

# Experimental evidence of the impact of framing of actors and victims in conservation narratives

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## Abstract

Media narratives play a crucial role in framing marine conservation dilemmas by depicting human actors, such as fish consumers or the fishing industry, as responsible for negative effects of their actions on species and ecosystems. However, there is little evidence documenting how such narratives affect preferences for reducing bycatch. Behavioral science research shows that people can act less prosocially when more actors are responsible for a collective outcome (responsibility diffusion effect) and when more victims need to be helped (compassion fade effect); thus, the media's framing of actors and victims may have a significant effect on preferences. We conducted the first test of responsibility diffusion and compassion fade in a marine context in an online experiment (1548 participants in the United Kingdom). In 9 media narratives, we varied the type of actors responsible for fisheries bycatch (e.g., consumers and industry) and victims (e.g., a single species, multiple species, and ecosystems) in media narratives and determined the effects of the narratives on participants' support for bycatch policies and intentions to alter fish consumption. When responsibility for negative effects was attributed to consumers and industry, the probability of participants reporting support for fisheries policies (e.g., bycatch enforcement or consumer taxes) was ~30% higher (odds ratio = 1.32) than when only consumers were attributed responsibility. These effects were primarily driven by female participants. Narratives had no effect on personal intentions to consume fish. Varying the type of victim had no effect on policy support and intentions. Our results suggest that neither responsibility diffusion nor compassion fade automatically follows from increasing the types of actors and victims in media narratives and that effects can depend on the type of outcome and population subgroup.

## KEYWORDS

biodiversity conservation, communication, compassion fade, fish consumption, fisheries policy, framing, identifiable victim effect, narratives, responsibility diffusion

## Resumen

Las narrativas mediáticas juegan un papel importante en el encuadre de los dilemas de conservación marina al representar a los actores humanos, por ejemplo, los consumidores de pescado o la industria pesquera, como los responsables de los efectos negativos de sus acciones sobre las especies y ecosistemas. Sin embargo, hay poca evidencia que documente cómo estas narrativas afectan las preferencias para reducir la captura incidental. Investigaciones de la ciencia conductual muestran que las personas pueden actuar menos a favor de la sociedad cuando más actores son responsables de un resultado colectivo (efecto de difusión de la responsabilidad) y cuando más víctimas necesitan asistencia (efecto de la

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desaparición de la compasión); por lo tanto, el encuadre mediático de los actores y las víctimas puede tener un efecto significativo sobre las preferencias. Realizamos el primer análisis de la difusión de la responsabilidad y la desaparición de la compasión en un contexto marino con un experimento en línea (1,548 participantes en el Reino Unido). Diversificamos el tipo de actores responsables de la captura incidental (p. ej.: consumidores e industria) y sus víctimas (p. ej.: una sola especie, múltiples especies y ecosistemas) en nueve narrativas mediáticas y determinamos sus efectos sobre el respaldo que dan los participantes a las políticas de captura incidental y sus intenciones de alterar el consumo de pescado. Cuando se le atribuyó la responsabilidad de los efectos negativos a los consumidores y a la industria, la probabilidad de que los participantes apoyaran las políticas pesqueras (p. ej.: implementación de la captura incidental o impuestos al consumidor) fue ~30% más alta (razón de probabilidad = 1.32) que cuando se le atribuyó la responsabilidad solamente a los consumidores. Estos efectos fueron impulsados principalmente por las mujeres participantes. Las narrativas no tuvieron efectos sobre las intenciones personales de consumir pescado. La variación en el tipo de víctimas no tuvo efectos sobre el apoyo a las políticas y las intenciones. Nuestros resultados sugieren que ni la difusión de la responsabilidad ni la desaparición de la compasión ocurren automáticamente tras incrementar los tipos de actores y víctimas en las narrativas mediáticas y que los efectos pueden depender del tipo de resultado y del subgrupo poblacional.

Evidencia Experimental del Impacto que Tiene el Encuadre de los Actores y las Víctimas en las Narrativas de Conservación

#### PALABRAS CLAVE

comunicación, conservación de la biodiversidad, consumo de peces, desaparición de la compasión, difusión de la responsabilidad, efecto de la víctima identificable, enmarcado, narrativas, políticas pesqueras

#### 【摘要】

媒体叙事通过描述人类行为者 (如鱼类消费者或水产捕捞业) 的行为对物种和生态系统的负面影响, 对海洋保护困境的框架构建产生了关键作用。然而, 很少有证据记录这种叙事如何影响减少渔业兼捕的倾向。行为科学研究表明, 当有更多的行为者对集体结果负责 (责任扩散效应), 或有更多的受害者需要帮助 (同情心消退效应) 时, 人们的亲社会行为会减少; 因此, 媒体对行为者和受害者的描述可能对行为倾向产生重大影响。我们在一项在线实验中首次测试了海洋背景下的责任扩散和同情心消退效应, 本实验有 1,548 名来自英国的参与者。在 9 种媒体叙事中, 我们改变了媒体叙事中为渔业兼捕负责的行为者 (如消费者和产业) 和受害者 (如单一物种、多个物种和生态系统) 的类型, 并确定了各种叙事方式对参与者支持兼捕政策和改变鱼类消费意愿的影响。我们发现, 当负面影响的责任被归咎于消费者和行业时, 参与者报告支持渔业政策 (如兼捕执法或消费税) 的概率比只归咎于消费者时高约 30% (优势比为 1.32)。这些影响主要由女性参与者驱动。此外, 不同的叙事对个人消费鱼类的意愿没有影响; 不同类型的受害者对政策支持意愿也没有影响。我们的结果表明, 增加媒体叙事中的行为者和受害者的类型并不一定会产生责任扩散或同情心消退效应, 而这些效应可能取决于结果的类型和人口亚群。【翻译: 胡怡思; 审校: 聂永刚】

