1   **Five lessons to guide more effective biodiversity conservation message framing**

2   Alexander M. Kusmanoff *, a, c, Fiona Fidler b , Ascelin Gordon a, Georgia E. Garrard a, c, Sarah A.

3   Bekessy a, c, d

4   *Corresponding author, email: alex.kusmanoff@rmit.edu.au

5   a ICON Science, School of Global Urban and Social Studies, RMIT University, GPO Box 2476,

6   Melbourne VIC 3001 Australia

7   b School of BioSciences, University of Melbourne, Parkville Campus, Victoria 3010, Australia

8   c National Environment Science Programme, Threatened Species Recovery Hub

9   d ARC Centre of Excellence for Environmental Decisions

10   **Running head:** Framing conservation

13   **Article Impact Statement:** There are relatively easy and low-cost gains to be had by putting more

14   effort into strategically framing conservation messages.

15

16

17

18   **Abstract**

19   Because the conservation of biodiversity is a social and political process, conservation policies are

20   more effective if they can create shifts in attitudes and/or behaviours. As such, communication and

21   advocacy approaches that influence attitudes and behaviours are key to addressing conservation

22   problems. It is well established that the way an issue is 'framed' can influence how people view,

23   judge, and respond to an issue. Furthermore, responses to conservation interventions can be

24   influenced by subtle wording changes in statements that may appeal to different values, activate

25   social norms, influence a person's affect or mood, or trigger certain biases, each of which can

26   differently influence the resulting engagement, attitudes and behaviour. We contend that by

27   strategically considering how conservation communications are framed, they can be made more

28   effective with little or no additional cost. In this article, we provide an overview of key framing

29   considerations as five 'lessons' to help communicators think strategically about how to frame their

30   messages for greater effect.

31   **Introduction**

32   Building community support for biodiversity is crucial for achieving successful conservation

33   outcomes. We know that how we talk about or 'frame' information can have a big impact on the

34   way people understand it, and how they respond to messages (e.g. Kahneman and Tversky 1984;

35   Entman 1993). This has been long understood by advertisers and politicians and is increasingly

36   appreciated by ecologists and conservation scientists (Kidd et al. 2019a).

37   'Framing' refers to the way an issue is described or how a problem is conceived, articulated and

38   approached and can relate to various aspects of the communication; from the semantic (e.g.

39   referring alternatively to 'global warming' or 'climate change' (see Lakoff 2010; Schuldt and Roh

40   2014)); to the use of different descriptions for fees (e.g. 'levy' versus 'tax' or 'surcharge' versus

41   'convenience fee'); to the framing of entire issues (e.g. alternatively framing climate change as an

42   environmental issue, a public health issue or a national security issue (see Myers et al. 2012)).

43   Although 'framing' defies precise definition, different frames serve either to emphasize or obscure

44   different aspects of a given reality. Because people respond differently to different frames, there is

45   opportunity for those who seek to promote conservation to strategically consider how they frame

46   their messages to be more effective for their target audience.

47   Much scientific communication, including within conservation, has assumed that people will adopt

48   the targeted behavior if they can simply be informed about the benefits of that behavior. This

49   perhaps reflects the instinct of conservation (and other) scientists who, being trained to follow the

50   data, assume that facts will 'speak for themselves' (see Nisbet and Scheufele 2009 for a discussion of

51   this 'deficit' model in the context of science communication). This approach has limited utility given

52   that human behavior is not strictly rational but results from the interaction of numerous factors,

53   including a person's values, attitudes, relevant social and personal norms (e.g. Azjen 1991) and other

54   contextual factors (Steg and Vlek 2009). This understanding is increasingly being used to inform the

55   way government and business seek to influence specific behaviours through so-called social 'nudges'

56   (Thaler and Sunstein 2008; Akerlof and Kennedy 2013)) and 'behavioural insights' more broadly. We

57   contend that by considering key aspects of 'framing' when communicating about conservation, that

58   conservation scientists and practitioners can easily leverage this knowledge to enhance the

59   effectiveness of their conservation messages.

60   While framing has been considered in health promotion campaigns (see Keller & Lehmann 2008 for a

61   meta-analysis of framing approaches in health communication) and increasingly in energy and water

62   conservation (e.g. van de Velde et al. 2010; Steinhorst, Klöckner and Matthies, 2015), there are

63   fewer studies specifically related to biodiversity, although this is a growing area of research (e.g.

64   Verissimo et al. 2011, Verissmo 2019). And although there exists good general information on

65   designing communication campaigns (for example www.resource-media.org), including for engaging

66   people in conservation (e.g.

67), these are

68 broad and seek to cover communication strategies as a whole, providing only limited guidance on

69 message framing itself. The Nature Conservancy has produced some 'recommendations on how to

70 communicate effectively to build support for conservation' (Metz and Weigel 2013), based on polling

71 data in the US context. This provides some good advice for how to (re)frame conservation issues,

72 although the identified 'rules' are likely to be both contextually and temporally specific.

73 While valuable, this information is not in a form easily accessible for ecologists, conservation

74 scientists and others to apply to their communications (Bekessy et al. 2018). The goal of this paper is

75 to articulate key framing considerations identified from previous research across relevant disciplines

76 (including communications, behavioural sciences and conservation), and to make them easily

77 accessible by conservation researchers, practitioners and others who seek to communicate

78 effectively about conservation (herein 'conservation communicators').

79 Here we provide a short introduction to framing and present five 'lessons' to help guide

80 conservation communicators to think strategically about framing their messages for greater effect.

81 Because framing is so dependent on context, it is difficult to synthesize any absolute rules that can

82 be applied across all contexts. However, there are key considerations that are always worth bringing

83 to your strategic message framing. These provide good general heuristics for effective framing, but

84 should always be considered in light of the given context and not be followed blindly. We have

85 outlined key considerations for the application of each lesson below, although not all will be relevant

86 in every circumstance. These will be helpful to all who seek to communicate about conservation with

87 influence, even those who may not seek to actively use framing, as it is necessary to be aware of

88 framing effects in order to avoid inadvertently creating counter-productive effects.

89

90 Lesson 1: *How* you say something can be as important as *what* you say

91   The term 'framing' is used differently across disciplines (Cappella and Jamieson 1997; Druckman

92   2001), but is generally used to refer to the way that emphasizing different aspects of the world

93   influences how people understand and respond to information. For example, a glass half-full and a

94   glass half-empty are alternative ways of describing the same glass of water, but each emphasizes a

95   different aspect of the 'reality'. Almost anything can be the subject of framing, including situations,

96   attributes, choices, actions, issues, responsibility and news (Hallahan 1999). Frames influence

97   people's preferences "because a substantively different consideration is brought to bear on the issue

98   at hand" (Druckman 2001, pp 235) (see Fig. 1 for an illustration of framing).

99   Social surveys, for example, have demonstrated that minor differences in phrasing can result in

100   significantly different answers. When asked "How long was the movie?", the average response of

101   movie-goers was 30% higher than when asked "How short was the movie?" (Harris 1973). While

102   some may be tempted to dismiss these effects as the simple artefact of leading questions, their

103   influence can be far from trivial. For example, when asked "Do you think the US should allow public

104   speeches against democracy?", 62% of respondents answered negatively, but when the same

105   question was alternatively framed "Do you think the US should forbid public speeches against

106   democracy?", only 46% answered in the affirmative (Rugg 1941). Although answering 'no' to the

107   proposition in the first question is equivalent to answering 'yes' to the second, many fewer people

108   supported the proposition when framed in terms of a *prohibition* than as a *permission*. This

109   demonstrates the potential influence that alternatively framed, yet objectively equivalent, language

110   can have on people's response to information. Words and phrases used to deliver information are

111   more than stylistic considerations.

