SECOND EDITION

THE LITTLE OWL

Population Dynamics, Behavior and Management of Athene Noctua

DRIES VAN NIEUWENHUYSE,
RONALD VAN HARXEN and DAVID H. JOHNSON

The Little Owl

Population dynamics, Behavior and Management of Athene noctua

Dries Van Nieuwenhuyse
Ronald van Harxen
David H. Johnson

Illustrations by Joris De Raedt

PLATE 01

Athene noctua vidalii

2008 versus 2023

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The Little Owl

- Bibliographie
  - N=3450
- Vocalisations
  - N=1300 xeno-canto; N=840 Macaulay
- Images
  - N=12160
- Baguage/Reprise
  - N=108000
- Données BirdLife
- EBBA2 (50 x 50 km)
- Art 12 directive habitat EU27 (10x10km)

xeno-canto
Sharing wildlife sounds from around the world

The Cornell Lab of Ornithology
Macaulay Library

BirdLife INTERNATIONAL

6221 EURING
The European Union for Bird Ringing

European Environment Agency

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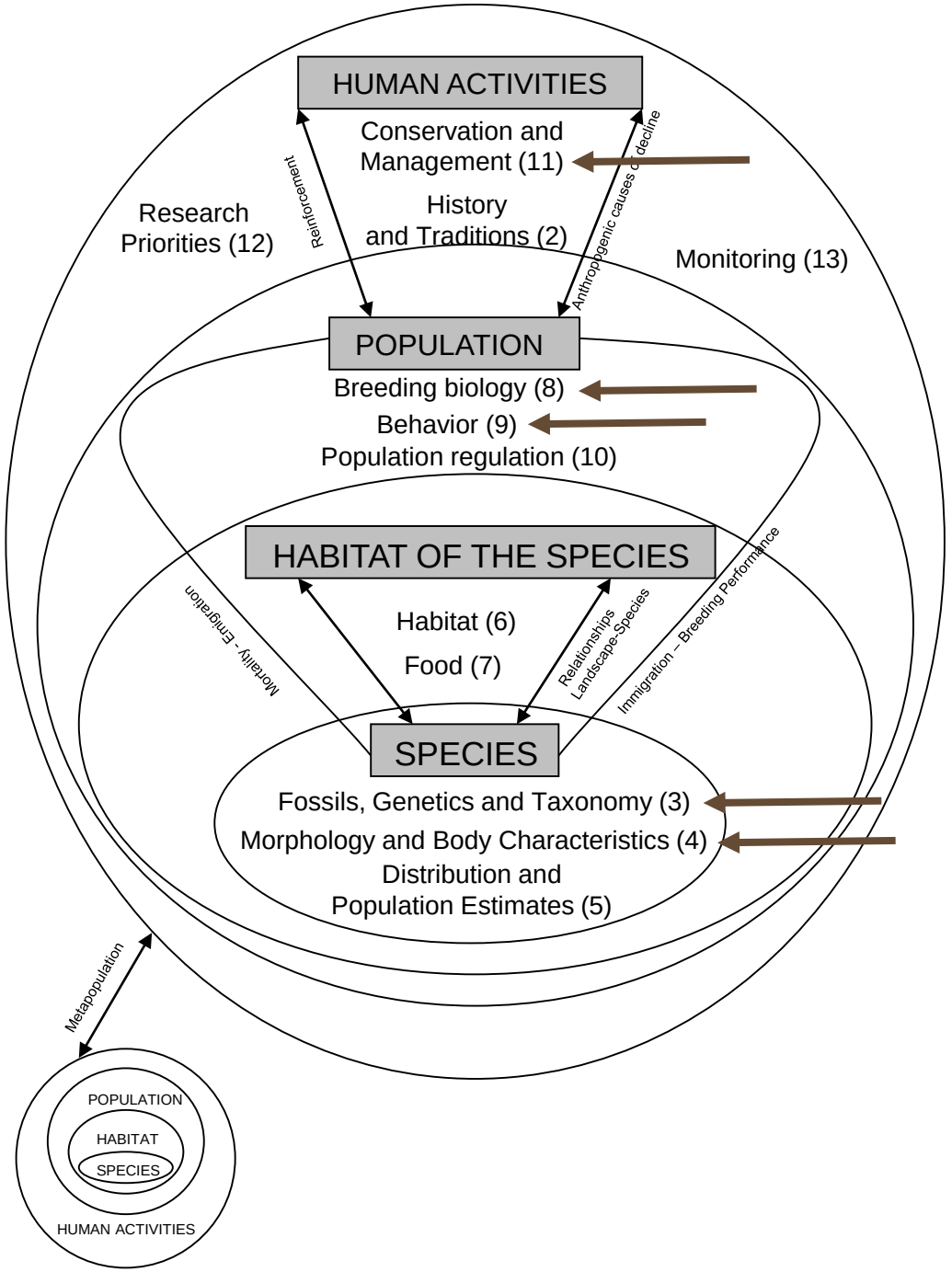
Changements fondamentaux



