

TourCount 2.1.6

1. Introduction

TourCount is an Android App (Fig. 1) that supports you when recording butterflies. It allows a species-specific 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. It needs access rights to storage media and uses GPS to register positions while counting.

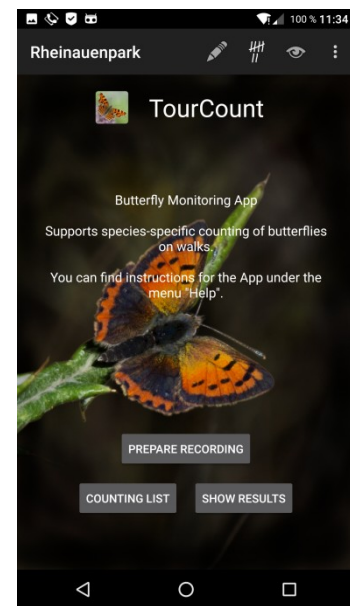


Fig. 1: Starting page

2. Set up

Before initial use you must set up an empty basic database (Basic DB) or import and adapt an example Basic DB (see docs in GitHub).

Therefore, you first enter the meta data of the planned tour (Fig. 2). Tip on "Prepare Recording", enter the data and finish this by tipping on the saving symbol. The meta data may be modified anytime later.

Then open the "Counting List" and create the species list. Use the pencil button or the function "Edit List" for that.

The species list page opens (Fig. 3). Add an entry by the (+)-Button and enter a name and a code (five-digit with leading zeros). Repeat this for each expected species, e.g.:

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

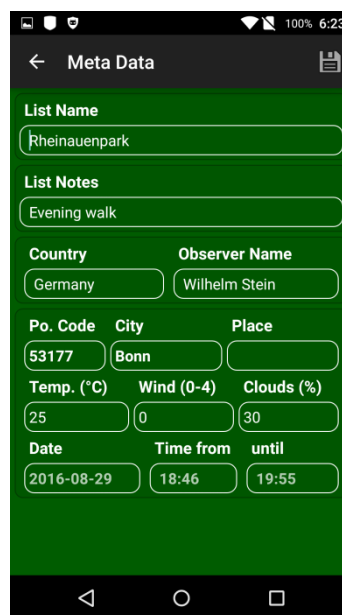


Fig. 2: Edit Meta Data

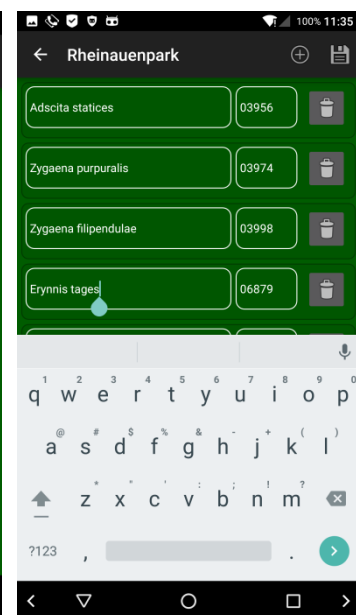


Fig. 3: Edit List page

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 according to Karsholt/Razowski, as used e.g. in the German Lepiforum (<http://www.lepiforum.de>). The appended *-symbol marks a species group.

With "Save List" you get it stored into the database. This list can be changed or supplemented anytime afterwards by the Edit function of the counting page.

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 /sdcard (or /sdcard0, or /storage/emulated/0, it differs between smartphone models or Android versions).

The "Basic Database" 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 List" (Fig. 4).

To count just tip on the (+)-Button of the corresponding species. The counter increases and the page to edit the individual data opens (Fig. 5). Date and time as well as coordinates are entered automatically. Multiple counts may be applied. Tipping on the Save Button gets back to the counting page.

The (-)-Buttons allows for corrections. Mind that the (-)-Button reduces the individuals list for the last entry of a species.

The Pencil-Button in each species row of the counting page opens the species editing page (Fig. 6) that lets you add remarks for each species and set its counters to any value. But this generates inconsistency between the individuals table and count number in the DB.

If you enter a species related remark this will be shown on the counting page in an extra line beneath the species row.

