

## ARTICLE

### OTTERS AS FLAGSHIPS: SOCIAL AND CULTURAL CONSIDERATIONS

Sadie S. Stevens<sup>1</sup>, John F. Organ<sup>2</sup>, and Thomas L. Serfass<sup>3</sup>

<sup>1</sup> Department of Natural Resources Conservation, University of Massachusetts, Amherst, MA 01002, USA, e-mail: [sadiesstevens@yahoo.com](mailto:sadiesstevens@yahoo.com)

<sup>2</sup> US Fish and Wildlife Service, 300 Westgate Center Drive, Hadley, MA 01035, USA

<sup>3</sup> of Biology and Natural Resources, Frostburg State University, Frostburg, MD 21532, USA



(Received 23<sup>rd</sup> March 2011, accepted 27<sup>th</sup> March 2012)

**Abstract:** Otters have served as flagship species to raise awareness for conservation of aquatic ecosystems in many areas, and the IUCN Otter Specialist Group has recommended increasing such usage of the world's 13 otter species. However, success with using one of a group of species as a flagship in some areas will not necessarily translate to conservation successes in other areas. Consideration must be taken to ensure that flagship species will not engender ambivalence or ill-will among those whose support is sought. The target audience's knowledge of, associations with, and attitudes toward the species, as well as the species' visibility, must be considered when choosing a flagship. We discuss the potential of otters to be used as flagship species in new areas, as well as methods for determining a species' appropriateness as a flagship.

The IUCN Otter Specialist Group and participants of the IX<sup>th</sup> International Otter Colloquium recommended using otter species as flagships to promote conservation in Latin and North America (IUCN Otter Specialist Group 2004). In Europe, the Eurasian otter (*Lutra lutra*) is already widely considered a flagship species (White et al., 1997; Bifulchi and Lodé 2005; Kruuk 2006), and the biodiversity action plans of many local governments and organizations include the use of otters as flagship species to promote protection of wetland/riparian habitats (Brecon Beacons NP Local BAP Steering Group, 2002; Jeeves et al., 2002, Devon Biodiversity Partnership, 2005; Sussex Biodiversity Partnership, 2005). The Eurasian otter also was one of the top 10 species used in fundraising advertisements in *BBC Wildlife* (a wildlife and conservation monthly published in the United Kingdom) (Leader-Williams and Dublin, 2000). However, success with using one of a group of species as a flagship in some areas does not necessarily translate to success in others. Herein we discuss considerations for using otters as flagship species.

### ***What is a flagship?***

The term “flagship species” first appeared in the literature in the 1980s (Mittermeier 1986, Leader-Williams and Dublin 2000). Flagship species are defined as “popular, charismatic species that serve as symbols and rallying points to stimulate conservation awareness and action...” (Heywood, 1995). Flagship species by definition serve a “strategic socio-economic role” and should not be confused with umbrella, keystone, or indicator species, all of which serve ecological roles (Leader-Williams and Dublin, 2000; Walpole and Leader-Williams, 2002). A variety of species have been called flagships, from lobsters (Davis 1994) to lion tamarins (*Leontopithecus* spp.) (Dublin, 1994).

### ***What is a “good” flagship?***

Choosing an appropriate flagship species requires consideration of the perceptions, preferences, and attitudes of the people whose support is being sought (Dietz et al., 1994; Bowen-Jones and Entwistle, 2002). Great care must be taken to ensure that an appropriate species - one that will not engender ambivalence or ill-will among the target audience - is used (Bowen-Jones and Entwistle, 2002; Kaltenborn et al., 2006). Support generally is sought from people living within or near the areas to be protected and potential donors or supporters living far from the area - audiences with often markedly different characteristics. Although some species may effectively be used to gain support from both audiences, others may not serve this dual role (Entwistle, 2000; Bowen-Jones and Entwistle, 2002). Large carnivores, for example, have characteristics that are favored by many in developed countries (Bowen-Jones and Entwistle, 2002), and such large, charismatic mammals are most frequently used as flagship species to gain support from far-removed donors (Leader-Williams and Dublin, 2000). However, large carnivores may be viewed as competitors for limited resources or a threat to lives or livelihoods by people living within the animals’ ranges (Leader-Williams and Dublin, 2000), and therefore may not be effective in helping to elicit local support for conservation.

### ***Choosing a flagship***

Several researchers have suggested factors that should be considered when choosing a flagship species (see Dietz et al., 1994; Bowen-Jones and Entwistle, 2002). Many of those will not preclude a species from use, regardless of the outcome of preliminary investigations. The following, however, should influence whether a species is chosen as a flagship.

- Knowledge: The species should be readily associated with locally important habitats, distinctive, and known to the target audience (Bowen-Jones and Entwistle, 2002).
- Associations: The species should not already be used to convey conflicting messages or those that may potentially be confused with the conservation message (Bowen-Jones and Entwistle, 2002). For example, in the USA a blue jeans- and ranger hat-wearing, shovel-toting character called “Smokey Bear” spreads a public service message about fire prevention in the country’s longest-running public service campaign (Ad Council, 2008). Ninety-eight percent of Americans shown Smokey’s picture can identify him, and 95% can finish his slogan when given the first words (“Remember only YOU...”) (Forest Service, 1984). Based on this widespread association of Smokey Bear with fire prevention, using a bear species to spread a different message in the USA may confuse the target audience.

