

The Importance of Collecting and Archiving Data on Domestic and Cultivated Organisms

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Abstract

At least 29% of the world's terrestrial ecosystems have been significantly modified by human activity (Ellis 2011). Total livestock biomass is 15 times greater than that of wild mammals (Bar-On et al. 2018). Crops such as maize, soybean, rice, and wheat cover 23% of available agricultural land (Ritchie and Roser 2013). Even where land is not farmed, it is often converted to highly modified habitats such as urban ecosystems. Within the matrix of anthropogenic ecosystems spread around the world are many wild species (i.e., free-living, non-domesticated or feral). Some native species persist from the original ecosystems, while others colonize anthropogenic ecosystems including alien invasive species. Thus, wild flora and fauna in many areas are part of ecosystems that are dominated by, and often characterised by, the domestic and cultivated organisms that exist in them. Examples include large herbivores raised for milk and meat production, and omnivorous and carnivorous species such as both domestic and feral dogs and cats. Moreover, crops are typically grown in monoculture plots including tree plots in commercial forestry, and an enormous array of cultivated plants are grown in gardens, parks, and along streets in urban areas. Tellingly, in many ecosystems the domestic bee is the primary pollinator and domestic cats are the main predator.

Domestic and cultivated organisms are not isolated from wild organisms and indeed they interact in many ways, including predation, parasitism, and herbivory, competition for biotic and abiotic resources, and pathogen transmission. If we are to understand modern ecosystems, clearly we cannot ignore the domesticated and cultivated components of ecosystems. So where are the observational data on these species? [iNaturalist](#) reluctantly

tolerates them but does not publish them to the Global Biodiversity Information Facility ([GBIF](#)), [eBird](#) actively discourages recording them, and GBIF doesn't encourage their submission either. Some information can be gleaned from land cover maps and remote sensing, but without knowing the specific species present in the land use category it is hard to build a holistic picture of an ecosystem. Data on domesticated and cultivated organisms have many uses, including horizon scanning and risk assessment for invasive species, understanding the impacts of invasive species, predicting the spread of disease, the spillover of disease to and from wild and domestic organisms, and many others (Groom et al. 2021).

Evidently there are important components of ecosystems largely missing from our public databases. As data on biodiversity becomes more intergrated, such as implementing Digital Extended Specimens (Webster et al. 2021), it will become increasingly important to access data from all aspects of an ecosystem, included those that are domestic and cultivated. In this talk we will expand on why we should be mobilising such data. They can be published without ruining the integrity of data on wild organisms, so why don't we embrace and use these fundamentally important, but much ignored, data?

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agriculture, anthropogenic, data publication, ecosystems

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Conflicts of interest

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