

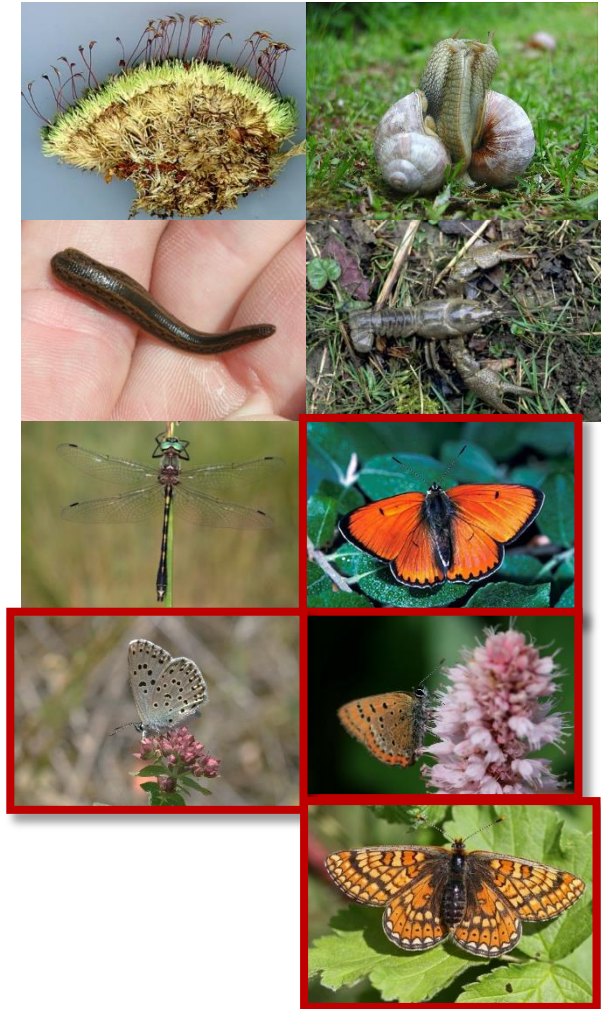
Using the eBMS website in Luxembourg

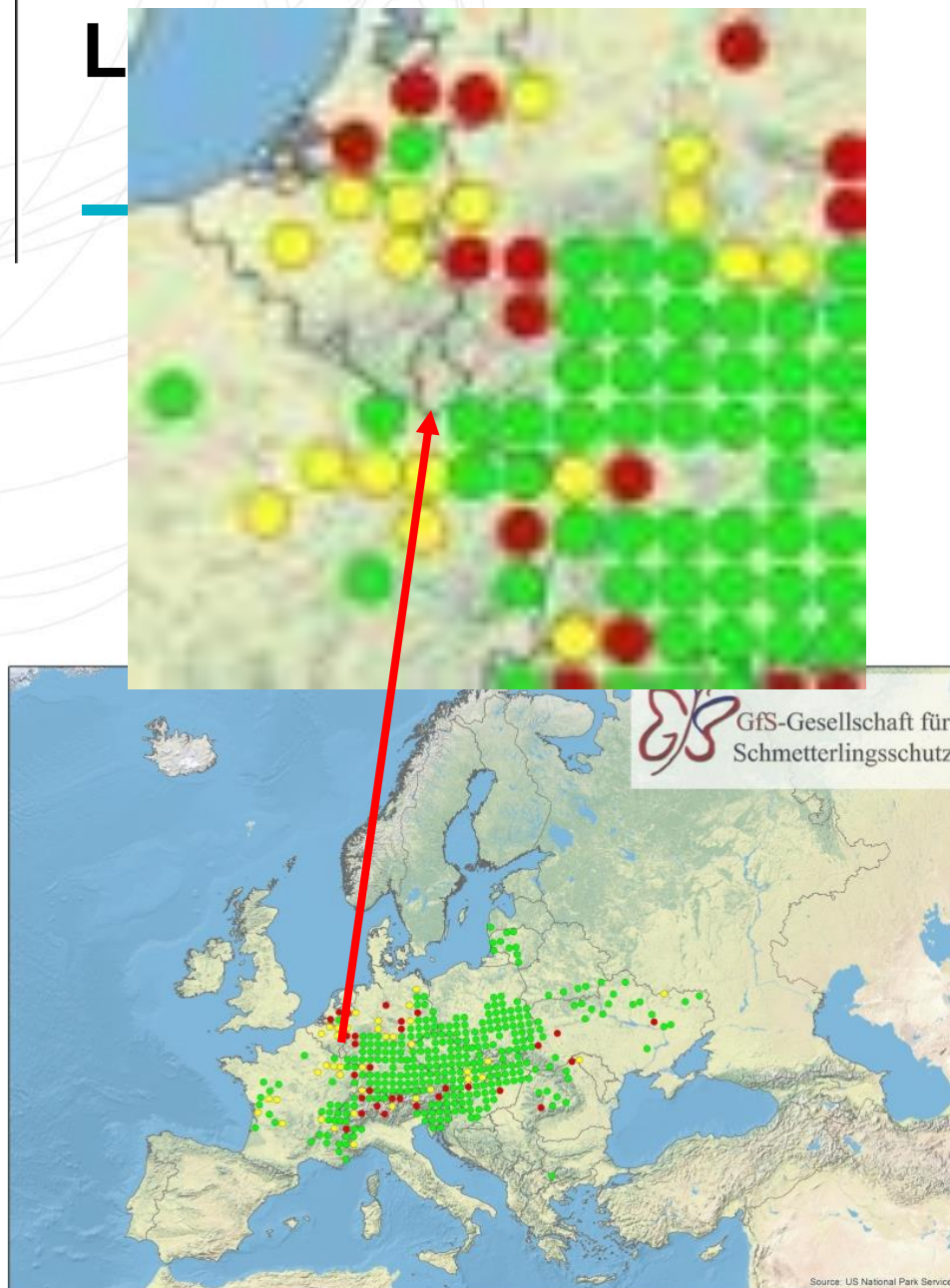
butterfly-monitoring.net

Xavier MESTDAGH (LIST) – LuxBMS
Wednesday 4th December 2019

LuxBMS - Context

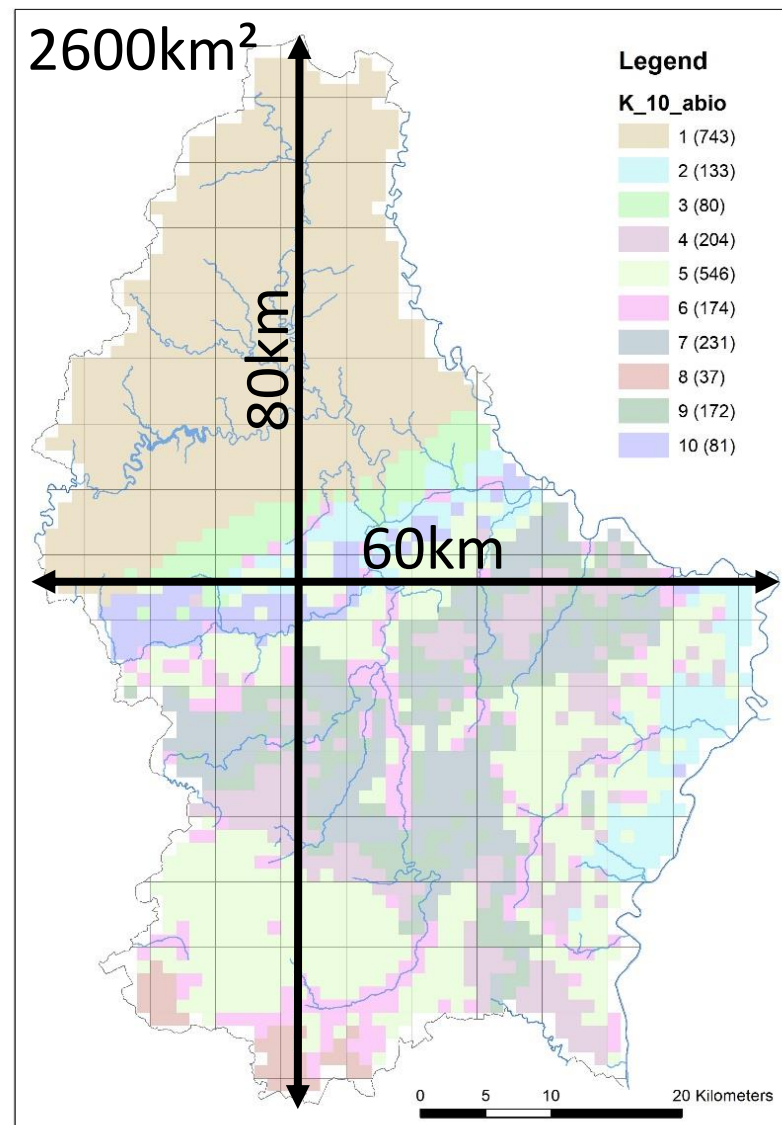
- 2007 – EU Habitat directive art.17 report: many species with unknown conservation status
⇒ the Government of Luxembourg asked to develop a national biomonitoring
- 2010: LIST initiated:
 - “**Target**” monitoring of:
 - 4 plant species
 - 1 mollusc species
 - 1 annelid species
 - 9 arthropod species
 - (6 fish species)
 - 7 amphibian species
 - 3 reptile species
 - 4 mammal species
 - “**Global**” monitoring of butterflies on transects = bio-indicator of common landscapes
 - Co-funded by Ministry and LIST (≈ € 270k)





Phengaris teleius

(30.11.2017)
V003



Common landscape monitoring

2600km²

Random 1km squares

 Professionals (30)

 Volunteers (8)

Stratified random sampling (10 strata)
≈ 38 squares ≈ 1.5% of the country
≈ 2.5 km transects; 8-16 sections
Up to 12x per year (1-2 volunteers)

Urban area

Fallows

Crop

Grassland



Forest

LuxBMS - Context

Common landscape monitoring

- Previous Luxembourg online encoding system (Indicia)
 - No mapping tool => using ArcGIS in parallel...
 - Grid-based observations:
 - Presence of species in each 200m-squares crossing the transect
 - Section-based observations: counts on part of the transects
 - Reliability
 - Habitat type
- Developments and maintenance: whatever the country size, the amount of work is the same...

Grid-based species records

Transect: 069_124
Add Species:

Date: 31/05/2017

Observations along the transect and inside the virtual box ("X"), observations along the transect and outside the virtual box ("7") and casual observations ("0").

Note: when a species record is associated with multiple codes for the same grid, please consider this order of priority (1) "X", (2) "7" and (3) "0".

