3.5.8 How to design data forms: the case of the Catalan Common Bird Survey (SOCC)

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Data forms are completed by the participants of a given monitoring scheme with their field observations, before these are computerised. Here, we present some basic considerations that may help optimising their design. These are based on the experience that we have gained in the framework of the Catalan Common Bird Survey.

How will data be computerised?

Before designing a data form, one crucial question that should be taken into account is how the survey data is to be computerised. There are two main ways to carry this out:

1) using scanning and digitalisation systems that transfer the data of each form directly and automatically into a database. They require a very specific design to reduce interpretation errors and enable efficient data computerisation, which, on the other hand, limits its general use.

2) entering data manually using specific data-entry software

All our data forms belong to the latter class and, hereafter we focus on this particular case.

The use of online databases for entering field data is also becoming popular now (see Chapter 3.5.9 for a case study).

Field use

We strongly recommend using data forms that are to be directly completed in the field rather than as an intermediate step between field annotations and data entry. We can reduce the rate of errors and omissions by making the form user-friendly. There are two reasons for this: 1) the risk of forgetting to collect important data increases greatly if participants record field data in their own notebook; 2) data transfer from notebooks to the 'official' data form can lead to a number of transcribing mistakes, especially if this is done a long time after the fieldwork has finished.

Some participants simply do not want to use even the best well-suited data form in the field, or may find them impractical. However, the better the data form is designed for field use, the less likely it is that participants will use their own field notes.

Three main considerations should be taken into account to design more user-friendly data forms: 1) the width of each field should facilitate annotations (too often, forms are so dense that their field use is unfeasible); 2) print forms should allow the use of pencil which is much more water-proof than most pens; 3)

participants should understand that, by using data forms in the field, data quality benefits and they will save time to themselves and the project. For example of field data form used in SOCC see Fig. 3.10.

Figure 3.10. *Field data form used in the Catalan Common Bird Survey (SOCC). Numbers indicate main subdivisions: 1) Census period (breeding season/winter); 2) Observer details (name, address, email…); 3) Date, timing, neutralised time and meteorology (temperature, wind speed, sky conditions, rain, visibility; including a warning not to run the census in unfavourable conditions); 4) Observations on impacts detected in the area (sections affected) and list of species observed out of the census (when returning back); 5) Time employed to make each section (6 in total); 6) Census data (species, distance band, section (males/others), birds flying over).*

