**TRIM – For Abundance Data**

Trim Analysis has been performed by Antoine Derouaux for Birds and Kristijn Swinnen for Moths in Flanders

The procedure was the following:

* For birds, we use regional common birds monitoring schemes data in Wallonia since 1990 (Derouaux & Paquet, 2018), in Brussels from 1992 (Weiserbs, 2012) and in Flanders since 2007 (Devos et al., 2016).
* We calculated regional trends with RTRIM-shell in R. This package automatically choose the best model to calculate yearly indices and trends using Poisson regression (van Strien et al., 2001; Bogaart et al, 2018).
* We combined the 3 regional indices for each birds and calculated Belgian indices and trends with RSWAN, an R script developed by CBS Netherlands (Marnix de Zeeuw and Arco Van Strien). RSWAN calculates trends and indices from regional or national indices taking into account the weight of the breeding population. The breeding pairs estimation for the 3 regions comes from the Article 12 rapportage to the European Commission (2007-2012; <https://nature-art12.eionet.europa.eu/article12/report?period=1&country=BE>).
* Belgian trends runs from 1990 to 2018.
* We have results for 95 common bird species in Belgium.
* For 48 species, we selected the trends for the 3 regions. Some species do not breed in Brussels Region or if they do, the population is very small and there is no trend or the trend is insignificant compared to Belgium. So for 35 species, we calculated the national index by comining Wallonia and Flanders index. Then some species a breed only in one region. We then take the regional index for the Belgian one. In Wallonia, it occurs for 8 species, in Flanders 4 species are concerned (Table 2).
* Table 2 : List of selected species for the LPI