Araschnia levana

08:	28:	48:	68:	88:
06:	26:	46:	66:	86:
04:	24:	44:	64:	84:
02:	22:	42:	62:	82:
00:	20:	40:	60:	80:

Gonepteryx rhamni

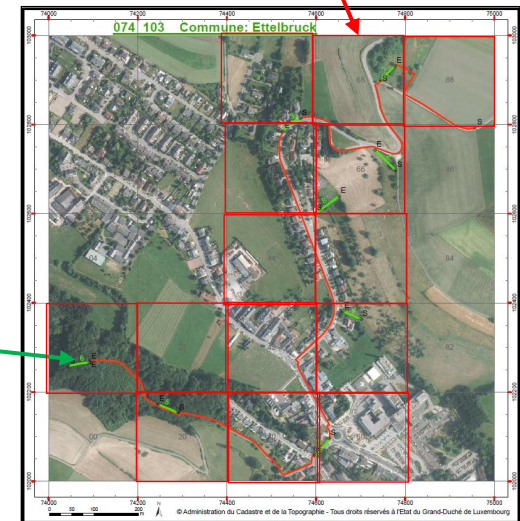
08:	28:	48:	68:	88:
06:	26:	46:	66:	86:
04:	24:	44:	64:	84:
02:	22:	42:	62:	82:
00:	20:	40:	60:	80:

Coenonympha arcania

08:	28:	48:	68:	88:
06:	26:	46:	66:	86:
04:	24:	44:	64:	84:
02:	22:	42:	62:	82:
00:	20:	40:	60:	80:

Ochlodes sylvanus

08:	28:	48:	68:	88:
06:	26:	46:	66:	86:
04:	24:	44:	64:	84:
02:	22:	42:	62:	82:
00:	20:	40:	60:	80:



General Information

Transect:

Date:

Setting this date field automatically fills in the Month field below. This field must be between April and September, otherwise the Month field will not be filled in, and you will not be able to proceed.

Number of Sections:

Observation:

Observer:

Start time:

End time:

Month:

Number in Month:

Weather:

Temperature:

Wind force:

Cloud cover:

Overall Comment:

Section-based species records

Transect: 071_117
Date: 05/08/2016

The number of sections in this list is selected on the first page

Species

Species	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7	Section 8	Section 9	Section 10
<input checked="" type="checkbox"/> Pieris rapae						1				
<input checked="" type="checkbox"/> Maniola jurtina						2				
<input checked="" type="checkbox"/> Pieris napi		1		1	2	5	1	4		4
<input checked="" type="checkbox"/> Polygonia c-album								1		
<input checked="" type="checkbox"/> Pieris brassicae						1				1
<input checked="" type="checkbox"/> Vanessa atalanta								2		
<input checked="" type="checkbox"/> Thymelicus lineola						1				
<input checked="" type="checkbox"/> Tossoria lathonia						1				

Habitat type

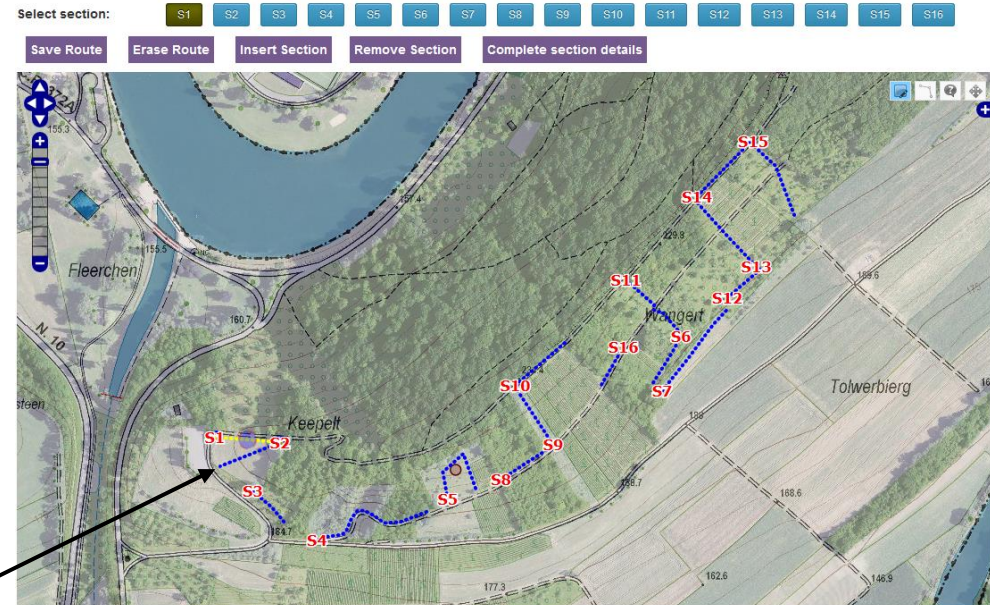
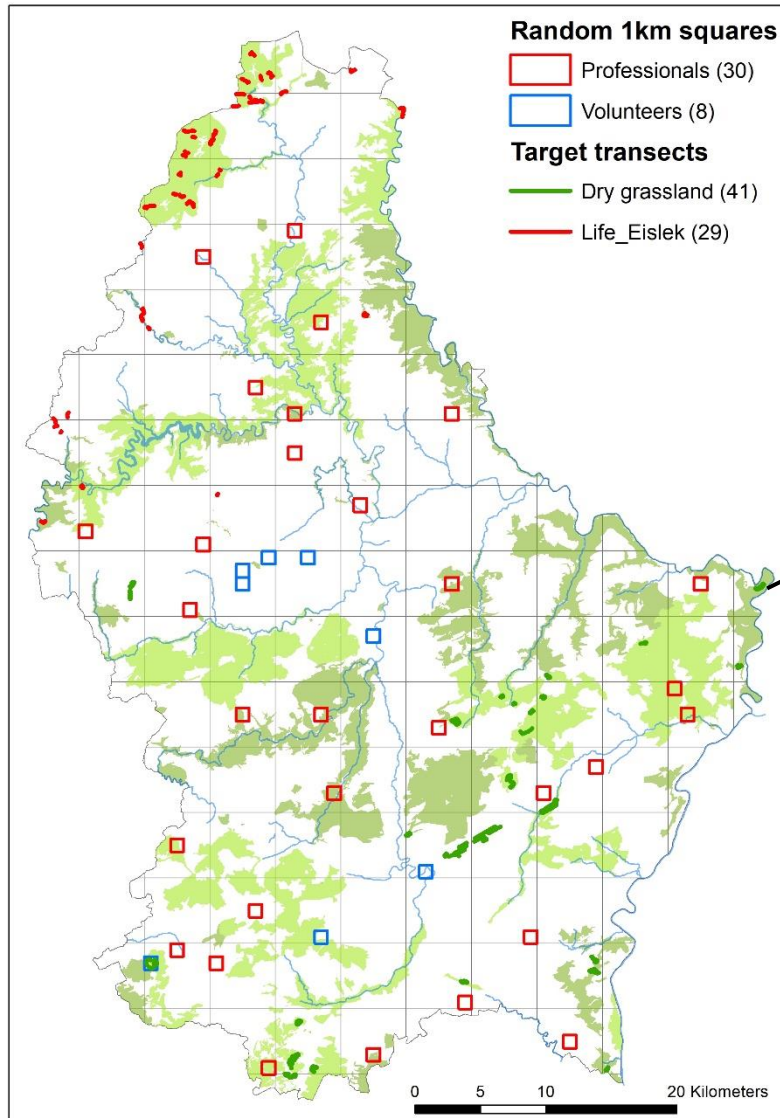
Habitat type	PRP	FRE	LIS	LIS	FRE
<input checked="" type="checkbox"/> No observation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Survey reliability	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