**关键词:** 公平, 框架, 责任扩散, 可识别的受害者效应, 同情心消退, 生物多样性保护, 鱼类消费, 渔业政策, 叙事, 交流

## INTRODUCTION

Bycatch is a major threat to marine wildlife and ecosystems (Lewison et al., 2014; Taylor et al., 2017). In addition to directly reducing populations, it has indirect effects at the ecosystem level (e.g., alters food web interactions [Komoroske & Lewison, 2015; Meyer et al., 2017]). Because bycatch is the result of entanglement or consumption of lost gear and industrial fish-

ing approaches, such as trawling, mitigation strategies, such as gear modification, are key. However, effective bycatch solutions are complex. Estimating bycatch rates is challenging because onboard scientific observers are scarce, and the impacts of bycatch mitigation need to be balanced with fishers' livelihoods across diverse socioecological and regulatory contexts. To reduce bycatch, various policies (e.g., regulatory enforcement, fines) are needed, as is altering fish demand (e.g., for

fish certified as low bycatch) (Booth et al., 2021; Komoroske & Lewison, 2015).

Transitioning to sustainable food systems and diets is vital to mitigate biodiversity loss and climate change more generally (Dasgupta, 2021; Farmery et al., 2022; IPCC, 2014). A sector of behavioral science research has focused on people's support for policies related to the livestock industry, such as ecolabels or taxes on meat (Lusk et al., 2007; Malone & Lusk, 2018). Other sectors have explored how framing messages in particular ways (e.g., drawing attention to environmental and health benefits of plant-based diets or how social norms around meat consumption are changing) affects personal food consumption intentions and behavior (Palomo-Vélez et al., 2018; Shreedhar & Galizzi, 2021; Sparkman & Walton, 2017). Less research, however, has examined what influences fish consumption and policy support in relation to bycatch and the role of media narratives in shaping preferences. People are still advised to replace red and processed meat with fish (e.g., NHS, 2018) and to buy ecocertified fish (e.g., so-called dolphin-safe tuna).

### Framing in environmental media narratives

Framing is generally thought of as a technique that makes some particular aspects of perceived reality more salient, thereby reorientating people to conceptualize an issue in a specific way (Chong & Druckman, 2007; Martell & Rodewald, 2020). There is a growing body of work documenting framing effects (e.g., Boykoff, 2009; Kusmanoff et al., 2020; Lakoff, 2010). The same frame may result in systematically different responses among population subgroups. For example, Feldman and Hart (2018) found a climate-change frame lowers support for renewable energy, carbon tax, and fuel efficiency policies (relative to pollution or security frames) among U.S. Republicans but not Democrats or Independents. Insights from the framing literature largely rely on textoids (i.e., schematic messages) created for the purpose of the study rather than on information framed in realistic narrative contexts (Malecki et al., 2021).

We used a randomized control experiment to examine the effects of framing actors and victims in media narratives about marine bycatch impacts, bycatch policy, and personal fish consumption intentions. Existing reviews highlight the lack of empirical tests of how different framings affect willingness to address marine conservation; existing evidence largely comes from applications to sociopolitical and climate change issues and terrestrial ecosystems (Kolandai-Matchett & Armoudian, 2020; Martin et al., 2017). Marine ecosystems are often reported as or more psychologically distant and less accessible to people's direct experience and lifestyles than climate change and terrestrial ecosystems (Kolandai-Matchett & Armoudian, 2020). For example, most people are unaware that only 38% of fish stocks are sustainably harvested in the United Kingdom and that 6 in 10 economically important fish stocks are overfished or at critically low levels, including North Sea cod (*Gadus morhua*) (Guille et al., 2021).

How issues are grounded and framed in popular media narratives can shape people's views and choices because this is often their first source of information (Kolandai-Matchett &

Armoudian, 2020; Silver & Hawkins, 2017). Yet few studies have examined the causal effect of such narratives in a marine context. Kolandai-Matchett & Armoudian (2020) found that both narrative and expository information about ocean acidification were similarly effective in motivating attitudes and behavior, and Malecki et al. (2021) found that video narratives about seabirds increase proconservation attitudes. These authors examined the effect of narrative communication format or mode, rather than the actual narrative content as it relates to bycatch, victims, or perpetrators.

Bycatch narratives are a concrete representation of marine biodiversity threats as they relate to people's daily lives. Consumer demand for fish arguably influences bycatch, and people can change their behavior by, for example, consuming ecocertified fish. Media and discourse analyses show that articles on marine conservation problems (including bycatch) frame the role of actors, including consumers, the fishing industry, and third parties, such as certification bodies, in their narratives (Jarreau et al., 2017; Kolandai-Matchett & Armoudian, 2020; Martin et al., 2017; Silver & Hawkins, 2017). Such narratives implicitly or explicitly provide causal explanation for how these actors deplete fisheries or cause harm to particular species (e.g., dolphins in tuna fisheries). Apart from how different actors are responsible for influencing outcomes, narratives also discuss ways to sustainably manage fish stocks and mitigate harm (e.g., sustainable seafood, changing fishing regulations [Jarreau et al., 2017; Silver & Hawkins, 2017]). The 2021 movie *Seaspiracy* portrayed how different factors (e.g., consumer demand for fish, harmful industrial fishing practices, ecocertification) can harm marine wildlife and portrayed, for example, whales and dolphins as bycatch victims.

### Framing actors and attributing responsibility

Framing how responsibility is attributed to individuals can affect willingness to change behaviors. Research from experimental economics and psychology shows that people are less likely to help others when there are more people available to help (El Zein et al., 2019). A classic illustration is via the "bystander effect," in which the presence of passive bystanders lowers the likelihood that individuals will intervene to help someone (Fischer et al., 2011). People may be less likely to help because they tend to subjectively divide personal responsibility to help by the number of bystanders. This diffusion of responsibility may be higher in ambiguous, nonemergency contexts, for example, when the human victim is not in immediate physical danger.