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Species\_nr | SciName | Index | Species\_nr | SciName | Index |
| 1860 | Anas platyrhynchos | Wal\_Bru\_Fla | 12510 | Acrocephalus scirpaceus | Wal\_Fla |
| 2690 | Accipiter nisus | Wal\_Bru\_Fla | 12590 | Hippolais icterina | Wal\_Fla |
| 2870 | Buteo buteo | Wal\_Bru\_Fla | 12600 | Hippolais polyglotta | Wal |
| 3040 | Falco tinnunculus | Wal\_Bru\_Fla | 12740 | Sylvia curruca | Wal\_Bru\_Fla |
| 3670 | Perdix perdix | Wal\_Fla | 12750 | Sylvia communis | Wal\_Bru\_Fla |
| 3940 | Phasianus colchicus | Wal\_Fla | 12760 | Sylvia borin | Wal\_Bru\_Fla |
| 4240 | Gallinula chloropus | Wal\_Bru\_Fla | 12770 | Sylvia atricapilla | Wal\_Bru\_Fla |
| 4290 | Fulica atra | Wal\_Bru\_Fla | 13080 | Phylloscopus sibilatrix | Wal\_Fla |
| 4500 | Haematopus ostralegus | Fla | 13110 | Phylloscopus collybita | Wal\_Bru\_Fla |
| 4930 | Vanellus vanellus | Wal\_Fla | 13120 | Phylloscopus trochilus | Wal\_Bru\_Fla |
| 5320 | Limosa limosa | Fla | 13140 | Regulus regulus | Wal\_Bru\_Fla |
| 5460 | Tringa totanus | Fla | 13150 | Regulus ignicapilla | Wal\_Bru\_Fla |
| 6680 | Columba oenas | Wal\_Bru\_Fla | 13350 | Muscicapa striata | Wal\_Fla |
| 6700 | Columba palumbus | Wal\_Bru\_Fla | 13490 | Ficedula hypoleuca | Wal\_Fla |
| 6840 | Streptopelia decaocto | Wal\_Bru\_Fla | 14370 | Aegithalos caudatus | Wal\_Bru\_Fla |
| 6870 | Streptopelia turtur | Wal\_Fla | 14400 | Poecile palustris | Wal\_Bru\_Fla |
| 7240 | Cuculus canorus | Wal\_Fla | 14420 | Poecile montanus | Wal\_Bru\_Fla |
| 7950 | Apus apus | Wal\_Bru\_Fla | 14540 | Lophophanes cristatus | Wal\_Bru\_Fla |
| 8480 | Jynx torquilla | Wal | 14610 | Periparus ater | Wal\_Bru\_Fla |
| 8560 | Picus viridis | Wal\_Bru\_Fla | 14620 | Cyanistes caeruleus | Wal\_Bru\_Fla |
| 8630 | Dryocopus martius | Wal\_Fla | 14640 | Parus major | Wal\_Bru\_Fla |
| 8760 | Dendrocopos major | Wal\_Bru\_Fla | 14790 | Sitta europaea | Wal\_Bru\_Fla |
| 8830 | Leiopicus medius | Wal\_Fla | 14860 | Certhia familiaris | Wal |
| 8870 | Dryobates minor | Wal\_Fla | 14870 | Certhia brachydactyla | Wal\_Bru\_Fla |
| 9740 | Lullula arborea | Wal\_Fla | 15080 | Oriolus oriolus | Wal\_Fla |
| 9760 | Alauda arvensis | Wal\_Fla | 15150 | Lanius collurio | Wal |
| 9920 | Hirundo rustica | Wal\_Fla | 15390 | Garrulus glandarius | Wal\_Bru\_Fla |
| 10090 | Anthus trivialis | Wal\_Fla | 15490 | Pica pica | Wal\_Bru\_Fla |
| 10110 | Anthus pratensis | Wal\_Fla | 15600 | Corvus monedula | Wal\_Bru\_Fla |
| 10170 | Motacilla flava | Wal\_Fla | 15670 | Corvus corone | Wal\_Bru\_Fla |
| 10190 | Motacilla cinerea | Wal\_Fla | 15720 | Corvus corax | Wal |
| 10200 | Motacilla alba | Wal\_Bru\_Fla | 15820 | Sturnus vulgaris | Wal\_Bru\_Fla |
| 10660 | Troglodytes troglodytes | Wal\_Bru\_Fla | 15910 | Passer domesticus | Wal\_Bru\_Fla |
| 10840 | Prunella modularis | Wal\_Bru\_Fla | 15980 | Passer montanus | Wal\_Fla |
| 10990 | Erithacus rubecula | Wal\_Bru\_Fla | 16360 | Fringilla coelebs | Wal\_Bru\_Fla |
| 11040 | Luscinia megarhynchos | Wal\_Fla | 16400 | Serinus serinus | Wal |
| 11060 | Cyanecula svecica | Wal\_Fla | 16490 | Chloris chloris | Wal\_Bru\_Fla |
| 11210 | Phoenicurus ochruros | Wal\_Bru\_Fla | 16530 | Carduelis carduelis | Wal\_Fla |
| 11220 | Phoenicurus phoenicurus | Wal\_Fla | 16540 | Carduelis spinus | Wal |
| 11390 | Saxicola torquatus | Wal\_Fla | 16600 | Linaria cannabina | Wal\_Fla |
| 11870 | Turdus merula | Wal\_Bru\_Fla | 16660 | Loxia curvirostra | Wal\_Fla |
| 11980 | Turdus pilaris | Wal | 17100 | Pyrrhula pyrrhula | Wal\_Bru\_Fla |
| 12000 | Turdus philomelos | Wal\_Bru\_Fla | 17170 | Coccothraustes coccothraustes | Wal\_Bru\_Fla |
| 12020 | Turdus viscivorus | Wal\_Bru\_Fla | 18570 | Emberiza citrinella | Wal\_Fla |
| 12200 | Cettia cetti | Wal\_Fla | 18770 | Emberiza schoeniclus | Wal\_Fla |
| 12260 | Cisticola juncidis | Fla | 18820 | Emberiza calandra | Wal\_Fla |
| 12360 | Locustella naevia | Wal\_Fla |  |  |  |
| 12430 | Acrocephalus schoenobaenus | Wal\_Fla |  |  |  |
| 12500 | Acrocephalus palustris | Wal\_Bru\_Fla |  |  |  |

**MSI-Tools to create multi-species indices and trends**

To create indicators, we can combine the trends of different species using the same habitats or the same environment variables. This can be done by unsing the MSI-Tools. It is a R script that apply a Monte Carlo method to calculate multi-species indices (see Soldaat et al., 2017 for more information). MSI-Tools calculate a trend for a defined group of species and is able to calculate the slopes and the standard error. This tool was used to create the different LPI’s. For each species, Constance Fastre assigned an habitat and a mean temperature to create the LPI’s by habitat and by temperature. Habitat assignation was discussed with species experts.

The global LPI is the combination of the whole species for which we had an indice.

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