LuxBMS - Context

- 2007 – EU Habitat directive art.17 report: many species with unknown conservation status
 - ⇒ the Government of Luxembourg asked to develop a national biomonitoring
- 2010: Butterfly counts as a bio-indicator of common landscapes, at national level.
- 2016:
 - Migration to butterfly-monitoring.net
 - Transects became a “ready-to-use toolbox”, used in
 - LIFE Eislek (target species = *Lycaena helle*)
 - LIFE Orchis (target habitats = dry grasslands)
- ⇒ Butterfly counts in nature protected areas
- 2019: Bumblebee counts



Nature protected areas: target species and/or habitats



=> In summary: ≈ 108 transects ($\approx 4\%$ of the country)

- Different survey frequency
- Different habitat types
- Different partners/institutions

All encoded on butterfly-monitoring.net

- LIST coordinates and provide extractions/reports to partners (LIFE projects)

Butterfly-monitoring.net: Site creation

Lux Scheme:

“Global” monitoring:

- Stratified random sampling of 1 km squares
- Counting sections spread over main habitat types (urban area, grasslands, forests, crops...)

“Target” monitoring:

- LIFE projects: project's area/sites
- N2k
- Protected species/habitats

Butterfly-monitoring.net: Site creation

- New transects are:
 - 1°: draw on GIS
 - 2°: validate on the field during repeated surveys
 - 4°: create the site on butterfly-monitoring.net (end of season)
- National maps used as background
- National coordinate system (e.g. epsg 2169)



Butterfly-monitoring.net: Site allocation

LIST coordinates observers and allocates them to transects within the encoding system. 2 technical ways (differences to be clarified):

Scheme admin / Scheme Transects Allocation

Scheme Transects Allocation

Countries 2016: Site:

Scheme admin / Scheme Transects Allocation

Scheme Transects Allocation

Countries 2016: Site: User: Search

Select All Deselect All

Allocated?	Countries 2016	ID	Site	SRef	User	Actions
<input checked="" type="checkbox"/>	Luxembourg	216635	053_101 Flatzbur	53239, 100445	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216684	058_068 Giele Botter	58456, 67476	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216683	060_069 Bascharage	60481, 68660	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216665	060_077 Grass	60610, 76404	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	218817	061_064 Op Hasgrond	49.50557N 5.91116E	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216688	061_095 Ospem	61238, 94314	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216626	062_100 Buschrodt	62498, 99407	Xavier Mestdagh (6)	Edit
<input checked="" type="checkbox"/>	Luxembourg	216637	062_122 Brachtenbach	62420, 121332	Xavier Mestdagh (6)	Edit

Site details

090_062 Bumerange Details Your Route Section Details

Country

Country:

Site Details

Allocate recorders to the site

Select user:

