MINI-REVIEW

Toward a systematic approach for identifying conservation flagships

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Abstract

Flagship species are frequently used by conservation practitioners to raise funds and awareness for reducing biodiversity loss. However, uncertainty remains in the academic literature about the purpose of flagship species and little research has been conducted on improving the effectiveness of these campaigns. To reduce this problem, here, we suggest a new definition that further emphasizes their marketing role and propose an interdisciplinary framework to improve flagship identification, based on methodologies from social marketing, environmental economics, and conservation biology. This framework emphasizes that conservationists should specify the purpose of a campaign before working with the potential target audience to identify the most suitable species, and should monitor the success of their campaigns and feed this back into the marketing process. We then discuss the role of return on investment analyses to determine when funds are best spent on high-profile flagships and when raising the profile of other species is more appropriate. Finally, we discuss how the flagship concept can be applied to other aspects of biodiversity, such as priority regions and species sharing specific traits. Thus, we argue for closer collaboration between researchers and marketing experts to ensure that marketing becomes a mainstream part of the interdisciplinary science of conservation.

Introduction

Successful biodiversity conservation efforts often depend on effective awareness and fundraising campaigns. Conservationists frequently use flagship species in these campaigns because the flagship approach is seen as an important method for linking positive attitudes toward the species with the desirability of conservation action (Leader-Williams & Dublin 2000; Walpole & Leader-Williams 2002; Eckert & Hemphill 2005). Thus, flagship species have been used by conservation nongovernmental organizations (NGOs) for decades (Home *et al.* 2009), but the concept was largely ignored by academics until the 1980s (Myers 1983; Mittermeier 1986; Western 1987). However, since then there has been much debate in the literature about the role, definition, and effectiveness of the flagship species concept (Bowen-Jones & Entwistle 2002; Ball 2004; Favreau *et al.* 2006; Bride *et al.* 2008; Home *et al.* 2009). This debate has identified positive (White *et al.* 1997; White *et al.* 2001; Kontoleon & Swanson 2003; Smith & Sutton 2008) and negative aspects (Simberloff 1998; Entwistle 2000; Linnell *et al.* 2000), but there has been no systematic review of the use and definition of the concept in the academic literature.

Here, we conduct such a review and show there is still confusion over the term, despite widely cited definitions that explain the difference between flagships and biological surrogate concepts, and argue that this confusion has the potential to negatively affect decisions on awareness and fundraising. In an attempt to reduce this uncertainty, we provide a new definition with a stronger emphasis on conservation marketing. We then provide a systematic framework for identifying flagship species, based on principles from social marketing, environmental economics, and conservation biology, and discuss the trade-offs

involved with increasing the profile of less well known but more appropriate flagships. Next, we argue that the flagship concept can be applied beyond traditional single-species approaches and illustrate this with two examples. Finally, we argue that marketing should be considered another important aspect of the interdisciplinary science of conservation and that the future success of the flagship concept depends on the adoption of a more rigorous and objective approach to marketing.

Defining flagships and their role

Flagship species have been defined as "popular, charismatic species that serve as symbols and rallying points to stimulate conservation awareness and action" (Heywood 1995) and "species that have the ability to capture the imagination of the public and induce people to support conservation action and/or to donate funds" (Walpole & Leader-Williams 2002). These definitions emphasize that flagship species are selected based purely on their marketing value and need not have any ecological significance (Simberloff 1998; Caro & O'Doherty 1999; Leader-Williams & Dublin 2000; Walpole & Leader-Williams 2002). To investigate the extent to which these definitions have been accepted by the scientific community, we conducted a systematic review of the academic literature on flagship species to better understand their use by academics. Using Scopus, Web of Science, and Academic Search Complete, we gathered all published research articles written in English and covering the life sciences that contained the term "flagship" in their title, abstract, or keywords, as of September 2009. This search identified 141 relevant articles from 68 journals, covering a broad spectrum of disciplines from conservation biology to economics, ecology, genetics, and microbiology, although conservation and ecology journals dominated with 117 articles.

