TourCount 3.4

1. Introduction

Fig. 1: Starting page

This counting app (Fig. 1) should support you when recording butterflies. It allows to register individuls species-specific, separated by sexus and metamorphic stages as well as individually localized in the field. It facilities this comfotably without field book and pencil on every stay in nature.

The integrated database 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 published on https://github.com/wistein/TourCount with source code and documentation. It is open source and has no tracking or advertising functions, demands only for permits which are needed for recording the data: Access rights for storage and GPS, and internet for reverse geocoding (gets address data derived form GPS coordinates by Nominatim service of OpenStreeMap.)

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. (On the counting page use the Pencil-Button in the action bar for this). Here you may add more species per (+)-Button from an integrated list (blue) of european species.

Alternatively, you could download a more comprehensive or special example Basic DB from https://github.com/wistein/TourCount/tree/master/docs. Copy it to the app's files directory (Android/data/com.wmstein.tourcount/files), then import and adapt it suitably.

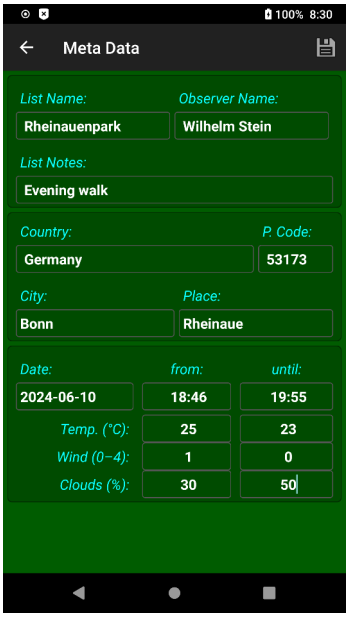


Fig. 2: Edit Meta Data

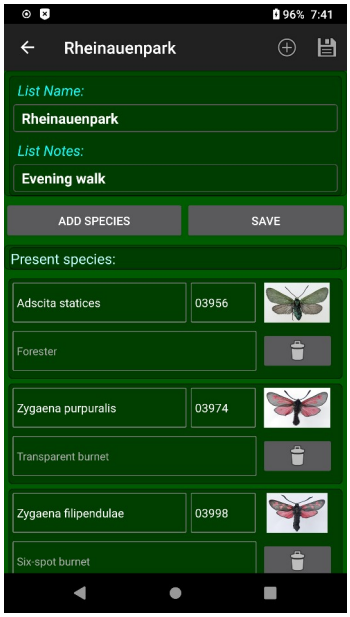


Fig. 3: Edit Species List

Then you may enter general parts of the master data for the planned tour on the "**Edit Meta Data**" page (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.

Tip: Date and time can be entered by tapping the relevant field. If a different date or time is to be entered, these fields can be pressed longer and the input dialog that then opens can be used.

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 select the species from the scroll-down list. At the end of this list you may select a non-existing species (NN). This can then be edited by entering its scientific name, common name and code (five-digit with leading zeros, see left table).

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).

```
...
Pieris rapae                06998
Small white
Pieris napi                 07000
Green-veined white
Pontia daplidice            07005
Bath white
...
```

TourCount species list (partly)

Click "**Save List**" to store the input into the database. This list can be changed or supplemented anytime afterwards.

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 app's files directory "**Documents/TourCount**".

The Basic DB may be used as a template for further tour recordings. You may export the Basic DB anytime later, e.g. when you 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 (**+**)-Button of the corresponding 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 condition rating (state 0-6 with 0 = undefined, 1 = very good) as well as multiple counts may be applied here. Go back to the counting page by clicking the "**Save**" button.

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

Before leaving TourCount after a tour you should complete the meta data and save the current countings by exporting the internal DB (tourcount_yyyy-mm-dd_hhmmss.db or ...csv).

