

TourCount 3.7.0

1. Introduction

TourCount should support you when recording European butterflies (**Fig. 1**). It allows to register individuals species-specific, separated by sexes and metamorphic stages as well as individually with state and location in the field. It offers prepared data outputs and can substitute your field book and pencil, and if applicable a camera for documentary pictures.

The integrated database is tour-related, thus pro tour a new database instance will be used. Databases can be individually created and adapted regarding expected butterfly species. The recorded data (meta data, counts and remarks) may either be read from the results page of the app or transferred to a PC for your own processing. The results page is prepared for an easy manual transfer into a butterfly registration system (e.g. www.science4you.org).

The app is published on <https://github.com/wistein/TourCount> with source code and documentation. It is open source, has no tracking or advertising functions and does not make use of Google Play Services. It demands only for permits which are needed for recording and managing the data:

- Access rights for storage,
- location service with GPS,
- optional internet access for reverse geocoding (address data derived from GPS coordinates by Nominatim service of OpenStreetMap.)
- Wakelock to prevent the app from self dimming or turning off, but turns off the screen and its touch sensitivity when held close to the body or in a jacket pocket until the device is used again.



Fig. 1: Starting Page

2. Setting up

For installation hints refer to **chapter 5**.

When starting the app for the first time, you must grant permissions for storage and location tracking. For more reliable location tracking on long trips, you can optionally activate **“Allow all the time”**. This prevents Android from terminating the location tracking service during longer breaks in app usage.

Before initial use you should adapt the settings (→ **4. Further Functions**).

The preconfigured species list should be adapted to the species to be expected regionally. For this use the editing icons in the app bar of the counting page (**Fig. 2**):

- ⊕ **“Add Species”**,
- 🗑 **“Remove Species”** or
- ✎ **“Edit Terms”**

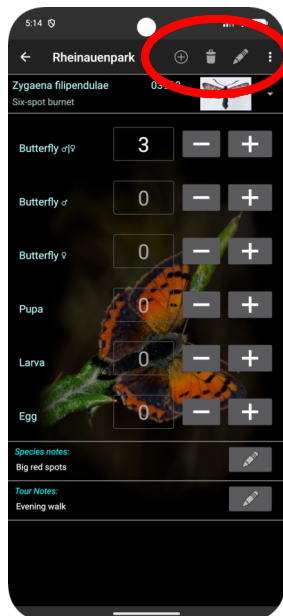


Fig. 2: Counting Page

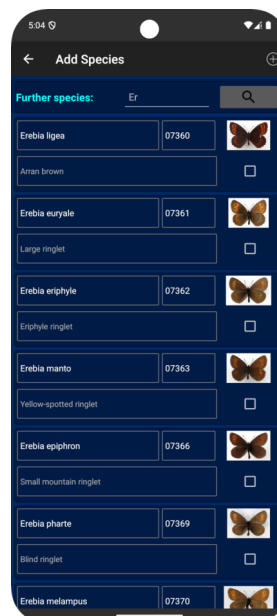



Fig. 3: “Add Species” page





On these 3 pages the selection of species can be eased with **preselection** by 2 initial letters of the genus name.

Under **“Add Species”** (**Fig. 3**), further species can be added from the larger integrated list of European species using the checkboxes. (The added species then disappear from the selection list).

A placeholder for an indeterminate species (NN) can be added from the end of the **“Add Species”** scroll-down list, which can be edited under **“Edit terms”** once it has been defined.

Under “**Remove Species**” mark all irrelevant species and remove them with the  button.

...

Pieris mannii	06997	
Southern small white		
Pieris rapae	06998	
Small white		
Pieris napi	07000	
Green-veined white		
Pie. napi/rap. compl.	07001*	
Small whites compl.		

...

Fig. 4: Species list (partly)

Under “**Edit Terms**” if necessary, adjust tour name, comment, species name and code. (Species names, scientific and English and species code, 5 digits, with leading zeros).

The *-sign attached to code 07001 in **Fig. 4** indicates a complex of species that are difficult to distinguish. For sorting purposes, the largest code within such species complexes should be used for the group.

Caution: An incorrect code will display an “N/A” or incorrect image. If necessary, see the “**List of coded Butterflies.pdf**” on <https://github.com/wistein/TourCount/tree/master/docs>.

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

Changes are applied using the corresponding ,  or  function buttons.

Then you may enter the observer name on the “**Edit Meta Data**” page (**Fig. 5**) and finish this by clicking the saving symbol. If **reverse geocoding** is activated under “**Settings**” location-related meta data will be derived from GPS coordinates and will be inserted automatically. The editable meta data may also be modified anytime later.