Other studies show that increased moral wiggle room reduces generosity and cooperation in controlled experimental games in which choices are incentivized through monetary payments. Dana et al. (2007), for example, found that people are more likely to free ride or choose self-interested strategies to maximize their monetary payoffs when there is more moral ambiguity between how one's choices affect another person in social dilemmas, such as dictator games. Generosity toward recipients falls when there are 2 instead of 1, even though both can unilaterally choose to share their earnings. More broadly

when the number of actors increases, there is a tendency for people to delegate responsibility for taking personally costly actions to help others through processes such as the bystander effect and free riding (El Zein et al., 2019).

Yet research also suggests responsibility diffusion can be context specific. Lind, Nyborg, and Pauls (2019) found that increased moral wiggle room does not reduce generosity toward an environmental charity. Fischer et al. (2011) found that in the presence of bystanders who are perceived as a welcome source of support (e.g., because they are perceived to be strong), the probability that individuals will help increases. Other studies show that attributing the responsibility for emergencies caused by zoonotic spillovers, such as the Covid-19 pandemic, or the destruction of nature by humans can increase support for wildlife conservation policies (Shreedhar & Mourato, 2020). How this research extends to marine contexts and complex problems, such as bycatch, has not yet been studied.

The climate governance literature suggests there may be a responsibility diffusion effect. Pidgeon (2012) contends that there is a “governance trap” in Western democracies in which the responsibility of citizens is emphasized, whereas citizens themselves attribute primary responsibility to powerful actors, such as businesses. One interpretation is that people seek to “displace responsibility for action onto others rather than themselves, thereby avoiding costly or difficult changes to their own lifestyles” (Pidgeon, 2012, p. S89).

## Framing victims and compassion fade

Apart from who is held responsible for harm, another key component of media narratives is who is being harmed and how the victim is framed. When evaluating environmental benefits from a rational choice perspective, it is reasonable to expect that people are willing to pay more money to protect more species because environmental benefits of protecting more species are greater (Pellegrin et al., 2018; Shreedhar & Mourato, 2019). In contrast, however, willingness to pay does not always increase when the number of individuals in need increases (Desvousges et al., 1993).

People are more likely to donate when appeals feature 1 identifiable victim rather than a large number of statistical victims (Kogut & Ritov, 2005; Small & Loewenstein, 2003; Västfjäll et al., 2014). This pattern is called the “identifiable victim effect”; people may act more generously because they personally identify with and feel greater sympathy for 1 victim in need of aid compared with  $\geq 2$  victims (Small & Loewenstein, 2003). Similarly, *compassion fade* refers to the process whereby compassionate and empathetic feelings toward the victim decrease as the number of people in need increases, thereby decreasing donations (Västfjäll et al., 2014). A recent meta-analysis of 41 studies shows a small positive mean effect size ( $d = 0.10$ ) when comparing 1 identified victim with many victims (Lee & Feeley, 2016).

Comparatively fewer studies have explored compassion fade toward nonhuman victims, and the ones that have show mixed results. For example, donations to environmental appeals do not

appear to differ whether they feature a single animal versus a group of 4 or a single animal versus a species (Hsee & Rottenstreich, 2004; Thomas-Walters & Raihani, 2017). Few studies have examined monetary donations to different species. People are more likely to donate to appeals framed using a single flagship species than a nonflagship species or an ecosystem composed of a flagship and nonflagship species (Shreedhar & Mourato, 2019). Compassion fade may be more likely among those with lower proenvironmental motivations and personal experience. Markowitz et al. (2013) found that compassion fade among self-identified nonenvironmentalists, who stated that they would donate significantly less to larger numbers of victims (e.g., single photo of a polar bear vs. a photo of many polar bears). Pellegrin et al. (2018) found that 1 identifiable plant victim (with a name and photo) elicited lower policy support among French farmers to participate in a land restoration program compared with alternative framings with 30 plants of various species and 30 plants of the same species. These effects were more pronounced among organic farmers than conventional farmers. More broadly, Pellegrin et al.’s (2018) findings were consistent with studies positing that people are willing to pay higher amounts for more plants (and environmental benefits).

Research is urgently needed to understand how people perceive and are willing to help nonhuman victims when narratives are framed on a scale from an individual animal to entire ecosystems. Thus, we examined whether the compassion fade effect persists in marine contexts when media narratives frame bycatch victims as 1 versus many cetacean species versus a marine ecosystem composed of different species. On the one hand, people may be willing to reduce their fish consumption and support bycatch policies when they encounter 1 identifiable victim in a narrative. On the other hand, they may take more actions and support policies if they are exposed to more types of victims because benefits may be perceived as greater. Given the contrasting predictions and mixed evidence on compassion fade toward nonhuman victims, we hypothesized that victim type has no effect on policy support or intentions.

To contribute to the research on framing of responsibility, we tested the effect of varying the types of actor groups, instead of increasing the number of similar individual members in a group, on policy support and intentions. Specifically, we framed multiple high-level actor groups, namely, fish consumers, the commercial fishing industry, and sustainability certification organizations in our media narratives, and determined the effects on personal intentions to consume fish and to support different types of fisheries policies. If responsibility is attributed primarily to demand from consumers, people may be willing to undertake more personally costly actions to stop or reduce bycatch, for example, by stopping or reducing how much fish they consume and thereby reducing demand. However, if narratives place the blame on the fishing industry in addition to the consumer, for example, by highlighting harmful fishing techniques, then people may be unwilling to alter their own consumption because they may blame industrial practices. Thus, we hypothesized that personal intentions to reduce fish consumption will be higher when fewer types of actors



**TABLE 1** Sample size of survey participants and treatment (bycatch narrative) groups participants were placed in

Type of actor responsible for bycatch	Type of bycatch victim		
	Single species	Multiple species	Ecosystem + multiple species
Consumers	173	172	168
Consumers + industry	170	169	176
Consumers + industry + sustainability certification	170	176	174

are held responsible for causing bycatch. We also hypothesized that support for bycatch policy is higher when more actors are responsible for causing bycatch. This is because governmental policies can approach bycatch mitigation from a variety of angles and entail costs for multiple actor types, including businesses, governments, and consumers (e.g., ecolabel certification, increased regulatory enforcement, and fines for bycatch).