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 some

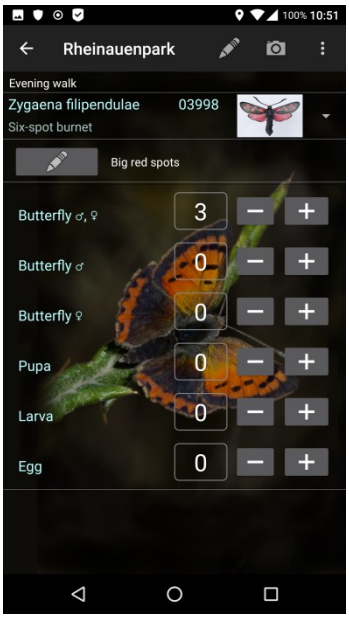


Fig. 4: Counting page

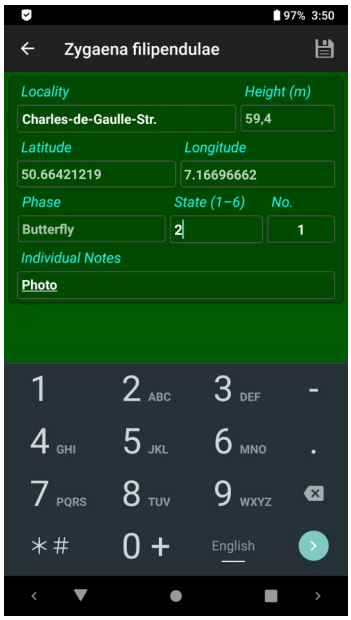


Fig. 5: Edit Individual

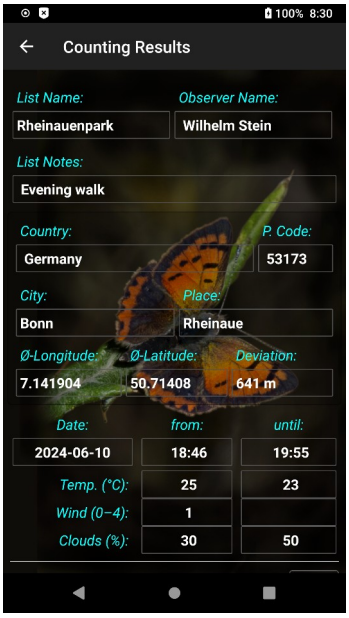


Fig. 6: Results page (head)

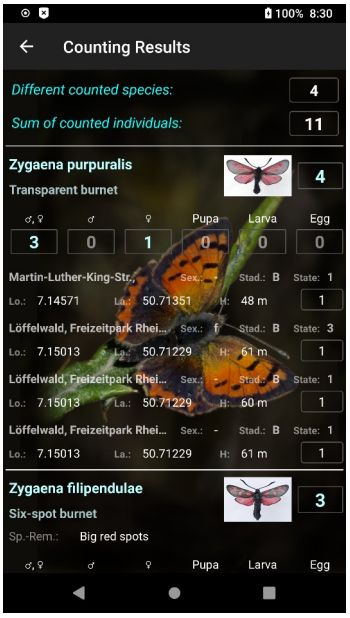


Fig. 7: Results page (detail)

calculations.

The results scroll page (Fig. 6 and 7) can be opened on the starting page 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.

