Author preprint
Fajrini, R., Nichols, R.M., Phelps, J. 2022. Poacher pays? Judges' liability decisions in a mock trial about environmental harm caused by illegal wildlife trade. *Biological Conservation* 266:109445.
https://www.sciencedirect.com/science/article/pii/S0006320721004973?dgcid=author

Poacher pays?
Judges' liability decisions in a mock trial about environmental harm caused by illegal wildlife trade

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Keywords: conservation litigation, law, environmental governance, liability, judicial decision-making, wildlife trade

Abstract
Conservation litigation applies environmental liability law to biodiversity conservation contexts—holding parties who harm biodiversity responsible for providing remedies such as restoration, compensation, apologies and investments into education and cultural activities. Many countries have enabling legislation, but these types of lawsuits are rare in most countries and have been infrequently used to protect biodiversity from drivers such as illegal wildlife trade. Yet, these types of cases could be strategically used to provide remedies for cases of egregious harm and help catalyze social change through the power of judicial decisions. The viability of future cases, however, relies heavily on the judges and juries who adjudicate cases. Rather than wait potentially decades for test cases to emerge to help evaluate the success of this strategy, we conducted mock trials and post-trial interviews with Indonesian judges (N = 32), a population that is rarely explored in conservation science. We presented them with a hypothetical civil lawsuit in a case of illegal tiger trade, which sought to hold the defendant liable for providing 11 different remedies to address the harm purportedly caused by their actions. The results show that judges were very amenable to providing remedies in this type of civil lawsuit; for eight of the 11 claims, over 60% of the respondents indicated each claim would be likely to be accepted. The results also highlighted six key themes important in judicial decision-making, which provide insights for practitioners developing future lawsuits. The results suggest a favorable setting for testing real-world application of liability laws to remedy biodiversity harm, which may become an important part of future environmental governance.

1. Conservation litigation

The scale and rate of contemporary environmental harm are driving increased focus on remedial actions, such as restoration, species reintroductions, rewilding, and mitigation banking that seek to repair harm (e.g., Perino et al. 2019; zu Ermgassen et al. 2019; Baker et al. 2020). They are also driving a focus on securing legal remedies for harm to the environment that hold parties liable for providing remedies such as restoration, compensation, restorative justice (e.g., Phelps et al. 2021a).

Environmental liability suits are a key strategy through which to hold parties liable for the environmental harm they cause, including responsibility for providing remedies (often via civil lawsuits, see Bergkamp 2001). They have long been used in many countries, frequently in the context of pollution. For example,

following the Exxon Valdez and Horizon oil spills in the United States, liability lawsuits ordered the responsible parties not only to clean up pollution, but also to provide remedies such as compensation to fishers and funds to aid the recovery of affected species (using The Oil Pollution Act; Cruden et al. 2016). Such principles can also be applied to biodiversity conservation contexts; strategic conservation litigation, often in combination with criminal enforcement, may provide new pathways to justice, fund restoration and help deter future environmental harm (Phelps et al. 2021a; www.conservation-litigation.org). It could be used to help remedy harm to biodiversity caused by drivers of biodiversity loss such as illegal commercial wildlife trade. For example, a 2020 landmark judgement in France ordered illegal fishers operating inside the national park of Calanques to pay for improved conservation of the park. The fishermen and the buyers of the illegal catches also had to compensate the park for the reputational and moral harm that they caused (under the French Civil Code; Tribunal Correctionel [TC] [First Instance Court], Marseille, civ., Mar. 6, 2020; see Chrisafis 2018). In 2021, an Indonesian NGO brought a civil lawsuit against a zoo that had illegally kept animals, requesting remedies associated with animal rehabilitation, species conservation and public education (under Indonesian Law No. 32/2009 on Environmental Protection and Management combined with Law No. 5/1990 on Conservation of Living Natural Resource and its Ecosystem; Walhi 2021, 9 / Pdt.G / LH / 2021 / PN Psp; see WALHI Sumut 2021).

Many countries have enabling legislation that allows similar lawsuits that seek to hold those who harm the environment liable for providing a range of remedies, including Brazil, Mexico, Indonesia and Democratic Republic of Congo (see Jones et al. 2015). Legislation varies widely across legal systems and jurisdictions, but the right to bring liability lawsuits is typically included in a countries' Civil Code, and often within specialised environmental protection acts. Depending on the country, this legislation can provide access to a range of possible remedies, such as financial compensation for private losses (e.g., lost income), remedies in the form of habitat rehabilitation (e.g., pollution clean-up, reforestation), and/or public apologies, community service, and investments into cultural activities (see Jones et al. 2015; Phelps et al. 2021). However, in most countries, especially across the Global South, cases focused on liability and remedies are comparatively rare in the conservation sector, which has historically focused on criminal prosecutions and administrative procedures that characterize most environmental rule of law (see Nurse 2013; White 2017).

Yet conservation litigation could help deter environmentally harmful behavior and shift norms. Across contexts, strategic litigation has catalyzed important social changes, including legal claims that helped to establish new types of relationships (e.g., between smoking and lung cancer, Daynard 2004; between emissions, climate change and sea level rise, Setzer and Vanhala 2019); lawsuits that challenge social norms (e.g, advocacy for reproductive health issues in Colombia, Roa and Klugman 2014; cases that assert Indigenous land rights, Gilbert 2017, cases that uphold constitutional rights of nature, Boyd 2017; cases that recognize the rights of animals, Wise 2000), and a wide range of cases that "can help nudge along local incremental change" (Stern 2010). However, in the absence of established practices and case law, there is understandable uncertainty among conservation practitioners; even where the laws allow for suits, potential plaintiffs may be uncertain about how to form cases and whether they are likely to be accepted by courts, while judges and juries have few precedents on which to draw (see Phelps et al. 2021a). Moreover, litigation can also be expensive, time-consuming, and risky in terms of both retaliatory violence and uncertain outcomes (Gilbert 2017). As such, it is unsurprising that new forms of environmental litigation are occasional. Prospective plaintiffs for conservation litigation suits, such as the hypothetical case presented in this article, are not likely to be familiar with these types of lawsuits (see Phelps et al. 2021a,b). Future cases require that prospective plaintiffs be aware that these remedies are potentially available—not just that the law may allow such cases, but also the judges are willing to consider positive judgements on related claims.

1.1 What judges think, matters

Understanding judges' evaluations of the evidence, argument and proposed remedies in conservation litigation is pressing: in bench trials, judges are both arbiters of law and triers of fact. And, while more than 45 countries employ trial-by-jury to at least some degree (as opposed to trial by panel of judges, Vidmar 2002), approximately 90% of the world's jury trials occur in the United States alone (Kalven and Zeisel 2019). Worldwide, legal rulings on the environment, including conservation litigation cases, are likely to be tried by judges at the bench.

In the absence of abundant experience, clear precedents and established norms around conservation litigation, systematic inquiry into judges' decision-making processes can provide insights into whether these types of cases are likely to be successful and how they can be formulated to deliver pro-environmental verdicts. Judges' views are particularly important in the context of conservation litigation because environmental harm and remedies are not often explicitly articulated in the law, leaving plaintiffs and judges with questions such as how to frame and calculate the value of biodiversity (BIOVAL 2020; Phelps et al. 2021a). This leaves them especially open to interpretation, including both large questions of jurisprudence and individual case evaluations (e.g., Stern 2010).

1.2 Mock trial approach to case evaluation

A typical method for probing judicial decision-making involves a systematic review of cases to assess judicial behaviors, "what judges do as judges" (Baum 2009), including the content of legal decisions (e.g., Hall and Wright 2008), preliminary actions to decision and even quantitative modelling to predict court-, case-, and judge-level factors that influence decisions (e.g., Zorn and Bowie 2010).

Of note, our sample had likely received more environmental training than the Indonesian judiciary as a whole, although judges like our respondents are the most likely to try such cases because environmental cases are chaired by judges with this type of training. As such, these results provide broad insights into the acceptability of claims and judicial reasoning in this hypothetical case. However, the dearth of conservation litigation globally means that such review is impossible. In order to explore judicial decision-making across cases that don't exist in abundance, we turned to the mock trial paradigm (Stephenson 1992), a type of simulation approach traditionally used by social scientists to investigate juror decision making in the context of an abridged, often hypothetical case. In a mock jury or mock trial study, participants typically are provided with a scenario of a case via text, video, or hybrid format. They review the material, deliberate alone and/or with others, and provide case judgments akin to the verdicts that would be required of an actual trial. With this method, researchers can better understand decision-making in the context of a simplified case, especially when legal, ethical, or experimental limitations prohibit such investigation during an actual trial (Bieneck 2009). However, they are also used in applied contexts, often by practitioners who are seeking to bolster trial strategy (Lieberman 2011). Mock jurors are typically comprised of jury-eligible lay citizens, but increasingly, scholars who utilize mock trial methods are also incorporating professional judges into their samples (see Chorn and Kovera 2019; Catellani et al. 2021).

Rather than wait a decade(s) for conservation litigation test cases to emerge and trial their legal strategies (cf. Stern 2010), we conducted a series of mock trials and interviews with a sample of Indonesian judges, an under-researched group that plays a significant role in shaping environmental outcomes. The mock trial centered around a hypothetical civil lawsuit in an illegal wildlife trade case. We also conducted follow-up interviews to understand judges' verdicts and reasoning over a series of proposed remedies in the case, providing insights into how judges might adjudicate future similar cases.