When you have created the counting list for all expected species and entered the basic meta data, the internal database is ready for export as a loadable “**Basic Database**” by the function “**Export as Basic DB**” in the menu of the starting page (**Fig. 8**).

This saves a copy of the prepared empty database as **tourcount0_Tourname.db** within the app’s files directory “**Documents/TourCount/**”.

The Basic DB may be used as a template for further tour recordings in the region. It should be renamed suitably, e.g. tourcount0_region xyz.db.

Note: The file names of the Basic DBs must always start with the string “**tourcount0**”.

The data directory “**Documents/TourCount/**” is created during the first app call. When uninstalling TourCount you will not lose your data as this directory remains untouched.

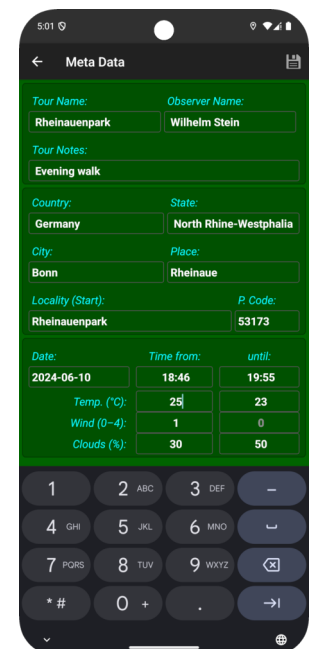


Fig. 5: Edit Meta Data page

Exporting as a Basic DB just stores the structure of the set up DB and ignores all inspection-specific counting data.

Alternatively you can import and adapt a created **species list** for your region. Examples for downloading, partly from other European countries than Germany, are provided on <https://github.com/wistein/TourCount/tree/master/docs>.

Copy them to the app’s data directory **Documents/TourCount/** and import and edit them in TourCount suitably.

3. Usage

After starting the app, a message about the first GPS fix is displayed and, if applicable, with a message indicating that the detected position is outside the European fauna area (as a reminder that only European species are supported).

Start with **"Edit Meta Data"** (Fig. 5). Enter the specific meta data of the tour and save them.

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 for an input dialog.

Continue with **"Counting"** (Fig. 2). 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 (♂, ♀, pupa, larva, egg) of the species. The counter will increment and a page opens to enter the **individual data** (Fig. 6). 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.

The **(-)-buttons** on the Counting page allow for corrections. Mind that the **(-)-button** reduces the individuals list in a last-in-first-out-mode for the respective category.

Go back to the counting page by clicking the **📄 button**.

The **📝 button** underneath the species name row of the counting page 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 **📄** or **🗑 button**.

Before finishing TourCount after a tour you should complete the meta data and save the current reckonings by exporting the current internal DB (⇒ **Tour_YYYYMMDD_hhmmss_tourname.csv** or **tourcount_YYYYMMDD_hhmmss_tourname.db** in the directory **Documents/TourCount/**). **"Tour"** will show the name you gave the tour.

The **"Counting Results"** page (Fig. 7 and 8) can be opened on the starting page with **"Show results"** or the **👁 icon**. 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 sorted by the recorded time.

With large lists or big amounts of data, the response of the app can be somewhat delayed, especially when calling up pages with large scroll lists, as extensive calculations are running in the background. If the message "TourCount not responding" appears, please reply with **"Wait"**.

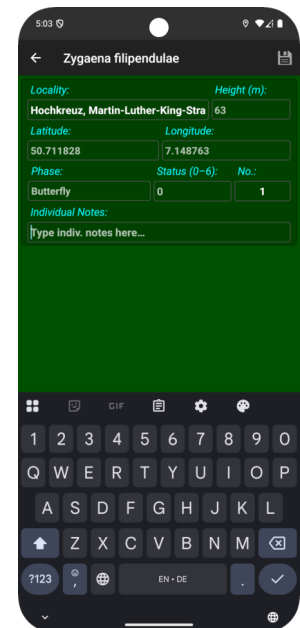


Fig. 6: Edit Individual Data page

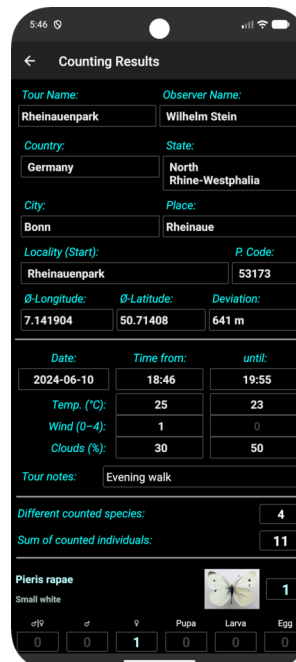


Fig. 7: Results page (head)

