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LETTER

Personal traits predict conservationists' optimism about outcomes for nature

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Abstract

In the face of unprecedented biodiversity loss, the belief that conservation goals can be met could play an important role in ensuring they are fulfilled. We asked conservationists how optimistic they felt about key biodiversity outcomes over the next 10 years; 2341 people familiar with conservation in 144 countries responded. Respondents expressed optimism that enabling conditions for conservation would improve but felt pressures would continue, and the state of biodiversity was unlikely to get better. Respondents with greater general optimism about life, at early-career stages, and working in practice and policy (compared to academia) reported higher conservation optimism. But most of our biodiversity and conservation status indicators were not associated with conservation optimism. Unbounded optimism without appropriate action would be misguided in the face of growing threats to biodiversity. However, supporting those struggling to see the light at the end of the tunnel could help sustain efforts to overcome these threats.

KEYWORDS

biodiversity conservation, conservation optimism, conservation psychology, hope, occupation, personality, pessimism

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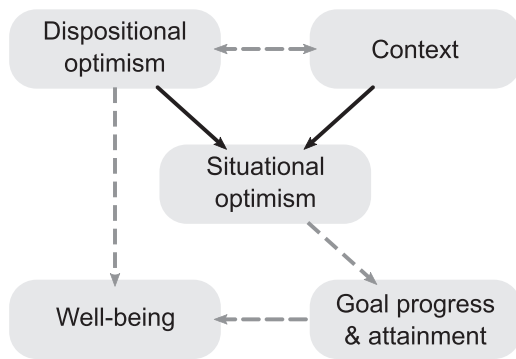


FIGURE 1 A conceptual framework for the role of optimism in conservation. An individual's situational optimism is influenced by dispositional optimism and context. Situational optimism influences perceived goal progress and attainment. Dispositional optimism and goal progress are positively associated with aspects of well-being. The black lines indicate relationships evaluated in this study

1 | INTRODUCTION

Thirty years have passed since the first global commitment to protect biodiversity was agreed at the 1992 Rio Earth Summit (UN, 1992). But this commitment has been followed by inadequate collective action, with overwhelming evidence of ongoing global biodiversity loss (CBD, 2020; IPBES, 2020). Therefore, it might be hard to see why conservationists should think conservation goals will be met in the future. Yet, optimism—the expectation that good things will happen (Carver et al., 2010)—may play a role in ensuring these goals are met.

Optimism includes dispositional and situational aspects. Dispositional optimism is the general expectation of good outcomes in life (Carver & Scheier, 2014; Malouff & Schutte, 2017). Situational optimism is the general expectation of positive outcomes within a specific context (Tusaie & Patterson, 2006). Situational optimism about conservation may be influenced by both dispositional optimism and contextual factors, such as witnessing biodiversity loss (Figure 1, Tusaie & Patterson, 2006).

Situational optimism might have implications for individuals' actions and experiences. The expectancy-value model of motivation suggests that individuals are more likely to pursue goals they value and believe can be achieved (Carver et al., 2010; Wigfield & Eccles, 2000). Consequently, situational optimism may increase motivation toward and attainment of challenging goals (Monzani et al., 2015), although we found no studies testing this among conservationists. In turn, goal attainment can contribute to subjective well-being (Klug & Maier, 2014). We make the distinction between situational optimism and perceived group efficacy, which is an individual's evalu-

ation of a group's ability to perform specific tasks (van Zomeren et al., 2008). Both situational optimism and efficacy perceptions are likely to influence expectations of future success and thus motivation, but our study only examines the former.

Situational optimism may also be useful to promote within groups working toward shared goals (Luthans & Youssef-Morgan, 2017), such as within conservation organizations and movements. For instance, optimistic individuals can contribute to an organizational culture that fosters desirable employee attitudes, behaviors, and performance (Avey et al., 2011). Finding widespread low situational optimism suggests threats to motivation, well-being, and organizational efforts across the sector, which could be offset by support in other aspects of conservationists' work lives.