2. Methods

2.1 Study context

Indonesia is an appropriate context in which to explore both judicial decision-making and the potential for conservation litigation. A hotspot for biodiversity and endemism, the country is also well-recognized as under threat from large-scale environmental change and targeted threats such as illegal and unsustainable harvest (Sodhi et al. 2004). Between 2015-2019, Indonesia's Ministry of Environment and Forestry reported 758 criminal environment cases, including 255 illegal wildlife trade cases that involved 22,089 individual animals and 11,609 body parts of protected animals (MOEF 2021). Indeed, the country has been the focus of conservation enforcement efforts, including NGO-supported initiatives (e.g., Wildlife Conservation Society Wildlife Crime Units, SMART Patrols in several provinces on Sumatra) and new government enforcement initiatives (e.g., Law Enforcement Division of the Ministry of Environment and Forestry [GAKKUM] established in 2015).

These efforts focus principally on enforcement of criminal law, notably based on Indonesia's primary piece of biodiversity conservation legislation, Law No. 5/1990 on Conservation. This law allows for criminal fines and imprisonment, but does not mention environmental damage or remedies. However, Law No. 32/2009 on Environmental Protection and Management provides opportunities to hold those who harm the environment responsible for providing remedies, and is expansive in the types of remedies it potentially allows.

To date, Indonesian courts have made rulings in at least 15 such cases, most of them oil palm companies that have illegally cleared land using fire (SC 2021). They have ordered companies to fund reforestation actions at sites they have harmed, and to pay compensation to the government for negative impacts on ecosystem services (SC 2021). A recent lawsuit, against a zoo that was holding threatened and endangered species without legal permissions, is seeking to hold them liable for causing harm to threatened species and demanding a wide range of remedies (Walhi 2021). While some countries do not allow for this type of litigation, or only allow comparatively narrow remedies, many jurisdictions, including Indonesia, allows for a wide range remedies. Notably, however, liability legislation does not often specifically circumscribe what these remedies are permitted (Jones et al. 2015; Phelps et al. 2021). For example, while Indonesian law allows lawsuits to seek remedies for environmental harm, it does not state how to quantify such remedies, whether non-financial remedies such as public apologies are allowed, and what types of downstream impacts on ecosystems and human wellbeing are recognised (Phelps et al. 2021a,b). Without specific legal guidance, courts are often left to determine appropriate remedies, based on the evidence presented by plaintiffs and defendants. In Indonesia, like in many countries, cases are heard by a panel of three judges, so they are often heavily involved not only in evaluating evidence but also interpreting the scope of the law with regards to harms and remedies.

2.2 Participants

A total of 32 Indonesian judges (26 male) were interviewed. Recruitment was challenging and time-consuming, partly due to professional gatekeeping, social hierarchies, busy schedules, and lack of public contact information, so we relied on snowball sampling initiated using the researchers' personal and professional contacts. To enhance the ability to generalize our findings, we sought to recruit judges with varying lengths of time bench (M = 15.9 years, SD = 9.7 years) and judges who both had (78.1%) and had not (21.9%) received some kind of formal environmental training during university, law school or in their professional development. Importantly, 59% held the Supreme Court Environmental Judge Certification; all environmental cases are heard by a panel of three judges, which should be chaired by a judge holding this certification (SC Decree No.134/KMA/SK/IX/2011 jo Decree No. 36/KMA/SK/III/2015), so it is appropriate that our sample is skewed to this population.

The research was approved by Lancaster University Faculty of Science and Technology Research Ethics Panel (Reference #FST18148) and was conducted under Indonesian Ristek Foreign Researcher Permission for J. Phelps. Participants who agreed to take part in the study were sent a link to a participant information sheet and granted informed consent to participate before proceeding.

2.3 Instrument

The materials and procedure spanned two sessions: a self-administered online component and a follow-up interview. All study materials were constructed and administered in Bahasa Indonesia.

The online portion, hosted on the research platform Qualtrics, consisted of two main sections. First, participants completed a series of online questions. The initial questions probed about the respondents' professional background. As part of another and separate aim of the project, participants then completed a series of attitudinal questions. Due to the large and complex scope of the project, the findings from this section are not presented in this manuscript.

Next, we presented the participants with a mock trial scenario involving a civil lawsuit for harm caused by illegal wildlife trade (case fully described in Appendix A). In this case, a defendant who had been criminally convicted of illegally trading one Sumatran tiger skin and one live Sumatran tiger cub now faced a civil lawsuit brought by several plaintiffs, including the Ministry of Environment and Forests, a local non-governmental organization, a local tourism company, and an indigenous organization. In the hypothetical civil case, the plaintiffs asked the court to order the defendant to provide a range of different remedies for the harm caused by illegal trade of the two tigers.

We created a highly condensed case scenario that presented the critical case elements. To ensure balance in the case, we piloted the initial case design with three attorneys who, during pilot testing, provided feedback on the strengths and weaknesses of each side, which we then used to revise and finalize the version presented to our sample.

Participants first reviewed a short, written, neutral summary of the case. They then read the plaintiffs' case statement and viewed videos of plaintiff experts' testimonies: one from an academic expert who testified on the impact of removing two animals on wildlife conservation (3 min 39 s), one from a member of a Malay indigenous community who testified about the cultural impact of the loss (1 min 25 s), and one from a park ranger who testified on the impacts on park patrol and regulation enforcement (1 min 55 s). The participants then reviewed the plaintiffs' 11 proposed remedies (damage claims) that aligned with the different types of environmental harm that they claimed had resulted from the illegal trade of the tigers (Table 1). Following this, the participants reviewed the defendant's statement and a video of oral testimony from one defense expert, a university lecturer (2 min 20 s).

After reviewing the case information, respondents indicated a ruling, based on the available evidence and argument, about whether some form of remedies could be granted in this type of case. They then made an assessment of each of the 11 remedies requested by the plaintiffs, stating whether they considered the claim likely to be accepted in an Indonesian court, using a four-point Likert scale from "very likely" to "very unlikely". In order to accommodate judges' limited availability, we designed the entire online component to last no longer than an hour. The median time from access of the study information sheet to completion was 50.8 min.

Table 1. Eleven types of remedies requested by the plaintiffs (damage claim)

Remedy	Remedy Description
R1. Costs of Animal Rehabilitation	Financial compensation for the costs of caring for the live tiger cub. This will include the cost of food and shelter and of the efforts to rehabilitate and release it back into the wild in Indonesia. If the animal cannot be released successfully, then the costs of long-term care for 25 years. Compensation would go to the NGO animal rescue center providing these services.
R2. Costs of Long-Term Animal Care	If the live tiger cub cannot be released successfully into the wild, then financial compensation for the costs of long-term care for the animal for 25 years. Compensation would go to the NGO animal rescue center providing these services.
R3. Costs for Lawsuit Preparation	Financial compensation for the costs of scientific assessments needed for this case, including field visits, hiring expert witnesses, preparing scientific expert reports, laboratory tests. Compensation would go to the MoEF that paid upfront for these costs.
R4. Costs of Transport and Destruction of Biological Materials	Financial compensation for the cost of transporting the live tiger cub from the market where it was confiscated to the animal rescue center including vet team, transport, anesthetic, as well as the costs of destroying the tiger skin. Compensation would go to the parties NGO animal rescue center that provided these services.
R5. Costs of Actions to Increase Tiger Population by One (1) Animal	Financial compensation for the costs of implementing conservation actions needed to help to increase the wild tiger population by one (1) individual, to account for dead tiger (tiger skin). This will involve the costs associated with the conservation of an 240 km2 of additional prime forest habitat for 20 years (lifetime of a tiger in the wild). Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
R6. Costs to Increase Monitoring	Financial compensation for costs of increasing monitoring capacity of the tiger habitat to avoid future illegal wildlife trade. These costs might include additional park ranger time, training, and basic equipment. Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
R7. Costs for Conservation Education	Financial compensation for the costs associated with a children's education programmed about tiger conservation and cultural value in Kerinci Province that aims to raise awareness about the need for conservation for future generations. Compensation would go to a dedicated Trust Fund and be operationalized by an appointed party or NGO with expertise in environmental education.
R8. Public Apology	Order to issue a public apology by the perpetrator for harming an important cultural symbol and unique biodiversity.
R9. Public Service	Order for the defendant to participate in public service in an appointed national park within tiger habitat.
R10. Compensation of Private Losses to Tourism Operator	Financial compensation for an estimated decrease in income for tourism to an eco-lodge in Sumatra, where people come to see wildlife and nature. Compensation would be to the tourism lodge owner.
R11. Costs of Indigenous Cultural Events	Financial compensation for indigenous people's cultural loss associated with the loss of a precious and unique species. Compensation would go to a dedicated Trust Fund to support cultural events and activities led by indigenous people focused on recognizing the cultural importance of tigers.

To explore participants' reasoning, semi-structured follow-up interviews were conducted either by videoconference or in person by one of the authors, an Indonesian lawyer with particular experience in environmental law and judicial training (R. Fajrini). Interviews were conducted within ten days of the online exercise, with the exception of one interviewee who, due to schedule constraints, was interviewed two months later. Each interview lasted no longer than 45 minutes. Participants were first reminded of the scenario with a case summary and list of key points from the plaintiffs and the defense, and were invited to ask any questions of clarification about the case details. Participants were then provided with the 11 claims, sorted into four piles based on the likelihood of acceptance they reported during the online questionnaire, but were allowed to re-sort these. They were then asked to explain their legal opinion on each of the remedies. Notes were taken during the interview, which were also audio-recorded with the participants' permission, and were transcribed, translated, and back-translated to ensure accuracy.