We then investigated how the flagship species concept was used or defined across these disciplines, and described whether these uses and definitions incorrectly overlapped with the characteristics of other surrogate concepts such as umbrella, keystone, or indicator species (for definitions of these concepts see Caro & O'Doherty 1999). We had to exclude 51 articles because they did not include a flagship definition, leaving 90 articles to be classified. Of these, a third used an incorrect definition of flagship species that mixed the characteristics of the concept with those of other surrogate species concepts (Table 1). Moreover, the proportion of articles containing these incorrect definitions was similar during the first and second half of our study period ($\chi^2 = 0.01$, df = 1, $P = 0.920$), so this confusion in the academic community shows no sign of reduction. There was also no difference in the proportion of conservation articles using incorrect definitions when compared to those published in other journals ($\chi^2 = 0.21$, df = 1, $P = 0.646$), suggesting that this confusion is just as prevalent among conservation researchers as within other disciplines.

Revisiting the definition of flagship species

Our review of the literature suggests that there remains a considerable amount of confusion about the meaning of the flagship species concept, despite the existing definitions that emphasize their strategic role, and we would argue that this is having significant negative effects on the relevance of flagship species research. Therefore, we suggest here a new definition that further clarifies the concept by proposing that flagship species should be defined as *"a species used as the focus of a broader conservation marketing campaign based on its possession of one or more traits that appeal to the target audience."* We think this emphasis on marketing is vital because it makes clear that the flagship concept is not a biological or ecological phenomenon: the only similarity between flagship species and indicator, umbrella, or keystone species is that they are all surrogates, as flagships have to raise support for more than the

Table 1 Use of the flagship species concept in journals of different research areas and the extent to which flagship species definitions used are mixed with other surrogate species concepts (cf. Caro & O'Doherty 1999)

	Flagship	Flagship + indicator	Flagship + umbrella	Flagship + keystone	Flagship + umbrella + keystone	Indicator	Umbrella
General	3	0	2	0	0	1	0
Conservation	27	1	8	0	2	0	3
Microbiology	0	0	0	0	0	7	0
Social sciences	6	0	2	0	0	1	0
Ecology	21	0	2	1	0	0	3
Total	**57**	**1**	**14**	**1**	**2**	**9**	**6**

species itself (Walpole & Leader-Williams 2002). Thus, there are several ways in which flagship species can act as surrogates in marketing campaigns, although they are all very different from the biological surrogate concepts mentioned above.

Take, for example, a hypothetical NGO marketing campaign to persuade foreign tourists not to buy shahtoosh shawls when on holiday. At first glance, such a campaign appears to be simply about Tibetan Antelope conservation. However, such a marketing campaign could have three benefits for broader conservation. First, it raises awareness about the problems of illegal wildlife trade, which threatens thousands of species worldwide. Second, it raises the profile of the NGO running the campaign and helps them raise money for other conservation projects. Third, for fundraising campaigns, it is common to set a total donation threshold, so that any extra money raised is spent on other core projects. Thus, the same species can represent and promote a variety of constituencies, sometimes simultaneously, and in doing so plays a surrogate role. These constituencies can be: a geographical or ecological area, such as a protected area or ecosystem, as with the golden lion tamarin (*Leontopithecus rosalia)* and the Atlantic forest (Dietz *et al.* 1994); an institution, such as an NGO or government agency, as with the giant panda (*Ailuropoda melanoleuca*) and the World Wide Fund For Nature (Lorimer 2007); or a biological group, such as a taxonomic family, order, or class, as with the monarch butterfly (*Danaus plexippus*) and insects (Guiney & Oberhauser 2008).

One key aspect of our definition of a flagship species is that it contains no mention of charisma, even though this is frequently cited as an important characteristic (Leader-Williams & Dublin 2000; Lorimer 2007; Tisdell *et al.* 2007). This omission is because charisma can be very fluid and is susceptible to manipulation through marketing (Lorimer 2007) and the provision of information (Tkac 1998; MacMillan *et al.* 2006; Tisdell 2006). The new definition also emphasizes that the flagship species is selected based on its desirable traits for a marketing campaign, rather than being important in its own right, and that these traits depend on the campaign and the target audience. This is another key aspect of the definition because much of the confusion over flagship species in the literature and elsewhere occurs when traits highlighted in a particular campaign are assigned to the species and assumed to be universally applicable (Bowen-Jones & Entwistle 2002; Farjon *et al.* 2004).