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.

When you have large lists or have collected big amounts of data the app may delay the start of pages, especially when entering a transect section list (the counting page) or the result page, as those need heavy calculations.

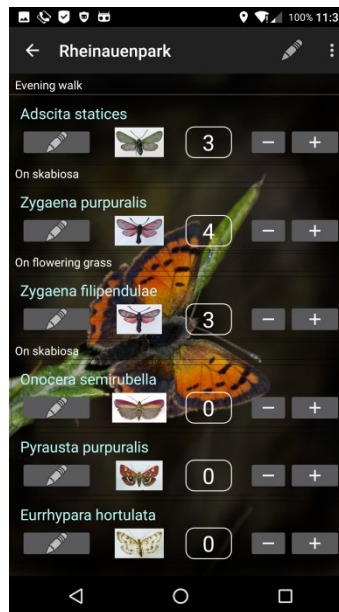


Fig. 4: Counting List

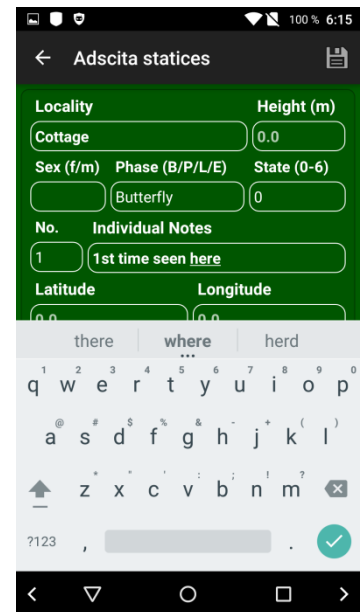


Fig. 5: Edit individual

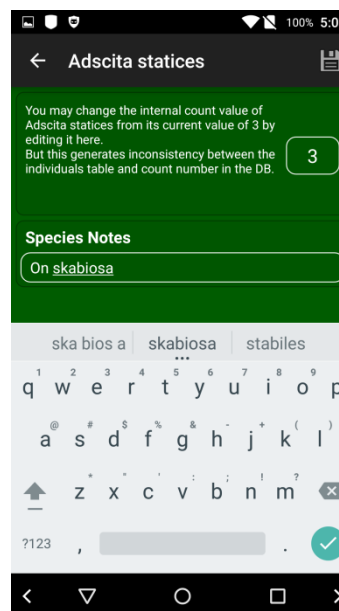


Fig. 6: Edit species

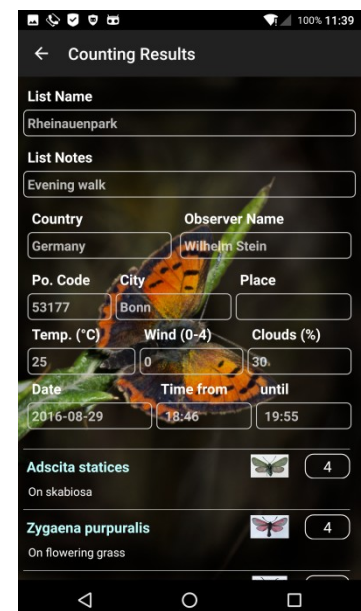


Fig. 7: Results page

Finally, there is a page showing your results (Fig. 7). Here you see beneath the meta data of the tour the species which got counts. You open this page from the Starting page with the "Show Result"-Button or the Eye-symbol in the app-bar. It may take a few seconds to show up.

4. Further functions

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

The "Settings" page (Fig. 9) can be reached from some pages of the app. Here you may adapt the look and 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).. 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 from /sdcard/tourcount0.db