- Visibility: To be useful for engendering local support for conservation, the flagship species should be one that local residents can view and therefore directly relate to conservation goals (Dietz et al., 1994).
- Attitudes: A flagship species should be one with which the focal audience has positive associations (Bowen-Jones and Entwistle, 2002), and should have behavioral and physical traits that endear it to the people whose support is sought (Feistner and Mallinson, 2000). Kaltenborn et al., (2006) suggest that the best flagship species will be regarded highly and not feared by the target audience.

Many of the factors to be considered when choosing a flagship can be investigated with relative ease. The target audience's awareness of a species often can be determined through informal discussions, as can the audience's potential association of that species with locally important habitats. Determining if a species is used to convey other messages may be slightly more difficult and will involve in-depth probing of the target audience, as well as scrutiny of advertisements and associations made with the species in the target community. The animals' visibility likely will be ascertained during determination of local awareness of the species. Determining the audience's perceptions and attitudes about a potential flagship species will likely prove more challenging.

Perceptions of a species are based on a variety of factors, including: presumed aesthetic value and intelligence; the species' phylogenetic, cultural, and historic relationships with people; and the species' size, perceived dangerousness, and likelihood of inflicting property damage (Kellert, 1985). Whether or not a species occurs within the vicinity of a person's home will influence his or her perception of many of these factors, such as the perceived danger posed by the animal and the animal's likelihood of inflicting property damage. The African elephant (*Loxodonta africana*), for example, is popular with many people in the northern hemisphere where interactions with the species are limited to captive and virtual experiences (Dublin 1994). Likely because of this popularity the elephant was one of the top 10 most-used animals in Britain's *BBC Wildlife* fundraising ads (Leader-Williams and Dublin, 2000), but 91.5% of villagers around Serengeti National Park in Tanzania report being "very much afraid" of the animal (Kaltenborn et al., 2003). Such high levels of fear have been reported to be connected to negative attitudes toward other species (Røskraft et al., 2007).

Attitudes toward a species are thought to be formed based on perceptions, basic wildlife values, knowledge and understanding of wildlife, and people-animal interactions (Kellert 1994). Attitudes can vary by sociodemographic variables such as gender, age, and education, as well as other factors such as livestock and pet ownership, large-property ownership, rural living, and resource dependency (Kellert and Berry, 1987; Kellert, 1994; Bjerke et al., 1998, Czech et al., 2001). Individual species preferences vary based on an individual's general attitudes toward wildlife, sociodemographic background, childhood environment, and type and amount of exposure to animals; how the individual perceives an animal's usefulness, likeability, and attractiveness; and similarity of the animal to humans (Kaltenborn et al., 2003; Tisdell et al., 2006). Unfortunately, people living within a species' range often have more negative attitudes toward that species than people living further away (Ericsson and Heberlein, 2003; Røskraft et al., 2007).

Surveys and interviews often are used to determine perceptions, preferences, and attitudes in regard to wildlife species (e.g., Kellert, 1985; Bjerke et al., 1998; Ericsson and Heberlein, 2003; Kaltenborn et al., 2003; Andersone and Ozolins, 2004; Heydlauff et al., 2006; Kaltenborn et al., 2006; Tisdell et al., 2006; Bruskotter et al.,

2007; Røskraft et al., 2007). A variety of other tools have been suggested for determining attitudes toward wildlife as well, including workshops, focus groups, panel discussions, public meetings, and conferences (Jacobson, 1999). An understanding of the target audience's perceptions of and attitudes toward a species is critical when assessing the species' potential as a flagship for a particular region.

### ***Is an otter an appropriate flagship?***

Water is an essential resource, likely leading most people to consider aquatic habitats locally important. Therefore, the otters' obligate use of aquatic habitats (Kruuk, 2006) may lead to the species being associated with locally important habitats. The presence of otters in a region can be determined by a variety of well established methods, including camera trapping (Stevens and Serfass, 2008), visual censuses, sign surveys, snow track surveys, and scent stations (Estes and Jameson, 1988; Swimley et al., 1998; Ruiz-Olmo et al., 2001; Melquist et al., 2003). Otter species may be nocturnal in at least portions of their range (e.g., Stevens and Serfass, 2008), and therefore may not be seen or known by local people. The aquatic habits of otters - which often lead to brief or partial observations of the animal swimming - also may make distinguishing them from other species challenging, especially for the general public. In Pennsylvania, for example, both mink (*Neovison vison*) and beaver (*Castor canadensis*) frequently have been mistaken for Nearctic river otter (*Lontra canadensis*) (personal observation - T. S.).