Changements fondamentaux

Taxonomie

Morphologie

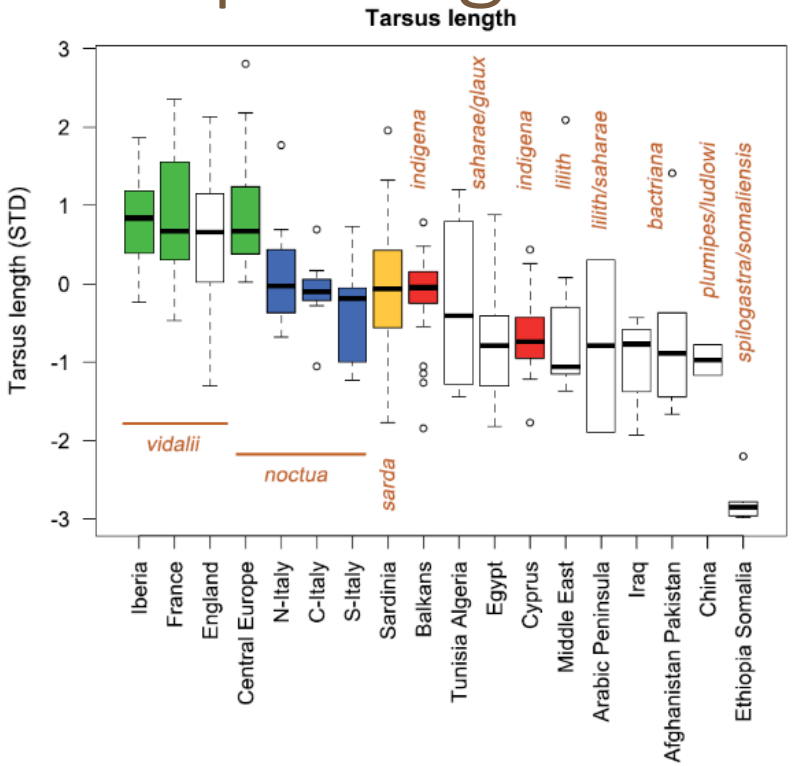
Biologie de la reproduction

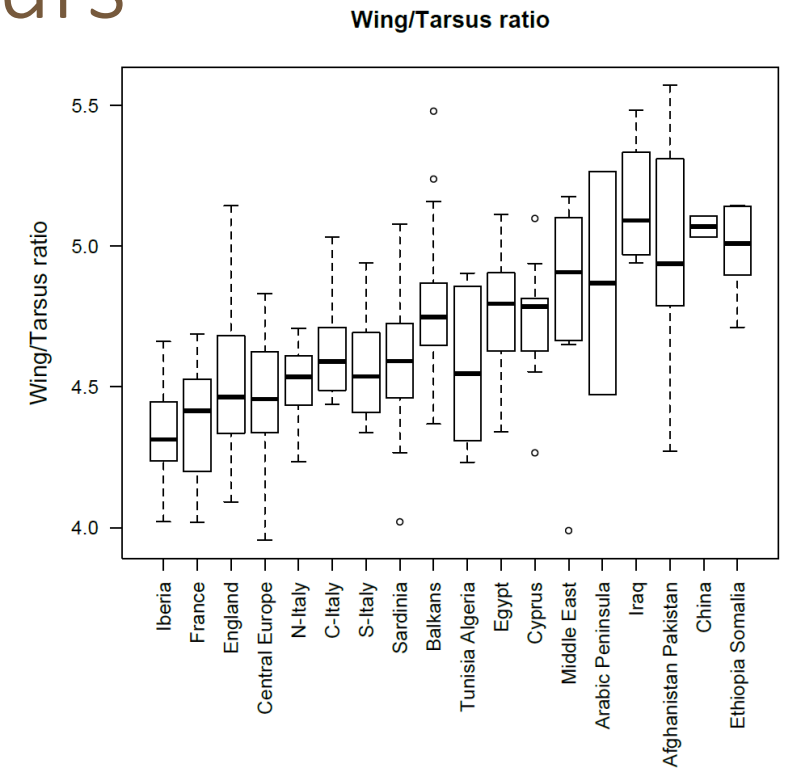
Comportement

Gestion

Morphologie

Morphologie et couleurs



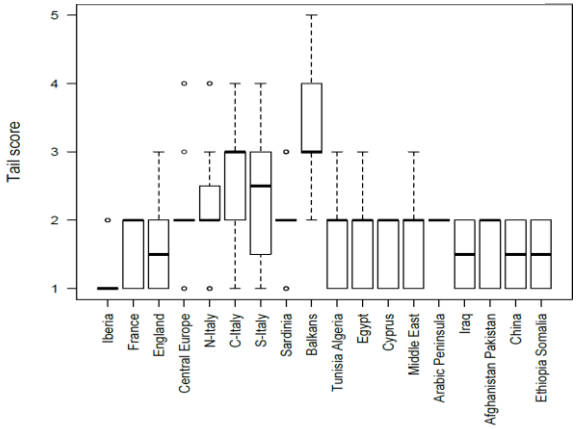


Journal of Ornithology
https://doi.org/10.1007/s10336-020-01792-7

ORIGINAL ARTICLE

Plumage coloration and morphometrics of the Little Owl *Athene noctua* in the Western Palearctic