112   Framing is not limited to generating preferences between differently framed choices. For example,

113   appeals that emphasize personal benefits of taking climate action (e.g. lifestyle and quality of life

114   improvements) rather than the need for making sacrifices (e.g. drive less, use less power) were

115   associated with increased engagement and behavioural intentions (Gifford and Comeau 2011). That

116   the way an author frames information can influence how it is understood by the audience is seen in

117   the way politicians frame issues to serve their own agenda. For example, President Obama's claim

118   that opening up new areas to offshore drilling "will move us from an economy that runs on fossil

119   fuels and foreign oil to one that relies more on homegrown fuels and clean energy" (New York Times

120   2010) frames an environmentally-unfriendly policy (offshore drilling) as being instrumental to a

121   clean energy strategy.

122   'Framing' can also refer to the way issues are conceptualized (Zhou and Moy 2007) and the

123   framework with which people understand the world (Goffman 1974). Such frames are routinely

124   manipulated through the deliberate actions of political and media 'elites' for their own means

125   (Entman 1993; Hallahan 1999; Lakoff 2004), and are generally shaped over a long period of time

126   (Lakoff 2010).

127   Because all information necessarily exists in some kind of a frame, there is no option to simply avoid

128   framing. This means that when we communicate about conservation, we can either try to be

129   strategic about how we frame messages, or we can continue to be uniformed about framing and

130   persevere with less effective messaging.

131   [Fig. 1 about here]

132   <u>Lesson 2: Emphasize the things that matter to your audience (not necessarily the things that matter</u>
133   <u>to you)</u>

134   Messages can frame issues to strategically engage different audiences and to achieve different goals.

135   Typically, a message should be tailored for the audience and framed in a way that is most likely to

136   resonate with their interests or concerns. Just because *you* care about protecting the habitat of a

137   threatened species doesn't mean that your audience will, but other aspects of the issue may

138   resonate with your audience (e.g. retaining natural areas for human recreation or wellbeing).

139   Strategically framing a message therefore includes identifying the target audience, and how to best

140   engage them, being clear about what you want the audience to do once you have engaged them,

141 and understanding who the best messenger could be for a particular audience (This is useful for any

142 communication and does not relate specifically to framing).

143 *Identify your target audience*

144 A central principle of effective communications is the clear identification of the context and

145 audience (e.g.Noar 2006). Particularly relevant to framing is a consideration of what is likely to

146 engage or motivate the intended audience and how that audience will be reached. In conservation,

147 the goal may be to mobilize committed supporters, or raise awareness amongst the unengaged;

148 other times it will be to win over those who are inherently antagonistic to conservation.

149 Unfortunately, there is rarely one frame to suit all of these situations.

150 While it is tempting to think that one might craft a single perfect message to be broadcast to

151 positively influence everyone simultaneously, this is naïve. Most audiences will comprise a broad

152 range of people, and thus messages may be more effective if they are tailored to the different

153 interests and needs of the audience. Audience segmentation, a process in which demographic

154 information (e.g. age, gender, income, etc) and psychographic information (e.g. attitudes, interests,

155 opinions etc.) is used to divide the general public into discrete and uniform groupings to facilitate

156 communication that best matches each subgroup, is a commonly used approach, particularly within

157 marketing (see Maibach, Roser-Renouf and Leiserowitz (2009) for an example of market

158 segmentation for climate change and Verissimo et al. (2014) that uses segmentation to prioritise the

159 selection of a bird species as the flagship of a campaign). Where a communication is constrained to a

160 single mode of broadcast or dissemination, communicators should think carefully about the

161 audience with whom they most wish to reach and influence, and frame it with that group in mind.

162 *Understand what you want your audience to do*

163 In the context of biodiversity conservation, communication and advocacy is sometimes about

164 providing information and seeking to influence attitudes over time and is not always about

165   motivating a particular behaviour or choice. Often the goal will be to generate popular support or

166   acceptance of particular policies or interventions, or to help make people more receptive to future

167   messages targeted at a particular behaviour. To most effectively frame your message, you should

168   first ensure that you have a clear idea of what you are trying to achieve with your communication.

169   *Consider what to emphasize (or not) to engage your audience*

170   Perhaps the most intuitive approach is to highlight (or omit) those attributes that will appeal to (or

171   turn-off) an audience. The environmentally framed marketing of hybrid vehicles such as the Toyota

172   Prius provides a good example. By emphasising the environmental benefits of lower fuel

173   consumption, and not the greater energy required to produce the hybrid drive system, these can be

174   framed as an environmentally responsible choice to an audience with an existing environmental

175   concern. Other audiences may be financially constrained, and therefore more likely to resonate with

176   messages that emphasise the reduction in fuel costs. This highlights the importance of

177   understanding who a message is aimed at and framing it accordingly. Strategically considering

178   audiences in this way is not often done well in conservation, where all too often messages are

179   pitched primarily to those who already support the cause (e.g. Kusmanoff et al. 2016). Interestingly,

180   it seems that the distinctive shape of the Prius was intentionally (and successfully) devised to appeal

181   to environmentally conscious consumers who also wanted to make a public statement about their

182   'environmental bona fides' (Sexton and Sexton 2014).

183   Tailoring a message to different audience 'segments' is useful because different audiences typically

184   respond differently to different frames. Where it is not possible to target individual audience

185   segments with tailored messages, the strategic approach may be to seek a frame that avoids eliciting

186   a counter-productive response within any audience segment. For example, Myers et al. (2012)

187   found that framing climate change as a national security issue resulted in backlash from an audience

188   already dismissive of climate change. In contrast, framing climate change as a public health issue and

189   emphasizing the benefits of action was effective across numerous audience segments.

190 There are many ways to segment an audience, but a useful starting point can be to consider the

191 things an audience values. Broadly speaking, people tend to act in ways that either maximize their

192 own payoff (i.e. they are motivated by self-interest), or maximize the payoff to society (i.e. are

193 motivated by altruism) (Garling 1999), and in the context of pro-environmental behaviour, to

194 maximize payoff to the biosphere (i.e. an environmental motivation) (De Groot and Steg 2007).

195 Considering an audience segmented on this basis is likely to be helpful for framing conservation

196 messages, because many of the behaviour changes advocated in conservation are about sacrifice.

197 Messages that motivate people to consume less are important (Schultz 2011), but likely to be less

198 effective for a self-interested audience. Strategically framing a message to highlight personal

199 benefits as opposed to social or environmental benefits may help engage such an audience more

200 effectively (Kusmanoff et al. 2016).

201 Emphasis of one type of value can suppress opposing values (Maio et al. 2009); for example the

202 often 'sacrificial' actions required to promote biodiversity conservation (and environmental

203 protection more broadly) may be harder to promote when competing self-enhancing motives (e.g.

204 pursuit of pleasure, wealth, etc.) are activated (Maio et al. 2009). Because of this, some

205 environmental advocates argue that communicators should generally avoid making self-interested

206 appeals at all (e.g. Blackmore et al. 2013). A useful starting point to considering how to engage

207 different segments about biodiversity is provided by Christmas et al. (2013).

