TransektCount 3.4

1. Introduction

Fig. 1: Starting page

TransektCount should support transect counters in nature preserving projects according to the Butterfly Monitoring Scheme methodology in Europe (Fig. 1). It allows a species-specific counting per transect section. It can substitute your field book and pencil, and if applicable a camera for documentary pictures of interesting species.

The integrated database is organized according to a transect inspection. That means, there will be used a new database instance per inspection. Databases can be individually created and adapted regarding transect sections and expected butterfly species within the app. 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 app is open source, has no tracking or advertising functions, demands only for storage access permits which are needed for the app's serviceability and is published on https://github.com/wistein/TransektCount.

Older Smartphones may produce a wrong display of the transect sections list (the last delete icon is crossed out) as their amount of RAM is not sufficient.

2. Set up

Before initial use you should adapt the settings to your liking (Fig. 2 and 11).
Then you should edit the prepared species list of the 1. transect section with the section editor (Fig. 3 and 4). Add further species by clicking the (+)-Button in the head line of "Transect Sections".

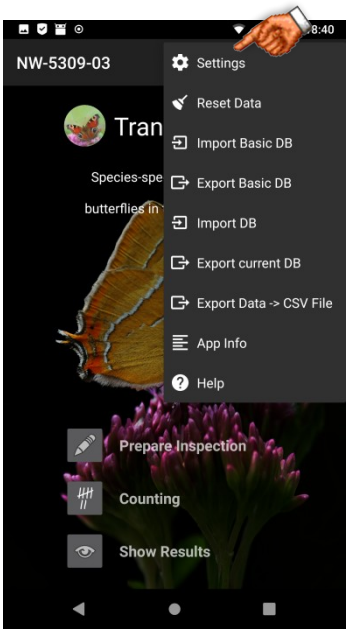

Fig. 2: Starting page menu

Fig. 3: Initial list of transect sections

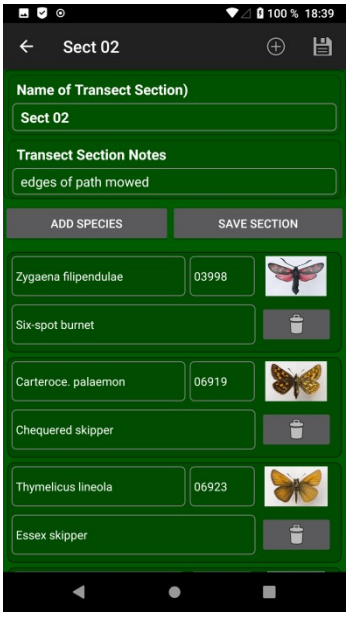

Fig. 4: Enter new section data

Alternatively you can import and adapt a more comprehensive Basic DB for your transect. Examples for downloading are provided on https://github.com/wistein/TransektCount/tree/master/docs. Copy them to the internal files directory of TransectCount `Android/data/com.wmstein.transektcount/files` and import and edit them suitably. When de-installing TransektCount this directory will be deleted. So it is recommended to backup these .db-files to a safe place.

To edit the species list of the first section click the pencil button in the section line of "Transect Sections". Use the (+)-button in the head line of the section editor (Fig. 5) to select 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 the following table). When finished click SAVE SECTION or the save icon. This list can be changed or supplemented anytime afterwards.

```
Sect 01
----------------------------
...
Pieris rapae              06998
Small White
Pieris napi               07000
Green-veined white
Pieris na./ra.-compl.     07000*
Small whites complex
...
```

Detail of section list “Sect 01”

The codes will be used as an option to sort the list and as a reference to show corresponding butterfly icons. The codes derive from the numbering scheme of Karsholt/Razowski, as used e.g. in the German Lepiforum (https://lepiforum.org/). You can find a list of codes in the aforementioned GitHub web page.

The appended *-symbol at code 07000 marks a species complex whose code advisably should be the largest code of its members. In the next step, you could enter some meta data like transect-No. or inspectors name. Click on PREPARE INSPECTION and save the input by clicking the save icon.

Once this list is complete, you can copy it for all remaining transect sections by the counting page menu function: “Duplicate Section List”, and name each section accordingly (e.g.: Sect 02, Sect 03,...)

When you have created the section lists for all transect sections and entered the main meta data, the database is ready for export as a "Basic Database".

For that you find the function "Export as Basic DB" in the menu of the starting page.
After that you have a copy of the empty database saved as "Basic Database" (transektcount0.db) within the files directory of TransektCount (see above).

The Basic DB does not contain any inspection related data and serves als a template for future inspections. It can also be exported again later, e.g. after changes of lists. Exporting as Basic DB ignores all counts, notes and inspection-related meta data.

