

# *Communication of flagship species in conservation: lessons from invasive management projects*

Article

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1 **Communication of flagship species in conservation: lessons from invasive management**  
2 **projects**

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13

14 **Abstract**

15 With the increase of public awareness and involvement in conservational projects, flagship  
16 species have become a common tool to appeal to people's motivations. Yet, the effectiveness  
17 of these species depends on a proper communication of their conservational importance.  
18 Using two projects aiming to control the invasive species American mink, I illustrate how  
19 communication can positively or negatively impact on succeeding at involving the public; and  
20 consequently on the projects. The Scottish mink initiative project managed to increase the  
21 number of volunteers involved by selecting flagship species and their communication adapted  
22 to the public needs. Meanwhile, in the Spanish project, while no volunteers are yet involved,  
23 there has been an increase of public awareness via using the European mink as native flagship  
24 species. However, as its nativeness remaining unconfirmed I suggest there is a high risk of  
25 potential miss-communication with the public that can negatively impact on their perception.

26 **Introduction**

27 Public awareness and participation in management projects aiming to safeguard biodiversity  
28 have become key to bring support, funds and success. The reason behind people awareness or  
29 involvement in conservation projects is a complex compound of personal, social and  
30 environmental factors (Smith and Sutton 2008; Beirne and Lambin 2013); among which  
31 empathy, self and community benefit, and sense of responsibility about biodiversity loss  
32 have been reported as key motivational drivers (Hart & Larson 2014; Verissimo et al. 2011).  
33 To promote public awareness and participation, scientists and managers need to connect these  
34 motivational drivers with the objective behind management. Confronted with the difficulty of  
35 dealing with numerous personalized interactions between them and the network of citizens,  
36 generalized motivational arguments such as the protection of flagship species are of common  
37 use (Caro 2010).

38  
39 The idea behind the use of flagship species is that management focused on one or a few  
40 species will benefit an entire ecosystem. Thus, frequently the selection of these species is  
41 based on ecological factors including (but not exclusively) their role in the ecosystem or on  
42 their vulnerable status (Simberloff 1998; Kalinkat et al. 2016). Besides, among the potential  
43 set of species those most charismatic and appealing to the target audience are frequently  
44 selected (Verissimo et al. 2011; Verissimo et al. 2014) because they better enhance public  
45 awareness and participation (Smith and Sutton 2008). Yet, the effectiveness at driving people  
46 motivation highly depends on properly communicating the reasons behind this selection. To  
47 make projects and the ecological concepts accessible to a wide audience of citizens,  
48 communication is sometimes simplified. However, citizen knowledge is an important  
49 component of their involvement and resilience (Hou 2016), and therefore transmitting proper  
50 information can be crucial for the long term viability of the project. Where scientist and  
51 managers fail at proper communicating with citizens the latest may lose awareness, and if  
52 involved in participation, their motivation and commitment, potentially dropping out from the  
53 project.

54

55 The appropriate selection of flagship species and the communication strategy is especially  
56 important in projects aiming to reduce or eradicate invasive animal species via removal since  
57 this type of project is generally less attractive by the general public than those dealing directly  
58 with species protection; yet, the support and, frequently, involvement via volunteer  
59 participation in projects managing invasive species is essential for assuring success at a  
60 significant spatial scale, especially when leading with highly dispersive species (e.g., Delaney  
61 et al. 2008; Oliver et al. 2016).

62

63 Here I illustrate the importance of the selection of the flagship species and of the proper  
64 communication of the reasons behind their selection for the management of invasive species.  
65 To do so I use the successful example of a management project aiming to control the invasive  
66 American mink (*Neovison vison*) in Scotland based on volunteer involvement. Then, I use the  
67 example of the Spanish management project, which recently started to work on public  
68 awareness via the use of (unconfirmed native) flagships species and the potential future  
69 caveats this could face. I've been actively involved as project scientist in both and, in the first  
70 case, also as volunteer. I explain here their respective communication strategies and how they  
71 affected or may affect public awareness and participation.

72

### 73 **The American mink control in Scotland**

74 The American mink control in Scotland, one of the largest mammal control project in Europe,  
75 was initiated in 2006 centered on the Cairngorms National Park covering 3,800 km<sup>2</sup> (CNP  
76 57°0'N 3°3'W; NE Scotland) and gradually expanded over time to ca. 20,000 km<sup>2</sup> in 2012  
77 supported by ca. 400 volunteers (Bryce et al. 2011). Starting with 186 volunteers involved  
78 during the first years of the project, the number raised to 450 ca. in 2014, mostly composed of  
79 local residents, non professional naturalists and wildlife professionals; which have been key  
80 in the success of the project (Beirne & Lambin, 2013; Bryce et al. 2011).

81

82 The project started using the water vole (*Arvicola terrestris*) as flagship species to protect  
83 native species affected by American mink. Water voles are key stones in the ecosystem  
84 functioning but in the UK they suffered near catastrophic declines of over 80% partly  
85 attributed the predation to mink predation (Aars et al. 2001). The selection of the water vole  
86 as kick start flagship species for the project primary responded to ecological factors given its  
87 declining status and its role in ecosystem functioning (Aars et al. 2001; Bryce 2006). Besides,  
88 the species has a charismatic value within the general public in the UK, since it has been  
89 symbolised for generations of children by the character Ratty (though actually a water vole)  
90 in Kenneth Grahame's tale "The Wind in the Willows" (1908); which provides a cultural  
91 attachment and familiarity to species, traits positively related to citizens' motivation (Bowen-  
92 Jones and Entwistle 2002; Jepson and Barua 2015). When expanding, the project evolved to  
93 incorporate other flagship species depending on the public interests in the area. For example,  
94 using native birds in the coastal West Scotland and salmonids in the East because their  
95 ecological and economical value in nature-based and fishing-based tourism (e.g., Fraser et al.  
96 2014).

