TourCount 3.0

1. Introduction

Fig. 1: Starting page

TourCount is an Android App (Fig. 1) that supports you when recording butterflies in the field. It allows species-specific and separated by sexus and metamorphic stages as well as individually localized counting when walking in nature. It can substitute your field book and pencil, and with a modern smartphone you carry a camera for pictures of interesting species anyway.

The integrated database is related to tours/walks and can be individually created and adapted regarding expected butterfly species. The recorded data (meta data, counts and remarks) may either be read on the smartphone for transfer into the butterfly registration system (e.g. on www.science4you.org) or transferred to a PC for your own processing.

The app is open source (published under https://github.com/wistein/TourCount), has no tracking or advertising functions, demands only for permits which are needed for recording the data. (Access rights for storage, internet for reverse geocoding and GPS.)

2. Setting up

Before initial use you should adapt the settings to your liking (see 4. Further Functions).

Then you should edit the preliminary species list. (Use the Pencil-Button in the action bar of the counting page for this). Here you may add more species per (+)-Button.

Alternatively, you could download a more comprehensive or special example Basic DB from https://github.com/wistein/TourCount/tree/master/docs. Copy it to your home directory /storage/emulated/0 (or /sdcard0, or /sdcard, it differs between smartphone models and Android versions), then import and adapt it.

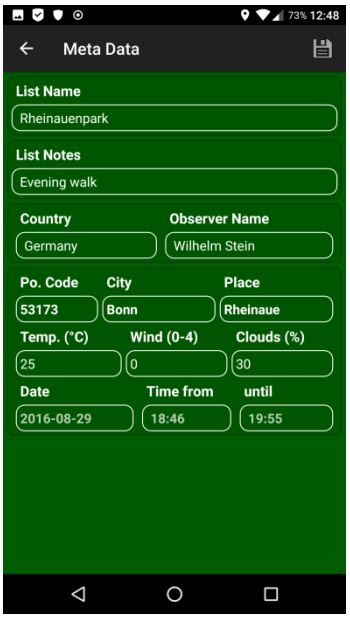

Fig. 2: Edit Meta Data

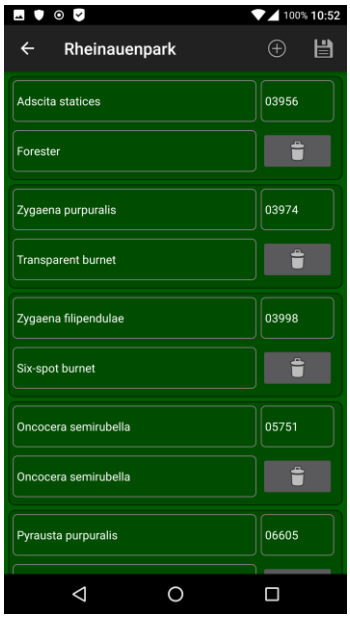

Fig. 3: Edit Species List

Then you may enter universal parts of the master data for the planned tour under “PREPARE RECORDING” (Fig. 2) and finish this by clicking the saving symbol. Location-related meta data will be derived from GPS coordinates and will be inserted automatically, when reverse geocoding is activated under “Settings”. The editable meta data may be modified anytime later.

Then edit the species list on “COUNTING”. Use the pencil button in the action bar for that. The species list page opens (Fig. 3). Add an entry by the (+)-Button and enter a name (scientif. and English) and a code (five-digit with leading zeros). Repeat this for each expected species, e.g.:

```
...
Pieris rapae            06998
Pieris napi             07000
Pieris na./ra.-compl.   07000*
...
```

Species list (partly)

The codes will be used as an option to sort the list and as a reference to show corresponding butterfly pictures on the counting and results page. The codes derive from the numbering scheme of european butterflies by Karsholt/Razowski, as used e.g. in the German Lepiforum (http://www.lepiforum.de).

The appended *-symbol marks a species group. It is a good idea to choose the bigger code of the species of this group for sorting. Click "Save List" to store the input into the database. This list can be changed or supplemented anytime afterwards by the Edit button of the counting action bar.