Add

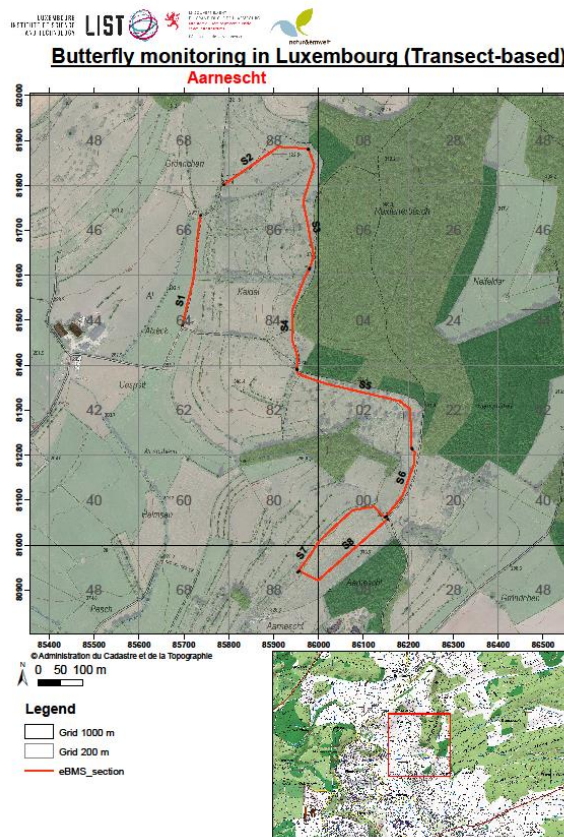
fernandouser0s ☐

Lionel L'Hoste ☐

Xavier Mestdagh ☐

Save Delete

Field forms

[illegible][illegible]

Butterfly-monitoring.net: data encoding

- All transects are encoded under the “Luxembourg scheme” by observers themselves
 - Butterfly counts only, only on sections
 - Evolutions: add bumblebee counts? Add other non standardised observations?

Walk Data Entry

In the species grid visible after the visit details are entered, the field “Reliability” allows you to record the count reliability at each section level. The meaning of each code is as follows:

1. Suitable conditions, the count reflects the butterfly abundance.
2. Unsuitable conditions (for instance too much wind, running cows around the observer. .). The count does not reflect the butterfly abundance although some butterflies have been observed.
3. The section could not be surveyed, for instance due to accessibility.

Transect: 062_122 Brachtenbach

Date: 24/06/2019

Recorder Name: Mestdagh, Xavier

Start Time (hh:mm): 10 : 15

End Time (hh:mm): 11 : 20

% Sun: 95

Temp (Deg C): 24

Wind Direction: Not recorded/no data

Wind Speed: 2. Wind felt on face, leaves rustle

Walk Data Entry

In the species grid visible after the visit details are entered, the field “Reliability” allows you to record the count reliability at each section level. The meaning of each code is as follows:

1. Suitable conditions, the count reflects the butterfly abundance.
2. Unsuitable conditions (for instance too much wind, running cows around the observer. .). The count does not reflect the butterfly abundance although some butterflies have been observed.
3. The section could not be surveyed, for instance due to accessibility.

062_122 Brachtenbach on Monday 24th June 2019

Butterflies

Use species list : Species known at this site

Species Sort Order:

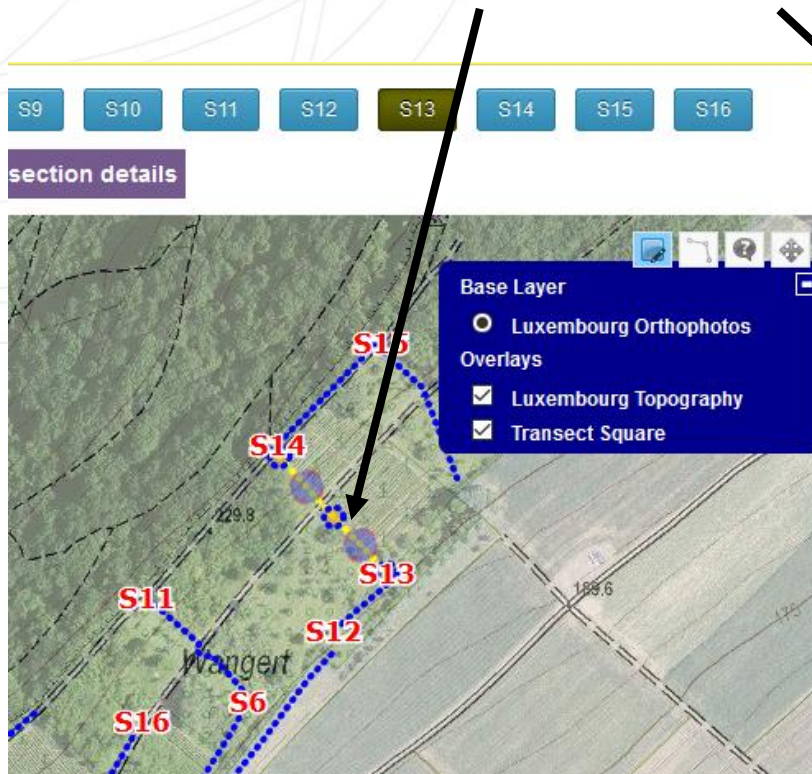
☒ Taxonomic Sort Order

☐ Species name

Sections	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	Total
% Sun	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	
Reliability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<i>Ochlodes sylvanus</i>													1				1
<i>Thymelicus sylvestris</i>						2			2			1					5
<i>Thymelicus lineola</i>																	0
<i>Pyrgus malvae</i>																	0
<i>Aponia crataegi</i>									1								1
<i>Pieris brassicae</i>																	0
<i>Pieris rapae</i>																	0
<i>Pieris napi</i>																	0
<i>Anthocharis cardamines</i>																	0

Butterfly-monitoring.net: data encoding

- Admin can edit all sites and observations within the LuxBMS



At what level a change of section
requires the creation of a new
site???

