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Flagship individuals in biodiversity conservation

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Abstract

Flagship species are an important tool for mobilizing support for conservation. Here, we extend this concept to include individual organisms, whose characteristics, fates and connections to people can garner public attention, attract conservation support, and spur activism. Flagship individuals typically have some of the following characteristics: (i) species traits associated with charisma, (ii) unique or distinguishing individual traits, (iii) high level of exposure to humans, and (iv) a known, noteworthy life history or fate. The interplay between these characteristics and human agency creates unique connections between flagship individuals and people, and generates widespread media attention. We discuss how the selection and promotion of flagship individuals can inspire empathy and, ultimately, conservation action. Finally, we identify the limitations of the flagship individual approach, while arguing that, if carefully and strategically implemented, it has the potential to produce significant benefits for conservation policy and practice.

In a nutshell

- The unique characteristics and life stories of some individual organisms, termed flagship individuals, have enormous potential to mobilize support and raise awareness of conservation.
- Flagship individuals typically have traits associated with species charisma, unique individual traits, high level of exposure to humans, and a known, noteworthy life history or fate. Flagship individuals can be used to create unique connections with people and gain leverage and agency by inspiring empathy and promoting storytelling.
- Flagship individuals are complementary to the use of flagship species and other related concepts. Flagship individuals can be used to raise awareness, promote public engagement and behavioral change, attract funding, and induce policy change.

Introduction

A key challenge for biodiversity conservation is the lack of strong public support and mobilization (Courchamp *et al.* 2018). To cope with ongoing rates of biodiversity loss, it is critical to find effective ways to mobilize support for conservation, including through different conservation-marketing approaches and strategies (Veríssimo *et al.* 2014). One common strategy in conservation marketing campaigns is the use of flagship species. These are "*species used as foci of broader conservation marketing campaigns, based on their possession of one or more traits that appeal to the target audience*" (Veríssimo *et al.* 2011). Flagship species are considered one of the most effective approaches for garnering public support and attracting funding (Barua *et al.* 2011; McGowan *et al.* 2020).

The flagship species concept has also been expanded to focus on multiple species ('flagship fleets'), landscapes and ecosystems (Veríssimo *et al.* 2014; Lundberg *et al.* 2020; Dobson *et al.* 2021). Here, we argue that this concept can also be especially powerful and effective when applied at the level of individual animals. By selecting particular individuals as figureheads of conservation marketing, advocacy, or education, 'flagship individuals' can be used to garner empathy through communicative and psychological mechanisms, and by providing an embodiment, or archetype, to symbolize a cause (Wald *et al.* 2021). Although the potential of individuals to generate intense public attention, attract conservation support, and spur activism has been discussed in the literature (eg Nicholls 2006; Due *et al.* 2014; Carpenter and Konisky 2019), this has not yet been properly recognized and more widely used in conservation.

Here, we introduce the concept of flagship individuals as a promising approach for biodiversity conservation. We highlight several case studies of flagship individuals and explore their impacts, including improved awareness and education (eg Smokey the bear), changed attitudes and behaviors (eg Tilikum the orca), public initiatives (eg Lua the manatee), fundraising (eg 480 Otis the bear) and policy changes (eg Grecia the toucan; WebTables 1-4). We also provide an overview of key characteristics of flagship individuals, guidelines for their selection, notable risks and caveats, and recommendations for conservation practice.

The concept and characteristics of flagship individuals

We define flagship individuals as organisms whose individual traits, species characteristics, exposure to humans, or fates, serve to engage and motivate people, and garner support for broader conservation goals (Figure 1). They partly correspond to the idea of an *identifiable victim* (see Glossary in WebTable 2) of anthropogenic threats posed to wildlife (Thomas-Walters and Raihani 2017). Their main potential lies in people's tendencies to connect more strongly and emotionally to a specific individual than to an abstract group or category, such as species (Deshpande and Spears 2016).

Flagship individuals commonly have a combination of the following four characteristics (Figure 1): 1) traits associated with species charisma, 2) unique or distinguishing individual traits, 3) high level of exposure to humans, and 4) a known, noteworthy life history, set of circumstances, or fate.

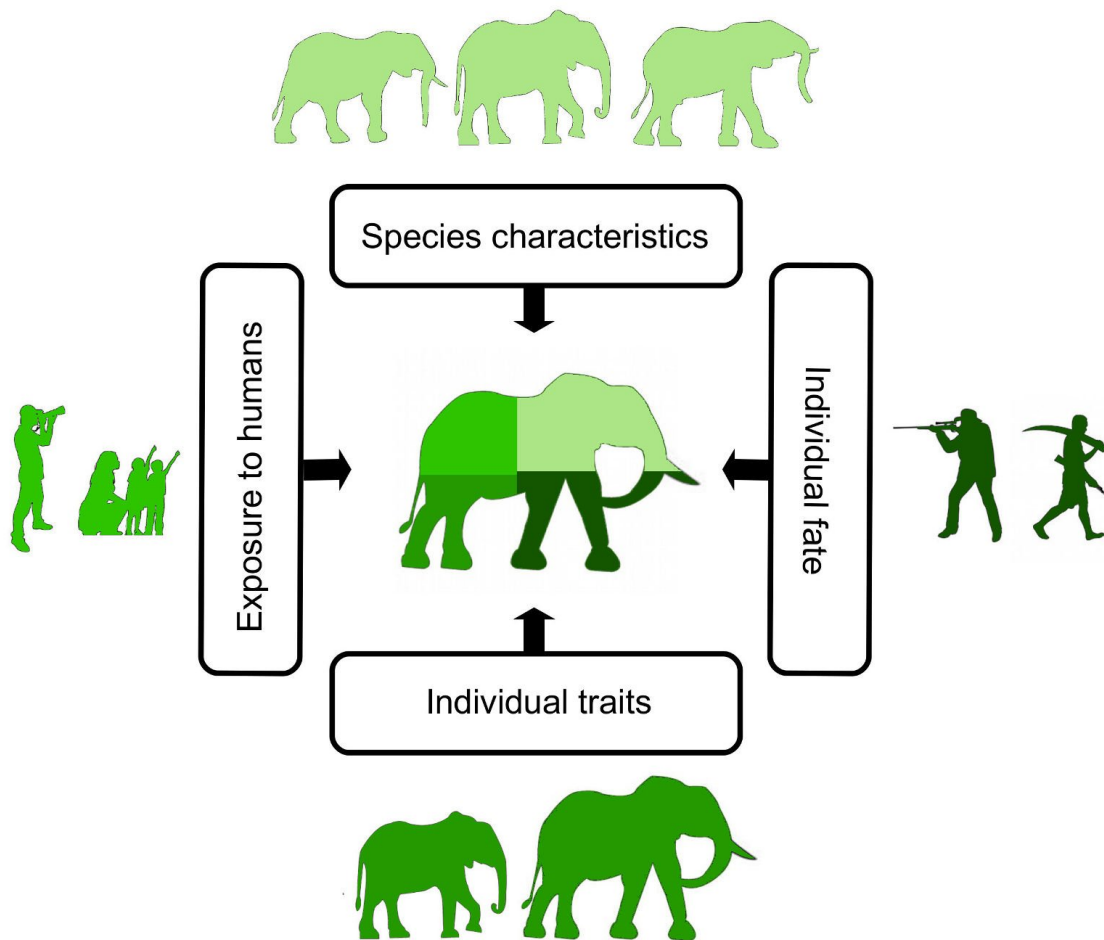


Fig. 1. Defining characteristics of flagship individuals, presented through the example of African elephant (*Loxodonta africana*). Flagship individual (green) is characterized by flagship characteristics of its species, its individual traits (in this example by its greater body size and prominent tusks), exposure to humans (ie tourism), and its individual fate (ie being a victim of poaching).