We conducted exploratory analyses to examine whether there is an interaction effect between the type of actors and victims (Appendix S7). Although it is possible that a single identified victim may make people feel more responsibility, results in the literature are mixed (Lee & Feeley, 2016). We also explored whether effects of narratives vary by population subgroups. Specifically, we examined whether environmentalist self-identification moderates the impact of framing multiple victims, which extends the work of Markowitz et al. (2013), and whether results vary by gender (past studies show men are more attached to nonvegetarian diets [De Backer et al., 2020]).

## METHODS

We designed a  $3 \times 3$  between-subjects experiment in which the type of actors (consumers, industrial fishing, industry plus sustainability certification) responsible for bycatch and the nonhuman victims (a single cetacean species vs. multiple cetacean species vs. marine ecosystems containing multiple cetacean species) (Table 1) varied. We compared the effects of 9 treatment stories across participants. The preregistered study design is available from the Open Science Framework at [https://osf.io/jd3x9/?view\\_only=9de4285cbd1a47dcad8f190c017dde7b](https://osf.io/jd3x9/?view_only=9de4285cbd1a47dcad8f190c017dde7b). Our protocol was approved by the London School of Economics' research ethics committee.

### Participant recruitment

We ran the study on 27 April 2021 and recruited participants from the Prolific Academic panel. We restricted participation to nonvegetarian U.K. residents who had over 95% approval ratings relative to their performance in studies conducted through Prolific Academic. We conducted a power analysis in G\*Power (assuming  $f = 0.1$ ,  $1 - \beta = 0.80$ ,  $\alpha = 0.05$ ; number of groups = 9, analysis of variance for main and interaction effects) (Faul et al., 2009). The estimated sample size was 1634 participants, and we recruited 1757 participants to account for possible reductions due to exclusion criteria. The study topic was social attitudes,

and all participants were paid £1 each. The survey was built on the Qualtrics survey platform.

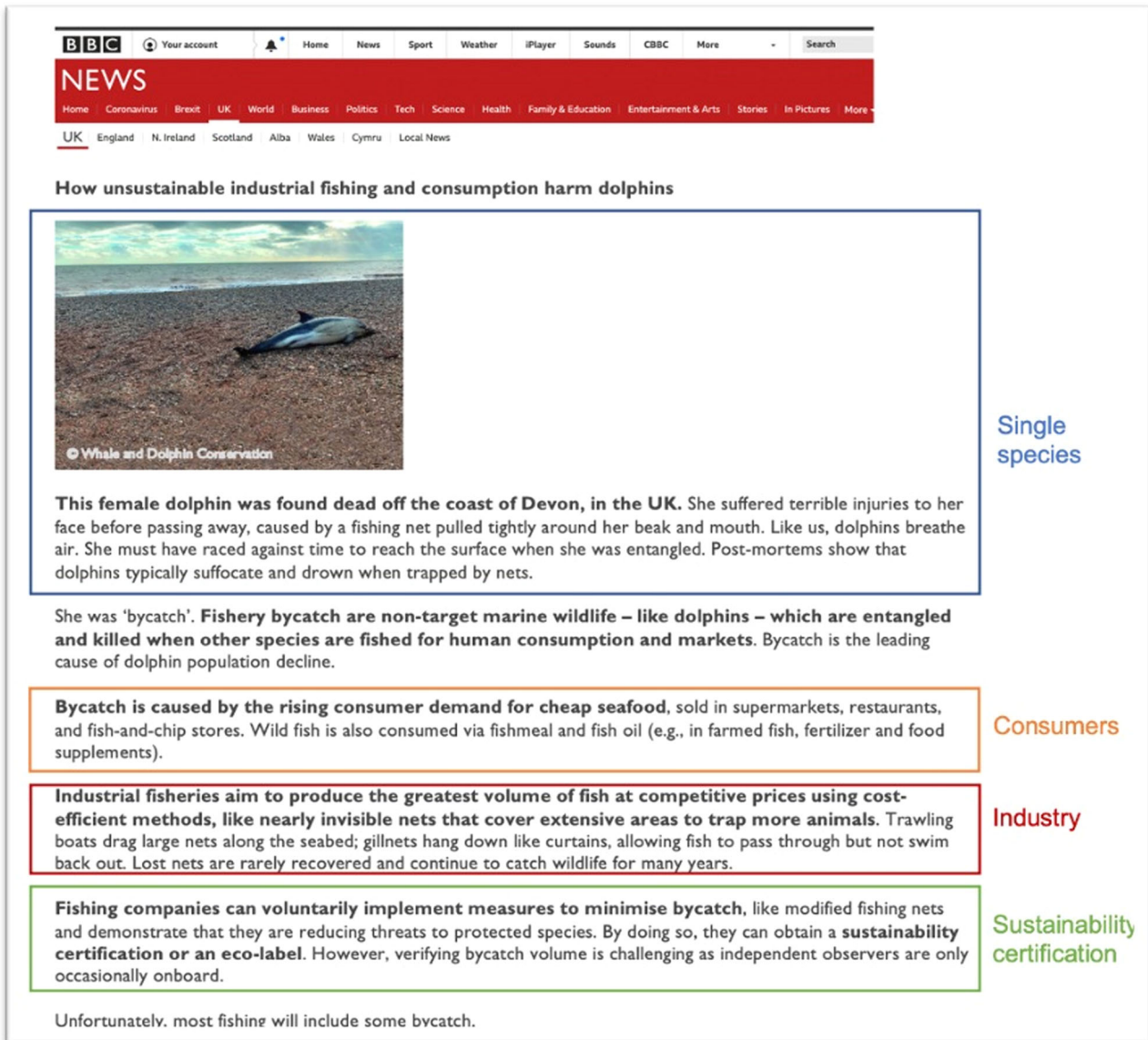
### Narrative stimuli

Participants were asked to imagine that they came across an article on their social media feed and were randomly shown 1 of the 9 narrative treatment articles (Figure 1). The narrative stimuli were adapted from online articles from the British Broadcasting Corporation (BBC) and other U.K. media (McCarthy, 2021; McGuinness, 2021; Tapper, 2018), communications from conservation organizations working on bycatch (e.g., Whale and Dolphin Conservation [<https://uk.whales.org/>]), and scientific journals (Booth et al., 2021; Komoroske & Lewison, 2015).