2.4 Data Coding and Analysis

Quantitative data from the online questionnaire was analyzed using IBM SPSS, Version 25. Qualitative data from the follow-up interview was coded manually using thematic analysis, an iterative six-step process designed to identify meaningful themes in open-ended responses across multiple participants (Braun and Clarke 2006). The qualitative coding process was top-down and guided by the 11 damage claims. R. Fajrini conducted initial coding and identification of themes, and the co-authors engaged in discussion and revision of the themes until they represented a complete and comprehensive view of the judges' decisions and legal reasoning.

2.5 Sample representativeness and generalizability

The results cannot be taken to be representative or predictive of judicial decisions in Indonesia or elsewhere. Judges who participated in this study were recruited through a non-random, snowball sampling method and therefore cannot be deemed representative of the population of Indonesian judges who may try similar cases. Of note, our sample had likely received more environmental training than the Indonesian judiciary as a whole, although judges like our respondents are the most likely to try such cases because environmental cases are chaired by judges with this type of training. As such, these results provide broad insights into the acceptability of claims and judicial reasoning—specifically in this hypothetical case in Indonesia. However, many of the general principles discussed by the respondents are relevant to other case contexts and are also relevant in other jurisdictions. As such, although we cannot say that judges elsewhere are likely to share views with our respondents, many are likely to evaluate similar legal questions and principles.

Scholars have expressed concerns over the generalizability of findings from scenario-based research to applied contexts (Aguinis and Bradley 2014). These concerns extend to mock jury research, whereby both the representativeness of the sample and the realism of the study procedures should be maximized to strengthen the study's external validity (Wiener et al. 2011). This study involved an abridged vignette comprised of short text and video components, and respondents' engagement with such study materials lacked the mundane realism judges experience over extended trial proceedings (Bieneck 2009). As such, practitioners must take special care to consider how these findings may apply in the context of their own cases, including unique argument, evidence, jurisdictions, plaintiff(s), defendant(s), nature and quantifiability of harm incurred, distinct proposed remedies, and case complexity.

3. Results

After having reviewed the hypothetical lawsuit, all but one of the respondents reported that civil remedies can be granted in this type of lawsuit-–with the lone refuting judge indicating only his complete inexperience adjudicating this type of case as the basis for his decision. Table 2 depicts each of the plaintiffs' remedies with the frequency and percentage of judges who indicated how likely each would be accepted in court.

Table 2. Frequencies and percentages of judges indicating likelihood of acceptance for each remedy in court. Each remedy shows judges' two most frequently occurring reasons for acceptance or rejection (reasons described in Table 3 and Appendix B).

Reasons (n)	Total Unlikely to be Accepted	Very Unlikely to be Accepted	Somewhat Unlikely to be Accepted	Remedy	Somewhat Likely to be Accepted	Very Likely to be Accepted	Total Likely to be Accepted	Reasons (n)
1A (1) 2C (1)	1 (3.2%)	0 (0.0%)	1 (3.2%)	R1. Costs of Animal Rehabilitation	3 (9.7%)	27 (87.1%)	30 (96.8%)	1A(17) 1C(13)
1B (13) 1C (7) 3A (7)	10 (32.3%)	1 (3.2%)	9 (29.0%)	R2. Costs of Long-Term Animal Care	8 (25.8%)	13 (41.9%)	21 (67.7%)	1A (12) 1C (7)
5C (13) 5A (8)	15 (48.4%)	8 (25.8%)	7 (22.6%)	R3. Costs for Lawsuit Preparation	7 (22.6%)	9 (29.0%)	16 (51.6%)	2A (13) 1A (6)
3A (6) 2D (5)	8 (25.8%)	1 (3.2%)	7 (22.6%)	R4. Costs of Transport and Destruction of Biological Materials	9 (29.0%)	14 (45.2%)	23 (74.2%)	3A (17) 1A (10)
1B (9) 3A (9)	12 (38.7%)	4 (12.9%)	8 (25.8%)	R5. Costs of Actions to Increase Tiger Population by One Animal	9 (29.0%)	10 (32.3%)	19 (61.3%)	1C (6) 2A (5) 4B (5) 5B (5)
3A(15) 1A (9)	18 (58.1%)	9 (29.0%)	9 (29.0%)	R6. Costs to Increase Monitoring	5 (16.1%)	8 (25.8%)	13 (41.9%)	2A (3) 3A (3) 1C (3)
1C (10) 1A (8) 3A (8)	17 (54.8%)	7 (22.6%)	10 (32.3%)	R7. Costs for Conservation Education	6 (19.4%)	8 (25.8%)	14 (45.2%)	1C (8) 6C (8)
2B (5) 1C (3)	4 (12.9%)	3 (9.7%)	1 (3.2%)	R8. Public Apology	7 (22.6%)	20 (64.5%)	27 (87.1%)	5C (13) 2B (7)
2C (10) 5A (8)	7 (22.6%)	4 (12.9%)	3 (9.7%)	R9. Public Service	12 (38.7%)	12 (38.7%)	24 (77.4%)	6B (11) 2D (8)
1A (10) 1C (9)	12 (38.7%)	4 (12.9%)	8 (25.8%)	R10. Compensation of Private Losses to Tourism Operator	10 (32.3%)	9 (29.0%)	19 (61.3%)	1A (14) 1C (7)
1C (15) 1A (5)	12 (38.7%)	3 (9.7%)	9 (29.0%)	R11. Costs of Indigenous Cultural Events	9 (29.0%)	10 (32.3%)	19 (61.3%)	1C (21) 1A (6)

Table contains data from $n = 31$ respondents. One respondent indicated during the interview that their responses in the online questionnaire did not reflect their true sentiments, so their data were excluded from this analysis. "Reasons (n)" tallies the number of responses depicting the subtheme; responses within judges exemplifying the same subtheme were counted separately if they varied in content.

There was a statistically significant difference in perceived likelihood of acceptance depending on claim, *Friedman* $\chi 2(10) = 80.503$, $p < 0.001$. The claims with the highest percentage of judges assessing each to be likely accepted include costs of animal rehabilitation (R1; 96.8%), public apology (R8; 87.6%), and public service (R9; 77.4%). The claims with the lowest rates of acceptance include costs to increase monitoring (R6; 41.9%), costs for conservation education (R7; 45.2%), and costs for lawsuit preparation (R3; 51.6%). With the exceptions of costs for increased monitoring and conservation education, the simple majority of judges deemed each claim to be likely rather than unlikely to be accepted. Individual judges differed, however, in their consistency of likelihood assessments; with each response category enumerated from 1 (very unlikely to be accepted) to 4 (very likely to be accepted), *mean interquartile range* (m_{IQR}) = 1.129, $SD_{IQR} = min_{IQR} = 0$, $max_{IQR} = 3$. The total number of claims judged likely to be accepted did not significantly correlate with number of years served in the judiciary, $r = -0.286$, $p = 0.119$, nor differed significantly between those who had environmental training and those who did not, $t(29) = 1.223$, $p = 0.231$, or those who hold the Supreme Court Environment Judge Certification and those who do not, $t(28) = 1.069$, $p = 0.294$.

Coding revealed six common themes reflecting why judges thought each of the eleven proposed remedies was likely or unlikely to be granted by an Indonesian court (Table 3).

Table 3. Themes & subthemes of reasons for why judges considered proposed remedies likely or unlikely to be accepted. (See Appendix B)

Theme	**Sub-theme**	**Definition**
1. Foundations of case argument	1A. Causation	Ability to build strong causal links between the defendant's actions and the purported harm
	1B. Degree of uncertainty	Unacceptable level of uncertainty on whether the defendant's actions caused the harm or whether the remedy requested will fix the harm
	1C. Ability to conceptualize or quantify the harm and remedy	Ability to explain the harm and the remedy needed in a more concrete way; abstract harm and remedy as less acceptable
2. Attributes of the proposed remedy	2A. Relative importance of the remedy	The urgency of the remedy to address the core harm in the case
	2B. Redressability	Appropriateness and ability of the proposed remedy to actually fix the harm
	2C. Feasibility of the proposed remedy	Feasibility to operationalize and execute the remedy due to institutional or logistic issues
	2D. Alternative remedy	The existence of a more appropriate remedy to the harm (to reject) The remedy proposed can be a good alternative for other remedies (to accept)
3. Fairness	3A. Proportionality	Defendant's liability to the harm and its remedy should be in proportion with their action contribution Defendant's liability should not replace governmental responsibility to provide certain types remedial actions

	3B. Defendant's ability to pay	The defendant's financial ability to fund the ordered remedial actions
4. Quality of argumentation	4A. Quality of legal argument	Plaintiff's ability to build a claim based on a sound legal argument
	4B. Expert witness	Ability to back the argument with strong scientific evidence, which usually relies on expert witnesses
5. Legal bases for decision making	5A. Legal basis on written law	Accommodation of the requested remedy in the written law
	5B. Judicial discretion/activism	Judge's power to make decisions in the absence of clear written law or when the law does not provide a solution to the problem; judicial activism can be conducted through application of legal principle, reinterpretation of the law or exploring similar cases in a different jurisdiction
	5C. Precedent jurisprudence	The precedence of the remedy being accepted by the court in previous cases
6. Court's broader roles in society	6A. Ensuring deterrence	Consideration that granting high burden of compensation will deter future unlawful action
	6B. Sensitizing the defendant	Consideration that the remedy could also benefit to pro-socially change the defendant's mind and perceptions
	6C. Court's responsibilities to society	Consideration that court decisions are not only intended to solve the case between plaintiffs and defendants, but also to have a broader societal impact (e.g., to ensure the rights of future generations, to educate the public)

3.1 Foundation of case argument

Respondents addressed the foundations of case argumentation: causation (1A, see Table 3), uncertainty in linking the defendant's actions to the harm and to the proposed remedies (1B), and the ability to clearly conceptualize different types of harm and their corresponding remedies (1C). These are common elements of many cases (Moore, 2019). In our hypothetical case, they were particularly relevant in the context of remedies for harm caused to the intangible values for wildlife, such as those related to culture, and whether/how those harms can be remedied. This difficulty in conceptualizing intangible values was reflected in the comparatively lower rates of acceptance for remedies involving cultural (R11, see Table 1) and educational (R7) activities. In contrast, remedies such as compensation for the cost of animal rehabilitation (R1), which was most often deemed likely to be accepted (96.8%), was justified as a concrete harm that can be precisely quantified. Discussion about causation and uncertainty were recurrent across all remedies, used to explain both positive and negative verdicts.