208 *Consider the messenger*

209 There's much evidence that the weight we give information is influenced by the characteristics of

210 the messenger (Dolan et al., 2012). This can occur both consciously and sub-consciously. A common

211 example of a conscious judgement is the way politically contentious issues often evoke an 'us versus

212 them' attitude where *who* says something is more important than *what* is said. People who strongly

213 support one side will simply not engage with the information presented by the other side. This is not

214 limited to politics and can occur especially where there is a miss-match in identity and values

215   between a messenger and an audience. However, even when you successfully engage an audience,

216   the more subtle ***messenger effect*** can influence how people perceive the quality of the information,

217   based on judgements of the messenger's credibility, rather than the content of the information

218   (Kassin 1983). Its therefore important to think about how your target audience will judge a message

219   that comes from you or your organisation, and whether it might be possible to partner with another

220   person or organisation in order to better engage your target audience (See Dolan et al. (2012) for a

221   useful and succinct summary of messenger related factors that influence the judgement of

222   information).

223   [Fig 2 about here]

224   <u>Lesson 3: Use social norms</u>

225   Social norms have successfully been used to promote a range of pro-environmental behaviours

226   (Farrow Grolleau and Ibanez 2017). Social norms are the informal rules of 'normal' behaviour within

227   a particular social group and can strongly influence behaviour. For example, people are more likely

228   to litter in an environment that is already littered because the discarded litter signals that this is

229   normal behaviour in that environment (Cialdini et al. 1990). Norms include *descriptive* norms which

230   indicate what behaviour is appropriate, and also *injunctive* norms which indicate the social approval

231   (or disapproval) of the behaviour. Both can strongly influence behaviour. Therefore, a message that

232   emphasises the social acceptance of particular behaviour (e.g. recycling) can help promote the

233   behaviour. Similarly, where the target behaviour is already prevalent, messages in the form of '*the*

234   *majority of [people in the relevant social group] undertook [the target behaviour]*' have proven

235   effective in a range of settings (e.g. Schultz et al. 2007; John, Sanders & Wang 2014). For greatest

236   effect, a message should use both descriptive and injunctive norms (see fig. 3).

237   However, if the prevalence of an undesirable behaviour is highlighted, this can indicate that such

238   behaviour is 'normal' and unintentionally promote that behaviour (see fig 3). For example, electricity

239   bills that include information about neighbours' average use can be effective at reducing

240   consumption of higher-usage customers, but simultaneously influence lower-consumption

241   customers to consume more (Schultz et al. 2007). Creating a norm around a particular consumption

242   figure (i.e. the neighbours average) acts as an anchor, driving consumption towards that level.

243   The emerging use of 'dynamic norms' offers a way to leverage a normative influence even where the

244   desired behaviour runs counter to the relevant global norm for a group. Messages that use dynamic

245   norms differ from those containing 'static' norms by providing information about how people's

246   behaviour may be changing over time. For example, despite a context in which meat consumption

247   was the normal behaviour, Sparkman and Walton (2017) used a message which read in part "over

248   the last 5 years, 30% of Americans have started to make an effort to limit their meat consumption"

249   (i.e. a dynamic descriptive norm) to double meatless orders at a café.

250   Whether or not norms are deliberately used to enhance the effectiveness of a message, it is

251   important not to accidentally create an unhelpful norm by emphasizing the prevalence of an

252   undesirable behaviour. Communicators should emphasize both the prevalence of the desirable

253   behaviour (where applicable), and the social approval of the behaviour (or disapproval of the

254   undesirable behaviour) (Cialdini et al. 2006) (see fig 3).

255   [Fig. 3 about here]

256   Lesson 4: Reduce psychological distance

257   Psychological distance is the level of cognitive separation or sense of distance people feel from

258   themselves to another person, event, or issue. When this is larger, people tend to think about the

259   matter in a more abstract fashion (Bar-Anan et al. 2006) and may be less motivated to take action

260   (Spence et al. 2012). Psychological distance includes geographic, temporal or social distance, and is

261   also affected by the relative certainty of an event occurring (greater certainty reduces psychological

262   distance) (Bar-Anan et al. 2006). Re-framing a message to reduce the psychological distance can help

263   engage the audience with an issue (Jones et al. 2016). A message framed to emphasise that a

264   problem will affect people like the audience themselves; occur nearby; and will be highly likely to

265   occur sometime soon, will help reduce this distance (fig 4).

266   [Fig. 4 about here]

267   In a conservation context, communicators might typically aim to *decrease* psychological distance

268   (see fig 4), for example, by framing messages to decrease the distance between the audience and

269   the effects of, say land clearing, in order to make the consequences of habitat loss more tangible.

270   However, in some cases it may actually be advantageous to *increase* psychological distance to some

271   issues, such as in advocating feral animal management to promote a more abstract perspective (e.g.

272   that feral cats are *pests*, and not *pets*).

273   *Increase vividness with emotion*

274   One approach to increasing the vividness of a message is to evoke emotion. Emotive messages can

275   be effective at motivating an audience, and may often have greater influence than cognitive appeals

276   (Shiv and Fedorikhin 1999). This can be aided through the use of narratives that relate to people and

277   experiences, rather than reporting on numbers and statistics (Loewenstein et al. 2001). Both positive

278   and negative emotional appeals can be effective at influencing attitudes. Negative appeals, such as

279   those based in fear, tend to be used more often in conservation campaigns. These can be counter-

280   productive as they tend to reduce the audience's agency and can lead to avoidance of the fear

281   inducing information in the future (Loewenstein et al. 2001). However, Kidd et al. (2019b) highlight

282   the lack of broad consensus about the use of positive and negative messages in conservation; like all

283   framing issues, the effectiveness will depend on audience and context.

284   *Avoid undermining agency*

285   When reducing the psychological distance, one must be careful not to make the distance so small

286   that it becomes counter-productive for promoting behavior (McDonald et al. 2015) and undermines

287   a person's sense of agency. Personal agency (similar to self-efficacy) is the sense of power regarding

288 a person's ability to influence their own actions (Ajzen 1991), and is related to 'response efficacy',

289 the sense that their actions will achieve an intended outcome. Empowering agency is important for

290 motivating behaviour. This is a particular challenge for biodiversity conservation given the complex

291 and diffuse nature of many such problems. Unfortunately, many conservation messages undermine

292 agency by focussing on the dire situation of many conservation issues.

293 Hope-based appeals are well suited to promoting efficacy (Myers et al. 2012). However, this does

294 not work in all cases; Hornsey and Fielding (2016) found that an optimistic message about progress

295 in curbing carbon emissions was less effective than a pessimistic message because emphasising

296 'good news' increased complacency. This highlights the role that context plays in framing, and

297 underlines the value of testing your messages wherever possible.

298 Lesson 5: Leverage useful biases

299 There are many cognitive biases that influence how we think and behave, and messages can be

300 strategically framed to either take advantage of, or to avoid, particular biases. For example, ***prospect***

301 ***theory*** (Kahneman and Tversky 1979, 1984), which results in a tendency for people to weigh losses

302 more heavily than equivalent gains, has often been used to demonstrate framing effects. For

303 example, alternatively framed environmental policy options are viewed more favourably when

304 framed as a 'restored loss', rather than as a 'new gain' (Gregory, Lichtenstein and MacGregor 1993).

305 (However, also see O'Keefe and Jensen 2008 which suggests gain-framed messages may actually be

306 more effective than loss-framed messages). Although there are numerous explanations for this

307 tendency to give greater attention and weighting to negatively framed information (Cialdini et al.

308 2006), the upshot is that negative framing is often more effective than equivalent positive framing

309 (Baumeister et al. 2001). This includes positive statements framed in terms of 'please do' compared

310 to equivalent negatively framed statements in the form of 'please don't do'. Winter (2006)

311 demonstrated that such negatively worded signs were much more effective at encouraging park

312 visitors to remain on established paths (fig 5).