Scheme admin / Scheme walks

Scheme walks

Week Number 2019

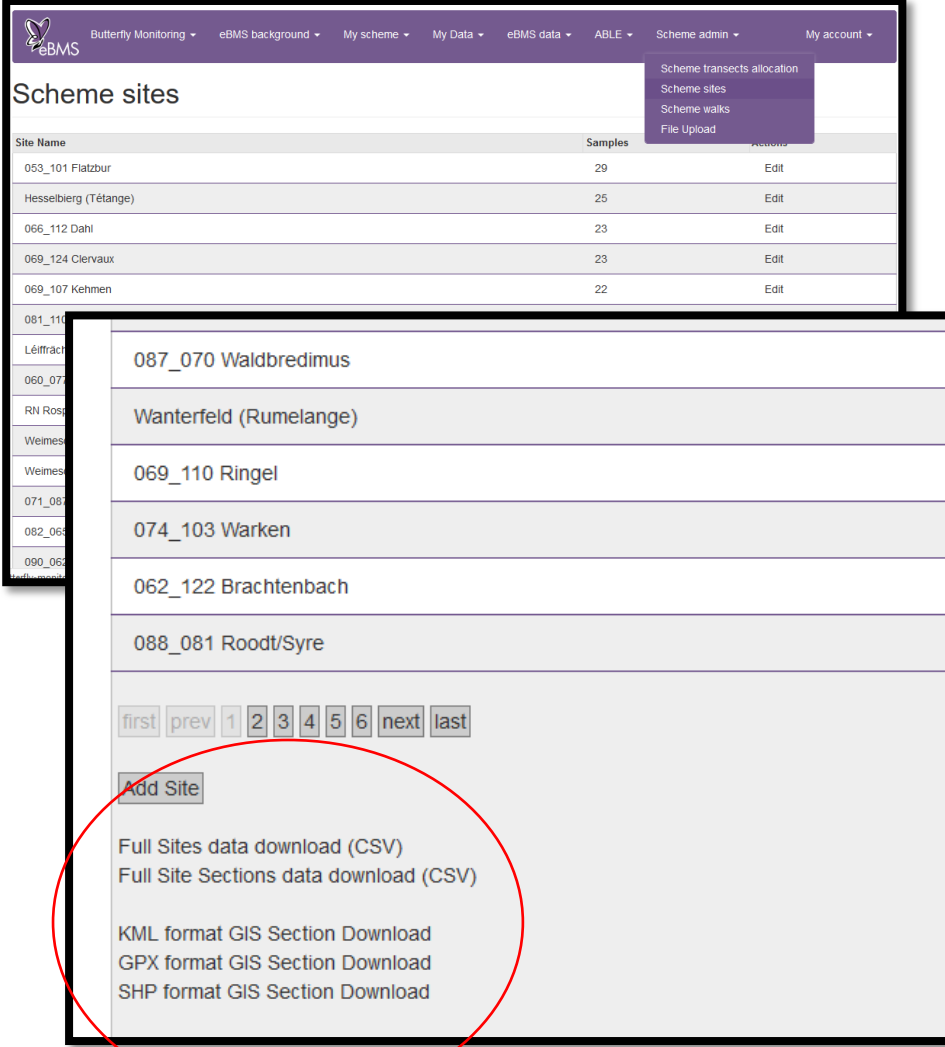
	Mon	Tue	Wed	Thu	Fri	Sat
1	Dec 31	1	2	3	4	5
2	Jan 7	8	9	10	11	12
3	Jan 14	15	16	17	18	19
4	Jan 21	22	23	24	25	26
5	Jan 28	29	30	31	1	2
6	Feb 4	5	6	7	8	9
7	Feb 11	12	13	14	15	16
8	Feb 18	19	20	21	22	23
9	Feb 25	26	27	28	1	2
10	Mar 4	5	6	7	8	9
11	Mar 11	12	13	14	15	16
12	Mar 18	19	20	21	22	23
13	Mar 25	26	27	28	29	30
14	Apr 1	2	3	4	5	6
15	Apr 8	9	10	11	12	13
					GvB Test Site Lux 1	GvB Test Site Lu
					082_065 Frisange	087_070
					087_070	Waldbredimus
16	Apr 15	16	17	18	19	20

Butterfly-monitoring.net: data exports

- Three main types of exports to get all data from the LuxBMS
 - Site information
 - Where...
 - Sample files
 - When, by who...
 - Occurrence files
 - What species, how much...

Butterfly-monitoring.net: data exports

- Site information
 - Full sites and sections data (.csv)
 - Site name, IDs
 - Lengths
 - Habitats...
 - GIS
 - One feature by section



eBMS Butterfly Monitoring eBMS background My scheme My Data eBMS data ABLE Scheme admin My account

Scheme sites

Site Name	Samples	Actions
053_101 Flatzbur	29	Edit
Hesselberg (Tétange)	25	Edit
066_112 Dahl	23	Edit
069_124 Clervaux	23	Edit
069_107 Kehmen	22	Edit
081_110		
Léiffracht		
060_077		
RN Rosch		
Weimes		
Weimes		
071_087		
082_063		
090_062		

087_070 Waldbredimus

Wanterfeld (Rumelange)

069_110 Ringel

074_103 Warken

062_122 Brachtenbach

088_081 Roodt/Syre


first prev 1 2 3 4 5 6 next last


Add Site

Full Sites data download (CSV)
Full Site Sections data download (CSV)
KML format GIS Section Download
GPX format GIS Section Download
SHP format GIS Section Download

Butterfly-monitoring.net: data exports

- Sample and Occurrence files => Annual report

English



Butterfly Monitoring ▾ eBMS background ▾ My scheme ▾ My Data ▾ eBMS data ▾ ABLE ▾ Scheme admin ▾ My account ▾

My transect sites
My transect walks
My app timed counts
My transect reports ▾

My site/visit Summary
My annual report
My year by year index plot
My section plot

Annual report

Annual Summary data shows a summary of the data arranged by weeks of the year.