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

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

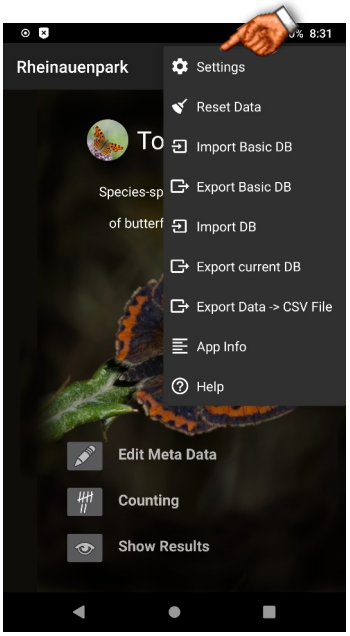


Fig. 8: Main menu

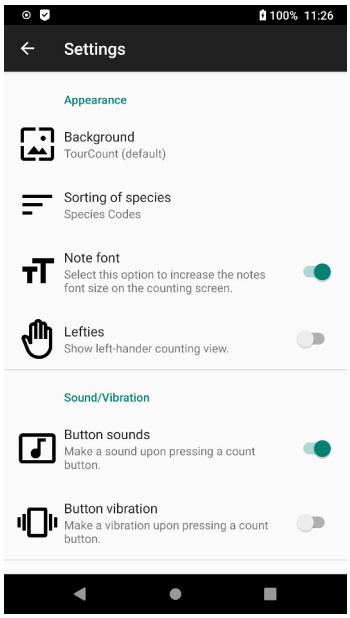


Fig. 9: Settings (partly)

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 an empty "Basic DB" which is reasonable, when lasting changes of a counting list have been made (e.g. new species added).

"**Export current DB**" writes a copy of the complete internal DB to "Documents/ TourCount/tourcount_YYYY-MM-DD_hhmmss.db".

The function "**Export Data → CSV File**" writes the counting results into the pre-formatted spreadsheet-readable .csv-file "tourcount_YYYY-MM-DD _hhmmss.csv" to "Documents/TourCount". This directory allows accessing the files by other spreadsheet apps, like Collabora (obtainable from F-Droid).

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 always start with the string "**tourcount**", otherwise the file cannot be imported).

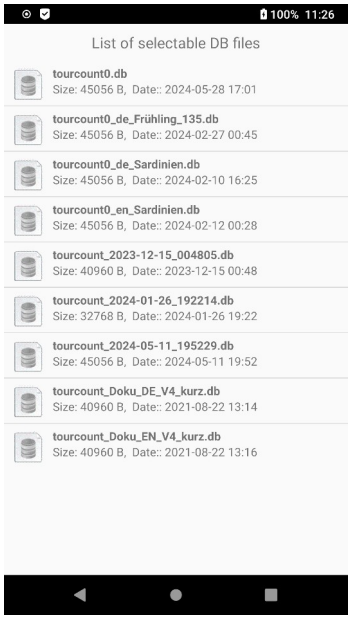


Fig. 10: Import file selection

Under "App Info" you find the email address of the author, the history of the app and the license notes.
The menu of the counting page provides a "Share" function for sending notes using a standard app like SMS or email.

[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.

The counting page is temporarily switched off by means of the proximity sensor when the phone is put into a pocket or held closed to the body. This saves energy, prohibits unwanted input and recalls the app into its current state immediately when used again.

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

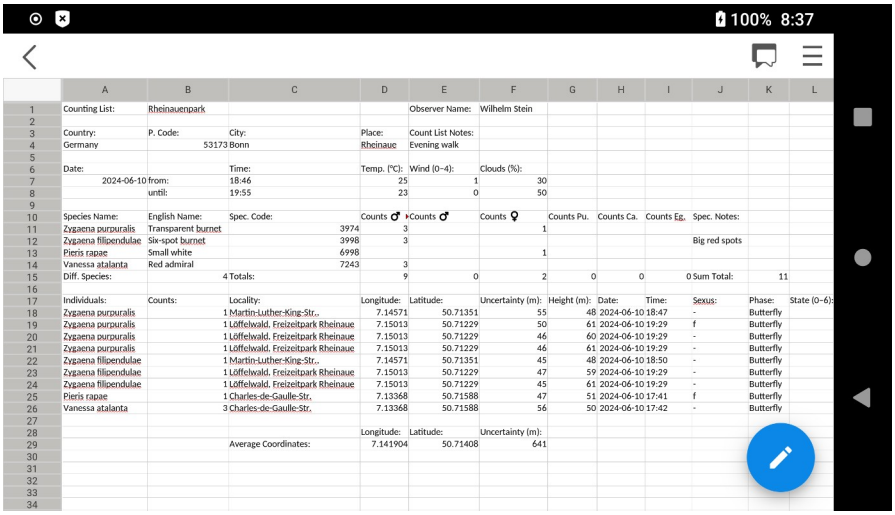
With a free tool like "SQLiteBrowser" (http://sqlitebrowser.org) you may examine and edit a DB file manually or per SQL script. Some useful example SQL scripts are published in the docs directory of the GitHub TourCount project site https://github.com/wistein/ TourCount/tree/master/docs.

