oriented to its control with the aim to increase its biodiversity [10-12], and, in the case of birds, to produce aquatic habitats or to keep the suitable proportions among vegetation and free water, so this management form have traditionally favored aquatic bird families like ducks or coots [13]. However until the last 1990's not emerge the studies on small birds linked to the marsh and reeds, as the studies analyzing its communities [14, 15] and also those referred to the biology, ecology and conservation of its species [16, 17]. Due to the implementation of ringing stations with Constant Effort Sites at wetlands, many pioneer studies have been performed from the beginnings of the present century [18-21].

In contrast, the research about habitat management of endangered palustrine small birds (e.g. *Acrocephalus paludicola*, *Acrocephalus melanopogon*, *Emberiza schoeniclus*, *Panurus biarmicus* [22-24,25,26]) and particularly the study of evolutionary processes [27- 29] carried out in its habitats where the habitat patches play an important role for the conservation of this species [30,31] is still scarce. The evolutionary outcomes

can result excellent studies on local movements among landscape patches, for example, in the context of metapopulations [32, 33].

In this sense habitat management for biodiversity conservation is based in the species-area relationship and the intermediate disturbance hypothesis [34]. Management of larger habitat patches should conserve more species and species diversity is maximized when ecological disturbance is at intermediate levels [35]. For example, in reed habitats, under appropriate long-term management, the homogeneous structure of the reed habitat breaks up forming a more heterogeneous structure, which provides more suitable small habitats for a wider spectrum of species [36]. Management of patches of reeds varies within species and studies have come to show that abundance and diversity of songbird reed bed species is highest in unmanaged (e.g unburned) than managed (e.g. burned) areas [37,38].

Intraspecific and interspecific differences are found in these habitats and they are based on an ecomorphological perspective [39,40]. Suboptimal areas support birds of lesser ages and minor condition and size (females and juveniles) [41] while patches inside of unmanaged habitats are used as sources and support more birds with more age and better condition [42]. Marginal reed habitats are thus used for forager-transient birds [43] and with interspecific differences in morphology, migratory behavior and foraging activity [44]. Then, several factors as ability to find food resources, dominance status, or energetic constraints related to flight, can equally determine its morphological adjustments [45] and movements inside or among reed patches.

## Conclusion

Small reed patches are an important process for the development of globally threatened or endangered small

populations of specialized reed birds ensuring dispersal (e.g. *Acrocephalus paludicola* [33], *Panurus biarmicus* [29]). In order to facilitate the increase physiological constraints of these passerine birds enhancing dispersal is need to manage suboptimal pioneer areas of reed for the growth of seed plants and the increase diversity of insects by means of mixed plots of cutted and uncutted bushes, reeds and another medium high marsh trees. Also is emphasized the importance of intertidal wetlands in terms opportunities of some physiological birds processes as moult for some not threatened palustrine birds (e.g. *Luscinia svecica*, [46]). Then, is highlighted the implementation and management of small-marginal areas of wetlands around great areas providing to increase the diversity of reed-dwelling-marsh passerines [47].

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### Conflict of Interest

The author declares that he has no conflict of interests.

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