In *Estimated table*, figures shown in red are (or include) estimates for missing weeks, based on a simple interpolation.

Raw data will just show the counts (in black font) exactly as entered. When looking at single sites in *Raw data* form, you can edit your counts by clicking on the sample link at the top of the column.

Please be aware that there will be delay between entering the walk data, and that data appearing on this page. There are two reasons this may happen:

1. There is a process that must run every 15 minutes to calculate the summary values and estimates
2. There is some caching of the data to speed up the page response times.

To bypass the caching, untick the option box below (but beware that the page may take longer to respond). In the meantime, newly entered data should still be visible in your 'My Walks' page.

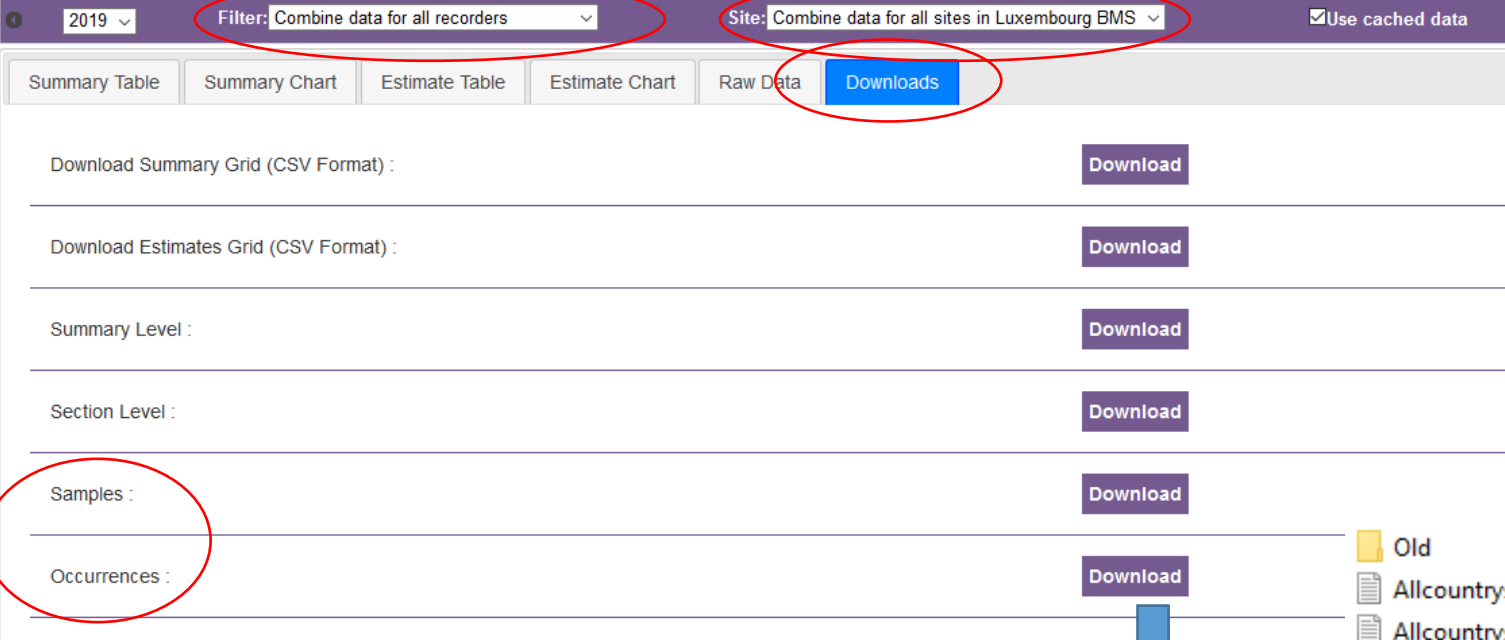
2019 ▾
Filter: My data ▾
Site: Combine data for all your current sites ▾
☒ Use cached data

Summary Table
Summary Chart
Estimate Table
Estimate Chart
Raw Data
Downloads

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Date	Jan 01	Jan 08	Jan 15	Jan 22	Jan 29	Feb 05	Feb 12	Feb 19	Feb 26	Mar 05	Mar 12	Mar 19	Mar 26	Apr 02	Apr 09	Apr 16	Apr 23	Apr 30	May 07	May 14	May 21	May 28	Jun 04	Jun 11	Jun 18	Jun 25	Jul 02	Jul 09	Jul 16	Jul 23	Jul 30
Ochlodes sylvanus																									1						
Thymelicus																															

Butterfly-monitoring.net: data exports

- Set filters to “Combine data for all...” = all data of the LuxBMS
- Download “Samples” and “Occurrences” .csv files year by year.



The screenshot shows the data export interface of Butterfly-monitoring.net. At the top, there is a navigation bar with a year selector (2019), a filter dropdown (set to 'Combine data for all recorders'), a site dropdown (set to 'Combine data for all sites in Luxembourg BMS'), and a checkbox for 'Use cached data'. Below this is a tabbed interface with options: Summary Table, Summary Chart, Estimate Table, Estimate Chart, Raw Data, and Downloads (highlighted in blue). The main content area lists various data export options, each with a 'Download' button. The 'Samples' and 'Occurrences' rows are circled in red. A large blue arrow points from the 'Occurrences' download button to a list of files on the right. The list includes files for 'Old' data and 'Allcountrysites' for 'Occurrences' and 'Samples' from 2016 to 2019.