Flagship individuals typically belong to charismatic species, and therefore share the ‘charismatic traits’ (eg beautiful, impressive, endangered) of their conspecifics (Albert *et al.* 2018; Courchamp *et al.* 2018). Many of the individuals with recognized flagship potential (WebTables 1-4) were also represented by large terrestrial mammals identified as the ‘most charismatic’ by Albert *et al.* (2018).

In addition to species characteristics, flagship individuals may also possess unique traits that distinguish them from their conspecifics. For example, they may have unusual or extreme size (eg General Sherman, a giant sequoia, *Sequoiadendron giganteum*, considered to be the largest living single stem tree on Earth; Figure 2a), extreme longevity (eg Wisdom the Laysan albatross, *Phoebastria immutabilis*, the oldest known bird in the world), more pronounced or unique morphological features, or uncommon behaviours.



Figure 2. Examples of flagship individuals. (a) General Sherman, a giant sequoia, the world largest known living single-stem tree (photo: Josh McNair, CaliforniaThroughMyLens.com); (b) Cecil the Lion, whose killing by a trophy hunter drew global condemnation; (c) Keiko, a captive orca who starred in the movie *Free Willy*; (d) Sam, a female koala who attracted global attention to bushfire impacts; (e) Sudan, a captive northern white rhinoceros who was the last known male of the species (photo: Ami Vitale); (f) Grecia, a chestnut-mandibled toucan, victim of abuse, inspired public activism and policy change (photo: Rescate Wildlife Rescue Center). More information in WebPanel 1.

Flagship individuals also tend to be very exposed to humans, for example in protected areas that are popular tourist destinations, or in urban areas (eg Ruthi the striped hyena, *Hyaena hyaena*; WebTables 1-4). Furthermore, they may have high levels of direct human interaction, for example as zoo attractions (eg Tilikum, a captive killer whale, *Orcinus orca*, kept at SeaWorld Orlando), or by having become so habituated to people that they tend to approach them (eg Lua the Antillean manatee, *Trichechus manatus manatus*; Panel 1). Such visibility can be further strengthened

internationally through social media (eg see the media popularity of Knut the polar bear, *Ursus maritimus*, from the Berlin Zoo, which led to a global media phenomenon labelled "Knutmania"; WebTables 1-4).

Flagship individuals are often brought to prominence by their unusual life history or circumstances, dramatic events, and/or often tragic fate. These events can generate an emotional response, raise awareness of specific conservation issues, and draw public support and direct engagement. For example, the killing of Cecil the lion (*Panthera leo*) by a trophy hunter drew global condemnation and directed attention towards the complex conservation issue of trophy hunting (Figure 2b; Carpenter and Konisky 2019). In another example, Grecia the chestnut-mandibled toucan (*Ramphastos ambiguus swainsonii*), after being abused and losing her upper beak, was taken to an animal shelter where her beak was replaced with a prosthetic 3D-printed one. Her story inspired public activism and policy change (WebTables 1-4). It is important to note that success stories and positive outcomes can also be effective in attracting and mobilizing public attention.

Individuals who are recognized as the last remaining representatives of their species may also become flagships. They can be either a living or a deceased individual, such as Sudan, the last male individual of northern white rhinoceros (*Ceratotherium simum cottoni*; Fink *et al.* 2020), and Lonesome George, last known individual of the Pinta Island tortoise (*Chelonoidis niger abingdonii*; Nicholls 2006). They can also represent historic representatives of extinct species, such as Benjamin, the last known thylacine (*Thylacinus cynocephalus*), and Martha, the last passenger pigeon (*Ectopistes migratorius*; Avery 2014). However, the fate of a flagship individual can also be uplifting, as was the case for Diego, the Hood Island giant tortoise (*Chelonoidis niger hoodensis*), who had a pivotal role in saving his species (Cayot 2021).

As is apparent from the examples already cited, flagship individuals also require a name or an identifier, often one that includes both the personal name of the individual and a common name of the species (eg Smokey Bear or Herman the Sturgeon; WebTables 1-4). Their name enables flagship individuals to become recognized, referred to as unique individuals, and attributed personhood (Levin 2015). While links between the common name of a species and the success of conservation efforts remains unclear (eg Carvell *et al.* 1998; Gregg *et al.* 2020; Diaz-Restrepo *et al.* 2022), the possession of a name seems to be important for the effectiveness of flagship individuals. For example, Cecil the lion's popularity has been partly attributed to marketing using his personal name, instead of his research code number (ie MAGM1; Macdonald *et al.* 2016; Carpenter and Konisky 2019). Similarly, it is believed that his personal name was one of the reasons why Diego the tortoise received more media attention than E5, another male conspecific involved in the captive-breeding program, even though the latter made a greater contribution to the species' recovery based on the number of offspring (Moore 2021).

Panel 1. Lua the Antillean Manatee

The Antillean manatee (*Trichechus manatus manatus*) was once widespread from the south-eastern coast of Brazil to Central America and the Caribbean. In Brazil, habitat loss and overhunting severely reduced and fragmented the wild population, restricting extant subpopulations to the north and north-east coast. In response to these threats an ambitious program was initiated in 1994, with the aim of releasing rehabilitated orphaned manatee calves into the southernmost subpopulation. The program is unique within Brazil, and has invested significant resources in rehabilitation and post-release monitoring. Until 2015, 30 manatees have been released at three sites, with a high rate of success (75%; Normande *et al.* 2015).

The manatee named 'Lua' (Figure 3) was stranded in March 1991 in Morro Branco, Northeast Brazil. Her stranding coincided with the start of the reintroduction program, and she was one of the first rescued calves to go into rehabilitation. In 1994 she was the first released manatee in the wild (together with 'Astro') and quickly became the symbol of the reintroduction program,

being used in local media and community activities to gain public attention. Underwater photographers took advantage of her docile behaviour to take iconic pictures for national awareness raising campaigns.

Because of her docility and willingness to approach humans and boats, for many people she was their first direct contact with wild manatees. Her habituation to humans greatly facilitated the creation of a local sustainable tourism initiative that currently supports up to 400 families from the local communities of Porto de Pedras and Barra de Mamanguape (Normande *et al.* 2015, 2016). Nevertheless, Lua's tameness has also brought challenges, with some visitors offering her food and water and, sometimes, even beer and fried fish. Such interactions can lead to health issues and potentially reduce the amount of time a manatee spends foraging, resting or mating. In spite of this, Lua was the first released manatee to successfully breed in the wild (Lima *et al.* 2005) and already had six calves (almost half of all reported calves from released mothers), contributing to the repopulation of the area and to the connection of sub-populations.

