

TourCount 3.6.4

1. Introduction

TourCount should support you when recording butterflies (**Fig. 1**). It allows to register individuals species-specific, separated by sexus and metamorphic stages as well as individually localized in the field. It facilitates this comfortably 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 or transferred to a PC for your own processing. The output is prepared for an easy 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 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 access for reverse geocoding (gets address data derived from GPS coordinates by Nominatim service of OpenStreetMap.)

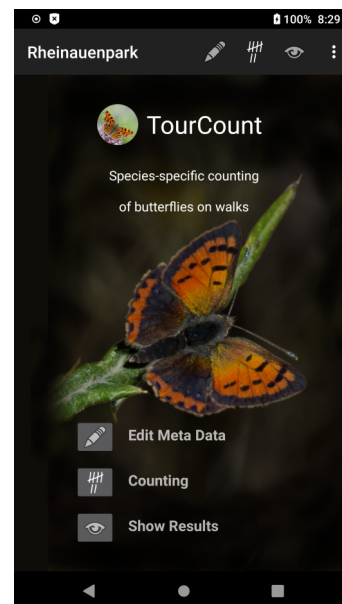


Fig. 1: Starting Page

2. Setting up

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

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**)

On these 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.

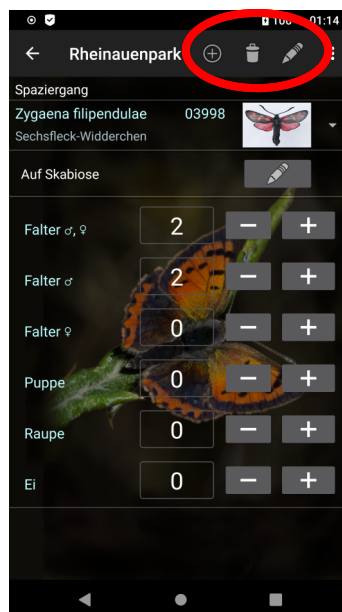


Fig. 2: Counting Page

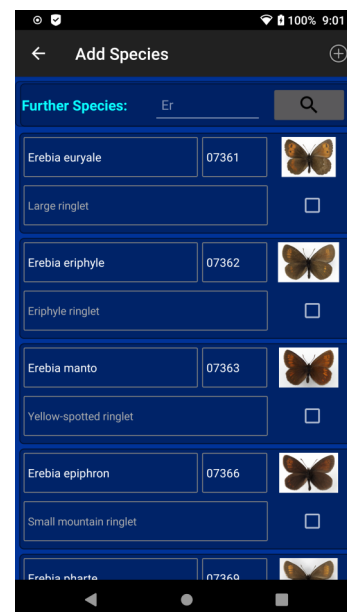


Fig. 3: “Add Species” page

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

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

TourCount species list (partly)

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

Under **“Edit Terms”** if necessary, adjust tour name, comment, species name and code.

For valid scientific names, common names and codes (five-digit with leading zeros (see document „[List of coded Butterflies.pdf](#)“ (link in 6.3 References).

Caution: An incorrect code displays an “N/A” or incorrect image.

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.

For valid scientific names, common names and codes (five digits with leading zeros, see document “**List of Coded Butterflies.pdf**” (link under 6.3 Locations).

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 “**Documents/TourCount**”, then import it into TourCount and adapt it suitably.

Then you may enter the observer name on the “**Edit Meta Data**” page (**Fig. 4**) 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 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.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_Kottenforest. Saving as a Basic DB just stores the structure of the set up DB and ignores all inspection-specific counting data.

The screenshot shows the 'Edit Meta Data' page of the TourCount app. The page is green with white text and input fields. At the top, there's a title bar with a back arrow, 'Meta Data', and a save icon. The form includes fields for 'Tour Name' (Rheinauenpark), 'Observer Name' (Wilhelm Stein), 'List Notes' (Evening walk), 'Country' (Germany), 'State' (North Rhine-Westphalia), 'City' (Bonn), 'Place' (Rheinaue), 'Locality (Start)' (Rheinauenpark), and 'P. Code' (53173). At the bottom, there's a section for 'Date' with 'from' (2024-06-10) and 'until' (18:46 to 19:55) times, and a table for weather conditions: Temp. (°C) 25/23, Wind (0-4) 1/0, and Clouds (%) 30/50.

