

Discussing Population Concepts: Overpopulation is a Necessary Word and an Inconvenient Truth

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Abstract

In science, in the media, and in international communication by organizations such as the United Nations, the term 'overpopulation' is rarely used. Here, we argue that it is an accurate description of our current reality, well backed up by scientific evidence. While the threshold defining human overpopulation will always be contested, overpopulation unequivocally exists where 1) people are displacing wild species so thoroughly, either locally or globally, that they are helping create a global mass extinction event; and where 2) people are so thoroughly degrading ecosystems that provide essential environmental services, that future human generations are likely to have a hard time living decent lives. These conditions exist today in most countries in the world, and in the whole world. Humanity's inability to recognise the role population growth has played in creating our environmental problems and the role population decrease could play in helping us solve them is a tremendous brake on environmental progress. While reducing excessive populations is not a panacea, it is necessary to create ecologically sustainable societies. We, therefore, recommend use of the concept of overpopulation in scientific publications and in public outreach.

Background

People who work to draw attention to the risks of excessive human populations and to promote family planning to curtail population growth, are often warned not to use the word overpopulation (Gardner, 2014). In one sense, overpopulation just describes humanity's present project: the process of increasing human numbers globally to the detriment of wildlife, our common climate, food security, green urban spaces, and more (Foreman and Carroll, 2014; Crist et al, 2017). But the word can be construed as misanthropic, perhaps not as bad as Thanos in the film *Avenger's: Endgame* (Abegão, 2019), but still somehow hinting at a desire to eliminate surplus people by unethical means. This, of course, is a misrepresentation, but it happens repeatedly. Should we self-censor to be a smaller target for criticism or should we present our honest view

that humanity is already overpopulated, and that by denying it we turn our backs on the best options for averting humanitarian and ecological crises?

Science and a Definition

The word 'overpopulation' can be applied to any species which exceeds the carrying capacity of its habitat. For a while, the species might continue to uphold its numbers, but only by running down its 'natural capital', consuming the critical resources faster than they can regenerate and disrupting the balance that sustains each year's bounty. Ultimately, the degraded habitat will no longer support such numbers and the population collapses locally. But people are clever in modifying environments to support more people. They can use technology to get more goods and services from the same resources. People can also gather and trade resources over vast distances – a major difference compared to other species. This has led to lengthy discussions about the question "How many people can the Earth support?" (Cohen, 1995). The answer depends upon value judgements, such as what quality of life we want people to have and how much we value preserving wild places where other species can thrive (Wilson, 2017). They also depend upon what technologies we might conceivably draw upon in the future. Maximum and optimum population sizes are likely to differ substantially (Lianos and Pseiridis, 2016; Derer 2018a; Tucker, 2019).

All of this creates a large grey area, with room for disagreement about what constitutes overpopulation. The Global Footprint Network (GFN), for example, defines "overshoot" by contrasting a national population's overall consumption with its country's total biocapacity (www.footprintnetwork.org). This definition assumes perfect substitutability between different biocapacities, and an entitlement for humans to consume it all (a country could be sustainable, according to the GFN's criteria, even if it had no national parks and exterminated all its native wildlife). But even such selfish calculations, grounded on human species only, imply that we would need 1.75 planet Earths to sustain our current behaviours. In theory, humanity could retreat from this excess purely by consuming less and improving technology, without stemming population growth. In practice, that is unlikely, much more costly, and achieves less human wellbeing than addressing both population growth and per person impacts simultaneously. The GFN's footprint calculator, however, emphasises per capita footprints while de-emphasising numbers of "feet". Users of this approach can avoid thinking about population matters.

There are limits beyond which human overpopulation becomes undeniable. We suggest the following definition of overpopulation, grounded straightforwardly in the environmental ethics - overpopulation exists where 1) people are displacing wild species so thoroughly, either locally, regionally, or globally, that they are helping create a global mass extinction event; and 2) people are so thoroughly degrading ecosystems that provide essential environmental services, that future human generations are likely to have hard times living decent lives (Staples and Cafaro, 2012, The Overpopulation Project, 2020). This definition recognises that this planet is not inhabited by humans

alone. We share it with perhaps 10 million other species or may be more, and we do not want to live under too crowded conditions. We want to live well, we want our grandchildren to live well, and we want them and *their* grandchildren to live well in a biologically rich world (Dodson, 2019). According to this definition, whole world and most of the nations are overpopulated, and getting more overpopulated with each passing year. Fortunately, not all areas of the planet Earth are overpopulated and in places that are, we could reduce our numbers to restore and protect ecosystems. But, to motivate action to do so, we must be able to name/acknowledge overpopulation as a problem. We must use this word.