At the time of writing, Lua is a middle-aged (31 years old) manatee of around 3.1 m length and 640 kg weight. Her body size and unique features, including an 'algae mask' on the face, make her easy to recognize and track, and her friendly disposition towards humans means she remains one of the most important conservation assets on the northeast coast of Brazil.



Figure 3. Lua the Antillean manatee (*Trichechus manatus manatus*).

Flagship individuals can also be objects of research, such as tagged and tracked individuals, which are often used for conservation communication and outreach (eg tracked great white sharks, *Carcharodon carcharias*, such as Mary Lee; WebTables 1-4). Further, they can represent a succession of individuals, where each one replaces the previous one and takes over the identity after their death (eg Sir Nils Olav, king penguin, *Aptenodytes patagonicus*, at the Edinburgh Zoo, is in his 3rd reincarnation). Flagship individuals are sometimes also promoted as a small group, as was the case with the "Magnificent Seven" tuskers (Dzombo, João, Kambaku, Mafunyane, Ndlulamithi,

Shawu, and Shingwedzi), African elephant bulls (*Loxodonta africana*), used to promote conservation work of the Kruger National Park (WebTables 1-4), an approach analogous to the concept of *flagship fleets* (Verissimo *et al.* 2014).

A particular subgroup of flagship individuals are fictional characters, such as those from animated movies (eg Nemo from "Finding Nemo", and Blu from "Rio"; De Matos 2019), public campaigns (eg Smokey Bear, also personified by an American black bear, *Ursus americanus*, in Washington Zoo), and movie/television characters played by animal actors (eg Flipper the dolphin, *Tursiops truncatus*, and Skippy, the eastern grey kangaroo, *Macropus giganteus*). Fictional flagship individuals offer opportunities for conservation organizations to team up with the producers of digital visual media to further their objectives (Dorward *et al.* 2017; Silk *et al.* 2018). They may even be linked with the concept of a *virtual influencer*, which is becoming an increasingly popular marketing tool (eg Eric the pangolin; Verissimo 2021).

Drivers of flagship individual effects

The main mechanisms by which flagship individuals seem to gain leverage where other flagship types may be less effective are psychological, by inspiring empathy, and communicative, through storytelling. Empathy may be generated and strengthened through processes of personification and anthropomorphism, which help people relate better to an individual and reduce perceptions of distance between humans and nonhumans (Kusmanoff *et al.* 2020; Wald *et al.* 2021). Empathy can be further strengthened through negative emotional responses such as anger, driven by events perceived as morally wrong (Levin 2015; Macdonald *et al.* 2016; Boissat *et al.* 2021).

Different storytelling techniques by news media and organizations involved in conservation marketing, advocacy, or education can substantially affect the promotion and effectiveness of flagship individuals. These include personalized narratives focused on individuals rather than groups (Wald *et al.* 2021), which are often featured in natural history documentaries (Boissat *et al.* 2021). Traditional and social media have an important role in selecting, covering and promoting flagship individuals, often with their own agenda and rules for choosing and framing stories (Harcup and O'Neill 2017; Arbieu *et al.* 2021). In particular, stories that involve celebrities (such as named individuals) or criteria that match those of flagship individuals, such as elements of surprise, bad news, and relevance for the target audience, are generally more prone to be selected and spread by the media (Harcup and O'Neill 2017). Zoos regularly personify captive animals in their displays (Levin 2015), which may drive establishment of a flagship individual. For example, captive individuals are typically named, get frequent news coverage, and sometimes even get their own webcams, blogs, and social media pages through which they "communicate" with the public (Levin 2015).

The salience or appeal of a flagship individual can vary spatially and temporally, and are affected by various sociocultural factors. For example, the previously mentioned death of Sudan, the last male northern white rhinoceros, attracted attention and emotional responses that were mainly concentrated in Western countries, far outside of the species range (Fink *et al.* 2020).

Effects of flagship individuals

Flagship individuals do not only garner support for the conservation of their species, but often also have a positive impact in tackling broader conservation challenges (eg Sam the koala, who helped raise awareness on both the extinction risk faced by koalas and the impacts of bushfires; Figure 2d; Due *et al.* 2014). Flagship individuals can generate focusing events (Carpenter and Konisky 2019; Jarić *et al.* 2022), and even catalyze conservation movements (Boissat *et al.* 2021). Besides being used to raise public awareness of, and funds for, conservation problems and initiatives, they can also lead to attitudinal shifts, behavioral changes, and policy development (Panel 1; WebTables 1-4). Their wide reach can be used to attract new audiences, and provide common focal points and advocacy goals for both conservation and animal protection activists

(Carpenter and Konisky 2019). There is, however, a lack of data to evaluate the scale of contributions of flagship individuals to conservation, which stems from the overall lack of data on the impact of conservation efforts.

Emergence, selection, and use of flagship individuals

Flagship individuals can either rapidly appear in the spotlight through a *focusing event* (eg Cecil the lion, Grecia the toucan; WebTables 1-4), or gradually through continuous interactions with people (eg Lua the Antillean manatee; Panel 1). Media often plays a key role in driving a focusing event. Following the initial surge of attention, the flagship status of an individual will emerge once it gets selected and promoted by conservation-oriented individuals or organizations. Such players have an essential role in communicating the relevance of the individual story or fate beyond the immediate context, to create circumstances in which broader societal awareness and flagship status match, and together pave the way towards concrete conservation actions. While predicting focusing events is very challenging, practitioners can maximize effectiveness through timely and carefully targeted conservation marketing strategies, interventions, education campaigns, and advocacy (Lundberg et al. 2020; Jarić et al. 2022).

Flagship individuals can also be selected, promoted, and used without having been previously popular or publicly known. This is common for individuals featured in scientific or conservation projects, such as reintroduced or tracked individuals. For example, Mary Lee, the great white shark, was selected and used for a campaign to promote research on animal tracking, becoming in the process one of the most famous shark individuals worldwide (WebTables 1-4).

Flagship individuals should be selected and promoted based on the target audience and intended goal of the campaign (Barua *et al.* 2011; Veríssimo *et al.* 2011; Dobson *et al.* 2021). For example, international fundraising efforts may call for individuals of a globally salient species, even outside its species range, while those mainly salient within their range may be more suitable for local conservation efforts. Societal preferences can vary both among and within different flagship types, which allows to maximize their effectiveness by developing carefully targeted marketing strategies that may include different types of flagships, designed for particular target groups (Lundberg *et al.* 2020). Flagship individuals have a great potential to be included in such outreach efforts, and combined with other flagship types, to be deployed in a wide range of contexts. Their selection process could follow a similar framework to that proposed for flagship species by Veríssimo *et al.* (2011), as well as the set of selection criteria established by Barua *et al.* (2011), while taking into account specific characteristics of flagship individuals (Figure 1). According to that framework, those seeking to use flagship individuals in a conservation campaign could first identify and understand the conservation issue, target audience and their relationship (Veríssimo *et al.* 2011). Such knowledge should shape the selection of a flagship individual, while also considering its societal and ecological characteristics and intended uses (Barua *et al.* 2011). Finally, a marketing, advocacy, or education strategy involving a selected flagship individual should be developed and implemented, followed by an evaluation of the campaign success (Veríssimo *et al.* 2011). Evaluation of the effectiveness of flagship individuals should be conducted using evidence-based methods, such as brand awareness (Veríssimo *et al.* 2014), counterfactual approaches (Veríssimo *et al.* 2020), and coalition models (Boissat *et al.* 2021).