Tour Name:	Observer Name:
Rheinauenpark	Wilhelm Stein

List Notes:
Evening walk

Country:	State:
Germany	North Rhine-Westphalia

City:	Place:
Bonn	Rheinaue

Locality (Start):	P. Code:
Rheinauenpark	53173

Date:	from:	until:
2024-06-10	18:46	19:55

Temp. (°C):	25	23
Wind (0-4):	1	0
Clouds (%):	30	50

Fig. 4: Edit Meta Data page

3. Usage

Start with **"Edit Meta Data"** (Fig. 4). 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. 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 **📄 button**.

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.

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 (files ⇒ **tourcount_Tour_YYYYMMDD_hhmmss.db** or **.csv**) to the directory **Documents/TourCount**. "Tour" will show the name you gave the tour.

The **"Counting Results"** page (Fig. 6 and 7) 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. 5: Edit Individual Data page

Fig. 6: Results page (head)

Fig. 7: Results page (continued)

4. Further Functions

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

In "**Settings**" (**Fig. 9**) 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`

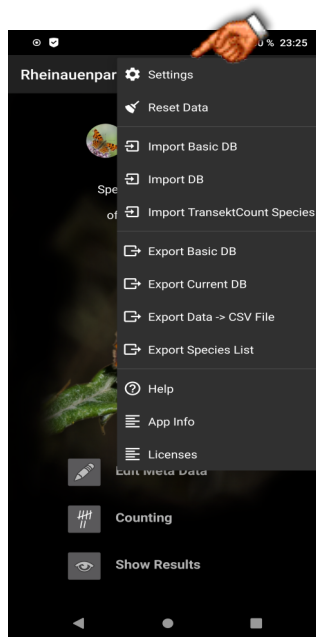


Fig. 8: Main Menu

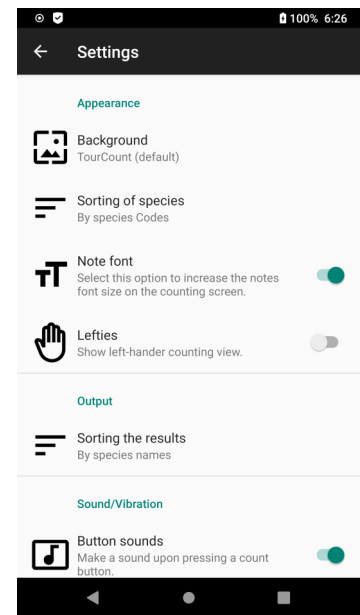


Fig. 9: Settings (partly)

Android-specifically, TourCount stores the data in the same, equally named SQLite DB file in 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.

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).

The current **species list** (without tour metadata) can be exported as a .csv file "**species_Tour_[name_]YYYYMMDD_hhmmss.csv**" (CSV = Comma Separated Values text file). This can also be renamed for later re-import using a file manager. If the **TransektCount** app is installed, the exported species lists can be imported mutually.

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

By "**Export Basic DB**" you may export the current 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_[name_]YYYYMMDD_hhmmss.db**".

The function "**Export Data → CSV File**" writes the counting results into the pre-formatted spreadsheet-readable .csv-file "**Tour_[name_]YYYYMMDD_hhmmss.csv**" to "**Documents/TourCount**". This directory allows accessing the files by a spreadsheet app to see the results table.

IT-affine users may transfer the exported ".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>.