Yet, being highly optimistic may also lead to misjudged risks and wasted resources pursuing unattainable aims (Carver et al., 2010; Forgeard & Seligman, 2012). Moreover, high levels of environmental optimism could lead to complacency (Gifford, 2011). Finally, a culture that stigmatizes failure may hamper opportunities to learn from it (Catalano et al., 2018). Consequently, optimism should not be indiscriminately promoted (Luthans & Youssef-Morgan, 2017).

Individuals may be optimistic about conservation outcomes at different scales. For instance, a conservationist might be optimistic that the goals of a local protected area will be attained but believe national-level policy goals will not. Furthermore, a conservationist's situational optimism might be influenced by multiple factors such as personal characteristics, the state of biodiversity where they work, or regional social and ecological differences (Table 1). Understanding which groups are the least situationally optimistic could be used by employers, funders, and others to direct support, such as improving other aspects of conservationists' work lives, to those who need it most.

2 | METHODS

Ethical approval was granted by the University of Oxford (R62487/RE001, see Supporting Information 1). The target population was those who identify as conservationists, convenience sampled through internet surveys in six languages from July 2019 to August 2020, using snowball sampling approaches. (See Supporting Information 2, where we repeat the analysis with a stricter definition of conservationists, with results consistent with those presented below.)

We designed a 10-item instrument assessing respondents' optimism about future conservation outcomes in the country whose conservation context respondents were

TABLE 1 A priori hypothesized associations between situational optimism about conservation outcomes and personal characteristics, indicators of the state of biodiversity and conservation at a national level, and other explanatory variables

Explanatory variable	Hypothesized association
Dispositional optimism	(+) After accounting for contextual factors, we expect dispositional and situational optimism to be positively correlated (Tusaie & Patterson, 2006).
Years in conservation	(−) We expected those working in conservation for longer to have witnessed slow progress toward biodiversity targets and thus be less situationally optimistic.
Practice/policy (RL = academia)	(?) Academics may have been more aware of the extent of biodiversity loss and so less situationally optimistic. Alternatively, practitioners might be more likely to witness biodiversity loss.
University (RL = nonuniversity education)	(+) Environmental awareness may be positively associated with educational level (e.g., Kollmuss & Agyeman, 2010). Therefore, we expect those with university-level education to be more aware of threats to nature and thus be less optimistic about conservation outcomes.
Male (RL = female)	(?) We have no expectations about the association between situational optimism and gender, but we include this variable out of interest.
Red List Index	(+) We anticipated greater situational optimism about conservation outcomes in countries with a high proportion of nonthreatened species, natural land cover, protected area coverage, higher conservation spending, and better overall governance.
Primary cover	
Protected area cover	
Conservation spending	
Governance	
Biome (RL = terrestrial)	(?) Marine and terrestrial environments face differing threats, and situational optimism may vary among those working across these biomes.
Region (RL = North America and Europe)	(?) After controlling for other contextual factors, social, ecological, and political differences between regions may influence situational optimism about conservation outcomes.

Note: (+), positive association; (−), negative association; (?), unclear association.

Abbreviation: RL, reference level.

most familiar (see Supporting Information 3). The choice of items was guided by the Convention on Biological Diversity's Aichi Biodiversity Targets, representing a broad consensus on conservation aspirations (CBD, 2010). This instrument was used to quantify respondents' latent situational optimism with respect to the country whose conservation context they were most familiar with, hereafter referred to as nationally focused situational optimism. Conservationists are also expected to be motivated by local outcomes, so an additional one-item measure of locally focused situational optimism was included. Respondents were prompted to consider the most important goals related to a particular place, situation, or work focus when answering this question.

Factors associated with nationally and locally focused situational optimism were explored through two structural equation models. This approach allowed us to estimate latent variables and the relationships between variables within the same model (see Supporting Information 4 for an illustration of the model structure). These models included an estimate of latent dispositional optimism derived from the Life Orientation Test-Revised (a widely used, standardized and validated tool, Scheier et al., 1994) and personal characteristics (Table 1).