Caveats and challenges

While flagship individuals can be an effective tool in conservation marketing, there are several caveats and challenges that need to be understood and addressed. Some of these are inherent to the use of individuals in conservation campaigns, while others are mainly associated with their improper use. Ultimately, the concept we present here requires further research, including experimental designs that explore the societal impacts of individual- versus species-focused conservation marketing, advocacy, or education. Furthermore, the four identified characteristics of

flagship individuals are yet to be properly tested, including their importance and relative frequency among flagship individuals.

Flagship individuals are inherently more transient than other flagship types, and they will ultimately cease to perform their flagship role. This may be due to the death or disappearance of individuals, or the loss of the key structures that generated and maintained their appeal – for example, the cessation of an animal tracking program, release from captivity, translocation, or loss of media interest. This can lead to negative eventual outcomes, such as reduced public support, or rise of conservation pessimism and apathy. The effects of these challenges might be mitigated by moving focus onto another individual, by using ‘fleets’ of individual flagships, or by developing fictional flagship characters. In some highly threatened or rare populations or species, such as kākāpō (*Strigops habroptilus*), all of the individuals have been named. This can facilitate switching between individuals in the campaign, or using them as flagship fleets.

Focusing events generated by flagship individuals are also inherently transient (Jarić *et al.* 2022). This makes it critical to adapt conservation marketing, advocacy, or education strategies to anticipate them, maximize effectiveness, mitigate effects of attention decay, and ensure that flagship individuals are used to drive longer-term attention and effects.

Improper use of flagship individuals by providing misleading, oversimplified, or sensationalized information may distort reality, provide a false characterization of the individual, species, or conservation issue, and ultimately undermine conservation efforts (Somerville *et al.* 2021). This also includes exaggerated anthropomorphism and promotion of certain stereotypes, which is also associated with the tendency of media to sensationalize conservation issues (Bradshaw *et al.* 2007; Cousteau and Irwin 2007).

Flagship individuals often appeal to people concerned with animal welfare, which may be a challenge when the priorities of animal welfare and conservation organizations do not align (Hayward *et al.* 2019). Flagship individuals could also be negatively perceived within the species range, for example, due to human conflicts over wildlife management (Jepson *et al.* 2011). There is also concern that some applications of the concept, such as the use of captive or fictional flagship individuals, may provide a false sense of the presence and stability of a threatened species, or even of one extinct in the wild (Courchamp *et al.* 2018). Further, the popularity of a flagship individual can potentially harm its species if it leads to unsustainable tourism or pet trade, as well raising some important ethical issues. Bringing an individual into spotlight can lead to unintended consequences, such as increased disturbance, undesirable interactions with people (Newsome and Rodger 2008), or risks to public safety. For example, the global popularity of Freya the walrus (*Odobenus rosmarus*), a resident of Oslofjord harbors, and increasingly large crowds she was attracting, ultimately led to a decision to euthanize her due to concerns for human safety (Nikel 2022). Further work is needed to understand how to employ flagship individuals effectively while mitigating these risks.

Conclusions

The aim of our study was to present the concept of flagship individuals, to raise awareness on their potential for conservation action and challenges associated with the concept. The concept of flagship individuals has great potential within biodiversity conservation, by contributing to conservation through improved public support (eg Lua the manatee), education (eg Smokey the bear), fundraising (eg 480 Otis the bear), and policy implications (eg Grecia the toucan). It is complementary to the use of flagship species and other related concepts, and diversifying the flagship concept may generate wider support for conservation and attract new audiences (Veríssimo *et al.* 2014; Lundberg *et al.* 2020; Dobson *et al.* 2021). Despite some challenges, if properly implemented the flagship individual approach could produce significant benefits for conservation from global to local scales.

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WebTable 1. Reported and potential examples of flagship individuals. The dataset represents a selection of 40 examples that span different species groups, regions and charisma effects, identified by literature search and expert suggestions.

No.	Name	Species		Group	Habitat	Country	Continent	Status
		Vernacular name	Scientific name					
1	480 Otis	Brown bear	<i>Ursus arctos</i>	Mammal	Terrestrial	USA	N. America	Wild
2	Alex	Grey parrot	<i>Psittacus erithacus</i>	Bird	Terrestrial	USA	N. America	Captive
3	Bill and Lynn	North American beaver	<i>Castor canadensis</i>	Mammal	Semiaquatic	USA	N. America	Wild
4	Benjamin	Thylacine	<i>Thylacinus cynocephalus</i>	Mammal	Terrestrial	Australia	Australia	Captive
5	Bert	Moose	<i>Alces alces</i>	Mammal	Terrestrial	Germany	Europe	Wild
6	Bruno (JJ1)	Brown bear	<i>Ursus arctos</i>	Mammal	Terrestrial	Germany	Europe	Wild
7	Cecil	African lion	<i>Panthera leo</i>	Mammal	Terrestrial	Zimbabwe	Africa	Wild
8	Chi Chi	Giant panda	<i>Ailuropoda melanoleuca</i>	Mammal	Terrestrial	UK	Europe	Captive
9	David Greybeard	Eastern chimpanzee	<i>Pan troglodytes schweinfurthii</i>	Mammal	Terrestrial	Tanzania	Africa	Wild
10	Dicke Marie	European oak	<i>Quercus robur</i>	Plant	Terrestrial	Germany	Europe	Wild
11	Diego	Hood Island giant tortoise	<i>Chelonoidis niger hoodensis</i>	Reptile	Terrestrial	Ecuador	S. America	Wild/captive
12	Elsa	Lion	<i>Panthera leo</i>	Mammal	Terrestrial	Kenya	Africa	Wild/captive
13	Fernanda	Fernandina Island	<i>Chelonoidis niger</i>	Reptile	Terrestrial	Ecuador	S.America	Wild/captive

		Galápagos tortoise	<i>phantasticus</i>					
14	Flipper	Common bottlenose dolphin	<i>Tursiops truncatus</i>	Mammal	Aquatic	USA	N. America	Fictional/captive
15	General Sherman	Giant sequoia	<i>Sequoiadendron giganteum</i>	Plant	Terrestrial	USA	N. America	Wild
16	Grecia	Chestnut-mandibled toucan	<i>Ramphastos ambiguus swainsonii</i>	Bird	Terrestrial	Costa Rica	N. America	Wild/captive
17	Grizzly 399	Grizzly bear	<i>Ursus arctos horribilis</i>	Mammal	Terrestrial	USA	N. America	Wild
18	Guy	Western lowland gorilla	<i>Gorilla gorilla gorilla</i>	Mammal	Terrestrial	UK	Europe	Captive
19	Herman	White sturgeon	<i>Acipenser transmontanus</i>	Fish	Aquatic	USA	N. America	Captive
20	Herschel	California sea lion	<i>Zalophus californianus</i>	Mammal	Aquatic	USA	N. America	Wild
21	Ivy and Brumas	Polar bear	<i>Ursus maritimus</i>	Mammal	Terrestrial	UK	Europe	Captive
22	Jumbo	African bush elephant	<i>Loxodonta africana</i>	Mammal	Terrestrial	UK/USA	Europe/N. America	Captive
23	Keiko	Killer whale, orca	<i>Orcinus orca</i>	Mammal	Aquatic	Iceland	Europe	Wild/captive/fictional
24	Knut	Polar bear	<i>Ursus maritimus</i>	Mammal	Terrestrial	Germany	Europe	Captive
25	Koko	Western lowland gorilla	<i>Gorilla gorilla gorilla</i>	Mammal	Terrestrial	USA	N. America	Captive
26	Lonesome George	Pinta Island tortoise	<i>Chelonoidis niger abingdonii</i>	Reptile	Terrestrial	Ecuador	S. America	Wild/captive