An Uncomfortable Concept

Why are so many people uncomfortable talking about overpopulation? There are many reasons, two of which seem especially important. First, some people deny overpopulation exists, referring to recent progress in human well-being around the world (Götmark, 2018). Second, the term may cause communication problems, if not explained well. Some colleagues and conservationists, both in rich low-fertility countries and poor high-fertility countries, feel it gives the wrong impression about whose interests are being pursued.

Regarding the first point, we do not deny that the average living conditions for many people around the world have improved in recent decades (Roser, 2020). However, this observation distracts from the more salient fact that, on several criteria, suffering and deprivation have increased in absolute numbers. Undernourishment, for instance, persists and has even increased compared to 60 or 70 years ago (Marsh, 2017; FAO 2019). Moreover, future improvements in peoples' lives are commonly taken for granted, despite the United Nation's forecast that we face another 80 years or more of substantial global population increase, while environmental capital, from groundwater reserves to climate stability, is being run down already (Drechsel et al, 2001; UNEP, 2012; Vaughan, 2019). It may be pointed out that food (Le Page, 2020) and freshwater (D'Odorici et al, 2018; Götmark, 2019) cannot increase indefinitely as human population grows. Many will argue that Malthus was proven wrong in the 19th century (Wikipedia, 2020), Paul Ehrlich in the 20th century (Climate One, 2018) and smart *Homo sapiens* will once again solve new problems through clever management or new technology in the 21st century - more people, more brains to solve problems.

This is a common response from political and intellectual elites whose privilege has allowed them to do well and feel confident about the future. However, people heading to work on crowded buses, low-paid workers fighting flooded labour markets, or poor farmers worried about droughts or subdividing their properties among their numerous children, usually have more negative and realistic views about population growth (Dodson, 2019). This contrast can be seen when people respond to newspaper reports or opinion pieces focused on solving environmental problems through technical solutions. People often recognise population growth or

overpopulation as the missing piece and express scepticism about solutions that ignore population growth.

Those who have any interest in wildlife are even less inclined to argue away overpopulation, since they are aware of current clear negative trends for wild species and populations. One study of mammal population trends for the period 1900-2015 concludes, of the 177 mammals for which we have detailed data, all have lost 30 percent or more of their geographic ranges and more than 40 percent of the species have experienced severe population decline, and more than 80 percent range shrinkage (Ceballos et al, 2017). Another recent study has concluded that North American wild bird abundance decreased by 30 percent during the last 50 years, an astonishingly rapid rate of population loss (Pennisi et al, 2019). Human overpopulation has obviously contributed to these negative effects.

The second issue is that, in some circles, such as in discussions regarding international development aid, the word overpopulation increasingly seems to have become a taboo over the last two or three decades (Bognar, 2019). Among our colleagues in Africa, use of this word can create negative responses, despite our sharing of similar views on the negative effects of population growth and on the needed solutions, such as greater financial support for family planning. For example, an African colleague protested that attributing social and environmental problems to overpopulation “... ignores issues of inequities within and across countries which is at the heart of the poor state of human conditions we see in different parts of the world today. It is NOT overpopulation that is sending millions of children to bed hungry each night. It is not overpopulation that is responsible for the massive ecological devastation in Africa today.”

There is a lot to unpack in these words, but implicit is the idea that citing overpopulation means denying the inequities of colonial legacies and modern exploitation. Even worse, persons citing overpopulation wish to impose some sort of penalty on poor, high-fertility countries, rather than identifying a crucial area in which they need help. We are all raised on stories where adversity is characterised by villains and heroes, so it may be hard to grasp that naming is not blaming. Yet, it is incorrect to argue that population growth has played no role in driving deforestation, overgrazing, soil degradation and loss of species in Africa, not to mention shrinking land holdings, burgeoning urban slums and insufficient access to food, infrastructure, and services (Campbell et al, 2007; Graves et al, 2019). Knowing the fact that crowded labour markets lead to low wages and exploitative working conditions, can it really be argued that population growth plays no role in driving economic inequality?