The world's 13 otter species have many characteristics that endear them to the general public in some regions. Otter species have been described as cute (Missett, 1983; Cohn, 1998), cuddly (Cohn, 1998), attractive (Kruuk, 2006), playful (Audubon and Bachman, 1851; Grinnell et al., 1937; Liers, 1951; Crandall, 1954; Caras, 1967; Harris, 1968; Park, 1971; Chanin, 1985), charismatic, charming (Foster-Turley, 1988), graceful, agile (Barker, 1955), engaging (Stowe, 1956), and fun-loving (Laycock, 1981). Otters as a group are popular in many developed countries, and this popularity is evidenced in a variety of ways, from the results of contingent valuation studies to the exhibit preferences of aquarium visitors and the popularity of otter tourism.

Several contingent valuation studies involving otters have shown that people are willing to pay large sums of money to conserve various species. In a study by White et al. (1997) in North Yorkshire, UK, respondents indicated a willingness to pay an average of £11.91 for the conservation of the Eurasian otter. The same group of respondents was willing to pay only £7.44 for the conservation of the water vole (*Arvicola terrestris*), although both species occupy similar habitats and face similar threats (White et al., 1997). Another study reported that residents of California, USA, were willing to pay an average of \$20.75 USD per household per year to prevent sea otter (*Enhydra lutra*) population declines (Hageman, 1985).

Results of a 1996 poll by *BBC Wildlife*, which is read by 100,000 people each month, showed the Eurasian otter as the most popular animal among readers (Bright and Morris, 2000). Visitors to the Monterey Bay Aquarium in California, USA, consistently rank the sea otter exhibit as the most enjoyed in the Aquarium. Sea otter merchandise also accounts for 22% of sales at the Aquarium's shops (Aldrich et al., 2001). In Pennsylvania, USA, over 90% of anglers participating in a survey agreed or strongly agreed with the statement, "I would enjoy seeing a river otter [*Lontra canadensis*] in the wild;" 82% were glad that river otters were reintroduced along the creek in which they were fishing when the survey was administered (Serfass, in preparation).

In a study that asked over 6,000 European teenagers about their preferences for 3 carnivore species (gray wolf [*Canis lupus*], brown bear [*Ursus arctos*], and Eurasian otter), the otter regularly received more positive responses than the other species. Respondents had the comparatively greatest level of agreement (80%) with the following statement when attributed to the otter: “it is important to maintain populations of [wolf/brown bear/otter] in Europe so that future generations can enjoy them.” The otter also received the greatest number of positive responses to the statement, “Whether or not I get to see a [wolf/brown bear/otter], it is important to me that they exist in Europe (Bath and Farmer, 2000).”

Yet another gauge of the popularity of a species is its ability to attract tourists to an area. Otters have been called “quintessential tourist attractions” (Earthwatch Institute 2008), and 2 highly visible species of otters, sea and giant (*Pteronura brasiliensis*), have proven to be of considerable value in the tourism arena. Sea otter viewing brings a substantial amount of income to California, USA, each year (Aldrich et al., 2001). A study attempting to determine the value of a potential sea otter population expansion in the state reported an increase of local tourism tax (an important value-added for local governments) of \$19,400 +/- \$6,500 per otter per year. The total value added of sea otter expansion was estimated at a low of \$18 million and a median of \$114 million over 25 years (Aldrich et al. 2001). The diurnal, noisy, group-living, and easily-observable giant otters are especially attractive to nature tourists in tropical rainforest areas, such as parts of South America (Staib and Schenck, 1994; Kruuk, 2006). In southeastern Peru, local tour companies promote giant otters as a major tourist attraction, and most of the tourists to the area reported that giant otters were the highlight of their animal observations (Staib and Schenck, 1994). Each year, 6-8,000 tourists visit one hand-fed wild family of giant otters in the Brazilian Pantanal; 50,000 tourists have seen the family over a 10-year period (Munn, 2005).

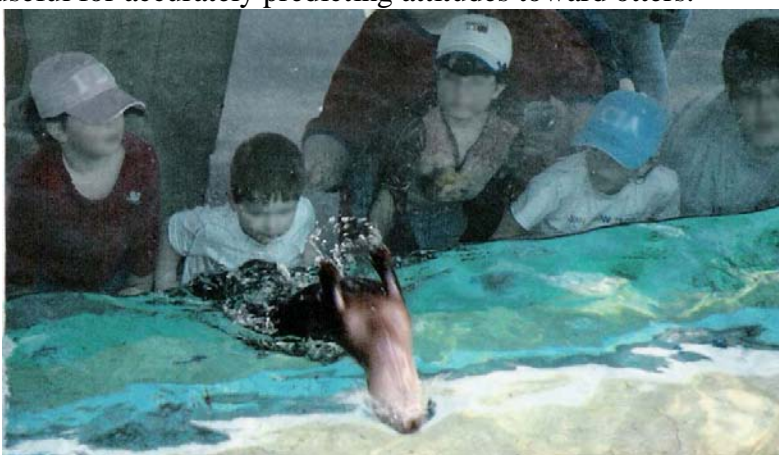
Zoo visitors often express enthusiasm for otters’ charismatic behavior (personal observation – S.S.) (Figure 1). A December 2004 search for “otter” and “zoo” on the popular video sharing website, YouTube ([www.youtube.com](http://www.youtube.com)), returned just over 500 video clips devoted to the world’s species of otters, with all but a very few highlighting aspects of otter behavior. One YouTube video showing sea otters at the Vancouver Aquarium “holding hands” was viewed by over 1.5 million people and put on over 500,000 different web pages in just 2 weeks, becoming YouTube’s top rated animal video ever, according to a CBC News report from April, 2007. In just under 10 months the video had been viewed over 9.6 million times, over 55,000 other YouTube members had chosen the video as a favorite, and several members had put the video to soundtracks.