27	Lua	Antillean manatee	<i>Trichechus manatus manatus</i>	Mammal	Aquatic	Brazil	S. America	Wild
28	Magnificent Seven tuskers	African bush elephant	<i>Loxodonta africana</i>	Mammal	Terrestrial	South Africa	Africa	Wild
29	Martha	Passenger pigeon	<i>Ectopistes migratorius</i>	Bird	Terrestrial	USA	N. America	Captive
30	Mary Lee	Great white shark	<i>Carcharodon carcharias</i>	Fish	Aquatic	USA	N. America	Wild
31	Ndakasi	Mountain gorilla	<i>Gorilla beringei beringei</i>	Mammal	Terrestrial	DR Congo	Africa	Captive
32	Ruthi	Striped hyena	<i>Hyaena hyaena</i>	Mammal	Terrestrial	Israel	Asia	Wild
33	Sam	Koala	<i>Phascolarctos cinereus</i>	Mammal	Terrestrial	Australia	Australia	Wild
34	Sir Nils Olav	King penguin	<i>Aptenodytes patagonicus</i>	Bird	Aquatic	UK	Europe	Captive
35	Smokey Bear	American black bear	<i>Ursus americanus</i>	Mammal	Terrestrial	USA	N. America	Fictional/captive
36	Sudan	Northern white rhinoceros	<i>Ceratotherium cimum cottoni</i>	Mammal	Terrestrial	Czechia/Kenya	Europe/Africa	Captive
37	Tilikum	Killer whale, orca	<i>Orcinus orca</i>	Mammal	Aquatic	USA	N. America	Captive
38	Wally	Bearded vulture	<i>Gypaetus barbatus</i>	Bird	Terrestrial	Germany	Europe	Wild/captive
39	Winter	Bottlenose dolphin	<i>Tursiops sp.</i>	Mammal	Aquatic	USA	N. America	Captive
40	Wisdom	Laysan albatross	<i>Phoebastria immutabilis</i>	Bird	Semiaquatic	USA	N. America	Wild

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WebTable 2. Description of reported and potential flagship individuals presented in WebTable 1.

No.	Name	Description
1	480 Otis	A male brown bear, winner of the Fat Bear Competition in 2021, a tradition introduced by the Katmai National Park and Preserve in Alaska, as a way to highlight natural beauties of the protected area, health of the ecosystem and bear conservation. It is focused on their summer accumulation of fat reserves, to allow them to survive winter hibernation. All individuals participating in the contest attract a lot of attention by the public and media. Otis is also a subject of fundraising campaign (Otis fund), which gathered considerable funds for research and conservation activities (https://www.katmaiconservancy.org/the-otis-fund/).
2	Alex	Alex was subject to a thirty-year experiment by animal psychologist researcher Irene Pepperberg who bought him at a pet shop at the age of 2. He died in 2007 at the age of 31. Pepperberg's work with him made it clear that birds, and particularly parrots, can be very intelligent. The Alex Foundation (https://alexfoundation.org) has the goal "to support research that will expand such knowledge, and to use these findings to encourage responsible ownership of parrots, their conservation and preservation in the wild, and veterinary research into their psychological diseases and care, thereby improving the lives of all parrots worldwide."
3	Bill and Lynn	A mated pair of beavers in a riparian area of Pennsylvania, promoted as flagship individuals for the recolonization of the area by beavers, to reduce conflicts and increase acceptance by local landowners.
4	Benjamin	The last known thylacine individual, died from exposure at the Beaumaris Zoo in Hobart. Motivated creation of Remembrance Day of Lost Species (https://www.lostspeciesday.org), held each year on November 30, the date of Benjamin's death; also featured in famous video clip.
5	Bert	Moose were historically present in Germany, but were extirpated and are now very slowly coming back, mainly from Poland. Bert is one of the very few moose currently in Germany, and he is particularly popular in the state of Brandenburg where he is living since 2018 and where he is regularly in the news. In addition to being one of the first moose to return to Germany, his second charismatic characteristic is his unusual behavior, his tendency to socialize with cattle, which also makes it easier to observe him than other moose.
6	Bruno (JJ1)	Brown bears became extinct in Germany in the 19 th century (the last one was shot in 1835 in Ruhpolding, Bavaria), but in 2006 the bear Bruno aka "JJ1" entered Bavaria and thus Germany, coming from Italy and passing through Austria. He was therefore the first brown bear to be known in Germany after more than 170 years. His killing of livestock and pets

		caused conflict with some humans, and he was eventually shot only a few weeks after his appearance in Germany. Since 2008, his stuffed body is on display at the Museum of Man and Nature in Munich. His fate attracted high media attention, and was perceived as a tragic example of human-wildlife conflict, which led to development of a management plan for brown bears in Bavaria.
7	Cecil	Famous tourist attraction in Zimbabwe's Hwange National Park, whose killing by a trophy hunter drew global condemnation, brought attention towards the issue of trophy hunting, and attracted conservation funding.
8	Chi Chi	Famous captive female giant panda from the London Zoo, one of the best-known pandas in the world. Inspired panda logo of the World Wide Fund for Nature (WWF), which made Chi-Chi the face of conservation.
9	David Greybeard	Chimpanzee at the Gombe National Park, Tanzania, part of the Kasekela chimpanzee community, who was studied by scientist Dr Jane Goodall in her ground-breaking research about emotion, communication, personality, and the use of tools in animals; it brought increased awareness of great apes, and the need for their protection, and protection of their habitats.
10	Dicke Marie	With an estimated age of 500-600 years, this oak tree is supposedly Berlin's oldest tree and one of Germany's few national heritage trees. It has been photographed a countless number of times, including for many postcards, and is also well-known through the Humboldt brothers Alexander (the famous researcher Alexander von Humboldt) and Wilhelm who gave this tree its name.
11	Diego	A male tortoise, captured in the wild and kept in zoos, it was included in the captive breeding program in an effort to save the nearly extinct subspecies. It was instrumental in saving the subspecies, by fathering more than 900 offspring released on the Española Island, Galápagos. Highly popularized by media, raised awareness of the conservation programme, and of the conservation efforts on Galápagos.
12	Elsa	A female lion orphaned as a cub, she was raised by game wardens, and eventually released into the wild. Her life inspired several books and movies, attracted global attention and made a huge impact on public perceptions and attitudes towards conservation of lions and African wildlife in general.
13	Fernanda	Believed to be last Fernandina Island Galápagos tortoise, which was believed to be extinct prior to Fernanda's discovery in 2019, with its status confirmed by genetic analysis in 2021.
14	Flipper	Movie character played by animal actors; inspired many people to protect cetaceans; popular character in eponymous movies and TV series, and representing a fictional flagship individual that contributed to the popularity of dolphins.
15	General Sherman	World largest known living single-stem tree (2500 m ³ volume) as well as among the oldest ones (2300-2700 years old),