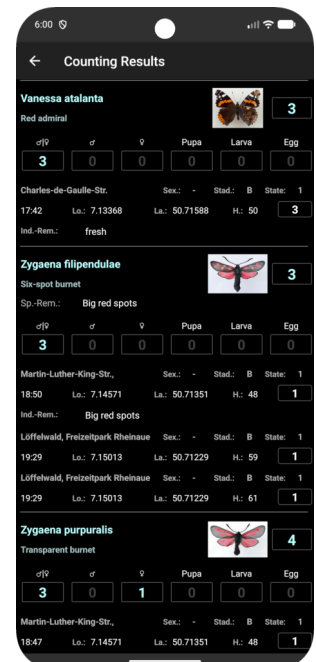


Fig. 8: Results page (continued)

4. Further Functions

The main menu on the starting page (**Fig. 9**) has Settings, Reset, Import, Export, Help and Info functions.

In "**Settings**" (**Fig. 10**) you may adapt the look and 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

Android-specifically, TourCount stores the data in the same, equally named SQLite DB file in the the app's own internal storage area. As this file cannot be read or changed directly by the user, importing or exporting the data from/to files in a user accessible storage area is necessary.

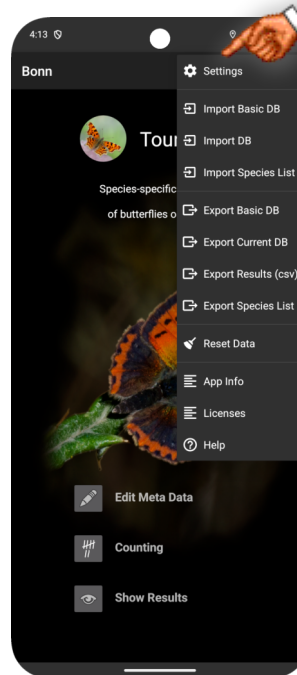


Fig. 9: Main Menu

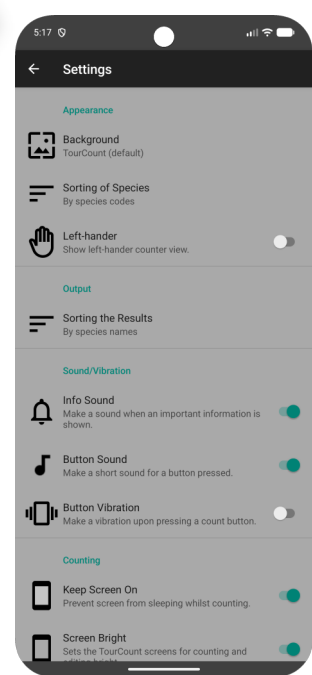


Fig. 10: Settings (partly)

With "**Import Basic DB**" you can select and import an existing Basic DB file that was exported as a template for a regional tour and begins with "**tourcount0**".

Note: The file name must always begin with the exact character string "**tourcount0**" (e.g., "tourcount0_KottenForest.db"), otherwise the file cannot be imported as a Basic DB.

With "**Export Basic-DB**", the internal DB can be exported as the Basic-DB "**tourcount0_Tourname.db**", i.e. without walk-specific data but with the current species list to **Documents/TourCount/** (see "**2. Setting up**").

With "**Import DB**," an exported or appropriately named TourCount DB containing count data can be selected and loaded into the app.

Note: The file name must always begin with the exact character string "**tourcount_**" (e.g., "tourcount_KottenForest-2025-07-15.db"), otherwise the file cannot be imported as a normal DB.

"**Export current DB**" writes a copy of the entire DB with all currently contained data to "**tourcount_YYYYMMDD_hhmmss_tourname.db**" into **Documents/TourCount/**.

The function "**Import Species List**" lets you select and import an available species list. The metadata is retained during import, but all counting data is deleted. If the TransektCount app is installed, the exported species lists can be imported mutually. The file manager can be used to rename these as required.

Note: The file name of a species list must always begin with "**species_**", otherwise the file cannot be imported.

With "**Export Species List**" the current species list without any other data can be exported as a CSV file (CSV = Comma Separated Values text file) "**species_Tour_YYYYMMDD_hhmmss_tourname.csv**".