The popularity of otters in developed countries is not surprising based on what we know about peoples’ species preferences in those areas. In the UK, for example, agility and “cuteness,” both descriptors ascribed to otter species, are among the characteristics preferred by primary school children (Entwistle and Stephenson, 2000). Two other studies reported that children in the USA like loveable animals the best, although beautiful animals also are popular. In each of the 2 studies “useful animals” got substantially fewer votes (Kellert and Westervelt, 1985; Westervelt and Llewellyn, 1985).

In areas (or among target audiences) where less is known about the popularity of otters, knowledge of species preferences can be used to begin assessing the animals’ potential as flagships. In Tanzania, for example, although no research has specifically assessed perceptions of or attitudes toward otter species, several studies have probed residents’ preferences for other species. Two studies reported that the



species most well-liked by Tanzanian adults and children are those that were useful (e.g., provided meat or tourism revenue), non-threatening, and/or aesthetically pleasing (Entwistle and Stephenson, 2000; Kaltenborn et al., 2006). Based solely on the marked difference between the preferences of Tanzanian children and American children - of whom only a small percentage prefer “useful” animals - there likely are differences in perceptions of otters in the 2 countries. Similarly, in areas where attitude typologies and scales (such as those developed by Kellert [1980], Purdy and Decker [1989], and Fulton et al., [1996]) have been used to assess attitudes toward other species or wildlife in general, the information gained will prove immensely useful in assessing the appropriateness of potential flagship species. However, general attitudes should not be assumed to be a perfect predictor of attitudes toward more specific items (McCleery et al., 2006), and therefore general wildlife attitude research may not be useful for accurately predicting attitudes toward otters.



**Figure 1.** Children watch a Nearctic river otter (*Lontra canadensis*) swim at the Smithsonian National Zoological Park in Washington, D.C., USA. (Photo credit: S. Stevens)

Most otter species are unlikely to be perceived as a danger to humans, although more than ¼ of teenagers in Northern Ireland did report that they would be afraid of swimming in water occupied by Eurasian otters (Bath and Farmer, 2000). The major source of negative human-otter interactions is likely to be otters’ dietary habits. Conflict over fisheries has been documented for many species of otters, including sea otters, Eurasian otters, Nearctic river otters, and giant otters (Gómez and Jorgenson, 1999; Aldrich et al., 2001; Britton et al., 2005). Other species of otters, including spotted-necked (*Lutra maculicollis*) and cape clawless otters (*Aonyx capensis*) also have been seen taking fish from nets (Kruuk, 2006, personal observation – T.S.) (Figure 2), and during experimental fishing in Rwanda spotted-necked otters consumed 1/7<sup>th</sup> of the fish caught in gillnets (Lejeune, 1989). Losses attributed to predation by otters (including Eurasian otters, small-clawed otters [*Aonyx cinereus*], and smooth-coated otters [*Lutrogale perspicilata*]) can be substantial at fish farms and aquaculture projects as well (see Kruuk, 1996 for review). In cases where loss of income from otter depredation may be substantial, perceived risk may be even greater than the actual risk (Thirgood et al., 2005), possibly contributing to strong negative attitudes toward the species.

### **Can an otter become a better flagship?**

What happens if an otter species is a perfect flagship candidate according to every criteria but one? Perhaps the species is nocturnal and not seen by the local target audience, perhaps it is confused with other species, or perhaps it is little known. In such cases, outreach and education may increase the likelihood of the species being an

effective flagship. Opportunities for nighttime viewing of otters or film and video obtained from remote camera systems can be used to overcome issues with visibility, and identification workshops can help eliminate confusion among members of the public who may have difficulty distinguishing the otter from other similar-sized aquatic species. Communication of information may prove useful if the target audience knows little about the otter species and will likely be effective if individuals in the audience do not have strong attitudes toward the animals. Communication and persuasion techniques can be effective tools for influencing attitudes, and are well-studied in social science disciplines (Petty et al., 1992; Eagly and Chaiken, 1993; Bohner and Wänke, 2002; Johnson et al., 2005). Within the field of wildlife conservation, Tisdell et al. (2006) reported increases in support for survival of specific species after information provision. Although the provision of factual information alone did not positively influence children's attitudes in a study of the effectiveness of various wildlife education strategies, information provision in combination with other typical components of wildlife education programs did improve attitudes toward wildlife (Morgan and Gramann, 1989).