The two models also included measures of biodiversity status and conservation effort (Table 1). We used two indicators of the state of biodiversity; species extinction risk and the extent of natural land cover in 2020. As a proxy for species extinction risk, we used the International Union for Conservation of Nature (IUCN) Red List Index within a given country in 2020 (IUCN, 2020). We used the aggregated Red List Index across five taxa, weighted by the proportion of each species distribution within a given country (Rodrigues et al., 2014). A Red List Index score of 1 means all species in a country are listed as Least Concern, and 0 means all are considered Extinct (IUCN, 2020). As a measure of the extent of natural land cover, we measured the mean extent of primary natural forest and nonforest land cover within each country in 2020, as calculated in the Shared Socioeconomic Pathways scenario 2 by the Land-Use Harmonization project (Hurt et al., 2020).

Finally, we used three indicators of conservation effort: conservation spending, protected area cover, and national governance quality. As an indicator of conservation spending, we used the annual estimated country-level conservation spending between 2001 and 2008 (where data were available), weighted by each country's geographical area (Waldron et al., 2013). As an indicator for the area under effective biodiversity protection, we calculated the

proportion of countries' geographical extent covered by IUCN Categories I–VI protected areas in 2020 (UNEP-WCMC & IUCN, 2020). Finally, as a proxy for general environmental governance, we constructed a composite variable based on the Worldwide Governance Indicators within each country in 2018, assuming this is closely associated with good environmental governance (Kaufmann et al., 2011).

All analyses were performed in the statistics software “R” (version 4.0.2, R Core Team, 2020) (see Supporting Information 5 and https://rpubs.com/thomas_pienkowski/OP_walk for details). Not all respondents completed all questions, with complete cases for 1988 observations. (See Supporting Information 6, where we repeated the analysis with complete cases, with results consistent with those below.) Missing data were substituted with synthetic values through multivariate imputation by chained equations creating 10 datasets containing imputed data, using the package “mice” (version 3.9.0, van Buuren S & K, 2011), described in Supporting Information 6. Furthermore, five respondents reported nonbinary gender identities and were removed from the statistical analysis to avoid statistical separation.

Two models were estimated for each of the 10 imputed datasets, using the robust weighted least squares estimator and polychoric correlation. The estimates and variances from the models applied to the 10 imputed datasets were pooled following Rubin's Rules, and coefficient estimates were presented in standardized units (see Tables S1 and 2, Rubin, 1987). (Further analysis exploring modeling assumptions are presented in Supporting Information 7, with the results generally consistent with those below.)

3 | RESULTS

3.1 | Conservationists' expectations for the next decade

Our survey was completed by 2341 conservationists familiar with conservation in 144 countries (Table 2). Of these, 2336 were included within the statistical analysis (see Table S3 for details on their characteristics).

Although none of the Aichi Biodiversity Targets was fully met in 2020, conservationists in our study were optimistic that some related outcomes might be met by 2030 (Figure 2, CBD, 2020). For instance, many anticipated increased public support for conservation. However, this apparent optimism around enabling conditions did not translate into expected improvements in the state of nature. For example, less than a quarter thought that goals to improve biodiversity (Aichi Strategic Goal C) will be met during the next 10 years. Furthermore, few respondents were optimistic that the locally focused conservation

goals most important to them would be met by the end of the decade (supporting Information 8 illustrates optimism variability between countries).

3.2 | Dispositional and situational optimism

Dispositional optimism was correlated with nationally and locally focused situational optimism (Figure 3a). Those at the 90th percentile of dispositional optimism scores reported an estimated 0.25 standard deviation (SD) higher nationally focused situational optimism than those at the 50th. Dispositional optimism appeared to be one of the strongest predictors of both locally and nationally focused situational optimism (Supporting Information 9 compares our Life Orientation Test-Revised scores with other populations).