3.2 Attributes of the proposed remedy

Respondents also explained their reasoning in terms of the attributes of the individual remedies. For example, some remedies were considered unlikely because they were deemed less important than other proposed remedies (2A), notably the costs of transportation (R4) and legal fees (R3) were perceived as less important than urgent priorities such as rehabilitating the rescued animal (R1). The issue of redressability—whether a proposed remedy meaningfully addresses the purported harm (2B)—was most recurrent in explaining why an apology (R8) was likely to be accepted as a remedy for intangible harm,

with one respondent explaining that "it would be difficult to grant a financial payment as a remedy to immaterial (i.e., intangible) harm." On the other hand, several respondents considered redressability a limitation to remedies such as apologies, arguing that an apology was just a formality, or that intangible remedies would not benefit the harmed environment. Some judges were also concerned with the feasibility of operationalizing the remedies (2C), reporting some unlikely to be accepted in court because they would be too burdensome to undertake, either because there was no existing mechanism through to implement them (e.g., public service, R9), or because they would be challenging to execute on-the-ground, especially where the actions are beyond the court's control (e.g., R5, which could require permits and changes in spatial planning). Some judges also highlighted the relative appropriateness of some remedies relative to others (2D), notably in relation to the proposed remedy of ordering the defendant to undertake social work (R9), which was specifically identified as appropriate in instances where defendants could not afford to pay large financial amounts.

3.3 Fairness to the defendant

Some judges were concerned about whether proposed remedies were fair to the defendant. Several remedies (notably R4, R5, R6) were reported unlikely to be accepted in court because they might not be proportional to the harm caused (3A). For example, respondents explained that the purported harm may have also been the result of others' actions; some proposed remedies were perceived to overlap with core government roles and so were not the defendant's responsibility (e.g., R6, monitoring tiger populations, or R4, destroying/transporting biological material), and some remedies potentially overlapped that could result in double-counting. Notably, some respondents considered the proposed remedial actions to increase the wild tiger population by protecting 240 km^2 of habitat (R5) disproportionate to the harm caused by removing one individual tiger. "Is it fair? He killed one tiger but he is burdened to pay all of this cost." Another judge stated that R5 "might be acceptable, but not all the cost should be paid by the defendant." Fairness was particularly a concern for poor plaintiffs, and several remedies were reported unlikely to be accepted in cases where the defendant would not be able to afford to pay for remedies (3B).

3.4 Ability to prove argument

Judges commented on both plaintiff's and defendant's ability to prove their arguments with respect to both the quality of their legal argumentation (4A) and of scientific expert testimony (4B). Comments about legal argumentation were fairly generic, focused on the ability to provide (or challenge) the factual and legal grounds for making the claim. One respondent highlighted that "there should be consistency between the claim grounds and the remedies that are demanded."

Judges also emphasized the importance of scientific expert testimony for harm and remedies that are less familiar, and noted the specialized knowledge required to understand them, particularly for R1, R2 and R5. One respondent explained that experts are needed to explain the indirect damage that might cascade from the impacts of the initial harm: "Just like in a forest fire case, whether or not this case causes respiratory health problems for the community, there is no way a judge can draw confident causation without the expert." Other respondents required further expert testimony to explain why the remedial actions are needed, stating "You need to prove the animal cannot be released into the wild so that you ask for long- term care costs," as well as, "Why does the long-term care need to last for 25 years?" but also, "How much area is needed for additional conservation and its cost?" and, "What does monitoring have to do with the actual damage in the case?" Furthermore, judges seemed to expect the expert to provide them with high accuracy and full certainty, something that might not always be possible in all cases. One respondent stated that "damage should be calculated in a concrete manner, precise and exact."

3.5 Legal bases for decision-making

Judges reported that decisions about the remedies could be premised upon several different legal bases: written law (5A), judicial discretion based on prevailing legal principles (and even extending judicial activism; 5B), and precedence including standard practices and previous judgements (5C). Some

respondents highlighted limitations to granting remedies that had not yet been accommodated in formal written law. For example, ordering the defendant to undertake public service (R9) or to pay for costs of preparing a claim (R3) are not established parts of Indonesian civil law. However, several judges expressed that future legal reform should reflect remedies that are not currently codified. Indeed, the public apology remedy (R8), although not a part of formal written law, was widely reported to be likely accepted (87.1%). This support was based, in part, on precedent decisions in Indonesia where this has been implemented (5C). Interestingly, some respondents also drew precedents based in customary law when considering cultural damage (R11), especially if the case happened in a region where customary law is actively practiced like Bali, parts of Kalimantan and Sumatera.

Judicial discretion (5B) was a particularly interesting reason for why several remedies were reported likely to be accepted, including as an explanation for R1 because "environmental judges should uphold the *pro natura* principle." Another judge explained that "environmental cases are more complex than regular civil cases, so judges need to be progressive." In support of R11, one respondent stated that "we need to consider conservation for inter and intra generation interest." These reflect both the importance of jurisprudence, often guided by broad principles of environmental law; "we can exercise judicial activism, precautionary principle and preventive principle."

3.6 Court's broader role in society

Judges also explained their reasoning based on their views of the court's broader social mandates, beyond ensuring case-specific justice. This includes supporting verdicts that would both yield wider deterrence effects on future perpetrators (6A) and to educate or reform the specific defendant (6B). For example, ordering the defendant to complete public service (R9) was considered likely to be accepted (77.4%) as a "good tool to educate society, especially the defendant, about conservation efforts. Hopefully he will realize his mistake and become more aware and care about tiger conservation and how hard it is."

Some judges reported that the acceptability of some remedies was informed by their broader responsibilities to the public (6C), such as ensuring restorative justice, protecting the rights of future generations, and educating the general public. For example, the remedy to covers the cost of conservation education (R7) was reported likely to be accepted because "we hope it will increase awareness and knowledge among society that this one action has broad impacts…. (and the) community will condemn and reject it". The focus on public education was also reflected in one respondent's justification for accepting the remedy involving conservation actions to increase the wild tiger population (R5) explaining that "can you imagine for only one tiger we need to go to that extent (of providing multiple types of remedies), many people do not know it…." Another respondent justified the acceptability of non-monetary remedies like public apology (R8) and public service (R9) because their restorative justice potential.

4. Discussion

4.1 Judges are receptive to conservation litigation

Respondents overwhelmingly agreed that these types of cases merit legal remedies and were willing to consider accepting a wide range of them (Table 2). The judges were interested in remedies that were fair and proportional, to both defendants and plaintiffs, recognizing that many defendants are likely to be poor but also focusing on educating and reforming offenders. Although the scope of the study is limited, and the results are not predictive, they do indicate that Indonesian judges are generally receptive to conservation litigation. Given the dearth of precedent cases globally, these positive, if hypothetical judgements suggest that trialing such litigation is strategic in Indonesia, and potentially further afield. The results may increase plaintiffs' confidence in attempting such lawsuits and designing their own cases. The results potentially help to accelerate our understanding of how to form future cases, where we might otherwise have to wait for decades of uncertain testing cases in the court system. Informed by this

scenario, real world test cases are now needed to explore their potential in jurisdictions where such lawsuits are permitted.

4.2 Not all remedies are viewed the same

As part of that real-world test litigation, the results suggest there is wide scope for diverse remedies. Prior to this research, informal discussions with a number of Indonesian lawyers and activists suggested that judges were expected to be far more conservative in their judgments than they were in this study, in large part due to the dearth of case law and unspecified legal remedies for environmental harm. These findings, on the other hand, paint a different picture.

The remedies deemed most likely to be accepted included financial compensation to cover the costs of animal rehabilitation (R1), for which both causation and conceptualization was clear; the issuing of a public apology by the defendant (R8), given its strong redressability for providing remedies for harm to intangible values and relatively straight-forward implementation, and an order for the defendant to participate in public service (R9), which was also perceived to "remedy" the defendant.
The claims deemed least likely to be accepted include the costs to increase monitoring (R6) and costs for conservation education (R7). Causation was less clear for both relative to other remedies. Increased monitoring was more often deemed potentially unfair, and conservation education suffered from potential difficulty in the conceptualization of the related harm incurred (associated with the intangible values for nature). A remedy to compensate the costs of lawsuit preparation (R3) was also less likely to be accepted, as Indonesia has no existing legal basis nor is this common practice in Indonesia.
Nevertheless, for eight of the 11 claims, over 60% of the respondents indicated each claim is likely to be accepted in their jurisdiction. Taken together, the judges' evaluations paint both an encouraging and complex picture of what remedies may be successful in future litigation.