Figure 3.11. *Two screenshots of the software used to computerise and visualise data from the Catalan Common Bird Survey (SOCC).*
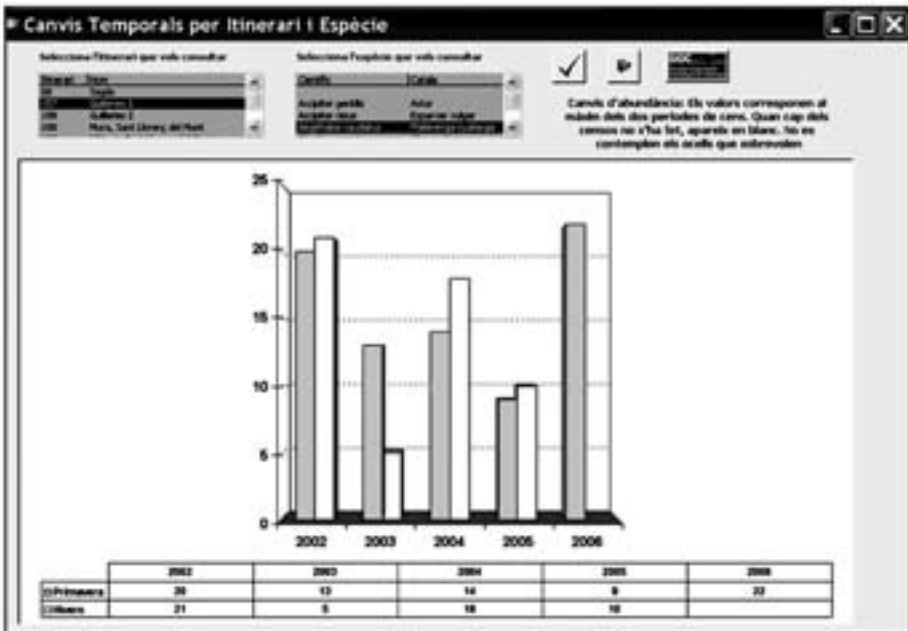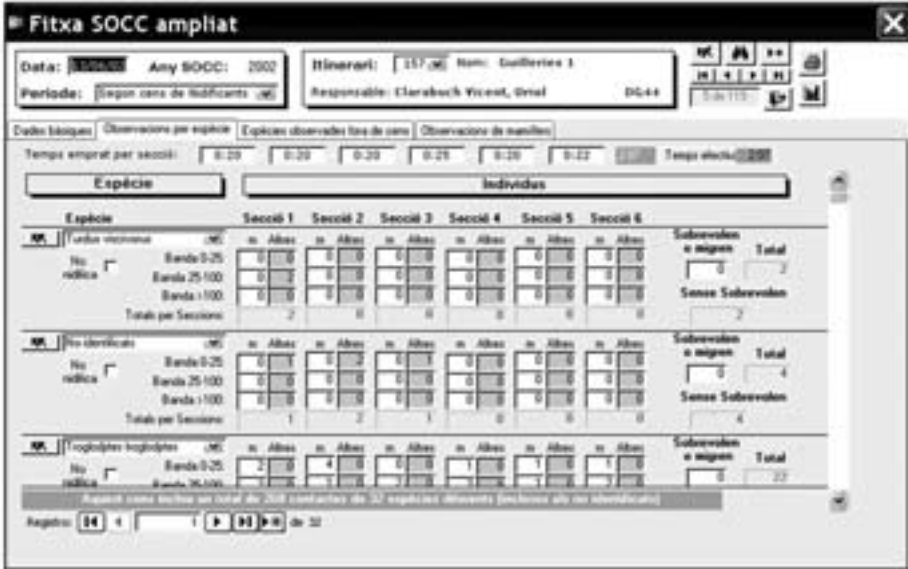
Note that this overall recommendation in favour of the use of standardised data forms in the field may not make sense in some particular cases (e.g. more complex census techniques), but seems appropriate for most monitoring schemes.

From paper to computer

In the case of the Catalan Common Bird Survey, we encourage our collaborators to send their data already computerised and we ask them to keep their original paper form so that it is always possible to refer to them, if necessary. It would also seem useful to ask collaborators to send a paper copy of their forms together with their computerised data, however, this option adds postal, space and processing costs in exchange of a rather limited benefit (a paper copy that can be double checked).

In general terms, it seems better to invest in the implementation of good data entry software that allows basic data validation procedures and gives participants the option of preparing automatic summary tables and graphics before data are finally submitted (Figure 3.11). The latter are especially useful for detecting omitted species and count errors while automatic validation procedures built in to the software can highlight many mistakes related to species identification. For instance, when someone tries to enter data from a breeding bird census of a species that only mostly occurs in winter a pop-up window warns of the possible error. Depending on the nature of the possible error, the software allows the user to reconfirm the record or directly prevents them entering some combinations of species, season or region that are predefined as 'not allowed'.

In our case, the data entry software was developed using Microsoft Access. Each participant receives a personalised version with all his data. Currently, 70% of the volunteers use the software to enter the data and the remaining 30% send it on paper. Data arriving as paper forms are subsequently computerised by specifically trained staff members.

Data forms and data entry software

It does not matter if it is the surveyor or the project coordinators who computerise the field data, the forms should be designed to match the design of the data entry software. It is very important, therefore, to develop both designs in parallel. It is particularly important that the order in which the fields are arranged in the data form strictly match the order in which they appear in the data entry software. This allows a more efficient data entry process. For similar reasons, it is also important that field names, codes and abbreviations are exactly the same in both cases.