**Figure 2.** A spotted-necked otter (*Lutra maculicollis*) removes fish from a fisherman's net in Lake Victoria near Kisumu, Kenya in 2005. (Photo credit: T. Serfass)

The Golden Lion Tamarin Conservation Program in Brazil provides an excellent example of the ability of education to enable a once little-known animal to serve as an effective flagship, and may be a useful model for those aspiring to use lesser locally-known otter species as flagships. When the program began, surveys showed that 41% of adults could not recognize the golden lion tamarin (*Leontopithecus rosalia*) from a photograph (Dietz et al., 1994; Dietz and Nagagata, 1995). However, participants also reported no negative attitudes toward the animals (Dietz and Nagagata, 1995). Two years after educational activities, a survey showed a significant increase in: the percentage of adults able to recognize the animal, knowledge about the animal, the number of adults that felt the animal was beneficial, and reported "positive" behaviors toward other wildlife (e.g., leaving a snake observed in the woods alone versus killing it) (Dietz et al. 1994, Dietz and Nagagata, 1995).

It must be noted, however, that changing strong negative attitudes through communication may not be possible; people often use increases in knowledge to argue communications not congruent with existing attitudes (Petty et al., 1992). In the case of the Golden Lion Tamarin Conservation Program, although the number of adults

who felt the golden lion tamarin was important or beneficial increased significantly after education efforts, this increase was the result of a shift among those who initially reported not knowing if the tamarin was important or beneficial—the number of individuals who answered “no” did not change.

## Conclusions

Several species of otter are being used to raise awareness for conservation (Brecon Beacons NP Local BAP Steering Group, 2002; Jeeves et al., 2002; Devon Biodiversity Partnership, 2005; Sussex Biodiversity Partnership, 2005; Kruuk, 2006), and otter species enjoy popularity with the general public in many developed countries. However, such may not be the case in other areas. Researchers and conservationists need to be careful not to choose flagship species based on personal perceptions, especially when working in areas where they are not endemic. An otter species that enjoys popularity among far-removed audiences or those in one part of its range may be disliked in another, although exhibiting similar life history and ecological traits in all areas. Attitudes not only potentially differ between those people sharing a species' range and those not, but also between professions and cultures. The general public may have a more positive image of an otter species than fishermen, and fishermen in one culture within the species' range may be more tolerant of loss from an otter species than those from another. Attitudes toward a species can be determined using a variety of methods (e.g., Kellert, 1985; Bjerke et al., 1998; Jacobson, 1999; Ericsson and Heberlein, 2003; Kaltenborn et al., 2003; Andersone and Ozolins, 2004; Heydlauff et al., 2006; Kaltenborn et al., 2006; Tisdell et al., 2006; Bruskotter et al., 2007; Røskraft et al., 2007), and such research is critical before an otter species is used as a flagship. Education and outreach also may prove useful tools for improving the success of the otter as a flagship species, although such tools should not be expected to change strong attitudes.

**Acknowledgements** - We would like to thank the X<sup>th</sup> International Otter Colloquium Organizing Committee and the University of Maryland's Wilson H. Elkins Professorship for enabling our participation in the X<sup>th</sup> International Otter Colloquium.

## REFERENCES

- Ad Council. (2008).** Forest Fire Prevention - Smokey Bear (1944-Present).  
[<http://www.adcouncil.org/default.aspx?id=129>. Accessed February 8, 2008].
- Aldrich, K., J. Kurtis, S. Drucker. (2001).** A cost-benefit analysis of public law 99-625: sea otter-shellfishery conflicts in Santa Barbara and Ventura Counties. Thesis. University of California, Santa Barbara, USA.
- Andersone, Z., J. Ozolins. (2004).** Public perception of large carnivores in Latvia. *Ursus* **15**:181-187.
- Audubon, J.J., D.D. Bachman. (1851).** *The quadrupeds of North America*. Vol. 2. George R. Lockwood, New York, USA.
- Barker, W. (1955).** Playboy of the waterways. *Natural History*, September: 370-371.
- Bifolchi, A., T. Lodé. (2005).** Efficiency of conservation shortcuts: an investigation with otters as umbrella species. *Biological Conservation* **126**:523-527.
- Bath, A., L. Farmer. (2000).** Europe's carnivores: A survey of children's attitudes towards wolves, bears and otters. *WWF-UK Report*. Surrey, UK.
- Bjerke, T., O. Retan, S.R. Kellert. (1998).** Attitudes toward wolves in southeastern Norway. *Society & Natural Resources* **11**:169-197.
- Bohner, G., M. Wänke. (2002).** *Attitudes and attitude change*. Psychology Press, New York, USA.
- Bowen-Jones, E., A. Entwistle. (2002).** Identifying appropriate flagship species: the importance of culture and local contexts. *Oryx* **36**:189-195.
- Brecon Beacons National Park Local Biodiversity Action Plan Steering Group. (2002).** Our natural world – a local biodiversity action plan for the Brecon Beacons National Park.  
[<http://www.breconbeacons.org/content/environment/Understandbiod/getting-involved/the-local-biodiveristy-action-plan/biodapvol2.pdf> Accessed February 7, 2008].