4.3 Insights for potential future plaintiffs

There is a need to translate these findings into practical guidance for plaintiffs who might bring future cases. Although Indonesia-focused, many of the findings are likely insightful for other jurisdictions that also allow these types of lawsuits. Most notably, respondents referenced issues of causation and uncertainty in relation to many of the remedies, used to justify both positive and negative verdicts. Indeed, causation is a long-standing challenge and debate in environmental litigation across contexts (e.g., Brennan et al. 1987). This is important because, as in many countries, legislation in Indonesia does not specify which precise remedies should be granted in environmental lawsuits (see Phelps et al. 2021). In the absence of clear legal instruction, the results suggest that plaintiffs should not rely on ambiguity, but rather seek to provide judges with certainty. In particular, plaintiffs should seek to conceptualize harm in ways that are easily understood, and bolster judges' understanding of causation underpinning the purported harms and proposed remedies. This is particularly true for claims associated with more complex causal chains, principles and relationships that are not fully appreciated by the general public, such as certain ecological relationships (e.g., impacts on species, R5) and the intangible values of nature and the relationships between nature and human wellbeing (e.g., R7, R11, Díaz et al. 2015).

Increasing certainty and explaining causation relies on quality, legible science, and expert witnesses who can explain it eloquently in the court (see Breyer 2000). This can be not only challenging, but daunting for many scientists; there is a long-standing lack of related training and support (AAAS 2021; Eaton and Kalman 1994), which is an area likely to require future effort and investment, including within the conservation community. Concerns include not only confidence and competence, but also of risks—including against spurious Strategic Lawsuits Against Public Participation (SLAPP lawsuits) intended to intimidate (Dutta 2020), which have recently targeted scientific experts in Indonesia (e.g., see Jong 2018). Given the importance of scientific experts highlighted by the interviews, plaintiffs need to recruit and support appropriate experts. This might include developing anti-SLAPP legislation (e.g., Amarini and Kartikawati 2020); establishment of a national register of court-appointed scientific experts, and

development of national criteria to help judges evaluate the suitability of both scientific experts and evidence, (e.g., as was developed in the United States to guide judicial evaluations of theories and techniques, Daubert v. Merrell Dow Pharmaceuticals Inc., 509 U.S. 579. 1993).

However, the results highlight that, even when faced with uncertainty, plaintiffs may successfully appeal to established environmental legal principles, rooted in international law. For example, Indonesian judges referenced the precautionary principle (Sands 2018) and *in dubio pro natura* principle whereby "in cases of doubt, all matters before courts, administrative agencies, and other decision-makers shall be resolved in a way most likely to favor the protection and conservation of the environment" (IUCN WCEL 2016; Olivares and Lucero 2018).

Remedies should also be specifically tailored to the purported harm. This is particularly important for remedies associated with intangible values (e.g., R7, R6) and associated with the cascading impacts of the defendant's actions on species survival and ecosystems (e.g., R5)—types of impacts that conservationists might take for granted as obvious, but which some judge respondents perceived as uncertain. In these cases, the plaintiffs need to consider not only building clear, evidence-based causal links, but may also consider proposing remedies in which defendants are held responsible for only a proportion of remedial actions. When remedies involve specific restoration actions, plaintiffs should also consider the feasibility of executing those actions. Remedies like R5 and R9 require the establishment of new institutional arrangements and prerequisite conditions, which may cause hesitancy among judges.

Nevertheless, lawsuits may be strategic to establish new legal norms or precedents (especially in common law countries where such precedents can be binding). Future cases—including isolated cases, litigation by "repeat players" with long-term agendas, and cases brought by a broadening range of plaintiffs (see Galanter 1974)—could familiarize the judges and provide lessons learnt for litigants. This type of learning was already reflected in some of the respondents' justifications and has been important to setting new norms in other areas of society. Such learning may even involve referring to cases in other jurisdictions which, although not legally binding, may provide material for judges to exercise jurisprudence and activism in capturing the global development of environmental cases. Equally, losing cases can also lead to negative precedents that could make it harder to win in future lawsuits, so it is important to only bring strong cases when working to establish precedents or norms.
Applying the principle of legal equality, which states that all citizens are equal before the law while also considering factors such as individuals' circumstances (e.g., relative wealth, health, context), the judges demonstrated a strong concern regarding fairness and proportionality in addressing defendants' responsibility. Indeed, the relative attractiveness of remedies involving a public apology (R8) and or public service (R9) was partly because they could be considered fair for defendants with limited financial means. This suggests the likely importance of targeting future lawsuits at defendants most likely to cause greatest harm to biodiversity and with the financial means to pay for remedies, such as such as financiers, organized criminal trafficking and corporations. Since conservation litigation is most likely to be pursued strategically on a case-by-case basis, rather than as an 'everyday' procedural matter, plaintiffs are advised to take interest in defendant selection. Were conservation litigation used to challenge other types of defendants (e.g., small-scale harvesters), who are typically the focus of most conservation enforcement around the world (see Wilson and Boratto 2020), then where they are legally permitted, non-financial remedies may be the most appropriate and proportional, in order to avoid perpetuating over-criminalization and to address judges' concerns about fairness.

Because conservation litigation is most likely to be strategic and occasional, these cases are likely to be designed to send broader messages to society, policy makers and prospective violators (i.e., test cases). For example, the remedies in the Calanques National Park case highlighted that illegal fishing caused not only environmental harm, but also reputational and moral harm to the national park (see Chrisafis 2018). This broader strategic objective of such litigation was reflected in a number of the interviews in this

study, where respondents stated the importance of such litigation to broader social messaging and education. As such, future plaintiffs should, depending on cultural and legal context and tradition, consider appealing to the judges' recognition that their decisions about individual cases can send strong social messages.

Lastly, this research shows that societal impact is one of important considerations for the judges. Judges care about their decision impact beyond just case-specific resolution. Judges not only care about what the plaintiff or defendant says, they also care what the general public might think and learn from the case. Therefore, in jurisdictions where this is allowed, non-parties who support the case could enrich judges' views on these broader impacts by submitting *amicus curiae "friends of the court"* briefs to the court.

5. Conclusion

The results suggest that Indonesian judges are likely receptive to conservation litigation in cases resulting in harm to biodiversity, and that they are further receptive to a wider range of remedies than has traditionally been claimed via environmental lawsuits. This potentially further enables future, strategic conservation litigation in Indonesia, and provides preliminary insights about what factors judges in other jurisdictions might consider when evaluating these types of cases. Similar studies with judges in elsewhere will be useful to navigating future litigation elsewhere, especially because caseloads are similarly low in most other jurisdictions.

Judges and courts cannot invite cases themselves; they can only receive them. As such, the burden is on prospective plaintiffs to bring forward real cases. Depending on jurisdiction, this includes government agencies, NGOs and citizens, for whom these results are significant. The results provide greater certainty that these types of cases are worth testing in Indonesia, and that trailing the wide range of remedies allowed under laws in a number of countries may be accepted in practice. Moreover, individual lawsuits may serve broader functions, beyond remedies they may provide in individual cases. This was recognized by a number of respondents, who recognized the potential for conservation litigation to remedy, educate and signal not only defendants, but also future possible offenders and society at large. As such, strategic conservation litigation may both help build new pathways to remedy, while also driving broader pro-environmental changes.

CRediT authorship contribution statement

Rika Fajrini: Conceptualization, Methodology, Investigation, Formal analysis, Writing - Original draft. Rebecca M. Nichols: Conceptualization, Methodology, Formal analysis; Writing - Original draft. Jacob Phelps: Conceptualization, Methodology, Formal analysis, Writing - Original draft, Funding acquisition.

Declaration of competing interest

This statement is to certify that:

- The work is all original research carried out by the authors. All authors agree with the contents of the manuscript and its submission to the journal.
- No part of the research has been published in any form elsewhere, unless it is fully acknowledged in the manuscript.
- The manuscript is not being considered for publication elsewhere while it is being considered for publication in this journal.
- Any research in the paper not carried out by the authors is fully acknowledged in the manuscript.
- All sources of funding are acknowledged in the manuscript, and authors have declared any direct financial benefits that could result from publication.

Acknowledgements
Thank you to all of the judges who participated, and to the coalition of practitioners and researchers in www.conservation-litigation.org, notably Taufiq Purna Nugraha and the Indonesian Institute of Sciences for their support. Thank you to Roni Saputra, Maribel Rodriguez, Umi Latifah, Grahat Nagara and Belinda Amri for their helpful comments, and to Andalas University for their support with recruiting judges. This work was funded by the UK Government through the Illegal Wildlife Trade Challenge Fund.

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Appendix A

Instrument: Online Questionnaire, including full hypothetical case presented to judges, and follow-up interview questions

Respondent background

- What is your role on the court?
- How long have you served as a judge?
- Have you received any environmental training, ,either as part of your university degree, any formal professional training, NGO training through the Supreme Court, or any other experience?
- What types of environment cases, if any, have you adjudicated?
- Before you became a judge, were you a practicing attorney?
    - If yes, what time of law did you practice, and for how long?