3.3 | Context and situational optimism

Those in conservation for longer reported lower levels of nationally and locally focused situational optimism (Figure 3a). For instance, someone working in conservation for 5 years had an estimated 0.33 SD higher nationally focused situational optimism than someone in the sector for 25 years. Those in conservation practice reported higher levels of nationally and locally focused situational optimism than those in academia.

Red List Index scores describing the overall threat status of national species were positively associated with nationally focused situational optimism (Figure 3b, IUCN, 2020). For instance, those considering Botswana, a country with a relatively high Red List Index score of 0.97, had an estimated 0.37 SD higher nationally focused situational optimism than those considering New Zealand, a low-scoring country (0.62).

There appeared to be substantial variation in situational optimism between regions (Figure 3c). For instance, those familiar with conservation in Oceanian and Central, East, and South Asian countries tended toward greater nationally focused situational optimism than those familiar with North American and European countries.

4 | DISCUSSION

4.1 | Mixed optimism about conservation outcomes

Respondents' optimism about conservation outcomes were mixed. Many did not expect improved enabling

TABLE 2 Respondents' selected characteristics. The region variable includes clusters of countries whose conservation context respondents said they were most familiar

Characteristic	Overall N = 2341	Female N = 1208	Male N = 969	Nonbinary N = 5	Unknown N = 159
LOTR	15.0 (3.9)	15.1 (3.9)	15.1 (3.8)	9.0 (5.8)	14.1 (3.5)
Years in conservation	12.2 (10.5)	10.2 (8.2)	14.3 (12.1)	7.8 (3.1)	26.6 (17.1)
Age	36.9 (11.2)	35.1 (9.5)	39.2 (12.7)	29.6 (2.9)	37.0 (10.9)
Position					
Academic	1094 (47%)	584 (48%)	491 (51%)	3 (60%)	16 (10%)
Practice/policy	729 (31%)	393 (33%)	323 (33%)	2 (40%)	11 (6.9%)
Unknown	518 (22%)	231 (19%)	155 (16%)	0 (0%)	132 (83%)
Education					
Nonuniversity	141 (6.0%)	50 (4.1%)	78 (8.0%)	0 (0%)	13 (8.2%)
University	2069 (88%)	1158 (96%)	888 (92%)	5 (100%)	18 (11%)
Unknown	131 (5.6%)	0 (0%)	3 (0.3%)	0 (0%)	128 (81%)
Region					
Central and South Asia	294 (13%)	128 (11%)	138 (14%)	0 (0%)	28 (18%)
East and South-East Asia	260 (11%)	139 (12%)	100 (10%)	0 (0%)	21 (13%)
North America and Europe	888 (38%)	506 (42%)	331 (34%)	4 (80%)	47 (30%)
Latin America and the Caribbean	230 (9.8%)	112 (9.3%)	107 (11%)	0 (0%)	11 (6.9%)
North Africa and West Asia	37 (1.6%)	12 (1.0%)	19 (2.0%)	0 (0%)	6 (3.8%)
Oceania	155 (6.6%)	86 (7.1%)	60 (6.2%)	0 (0%)	9 (5.7%)
Sub-Saharan Africa	475 (20%)	225 (19%)	212 (22%)	1 (20%)	37 (23%)
Unknown	2	0	2	0	0

Abbreviation: LOTR, Life Orientation Test-Revised.

conditions (such as better conservation knowledge) to translate into reduced pressures on nature or better biodiversity status. These evaluations appear consistent with other assessments. For instance, there is growing public awareness of the importance of biodiversity, but despite this, formal assessments suggest key 2030 biodiversity targets will not be met if trends continue (IPBES, 2020; UEBT, 2018). These results highlight that conservationists are only one of the numerous societal actors that will determine future conservation outcomes. Future research could explore how beliefs about the ability of conservation to mobilize collective action—reflecting perceived group efficacy—contributes to motivation (van Zomeren et al., 2008).

Our study did not measure respondents' motivation and behavior. However, the conservation community continues to strive toward biodiversity goals, despite our results suggesting many believe these will not be met in the medium-term. Within the expectancy-value model of

motivation, this could be because of the high value conservationists place on nature (Carver et al., 2010; Papworth et al., 2018; Wigfield & Eccles, 2000).