This confusion is best illustrated by the many campaigns that focus on large flagship mammals because these species are popular with donors (Caro *et al.* 2004). Often, the associated marketing will highlight their other traits that add to donor appeal, such as sharing their range with other species, being highly sentient, being important for ecotourism, having cultural significance, or playing a role in ecological processes. It is the first of these large mammal traits, their role as umbrella species, which has been picked up in the literature and several studies have shown that flagship species are no better than randomly selected groups of species at representing biodiversity (Andelman & Fagan 2000; Williams *et al.* 2000). However, this research illustrates the problems that occur when people conflate the use of flagship species in marketing with the actual traits of a species. For example, NGO campaigns to protect biodiversity-rich forests in central Africa often use elephants as flagships, as they are popular with donors and protecting them in these forests would ensure the conservation of many other species. This does not mean that NGOs assume that all African elephants are only found in biodiversity-rich areas, even if their campaigns mention that elephants play an umbrella species role within those specific central African forests. Thus, researchers must be careful to distinguish between claims made when raising funds and assessing the effectiveness of how those funds are spent (Smith *et al.* 2009).

A theoretical framework for selecting flagships

Our flagship species definition also emphasizes their marketing role to highlight that selecting suitable species is not a task for conservationists alone. Choosing the best flagship for a particular campaign involves understanding the target audience and the cultural, political, economic, and social contexts that shape their attitudes and interactions with the flagship species (cf. Kellert 1986; Hills 1993; Knight 2008; Ladle & Jepson 2008; Schlegel & Rupf 2010). In contrast, many traditional campaigns simply choose one of a handful of well-known flagship species, only because they are familiar to the target audience and guarantee some level of response (cf. Clucas *et al.* 2008; Sitas *et al.* 2009). However, this traditional approach has two disadvantages. First, it limits the conservation issues that can be addressed to those associated with these traditional flagship species. Second, it is known that some campaigns based on these flagship species cause resentment among the people that share their range or skew conservation management policies (Smith *et al.* 2010). Therefore, there is a need for a more effective approach to selecting flagship species (Caro & O'Doherty 1999; Andelman & Fagan 2000; Home *et al.* 2009) and we would argue that this should be adapted from the selection framework approach used in marketing. This involves first considering the conservation issue that needs to be

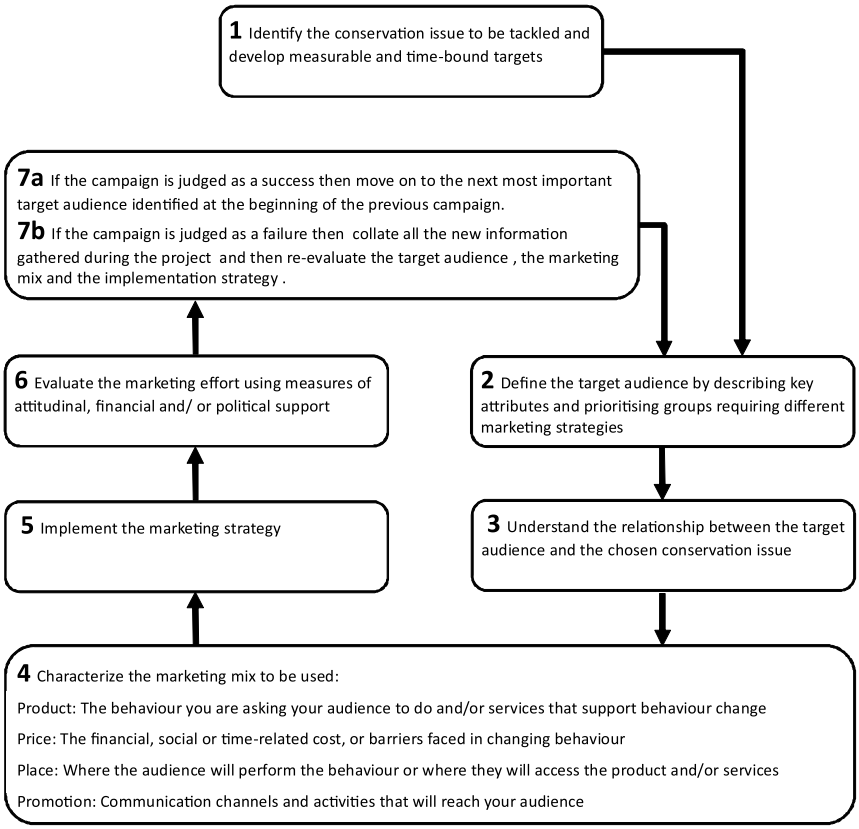

Figure 1 Seven stages of the flagship species selection framework.

addressed and then selecting the flagship species based on the target audience, the need to produce a distinctive campaign, and considerations of any potential negative impacts that such a campaign might have with the target stakeholders.