We systematically added more actors and victims as we moved from the baseline stimuli of consumers + single species victims. To start with, all narratives had a short title emphasizing the responsible actor and victim (e.g., “How Industrial Fishing and Consumption Harm Dolphins”) and a photo of the threatened victim or victims. The first paragraph introduced the victim treatment, including cause of death (e.g., injuries and suffocation through entanglement in fishing nets). The second explained how bycatch is a cause of cetacean population decline. The next paragraphs attributed responsibility for this harm to one of the actor treatments. All articles ended with the statement, “Unfortunately, most fishing will include some bycatch.” All photos featured a single beached animal and were used in real-life media communications around cetacean bycatch (Appendix S1). The ecosystem narratives had an additional photo of a coral reef to frame marine ecosystems.

Each article was carefully designed to hold constant all factors except the actor and victim frames, including the article presentation and format. To increase realism, and the ecological validity of the treatments, the narrative text was similar to online BBC articles (same logo, formatting, font type, and coloring) (Figure 1 & Appendix S2). We used BBC formatting because it is the most widely used and trusted source of online U.K. news across different groups (Nielsen, Schulz, & Fletcher, 2020). Because we randomly assigned participants to different groups, which had the same design, including the BBC logo, there were no individual differences in either stated attitudes (e.g., trust) toward the BBC (Appendix S3) or other unobserved factors between treatments.

We attempted to mirror how real stories contain multiple types of responsibility attributions and victims; thus, the word count increased from 150 in the baseline to 360 words in the longest article. As expected, participants spent more




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### How unsustainable industrial fishing and consumption harm dolphins

 © Whale and Dolphin Conservation

**This female dolphin was found dead off the coast of Devon, in the UK.** She suffered terrible injuries to her face before passing away, caused by a fishing net pulled tightly around her beak and mouth. Like us, dolphins breathe air. She must have raced against time to reach the surface when she was entangled. Post-mortems show that dolphins typically suffocate and drown when trapped by nets.

She was 'bycatch'. **Fishery bycatch are non-target marine wildlife – like dolphins – which are entangled and killed when other species are fished for human consumption and markets.** Bycatch is the leading cause of dolphin population decline.

**Bycatch is caused by the rising consumer demand for cheap seafood,** sold in supermarkets, restaurants, and fish-and-chip stores. Wild fish is also consumed via fishmeal and fish oil (e.g., in farmed fish, fertilizer and food supplements).

**Industrial fisheries aim to produce the greatest volume of fish at competitive prices using cost-efficient methods, like nearly invisible nets that cover extensive areas to trap more animals.** Trawling boats drag large nets along the seabed; gillnets hang down like curtains, allowing fish to pass through but not swim back out. Lost nets are rarely recovered and continue to catch wildlife for many years.

**Fishing companies can voluntarily implement measures to minimise bycatch,** like modified fishing nets and demonstrate that they are reducing threats to protected species. By doing so, they can obtain a **sustainability certification or an eco-label.** However, verifying bycatch volume is challenging as independent observers are only occasionally onboard.

Unfortunately, most fishine will include some bycatch.

**Single species**

**Consumers**

**Industry**

**Sustainability certification**

**FIGURE 1** Example of an experimental narrative condition with a single species (type of bycatch victim), and consumers, industry, and sustainability certification (types of actors responsible)

time reading the longer articles, which had more actors and victims (Appendix S4); however, it is difficult to isolate the effect of comprehension or article length per se on outcomes. Shorter response times can indicate lower comprehension and data quality, because people “speed through” the stimulus for instance (Greszki et al., 2015). Therefore, we analyzed a restricted sample in which participants took at least 3 min to complete the survey and answered an attention-check question (“What was the source of the article?”).

## Outcomes

Individuals can help facilitate the transition to sustainable fisheries and food systems as both citizens and consumers (Grunert, 2011; Hatanaka, 2020). Therefore, we tested the impact of the narratives on 2 categories of dependent variables: support for government policies and personal intentions

to consume fish. Outcomes were based on current U.K. media narratives and policy debates on bycatch and fisheries in the United Kingdom.

Participants reported the extent to which they supported “U.K. policies to reduce the negative impact of fishing, such as bycatch, on marine species” on a 5-point Likert scale (1 = *definitely not*; 5 = *definitely yes*). The policies were a ban on harvesting wild fish in U.K. waters; ban on deep-sea trawling in U.K. waters; consumer tax on all fish products; increased governmental enforcement and fines for by-catch; and government-mandated ecolabeling in grocery stores and restaurants for marine products. We selected these outcomes to reflect different levels of intrusiveness (e.g., informational ecolabels: 2 types that restrict choice and 2 types that are financial incentives, including consumer taxes and fees). In each outcome, the burden is placed on a different party (e.g., industry, consumers, ecocertification body). To measure the strength of people’s support for each

item, we used an ordinal Likert scale adapted from Feldman and Hart (2018) and Shreedhar and Mourato (2020). We analyzed effects of narratives on each outcome separately and considered effects on a policy composite. The policy composite was constructed by averaging the individual items (composite reliability acceptable at Cronbach alpha = 0.77 and McDonald omega = 0.77 [Deng & Chan, 2017]), which represented people's support for mitigating bycatch via fishing policies in a complementary single measure.