To prepare a certain monitoring inspection you will only need to enter the inspection-specific meta data.

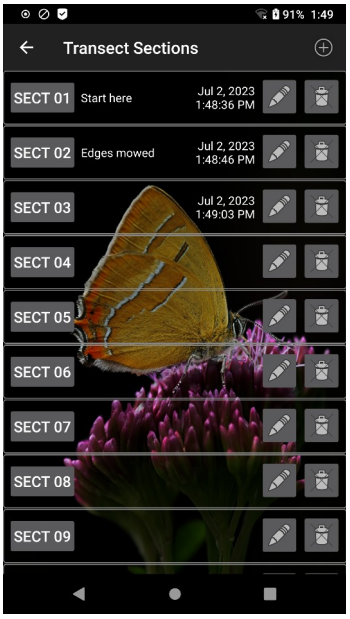

Fig. 5: Counting page

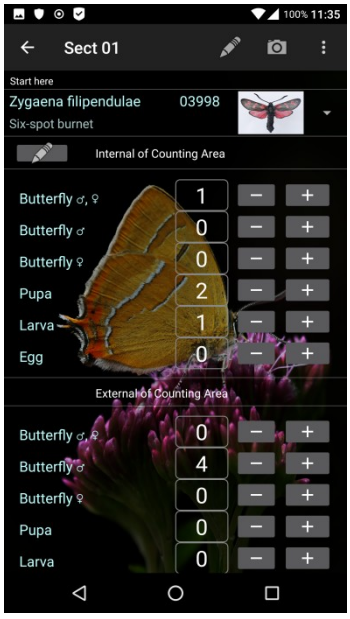

Fig. 6: Section list

3. Usage

Start with COUNTING (Fig. 5). Select the relevant transect section. The counting page for the first species in the sorted section list appears (Fig. 6). Select the respective species by clicking the butterfly icon (Fig. 7). As counting of butterflies ought to be distinguished between those within the imaginary counting area and butterflies outside this area you have 2 separate sets of counters (Internal and External of Counting Area).
To count just tip on the appropriate "+"-Button of the corresponding species. The "-"-Buttons allow for corrections.

Each count is stored immediately. While storing the count the current date and time will be stored either. The date and a possible section remark will then be shown in the list of sections and indicate a successful inspec-

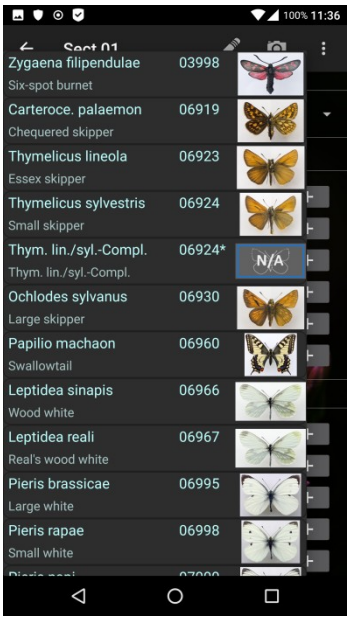

Fig. 7: Select species to count

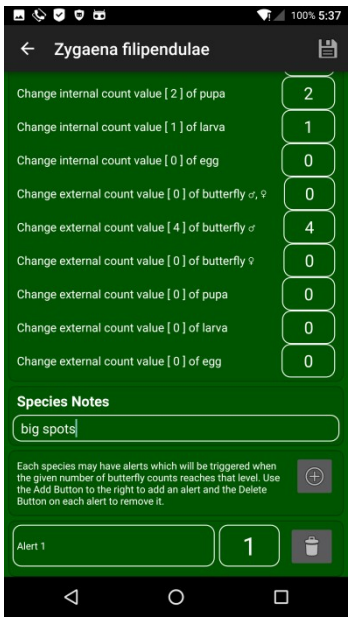

Fig. 8: Edit species

tion of that section. To select another species just tip on the butterfly icon of the scroll down list on top of the counting page (Fig. 7).

The Pencil-Button in the app bar of the counting page (as well as the section's Pencil-Button of the section list) opens the section editing page (Fig. 4) for adding remarks for the section, adding species or editing the names of section and species. The section related remarks will be shown on top of the counting page and within the section list.

The Pencil-Button beneath the species name row of the counting page opens the species editing page (Fig. 8) that lets you add remarks for each species and set its counters to any value. Here you may also set pop-up alerts which show up while reaching a set number of butterflies on the corresponding internal counters (sum of all ♂ and ♀) e.g. to realize already on site if a certain species is more abundant than on a previous inspection.