Opinions on environmental cases

Please respond to the following statements, and tell us whether you strongly disagree, somewhat disagree, somewhat agree, or strongly agree with each statement.

- The courtroom is an appropriate forum for groups trying to restore the environment
- The court is very limited in its ability to improve the environment
- It is appropriate for a judge to also be an environmental activist
- Existing criminal sanctions for environmental crimes are often too low
- The law provides clear guidance for judges to assess liability in environmental harm cases
- The law provides clear guidance for judges to assess damages claims in environmental harm cases
- Valuation of loss in environmental harm cases is straightforward
- Judges must rely on expert testimony in order to properly assess damage claims for environmental loss
- Overall, judges in my court are capable of adjudicating environmental harm cases

General questions about damage claims for environmental harm

Please answer "yes" or "no" to the following statements, based on your opinion and experience:

- In a forest fire case, could the court order compensation to cover the government's cost of putting out fires?
- In a case where an indigenous community's sacred forest has been destroyed, can the court order compensation in the form of a cultural education programme?
- In an illegal logging case, can the court order compensation in the form of planting new trees to replace those that have been lost?
- In an illegal logging case, can the court order compensation to cover the cost of increasing monitoring that is now required because of the threat of illegal logging (e.g., the cost of increased ranger patrols or new surveillance technology)?
- In a case involving an oil spill affecting a tourist beach, can the court order compensation for the loss of potential income to tourism operators in the area?
- In a case where a forest fire causes smog in neighbouring countries and diplomatic problems, can the court order compensation in the form of monetary compensation for immaterial damage?

ONLINE CASE STUDY

We are interested in your professional opinions about the following hypothetical case. This is a realistic, but purely hypothetical case. It includes case details, video testimony and a few questions. Please do this before the interview because we will discuss it in detail during your interview.

Neutral statement of the case

Video statement from interviewer

A defendant has been charged and found guilty of illegally trading one Sumatran tiger skin and one live Sumatran tiger cub, under Law No.5/1990. He was already fined and imprisoned for this illegal act. In addition, the defendant is now being sued in civil court by multiple plaintiffs: The Ministry of Environment and Forests, a local NGO, a local tourism company, and an indigenous group. They are seeking remedies for the harm caused by the illegal trade of tigers.

The Sumatran tiger (*Panthera tigris sondaica)* is a Critically Endangered species protected in Indonesia. The tiger skin was seized and destroyed. The live tiger cub is approximately six months old and is in an animal shelter. The defendant is a known wildlife "kingpin" trader in Sumatra, and was caught in Medan in 2018 during an enforcement action. The defendant denies involvement in the poaching of the animals from the wild, and says that he was involved only in the illegal trade. The alleged poachers were not caught. The defendant reports that he is not sure where in Sumatra the two animals came from.

Trade of protected wildlife is illegal in Indonesia, and this is usually met with fines and imprisonment. Environmental damages and its compensation are also acknowledged by the law. However, these laws do not instruct judges on how to construct the damage claim for environmental cases. MoEF Regulation 07/2014 guidelines provide suggestions for possible methods that could be used, but this is not a fixed approach and specifically to cases led by the MoEF. Thus, the regulation provides room for exploration.

Plaintiffs' statement

Text

The plaintiffs are seeking remedies for the harm caused by the illegal trade of two tigers. Remedies are required because the trade of these two individuals has caused harm at multiple scales. These include:

The defendant threatened the survival of Sumatran Tiger

Tigers are Critically Endangered, and the Sumatran tiger (*Panthera tigris sondaica*) is a subspecies of tiger that is found only in Sumatra. There are only 441-679 Sumatran tigers left, and no remaining subpopulation is larger than 50 animals. As such, the trade of even two individual tigers affects the survival of the entire species. The other two tiger populations in Indonesia (Bali, Java) are already extinct, and unless we take radical action, illegal trade will also drive the Sumatran tiger to extinction.

The defendant undermined conservation investments

Tiger conservation is a priority for the Government of Indonesia and many NGOs. Because the defendant reduced the wild tiger population, he should now be responsible for increasing the wild tiger population by the same amount.

This is because the act of removing two animals fundamentally undermines their efforts and investments. For example, Indonesia has developed a Tiger National Action Plan to help it meet its conservation objectives, including increased monitoring and enforcement. NGOs have invested millions of dollars in recent years to protect tiger habitat and reduce poaching. By trading these two tigers, the defendant reduced the effectiveness and value of those investments and efforts to protect the species.

The defendant's actions damaged the ecology of Sumatran forests

The Sumatran tiger is the largest predator in Sumatra, responsible for controlling populations of other species such as deer, wild pig, antelope, and gaur. Changes in their population can affect soils and vegetation. We cannot measure these changes over a short period of time, but it is well-established, based on research in other ecosystems and with multiple species, that changes in predator numbers have long-term impacts on the overall ecology and health of the system.

The defendant harmed culture and society

The tiger is an important symbol to many communities, including indigenous groups across Sumatra. By causing harm to these two animals, the defendant also caused direct cultural harm to the people who value them.

In addition, because the Sumatran tiger is a globally-recognized Indonesian symbol, acts to harm these two animals also affect Indonesian society. This includes harm to the country's global reputation for protecting endangered species. It means that future generations will not have the opportunity to understand, appreciate and associate with this unique species.

The defendant caused costs of caring for the tiger cub

The tiger cub is only six months old and cannot live on its own without its mother. As such, it now requires specialized care in captivity for three to five years until it grows. It will also require specialized training so that it can learn to live on its own in the wild and eventually be released into the wild. If it cannot be released because of its condition or ability to survive, the cub will need life-long care in captivity.

The defendant reduced ecotourism potential

Indonesia is rapidly growing its eco-tourism sector, and people come to Sumatra to see its natural environment and species in the wild. Tigers are rarely seen, but many other species that rely on the healthy, intact ecosystems. In addition, many tourists come to Sumatra specifically because it is known as one of the last habitats of large charismatic endangered species. If there are no tigers left, tourists are far less likely to come. Because the defendant removed two of these endangered animals, he is responsible for negatively affecting wildlife and nature eco-tourism potential in Sumatra.

Oral testimony from PhD expert witness

Video

I am a Professor from an Indonesian University, with a Ph.D. qualification and more than 5 years of expertise in biodiversity conservation and tiger conservation.

Removing two animals is very significant to tiger conservation. It is especially important here because these were two female tigers. Tiger populations are low, and there are even fewer breeding age female tigers. For example, the largest population in Gunung Leuser National Park has only 48 breeding age females. As such, there are simply not enough females remaining in most places to reliably grow the population, especially if that population experiences illegal trade. When populations get very small, they are at risk of inbreeding that can lead to genetic mutations and greater vulnerability to disease, which can contribute to extinction. The populations are also fragmented, so it becomes increasingly difficult for tigers to meet in the wild and breed.

What actions could be taken to remedy this action? The tiger cub in this case needs to be cared for by experts so that it can survive. It may then be possible to reintroduce it into the wild, but this is slow and expensive. I am not sure that the tiger cub in this case will be successful, but it is worth trying. A reintroduction attempt will require specialized enclosures, DNA testing to determine where the animal came from, and specialized training to help the animal learn to live in the wild.

However, the killed adult tiger cannot be returned to the wild. In order to remedy this loss, the defendant would need to take specific actions to increase the wild tiger population. In my expert opinion, this should be based on protecting and monitoring tiger habitat. Each tiger requires approximately 240 km2 of intact forest in order to survive, which would need to be protected and monitored over the life of the tiger, which is 15-20 years. The government's Tiger National Action Plan has already identified areas that urgently need additional protection.

I would also say that conservation efforts rely on increasing public education about the conservation status of the tiger in Indonesia, including to reduce the threat of illegal wildlife trade.

Oral testimony from an indigenous witness

Video

I am a representative from a Malay indigenous community in Sumatra, and I know about the cultural heritage of our people.

The tiger is culturally important to my community. We call him "Datuk", which means "Old Man" in our language. He is the symbol of strength and wealth, and we consider tigers a sacred animal that can guard us. The tiger is represented in many of our local customs, and we tell our children stories about the tiger. But "Datuk" is getting fewer and fewer every year because of being hunted. The tiger is dying out, and so are our stories about him. When we hear about tigers being illegally traded, it makes me terribly sad -- because it does not only harm the animals, but it also harms our culture. We need to protect this important animal, and also to teach our neighbours about its cultural importance.

Oral testimony from a park ranger

Video

I am a park ranger with more than ten years' experience monitoring tiger habitat in Sumatra. I completed my secondary school education and am a trained park ranger.

Illegal wildlife trade is making our job much harder. We have thousands of hectares to patrol and protect from illegal poachers, but we do not have the staff or resources to cover this. We are trying to make our patrols more effective, but this is difficult. Also, the poachers often have guns so it is dangerous for us. This is even more stressful because we know there is growing pressure from the government and NGOs to protect the tiger. If we are going to protect the tiger in my park, we need to make sure that the habitat is better monitored, for this we need training on using monitoring technology, a new vehicle and equipment like boots. We must also make local communities more aware about the importance of tiger conservation.

Damage claim / compensation requested by the plaintiffs

Written

The plaintiffs are seeking 11 different remedies.