Thus, the selection framework can be broken up into seven stages described below (Figure 1), but the marketing language used here may unsettle some, especially when describing a flagship species as a "product." However, we have adopted these terms here to further emphasize that a flagship species is a symbolic construct of a marketing campaign and should not be confused with the actual species. The first stage in this process is to identify the conservation issue to be tackled, and develop measurable and time-bound targets for determining success (Hastings 2007). The second stage involves defining the target audience through segmentation and targeting processes: segmentation involves describing key attributes of the entire potential audience and then dividing it into groups requiring different marketing strategies (Kotler & Levy 1969; Kotler & Armstrong 2010); targeting then identifies which of these groups should be the target audience for the marketing strategy (Kotler & Levy 1969; Kotler & Armstrong 2010). The third stage involves studying the relationship between the target audience and the chosen conservation issue, based on an understanding of the audience's values, attitudes, and perceived barriers to change (Ajzen 1991). This information is then used to position and differentiate the marketing strategy. Positioning identifies the core values that will define both the "flagship product" of the flagship species itself and the "core product" of the desired behavioral change (Kotler & Zaltman 1971; Peattie & Peattie 2003; Hastings 2007; Kotler & Armstrong 2010). Differentiation considers the relationship of the marketing strategy with those produced by potential competitors (Kotler & Armstrong 2010).

The fourth stage involves characterizing the product, promotion, place, and price to be used in the campaign (Kotler & Zaltman 1971; Peattie & Peattie 2003). This is known as defining the marketing mix and here we will focus on the marketing product, as the other aspects are more self-evident. The selection process should be based on the target audience's preferences in order to develop an audience-specific ranking of potential flagships. When dealing with a large number of potential flagship species, it can be more effective to focus on species attributes, rather than the species themselves (cf. Knegtering *et al.*

2002; Stokes 2007; Meuser *et al.* 2009; Veríssimo *et al.* 2009). Understanding what are the most desirable attributes for a given target audience and using them to rank all potential flagship species acts then as a shortcut to avoid both the impracticable task of understanding the audience's preferences toward every possible flagship and preselecting species, which can inadvertently eliminate species with high flagship potential. Attribute preferences can be identified through a number of environmental valuation techniques, such as contingent valuation or choice experiments (cf. White *et al.* 1997; White *et al.* 2001) Then, species that do posses the desired attributes should be evaluated based on: their relevance to the conservation target; their biological characteristics, their associated cultural and social values; the expected impact of using the species on the ground; and aspects of the market positioning and differentiation.

Stage five involves implementing the marketing strategy followed by stage six, which is the process of evaluation of marketing effort in relation to the proposed conservation targets (Kotler & Levy 1969; Kotler & Zaltman 1971). This evaluation stage is also crucial given that it is the only way to establish the success or failure of the marketing effort (Kapos *et al.* 2008) However, when measuring success, it is important to remember that the key aspect of a flagship species effectiveness is the extent to which it builds attitudinal, behavioral, financial, or political support. The seventh and final stage involve, depending on the outcome of the evaluation from stage six, either reviewing the analysis of the target audience to improve the effectiveness of the current campaign or advancing to the next most important target group within the audience and then repeating the process until the overall proposed objectives are reached. This establishes an information feedback loop that allows for the continuous improvement of the strategy (Kotler & Zaltman 1971).

Flagship selection and return on investment

When applying the framework described above, it is important to recognize that the preferences of the target audience are fluid and can be changed through marketing. Thus, the eventual popularity of a flagship species is partly dependent on how much funding is spent to improve its profile. This opens up a previously unexplored avenue of research on the trade-offs between using existing, less-appropriate flagships, or spending money to increase the profile of a more suitable species. Recent work has shown that a return on investment approach can improve the effectiveness of conservation activities (Wilson *et al.* 2006; Underwood *et al.* 2008) and this could be adapted for use in marketing campaign development. This is because campaigns based on already popular flagships may provide a low return on investment if: (1) the associated conservation work is relatively expensive; (2) the flagship is already well funded and the extra funding will produce small marginal gains; (3) funding for the flagship cannot legitimately be spent on the organization's priority projects; or (4) the recurrent use of the same species causes "flagship fatigue," diminishing the impact of the campaign (Entwistle 2000). In such situations, it might be more effective for organizations to develop marketing campaigns based on less well-known flagship species, despite the extra costs involved with awareness raising.