313   [Fig. 5 about here]

314   There are many cognitive biases that could be used to inform strategic framing. One example is the

315   *endowment effect*; this is the tendency for people to value something more highly when they own it

316   than if they do not, even if they have only owned it for a brief period (Kahneman et al. 1990). This

317   bias explains the framing effects observed by Nash and Stern (2009) in the context of selling laptop

318   computers; by framing the concept of ownership as a collection of separate rights about use of the

319   laptop, purchasers were more agreeable to subsequently imposed restrictions in their use of the

320   laptop. This example highlights the capacity for strategic framing to improve the effectiveness of a

321   message not only by emphasizing resonant frames, but also by identifying potentially unhelpful

322   framing effects. In a conservation example, framing a message designed to promote a policy that

323   involved restrictions on vegetation clearing in such a way that it highlighted the implications for

324   property use rights would risk evoking the endowment effect in landholders and adversely

325   influencing their attitude towards the policy (Kusmanoff 2017). Understanding how this framing can

326   generate an unhelpful bias can alert the communicator to use language that avoids or minimizes the

327   endowment effect.

328   Another well-known bias is *status quo bias, or* the preference to avoid change, such that among

329   alternatives, people display a bias for the status quo (Samuelson and Zeckhauser 1988). Thus, it may

330   be advantageous, where possible, to frame a conservation policy as the continuation of existing and

331   already accepted policies or principles. The *scarcity heuristic* is another potentially useful bias; here

332   items or commodities perceived to be in short supply are considered more desirable and therefore

333   more valuable, particularly where this is a result of high demand (Worchel et al. 1975), though it

334   may also arise where time also is scarce. This is an approach often used to promote sales, with such

335   refrains as "Hurry, while stocks last". Given the increasing scarcity of threatened species and habitat,

336   and the genuine need to act quickly to avoid extinctions, activating this bias may be a strategy well-

337   suited to conservation messaging. A commonly used marketing 'trick' is to evoke the *norm of*

338   *reciprocity* (e.g. Cialdini 2008); this is the feeling of obligation people feel to return in kind a nice

339   gesture or gift, and one reason why salespeople give free product samples. Perhaps an imaginative

340   conservation communicator could highlight the ecosystem services that a species or ecosystem

341   provides and evoke a reciprocal obligation in their audience?

342   There are many cognitive biases and other behavioural effects that strategic framing could

343   potentially leverage to enhance conservation messages. Even if a conservation communicator has no

344   desire to leverage biases, it is still important to be aware in order to avoid accidentally evoking

345   biases in a way that is counter-productive to their message. This codex of over 180 cognitive biases

346   (available at: https://commons.wikimedia.org/wiki/File:The_Cognitive_Bias_Codex_-

347   _180%2B_biases,_designed_by_John_Manoogian_III_(jm3).png) may provide a useful starting point

348   for those considering which cognitive biases might be relevant to their context and why.

349   Test your message for effectiveness and unintended framing effects

350   By considering these five simple lessons, conservation communicators can readily apply framing

351   insights drawn from across the literature at little or no cost to enhance the effectiveness of their

352   messages. These concepts apply equally to everyday communications as they do to broader

353   messaging campaigns. However, there is always a chance, even for carefully considered messages,

354   that unintended effects may result. Some examples of well-known potential 'boomerang effects' to

355   watch out for are outlined in fig. 6. Therefore, we suggest that messages intended for wide

356   dissemination should be tested beforehand wherever possible. A common method for this is the use

357   of focus groups (for which there is much guidance in the literature, e.g. Morgan (1996)), however

358   the advent of highly capable web-based survey platforms (e.g. www.qualtrics.com;

359   www.surveymonkey.com) provide convenient alternatives. General information on testing messages

360   can be found online, for example at: https://publicinterest.org.uk/TestingGuide.pdf.

361   **Conclusion**

362   Attitudes and behaviours are key drivers of biodiversity conservation outcomes. Therefore, the

363   effectiveness of conservation messages that seek to influence attitudes and behaviours can be

364   critical to the successful implementation of policy interventions and campaigns. With this in mind,

365   there are relatively easy and low-cost gains to be had by putting more effort into strategically

366   framing messages.

367   Here we have provided five key lessons to help guide strategic framing. Not all elements will be

368   relevant at all times, and neither are the elements of strategic framing necessarily limited to those

369   outlined here. Although we have discussed these concepts as discrete factors, most conservation

370   messages will include numerous framing elements that employ a variety of approaches targeted to

371   different aspects of the message. Part of the process of strategic framing is to consider how a

372   message sits together as a whole.

373   We note that message framing is but one ingredient to consider within the broader goal of

374   persuasion, and there are no absolute rules when it comes to this artform. We do not promise that

375   simply by heeding our lessons that readers will automatically arrive at more persuasive messages.

376   However, these offer a foundation for conservation communicators to begin to understand and

377   apply the benefits of strategically framing their messages.

378   **Acknowledgments**

384

385 **Literature Cited**

386 Ajzen I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision*

387 *Processes* **50**: 179-211.

388 Akerlof K and Kennedy C. 2013. Nudging toward a Healthy Natural Environment: How Behavior

389 Change Research Can Inform Conservation. California: Gordon and Betty Moore Foundation.

390 Bar-Anan Y, Liberman N, and Trope Y. 2006. The association between psychological distance and

391 construal level: evidence from an implicit association test. *Journal of Experimental Psychology:*

392 *General* **135**: 609-622.

393 Baumeister RF, Bratslavsky E, Finkenauer C and Vohs KD. 2001. Bad is stronger than good. *Review of*

394 *General Psychology* **5**: 323-370.

395 Bekessy SA, Runge MC, Kusmanoff AM, Keith DA and Wintle BA. 2018. Ask not what nature can

396 do for you: A critique of ecosystem services as a communication strategy, Biological Conservation

397 **224:** 71-74.

398 Blackmore E, Underhill R, McQuilkin J and Leach R. 2013. Common cause for nature: finding values

399 and frames in the conservation sector. Machynlleth, Wales: Public Interest Research Centre.

400 Capella J and Jamieson KH. (1997). Spiral of Cynicism: The press and the public good, Oxford

401 University Press, New York.

402 Christmas S, Wright L, Morris L, Watson A, Miskelly C. 2013. *Engaging people in biodiversity issues*

403 Final report of the Biodiversity Segmentation Scoping Study, Department for Environment, Food and

404 Rural Affairs, United Kingdom.

405 Cialdini RB, Reno RR and Kallgren CA. 1990. A focus theory of normative conduct: recycling the

406 concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology* **58**:

407 1015-1026.

408   Cialdini, Robert B. 2008 *Influence: Science and practice*. Boston: Pearson Education.

409   Cialdini RB. 2003. Crafting normative messages to protect the environment. *Current Directions in*

410   *Psychological Science* **12**: 105-109.

411   Cialdini RB, Demaine LJ, Sagarin BJ, Barrett DW, Rhoads K, and Winter PL. 2006. Managing social

412   norms for persuasive impact. *Social Influence* **1**: 3-15.

413   De Groot JI and Steg L. 2007. Value Orientations and Environmental Beliefs in Five Countries Validity

414   of an Instrument to Measure Egoistic, Altruistic and Biospheric Value Orientations. *Journal of Cross-*

415   *Cultural Psychology* **38**: 318-332.

416   Dolan P, Hallsworth M, Halpern D, King D, Metcalfe R, & Vlaev I. (2012). Influencing behaviour: The

417   mindspace way. *Journal of Economic Psychology* **33**: 264-277.

418   Druckman JN. 2001. The implications of framing effects for citizen competence. *Political Behavior* **23**:

419   225-256.

420   Entman R. 1993. Framing: towards a clarification of a fractured paradigm. Journal of Communication

421   43: 51-58.