- Bright, P.W., P.A. Morris. (2000).** Rare mammals, research and realpolitik: priorities for biodiversity and ecology? Pages 141-155 in **A. Entwistle and N. Dunstone, editors.** *Priorities for the conservation of mammalian diversity: has the panda had its day?* Cambridge University Press, UK.
- Britton, J.R., J.S. Shepherd, S. Toms, V. Simpson. (2005).** Presence of carp, *Cyprinus carpio*, in the diet of the otter, *Lutra lutra*. *Fisheries Management and Ecology* **12**:221-223.
- Bruskotter, J.T., R.H. Schmidt, T.L. Teel. (2007).** Are attitudes toward wolves changing? - a case study in Utah. *Biological Conservation* **139**:211-218.
- Caras, R.A. (1967).** Freshwater clown: the river otter. Pages 191-196 in *North American mammals: fur-bearing mammals of the United States and Canada*. Galahad Books, New York, New York, USA.
- Chanin, P. (1985).** *The natural history of otters*. Facts on File Publications, New York, New York, USA.
- Cohn, J.P. (1998).** Understanding sea otters: Exxon Valdez oil spill engenders research that sheds light on these cute, cuddly creatures. *Bioscience* **48**:151-155.
- Crandall, L.S. (1954).** *The management of wild mammals in captivity*. University of Chicago Press, Illinois, USA.
- Czech, B., P.K. Devers, P.R. Krausman. (2001).** The relationship of gender to species conservation attitudes. *Wildlife Society Bulletin* **29**:187-194.
- Davis, G.E. (1994).** Spiny lobsters as flagship species for marine ecosystems. *Wings* **27**(2):16-19.
- Devon Biodiversity Partnership. (2005).** The nature of Devon: a biodiversity action plan. [<http://www.devon.gov.uk/dbap-mammals-otter.pdf>. Accessed February 7, 2008]
- Dietz, J.M., L.A. Dietz, E.Y. Nagagata. (1994).** The effective use of flagship species for the conservation of biodiversity: the example of lion tamarins in Brazil. Pages 32-49 in **P.J.S. Olney, G.M. Mace, and A.T.C. Feistner, editors:** *Creative conservation: interactive management of wild and captive mammals*. Chapman & Hall, London, UK.
- Dietz, L.A.H., E.Y. Nagagata. (1995).** Golden lion tamarin conservation program: a community education effort for forest conservation in Rio de Janeiro State, Brazil. Pages 64-86 in **S.K. Jacobson, editor:** *Conserving wildlife: international education and communication approaches*. Columbia, University Press, New York, USA.
- Dublin, H. (1994).** In the eye of the beholder: our image of the African elephant. *Endangered Species Technical Bulletin* **19**(1):5-6.
- Eagly, A.H., S. Chaiken. (1993).** *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers, New York, USA.
- Earthwatch Institute. (2008).** Conserving otters in the Pantanal. Ecotourism: bane or boon? Goldring Family Foundation Case Study Series. Maynard, Massachusetts, USA. [[http://www.earthwatch.org/atf/cf/%7BBD9A05BF-0860-451E-AA86-7FBF37574C00%7D/WILDBIO\\_CONSERVINGOTTERSPANTANAL.PDF](http://www.earthwatch.org/atf/cf/%7BBD9A05BF-0860-451E-AA86-7FBF37574C00%7D/WILDBIO_CONSERVINGOTTERSPANTANAL.PDF) Accessed February 10, 2008]
- Entwistle, A. (2000).** Flagships for the future? *Oryx* **34**:239-240.
- Entwistle, A.C., P.J. Stephenson. (2000).** Small mammals and the conservation agenda. Pages 119-139 in **A. Entwistle and N. Dunstone, editors:** *Priorities for the conservation of mammalian diversity: has the panda had its day?* Cambridge University Press, UK.
- Ericsson, G., T.A. Heberlein. (2003).** Attitudes of hunters, locals, and the general public in Sweden now that wolves are back. *Biological Conservation* **111**:149-159.
- Estes, J.A., R.J. Jameson. (1988).** A double-survey estimate for sighting probability of sea otters in California. *Journal of Wildlife Management* **52**:70-76.
- Feistner, A.T., J.J.C. Mallinson. (2000).** A recipe for species conservation: multidisciplinary ingredients. Pages 309-323 in **A. Entwistle and N. Dunstone, editors:** *Priorities for the conservation of mammalian diversity: has the panda had its day?* Cambridge University Press, UK.
- Forest Service. (1984).** "Remember only you..." United States Department of Agriculture Forest Service Report FS-390.
- Foster-Turley, P. (1988).** The need for international Asian otter symposium. *IUCN Otter Specialist Group Bulletin* **3**:39-41
- Fulton, D.C., M.J. Manfredo, J. Lipscomb. (1996).** Wildlife value orientations: a conceptual and measurement approach. *Human Dimensions of Wildlife* **1**:24-47.
- Gómez, J.R., J.P. Jorgenson. (1999).** An overview of the otter-fisherman problem in the Orinoco Basin of Colombia. *IUCN Otter Specialist Group Bulletin* **16**:90-96.
- Grinnell, J., J.S. Dixon, J.M. Linsdale. (1937).** *Fur-bearing mammals of California*. Vol. 1. University of California Press, Berkeley, USA.