Participants also reported the extent to which they intended to take the following actions in the next 1 month on a 5-point Likert scale (1 = *definitely not*; 5 = *definitely yes*): stop eating fish, reduce your fish consumption, and check ecolabels to ensure purchase of sustainable fish. These outcomes were posed as "I intend to do X" and captured behavioral intentions or motivation to perform a particular action (Sheeran, 2002). We chose these outcomes to reflect different levels of personal effort and preferences, from forgoing fish consumption entirely to consuming more responsibly.

We do not pass judgement on the desirability or effectiveness of any specific fishery policy or action. We chose a variety of possible options debated in the U.K. media, even if controversial. Both the role of various bycatch policies and types of personal choices available to people have been extensively debated in the media (e.g., McCarthy, 2021; McGuinness, 2021; Tapper, 2018) and films like *Seaspiracy*. The policy outcomes have also been debated in relation to marine protected species and area conservation in the United Kingdom (Marine Management Organization, 2020).

We also collected information on several covariates, including sociodemographic data, participants' diets, past pro-wildlife behaviors (e.g., donating, signing petitions, etc.), self-identification as an environmentalist, and past media behavior (whether they followed environmental issues in the news and had watched a recent, prominent documentary on fishing industries, *Seaspiracy*). We also collected information on potential mediators, such as perceived effectiveness of actions, feelings of responsibility, and emotions. We excluded those who did not pass a seriousness check, based on Aust et al. (2013), those who did not remember that the source of the article was BBC, and those who spent <3 min reading the article.

## Data analyses

Because the outcomes were ordinal variables used to measure personal intentions and policy support, we used an ordered logistic regression model with heteroskedasticity and robust standard errors to assess differences across groups. We used a categorical treatment variable with 3 levels for responsibility diffusion:  $R_i = 0$  (cons [consumer], reference category),  $R_i = 1$  (cons + industry), or  $R_i = 2$  (cons + industry + cert [sustainability certification]). We also used another categorical variable with 3 levels for compassion fade:  $C_i = 0$  (single [single species], reference category),  $C_i = 1$  (mult [multiple species]), or  $C_i = 2$  (mult + ecosystem). In ordered logistic models, maximum likelihood estimation is used to obtain the probability of observing

an outcome  $j$  as a linear function of the treatment variables ( $R_i$ ,  $C_i$ ) and covariates ( $X_3$  to  $X_k$ ), plus random error ( $u_i$ ), which is within the range of the cut points ( $\kappa_1$  to  $\kappa_{1-k}$ )  $k$ , number of possible outcomes).

$$\Pr(\text{outcome}_i = j) = \Pr(\kappa_{j-1} < \beta_1 R_i + \beta_2 C_i + \beta_3 X_{3i} + \dots + \beta_k X_{ki} + u_i \leq \kappa_j). \quad (1)$$

The ordered log-odds coefficients  $\beta_1$  and  $\beta_2$  are treatment effects relative to the reference categories (cons and single) (i.e., a unit increase in the treatment changes outcome based on its respective regression coefficient in the ordered log-odds scale with all other variables held constant). For ease of interpretation, we present results in terms of odds ratios (ORs) (change in odds of reporting higher score when there is a unit change in the treatment) and percent change (percent change in odds for unit change in the treatment). We ran separate regression models for each of the intention and policy support outcomes and the policy composite.

The covariates were balanced across treatments, barring age, and gender, so our regression analyses controlled for these covariates. We also controlled for other covariates, including diet, past pro-wildlife behaviors, environmentalist self-identity, and past media behavior.

Data analyses were conducted in STATA and R. We tested the robustness of our analyses by running a number of alternative model specifications and repeating the analyses on different subsamples, as outlined in the robustness section in RESULTS. When an effect was not statistically significant, we used the TOSTER package in R (Lakens, 2017) to provide evidence of the absence of a meaningful effect. We set equivalence bounds at  $-0.3$  to  $0.3$  Cohen's  $d$  to demonstrate that the observed effect was statistically equivalent to zero.

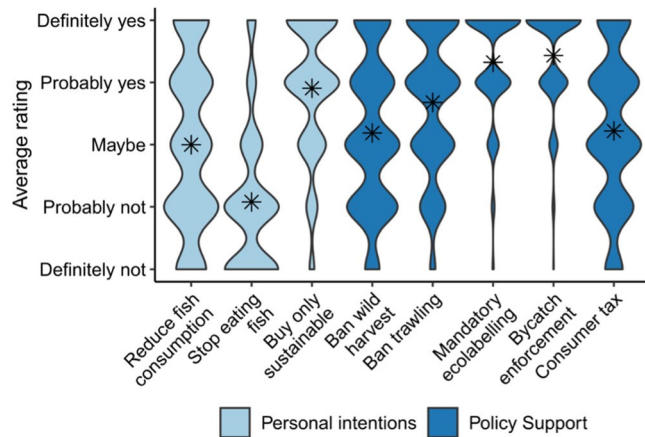
## RESULTS

Once participants who did not pass quality checks, spent <3 min on the study, or reported dietary restrictions related to fish consumption were excluded, our final sample size was 1548. Post hoc power analyses suggested we had 77.8% and 99.9% chance of detecting small effects of  $f = 0.1$  and  $f = 0.2$ , respectively.

Regression results did not vary substantively when we controlled for just age and gender. Overall, our analytical methods did not deviate from the preregistered protocol.

The average age of participants was 37.6 years (SD 13.3), 33.5% were male, 83.9% identified as White, 61.8% had at least an undergraduate degree, and 94.8% did not live by the coast. The majority were omnivores (73.5%), and the rest pescatarian or flexitarian. Most people (87.9%) had not seen *Seaspiracy*, but of those who had, most agreed with the documentary (10.9% vs. 1.2%). Only a minority (30.4%) self-identified as environmentalists; 26.8% were unsure. Sociodemographic characteristics of the sample by treatment group and the results of balance tests are in Appendix S3.





