COVID-19 lockdowns increase public interest in urban nature

Interactions with nature promote key human health benefits and help inform sound conservation actions (Schaef er et al. 2015; Schultz 2011). During the COVID-19 lockdowns such interactions were reduced and, in many cases, limited to urban nature (Kleinschroth and Kowarik 2020). Nevertheless, home-confinement regulations may have provided the impetus for people to reconnect with urban wildlife – through their windows, in their backyards, or in nearby urban parks (Manenti et al. 2020; Vardi et al. 2021). COVID-19 lockdowns and travel restrictions also changed the behavior of many wild animals (Corlett et al. 2020; Gaynor et al. 2020): some species started entering urban areas from which they were normally precluded (Corlett et al. 2020; Manenti et al. 2020; Vardi et al. 2021), while others altered their activity periods (Gordo et al. 2020; Manenti et al. 2020). Ultimately, the COVID-19 pandemic has provided a unique opportunity to explore different aspects of the multi-faceted relationships between people and nature (Bates et al. 2020; Rutz et al. 2020).

Here, we explored public interest in five common garden birds – European robin (Erithacus rubecula), common blackbird (Turdus merula), Eurasian blue tit (Cyanistes caeruleus), common chaffinch (Fringilla coelebs), and great tit (Parus major) – before, during, and after various COVID-19 lockdowns were enacted in Italy, France, Germany, the UK, and Sweden in 2020 (see WebPanel 1 for country selection rationale). Specifically, we used a “conservation culturomics” approach to gauge public interest in these birds. Conservation culturomics explores human–nature interactions through the quantitative analysis of large digital corpora of texts, images, videos, audio, and other media (Correia et al. 2021; Ladle et al. 2016). We analyzed patterns in relative search volume regarding species in Google Trends, pageview statistics in Wikipedia, and observations from the popular citizen-science platform iNaturalist (see WebPanel 1 and WebTable 1 for full details). Data were collected for five years from 2016 to 2020, beginning on the first of January until the sixth of December. Data were corrected to overall interest trends during these periods (see WebPanel 1). We also explored interest trends in 2020 as compared to the average interest from the preceding years (2016–2019).

During the first lockdown in Italy, France, Germany, and the UK, as well as during the parallel period in Sweden (where formal lockdowns were not enacted), we observed consistent and marked increases in public interest for all five species. This effect was apparent in our metrics of public interest, based on web searches and Wikipedia pageviews (Figure 1; WebFigure 1). These trends were evident when compared to pre-lockdown or post-lockdown periods and to previous years. Submissions to the iNaturalist platform showed similar trends in the UK (WebFigure 2). Increased interest in these species was documented in all five countries during the lockdowns; however, interest in the UK was typically more prominent than that observed elsewhere (most likely due to the larger number of total observations reported to iNaturalist in the UK relative to the other four countries).

The observed patterns are likely attributable to a combination of increased bird activity due to reduced human disturbance (Gordo et al. 2020), and increased motivation by citizens during lockdowns to observe birds and seek information about them (Basile et al. 2021; Manenti et al. 2020). These interpretations are consistent with prior studies that documented higher public interest in familiar birds and urban birds,
as manifested by online search patterns (Correa et al. 2016; Ladle et al. 2019).

Our findings suggest that many people used their time during the COVID-19 pandemic to rekindle an interest in and appreciation of nature. People may have turned to nature to help deal with stress brought about by the pandemic, or to otherwise support their psychological well-being (Bratman et al. 2019; Kleinschroth and Kowarik 2020). Exposure to nature has been linked to improved mood, concentration, and self-discipline, and to decreased physiological stress, which are especially important among urban populations (Bratman et al. 2019). As more people may begin to work from home on a more regular basis, engaging with garden birds may be a potential strategy for both reducing stress and increasing support for conservation.

Post-COVID economic stimulus packages are currently being prepared by many governments still facing crisis. These packages represent an opportunity to rethink not only the design of gardens and urban parks but also “green” urbanism in general, to develop healthy and sustainable urban ecosystems that also support wildlife (Beatley 2000; Bratman et al. 2019). Initiatives to maintain and recover populations of urban and peri-urban birds and other wildlife (BirdLife International 2017) may involve the management of natural green spaces, the construction of green roofs, and the conversion of low-value, peri-urban, agricultural land to “rewilded” areas (Beatley 2000). It is important that future research monitors trends in urban wildlife, the ways that people engage with it, and the benefits this engagement brings. Culturomics techniques offer a cost-effective means to achieve the latter (Ladle et al. 2016).