When you have entered the meta data and created the counting list for all expected species, the database is ready for export as the "Basic Database". To do this, you can use the function "Export as Basic DB" in the menu of the starting page (Fig. 9). After that you have a copy of the empty database saved as "Basic Database" (tourcount0.db) within the home directory.

The Basic DB will be used as a template for further tour recordings. You may export the Basic DB anytime later, e.g. when you modified its structure or inserted new species.

3. Usage

Start with “COUNTING” (Fig. 4). Select the species by clicking the species line to scroll down the species list.
To count just tip on the corresponding (+)-Button of the seen category of the species. The counter will increment and a page opens to enter individual data (Fig. 5). Location info, latitude, longitude, height as well as date and time will be added automatically. Location may be edited and state info as well as multiple counts may be applied here. Go back to the counting page by clicking the "Save" button.

The (-)-Buttons allows for corrections. Mind that the (-)-Button reduces the individuals list in a last-in-first-out-mode for the corresponding species category.

The Pencil-Button in the action bar of the counting page opens the counting list editing page for editing the list of species.

The Pencil-Button on top of the counting field opens the species editing page that lets you add a remark for each species that will be shown aside of it.

To move back one page you can use the back-button or the arrow in the left upper corner. To make sure to save edited content you should go back by tipping the Save-Button.

You should leave TourCount always from its starting page, as in this state the database is safely closed and GPS is no longer used by the app.

Some app pages have a specific context menu. You can activate it with the 3-point-symbol in the upper right corner.