When considering return on investment, however, it is important to acknowledge that organizations can benefit from successful flagship marketing campaigns by: (1) increasing their profile and legitimacy and so attracting further support; (2) paying for organization overheads by using a set percentage of the money raised; and (3) setting a threshold on earmarked funding in their campaigns, making it clear that any funding over the threshold will be spent on other projects. In all these cases, an organization might choose high-profile flagships, irrespective of the return on investment for field projects, as this will provide them with the most benefits. In addition, in some cases, there could be organizational benefits to raising the profile of less well-known potential flagship species. For example, by creating a new flagship, NGOs could ensure that they accrue most of the benefits that arise from promoting them (Smith *et al.* 2010). In contrast, commonly used flagship species, such as elephants or tigers are used by a range of organizations to market their work, which divides any potential contributions and makes them less effective at raising attention and funds from the perspective of any single organization.

Beyond traditional flagships

Our new flagship definition, with its focus on species traits instead of the species themselves, also allows the flagship concept to be applied to broader aspects of biodiversity. This is important because the impact of the flagship concept can only be optimized if we manage to expand its current use, a process known as market diversification (Kotler & Armstrong 2010). Despite receiving little attention in the literature, this diversification process is quite well established, as some broader biodiversity levels have acted as de facto conservation flagships for decades, with obvious examples being ecosystems, such as tropical rainforests and coral reefs, and protected areas,

such as the Yellowstone and Serengeti National Parks. All four of these entities are widely recognized by the general public and all have been used to raise funds and awareness for conservation.

However, there are a number of newer initiatives that can also be seen as flagships groups or regions, although they are unusual in the role that branding has played in their development. Branding is a marketing tool that constructs terms, signs, or symbols that allow the target audience to recognize certain products or services and distinguish them from those of their competitors (Hastings 2007; Kotler & Armstrong 2010). Traditionally, conservation NGOs have promoted themselves as brands (Brockington 2008) but this approach has been broadened by some organizations, so that their branding strategies have highlighted the importance of individual schemes based on using global-scale datasets to identify priority regions or species (Rodríguez *et al.* 2007). Such initiatives attempt to overcome the problem of focusing on low-profile regions or species by creating and marketing new "brands" that are linked with conservation value (Smith *et al.* 2010). Thus, we would argue that Conservation International (CI) with their biodiversity hotspots and the Zoological Society of London (ZSL) with their Evolutionarily Distinct Globally Endangered (EDGE) species, have made "conservation value" an important trait for their target audience and so turned these brands into successful flagship regions or groups, respectively (Rodríguez *et al.* 2007; Smith *et al.* 2010).

Conclusions

All conservation organizations need support to undertake their work and most successful organizations have developed effective marketing departments. Nonetheless, accepting the role of marketing can be unsettling and many conservation professionals are still wary of this association (Smith *et al.* 2010). However, we would argue that conservationists should abandon their current mind set, which assumes their work is intrinsically important and that any failure to convince others comes from the ignorance or apathy of the target audience (Walsh *et al.* 1993). Instead, conservationists should recognize that they could learn much from marketing professionals and that marketing should be considered as another dimension of the interdisciplinary science of conservation. Such recognition does not mean accepting the current status quo, as current conservation marketing approaches can have important limitations (Smith *et al.* 2010). Instead, we need collaborations between marketing and conservation professionals to ensure that future campaigns consider the larger conservation picture and take a more objective and balanced approach.

This means that the future of the flagship concept will depend greatly on the adoption of a more rigorous and objective approach, which can be summarized in three steps. First, researchers, journal editors, and reviewers should seek to end the current confusion over the definition of flagship species and recognize the fundamental role of marketing in the concept. Second, we need to improve current approaches for selecting flagship species so that they are underpinned by empirical evidence and conducted only after deciding the conservation target and identifying target stakeholders. Third, we need more effective evaluation of flagship species to increase our understanding of the concept's strengths and weaknesses. Such changes should ensure that the flagship approach is used more effectively to conserve a wider range of species and habitats.

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