4.2 | Dispositional optimism appears important

As hypothesized, dispositional optimism was associated with respondents' expectations of future success. These expectations may influence goal perseverance and attainment, with potential impacts on well-being and progress toward wider conservation targets (Carver et al., 2010; Forgeard & Seligman, 2012; Klug & Maier, 2014). This result suggests that those who tend to be less optimistic might benefit most from support in challenging roles or choose to avoid such positions (Figure 4). To aid this, individuals might reflect on how their outlooks and emotions influence their experiences in different roles

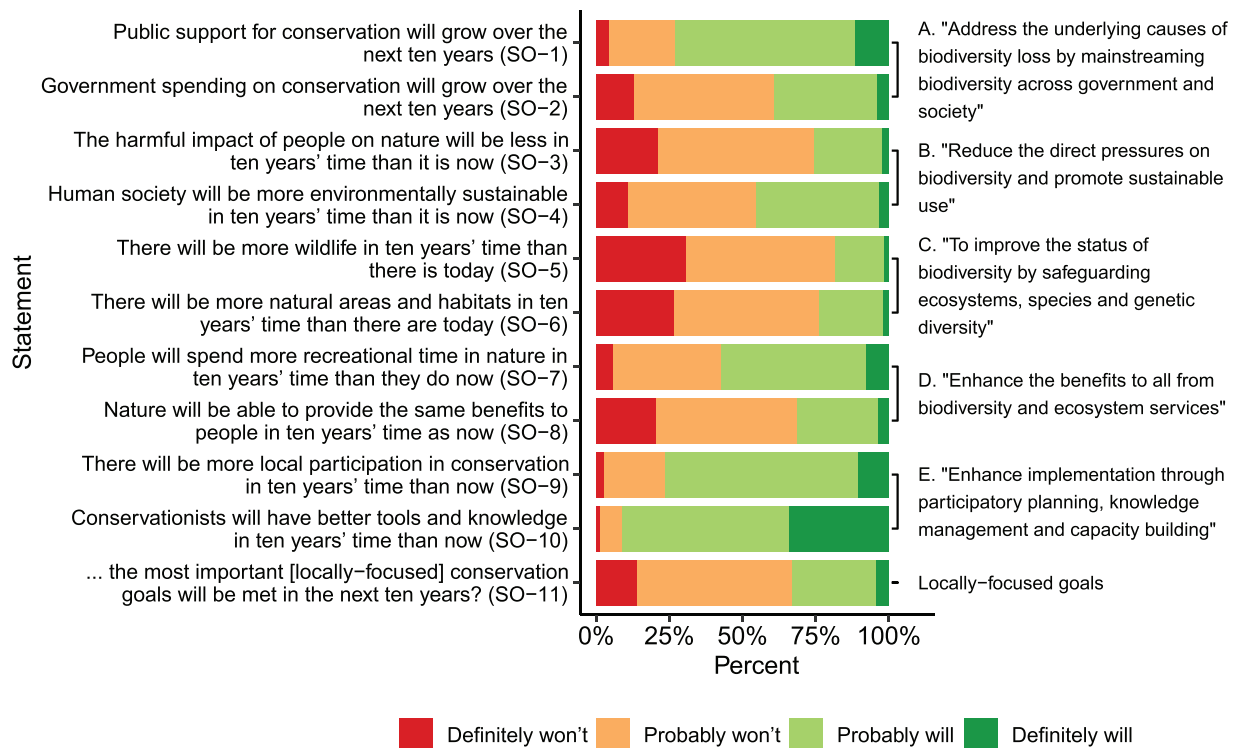


FIGURE 2 Expectations about conservation outcomes in the next 10 years. The perceived likelihood that 10 nationally focused conservation outcomes indicative of the five Strategic Goals (A–E) of the Convention on Biological Diversity's Aichi Biodiversity Targets (SO-1 to SO-10), and locally focused goals (SO-11), will be met by 2030 (CBD, 2010). Respondents were asked to think about the country whose conservation context they were most familiar with when evaluating the 10 nationally focused outcomes. Respondents were asked to think about the specific conservation area or context they were most familiar with when evaluating the locally focused goals

(Zeidner et al., 2004). Employers should also be mindful of their teams' composition, recognizing the potential complementarity of those who are more and less optimistic. Organizations might also offer resources to staff struggling with optimism about conservation. For instance, they could offer access to evidence-based interventions such as *Best Possible Self*—a method where people imagine desired future states (Malouff & Schutte, 2017).

