Introducing online tools to give feedback to the volunteers, volume 1: Finnish winter bird census scheme

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Keeping volunteers motivated and happy is a key aspect in long-term monitoring schemes using citizen science. Regular feedback is an important way to increase the motivation of the volunteers. The feedback can include published reports, meetings with presentations, but also online tools where volunteers can look at a variety of scheme results for themselves. Technical advances have enabled various online feedback options. The aim of this Bird Census News article series is to introduce various national versions of these online feedback systems, which hopefully can help national coordinators to develop their own systems. In addition, the articles will provide brief introductions to a range of bird monitoring schemes and also enable the reader to explore potential changes in bird populations in various areas.

The first article is introducing the Finnish winter bird scheme, which is coordinated by Finnish Museum of Natural History, University of Helsinki together with BirdLife Finland. The scheme has a long tradition: the first surveys were conducted in December 1956. Since then approximately 500 routes have been surveyed annually and the scheme is even more popular than breeding bird surveys in Finland. The scheme has expanded to cover three surveys during the winter season: in early November, end of December – early January and end of February – early March.

There has been an online system for entering data for more than ten years, but traditional paper forms are also accepted (covering <20% of the reports). The latest version of the online portal, which has been built under the Finnish Biodiversity Information Facility (FinBIF), has been running for five years. During this period there has been an online feedback page, which provides several options for displaying statistics from

the surveys. These are explained in figures 1-4. The web-tool is found at https://laji.fi/en/project/MHL.3/stats?tab=species. The pages have Finnish, Swedish and English versions, but not all the texts have been translated into English yet. The online tool is automatically updated after the volunteers have entered their observations to the system. This means that there are likely to be mistakes and typos, especially in the freshly entered data. We have emphasized on the front page of the online tool that the results of the surveys should not be interpreted as official survey results, but they are intended for visualising the data. For instance, the trend analyses (Fig. 3) do not deal with spatio-temporal variation in survey sites, which is accounted for in the official trend analyses.

Another important aspect is how data on sensitive species is handled. The route- and survey-specific results do not show the most sensitive species, where for instance disturbance by birdwatchers and photographers could affect overwintering chances of birds. In the species section, the abundance of species are only shown at 10 km × 10 km resolution (Fig. 2) and the trend information does not include detailed spatial information (Fig. 3). Volunteers are often concerned about the display of data for sensitive species, which is why removal of detailed observations from public display is also an important factor to please the volunteers. Overall, the online tool has received positive feedback from the volunteers. When volunteers are looking at their own survey results, they can easily spot typing mistakes or notice that they have not necessarily entered their data from a certain year, for example. All these checks help to improve the quality of the data. The tool is also a good way to advertise the availability of data for researchers to increase the use of the data.

Species		Rout	es	Censuses
Species Vinter	Season	Bird a	ssocation area	
All	All	► All	municipalities	
Type to filter				Yleiset lajit
Species	Scientific n	ame	Observation count	
kyhmyjoutsen	Cygnus olo	r	5056	
laulujoutsen	Cygnus cyg	inus	8059	
pikkujoutsen	Cygnus col	umbianus	71	
metsähanhi	Anser faba	lis	157	
tundrahanhi	Anser albifi	rons	73	
merihanhi	Anser anse	r	113	
kanadanhanhi	Branta cana	adensis	1017	

Fig. 1. The online feedback pages (https://laji.fi/en/project/MHL.3/stats?tab=species) have three main options for how to explore the reported data: i) Species, ii) Routes and iii) Census information. In the opening page people can select a species to see species-specific statistics. It is also possible to select a smaller geographical area based on local bird association areas or look at a particular year. The species list currently includes Finnish and scientific names of species and number of records of each species. The (i) species examples are presented in Figs 2 and 3 and (ii) route-specific example is presented in Fig. 4. In the (iii) census section it is possible to look at results of single census surveys.



Fig. 2. In the species section, it is possible to explore the spatial distributions of abundances, but also the locations of the survey sites in 10 km x 10 km grids during the survey periods. This figure shows abundance of Bohemian Waxwing *Bombycilla garrulus* during three different census periods (Fall = November, Winter = December/January, Spring = February/March) during winter season 2019/2020.



Fig. 3. The species section enables users to investigate long-term changes and variation in in species population numbers. This example shows the annual abundances of Grey-headed Woodpecker *Picus canus* during the three survey periods (Fall = November, Winter = December/January, Spring = February/March). The scale of the y-axis is abundance of birds per survey route, which are relative low in this species. However, due to rather large survey effort we can see a clear increase in abundance during the last 20 years. When moving a cursor above each point, it is possible to see how many routes have been surveyed and how many birds have been seen during that particular year. Grey-headed Woodpeckers are pretty secretive during breeding season, so actually winter bird surveys are currently documenting the Finnish population trend of the species better than breeding bird surveys.

Taulukko havaitui	sta lajeista											
Fall	Winter	Winter Spring										
Punainen tausta: I vihreä tausta: lintu	intuja ainakin 50 % ja ainakin 100 % er	vähemmän ku nemmän kuin l	uin keskimääri keskimäärin; v	in (lasketaan v /ihreä numero	vain lajeille, joi : ennätys; pun	ta keskimäärii ainen numero	n ainakin 5 yk: : vähyysennät	silöä); ys.				ж
											± D	ownload result:
Species	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	КА	Med
kyhmyjoutsen	6	0	27	0	31	9	7	0	43	22	9.6	4.5
laulujoutsen	8	0	3	0	21	0	12	0	5	2	2.8	O
alli	0	0	1	0	0	0	0	0	0	0	0.1	0
mustalintu	0	0	0	0	0	0	0	0	0	1	0.1	0
telkkā	8	3	33	0	23	110	12	0	23	38	15.4	5.5
uivelo	0	0	19	0	0	0	0	0	0	17	2	0
isokoskelo	83	2	134	2	112	321	148	3	205	366	95.6	23.5
punasotka	0	0	0	0	15	0	0	0	0	0	0.8	0

Fig. 4. In the route section, it is possible to select a single route and investigate annual changes in species abundances on that route during certain survey period. Here is an example of one route in Raasepori city in southwest Finland during the December-January census period. The species names in Finnish are presented in rows and years in columns. Numbers that are lower or higher than the average count are highlighted in pink and light green respectively.