422   Farrow K, Grolleau G, and Ibanez L. 2017. Social norms and pro-environmental behavior: a review of

423   the evidence. *Ecological Economics* **140**: 1-13.

424   Festinger L. 1962. Cognitive dissonance. Scientific American 207(4), 93–107.Frey BS and Jegen R.

425   2001. Motivation crowding theory. *Journal of Economic Surveys* **15**: 589-611.

426   Futerra. 2015. *Branding biodiversity, the new nature message*. Futerra Sustainability

427   Communications, London. Available from www.wearefuterra.com/wp-

428   content/uploads/2015/10/Branding_Biodiversity.pdf (accessed May 2016).

429   Gärling T. 1999. Value priorities, social value orientations and cooperation in social dilemmas. *British*

430   *Journal of Social Psychology* **38**: 397-408.

431   Gifford R and Comeau LA. 2011. Message framing influences perceived climate change competence,

432   engagement, and behavioral intentions. *Global Environmental Change* **21**: 1301-1307.

433   Goffman E. (1974). Frame Analysis: An essay on the organisation of experience. Harvard University

434   Press, Massachusetts.

435   Gregory R, Lichtenstein S, MacGregor D. 1993. The role of past states in determining reference

436   points for policy decisions. *Organizational Behavior and Human Decision Processes* **55**: 195-206.

437   Hallahan K. 1999. Seven models of framing: Implications for public relations. *Journal of Public*

438   *Relations Research* 11: 205-242.

439   Harris RJ. 1973. Answering questions containing marked and unmarked adjectives and adverbs.

440   *Journal of Experimental Psychology* 97: 399-401.

441   Hornsey MJ and Fielding KS. 2016. A cautionary note about messages of hope: Focusing on progress

442   in reducing carbon emissions weakens mitigation motivation. Global *Environmental Change* **39**: 26-

443   34.

444   John P, Sanders M, and Wang J. (2014). The Use of Descriptive Norms in Public Administration: A

445   Panacea for Improving Citizen Behaviours? Social Science Research Network.

446   Jones CD, Hine W and Marks AD. 2016. The Future is Now: Reducing Psychological Distance to

447   Increase Public Engagement with Climate Change. *Risk Analysis*.

448   Kahneman D. and Tversky A. 1979. Prospect theory: An analysis of decision under risk.

449   Econometrica: *Journal of the Econometric Society*: 263-291.

450   Kahneman D. and Tversky A. 1984. Choices, values, and frames. *American Psychologist* **39**: 341-350.

451   Kahneman D, Knetsch JL and Thaler RH. 1990. Experimental tests of the endowment effect and the

452   Coase theorem. *Journal of Political Economy* 98: 1325-1348.

453   Kassin, S. M. 1983. Deposition testimony and the surrogate witness: Evidence for a" messenger

454   effect" in persuasion. *Personality and Social Psychology Bulletin* **9**: 281-288.

455   Keller, PA & Lehmann DR. (2008). Designing effective health communications: a meta-analysis.

456   *Journal of Public Policy & Marketing* **27**: 117-130.

457   Keller PA, Lipkus IM and Rimer BK. 2003. Affect, framing, and persuasion. *Journal of Marketing*

458   *Research* **40**: 54-64.

459   Kidd LR, Garrard GE, Bekessy SA, Mills M, Camilleri AR, Fidler F, ... & Louis W. 2019a. Messaging

460   matters: A systematic review of the conservation messaging literature. *Biological conservation* **236**:

461   92-99.Kidd LR, Bekessy SA and Garrard GE. 2019b. Neither Hope nor Fear: Empirical Evidence Should

462   Drive Biodiversity Conservation Strategies. *Trends in Ecology and Evolution.*

463   Kusmanoff AM. 2017. *Framing the Conservation Conversation: An investigation into framing*

464   *techniques for communicating biodiversity conservation* (PhD dissertation). Melbourne, Victoria,

465   RMIT University.

466   Kusmanoff AM, Hardy MJ, Fidler F, Maffey G, Raymond C, Reed MS and Bekessy SA. 2016. Framing

467   the private land conservation conversation: Strategic framing of the benefits of conservation

468   participation could increase landholder engagement. *Environmental Science & Policy* **61**: 124-128.

469   Lakoff, G. 2010. Why it matters how we frame the environment. *Environmental Communication* **4**:

470   70-81.

471   Lakoff, G. 2004. Don't think of an elephant! Know your values and frame the debate. Chelsea Green

472   Publishing Company. Vermont USA.

473   Loewenstein GF, Weber EU, Hsee CK and Welch N. 2001. Risk as feelings. *Psychological bulletin* **127**:

474   267-286.

475   Maio GR, Pakizeh A, Cheung WY and Rees KJ. 2009. Changing, priming, and acting on values: effects

476   via motivational relations in a circular model. *Journal of Personality and Social Psychology* **97**: 699-

477   715.

478   McDonald RI, Chai HY and Newell BR. 2015. Personal experience and the 'psychological distance of

479   climate change: An integrative review. *Journal of Environmental Psychology* **44**: 109-118.

480   Metz D, Weigel L (2013). *The Language of Conservation 2013: Updated Recommendations on How to*

481   *Communicate Effectively to Build Support for Conservation*. Conservation Gateway

482   www.conservationgateway.org accessed June 2019.

483   Morgan DL. 1996. Focus groups. *Annual Review of Sociology* **22**: 129-152.

484   Myers TA, Nisbet MC, Maibach EW and Leiserowitz AA. 2012. A public health frame arouses hopeful

485   emotions about climate change. *Climatic Change* **113**: 1105-1112.

486   Nash JR and Stern SM. 2009. Property frames. *Washington University Law Review* 87: 449-504.

487   Nisbet MC, and Scheufele DA. (2009). What's next for science communication? Promising directions

488   and lingering distractions. *American Journal of Botany* **96**: 1767-1778.

489   New York Times. 2010. Obama's Remarks on Offshore Drilling. Available from

490   www.nytimes.com/2010/04/01/science/earth/01energy-text.html (accessed March 2017).

491   Noar SM. 2006. A 10-year retrospective of research in health mass media campaigns: where do we

492   go from here?. *Journal of health communication* **11**: 21-42.

493   O'Keefe DJ, and Jensen JD. 2008. Do loss-framed persuasive messages engender greater message

494   processing than do gain-framed messages? A meta-analytic review. *Communication Studies* **59**: 51-

495   67.

496   Rugg D. 1941. Experiments in wording questions: II. *Public Opinion Quarterly* **5**: 91-92.

497   Samuelson W and Zeckhauser R. 1988. Status quo bias in decision making. *Journal of Risk and*

498   *Uncertainty* **1**: 7-59.

499   Schuldt J, and Roh S. 2014. Media frames and cognitive accessibility: What do "global warming" and

500   "climate change" evoke in partisan minds? *Environmental Communication* **8**: 529-548.

501   Schultz PW, Nolan JM, Cialdini RB, Goldstein NJ and Griskevicius V. 2007. The constructive,

502   destructive, and reconstructive power of social norms. *Psychological Science* **18**: 429-434.

503   Schultz PW, Khazian AM and Zaleski AC. 2008. Using normative social influence to promote

504   conservation among hotel guests. *Social Influence* **3**: 4-23.

505   Schultz P. 2011. Conservation means behavior. *Conservation Biology* **25**: 1080-1083.

506   Sexton SE, Sexton AL. 2014. Conspicuous conservation: The Prius halo and willingness to pay for

507   environmental bona fides. *Journal of Environmental Economics and Management* **67**: 303-317.