4.3 | Some personal characteristics predict situational optimism

The state of biodiversity would almost certainly be worse in the absence of conservation actions (Bolam et al., 2020; Hoffmann et al., 2015). Still, inadequate progress toward conservation targets has been recognized for decades (Pullin, 2002). Witnessing this is a reasonable explanation for why those in the sector for longer are less optimistic. Those with long experience of biodiversity loss may have more pessimistic projections into the future than early-career conservationists (see Supporting Information10 for further analysis with the inclusion of age as an explanatory variable).

Job position was also associated with situational optimism. Conservation practice may attract those who are optimistic about enacting real-world change, or such optimism may be cultivated and rewarded within practitioner circles. Alternatively, academics may be distanced from on-the-ground examples of positive change or more exposed to the global scale of biodiversity threats. These results suggest that those with low dispositional optimism, academics, or senior conservationists might benefit from support. However, studies suggest that other groups—such as early-career conservationists or those working in frontline roles—face other serious challenges (Pienkowski et al., 2021; Singh et al., 2020). As such, patterns of situational optimism should be only one of many factors determining where support should be directed.

Moreover, 88% of our respondents were university educated, 95.4% responded in English, and only 164 identified as rangers or fieldworkers. Therefore, our results are not representative of the conservation sector as a whole. Internet surveys using convenience sampling are an increasingly popular approach for getting large samples quickly and cheaply. But, naively extrapolating from them risks mischaracterizing perspectives and experiences