		and a key tourist attraction of the Sequoia National Park, USA. Raises attention and interest in national park, attracts tourism and funding for the national park.
16	Grecia	A female toucan born in the wild, in Grecia canton of Costa Rica. It was abused and lost its upper beak, which was replaced afterwards with a prosthetic 3D printed beak. It inspired public activism and national movement on animal rights, also resulting in policy change.
17	Grizzly 399	A female grizzly bear that resides in the Grand Teton National Park and Bridger-Teton National Forest. She attracts huge attention and tourist visitations in the area, and is considered the most famous bear in the Greater Yellowstone Ecosystem, believed to be partly responsible for millions of tourists visiting the area. She was collared and tracked by scientists, who named her. Due to constant proximity of tourists she became partly habituated to humans, and often resides near roads, which exposes her to tourists. She is followed by 40 to 50 wildlife photographers. she has dedicated social media accounts, and inspired several books.
18	Guy	A male western lowland gorilla, one of the most famous animals at the London Zoo; his popularity attracted high visitation rates, to a great extent due to his peculiar behavior and interactions with humans and other animals, perceived as gentle. He often featured on TV and natural history shows.
19	Herman	Captive white sturgeon at the Sturgeon Viewing Interpretive Center, Bonneville Hatchery, USA, is the oldest and largest known captive sturgeon (79 years old, >3 m length) that attracts considerable media coverage, as well as awareness about sturgeon conservation issues.
20	Herschel	Herschel was a massive sea lion bull living in the Shilsholl Bay near Seattle, and was the first to venture all the way to the locks leading to Lake Washington to predate on steelhead in the 1980's. Herschel is therefore both an icon of sea lion recovery after their extirpation in the 1930's (for oil and meat for local consumption and aphrodisiac products for Chinese markets), and an illustration of management conflicts over wildlife owing to the impact of sea lions' recovery on the stock of steelheads. His popularity contributed to the amendment to the Marine Mammal Protection Act.
21	Ivy and Brumas	Famous female polar bears at the London Zoo, with Ivy giving birth to Brumas in 1949, which was first successful birth of polar bears in UK. Their popularity was attracting a lot of visitors, and resulted in many newsreels, books, toys, and other merchandise.
22	Jumbo	Male African bush elephant born in 1860 in Sudan. He was moved to several zoos, including Jardin des plants in Paris and the London Zoo, and ultimately to United States where he appeared in a circus and exhibitions. He was hugely popular in the USA and UK, and improved awareness of elephants.
23	Keiko	Keiko played Willy in the movie Free Willy. He was originally captured in the Atlantic Ocean near Iceland in 1979,

		spent time in captivity in Iceland, Ontario and Mexico City. He then played his movie role in Free Willy which aired in 1993. He had health problems probably due to poor captivity conditions. The Free Willy-Keiko Foundation was established in 1995 to bring him back to health and eventually released him back into the wild. Keiko was first transported back to Oregon (in 1996) and then to Iceland (in 1998). He was released back into the wild in 2002, and died 2003 in Norway at the age of ca. 27. Due to his role as Willy in Free Willy, Keiko became a flagship individual for animal welfare as well as whale conservation.
24	Knut	"Rarely has an animal gained as much worldwide attention during its lifetime as the polar bear (<i>Ursus maritimus</i>) Knut, born 2006 in the Berlin Zoological Garden. Knut's popularity resulted in the most profitable period in the Zoo's 163-year history. In 2011 in front of running cameras, Knut drowned after he suffered epileptic seizures and fell into the enclosure's pool" (Prüss et al. 2015; see WebTable 4 for full citation). He was rejected at birth by his mother together with his twin brother who died after four days; was then raised by zookeepers after a public debate whether or not he should be killed, and children protesting for him to stay alive. Due to Knut's worldwide attention, the term "Knutmania" was coined. He has Wikipedia articles in >40 languages, the bronze sculpture "Knut the dreamer" can now be seen in Berlin's Zoo and his remains are displayed in Berlin's Natural History Museum. His pictures were also used for an environmental campaign in 2007, e.g. with Vanity Fair magazine and Leonardo DiCaprio; he was mascot for the 2008 conference on endangered species in Bonn; he had a 2008 special issue stamp released for nature protection.
25	Koko	Female western lowland gorilla, born at the San Francisco Zoo, Koko was probably the most documented individual non-human animal, and became famous for being the first gorilla to communicate via a modified version of sign language. Koko inspired millions of people around the world to better understand the sensitive, caring and intelligent nature of gorillas, and became an ambassador for her species through many magazine articles, books, documentaries, news stories, public service announcements, a website, photos, and film/video clips on YouTube and the internet.
26	Lonesome George	Male Pinta Island tortoise, he was the last known individual of the subspecies. He became popularized and widely known as the rarest creature in the world, and was a symbol of conservation efforts in the Galápagos Islands and throughout the world.
27	Lua	The first captivity-released manatee in Brazil and very important for the creation and zoning of Costa dos Corais MPA. She also was the first released manatee to reproduce and an important symbol of the success of the Brazilian conservation translocation program, being used in local media and community activities to gain public attention. Underwater photographers took advantage of her docile behavior to take iconic pictures for national awareness raising campaigns, and many people had their first direct contact with wild manatees through Lua. Her habituation to humans greatly facilitated the creation of a local sustainable tourism initiative.

28	Magnificent Seven tuskers	Seven male elephants (Dzombo, João, Kambaku, Mafunyane, Ndlulamithi, Shawu, and Shingwedzi) publicized by the National Park Kruger as a successful example of their conservation work. Each individual has received its name, and they also received their collective name. They became highly popular tourist attraction as a result of promotion that included merchandise and illustrated articles.
29	Martha	Female passenger pigeon, is considered to be the last living individual of her species. Before she died at the Cincinnati Zoo she was already a celebrity and attracted many visitors, and has since become a symbol of extinction threat as well as an enduring icon of the conservation movement.
30	Mary Lee	A 1500 kg great white shark that was tagged as a part of a research project, and was promoted as a flagship of the project. She had a highly popular Twitter account that was keeping track of her movement, and has significantly contributed to a shift away from the negative perceptions of sharks.
31	Ndakasi	An orphaned female mountain gorilla, saved by park rangers after her whole family was shot dead by militia poachers. She rose to international fame when she featured in a viral "selfie" photo. Following her death, her obituaries were published by many global major news media, and her photos and life history became viral again on social and news media. She contributed to increased awareness about the problem of poaching and conservation of mountain gorillas. She featured in the Academy nominated documentary film Virunga, focused on the efforts of rangers in the Virunga National Park to protect mountain gorillas.
32	Ruthi	Female striped hyena, became popular in the city of Modi'in in central Israel, where she was frequently encountered, and became a source of affection for many locals. Her popularity led to establishment of a dedicated social media accounts, news media coverage, and to many dedicated works of art and merchandise. She contributed to promoting an ecological corridor through central Israel, and to improved perceptions of the species.
33	Sam	Her picture raised a surge in media attention, as a firefighter was giving this female koala a drink during a violent Victorian bushfire. She brought a lot of attention to the threat of fires to biodiversity.
34	Sir Nils Olav	Brigadier Sir Nils Olav III, a king penguin at the Edinburgh Zoo, is a mascot and colonel-in-chief of the Norwegian King's Guard. His name and ranks have been passed down from one individual to another, with each one replacing the previous one and taking over the identity after their death (current one is his 3 rd reincarnation). Attracts considerable media attention in the UK and Norway, and likely raises awareness of the species and penguins in general.
35	Smokey Bear	American campaign and advertising icon of the U.S. Forest Service for the Wildfire Prevention Campaign. Real life counterpart/personification was a bear cub caught in a wildfire, rescued and kept at the Washington DC zoo. Smokey bear is now featured in all wildfire prevention campaigns throughout the US, and has marked generations of US campers