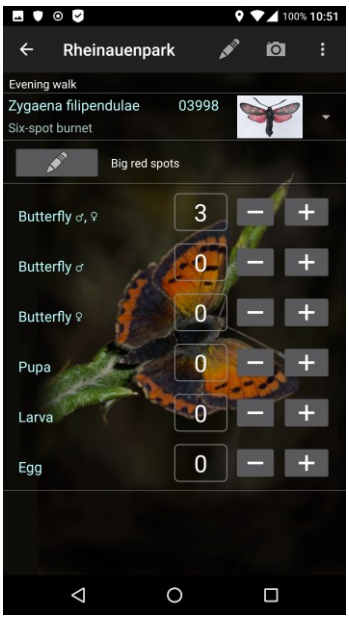

Fig. 4: Counting page

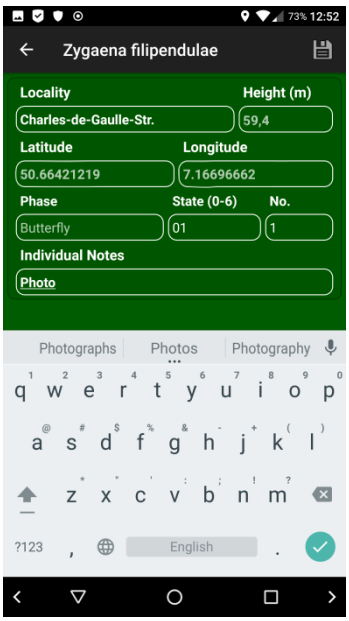

Fig. 5: Edit Individual

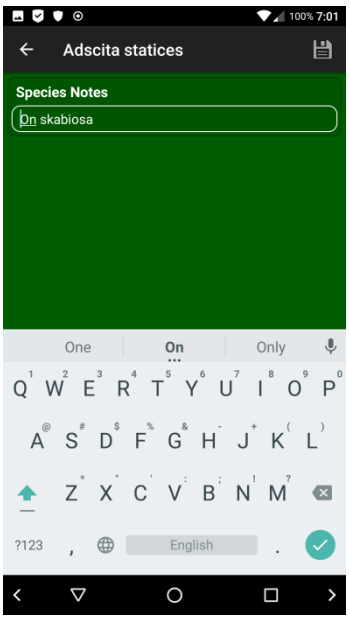

Fig. 6: Edit Species Notes

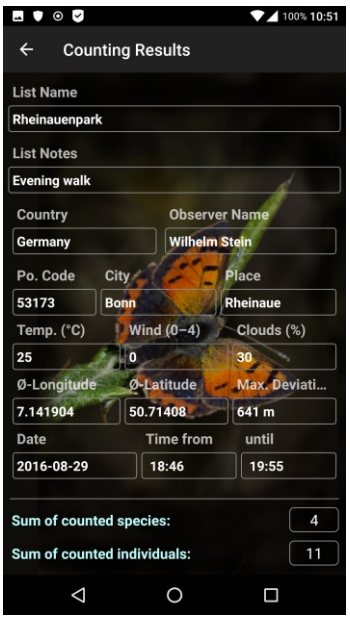

Fig. 7: Results page

When you have a large list or have collected big amounts of data the start of the results page may be delayed, as this needs heavy calculations.

Finally, there is the results page (Fig. 7) which.
can be opened with "SHOW RESULTS".
It shows all the registered data orderly arranged. Beneath the meta data it shows the totals followed by a list of all counted species with their individual records.

4. Further functions

The menu on the starting page (Fig. 8) has Settings, Reset, Import, Export, Info and Help functions.

In "Settings" (Fig. 9) you may adapt the look an feel in some aspects to your wishes, e.g. sounds, sorting order, background or left-/right-hand counting.

Selecting an own background picture can be achieved by the Gallery App, accessible in the left side menu of the background option (if applicable wipe from the left edge).

Reverse Geocoding[1] allows for automatic insertion of statements of place (*postal code, city, place*) into meta data and *location* into the individual data.

For preparing a new tour you may use “Reset Data” to reset the tour-specific meta data and count data. Alternatively you may import the Basic DB tourcount0.db

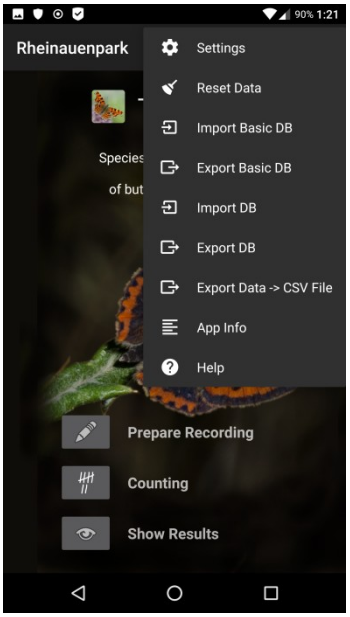

Fig. 8: Main menu

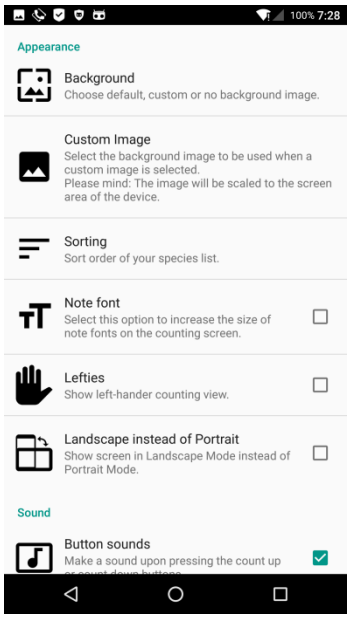

Fig. 9: Settings (partly)

Internally, TourCount stores the data in a single SQlite-DB file in the app's own system storage area. As this file cannot be read or changed directly by the user, exporting the data to files in a user reachable storage area is necessary.

By “Export Basic DB” you may export the DB as empty "Basic DB" which is reasonable, when lasting changes of the counting list have been made (e.g. new species added).

You may import (Fig. 10) any previously exported TourCount-DB. This supports monitoring on different tours. To achieve this you may create tour-specific Basic DBs which may be renamed by a file manager into e.g. tourcount1.db, tourcount2.db, etc.
(**Mind**: The db file name must start with the string “tourcount”, otherwise the file cannot be imported).