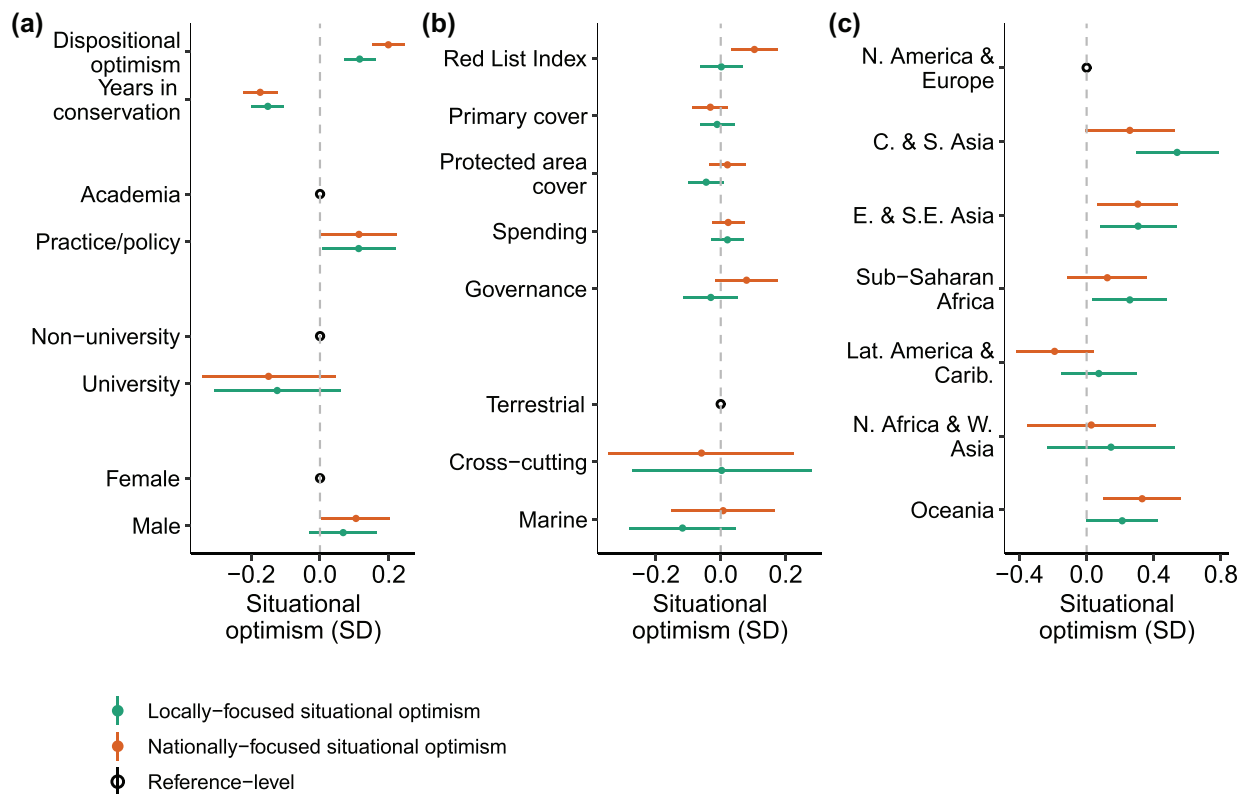


FIGURE 3 Predictors of situational optimism about conservation outcomes. The associations between nationally and locally focused situational optimism and (a) personal characteristics, (b) biodiversity state, conservation effort and focal environment, and (c) regional grouping variables. These estimates were derived from two structural equation models. Coefficients are in standardized units, meaning a one-unit change in continuous explanatory variables is associated with a given standard deviation (SD) change in the response variables, holding all other variables constant. Estimated uncertainty is presented in two-sided 95% confidence intervals. Levels representing unknown or other responses are not shown. Cross-cutting applies to those whose work encompasses terrestrial and marine biomes

within the sector, potentially leading to poorly informed policy responses.

4.4 | Biodiversity and conservation context appear less important

Our results imply that respondents' situational optimism was not particularly sensitive to our chosen biodiversity status and conservation effort indicators. These indicators are commonly used to inform policymaking, partly because the collection, use, and global generalization of such data are relatively tractable. However, our respondents may have considered contextually important factors when giving their assessments, which may not be reflected in these coarse, nationally aggregated, indicators.

Our results also implied significant regional differences in situational optimism, perhaps reflecting social, ecological, or political factors not captured by other variables. For instance, Latin American environmentalists face the highest risk of violence globally because of their work, so they might be less optimistic about conserva-

tion prospects than those in other regions (Global Witness, 2020).

4.5 | The role of optimistic conservation framings

Some have suggested that gloom-and-doom discourse may create a culture of "learned helplessness" (Swaigood & Sheppard, 2010). Potentially in response, several environmental optimism movements sharing positive conservation outcomes have emerged, including *Conservation Optimism*, *Earth Optimism*, and *Ocean Optimism*. Reflecting on positive outcomes may remind those in the sector that the conservation movement is making a difference, as demonstrated empirically (Bolam et al., 2020; Hoffmann et al., 2015).

Yet, as in other fields, trade-offs, opportunities for abuse, and unequal power dynamics are ever-present in conservation. Thus, conservation "success stories" should be treated critically and should not obscure or minimize the harm that can be caused to others. Building transparency