It is a fact that no country other than petro-states has achieved middle-income status without first reducing its birth rate substantially through voluntary family planning, and countries which did so, regardless of their colonial legacy, have seen substantial improvements (O'Sullivan, 2013). By denying overpopulation and the problems generated by continued rapid population growth, our colleague's commendable desire to address economic equity could contribute to worsening it. Such denial also ignores the fact that limiting future population growth is likely to be an

important factor in preserving spectacular wildlife heritages of African nations (Bradshaw and Di Minin, 2019).

A Balanced View and a Recommendation

Pointing all this out does not mean arguing against greater economic equity between nations, fairer trade relations, or increased foreign aid—all are needed. It also does not mean acquiescing in overconsumption by wealthy people or pretending that overpopulation is only an issue in the developing world. But as Clark (2016) notes, “Valid arguments about injustice and economic equity should not do double duty as forms of population denialism.”

It is important to acknowledge that overpopulation exists in many rich countries with too high rates of consumption as well as in many poor countries with too high fertility rates. Every effort should be made to reduce high consumption rates as well as high birth rates. In combination, these two measures would create a much better future for people on the planet. From this perspective, the fact that some rich nations have aging, and declining populations is good news (Götmark et al, 2018). Each nation, each political leader, each citizen, can contribute to creating sustainable societies by addressing both consumption and population issues, and their interconnections. Avoiding overpopulation is important in creating societies that sustain good human lives and maintain the existence of other species. Many futurists acknowledge the threat but claim that the problem is fixing itself (Randers 2012, Rosling et al, 2018). This belief is part of the mythology through which population growth and overpopulation have been rendered taboo, particularly since the mid-1990s. Sadly, as a consequence of this complacency, family planning efforts were neglected, and many countries have seen fertility declines stall or reverse (Bongaarts, 2008). The United Nations’ prediction of peak world population has consequently been revised upward from 9 to 11 billion people since 2000 (O’Sullivan, 2016). The partnership “Family Planning 2020” was launched in 2012 to revitalise languishing family planning efforts and has helped many women in many countries receive contraception (Cahill et al, 2018). But it has fallen well short of its targets, due to weak political will in both donor and recipient countries (Family Planning 2020, 2019) and the number of women with an unmet need for contraception continues to rise (Kantorová et al, 2020), while family planning receives only 1 percent of international aid (Potts and Graves, 2019).

It seems that the campaign to disavow overpopulation and refocus birth control efforts exclusively on women’s reproductive health and rights has not served women’s rights well. Equally, it has impeded environmental protection. The Convention on Biological Diversity’s Aichi targets systemically neglect of population growth as a driver of biodiversity loss (Driscoll et al, 2018). Integrated assessment models (IAMs) using the IPCC’s ‘shared socioeconomic pathway’ (SSP) scenarios have found that the feasibility of achieving less than two degrees warming depends on extremely rapid fertility decline in Africa but fail to include measures to achieve that decline (O’Sullivan,

2017). An area of forest equal to the size of Germany can be saved from conversion to crops by accelerating fertility decline in Africa (Searchinger et al, 2018).

We ignore overpopulation at our peril. Yet, in recent decades, many environmental scientists and environmental advocacy organizations have done just that (Porritt, 2014; Foreman and Carroll, 2014; Derer, 2018b). The word 'overpopulation' is rare in titles or abstracts of articles in the fields of demography, ecology, food science, or sustainability in general. This neglect and denial have made it much harder to deliver the reproductive freedom that millions of people in high-fertility countries want, and consequently undermine their own conservation aims. Still, the fight to address overpopulation continues. We recommend that the concept be used widely in scientific analyses as well as in public outreach, especially in media discussions about environmental issues.

In a promising sign, the "World Scientists' Warning to Humanity: A Second Notice" (Ripple et al, 2017) has attracted endorsement from 15,364 scientists for an agenda which includes "further reducing fertility rates by ensuring that women and men have access to education and voluntary family-planning services, especially where such resources are still lacking." The organisation formed to advance the agenda, ScientistsWarning.org, organised a well-attended seminar on overpopulation at the most recent annual United Nations Climate Change Summit (COP 25) in Madrid in December 2019 (Scientists' Warning, 2019). The event eloquently argued that overpopulation was a major threat to climate stabilization and there were effective, just, and practical solutions to help us deal with it (Cafaro, 2012). The self-righteous refusal to name the problem can only deepen the environmental and social crises we face. Having come so close to the brink of cascading disasters (Cafaro and Crist, 2012), we can no longer afford to pander to misguided political correctness.

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