508   Shiv B and Fedorikhin A. 1999. Heart and mind in conflict: The interplay of affect and cognition in

509   consumer decision making. *Journal of Consumer Research* 26: 278-292.

510   Sparkman G and Walton GM. (2017). Dynamic norms promote sustainable behavior, even if it is

511   counternormative. *Psychological Science* **28**: 1663-1674.

512   Spence A, Poortinga W and Pidgeon N. 2012. The psychological distance of climate change. *Risk*

513   *Analysis* **32**: 957-972.

514   Steg L, and Vlek C. 2009. Encouraging pro-environmental behaviour: An integrative review and

515   research agenda. *Journal of Environmental Psychology* **29**: 309-17.

516   Steinhorst J, Klöckner CA, Matthies E. 2015. Saving electricity–For the money or the environment?

517   Risks of limiting pro-environmental spillover when using monetary framing. *Journal of Environmental*

518   *Psychology* **43**: 125-135.

519   Thaler RH and Sunstein CR. 2008. Nudge: Improving decisions about health, wealth, and happiness.

520   New Haven: Yale University Press.

521   Van de Velde L, Verbeke W, Popp M, Van Huylenbroeck G. 2010. The importance of message framing

522   for providing information about sustainability and environmental aspects of energy. *Energy Policy*

523   38: 5541-5549.

524   Veríssimo, D. (2019). The Past, Present, and Future of Using Social Marketing to Conserve

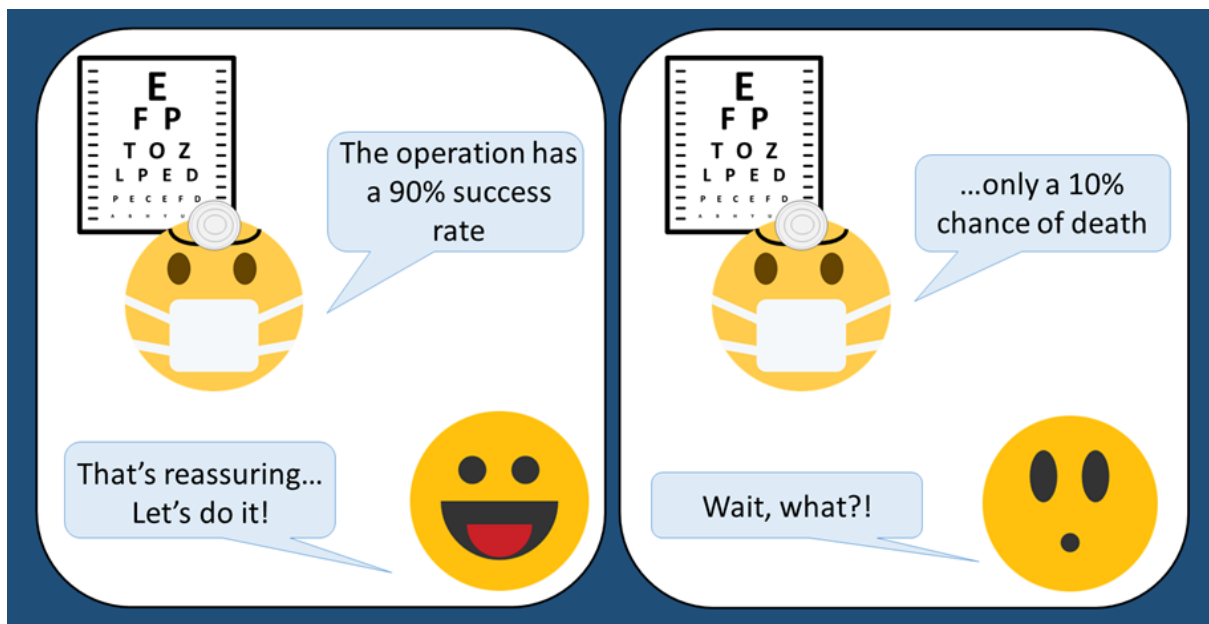525   Biodiversity. *Social Marketing Quarterly* **25**: 3-8.

526   VerÍssimo, D., Pongiluppi, T., Santos, M. C. M., Develey, P. F., Fraser, I., Smith, R. J., & Macmilan, D. C.

527   2014. Using a systematic approach to select flagship species for bird conservation. *Conservation*

528   *Biology* **28**: 269-277.

529   Verissimo D, MacMillan DC. and Smith RJ. 2011. Toward a systematic approach for identifying

530   conservation flagships. *Conservation Letters* **4**: 1-8.

531   Winter PL. 2006. The impact of normative message types on off-trail hiking. *Journal of Interpretation*
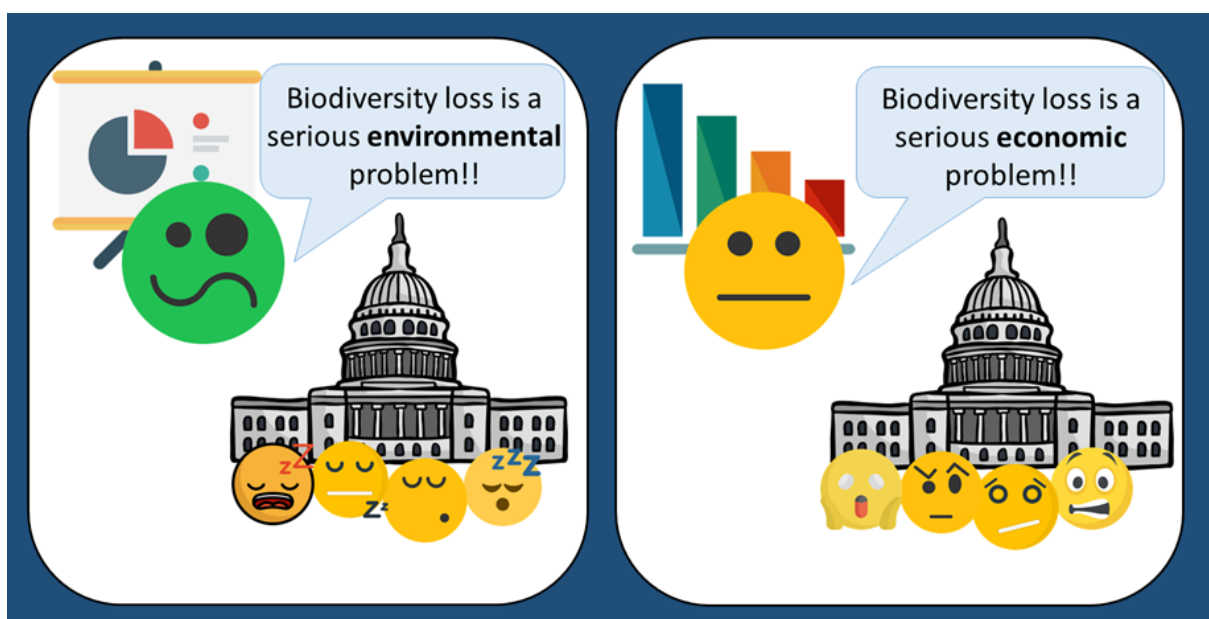
532   **11**: 34-52.

533   Worchel S, Lee J and Adewole A. 1975. Effects of supply and demand on ratings of object value.

534   *Journal of Personality and Social Psychology* **32**: 906-914.