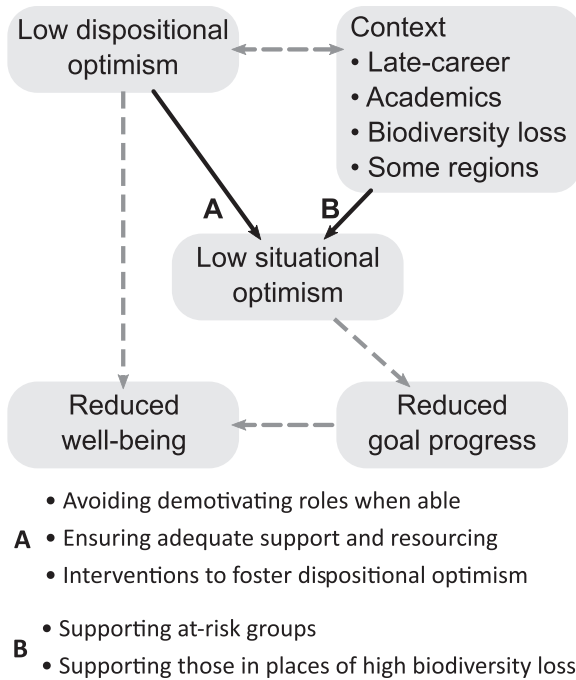


FIGURE 4 Dispositional optimism and some contextual factors are associated with situational optimism, but measures may mitigate or manage these associations

could involve promoting the voices of those most exposed to the benefits and costs of conservation interventions, particularly when their stories are not unambiguously positive. Fundamentally, building optimism may engender confidence to seek out, engage with, and address conservation problems rather than overlook them (Catalano et al., 2018).

5 | CONCLUSION

Our results suggest that many conservationists have limited optimism that key conservation goals, such as improving the status of biodiversity (CBD, 2010), will be met in the medium term. These expectations may reflect a realistic evaluation of the threats facing nature and people. Still, these results suggest potentially widespread threats to motivation and well-being, which may undermine conservationists' collective efforts (Pienkowski et al., 2021).

Optimism is not appropriate in all circumstances, and other factors—such as emotions like anger—have roles in motivating action (van Zomeren et al., 2008). Future research could usefully evaluate the links between situational optimism, motivation, and conservation outcomes. For instance, optimism may enhance motivation to act, but evidence-based approaches are needed to ensure these actions are effective (Sutherland et al., 2004). Nevertheless, positive psychology scholarship suggests that opti-

mism can help individuals and groups realize their aspirations (Luthans & Youssef-Morgan, 2017). For some, engaging with optimism movements like *Conservation Optimism*, *Earth Optimism*, and *Ocean Optimism* might help them overcome feelings of “helplessness” (Swaigood & Sheppard, 2010). Others might benefit from support in other areas of their work lives. This support could include funders prioritizing conservationists' livelihoods when allocating funds, employers fostering supportive work environments, or individuals sharing strategies that help them cope (Pienkowski et al., 2021). Such support may be particularly beneficial for some groups, such as those who have seen limited conservation progress during their careers or are working in challenging geographic areas.

Conservation is entering a crucial window for “bending the curve” upward on biodiversity loss, where things might get worse before they get better (Leclère et al., 2020). During this critical time, building a shared belief that conservation goals can be met may help ensure that they are fulfilled.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS


Conceptualization, methodology, formal analysis, data collection, resources and funding, writing—original draft, writing—review & editing, and funding acquisition: Thomas Pienkowski. *Conceptualization, methodology, data collection, writing—review & editing, and supervision:* Aidan Keane. *Conceptualization, methodology, data collection, and writing—review & editing:* Emiel de Lange. *Conceptualization, methodology, data collection, and writing—review & editing:* Munib Khan-yari. *Conceptualization, methodology, data collection, and writing—review & editing:* Sofia Castelló y Tickell. *Conceptualization, methodology, data collection, and writing—review & editing:* Mirjam Ha-zenbosch. *Conceptualization, methodology, data collection, and writing—review & editing:* William N. S. Arlidge. *Conceptualization, methodology, data collection, and writing—review & editing:* Gergő Baranyi. *Conceptualization, methodology, data collection, and writing—review & editing:* Stephanie Brittain. *Conceptualization, methodology, data collection, and writing—review & editing:* Sarah Papworth. *Conceptualization, methodology, data*

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DATA AVAILABILITY STATEMENT


Study data is available at <https://doi.org/10.6084/m9.figshare.14016086> and <https://github.com/Pienkowski/LiC-optimism>.

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