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Short communication

Species appeal predicts conservation status

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ABSTRACT

Conservation of animal species should start from real needs of protection and intervention shown by species and their habitats, but it is often driven by the perception which humans have of species, as the latter enables fund raising and attracts financial resources for conservation actions. However, this approach dominated by the so-called flagship species has been severely criticised, because of the associated risk of directing resources to charismatic species while neglecting threatened ones. An analysis of conservation status in relation to species appeal, habitat, sociality, body length and population size outlined how the more "appealing" bird species in Italy have better conservation status. This is likely due to an over-representation of most appealing species in conservation projects and suggests that a more careful and status-based prioritization of conservation efforts should be adopted.

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1. Introduction

Conservation status of animal species is affected by a plethora of different factors. Conservation measures and efforts dedicated to maintaining populations and habitats of a species can have the potential to improve species' status, although their effectiveness depends on a plurality of factors, including, among others, careful planning and the availability of economic resources. Since economic resources for conservation are limited, setting conservation priority is of crucial importance (Wilson et al., 2006). In many cases priorities are set according to criteria that are not exclusively scientific, because awareness and funding are biased towards "charismatic" species (Caro et al., 2004; Helgen and Groves, 2005; Amori et al., 2008; Clucas et al., 2008). Many species have received limited conservation attention (despite a high risk of extinction) as a result of their limited appeal (Amori et al., 2008). A focus on "charismatic" species may serve to garner public support for conservation, but it may also divert scarce resources away from threatened taxa (Seddon et al., 2005). Environmental organizations, governments and other conservation agencies focus their publicity and programmes on large, "charismatic" species to raise awareness and funds, exacerbating the problem. The reliance on particular species rests on the belief that this approach will be able to secure funding for the preservation of their habitat and by consequence of the biodiversity located therein. This has been promoted to the point that the fate of nature conservation is now inextricably tied to the fate of particular "charismatic" species (Kontoleon and Swanson, 2003). However, flagship concept is not a biological or ecological issue (Verissimo et al., 2011) and several studies have shown that the flagship approach has little positive effect on general biodiversity conservation and that the reliance on flagship taxa is not always an effective path to conservation of less charismatic species in the same areas (Prendergast et al., 1993; Andelman and Fagan, 2000; Williams et al., 2000; Amori et al., 2008), although some flagship species are also umbrella or indicator species (Sergio et al., 2006, 2008). In any case, there is a clear and present risk that non-charismatic species receive too little attention and protection; indeed, many uncharismatic taxa belonging to various taxonomic groups await study and conservation (Pillon and Chase, 2007).

The appeal of animal species may also be positively influenced by rarity and conservation concerns: rare species close to extinction may be regarded as more "charismatic" than common and widespread ones. Theoretically, rare species may be more desirable by people (tourists or collectors), and so could fall victim to an "Anthropogenic Allee Effect" (Courchamp et al., 2006), which could worsen their conservation status.

We have explored the possible effect of species appeal on the conservation status of bird species of the Italian avifauna. We tested the effect of species appeal and of other species traits (such as

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habitat, sociality, body length, population size) on the conservation status of breeding bird species listed in the Annex I of the Birds Directive (2009/147/CE).

We tested three alternative possible scenarios that should clarify the nature of relationship between species' perceived value and conservation status. *First scenario*: if conservation efforts have been independent from species' appeal, there should be no association between estimates of species appeal and conservation status. *Second scenario*: because of a positive association between rarity and appeal (potentially occurring also in our study system, see Discussion), species with a poor conservation status could have high appeal (however, this relationship is obviously dependent on the magnitude of the effect of rarity on conservation status, the latter also being affected by a wide variety of other factors). *Third scenario*: if conservation actions have been directed predominantly at "appealing" species, an effect of appeal on conservation status should be detected and the more appealing species should have better conservation status.