535   Zhou Y, Moy P. (2007). Parsing framing processes: The interplay between online public opinion and
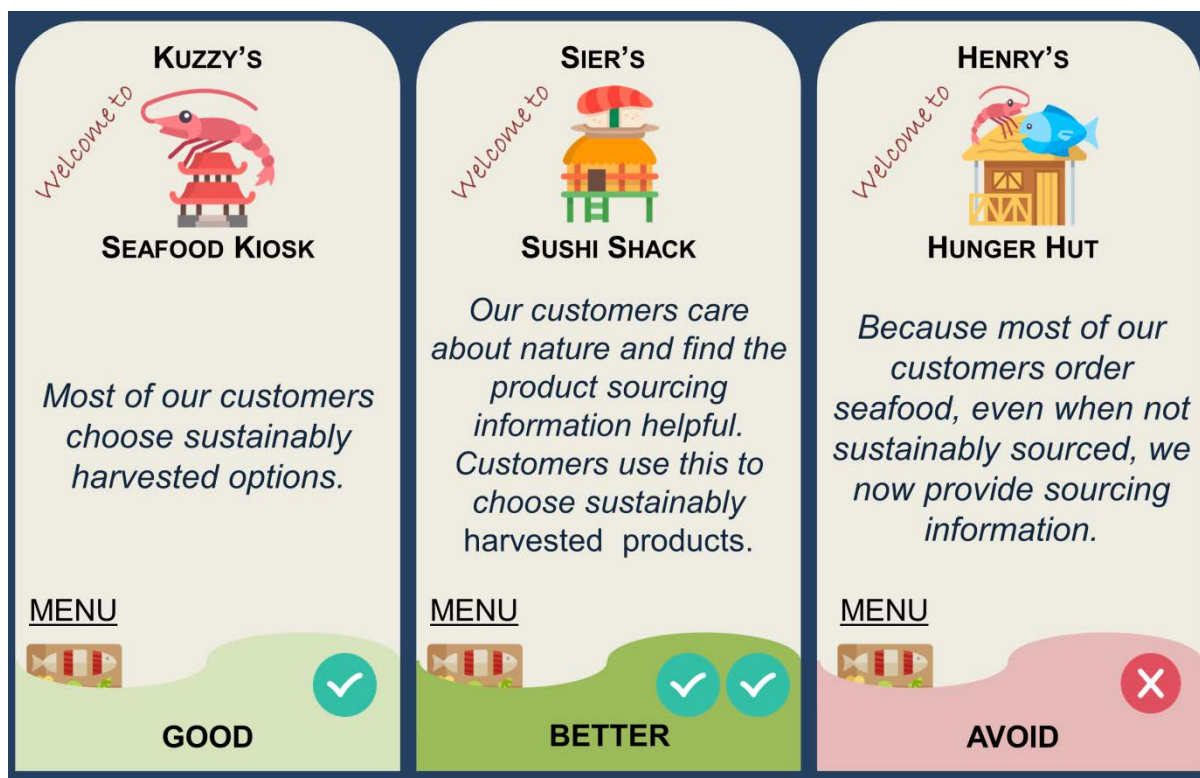536   media coverage. *Journal of Communication* 57: 79-98.

Figs

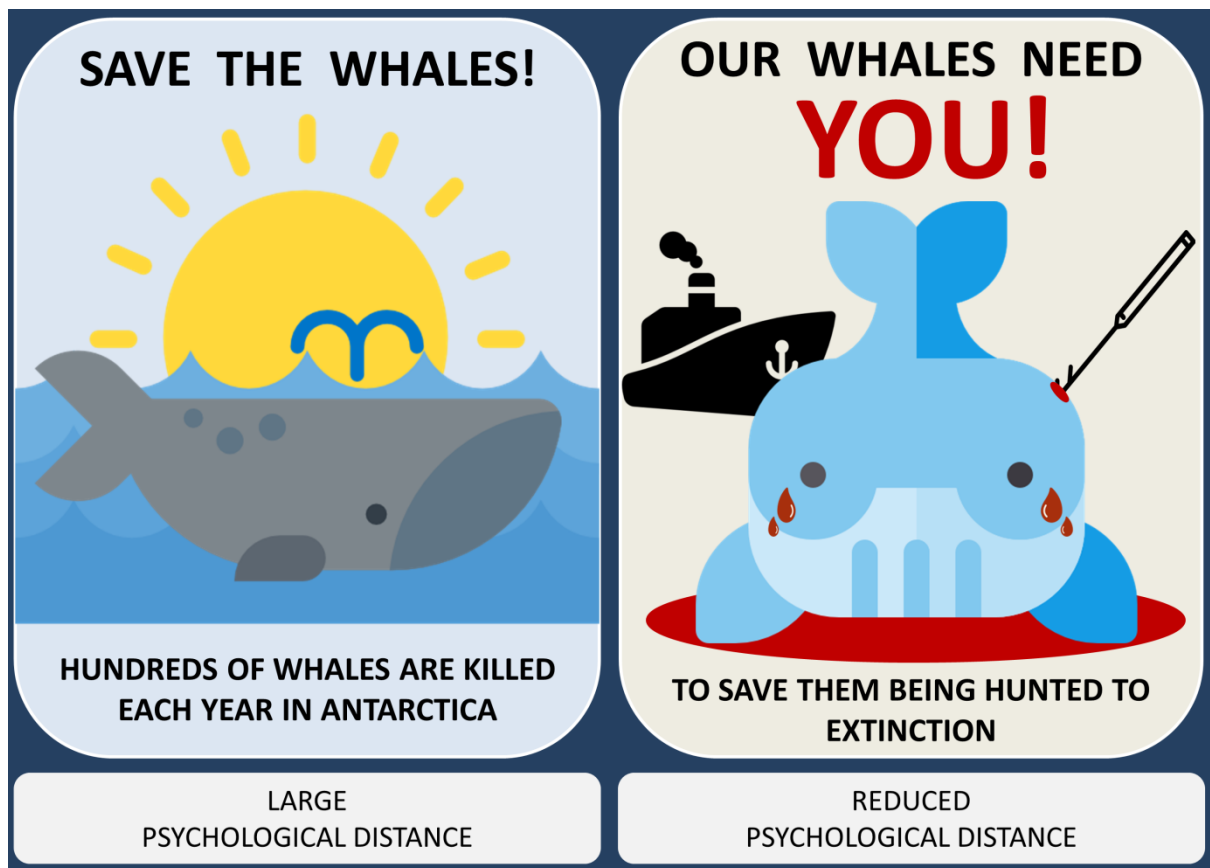*Fig. 1. An illustrated example of how alternatively framing information can influence the ways an audience may respond.*

Fig. 2. Issues can be framed to suit different agendas and audiences. Where possible your message should be tailored for your target audience. Characteristics of the messenger can also influence audience response. Note that this figure is based on an original climate change cartoon attributed to Felix Schaad.

546

547

Fig. 3. These hypothetical menu excerpts illustrate how information can be framed to activate norms,

either helpfully or unhelpfully. The excerpt from Kuzzy's establishes the making of sustainable choices

as a normal behaviour for customers. At Sier's this norm is paired with information about the social

approval of this behaviour, likely enhancing the influence of the message. Although the information

conveyed by Henry's menu is substantially the same as Sier's, Henry's establishes a norm of eating

seafood regardless of how it is sourced, potentially encouraging this undesirable behaviour.

SAVE THE WHALES!

HUNDREDS OF WHALES ARE KILLED
EACH YEAR IN ANTARCTICA

LARGE
PSYCHOLOGICAL DISTANCE

OUR WHALES NEED YOU!