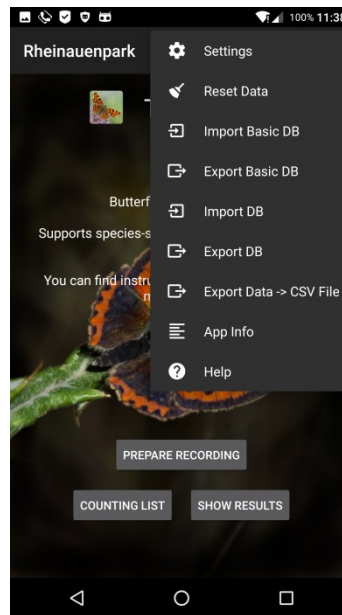


Fig. 8: Main menu

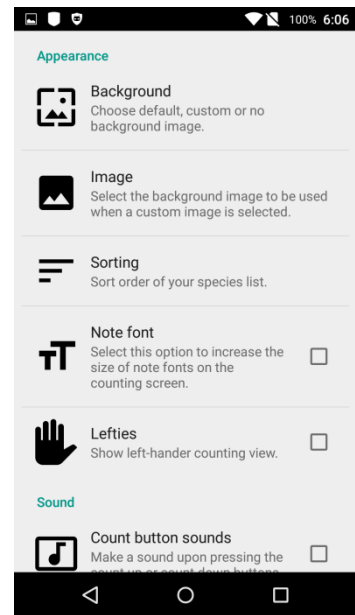


Fig. 9: Settings

Internally, TourCount stores the data always in a single, equally named SQLite-DB file in the app's own 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 /sdcard/tourcount_YYYY-MM-DD_hhmmss.db.

The function "Export Data -> CSV File" writes the counting results into a MS Excel readable .csv-file to /sdcard/tourcount_YYYY-MM-DD_hhmmss.csv.

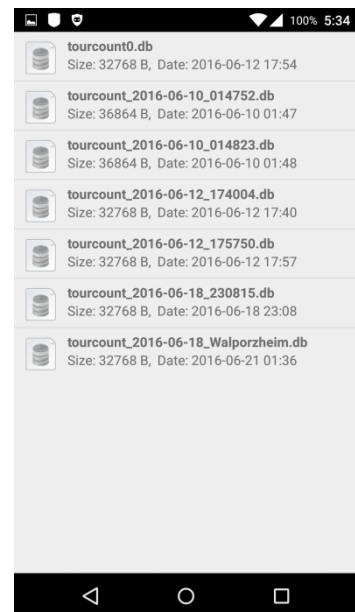


Fig. 10: Import file selection

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.

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

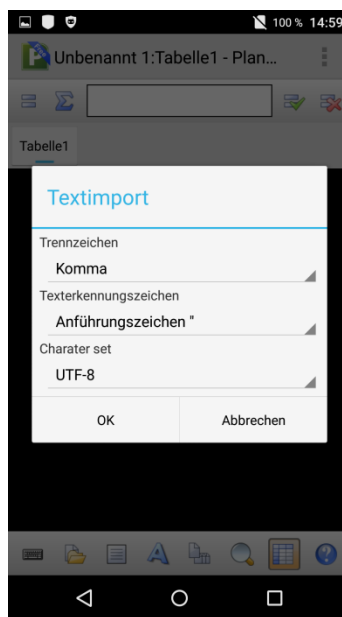
With a free tool like "SqliteBrowser" (sqlitebrowser.org) you may examine the db-file.

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 textfield 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 the imported .csv-table.



Counting Li	Rheinauenpark	Observer N. W
Country	Po. Code City	Place Count List Not
Germany	53177 Bonn	Evening walk
Temp. (°C)	Wind (0-4)	Clouds (%) Date Time from ur
25	0	30 29/08/2016 / 18:46
Species	Spec. Code Counts	Counts Counts
Adscita stat	3956	2 1
Zygaena pu	3974	4
Zygaena filij	3998	3
Erynnis tagr	6879	2 1
Carcharodu	6882	1
Pieris rapae	6998	1
Vanessa at	7243	3
Sum:	15	1 2
Individuals	Counts Locality Longitude Latitude	U
Adscita stat	1 Near pond	7.13213 50.71632
Adscita stat	1 Walk	7.14729 50.71299
Adscita stat	1 Near cottag	7.15013 50.71229
Zygaena pu	1 Walk	7.14571 50.71351
Zygaena pu	1 Walk	7.15013 50.71229
Zygaena pu	1 Near cottag	7.15013 50.71229
Zygaena pu	1 Near cottag	7.15013 50.71229

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