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

To move back one page you can use the arrow in the left upper corner. You should leave TransektCount from its starting page, as in this state the database is safely closed.

Some app pages have functional icons and/or a specific context menu (3-point-symbol) in their header.

When you have large lists or have collected big amounts of data the app may delay the start of pages, especially the results page, as this needs heavy calculations. This will be indicated by a short popup message "View gets calculated!"

Finally, there is a page showing your results (Fig. 9 and 10). Here, beneath the meta data of the inspection you see all the species which got counts. You can enter this page from the Starting page with the SHOW RESULTS Button or the eye symbol in the app-bar.

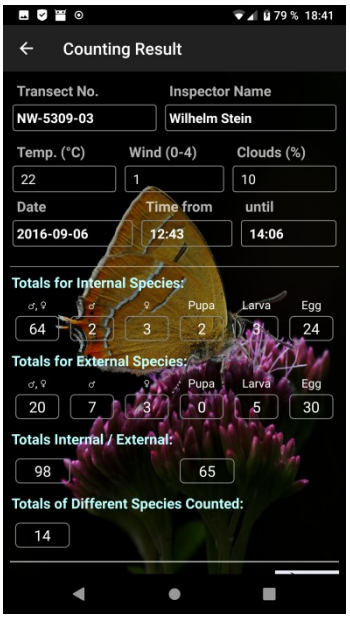

Fig. 9: Results page (head)

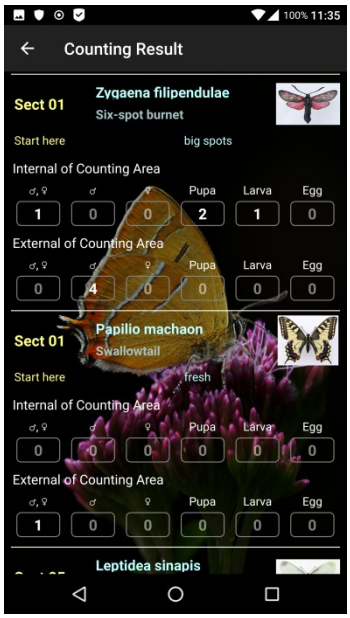

Fig. 10: Results page (detail)

4. Further functions

The menu on the starting page (Fig. 2) has Settings, Reset, Import, Export, Info and Help functions.

On the "Settings" page (Fig. 11) you may adapt the look an feel in some aspects to your wishes, e.g. background picture, sorting, left-/right-hand counting or sounds.

For preparing a new inspection you may use "Reset Data" to reset the inspection-specific meta data and count data. Alternatively you may import the Basic DB.

Android-specifically, TransektCount stores the data always in a single, 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 and 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 to take into account changes of the transect structure or new species you may have entered (see "2. Settings").

"Import Basic DB" always reads the file transektcount0.db from the directory `Android/data/com.wmstein.transektcount/files`.

Exporting the current database (Export DB) writes a copy of the complete DB to `Android/data/com.wmstein.transektcount/files/`transektcount_YYYY-MM-DD_hhmmss.db.

For your own purpose you can rename the exported TransektCount DB files by a file manager into e.g. transektcount1.db, transektcount2.db, etc. (Mind: The .db file name must start with the string “transektcount”, otherwise it cannot be imported).

You may import any previously exported TransektCount-DB (Fig. 12). This supports monitoring of different transects.

The function “Export Data -> CSV File” writes the meta data and the counting results into a pre-formatted spreadsheet-readable .csv-file "transektcount_YYYY-MM-DD_hhmmss.csv" to "Documents/TransektCount".
This directory allows accessing the files by other spreadsheet apps, like Collabora (obtainable from F-Droid).

Under "App Info" you may find the email address of the author, the history of the app and the license note.

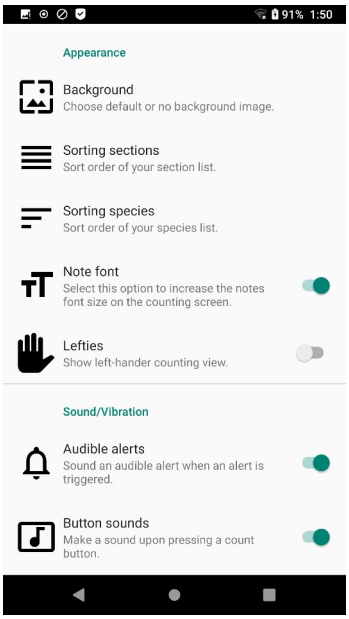

Fig. 11: Settings (detail)