We also checked whether the status of range, population and habitat of species (separately assessed) can vary with species appeal, and developed another related prediction: if conservation actions have been directed predominantly at "charismatic" birds, such species should have a better conservation status especially with regard to population, whereas the status of their habitat and range, which are likely to be affected by several factors (and especially by habitat extent and quality) that are largely unaffected by direct conservation efforts, should not be very different from that of other species.

2. Materials and methods

We analysed a set of 78 species considered as "conservation priorities" in Europe by the Birds Directive. Bird conservation in the EU is based primarily on the Birds Directive, which includes a list (Annex I) of species considered particularly vulnerable or rare or to require special conservation measures. Member states are bound to improve the conservation status of these species by protecting or enhancing their populations and habitats. Therefore, we worked only with species included in Annex I, thus benefiting from a similar legal protection. Species included in the Annex I actually performed better than non-annex species in a continent-wide analysis of species' conservation (Donald et al., 2007). Finally, species currently hunted in Italy were excluded from analysis, in order to reduce confounding effects of hunting impact on conservation status.

2.1. Assessing conservation status

We developed a practical framework to assess bird species' conservation status at the national/biogeographical level (Gustin et al., 2009), deriving a new method from a modified version of the procedure proposed by Habitat Committee of the European Commission under the auspice of monitoring within the Habitat Directive (92/43/CEE).

The following criteria were adopted to judge the status of the single attributes (range, population and habitat) on the basis of the available literature (c. 2000 references among articles, books, chapters, unpublished technical reports).

For range:

(i) favourable: range stable or expanding (since data are available);
(ii) inadequate: range decreased of less than 10% of the national or bioregional range; range subjected to marked fluctuations, without general trend perceptible; range not decreasing but entire population concentrated within less than ten sites; range surface very limited;
(iii) bad: range contraction higher than 10% of the national or bioregional range, or complete extinction within a bioregion hosting non-marginal populations.

For population:

(i) favourable: population stable or expanding, not lower than respective favourable reference value (FRV) when available as population figure (Brambilla et al., 2011), and reproductive, mortality and age-structure parameters not differing from standard ones; if data about population and FRV are not available, it is not possible to state that population is in favourable status (for populations up to 2500 pairs);
(ii) inadequate: population declining less than 10% in 10 years, or lower than FRV (when available as population figure) (but higher than 75% of FRV); population not declining but small (likely lower than a hypothetical value of FRV) or showing marked short-term fluctuations without perceptible general trend;
(iii) bad: population declining more than 10% in 10 years and lower than FRV (when available as population figure) or lower than 75% of FRV (when available as population figure), or reproductive, mortality and age-structure parameters strongly differing from standard values (if available); population extremely small.

For habitat:

(i) favourable: habitat extent large enough (and stable or increasing) and habitat quality suitable for long-term sustaining of the species;
(ii) inadequate: all other combinations;
(iii) bad: habitat extent clearly not enough for long-term survival of the species or population, or habitat quality clearly not sufficient for ensuring long-term survival.

"Unknown" was attributed to species/attributes for which sufficient information were not available. Our method was quantitative to what concerns the population and range components. Due to lack of data, our assessment was qualitative to what concerns the habitat. We supposed that, on the basis of current knowledge about species' status in Italy, our approach could be more reliable and conservative than possible attempts of quantitative evaluation of conservation status based on poor data. However, the framework we used could be easily upgraded in contexts where more data are available, and the results obtained under this procedure could easily be verified through an expert-based critical revision of data (as we actually carried out for Italy).

Conservation status of each species or population was synthesised using the classification proposed by the Habitat Committee:

(i) favourable: all voice favourable, or two favourable and one unknown;
(ii) inadequate: one or more inadequate but no bad;
(iii) bad: one or more bad;
(iv) unknown: three unknown or two unknown and one favourable.

All the results were subjected to evaluation and revision carried out by independent expert scientists, and were finally approved by the panel (Gustin et al., 2009).

We adopted the following scoring system for quantifying overall conservation status: one point for bad conservation status, two points for inadequate status and three points for favourable conservation status. This scoring method was also applied to range, population and habitat status.

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