













Data Papers

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InsectChange: a global database of temporal changes in insect and arachnid assemblages

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Abstract. Insects are the most ubiquitous and diverse group of eukaryotic organisms on Earth, forming a crucial link in terrestrial and freshwater food webs. They have recently become the subject of headlines because of observations of dramatic declines in some places. Although there are hundreds of long-term insect monitoring programs, a global database for long-term data on insect assemblages has so far remained unavailable. In order to facilitate synthetic analyses of insect abundance changes, we compiled a database of long-term (≥ 10 yr) studies of assemblages of insects (many also including arachnids) in the terrestrial and freshwater realms. We searched the scientific literature and public repositories for data on insect and arachnid monitoring using standardized protocols over a time span of 10 yr or longer, with at least two sampling events. We focused on studies that presented or allowed calculation of total community abundance or biomass. We extracted data from tables, figures, and appendices, and, for data sets that provided raw data, we standardized trapping effort over space and time when necessary. For each site, we extracted provenance details (such as country, state, and continent) as well as information on protection status, land use, and climatic details from publicly available GIS sources. In all, the database contains 1,668 plot-level time series sourced from 165 studies with samples collected between 1925 and 2018. Sixteen data sets provided here were previously unpublished. Studies were separated into those collected in the terrestrial realm (103 studies with a total of 1,053 plots) and those collected in the freshwater realm (62 studies with 615 plots). Most studies were from Europe (48%) and North America (29%), with 34% of the plots located in protected areas. The median monitoring time span was 19 yr, with 12 sampling years. The number of individuals was reported in 129 studies, the total biomass was reported in 13 studies, and both abundance and biomass were reported in 23 studies. This data set is published under a CC-BY license, requiring attribution of the data source. Please cite this paper if the data are used in publications, and respect the licenses of the original sources when using (part of) their data as detailed in Metadata S1: Table 1.

Key words: *abundance; arthropods; assemblage; biomass; community; dynamics; insect decline; insects; long-term; monitoring; spiders; springtails.*

The complete data sets corresponding to abstracts published in the Data Papers section in the journal are published electronically as Supporting Information in the online version of this article at <http://onlinelibrary.wiley.com/doi/10.1002/ecy.3354/supinfo>.

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Associated data are also available at the Knowledge Network for Biocomplexity: <https://doi.org/10.5063/F1ZC817H?>

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