The .csv file may be imported as a text file into a spreadsheet program as a

- comma-delimited text file with
- file origin "Unicode UTF-8",
- quotations marks ("") for text field recognition
- and all columns in text format

for further processsing.

The exported table is prepared for an easy entry of the results into the Monitoring web page like https://www.falterfunde.de/platform/s4y/falterfunde/index.do.



	A	B	C	D	E	F	G	H	I	J	K	L
1	Counting List:	Rheinauenpark			Observer Name:	Wilhelm Stein						
2												
3	Country:	P. Code:	City:	Place:	Count List Notes:							
4	Germany	53173	Bonn	Rheinaue	Evening walk							
5												
6	Date:		Time:	Temp. (°C):	Wind (0–4):	Clouds (%):						
7	2024-06-10	from:	18:46	25	1	30						
8		until:	19:55	23	0	50						
9												
10	Species Name:	English Name:	Spec. Code:	Counts ♂	Counts ♂	Counts ♀	Counts Pu.	Counts Ca.	Counts Eg.	Spec. Notes:		
11	Zygaena purpuralis	Transparent burnet	3974	3		1						
12	Zygaena filipendulae	Six-spot burnet	3998	3						Big red spots		
13	Pieris rapae	Small white	6998			1						
14	Vanessa atalanta	Red admiral	7243	3								
15	Diff. Species:	4	Totals:	9	0	2	0	0	0	Sum Total:	11	
16												
17	Individuals:	Counts:	Locality:	Longitude:	Latitude:	Uncertainty (m):	Height (m):	Date:	Time:	Sexus:	Phase:	State (0–6):
18	Zygaena purpuralis	1	Martin-Luther-King-Str.,	7.14571	50.71351	55	48	2024-06-10	18:47	-	Butterfly	
19	Zygaena purpuralis	1	Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229	50	61	2024-06-10	19:29	f	Butterfly	
20	Zygaena purpuralis	1	Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229	46	60	2024-06-10	19:29	-	Butterfly	
21	Zygaena purpuralis	1	Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229	46	61	2024-06-10	19:29	-	Butterfly	
22	Zygaena filipendulae	1	Martin-Luther-King-Str.,	7.14571	50.71351	45	48	2024-06-10	18:50	-	Butterfly	
23	Zygaena filipendulae	1	Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229	47	59	2024-06-10	19:29	-	Butterfly	
24	Zygaena filipendulae	1	Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229	45	61	2024-06-10	19:29	-	Butterfly	
25	Pieris rapae	1	Charles-de-Gaulle-Str.,	7.13368	50.71588	47	51	2024-06-10	17:41	f	Butterfly	
26	Vanessa atalanta	3	Charles-de-Gaulle-Str.,	7.13368	50.71588	56	50	2024-06-10	17:42	-	Butterfly	
27												
28				Longitude:	Latitude:	Uncertainty (m):						
29			Average Coordinates:	7.141904	50.71408	641						
30												
31												
32												
33												
34												

Fig. 11: In Collabora imported CSV table

Fig. 11 shows a part of the imported, not yet formatted CSV table into the Collabora app. This Android app is Open Source, free, based on LibreOffice and obtainable from the F-Droid store.

In the counter view, the display is temporarily switched off by a proximity sensor, e.g. when the phone is pocketed or held close to the body. This saves energy, prevents accidental entries and brings the app back immediately when it is used normally again.

In this view, a message can also be sent via a standard app, such as SMS or email, using the message icon.

The author's e-mail address and the history of the app development together with license information can be found under "**App-Info**".

