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Research article

## Evaluating conservation status and governmental efforts towards regional flagship species in Brazil

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## ABSTRACT

Several strategies have been adopted to optimize biodiversity conservation. The use of fauna and flora species as flagships can help increase public commitment and raise funds for their conservation. However, species choices must be well balanced, considering not only intrinsic aspects (e.g., risk of extinction and ecological role), but also social, cultural, and economic aspects of the region where the flagship will be adopted. Brazil is one of the countries with the greatest diversity on the planet. Nevertheless, there are several challenges associated with natural resources conservation. Flagships have been adopted informally for decades throughout the country but there are no efforts to evaluate these strategies results for the preservation of the selected species. The aim of this study was to carry out an extensive survey on regional flagship species, their conservation status, level of endemism, and domestic legislation currently in force for their protection or human use. A total of 62 flagships were identified, with at least one species of flora and one of fauna for each of the 27 Brazilian Federative Units. The animals most commonly used as regional symbols are birds, followed by mammals. Flora species used as regional symbols are quite diverse. However, they are all somehow used by humans. As for legal protection, there are government measures for endangered species. Nevertheless, most species used as regional symbols are not at risk of extinction and, for this reason, do not receive any legal protection. Moreover, while some flagships are endemic, others are alien species, indicating that this criterion is not considered when choosing regional symbols. In the overall analysis it was noted that species choice could be optimized to highlight the national biodiversity. Despite efforts to establish legal measures for their preservation, few effective results have been observed. Therefore, improved effective measures for their conservation should be adopted to guarantee the effectiveness of flagship species for biodiversity conservation.

## 1. Introduction

Flagship species are symbols that act as ambassadors, raising awareness, reminding people of the importance of wildlife conservation, and promoting fundraising for this purpose (Mallinson, 1991; Albert et al., 2018). Flagship species are chosen based on cultural, historical and social importance, being set according to national or regional particularities (Bowen-Jones and Entwistle, 2002). To be considered an effective flagship, the symbol needs to be charismatic enough to generate sympathy and be able to raise funds for conservation actions (Home et al., 2009; Albert et al., 2018). Animal symbols are used across the globe, with all

countries having at least one flagship species (Hammerschlag and Galagher, 2017). It is by setting a flagship that the government and other organizations bring people closer to environmental issues, even those that do not have a direct link with conservationist aspects on their daily basis. Such strategy is imperative since it is easier to raise interest and pride in a spectacular native symbol than attempt to communicate environmental risks by using complex terms and ecological processes (Mallinson, 1991; Zacharias and Roff, 2001).

Among the threats to biodiversity, overexploitation and habitat loss/degradation are the most representatives for both terrestrial and aquatic flora and fauna (Kappel, 2005). Deforestation in the tropics was

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