**FIGURE 2** Distributions of survey participant answers for each policy (e.g., ecolabels) support and personal intentions (e.g., to reduce fish consumption) outcome (\*, mean score). The wider the segment mean, the more people selected that answer. Responses to each outcome were on a 5-point Likert scale (1 = *definitely not*; 5 = *definitely yes*).

## Personal intentions

Across all groups, there were moderately low intentions to avoid eating fish (mean [SD] = 2.17 [1.21]), moderate intentions to reduce eating fish (mean [SD] = 3.05 [1.33]), and moderately high intentions to buy only fish certified as sustainable (mean [SD] = 3.91 [1.11]) (Figure 2). We found no effect of responsibility diffusion on consumption intentions. We found no effect of victim type on consumption intentions, based on the same equivalence testing. Because there were no differences across narrative treatments on personal intentions to reduce, stop, or buy more sustainable fish (Appendices S6 & S14), we focused on impacts on policy support for the rest of the results section.

## Policy support

Across all treatments, there was moderate support for banning wild fishing and a consumer tax (mean [SD] = 3.2 [1.2] for each) and moderately high support for banning trawling (mean [SD] = 3.7 [1.1]), mandating ecolabels (mean [SD] = 4.3 [0.85]), and bycatch enforcement measures, such as fines (mean [SD] = 4.4 [0.78]). Overall, there was moderately high support for fisheries policies based on the policy composite (mean [SD] = 3.80 [0.58]).

## Framing actors

There was a 1.32 increase in the odds, or 31.7% higher odds, of expressing higher support for fishing policies (composite) when people were exposed to narratives attributing responsibility to consumers and industry relative to the baseline, with or without information on sustainability certification. Although the cons + indus coefficient was marginally higher than the cons + indus + sus coefficient, the difference in coefficients was not statistically different based on a Wald test ( $p = 0.73$ ).

The cons + indus narrative increased support for bycatch enforcement and fines (OR = 1.38,  $p = 0.01$ , 37.7% higher odds), consumer tax (OR = 1.34,  $p = 0.03$ , 34% higher odds), and a trawling ban (OR = 1.29,  $p = 0.03$ , 29% higher odds). Adding the sustainability information to the industry narrative in the cons + indus + sus treatment attenuated support for a consumer tax and a trawling ban, but did elicit greater support for bycatch enforcement and fines (OR = 1.59,  $p < 0.01$ , 58.5% higher odds). None of the responsibility diffusion treatments affected support for banning wild harvest or mandating ecolabels.

## Framing victims

Compared with narratives featuring dolphins as the single cetacean species, there were no differences when participants were exposed to narratives with multiple cetacean species on either the policy composite or individual policy items. The exception was the ecosystem + multiple treatment, which elicited greater support for consumer taxes (OR = 1.34,  $p = 0.01$ , 33.9% higher odds).

Those who followed flexitarian diets expressed greater support (relative to omnivores) for bycatch policies (composite), as did those who self-identified as environmentalists (Appendix S23) and those who followed environmental issues in the news (Appendix S23). However, those with college degrees expressed less support for bycatch policies (composite) than those without a college degree (Appendices S15, S16, & S23).

## Exploratory analyses

We found no interaction effects when we crossed responsible actors and victims (Appendix S8). The exceptions were the positive interaction terms between cons + ind + sust and multiple + ecosystems on banning wild fishing (OR = 1.84,  $p = 0.03$ ) and between cons + ind + sust and multiple on banning trawling (OR = 1.86,  $p = 0.03$ ).

When victim treatment interacted with environmentalist self-identity (Appendix S8), there was a small positive interaction effect ( $p = 0.04$ ) on bycatch enforcement and fines, a negative main effect of multiple species ( $p = 0.05$ ), and a positive main effect of identity ( $p = 0.05$ ). Those with a stronger environmental self-identity tended to express greater support when exposed to multiple species; support was lower for narratives with multiple compared with single species. There was no corresponding interaction effect with the multiple + ecosystem treatment. Finally, when disaggregating the effects by gender (Appendix S17), we found nearly identical main effects as those among females (Table 2) and no effects among males.

## Robustness checks

Our results remained robust when we used the entire sample ( $n = 1747$ ) (Appendix S9), a restricted sample (including those who took <3 min but failed other quality checks [ $n = 1674$ ]



**TABLE 2** Effect of particular framings of actors and victims in narratives on support for policies to mitigate bycatch

Outcome variable	Estimator	Actor consumers + industry (SE)	Consumers + industry + sustainability certification (SE)	Victim multiple species (SE)	Multiple species + ecosystem (SE)
Policy composite	Coef	0.28* (0.11)	0.23* (0.11)	-0.13 (0.11)	0.19 (0.11)
	OR	1.32* (0.14)	1.25** (0.14)	0.88 (0.1)	1.21 (0.13)
Increase enforcement and fines	Coef	0.32* (0.13)	0.46* (0.13)	-0.05 (0.13)	0.12 (0.13)
	OR	1.38* (0.17)	1.59** (0.21)	0.95 (0.12)	1.13 (0.14)
Consumer tax	Coef	0.29* (0.12)	0.14 (0.11)	0.03 (0.11)	0.29* (0.12)
	OR	1.34* (0.16)	1.15 (0.13)	1.03 (0.12)	1.34* (0.16)
Mandate ecolabels	Coef	0.13 (0.12)	0.2 (0.12)	-0.07 (0.12)	0.06 (0.12)
	OR	1.14 (0.14)	1.22 (0.15)	0.94 (0.12)	1.06 (0.13)
Ban wild harvest	Coef	0.11 (0.11)	0.13 (0.12)	-0.16 (0.11)	0.1 (0.12)
	OR	1.12 (0.13)	1.14 (0.13)	0.86 (0.1)	1.11 (0.13)
Ban trawling	Coef	0.26* (0.11)	0.14 (0.12)	-0.21 (0.11)	0.04 (0.12)
	OR	1.29* (0.15)	1.15 (0.13)	0.81 (0.09)	1.04 (0.12)

Note: All models control for covariates (\* $p < 0.05$ ; \*\* $p < 0.01$ ). Reference level for victim treatment is a single species. Reference level for actor treatment is consumers. Abbreviations: Coef, coefficients; OR, proportional odds ratio (exponential of Coef).

