

## TourCount 2.1.3

### 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](http://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.

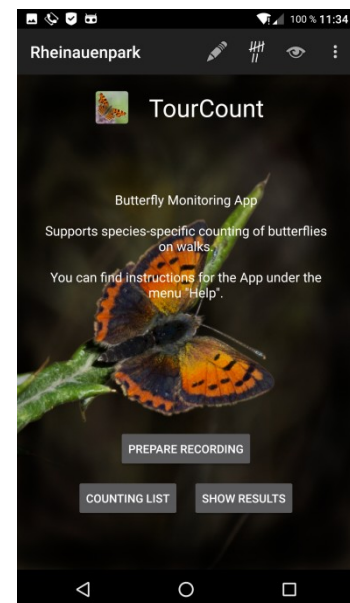


Fig. 1: Starting page

### 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*
...
```

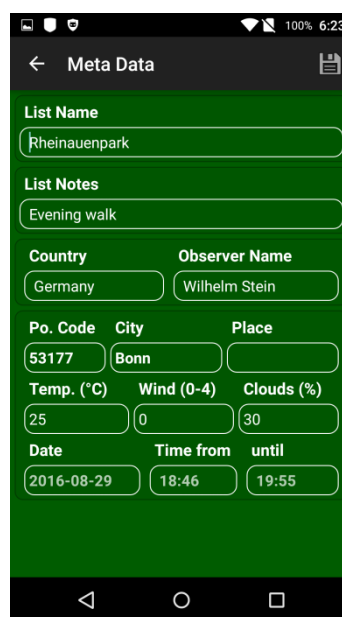


Fig. 2: Edit Meta Data

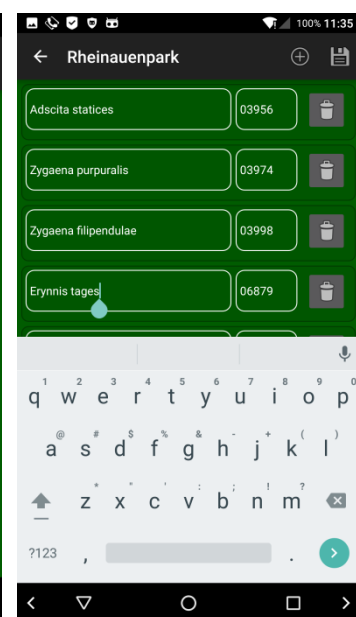


Fig. 3: Edit List page

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.

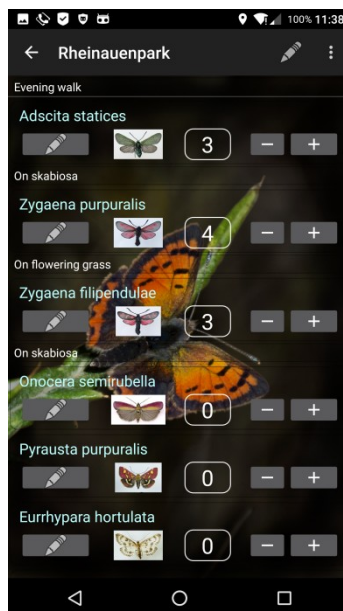


Fig. 4: Counting List

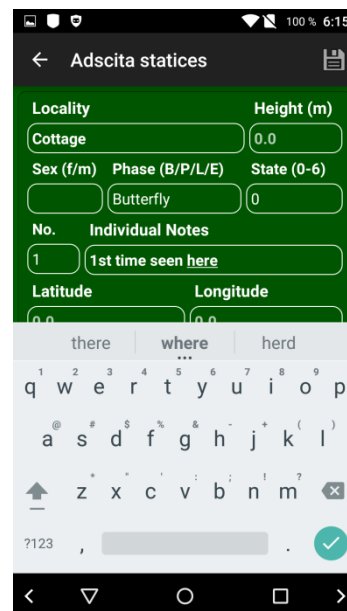


Fig. 5: Edit individual

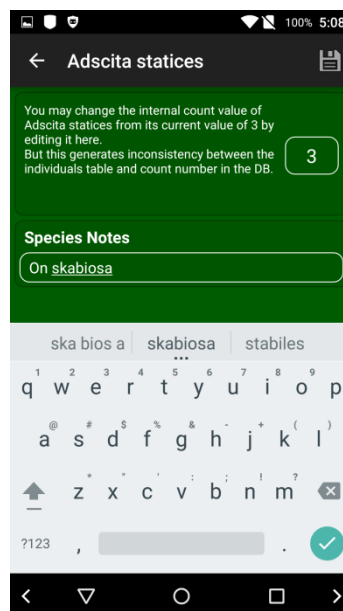


Fig. 6: Edit species



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

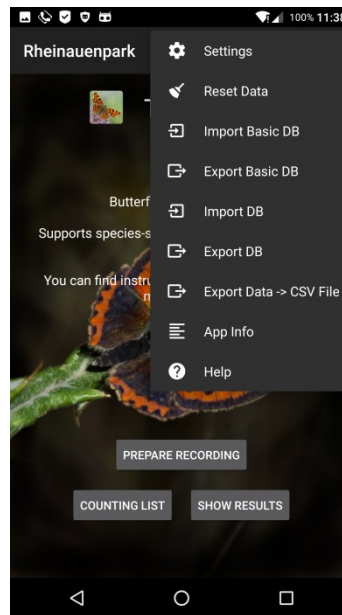


Fig. 8: Main menu

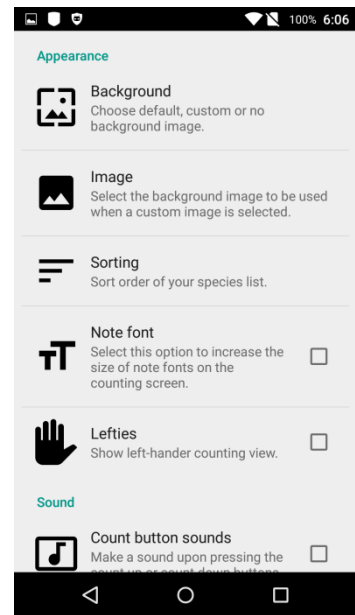


Fig. 9: Settings

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.

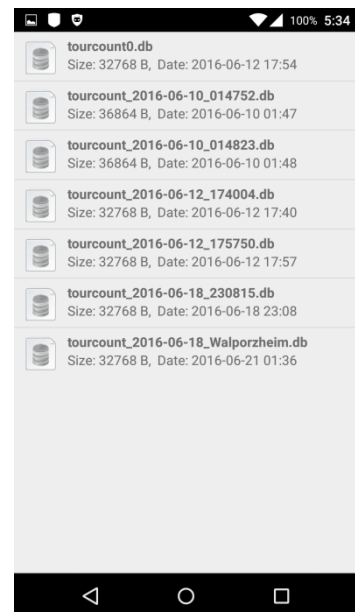


Fig. 10: Import file selection

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.

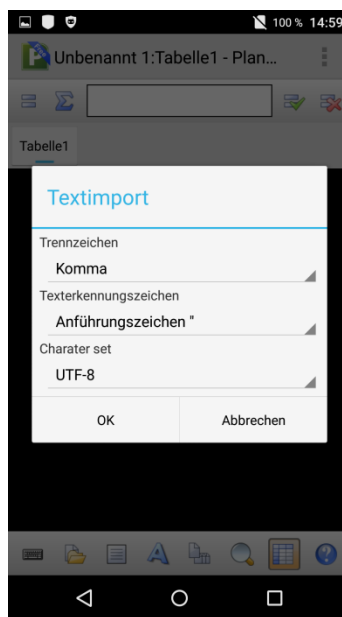
With a free tool like "SqliteBrowser" (sqlitebrowser.org) you may examine the db-file.