2019 Filter: Combine data for all recorders Site: Combine data for all sites in Luxembourg BMS ☒ Use cached data

Summary Table Summary Chart Estimate Table Estimate Chart Raw Data Downloads

Download Summary Grid (CSV Format) : Download

Download Estimates Grid (CSV Format) : Download

Summary Level : Download

Section Level : Download

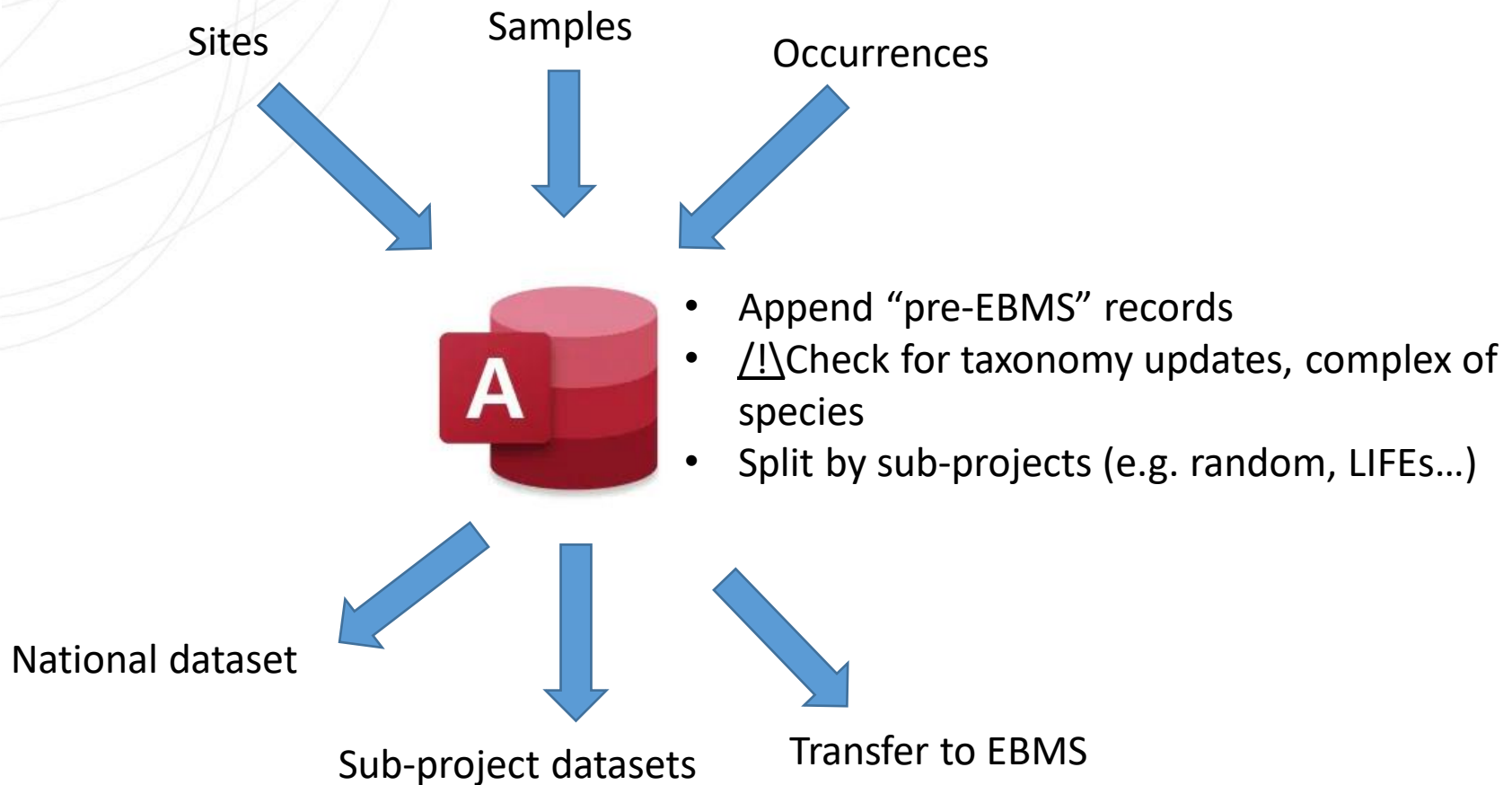
Samples : Download

Occurrences : Download

Old

- Allcountrysites_Occurrences_2016
- Allcountrysites_Occurrences_2017
- Allcountrysites_Occurrences_2018
- Allcountrysites_Occurrences_2019
- Allcountrysites_Samples_2016
- Allcountrysites_Samples_2017
- Allcountrysites_Samples_2018
- Allcountrysites_Samples_2019

Butterfly-monitoring.net: data management



Butterfly-monitoring.net: Evolutions?

- Additional reporting tools?
 - Online tool for species trends over year?
 - Allow selection of sites in the analysis
 - How to integrate older records.
- Additional species (e.g. bumblebees)?
- Allow encoding of non-standardised observations (e.g. before/after the walk)?

Butterfly-monitoring.net: conclusion

- Happy to get maintenance and development labour shared at EU level
- National flexibility: coordinate system, maps
- Regional coordinators
- Looking forward
 - mobile app for transects