

## ReSurveyEurope

### Project Metadata Form

When contributing data to ReSurveyEurope, please fill in this form for each resurvey project and send it to Ilona Knollová ([ikuzel@sci.muni.cz](mailto:ikuzel@sci.muni.cz)) together with the database. A resurvey project is understood as repeated sampling of a certain type of vegetation in a certain study area using specific methods.

- PROJECT NAME (identical with the Resurvey Project name given in the database):

Monitoring Habitat Conservation WBS

- FULL PROJECT NAME (use if the full project name is longer than used in the database):

Monitoring the Effectiveness of Habitat Conservation in Switzerland WBS

- REFERENCE (publication or URL or DOI of the dataset if published online):

Bergamini, A., Ginzler, C., Schmidt, B.R., Bedolla, A., Boch, S., Ecker, K., Graf, U., K uchler, H., K uchler, M., Dosch, O. & Holderegger, R. 2019. Biotoppe von nationaler Bedeutung: Zustand und Ver anderungen. WSL Berichte, 85, 1–104.  
Project website: <https://biotopschutz.wsl.ch/en/index.html>

- DATA OWNER: person(s), institution(s):

Data owner:  
Federal Office for the Environment, 3003 Bern

**Custodian:**

Ariel Bergamini, Swiss Federal Research Institute WSL, Z urcherstrasse 111, 8903 Birmensdorf, Switzerland. The mentioned custodian has given the right from the mentioned data owner to decide for which scientific projects the data may be used and he is the main contact person.

**Deputy custodian:**

Steffen Boch, Swiss Federal Research Institute WSL, Z urcherstrasse 111, 8903 Birmensdorf, Switzerland.

- CONTACT E-MAIL:

[ariel.bergamini@wsl.ch](mailto:ariel.bergamini@wsl.ch)

- METHODS (description of sampling design and methods):

In 2011, the program “Monitoring the effectiveness of habitat conservation in Switzerland” was initiated by the Swiss Federal Office for the Environment BAFU and the WSL Swiss Federal Research Institute. It monitors changes in habitats of national importance. Using remote sensing, changes of structures such as tree and shrub cover or infrastructures such as roads and buildings of all 7000 sites of national importance are measured. Of these 7000 sites about 900 are selected for vegetation surveys, weighting rare habitat types higher in a random selection process to avoid overrepresentation of frequent habitat types (for details see Till e

and Ecker, 2014). Each plot is surveyed once in a six-year cycle. The first survey period of the project lasted from 2011 to 2017, the second survey period started in 2018.

Within the 900 sites of national importance selected for vegetation surveys, we conducted about 7000 vegetation relevées in circular plots of 10m<sup>2</sup>. About 2000 of them have been repeated in the years 2018 and 2019. The rest will be repeated in the following years. All plots were permanently marked belowground with strong magnets, which ensures precise relocation with a metal detector. In each plot we recorded all vascular plant species and estimated their abundance (cover) in each plot using a modified Braun-Blanquet scale ( $r \triangleq <0.1\%$ ,  $+ \triangleq 0.1\% - <1\%$ ,  $1 \triangleq 1\% - <5\%$ ,  $2 \triangleq 5\% - <25\%$ ,  $3 \triangleq 25\% - <50\%$ ,  $4 \triangleq 50\% - <75\%$ ,  $5 \triangleq 75\% - <100\%$ ). In fens and bogs we recorded also all bryophyte species using the same cover scale. Nomenclature of vascular plants follows largely Juillerat et al. (2017), nomenclature of bryophytes Meier et al. (2013). The plots are located in the following broad habitat types: Dry meadows and pastures, bogs, fens, alpine floodplains, lakeside floodplains, river floodplains and river deltas.

For woody species the cover on the plot is estimated for the herb, shrub and/or tree layer, depending in which layers they occurred. If a woody species occurred in the shrub layer (height between 0.5m and 3m), then the species name is followed by '/S', if it occurred in the tree layer (height above 3m), the name is followed by '/B'. There is no mark for woody species occurring in the herb layer. If a species could not be identified without doubt, the species name is followed by '/cf' (e.g. *Poa annua* /cf. = *Poa cf. annua*). The name 'Tracheophyta spec.' was used when a vascular plant could not even be assigned to a family, the name 'Bryophyta spec.' when a bryophyte species could not be assigned to a family. Names of bryophytes are followed by '/M'.

Juillerat P., Bäumler B., Bornand C., Gyax A., Jutzi M., Möhl A., Nyffeler R., Sager L., Santiago H., Eggenberg S. 2017: Checklist 2017 der Gefäßpflanzenflora der Schweiz / de la flore vasculaire de la Suisse / della flora vascolare della Svizzera;

<https://www.infoflora.ch/de/flora/taxonomie/checklist.html>

Meier, M., Urmi, E., Schnyder, N., Bergamini, A. & Hofmann, H. 2013. *Checkliste der Schweizer Moose*, Universität Zürich, Zürich.

<https://www.swissbryophytes.ch/index.php/de/datenzentrum/checkliste>

Tillé, Y. & Ecker, K. 2014. Complex national sampling design for long-term monitoring of protected dry grasslands in Switzerland. *Environmental and Ecological Statistics*, **21**, 453–476.

- ENVIRONMENTAL DATA (list of environmental data measured):

In each plot a range of environmental variables are estimated: cover of the herbaceous layer, cover of the shrub layer, cover of the tree layer, cover of dwarf shrubs (only in fens and bogs), cover of lichens, cover of bryophytes (in floodplains, fens and bogs separately for Sphagnum and other bryophytes), cover of peat, cover of open soil, cover sand (only in floodplains), cover of gravel (only in floodplains), cover of stones, cover of rocks, cover of litter, cover of dead wood. All cover estimates are in percentage (continuous). We also try to deduce the kind of management on the plots: mowing, grazing (incl. type of grazing animals), forestry (mainly in alluvial forests), no management, management unknown. The whole procedure is described in a detailed manual which is available in German and French (just write an e-mail to: [ariel.bergamini@wsl.ch](mailto:ariel.bergamini@wsl.ch)).

For each plot also the vegetation type has been identified according to the classification scheme of InfoFlora (<https://www.infoflora.ch/de/lebensraeume/tyepoch/klassifikation.html>).

These types (alliances in most cases) have then been assigned to the classes, orders and alliances of Mucina et al. (2016; *Applied Vegetation Science* 19, Supplement 1:3-264).

- MANIPULATED PLOTS (description of the treatment if the plots were manipulated, e.g. mowing twice a year, fertilizing by NPK once a year, post-fire succession)

None of the plots are manipulated, but many of them are agriculturally used (mown, grazed) or there is some kind of forest management.

Birmensdorf, 2.4.2021

Ariel Bergamini