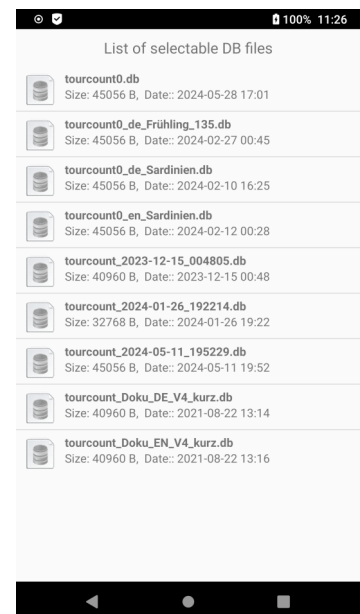


Fig. 10: Import File Selection

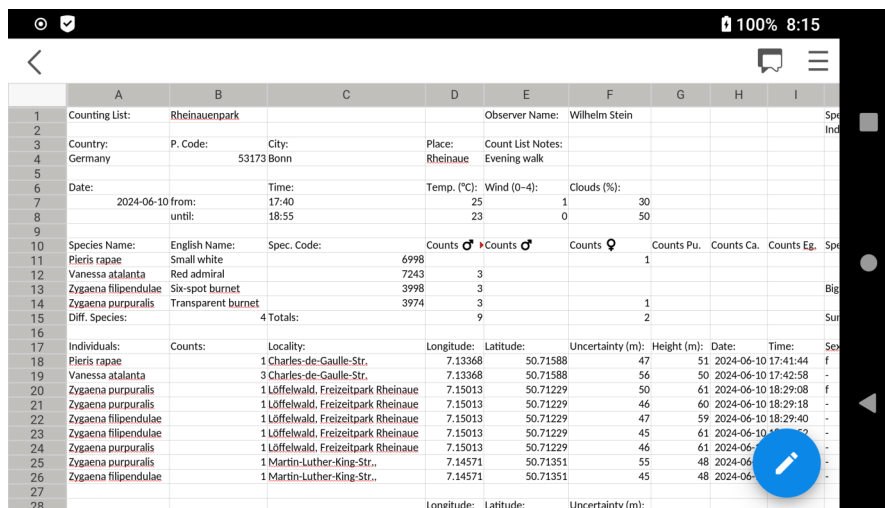
¹ For Reverse Geocoding (to produce address info from GPS coordinates) the service of Nominatim from OpenStreetMap is used. A valid own email address is necessary for durably reliable queries of address data and to exclude abuse. The mail address will be treated confidentially and will only be used to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

The .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 recognition and
- all columns in **text format**

for further processing.

The table can be organized by sorting option (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>.



	A	B	C	D	E	F	G	H	I
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:		17:40	25	1	30			
8	until:		18:55	23	0	50			
9									
10	Species Name:	English Name:	Spec. Code:	Counts ♂	Counts ♀	Counts ♀	Counts Pu.	Counts Ca.	Counts Eg.
11	Pieris rapae	Small white		6998			1		
12	Vanessa atalanta	Red admiral		7243	3				
13	Zygaena filipendulae	Six-spot burnet		3998	3				
14	Zygaena purpuralis	Transparent burnet		3974	3		1		
15	Diff. Species:		4 Totals:	9			2		
16									
17	Individuals:	Counts:	Locality:	Longitude:	Latitude:	Uncertainty (m):	Height (m):	Date:	Time:
18	Pieris rapae		1 Charles-de-Gaulle-Str.	7.13368	50.71588		47	51	2024-06-10 17:41:44
19	Vanessa atalanta		3 Charles-de-Gaulle-Str.	7.13368	50.71588		56	50	2024-06-10 17:42:58
20	Zygaena purpuralis		1 Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229		50	61	2024-06-10 18:29:08
21	Zygaena purpuralis		1 Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229		46	60	2024-06-10 18:29:18
22	Zygaena filipendulae		1 Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229		47	59	2024-06-10 18:29:40
23	Zygaena filipendulae		1 Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229		45	61	2024-06-10 18:29:52
24	Zygaena purpuralis		1 Löffelwald, Freizeitpark Rheinaue	7.15013	50.71229		46	61	2024-06-10 18:29:58
25	Zygaena purpuralis		1 Martin-Luther-King-Str.	7.14571	50.71351		55	48	2024-06-10 18:30:08
26	Zygaena filipendulae		1 Martin-Luther-King-Str.	7.14571	50.71351		45	48	2024-06-10 18:30:18
27									
28				Longitude:	Latitude:	Uncertainty (m):			

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 to use and is 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/>.

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 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 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>.