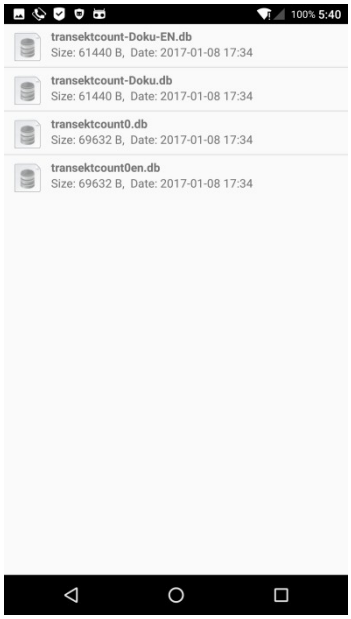

Fig. 12: Import file selection

The “+”-Button in the menu of the “Transect Sections” page allows you to create new section lists. This function will be used only while creating a transect Basic DB or when there are changes in a transect. But a better substitute for this might be to copy an existing section list and adapt it.

The counting page provides the "Duplicate Section List" function. This function is used while creating a Basic DB, as described under "2. Set up“.

The menu of the counting page provides a "Share" function for sending notes using a standard app like SMS or email.

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

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

With a free tool like "SQLiteBrowser" (http://sqlitebrowser.org) you may examine the db-file.

The .csv file may be imported into a spreadsheet program for further processing as a

- comma-delimited text file with
- file origin “Unicode UTF-8”,
- quotations marks for text field recognition
- and all data as text.

The exported table is optimized for easy transmission of the results into a Monitoring web page like

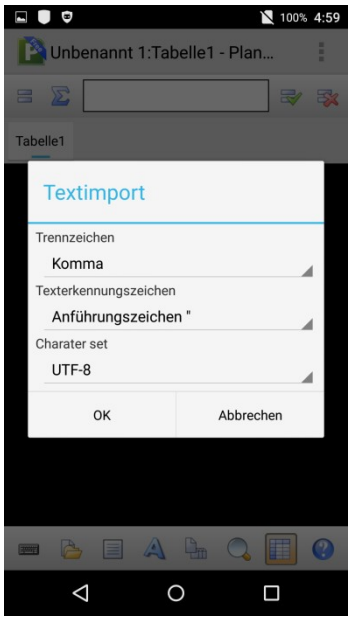

Fig. 13: Text import parameters

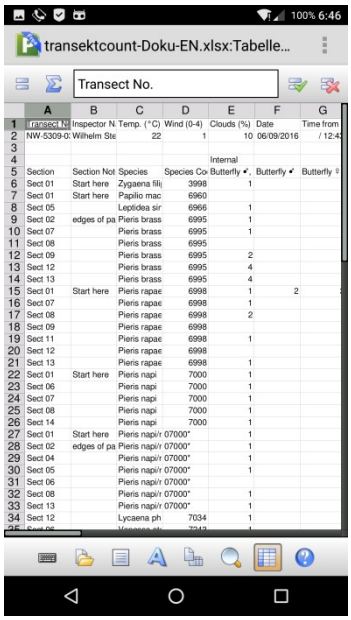

Fig. 14: Imported .csv-table

https://www.tmd-daten.de/platform-tmd/tmd/tmd-top/index.do

Fig. 13 and 14 show the import in the free Android app “PlanMaker Mobile Free”.

5. Glossary

Counting area:
The counting area matches a cube of 5 m length of the edges at the standing position within a -> transect. Seen individuals get separately counted for internal and external occurrence of this imaginary cube.
The internal records of the counting area are substantially for comparative evaluations as the internal area is country-wide (Europe-wide?) standardized.

CSV-file:
Comma-separated values file. A text based file format for data exchange of data in tabular form (e.g. for import of the TransektCount results into a spreadsheet software).

Documentation:
You find the documentation including example databases und infos under https://github.com/wistein/TransectCount/tree/master/docs.

File directories of TransektCount:
The public app-specific files directory (for exported .csv-files):

```
Documents/TransektCount
```

The files stored here are readable by other apps. The files will not be deleted when the app is deinstalled.

The internal app-specific files directory (for DB-files):

```
Android/data/com.wmstein.transektcount/files
```

Files stored here cannot be accessed by other apps. The files and the directory will be deleted upon deinstallation of TransektCount.

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 TransektCount uses Codes for the identification of species. However, this limits the utilization of TransektCount to European faunal areas, as there is no adequate global scheme.

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

Transect:
A defined path along which one counts and records occurrences of the species of study. This path is subdivided into segments of 50 m length of at most homogeneous vegetation. Counting is done preferably within a defined -> counting area.