- Financial compensation for the costs of caring for the live tiger cub. This will include the cost of food and shelter, and of the efforts to rehabilitate and release it back into the wild in Indonesia. If the animal cannot be released successfully, then the costs of long-term care for 25 years. Compensation would go to the NGO animal rescue center providing these services.
- Financial compensation for the costs of scientific assessments needed for this case, including field visits, hiring expert witnesses, preparing scientific expert reports, laboratory tests. Compensation would go to the MoEF that paid upfront for these costs.
- Financial compensation for the cost of transporting the live tiger cub from the market where it was confiscated to the animal rescue center including vet team, transport, anesthetic, as well as the costs of destroying the tiger skin. Compensation would go to the NGO animal rescue center that provided these services.
- Financial compensation for the costs of implementing conservation actions needed to help to increase the wild tiger population by one (1) individual, to account for dead tiger (tiger skin). This will involve the costs associated with the conservation of an 240 km2 of additional prime forest habitat for 20 years (lifetime of a tiger in the wild). Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
- Financial compensation for costs of increasing monitoring capacity of the tiger habitat to avoid future illegal wildlife trade. These costs might include additional park ranger time, training and basic equipment. Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
- Financial compensation for the costs associated with a children's education programme about tiger conservation and cultural value in Kerinci Province. Compensation would go to a dedicated Trust Fund and be operationalized by the appointed NGO with expertise in environmental education.
- Order to issue a public apology by the perpetrator for harming an important cultural symbol and unique biodiversity.
- Order for the defendant to participate in public service in an appointed national park within tiger habitat.
- Financial compensation for an estimated decrease in income for tourism to an eco-lodge in Sumatra, where people come to see wildlife and nature. Compensation would be to the tourism lodge owner.

- Financial compensation for indigenous people's cultural loss associated with the loss of a precious and unique species. Compensation would go to a dedicated Trust Fund to support activities led by indigenous people, recognizing the cultural importance of tigers.

Defendant's argument

Written statement

The defendant in this case cannot be held responsible for all of the proposed remedies for three important reasons:

First, there has been no claim like this one before. There are thousands of people who have been accused of trading wildlife, and many of them have been fined and imprisoned. However, none have ever been pushed to provide these types of compensation. This is an over-extension of the law.

Second, the defendant in this case was guilty of trading protected wildlife, but was not involved in the actual illegal harvest of the animals from the wild. As such, he cannot be held fully responsible for the harm caused by removing them because others were involved.

Finally, many of the damages listed in the plaintiff's claim cannot be proved. This will be explained by our expert witness.

Oral testimony from defense expert

Video

I am a Professor at an Indonesian University with more than 5 years of experience in wildlife conservation. The plaintiffs' damage claim contains many elements that are not legitimate.

Uncertainty

There is great uncertainty about the impacts of this case. For example, we do not know where these two tigers originated and their population numbers, so we cannot determine their impacts on populations. In fact, we do not even know exactly how many tigers there are in Sumatra, so it is impossible to state what the impact of removing two animals would have. The latest data show that tiger populations are increasing inside of protected areas.

Lack of causation

There is also a lack of evidence providing clear causation that removing two tigers from the population will have all of these negative effects on the survival of the species or on the broader ecosystem. For example, there are other predator species in Sumatran forests. There are also many forests in Indonesia that remain healthy even though there are no tiger populations remaining.

In addition, there are many other people involved in harvesting and trading tigers in Sumatra. The acts of one person cannot be identified as the cause for affecting the entire species when many other people are involved.

Indirect impacts

Many of the elements of the damage claim are also indirect and not closely associated with the acts of the defendant. For example, claiming compensation for education programmes, new protected areas and park rangers are all beyond the scope of what can be legally claimed.

Questions

- In your opinion, can damages <u>of some form</u> be granted in this type of case?
  "Yes" "No"

- Please consider the ten parts of the plaintiff's damage claim. For each, please state whether you consider it (1) very likely to be accepted, (2) somewhat likely to be accepted, (3) somewhat unlikely to be accepted, (4) very unlikely to be accepted.
  - Financial compensation for the costs of caring for the live tiger cub. This will include the cost of food and shelter, and of the efforts to rehabilitate and release it back into the wild in Indonesia. If the animal cannot be released successfully, then the costs of long-term care for 25 years. Compensation would go to the NGO animal rescue center providing these services.
  - Financial compensation for the costs of scientific assessments needed for this case, including field visits, hiring expert witnesses, preparing scientific expert reports, laboratory tests. Compensation would go to the MoEF that paid upfront for these costs.
  - Financial compensation for the cost of transporting the live tiger cub from the market where it was confiscated to the animal rescue center including vet team, transport, anesthetic, as well as the costs of destroying the tiger skin. Compensation would go to the NGO animal rescue center that provided these services.
  - Financial compensation for the costs of implementing conservation actions needed to help to increase the wild tiger population by one (1) individual, to account for dead tiger (tiger skin). This will involve the costs associated with the conservation of an 240 km2 of additional prime forest habitat for 20 years (lifetime of a tiger in the wild). Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
  - Financial compensation for costs of increasing monitoring capacity of the tiger habitat to avoid future illegal wildlife trade. These costs might include additional park ranger time, training and basic equipment. Compensation would go to a dedicated Trust Fund and be operationalized by the MoEF.
  - Financial compensation for the costs associated with a children's education programmed about tiger conservation and cultural value in Kerinci Province. Compensation would go to a dedicated Trust Fund and be operationalized by the appointed NGO with expertise in environmental education.
  - Order to issue a public apology by the perpetrator for harming an important cultural symbol and unique biodiversity.
  - Order for the defendant to participate in public service in an appointed national park within tiger habitat.
  - Financial compensation for an estimated decrease in income for tourism to an eco-lodge in Sumatra, where people come to see wildlife and nature. Compensation would be to the tourism lodge owner.

- Financial compensation for indigenous people's cultural loss associated with the loss of a precious and unique species. Compensation would go to a dedicated Trust Fund to support activities led by indigenous people, recognizing the cultural importance of tigers.

Follow-up interviews with judges

Thank you for agreeing to participate in this study. Before we start, we would first like to briefly remind you about the Participant Information Sheet that you read online.

- Do you have any questions for me about this study?
- I would like to confirm that you are OK for this interview to be audio-recorded.

Respondent's background

Questions about the case study

I would now like to discuss the hypothetical case about illegal tiger trade that you reviewed online.

Case summary

Present respondents with text of this summary

A defendant has been charged and found guilty of illegally trading one Sumatran tiger skin and one live Sumatran tiger cub, under Law No.5/1990. He was already fined and imprisoned for this illegal act. In addition, the defendant is now being sued in civil court by multiple plaintiffs: The Ministry of Environment and Forests, a local NGO, a local tourism company, and an indigenous group. They are seeking remedies for the harm caused by the illegal trade of tigers.

The Sumatran tiger (*Panthera tigris sondaica)* is a Critically Endangered species protected in Indonesia. The tiger skin was seized and destroyed. The live tiger cub is approximately six months old and is in an animal shelter. The defendant is a known wildlife "kingpin" trader in Sumatra, and was caught in Medan in 2018 during an enforcement action. The defendant denies involvement in the poaching of the animals from the wild, and says that he was involved only in the illegal trade. The alleged poachers were not caught. The defendant reports that he is not sure where in Sumatra the two animals came from.

Key points from the plaintiffs:

The plaintiffs are seeking remedies for the harm caused by the illegal trade of two tigers, which they say caused harm at multiple scales. These include that the defendant's actions

- Threatened the survival of Sumatran Tiger
- Undermined conservation investments
- Damaged the overall ecology of Sumatran forests
- Harmed culture and society
- Caused costs of caring for the tiger cub
- Reduced ecotourism potential

Key points from the defense:

- There has never been a case like this one before, and previous wildlife traders have never been asked to provide these types of compensation.
- The defendant in this case was guilty of trading protected wildlife, but was not involved in the actual illegal harvest of the animals from the wild, so cannot be held fully responsible for the harm.
- Many of the damages listed in the plaintiff's claim cannot be proved

- Because of scientific uncertainty, there is a lack of causation and indirect impacts

Questions

- Please share your overall impression of the case.
- Do you have any questions about the case that I can help to clarify?

The case involved a damage claim from multiple plaintiffs that had 10 parts. These elements are written down on these 10 note cards. We will review them briefly now, and feel free to ask for any clarifications.

- In your opinion, can damages <u>of some form</u> be granted in this type of case?

- Which of these elements of the damage claim are most and least likely to be accepted in court? Please sort the element of the damage claim into four piles: (1) very likely to be accepted, (2) somewhat likely to be accepted, (3) somewhat unlikely to be accepted, (4) very unlikely to be accepted.
- For claims listed "very likely to be accepted"
    - Why are they very likely to be accepted?
    - Why might these claims be *not* likely to be accepted?
- For claims listed "somewhat likely to be accepted"
    - Why are they somewhat likely to be accepted?
    - Why might these claims be *not* likely to be accepted?
- For claims listed "somewhat unlikely to be accepted"
    - Why are they somewhat unlikely to be accepted?
    - Why might these claims be likely to be accepted?
- For claims listed "very unlikely to be accepted"
    - Why are they very unlikely to be accepted?
    - Why might these claims be likely to be accepted?

- If you were a judge in this case, what else would you need to know to make judgements in this case?