97

98 Communication about the species and the project itself, has been focused on the ecological,  
99 economical and cultural value of the flagship species; recurrently done using different set of  
100 media, from one to one interactions with citizens to public talks, newsletters, automated  
101 feedback to those citizens being volunteers (e.g., Tintarev et al. 2012) and local and national  
102 press and TV news (e.g., <http://www.bbc.com/news/science-environment-19503827>).

103

104 The success of the control project at reducing American mink densities (e.g., Melero et al.,  
105 2015; Oliver et al., 2016), the ability to adapt the project to the different public needs and a  
106 customised and recurrent communication helped at ensuring the public support as well as the  
107 recruitment and the long term retention of volunteers (Beirne & Lambin 2013; Fraser et al.  
108 2014).

109

110 **The American mink control in Spain**

111 Most of the regional and national scale American mink control projects in Spain started in the  
112 decade of the 1990s with little success in controlling or reducing the species (e.g., Melero et  
113 al. 2010). The wide distribution of the species, with most populations still expanding, and the  
114 continuous and drastic reductions in funding have limited the successful control of mink  
115 populations. Besides, the public awareness has been for long poor and the participation close  
116 to null. (e.g., ca. < 5 volunteers in the population at NE Spain in 2007, > 20000km<sup>2</sup>; Melero  
117 2007).

118

119 Notwithstanding, during the last years project scientist and managers have worked on  
120 increasing public awareness. In NW Spain, awareness is raised towards the impacted breeding  
121 birds of special conservational and touristic interest (Velando & Munilla, 2008; Barros et al.  
122 2016). In central and NE Spain, the American mink poses a threat to the endangered  
123 Pyrenean desman (*Galemys pirenaicus*) but it is rarely used as flagship species because it is  
124 yet a poorly known species between the general public despite the scientific recognition of its  
125 high value for biodiversity and evolution due to its relic and narrow endemic character  
126 (Nowak 1999). The biggest part of the communication strategy, both regional (North Spain)  
127 and national, relies on the effect of the American mink on its counterpart the European mink  
128 (*Mustela lutreola*).

129

130 As in the case of the Scottish project, communication is done using different media from  
131 public talks (e.g. in civic centers and schools) to dissemination of media videos in the social  
132 media (see e.g. <https://youtu.be/lkPXLmDSBHs>) and local or national news. There are not  
133 recurrent newsletters but there is an active involvement with the local communities via public  
134 activities (see eg. <http://lifelutreolaspain.com/en/education-awareness>). The main message of  
135 this communication is the need to conserve the native European mink from the introduced  
136 American mink. Overall, it seems communication is effectively increasing public awareness  
137 on the presence and risks of the American mink related to the conservational status of the

138 European mink. However, this message confronts with the current ongoing debate on the  
139 nativeness of the European mink population in the area among scientist (Clavero, 2015;  
140 Clavero, 2014; Zuberogoitia et al. 2016). Defenders of the species' nativeness claim that the  
141 populations in the is the result of constrictions of its native distribution who left the  
142 population on the western France and northern Spain isolated (e.g. Zuberogoitia et al. 2016);  
143 but the late detection of the species (1831 and 1955 for France and Spain; Saint-Girons 1994)  
144 and its low genetic variability compared to the populations in Russia and the Danube points to  
145 human mediated introductions (Michaux et al. 2005). Without entering in this debate but  
146 aware of its existence, a logical concern follows in relation to the communication strategy:  
147 What would happen if the human mediated introduction hypothesis was eventually  
148 confirmed?

149

150 At least two processes will be directly impacted, the motivational reason for its conservation  
151 and the public perception. In the first case, scientist, managers and conservationists would  
152 need to decide whether continuing working towards the conservation of the population or  
153 shift towards its control based on its introduced non native status. This last, in my opinion, is  
154 unlikely to occur since the critically endangered situation of the species and its endemic  
155 character in Europe (Maran et al. 2016) makes any remaining population worth to conserve  
156 for the global benefit of the species and biodiversity. Therefore, the motivational argument  
157 for the conservation of the species in Spain (and France) would need to change towards  
158 safeguarding an endangered species rather than because its nativeness. However, the impact  
159 on the public perception might be harder to shift after public awareness linked to the  
160 conservation importance of the species as a native facing the invasion of the introduced  
161 American.

162

163 Under the face of this possibility one may wonder why communication on the European mink  
164 as a flagship species is not generally focus on its overall importance as endangered endemic  
165 species in Europe, instead of its unconfirmed nativeness; and why communication is based on



166 this species only rather than expanding it to other species of confirmed nativeness and interest  
167 such as the Pyrenean desman. Even supporters of its nativeness could consider to follow this  
168 “conservative approach” when communicating given the impact on public perception that  
169 could occur if the introduction is confirmed.

170

## 171 **Conclusions**

172 The two projects presented here illustrated how similar strategies on communicating the  
173 selection of flagship species may have different impact on people’s perception and interest on  
174 management initiatives. Beyond potential cultural differences, the success of volunteers’  
175 involvement in the Scottish project is linked to the success of its strategy to appeal to the  
176 public interest by adaptive the selection and communication of flagships species to their  
177 background. Meanwhile, the Spanish project is mostly focused on the importance of the  
178 nativeness of a single species, rather than using a wider range of available species of interest  
179 or fully explaining the controversy behind this selection. As such, while public awareness is  
180 increasing, there is a high risk of people’s rejection if the main message (the species  
181 nativeness) is confirmed to be wrong.

182

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