



Response: Commentary: Underestimating the Challenges of Avoiding a Ghastly Future

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A Commentary on

Commentary: Underestimating the Challenges of Avoiding a Ghastly Future

by Blumstein, J., Asiyani, A. P., Dutta, A., Huff, A., Lund, J. F., De Rosa, S. P., and Steinberger, J. (2021). *Front. Conserv. Sci.* 2:666910. doi: 10.3389/fcosc.2021.666910

In their comment on our paper “*Underestimating the challenges of avoiding a ghastly future*” (Bradshaw et al., 2021), Blumstein et al. (2021) attempt to contravene our exposé of the enormous challenges facing the *entire* human population from a rapidly degrading global environment. While we broadly agree with the need for multi-disciplinary solutions, and we worry deeply about the inequality of those who pay the costs of biodiversity loss and ecological collapse, we feel obligated to correct misconceptions and incorrect statements that Blumstein et al. (2021) made about our original article.

After incorrectly assuming that our message implied the existence of “one science” and a “united scientific community,” the final paragraph of their comment contradicts their own charge by calling for the scientific community to “... stand in solidarity.” Of course, there is no “one science”—we never made such a claim. Science is by its nature necessarily untidy because it is a bottom-up process driven by different individuals, cultures, perspectives, and goals. But it is solid at the core. Scientific confluence is reached by curiosity, rigorous testing of assumptions, and search for contradictions, leading to many—sometimes counter-intuitive or even conflicting—insights about how the world works. There is no one body of scientific knowledge, even though there is good chance that disagreements are eventually resolved by updated, better evidence, although perhaps too slowly. That was, in fact, a main message of our original article—that obligatory specialization of

disparate scientific fields, embedded within a highly unequal and complex socio-cultural-economic framework, reduces the capacity of society to appreciate, measure, and potentially counter the complexity of its interacting existential challenges. We agree that scientists play a role in political struggles, but we never claimed, as Bluwstein et al. (2021) contended, that such struggles can be "... reduced to science-led processes of positive change." Indeed, this is exactly the reason our paper emphasized the political impotence surrounding the required responses. We obviously recognize the essential role social scientists play in creating solutions to avoid a ghastly future. Science can only provide the best available evidence that individuals and policymakers can elect to use to inform their decisions.

We certainly recognize that there is no single policy or polity capable of addressing compounding and mounting problems, and we agree that there is no "universal understanding of the intertwined socio-ecological challenges we face." Bluwstein et al. (2021) claimed that we had suggested scientific messaging alone can "... adequately communicate to the public how socio-ecological crises should be addressed." We did not state or imply such ideas of unilateral scientific power anywhere in our article. Indeed, the point of framing our message as pertaining to a complex adaptive system means that we cannot, and should not, work toward a single goal. Instead, humanity will be more successful tackling challenges simultaneously and from multiple perspectives, by exploiting manifold institutions, technologies, approaches, and governances to match the complexity of the predicament we are attempting to resolve.

Bluwstein et al. (2021) accused us of promoting a "neo-Malthusian" framework. In fact, our article was *anti*-Malthusian, because the complex adaptive system will necessarily rely on many *different* potential pathways for there to be any success in limiting the damage and averting disaster. If economic decision-makers—in whatever political or economic system they operate—take the resource context we described seriously, society can precisely avoid or at least diminish the implications of the Malthusian trap. It is the current mainstream development model, largely blind to the fact that human economies are embedded in a finite biosphere, that is actually driving civilization toward a Malthusian future.

Bluwstein et al. (2021) made a related claim was that we had somehow insinuated that human population growth is the "central driver" of the three crises of biodiversity loss, the sixth mass extinction, and climate disruption. Yet, we did not state or otherwise imply this (nor did we confuse biodiversity loss and the sixth mass-extinction event as separate crises). On the contrary, we devoted an entire section to the interacting and inter-dependent components of overpopulation *and* overconsumption, which are, for instance, also central tenets of the recent *Economics of Biodiversity* review (Dasgupta, 2021). Therein, the dynamic socio-ecological model shows that mutual causation drives modern socio-ecological systems. Just as it is incorrect to insist that a large global population is the *sole* underlying cause of biodiversity loss, so too is it naïve and incorrect to claim that high consumption *alone* is the cause, and so forth. Therefore, policies directed to some element of environmental remediation will also influence

population growth as households adjust fertility goals, just as policies aimed at influencing fertility behavior are expected to affect policies associated with environmental protection and remediation (Dasgupta, 2021).

Despite these well-established inter-dependencies, public discourses on issues of environmental concern most often avoid mentioning any policies related to population size or growth (Ryerson, 2010). Bluwstein et al. (2021) appear to be rallying for more silence. Yet the onus is not on us to defend a claim we did not make—that global population is the *sole* driver of the ecological crisis. Rather, the onus is on Bluwstein et al. (2021) to explain how it is that human numbers are irrelevant to ecological impact and/or quality of human life (which seems to be what they are claiming). We should be well past the point where hurling the *very* worn slur of "neo-Malthusian" makes any sense. In a world where continued population growth is largely being driven by lack of accessible and affordable family planning (Millman, 2014; Tavernise, 2015) and by female disempowerment, inequity, and economic exclusion (Status of Women in the States, 2021), it is high time to break the misogynistic silence surrounding the population question and push for universal family planning that gives women reproductive control, keeping girls in schools, supporting female university education everywhere (Revenge and Shett, 2012; Bourne, 2014), and providing high-quality sexuality education to all. Actively pursuing these policies will both decelerate population growth and enhance the quality of human life (Harte, 2007; Revenge and Shett, 2012). In a time when it is estimated that hundreds of millions of people could be dislocated because of climate change and other environmental degradation this century (Reuveny, 2007), it should not be too difficult to appreciate that working to lower fertility rates around the world is an argument for lessening suffering.