5. Installation hints

Two options:

1. From F-Droid store (released versions)

Get the app, but without docs or Basic database (Basic-DB) but with updates by the F-Droid app store:

https://f-droid.org/en/packages/com.wmstein.tourcount

After installation via the F-Droid store, the documentation and basic DB (and, if applicable, regional or seasonal sample DBs from the author's GitHub pages (see below).
Copy these into the Documents/TourCount directory, which is created at the 1st start of the app.

Since apps published on F-Droid are compiled by F-Droid with their signature, they are not mutually updateable from or with the corresponding developer versions.

2. From the author's GitHub project pages (current processing status)

TourCount App (tourcount_release_nnn.apk):

https://github.com/wistein/TourCount/tree/master/apk

Docs as well as Basic- and sample-DBs:

https://github.com/wistein/TourCount/tree/master/docs

On the smartphone activate the Android option "Unknown source" in "Settings -> Security" before Installation.

After downloading, install the app by clicking on its apk-file in the download folder.
Copy the Basic-DB and relevant sample DBs from the download folder into the APP data directory (Documents/TourCount) that ist created by the first start of the app.

Important: Finally deactivate the option "Unknown source"!

Note on F-Droid:
Getting apps from F-Droid is at least as secure as getting them from the Google Play Store.
In contrast to the Play Store, all apps are also checked for data protection and compiled by F-Droid itself.

If an app does not meet all of F-Droid's requirements with regard to undesirable features, it is noted.

The source codes of the F-Droid apps are published and licensed as open source.

Note on updates:
In the case of major version jumps with functional additions, structural changes may have been made in the internal database of an app. After such a change, the database version is incremented. This is recognized by the app and the currently used DB is adapted internally.

However, the currently adapted DB version cannot be used after a downgrade to a previous app which uses a previous DB version.

All sample DBs are written and published in the current structure.

6 Annex

6.1 Tips

Transferring data between smartphone and PC

Connect the smartphone to the PC using a USB cable. In the smartphone settings, select data transfer under Connected devices for USB.

The smartphone is now displayed with its technical ID in Windows Explorer. In the "Internal shared memory" area, the "Documents/TourCount" directory can be read and written to for data exchange.

6.2 Glossary

CSV file:
Comma-separated values file. Text-based file format for exchanging data in tabular form (e.g. for importing TourCount result data into spreadsheet programs).

File directories of TourtCount:
The public app-specific files directory (for DB files and exported CSV files) is:

"**Documents/TourCount/”**

Data stored here can also be read by other apps. The data is not automatically deleted when the app is uninstalled.

The previous app-specific directory for the DB files:

"**Android/data/com.wmstein.tourcount/files/**"

is no longer used from TourCount version 3.4.5, as data stored here cannot be read by other apps in newer Android versions and was deleted when the app got uninstalled.

GitHub:
Is a file hosting site for software development projects including version control. It is free of charge for Open Source Projects. Eponymous was the version control and source code management system Git. Run by GitHub, Inc. from San Francisco, USA. Since Dezember 2018 the company belongs to Microsoft. According to Microsoft GitHub will remain an independent platform.

Numbering scheme according to Karsholt/Razowski:
The entomologists O. Karsholt and J. Razowski developed a numbering scheme for all European butterfly species, that among others is used by the German Lepiforum. According to that numbering scheme TourCount uses Codes for the identification of species. However, this limits the utilization of TourCount to European faunal areas, as there is no adequate global scheme.

Open Source:
Source code of software, which can be edited and used publicly. Open source software can mostly be used free of charge and does not contain propriately licensed or closed source elements.

6.3 References

TourCount project:
The repository of the TourCount project is situated on https://github.com/wistein/TourCount.
It contains all published files with source code, configuration of the Android Studio Development platform, documentation and installable APK files.

Documents:
You find documents, example databases, SQL scripts for manipulating TourCount DBs and other information under https://github.com/wistein/TourCount/tree/master/docs.