Adding energy use data complements our understanding of community abundance based on the number of individuals. Energy use is a more direct measure of ecological function in terms of the amount of resources being used, and potentially made available to other trophic levels, by an assemblage. One of the major concerns for biodiversity in the Anthropocene is that declines in animal abundance will result in declines in ecological function. Although energy use is sometimes assumed to vary proportionally with the total number of individuals (?), this is not necessarily the case – shifts in the size spectrum can decouple these currencies. We do not have general empirical evidence for whether energy use and the number of individuals co-vary or diverge from each other in reality, particularly for terrestrial animals. Indeed, some scenarios for global change – size-biased exctinctions - would lead us to *expect* that these currencies would become decoupled. To detect changes in ecological function in terms of energy use, we should therefore use energy use data directly. Also, if energy use and abundance do not vary proportionally to each other, this is a signal that the underlying size structure of the community is shifting to favor larger-or-smaller-than-average species.

Schipper et al (2016) found evidence of widespread declines in the total number of individuals for breeding bird communities, but evidence of pervasive *increases* in the mean body size. These contrasting trends suggest that energy use and individual abundance do not strictly covary for these communities. If size spectra are shifting towards larger species, declines in abundance may not be matched by overall declines in energy use. However, the outcomes of these opposing forces depends on the relative magnitude of the changes in abundance and changes in mean body size within each community, and the trends that are most common at the aggregate scale do not necessarily play out in synchrony in each community.

We simulate energy use data for every community in the Breeding Bird survey and compare the long-term trends for energy use to long-term trends in total abundance for each community. We test whether the aggregate trends for energy use match or diverge from the aggregate signal for total abundance. At the community scale, we also test whether energy use tends to change proportional to, or over or under performing, changes in abundance. If energy use does *not* change proportional to individual abundance, it is a signal of considerable change to the size structure of the community favoring large or small species (although note that not all changes in the size structure will result in a marked decoupling of energy use and abundance). Size-biased extinctions disproportionately affecting large species would result in declines in energy use outpacing declines in individual abundance.