Dataflow from the field to a data repository: small-scale distribution of plant galls as use case

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Central aim of this study is to establish a dataflow for primary research data from the field to a data repository. As use case, the small-scale distribution of gall-inducing sawflies on their host plants is monitored. Therefore, multidimensional complex relationships need to be recorded at the levels of plant individuals, shoot orders, and single leaves and galls, to display in detail the spatial distribution of the observed galls on the individual plants and plant parts along a time span of several months.
Guidelines set up by science policy raise the pressure on researchers to deliver their data in a form that can be shared with others during or beyond the duration of the project. Nevertheless, data are mostly retrieved in a rather manual ways, with pen and paper, and are subsequently transferred into a data storage system. However, this type of data acquisition means that errors may occur during the process of data transcribing. Further, data gathering directly on a sheet of paper may be an obstacle for reflecting complex multidimensional relationships between biological or ecological entities.
This use case study is focussed on testing and improving the process of data recording via mobile device and the data flow from the field to the data repository. Data retrieval in the field is achieved by using a mobile data device. All entered data are transferred to a repository database. Direct access to contents of databases with thesaurus contents (e. g., standard lists of taxonomic names) proved to be most helpful for fieldwork. Furthermore, multimedia data (images, video, sound) as well as GPS coordinates are being integrated in the data flow, adequate device supports considered as given. Experience from campaigns during one vegetation period indicate that the data flow from a mobile device during field work to central biological repository databases is efficient and error unsusceptible.