Questions about the experts

- How do you decide whether individual experts will be allowed to present evidence in your court?
- What are the differences in the strength of testimonies of the four experts you heard presenting the case?
- Do you have anything else you would like to share, or any questions for us?

Appendix B

Codes and subcodes for each of the 11 remedies

No	Remedy	Accept proposed remedy				Reject proposed remedy		
		code	sub-code	quant		code	sub-code	quant
R1	Costs of Animal Rehabilitation	1	1A (causation)	17		1	1A (causation)	1
		1	1C (ability to conceptualize harm/remedy)	13		2	2C (feasibility of the proposed remedy)	1
		2	2A (relative importance of the remedy)	9				
		5	5B (judicial discretion)	6				
		3	3A (proportionality)	5				
		4	4B (expert witness)	3				
		2	2C (feasibility of the proposed remedy)	3				
		5	5A (legal basis in written law)	3				
		1	1B (degree of uncertainty)	1				
		3	3B (defendant's ability to pay)	2				
		4	4A (quality of legal argument)	2				
		5	5C (precedent jurisprudence)	2				
		2	2B (redressability)	1				
		6	6A (ensuring deterrence)	1				
R2	Costs of Long-Term Animal Care	1	1A (causation)	12		1	1B (degree of uncertainty)	13
		1	1C (ability to conceptualize harm/remedy)	7		1	1C (ability to conceptualize harm/remedy)	7
		1	1B (degree of uncertainty)	5		3	3A (proportionality)	7
		4	4A (quality of legal argument)	4		4	4A (quality of legal argument)	2
		3	3A (proportionality)	3		5	5A (legal basis on written law)	2
		4	4B (expert witness)	3		2	2A (relative importance of the remedy)	1
		5	5A (legal basis on written law)	3		2	2C (feasibility of the proposed remedy)	1
		2	2A (relative importance of the remedy)	2		3	3B (defendant ability to pay)	1

		3	3B (defendant ability to pay)	2				
		2	2C (feasibility of the proposed remedy)	1				
		5	5C (precedent jurisprudence)	1				
		5	5B (judicial discretion/activism)	1				
		6	6A (ensuring deterrence)	1				
R3	Costs for Lawsuit Preparation	2	2A (relative importance of the remedy)	13		5	5C (precedent jurisprudence)	13
		1	1A (causation)	6		5	5A (legal basis on written law)	8
		1	1C (ability to conceptualize harm/remedy)	4		3	3A (proportionality)	7
		5	5C (precedent jurisprudence)	4		1	1A (causation)	5
		3	3A (proportionality)	3		2	2A (relative importance of the remedy)	3
		4	4A (quality of legal argument))	3		1	1C (ability to conceptualize harm/remedy)	2
		5	5A (legal basis on written law)	3		2	2D (alternative remedy)	2
		5	5B (judicial discretion/activism)	2		4	4A (quality of legal argument))	1
		1	1B (degree of uncertainty)	1				
		3	3B (defendant ability to pay)	1				
R4	Costs of Transport and Destruction of Biological Materials	3	3A (proportionality)	17		3	3A (proportionality)	6
		1	1A (causation)	10		2	2D (alternative remedy)	5
		1	1C (ability to conceptualize harm/remedy)	8		2	2A (relative importance of the remedy)	2
		2	2A (relative importance of the remedy)	7		5	5A (legal basis on written law)	1
		6	6A (ensuring deterrence)	3		5	5B (judicial discretion/activism)	1
		2	2C (feasibility of the proposed remedy)	2		1	1A (causation)	1
		4	4A (quality of legal argument))	2				
		1	1B (degree of uncertainty)	1				
		2	2B (redressability)	1				
		3	3B (defendant ability to pay)	1				
		5	5B (judicial discretion/activism)	1				

R5	Costs of Actions to Increase Tiger Population by One (1) Animal	4	4B (expert witness)	6		1	1B (degree of uncertainty)	9
		5	5B (judicial discretion/activism)	5		3	3A (proportionality)	9
		2	2A (relative importance of the remedy)	5		1	1A (causation)	5
		1	1C (ability to conceptualize harm/remedy)	5		1	1C (ability to conceptualize harm/remedy)	5
		2	2C (feasibility of the proposed remedy)	4		2	2C (feasibility of the proposed remedy)	5
		1	1A (causation)	3		3	3B (defendant ability to pay)	2
		1	1B (degree of uncertainty)	2		5	5A (legal basis on written law)	2
		6	6A (ensuring deterrence)	1		2	2D (alternative remedy)	1
		6	6B (Sensitising the defendant)	1		4	4A (quality of legal argument))	1
		6	6C (Court's responsibilities to society)	1		5	5B (judicial discretion/activism)	1
		3	3A (proportionality)	1				
		3	3B (defendant ability to pay)	1				
		2	2B (redressability)	1				
		2	2D (alternative remedy)	1				
R6	Costs to Increase Monitoring	2	2A (relative importance of the remedy)	3		3	3A (proportionality)	15
		1	1C (ability to conceptualize harm/remedy)	3		1	1A (causation)	9
		3	3A (proportionality)	3		1	1C (ability to conceptualize harm/remedy)	5
		2	2C (feasibility of the proposed remedy)	2		4	4A (quality of legal argument))	2
		4	4A (quality of legal argument))	2		5	5B (judicial discretion/activism)	2
		4	4B (expert witness)	1		2	2A (relative importance of the remedy)	1
		1	1A (causation)	1		3	3B (defendant ability to pay)	1
		5	5B (judicial discretion/activism)	1		5	5A (legal basis on written law)	1
		6	6A (ensuring deterrence)	1				
R7	Costs for Conservation Education	1	1C (ability to conceptualize harm/remedy)	8		1	1C (ability to conceptualize harm/remedy)	10
		6	6C (Court's responsibilities to society)	8		3	3A (proportionality)	8
		5	5B (judicial discretion/activism)	4		1	1A (causation)	8
		1	1A (causation)	3		2	2D (alternative remedy)	5
		2	2C (feasibility of the proposed remedy)	3		1	1B (degree of uncertainty)	1

		2	2A (relative importance of the remedy)	2		5	5A (legal basis on written law)	1
		4	4A (quality of legal argument))	1				
		3	3A (proportionality)	1				
		3	3B (defendant ability to pay)	1				
		5	5A (legal basis on written law)	1				
		5	5C (precedent jurisprudence)	1				
R8	Public Apology	5	5C (precedent jurisprudence)	13		2	2B (redressability)	5
		2	2B (redressability)	7		1	1C (ability to conceptualize harm/remedy)	3
		1	1A (causation)	4		2	2A (relative importance of the remedy)	1
		2	2A (relative importance of the remedy)	4		5	5A (legal basis on written law)	1
		6	6B (Sensitising the defendant)	4		6	6B (Sensitising the defendant)	1
		6	6C (Court's responsibilities to society)	4				
		1	1C (ability to conceptualize harm/remedy)	3				
		2	2D (alternative remedy)	3				
		2	2C (feasibility of the proposed remedy)	2				
		4	4A (quality of legal argument))	1				
R9	Public Service	6	6B (Sensitising the defendant)	11		2	2C (feasibility of the proposed remedy)	10
		2	2D (alternative remedy)	8		5	5A (legal basis on written law)	8
		5	5B (judicial discretion/activism)	6		5	5C (precedent jurisprudence)	6
		5	5A (legal basis on written law)	4		2	2A (relative importance of the remedy)	2
		6	6C (Court's responsibilities to society)	4		2	2B (redressability)	1
		2	2C (feasibility of the proposed remedy)	3		5	5B (judicial discretion/activism)	1
		3	3B (defendant ability to pay)	3				
		5	5C (precedent jurisprudence)	3				
		1	1A (causation)	2				
		2	2A (relative importance of the remedy)	1				
		3	3A (proportionality)	1				

		4	4A (quality of legal argument))	1				
		6	6A (ensuring deterrence)	1				
R10	Compensation of Private Losses to Tourism Operator	1	1A (causation)	14		1	1A (causation)	10
		1	1C (ability to conceptualize harm/remedy)	7		1	1C (ability to conceptualize harm/remedy)	9
		3	3A (proportionality)	1		2	2B (redressability)	4
		4	4A (quality of legal argument))	1		5	5A (legal basis on written law)	2
		4	4B (expert witness)	1		3	3A (proportionality)	1
		5	5B (judicial discretion/activism)	1		2	2A (relative importance of the remedy)	1
		6	6A (ensuring deterrence)	1		3	3B (defendant ability to pay)	1
						4	4A (quality of legal argument))	1
						5	5B (judicial discretion/activism)	1
R11	Costs of Indigenous Cultural Events	1	1C (ability to conceptualize harm/remedy)	21		1	1C (ability to conceptualize harm/remedy)	15
		1	1A (causation)	6		1	1A (causation)	5
		2	2D (alternative remedy)	3		2	2C (feasibility of the proposed remedy)	2
		4	4A (quality of legal argument))	2		2	2B (redressability)	1
		5	5C (precedent jurisprudence)	3		2	2D (alternative remedy)	1
		5	5B (judicial discretion/activism)	3		3	3A (proportionality)	1
		2	2B (redressability)	2		5	5A (legal basis on written law)	1
		5	5A (legal basis on written law)	2		5	5C (precedent jurisprudence)	1
		6	6C (Court’s responsibilities to society)	1		6	6C (Court’s responsibilities to society)	1
		2	2C (feasibility of the proposed remedy)	1				