We dispute the claim by Bluwstein et al. (2021) that our article placed "... the onus on those who presently lead more sustainable lives..., who have the least current and historical responsibility for the crises, and who wield the least of a voice in international scientific and political debates about how to address them." This contradicts our actual message where we explicitly promoted major socio-structural changes, including to global capitalism, the mantra of economic growth, pricing externalities, corporate lobbying, market regulation, and property acquisition—all elements that, in fact, dominate the lives of individuals in the wealthiest and most consumptive nations. Thus, we never insinuated that confronting inequality and capitalism are "peripheral" pursuits—Bluwstein and colleagues' contention here grossly distorts our argument and is not borne out by our words.

As we stated in our paper, and in agreement with Bluwstein et al. (2021), there are staggering distributional inequities, and hundreds of millions of people are sadly already on the apocalyptic frontline of challenges to their livelihoods. We did not "blame" low-income or indigenous people for such calamities as we clearly describe above. Our paper highlighted that over 70% of people live in countries running a biocapacity deficit, but with few financial means to compensate this deficit by accessing biocapacity from abroad to enhance future resilience (Wackernagel et al., 2021). In other words, those with least

economic leverage will carry a disproportional burden of the impact of overshoot. Therefore, there is a tremendous and indisputable moral responsibility of those that have amplified the problem to address it. Without solidarity with those who are most politically and economically disadvantaged, even the privileged will not be able to protect themselves from destructive global trends.

Everyone—at any income level—must ultimately discard the belief that what is good for humanity as a whole is only possible *via* a cost to the individual—a plausible deduction from “the tragedy of the commons” concept (Hardin, 1968), and known technically as a “common-pool resource” problem (Gardner et al., 1990). Our collective mentality must instead embrace the real notion that we have aligned incentives for investing in sustainability. If we maintain the misapprehension that “noble responses” require personal sacrifice, we ignore that everyone has “skin in the game” (Safire, 2006). In other words, individual action is essential for the self, because the corollary benefits of reduced environmental damage and pressure are overwhelmingly beneficial to *everyone*, irrespective of socio-economic status. In fact, and as we emphasized in our paper, such aligned incentives and resulting actions will likely benefit the most economically disadvantaged the most, *via* reductions in poverty, inequality, ethnic division, social conflicts, and warfare (Homer-Dixon, 1991, 1999; Collier and Hoeer, 1998; Hauge and Ilingsen, 1998; Klare, 2001; Fearon and Laitin, 2003; Toon et al., 2007, 2019; Brückner, 2010; Acemoglu et al., 2017).

Bluwstein et al. (2021) incorrectly interpreted our comments regarding “awareness,” insinuating that we were merely advocating for “more” of it. But this is not what we wrote. Instead, our central point was that awareness is weak concerning the *complex adaptive system* of interacting drivers of environmental erosion. As we wrote, “awareness” has risen globally, but it is the *awareness of interactions* that remains superficial and nebulous. At the same time, we should not underestimate the need to continue increasing the public’s awareness of the unprecedented events transpiring. For example, a fair question to ask is how many people know that a human-driven mass extinction is imminent or understand that the crux of extinction is at the level of populations of species and what that means for humanity? What we can probably all agree on though is that the current narratives around sustainability, climate, resource exploitation, and the complex, interactive nature of the multiple drivers of

global change have not succeeded in winning sufficient hearts and minds of either the broader public or the policy elite.

In terms of communicating our narrative about avoiding a ghastly future, Bluwstein et al. (2021) suggested that we had intended to rely on “scientific messaging alone,” but this was clearly not our intention. In addition, Bluwstein and colleagues recommended that we “... scientists should help expose the structural causes and drivers of inequality, overproduction and overconsumption,” and thus implied that we are failing to do this. However, we plainly identified the importance of such issues and the need for scientists to “tell it like it is” in relation to them. Furthermore, Bluwstein et al. (2021) suggested that we were “... legitimizing the status quo by appealing to existing political elites.” But our recommended communication strategy included getting pro-sustainability messages out to the broadest possible audience, along with actions that individuals can take, such as voting for pro-sustainability leaders and decision-makers, and similarly choosing where and how our financial and other resources are invested. Of course, we recognize that to achieve such will require us scientists, and others, to “preach beyond the converted” (Pyke, 2017).

In conclusion, the comment by Bluwstein et al. (2021) does not mount any valid challenges to our article, nor does it expose an “elitist and neo-colonial” bias. Our central message remains and is one with which surely even the authors of the comment agree: we require urgent, expansive, multi-faceted, and bold responses to address the ghastly future of biological, political, health, and socio-economic repercussions arising from multiple and interacting erosions to the global environment.

AUTHOR CONTRIBUTIONS

CB, DB, and PE designed the concept and wrote the article, with major contributions from EC, GP, and MW. All authors contributed to the article and approved the submitted version.

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