- Hageman, R. (1985).** Valuing marine mammal populations: benefit valuations in a multi-species ecosystem. National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California, USA. Administrative report no. LJ-85-22.
- Harris, C.J. (1968).** *Otters: a study of the recent Lutrinae*. Weidenfield and Nicolson, London, UK.
- Heydlauff, A.L., P.R. Krausman, W.W. Shaw, S.E. Marsh. (2006).** Perceptions regarding elk in northern Arizona. *Wildlife Society Bulletin* **34**:27-35.
- Heywood, V.H. (1995).** *Global biodiversity assessment*. Cambridge University Press, Cambridge, UK.
- IUCN Otter Specialist Group. (2004).** Recommendations and Results of the IX<sup>th</sup> International Otter Colloquium (IOC). [[http://www.otterspecialistgroup.org/Library/Colloquium\\_XI\\_Recommendations.html](http://www.otterspecialistgroup.org/Library/Colloquium_XI_Recommendations.html) Accessed February 8, 2008]
- Jacobson, S.K. (1999).** *Communication skills for conservation professionals*. Island Press, Washington, D.C., USA.
- Jeeves, M.B., D. Kindleysides, J.A. Bullock, D.A. Lott. (2002).** Biodiversity challenge: an action plan for Leicester, Leicestershire and Rutland. Leicestershire and Rutland Wildlife Trust. [<http://www.lrwt.org.uk/lrwtbap.pdf> . Accessed February 7, 2008.]
- Johnson, B.T., G.R. Maio, A. Smith-McLallen. (2005).** Communication and attitude change: causes, processes, and effects. Pages 617-669 in **D. Albarracín, B.T. Johnson, and M.P. Zanna, editors: The handbook of attitudes**. Lawrence Erlbaum Associates, Mahwah, New Jersey, USA.
- Kaltenborn, B.P., T. Bjerke, J.W. Nyahongo, D.R. Williams. (2006).** Animal preferences and acceptability of management actions around Serengeti National Park, Tanzania. *Biodiversity and Conservation* **15**:4633-4649.
- Kaltenborn, B.P., J.W. Nyahongo, M. Mayengo. (2003).** *People and wildlife interactions around Serengeti National Park, Tanzania. Project Report 22*. Norwegian Institute for Nature Research, Trondheim, Sweden.
- Kellert, S.R. (1994).** Public attitudes toward bears and their conservation. Pages 43-50 in *Bears: their biology and management. A selection of papers from the 9<sup>th</sup> international conference on bear research and management, February 23-28, 1992, Missoula, Montana, USA*.
- Kellert, S.R., J.K. Berry. (1987).** Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin* **15**:363-371.
- Kellert, S.R. (1985).** Public perceptions of predators, particularly the wolf and coyote. *Biological Conservation* **31**:167-189.
- Kellert, S.R., M.O. Westervelt (1985).** Children's attitudes, knowledge and behaviors toward animals. *Phase V of the U.S. Fish and Wildlife Study*, Washington, D.C., USA.
- Kellert, S.R. (1980).** Contemporary values of wildlife in American society. Pages 31-60 in **W.W. Shaw and E.H. Zube, editors: Wildlife values**. Center for Assessment of Noncommodity Natural Resource Values, University of Arizona, Tucson. Institutional Series Report No. 1.
- Kruuk, H. (2006).** *Otters: ecology, behavior, and conservation*. Oxford University Press, New York, USA.
- Laycock, G. (1981).** *Games otters play*. Audubon, January:22-28.
- Leader-Williams, N., Dublin, H.T. (2000).** Charismatic megafauna as 'flagship species.' Pages 53-81 in **A. Entwistle and N. Dunstone, editors: Priorities for the conservation of mammalian diversity: has the panda had its day?** Cambridge University Press, UK.
- Lejeune, A. (1989).** Les loutres, *Lutra (Hydrictris) maculicollis* Lichtenstein, et la pêche artisanale. *Journal of African Ecology* **103**:215-223.
- Liers, E.E. (1951).** My friends the land otters. *Natural History*, September: 320-326.
- McCleery, R.A., R.B. Ditton, J. Sell, R.R. Lopez. (2006).** Understanding and improving attitudinal research in wildlife sciences. *Wildlife Society Bulletin* **34**:537-541.
- Melquist, W.E., P.J. Polechla, D. Towell. (2003).** River otter (*Lontra canadensis*). Pages 708-734 in **G.A. Feldhamer, B.C. Thompson, and J.A. Chapman, editors: Wild mammals of North America: biology, management, and conservation**. 2<sup>nd</sup> Edition. Johns Hopkins University Press, Baltimore, Maryland, USA.
- Missett, K. (1983).** Playboy of the western world. *Wyoming Wildlife*, December:10-17.
- Mittermeier, R.A. (1986).** Primate conservation priorities in the Neotropical region. Pages 221-240 in **K. Benirschke, editor: Primates: the road to self-sustaining populations**. Springer-Verlag, New York, New York, USA.
- Morgan, J.M., J.H. Gramann. (1989).** Predicting effectiveness of wildlife education programs: a study of students' attitudes and knowledge toward snakes. *Wildlife Society Bulletin* **17**:501-509.
- Munn, C. (2005).** Big, friendly giants. *BBC Wildlife*, June:34-39.
- Park, E. (1971).** *The world of the otter*. J.B. Lippincott, Philadelphia, Pennsylvania, USA.