		and travelers. The Smokey Bear Wildfire Prevention campaign is the longest-running public service advertising campaign in U.S. history.
36	Sudan	Captive northern white rhinoceros who was at the time of his death one of the last three living individuals and the last known male of the species, attracted a lot of attention and support for the plight of rhinoceros species.
37	Tilikum	Captive male orca kept at SeaWorld Orlando, featured in the documentary movie “Blackfish”. Tilikum attracted public attention and contributed to negative attitudes towards mistreatment of killer whales in captivity and their use for entertainment purposes.
38	Wally	Wally was, together with Bavaria, the first bearded vulture to be released in Germany, as part of a reintroduction project. They were released in the summer of 2021 and have been very frequently featured in the media. Wally died in May 2022 in the Bavarian Alps.
39	Winter	While she was a few months old, Winter got tangled in a crab trap in Florida in 2005. She got rescued and transferred to the Clearwater Marine Aquarium and eventually lost her tail. She was the first dolphin to receive a prosthetic tail, which allowed her to swim normally and prevented further injury. Attracted huge media attention, with dedicated books and movies (Dolphin Tale 1 & 2).
40	Wisdom	The 71-year-old Laysan albatross was first banded in 1956 and is still successfully breeding and raising chicks, making it the oldest wild bird known; it is a symbol of longevity and resilience of threatened species.

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WebTable 3. Reported and potential flagship effects, conservation threats and issues addressed, and the level of available evidence supporting impacts of flagship individuals presented in WebTable 1.

No.	Name	Intended/Manifested flagship effects	Conservation threats/issues addressed	Evidence of flagship effect available
1	480 Otis	Awareness, public support for protected area	Brown bear conservation, ecosystem health and protection	Strong (public and media attention, fundraising)
2	Alex	Awareness	Harm to wildlife, hunting	More evidence needed (media and public attention)
3	Bill and Lynn	Public support	Human-wildlife conflicts	More evidence needed (change of public attitudes)
4	Benjamin	Awareness	Hunting, habitat destruction	More evidence needed (media and public attention)
5	Bert	Awareness, public support, fundraising	Traffic accidents, human-wildlife conflicts	More evidence needed (media and public attention, change of public attitudes)
6	Bruno (JJ1)	Awareness	Human-wildlife conflicts	More evidence needed (media presence, resulting development of a management plan for brown bears in Bavaria)
7	Cecil	Awareness, public support, fundraising, policy change	Trophy hunting, lion conservation in general	More evidence needed (media presence, public attitudes, fundraising, adopted policies)
8	Chi Chi	Awareness, public support, fundraising	Panda conservation, conservation in general	More evidence needed (media and public attention, fundraising)
9	David Greybeard the chimpanzee	Awareness, public support	Conservation of great apes	More evidence needed (media and public attention)
10	Dicke Marie	Awareness, public support	Forest protection	More evidence needed (media and public

				attention)
11	Diego	Awareness	Conservation of the subspecies, conservation breeding, threats to Galapagos wildlife	More evidence needed (media presence)
12	Elsa	Awareness, public support	Conservation of lions and African wildlife	Strong (dedicated books and movies, media and public attention, change of public attitudes)
13	Fernanda	Awareness, public support, fundraising	Habitat loss and fragmentation	Evidence needed
14	Flipper	Awareness, public support	Public support for dolphin and more generally cetacean protection	More evidence needed (great popularity of TV shows and movies)
15	General Sherman	Awareness, public support, fundraising	Protected area, forest conservation	More evidence needed (visitation rates in the protected area, public awareness)
16	Grecia	Awareness, public support, policy change	Harm to wildlife	More evidence needed (media presence, public rallies, policy change)
17	Grizzly 399	Awareness	Conservation of the species and the Greater Yellowstone Ecosystem	More evidence needed (visitation rates in the protected area, media presence, public attention, dedicated books)
18	Guy	Awareness	Conservation of great apes	More evidence needed (media presence, and public awareness)
19	Herman	Awareness	Habitat loss and fragmentation, overfishing, sturgeon conservation	More evidence needed (media presence, and public awareness)
20	Herschel	Awareness, research funding, policy change	Overfishing, poor fishery management, habitat degradation and fragmentation; human-wildlife conflicts	More evidence needed (environmental activism, policy change)
21	Ivy and Brumas	Awareness	Conservation of the species	More evidence needed (media and public attention)

22	Jumbo	Awareness	Conservation of elephants	More evidence needed (public attention)
23	Keiko	Awareness, public support, fundraising, behavioral change	Harm to wildlife	Strong (animal welfare), More evidence needed (conservation, media presence and public attention)
24	Knut	Awareness, fundraising	Climate change, habitat loss	Strong (public and media attention, fundraising, effects of his use as a mascot)
25	Koko	Awareness	Conservation of great apes	More evidence needed (media presence, and public awareness)
26	Lonesome George	Awareness, public support	Conservation of Galapagos	More evidence needed (media presence, and public awareness)
27	Lua	Awareness, public support, fundraising	Habitat loss, hunting, manatee conservation	Strong (media and public attention, tourism initiative)
28	Magnificent Seven tuskers	Awareness, public support for protected area, fundraising	Poaching, elephant conservation	More evidence needed (visitation rates in the protected area, public awareness)
29	Martha	Awareness, public support	Hunting, species extinctions	More evidence needed (media and public attention, tourism initiative)
30	Mary Lee	Awareness, public support	Shark conservation, Human-wildlife conflicts	More evidence needed (media and public attention, change of public attitudes)
31	Ndakasi	Awareness, public support	Poaching, mountain gorilla conservation	More evidence needed (media and public attention)
32	Ruthi	Awareness, public support, behavioral change	Green corridors, conservation of the species	More evidence needed (media and public attention)
33	Sam	Awareness	Harm to wildlife, habitat destruction	More evidence needed (international media coverage)
34	Sir Nils Olav	Awareness	Conservation of penguins	More evidence needed (media attention)
35	Smokey Bear	Awareness, public support,	Harm to wildlife, habitat destruction,	Relatively strong (marked contribution to

		fundraising, behavioral change	public safety	fire suppression in the US)
36	Sudan	Awareness, public support, fundraising	Poaching, rhinoceros conservation	More evidence needed (media and public attention)
37	Tilikum	Awareness, public support, activism, behavioral change	Harm to wildlife	Strong (public and media attention, activism)
38	Wally	Awareness, public support, fundraising	Habitat loss and fragmentation, bearded vulture population recovery	More evidence needed (media presence), probably going to become stronger over time
39	Winter	Awareness, public support	Harm to wildlife (fish nets, crab traps, and other hazards on marine wildlife)	More evidence needed (media attention, dedicated books and movies)
40	Wisdom	Awareness	Albatross population recovery	More evidence needed (media attention)

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WebTable 4. Scale of flagship effects, presence of the four defining characteristics (0 - absent, 1 - present) and references on reported and potential flagship individuals presented in WebTable 1.