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 quotation 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.



Country	Po. Code	City	Place	Count List	Notes	
Germany	53177	Bonn		Evening walk		
Temp. (°C)	Wind (0-4)	Clouds (%)	Date	Time from	until	
25	0	30	29/08/2016	/ 18:46	/ 19:55	
Species	Spec. Code	Counts	Spec. Notes			
Adscita stat	3956	4	On skabiosa			
Zygaden pu	3974	4	On flowering grass			
Zygaden filij	3998	3	On skabiosa			
Erynnis tagi	6879	3				
Carcharias	6882	1				
Pieris rapae	6998	1	old			
Vanessa at	7243	3	New generation			
Sum:		19				
Individuals	Locality	Longitude	Latitude	Uncertainty	Height (m)	Date
Adscita stat	Near pond	7.13213	50.71632	20	125	29.08
Adscita stat	Walk	7.14729	50.71299	20	125	29.08
Adscita stat	Near cottage	7.15013	50.71229	20	131	08.09
Adscita stat	Cottage	0	0	0	0	29.10
Zygaden pu	Walk	7.14571	50.71351	20	148	29.08
Zygaden pu	Walk	7.15013	50.71229	20	131	29.08
Zygaden pu	Near cottage	7.15013	50.71229	20	131	09.09
Zygaden pu	Near cottage	7.15013	50.71229	20	131	09.09

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