Exporting the current database (Export DB) writes a copy of the complete DB to “/storage/emulated/0/tourcount_YYYY-MM-DD_hhmmss.db”.

The function “Export Data -> CSV File” writes the counting results into a MS Excel readable .csv-file to “/storage/emulated/0/tourcount_YYYY-MM-DD_hhmmss.csv”.

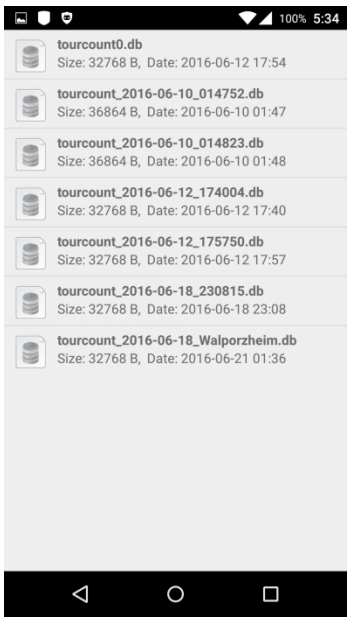

Fig. 10: Import file selection

[1] For Reverse Geocoding (to produce address info from GPS coordinates) the service of Nomination from OpenStreetMap is used. A valid own email address is necessary for durably reliable queries of address data and to exclude abuse. The mail address will be treated confidentially and will only be used to contact you in case of service problems. For more info see https://wiki.openstreetmap.org/wiki/Nominatim.

Under "App Info" you find the email address of the author, the history of the app and the license note.

The menu of the counting page provides a "Share" function for sending notes using a standard app like SMS or email.

From Android version 5.01 on, the app switches off screen and input function of the counting page, as soon as the phone is pocketed (controlled by the proximity sensor).

IT-affine users may transfer the exported "tourcount_YYYY-MM-DD_hhmmss.db" or "...csv" files to a PC.

With a free tool like "SqliteBrowser" (sqlitebrowser.org) you may examine the db-file.

The .csv file may be imported to an Excel sheet for further processing.

For a correct representation in the sheet it has to be imported as a comma-delimited text file with quotations marks for text field recognition and file origin "Unicode UTF-8".

Fig. 11 shows the csv formatting parameters for a correct representation in the free Android app PlanMaker Mobile Free.

Fig. 12 shows part of PlanMaker's view of the imported .csv-table.

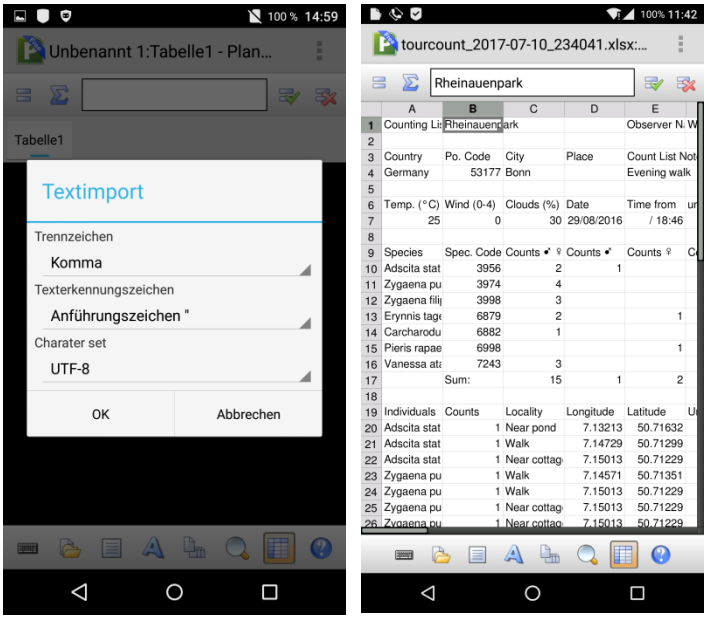

Fig. 11 and 12: CSV-import in smartphone office suite