No.	Name	Scale of effects	Four defining characteristics of flagship individuals (see the text for clarification)				References
			1) Charismatic species	2) Individual charismatic traits	3) Exposure to humans	4) Individual fate	
1	480 Otis	Local	1	1	1	0	Chappell 2021b
2	Alex	Global	1	0	1	1	Alex Foundation 2022
3	Bill and Lynn	Local	1	0	1	0	
4	Benjamin	Local & Global	1	0	0	1	Brewster 2020; NMA 2022
5	Bert	Local	1	1	1	0	Gandl 2020
6	Bruno (JJ1)	Local	1	0	1	1	Fischer & Neukirch 2010
7	Cecil	Global	1	1	1	1	Wheaton 2015; Macdonald et al. 2016; Carpenter & Konisky 2019
8	Chi Chi	Local & Global	1	1	1	0	Barua 2020
9	David Greybeard the chimpanzee	Global	1	1	0	0	Roet 2020
10	Dicke Marie	Local	0	1	1	0	Gomolka 2017
11	Diego	Global	1	0	0	1	Cayot 2021; Moore 2021
12	Elsa	Global	1	0	1	1	Duve & Völker 1997;

							Beinart 2007
13	Fernanda	Local & Global	1	0	0	1	Jensen et al. 2022
14	Flipper	Global	1	0	1	0	Duve & Völker 1997
15	General Sherman	Local	1	1	1	0	
16	Grecia	Local	1	0	1	1	Kahn 2016
17	Grizzly 399	Local	1	1	1	0	Gunther et al. 2015
18	Guy	Local	1	1	1	0	Pouillard 2020
19	Herman	Local	1	1	1	0	ODFW 2017
20	Herschel	Local	1	1	1	0	Gammon 2018
21	Ivy and Brumas	Local	1	0	1	0	Jukes 2016
22	Jumbo	Local & Global	1	1	1	0	Duve & Völker 1997
23	Keiko	Global	1	0	1	1	Duve & Völker 1997, Orlean 2002
24	Knut	Local & Global	1	0	1	1	Prüss et al. 2015
25	Koko	Global	1	1	0	0	Gold & Watson 2018
26	Lonesome George	Global	1	0	0	1	Nicholls 2006
27	Lua	Local	1	0	1	0	Lima et al. 2005; Normande et al. 2015, 2016
28	Magnificent Seven tuskers	Local & Global	1	1	1	0	SANParks 2022
29	Martha	Global	1	0	1	1	Avery 2014
30	Mary Lee	Global	1	0	1	0	Tibbetts 2017
31	Ndakasi	Global	1	1	0	1	Stirton 2021

32	Ruthi	Local	1	0	1	0	INPA 2019
33	Sam	Local & Global	1	0	1	1	Due et al. 2014; Carland 2017
34	Sir Nils Olav	Local	1	0	1	1	
35	Smokey Bear	Local	1	0	0	1	Smith 1956
36	Sudan	Global	1	0	0	1	Fink et al. 2020
37	Tilikum	Local & Global	1	0	1	1	Boissat et al. 2021
38	Wally	Local	1	0	0	1	Sebald 2022
39	Winter	Local & Global	1	0	1	1	Anthes 2013
40	Wisdom	Local & Global	1	1	0	0	Chappell 2021a

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WebTable 5. Glossary

Term	Definition
Conservation marketing	Ethical application of marketing strategies, concepts and techniques to influence attitudes, perceptions and behaviors of individuals, and ultimately societies, with the objective of advancing conservation goals (Wright <i>et al.</i> 2015).
Flagship fleet	Use of several flagship species in a single conservation marketing campaign (Veríssimo <i>et al.</i> 2014).
Flagship individual	Organism whose individual traits, species characteristics, exposure to humans, and/or fate engage and motivate people, and garner support for conservation goals.
Flagship species	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 (Veríssimo <i>et al.</i> 2011).
Focusing events	Sudden, relatively uncommon attention-grabbing events, which often concentrate attention on previously dormant issues (Birkland 1998).
Identifiable victim effect	Tendency of people to donate more to appeals featuring particular needy individuals (Deshpande and Spears 2016).
Virtual influencer	Individual based on Computer-Generated Imagery (CGI) or artificial intelligence with a substantial number of online followers (often on social media) who promotes products and brands (Veríssimo 2021).

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WebPanel 1. Extended information for Figure 2.

Examples of flagship individuals. (a) General Sherman, a giant sequoia (*Sequoiadendron giganteum*), is the world largest known living single-stem tree (2500 m³ volume) as well as among the oldest ones (2300-2700 years old), and a key tourist attraction of the Sequoia National Park, USA (photo: Josh McNair, CaliforniaThroughMyLens.com); (b) Cecil the Lion, a male African lion (*Panthera leo*), was a famous tourist attraction in Zimbabwe's Hwange National Park, whose killing by a trophy hunter drew global condemnation, and brought attention towards the issue of trophy hunting (Carpenter and Konisky 2019; photo: Daughter#3; CC BY-SA 2.0); (c) Keiko, a captive orca (*Orcinus orca*) that starred in the movie Free Willy (1993), has been credited with driving substantial change in public perception and popularity of the species, and was relevant both as a fictional flagship individual and in his own right (Silk *et al.* 2018; photo: public domain); (d) Sam, a female koala (*Phascolarctos cinereus*) who attracted global attention to the impact of bushfires to biodiversity following a video of her rescue by a firefighter during Black Saturday bushfires in Australia (Due *et al.* 2014; photo: Benjamin Healley, Museums Victoria; taxidermied mount; CC-BY 4.0); (e) Sudan, a captive northern white rhinoceros (*Ceratotherium cimum cottoni*) who was at the time of his death one of the last three living individuals and the last known male of the species, attracted a lot of attention and support for the plight of rhinoceros species (Fink *et al.* 2020; photo: Ami Vitale); (f) Grecia, a chestnut-mandibled toucan (*Ramphastos ambiguus swainsonii*) from Costa Rica, after being abused and losing its upper beak, replaced afterwards with a prosthetic 3D printed beak, inspired public activism and national movement on animal rights, also resulting in policy change (photo: Rescate Wildlife Rescue Center, Costa Rica).