- Petty, R.E., R.H. Unnava, A.J. Strathman. (1992). Theories of attitude change. Pages 241-268 in T.S. Robertson and H.H. Kassarian, editors: *Handbook of consumer behavior*. Prentice-Hall, Englewood Cliffs, New Jersey, USA.
- Purdy, K.G., D.J. Decker. (1989). Applying wildlife values information in management: the wildlife attitudes and values scale. *Wildlife Society Bulletin* 17:494-500.
- Røskraft, E., B. Händel, T. Bjerke, B. Kaltenborn. (2007). Human attitudes towards large carnivores in Norway. *Wildlife Biology* 13:172-185.
- Ruiz-Olmo, J., D. Saavedra, J. Jiménez. (2001). Testing the surveys and visual and track censuses of Eurasian otters (*Lutra lutra*). *Journal of Zoology* 253:359-369.
- Staib, E., C. Schenck. (1994). Giant otters and ecotourism in Peru. *IUCN Otter Specialist Group Bulletin* 9:7-8.
- Stevens, S.S., T.L. Serfass. (2008). Visitation patterns and behavior of otters at latrines. *Northeastern Naturalist* 15:1-12.
- Stowe, L. (1956). Man's most playful friend: the land otter. *Reader's Digest* 69 (October):151-154.
- Sussex Biodiversity Partnership. (2005). Otter species action plan for Sussex. [<http://www.biodiversitysussex.org/otter.htm>. Accessed February 7, 2008.]
- Swimley, T.J., T.L. Serfass, R.P. Brooks, W.M. Tzilkowski. (1998). Predicting river otter latrine sites in Pennsylvania. *Wildlife Society Bulletin* 26:836-845.
- Thirgood, S., R. Woodroffe, A. Rabinowitz. (2005). The impact of human-wildlife conflict on human lives and livelihoods. Pages 13-26 in R. Woodroffe, S. Thirgood, and A. Rabinowitz, editors: *People and wildlife: conflict or coexistence?* Cambridge University Press, New York, USA.
- Tisdell, C., C. Wilson, H.S. Nantha. (2006). Public choice for species for the 'ark': phylogenetic similarity and preferred wildlife species for survival. *Journal for Nature Conservation* 14:97-105.
- Walpole, M.J., N. Leader-Williams. (2002). Tourism and flagship species in conservation. *Biodiversity and Conservation* 11:543-547.
- Westervelt, M.O., L.G. Llewellyn. (1985). *The beliefs and behaviors of fifth and sixth grade students regarding non-domestic animals*. United States Government Printing Office, Washington, D.C., USA.
- White, P.C.L., K.W. Gregory, P.J. Lindley, G. Richards. (1997). Economic values of threatened mammals in Britain: a case study of the otter *Lutra lutra* and the water vole *Arvicola terrestris*. *Biological Conservation* 82:345-354.

## RÉSUMÉ

### LES LOUTRES, ESPECES PHARES: CONSIDERATIONS SOCIALES ET CULTURELLES

Les loutres ont servi d'espèces phares pour sensibiliser à la conservation des écosystèmes aquatiques. Dans ce cadre, le Groupe des spécialistes des loutres de l'UICN a d'ailleurs recommandé d'accroître l'utilisation des 13 espèces présentes dans le monde. Cependant, le succès de la conservation dans certaines aires, grâce à un groupe d'espèces emblématiques, ne se traduit pas nécessairement de la même façon dans d'autres régions. Certaines considérations doivent être prises pour s'assurer que les espèces phares n'engendreront pas d'ambivalence ou de mauvaise volonté de la part du public ciblé. Les connaissances de ce public, avec les associations, les attitudes locales envers les espèces choisies, la « visibilité » de l'espèce, doivent être considérés dès lors que le choix de l'espèce doit être fait. Ce travail présente le potentiel que présentent les loutres en tant qu'espèces phares dans de nouvelles régions mais aussi les méthodes permettant de déterminer la pertinence de leur choix.

## RESUMEN

### LAS NUTRIAS COMO ESPECIE BANDERA: CONSIDERACIONES SOCIALES Y CULTURALES

Las nutrias han servido como especie bandera para llamar la atención hacia la conservación de ecosistemas acuáticos en muchas áreas, mientras que el grupo de especialistas de nutrias la UICN ha recomendado potenciar el uso como especies

bandera de las 13 especies de nutrias que hay en el mundo. Sin embargo, el éxito de usar una especie de un grupo como especie bandera en determinadas áreas no necesariamente se traducirá en el éxito de conservación en otras áreas. Se deben considerar las medidas necesarias para asegurar que el uso de especies bandera no genere ambivalencia, ni mala voluntad en aquellas personas de las que se busca el apoyo. Cuando se elige una especie bandera el conocimiento del público objetivo sobre la especie, sus asociaciones con la misma y la actitud hacia ella, deben tomarse tanto en cuenta como su visibilidad. Discutimos aquí el potencial de las nutrias para ser usadas como especie bandera en nuevas áreas, así como los métodos para determinar la idoneidad de una especie bandera como tal.