[Appendix S10]), and a more restricted sample (omitting participants who watched *Seaspiracy* [ $n = 1367$ ] [Appendix S11]), as well as when we added more controls (e.g., credibility of the article and trust in BBC [Appendix S12]). The results were also similar when we used Ordinary Least Squares (OLS) regression models and an information theoretic approach with model averaging (Appendices S13–S16).

## DISCUSSION

We examined how increasing the diversity of actors and victims featured in media narratives about bycatch affected policy support and behavioral intentions. Research in nonmarine contexts suggests that increasing the number of actors and victims can be detrimental in conservation messaging due to responsibility diffusion and compassion fade effects. By testing carefully designed, credible media narratives on a large sample of U.K. adults, we found that attributing responsibility for bycatch to both consumers and industry may mobilize greater policy support, especially for bycatch regulation enforcement and fines. However, no treatment affected personal intentions to stop, reduce, or eat only sustainable fish.

Our experiment is the first to test the impact of media narratives that frame the responsibility of different groups of actors in a marine conservation context. Our results suggest that responsibility diffusion does not straightforwardly follow from increasing the types of actors. Compared with blaming only consumers, attributing responsibility to both consumers and industry did not appear to diffuse responsibility when it came to policy support for bycatch regulations and fines and consumer taxes. Some reasons that people increase policy support may be that they want to hold powerful actors to account (Pidgeon, 2012) or expect help from powerful bystanders (Fischer et al., 2011). However, in line with previous research on governance traps, we found that mentioning sustainability certification in narratives attenuated support for consumer taxes,

a measure targeting and imposing a cost on individuals. Effects on bycatch regulations and fines, which targeted businesses and were consistent with sustainability certification, were still significantly higher compared with the control. This suggests that responsibility diffusion can be specific to different outcomes and sensitive to the contextual information provided within the media narrative. It may also be that less intrusive measures like ecolabels crowd out support for personally costly stronger measures like consumer taxes. For instance, Hagmann et al. (2019) found that a green energy default diminished support for a carbon tax.

We found that featuring more types of victims (i.e., single vs. multiple cetacean species) did not necessarily result in compassion fade. This result is consistent with some studies that failed to find any impact on donations from varying the number of nonhuman victims (Thomas-Walter & Raihani, 2017) or on policy support from featuring 1 plant versus many plant species (Pellegrin et al., 2018). Indeed, support for consumer taxes increased when we added information about ecosystems. One explanation is that ecosystems may have been perceived as entitative or comprising a single coherent unit, thereby offsetting compassion fade effects (Smith et al., 2012). For example, Smith et al. (2012) found that donations are higher when people perceived greater entitativity for groups with positive features. However, it is unclear why one sees no effects on other policy outcomes given the many design differences between our study and other papers. Meta-analyses results suggest that single identified-victim messages, which are “affectively charged” through names and photos, elicit stronger effects (Lee & Feeley, 2016). Furthermore, we named no victims in an effort to standardize affect across conditions, making our study a much stricter test of compassion fade compared with previous work. In contrast to most compassion fade paradigms that feature living victims, the photos in our stimulus depicted deceased victims. It is possibly that this could have attenuated compassion fade effect because the victims featured were already dead. However, there is some evidence (e.g., from the Syrian refugee

crisis) that photos of single, dead victims can still have greater impact than reports or photos of multiple victims (Lenette & Miskovic, 2018; Slovic et al., 2017).

Perhaps one of the biggest differences between ours and past studies testing compassion fade is that we used a media narrative stimulus (rather than brief charitable giving appeal) that contextualized the victim's plight within a broader context of actions taken by different actors. In other words, our media narrative discussed cetacean bycatch issues more broadly. Thus, even though we used a photo of 1 individual from each species, the compassion fade effect may have been attenuated because the individual was seen as representative of the broader species group or a large group of victims. This could have led to the proportion dominance effect (i.e., the perception that helping a single victim is less effective than helping a group of unidentified victims because the former constitutes a lower proportion of the reference group [Lee & Feeley, 2016]). We also tested impacts on a range of context-specific outcomes (i.e., policy support and personal intentions) rather than donations and volunteering intentions. It is possible, therefore, that effects on small, one-off prosocial acts, such as donations, do not generalize to culturally significant habitual actions, such as dietary choices, which are much harder to change (Shreedhar & Galizzi, 2021).

We drew 3 useful, practical lessons from our results. First, media narratives holding industries and individual consumers responsible can increase support for some policies, such as bycatch enforcement and fines, compared with narratives attributing responsibility to just consumers. However, framing effects depend on the outcome because support for some policies (e.g., consumer taxes) can be attenuated when less costly options (e.g., ecolabels) are also mentioned in narratives. Second, framing effects can vary across population subgroups; female participants were more sensitive than male participants to our treatments. This is similar to past work that shows conservation narratives elicit different responses between men and women (Shreedhar, 2021). Although this suggests tailoring narrative frames to specific subgroups could be more effective, the flipside of this approach is the risk of polarization and lack of consensus among different stakeholders (Martell & Rodewald, 2020). Last, we found that framing effects were not powerful enough to affect personal intentions to change fish consumption habits, which may require stronger treatments (e.g., movie narratives [Boissat et al., 2021]). We could not examine whether media narratives per se are more effective because we did not have a no-narrative control group. The external validity of the sample population should not be taken for granted. Although it was broadly representative of the U.K. population in terms of ethnicity and age, it skewed toward females.

There is still much to learn about how to effectively frame victims and actors in media narratives. Probing such issues with high-powered representative samples, ideally in field settings, is a promising line of future inquiry.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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