Overall, we found that increased interest in birds was not sustained beyond the lockdown periods, suggesting that there are only short windows of opportunity to leverage greater attention toward nature to support conservation initiatives. Sustaining interest in nature could be achieved through long-term conservation campaigns (eg Salazar et al. 2019) and dedicated education programs. Ultimately, societal changes are needed to maintain appreciation for the enormous value, satisfaction, and health-related benefits we gain from interactions with the wildlife within our human-dominated landscapes – interactions that, in our busy 21st-century lives, we have perhaps taken for granted.

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what objectives matter in the 30 × 30 target is critical for prioritizing actions. In a recent white paper, we illustrated how expanding the US protected area network to reach this 30% target could look radically different depending on whether objectives focused on costs, species conservation, carbon sequestration, or landscape resilience and connectivity (Simmons et al. 2021). Each strategy we explored presented trade-offs in land acquisition costs, ecosystem representation, and climate mitigation potential, with only 2% of the contiguous US qualifying for protection across all four objectives. These trade-offs will likely intensify given the additional objectives stated within Biden’s executive order, which include climate-smart agriculture, accessible recreation opportunities, and growth in the green energy sector (EOP 2021).

The US and other involved nations must also specify what actions count toward achieving the 30 × 30 target. Area-based protection targets are susceptible to ineffective conservation outcomes when positioned in remote locations where land acquisition costs are low and few threats to biodiversity exist (Barnes et al. 2018). In addition, different categories of protected areas afford varying levels of protection. For instance, the inventory of the USGS Protected Areas Database – which includes public lands and a subset of private lands – considers more than 31% of US land under some form of protected area designation, yet only 13% has strict mandates for biodiversity protection (USGS GAP 2020). Such estimates of protection are also subject to ambiguity, given that some protected areas may have more or less protection due to varying levels of management capacity, that privately owned protected areas could be subject to future development, and that certain areas (such as those under traditional or Indigenous management) may not be classified as “protected areas” but nevertheless provide other effective area-based conservation measures that deliver important biodiversity outcomes (IUCN 2019). A baseline needs to be established to determine the conservation gap that must be filled over the next decade.

As more pro-biodiversity initiatives are adopted on production lands and waters, including private land conservation programs, agri-environmental schemes, and sustainable fisheries, nations must be clear about how these areas will contribute, if at all, to the 30% target. Being too inclusive risks undermining the premise of the 30 × 30 goal, yet restricting efforts to strictly defined protected areas risks high costs and missed opportunities for greater stakeholder engagement in sustainable, pro-environmental practices. This ambiguity over the level of inclusivity has also led to pushback from 64 US Congressional members of the Western Caucus over fears that the 30 × 30 target will disproportionately affect landholders and rural economies in the western US (Daniels 2021). Greater clarity and transparency are needed if the Biden administration hopes to encourage greater bipartisan support of the 30 × 30 agenda.

Finally, nations will need to clarify who gets to decide what matters and what counts toward the 30 × 30 target. There are valid concerns over the exclusion of Indigenous communities (Sengupta et al. 2021), industry stakeholders (Daniels 2021), and other underrepresented groups from 30 × 30 decision making. President Biden’s executive order does show promise in this regard, stating that the federal government “shall, as appropriate, solicit input from State, local, Tribal, and territorial officials, agricultural and forest landowners, fishermen, and other key stakeholders in identifying strategies that will encourage broad participation in [the 30 × 30 target]” (EOP 2021). However, the stakeholder solicitation process remains unclear and appears to be at the discretion of the federal government, where decision-making power lies. Dedication to diverse stakeholder inclusivity and empowerment, as well as transparent decision-making processes, must be a prerequisite to the 30 × 30 agenda, with scientists, practitioners, and Indigenous leaders playing a critical role in assisting policy makers with evidence-based decision making.

The three above-mentioned questions must be confronted before nations can determine how to efficiently achieve the