TO SAVE THEM BEING HUNTED TO
EXTINCTION

REDUCED
PSYCHOLOGICAL DISTANCE

Fig. 4. The hypothetical campaign poster on left does nothing to reduce the psychological distance between the threat to whales and the reader; the image is of a whale in its natural state (abstract for most people) and emphasizes that the threat to whales is far away (Antarctica). In contrast, the poster on the right seeks to reduce psychological distance by increasing the vividness, making the whale relatable to humans (i.e. the whale is making a plea for help, has tears), avoiding mention that the hunt occurs far away, and seeking to engender a connection to the reader by referring to 'our whales'.
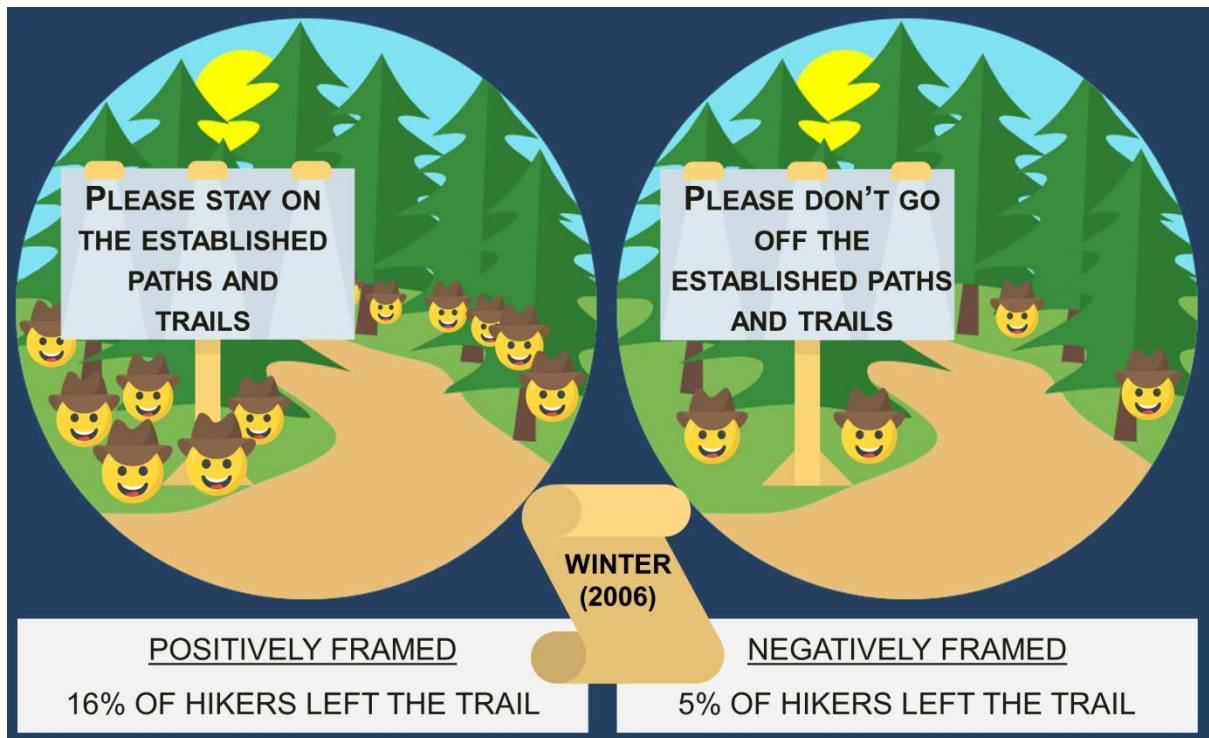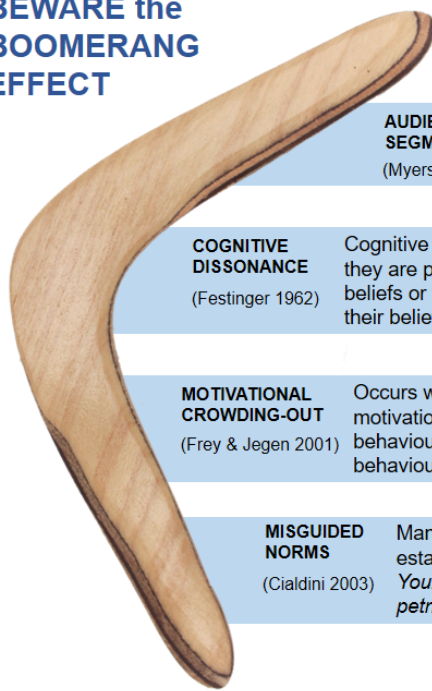
562

563 *Fig. 5. One common bias that may be leveraged by strategic framing is the greater influence of*

564 *negatively worded messages. In a study by Winter (2006) more than three times as many hikers that*

565 *encountered the positively framed sign disobeyed the request to stay on the path.*

566

567

BEWARE the BOOMERANG EFFECT

AUDIENCE SEGMENTATION (Myers et al. 2012)	Framing climate change as a national security issue aroused unintended feelings of anger and backlash in skeptical segments of the public.
COGNITIVE DISSONANCE (Festinger 1962)	Cognitive dissonance is the discomfort that arises within an individual when they are presented with new information or actions that conflict with their beliefs or values. People may seek to avoid such inconsistency, or change their beliefs or behaviours in order to restore consistency.
MOTIVATIONAL CROWDING-OUT (Frey & Jegen 2001)	Occurs when the offer of a reward (e.g. money) causes intrinsic altruistic motivations to be replaced by extrinsic, self-interested motivations for certain behaviours. Over time, incentives may actually reduce the targeted behaviour in segments of the audience that value nature intrinsically.
MISGUIDED NORMS (Cialdini 2003)	Managers at Arizona's Petrified Forest National Park inadvertently established theft as a social norm by putting up a sign that read: *Your heritage is being vandalized every day by theft losses of petrified wood of 14 tons per year, mostly a small piece at a time.*

568

569   *Fig. 6. Four examples of unanticipated 'boomerang' effects of messages that can work against the*

570   *aim of communicators.*

571

572

573 **Figure Legends**

574 *Fig. 1. An illustrated example of how alternatively framing information can influence the ways an*

575 *audience may respond.*

576

577 *Fig. 2. Issues can be framed to suit different agendas and audiences. Where possible your message*

578 *should be tailored for your target audience. Characteristics of the messenger can also influence*

579 *audience response. Note that this figure is based on an original climate change cartoon attributed to*

580 *Felix Schaad.*

581

582 *Fig. 3. These hypothetical menu excerpts illustrate how information can be framed to activate norms,*

583 *either helpfully or unhelpfully. The excerpt from Kuzzy's establishes the making of sustainable choices*

584 *as a normal behaviour for customers. At Sier's this norm is paired with information about the social*

585 *approval of this behaviour, likely enhancing the influence of the message. Unfortunately, although*

586 *the information conveyed by Henry's menu is substantially the same as Sier's, Henry's establishes a*

587 *norm of eating seafood regardless of how it is sourced, potentially encouraging this undesirable*

588 *behaviour.*

589

590 *Fig. 4. The hypothetical campaign poster on left does nothing to reduce the psychological distance*

591 *between the threat to whales and the reader; the image is of a whale in its natural state (abstract for*

592 *most people) and emphasizes that the threat to whales is far away (Antarctica). In contrast, the*

593 *poster on the right seeks to reduce psychological distance by increasing the vividness, making the*

594 *whale relatable to humans (i.e. the whale is making a plea for help, has tears), avoiding mention that*

595 *the hunt occurs far away, and seeking to engender a connection to the reader by referring to 'our*

596 *whales'.*

597

Fig. 5. One common bias that may be leveraged by strategic framing is the greater influence of negatively worded messages. In a study by Winter (2006) more than three times as many hikers that encountered the positively framed sign disobeyed the request to stay on the path.

601

Fig. 6. Four examples of unanticipated 'boomerang' effects of messages that can work against the aim of communicators.

604