The function "**Export Results**" writes the counting results into the preformatted spreadsheet-readable .csv-file "**Tour_name_YYYYMMDD_hhmmss.csv**" to "**Documents/TourCount/**".

From here, the exported .csv result files (comma-separated text files) can be viewed and, to a limited extent, edited in a spreadsheet app such as **Collabora** (open source, free, based on LibreOffice). It is available in the Collabora Office Store (an additional package source in the F-Droid app store), in the Play Store, or directly at <https://www.collaboraoffice.com/downloads/>.

¹ For Reverse Geocoding (to produce address info from GPS coordinates) the service of Nominatim 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 table can be sorted in advance using the result sorting option in TourCount (by species or codes), depending on your preference for easier data entry into a central monitoring web page like <https://www.falterfunde.de/platform/s4y/falterfunde/index.do>.

When loading the data, to ensure that the formats and character sets are displayed correctly, please ensure that

- file origin is "Unicode UTF-8",
- delimiter is comma and
- quotation marks (") are set for text field recognition.

If the leading zeros of the species codes are to be displayed, the column with the codes (in **Fig. 11**: Column C) must also be formatted as text in the import dialog.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Counting List:	Rheinauenpark			Observer Name:	Wilhelm Stein						Species sorted by species names
2												Individuals sorted by registered time
3	Country:	State:	P. Code:	City:	Place:	Locality (Start):	Tour Notes:					
4	Germany	NRW	53173	Born	Rheinaue	Rheinauenpark	Evening walk					
5												
6	Date:	Time from:	Time:	Temp. (°C):	Wind (0-4):	Clouds (%):						
7	2024-06-10	until:	18:46	23	1	30						
8			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	Pieris rapae	Small white	06998									
12	Vanessa atalanta	Red admiral	07243	3								
13	Zygaena trifolius	Six-spot burnet	03998	3								
14	Zygaena purpuralis	Transparent burnet	03974	3								
15	Diff. Species:	4		Totals:	9	2						
16												
17	Individuals:	Counts:	Locality:	Longitude:	Latitude:	Uncertainty (m):	Height (m):	Date:	Time:	Sexus:	Phase:	Status (0-6): S
18	Pieris rapae	1	Charles-de-Gaulle-Str.	7.13368	50.71588	47	51	2024-06-10	17:41	f	Butterfly	5 o
19	Vanessa atalanta	3	Charles-de-Gaulle-Str.	7.13368	50.71588	56	50	2024-06-10	17:42	-	Butterfly	1 fr
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												
70												
71												
72												
73												
74												
75												
76												
77												
78												
79												
80												
81												
82												
83												
84												
85												
86												
87												
88												
89												
90												
91												
92												
93												
94												
95												
96												
97												
98												
99												
100												

Fig. 11: InCollabora imported CSV table

Fig. 11 shows a part of the results table imported into the Collabora app and formatted there.

The exported .csv result files can also be transferred to a PC for further processing (see **6.1 Tips**) and imported into a spreadsheet program (tested with MS Excel, LibreOffice Calc, and Softmaker PlanMaker).

IT-affine users may also transfer the exported ".db" files to a PC and examine or edit them there with a free tool like "DB Browser for SQLite" (<http://sqlitebrowser.org>). It lets you edit them 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>.

Under "**App Info**" you find the email address of the author and the history of the app development.

Under "**Licenses**" you find the license notes.

The option menu on the counter page has a **photo function** to start the camera as quickly as possible without leaving TourCount.

A TourCount-specific message can also be sent there by **share function** via SMS or e-mail.

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.

5. Installation hints

1. From F-Droid store (released version)

Get TourCount without docs or example Basic-DBs 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, get 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.

2. From the author's GitHub project pages (current development version)

Docs as well as sample basic DBs from different regions:

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

Copy the relevant sample DBs from the download folder into the app's data directory (Documents/TourCount/) that is created by the first start of the app.

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 privacy 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. They may not be compatible with older versions of the app.

6 Annex

6.1 Tips

Transferring data between smartphone and PC

Connect the smartphone to the PC using a USB cable. In the smartphone notifications find „**Charging this device via USB**“, tap for more options and select „**Use USB for file transfer**“.

In Windows Explorer or under Linux in Nautilus, Nemo or similar file manager the smartphone is now shown with its technical ID. 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 TourCount:

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 December 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.

TourCount Documents:

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

TransektCount project:

TransektCount is the complementary Android app to support transect counters in nature preserving projects according to the Butterfly Monitoring Scheme methodology in Europe. It allows a species-specific recording of individuals in all stages per transect section.

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

TransektCount Documents:

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