Irene Pellegrino[1] · Marco Cucco[1] · Elisa Calà[1] · Giovanni Boano[2] · Marco Pavia[3]



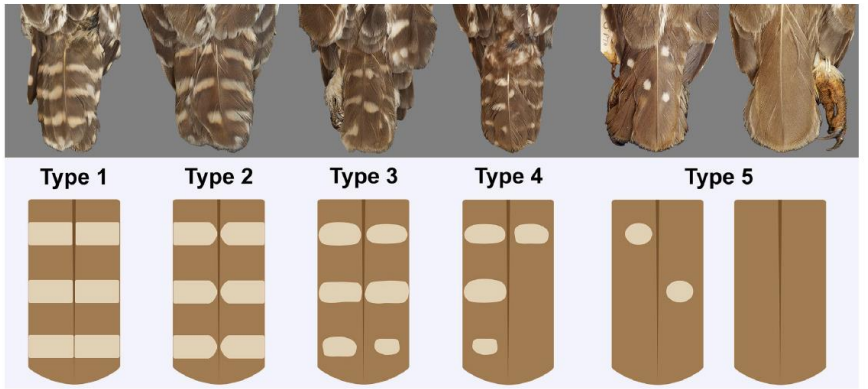


Fig. 1 Tail pattern of the Little Owls. The tail score increases with the extension of the dark area and the concurrent decrease of light spots on the tail feathers

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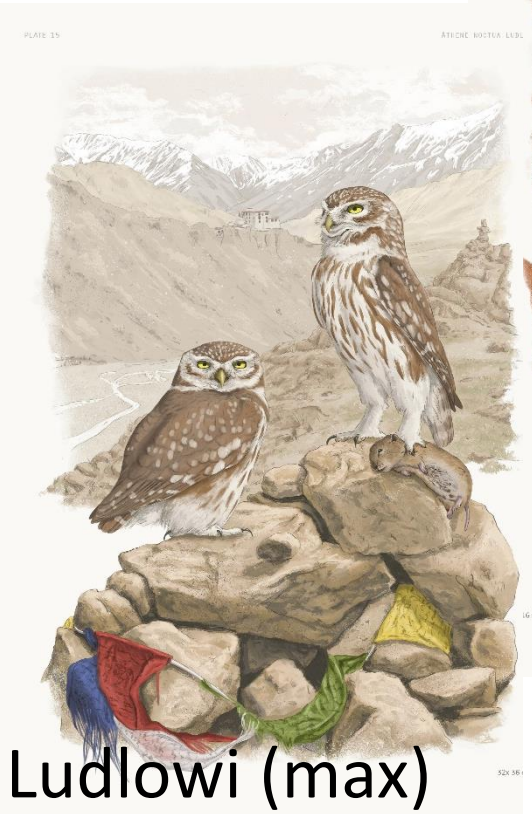
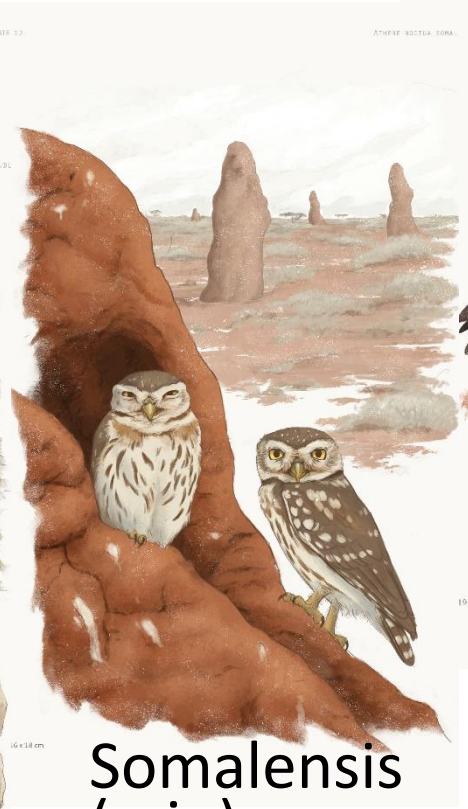
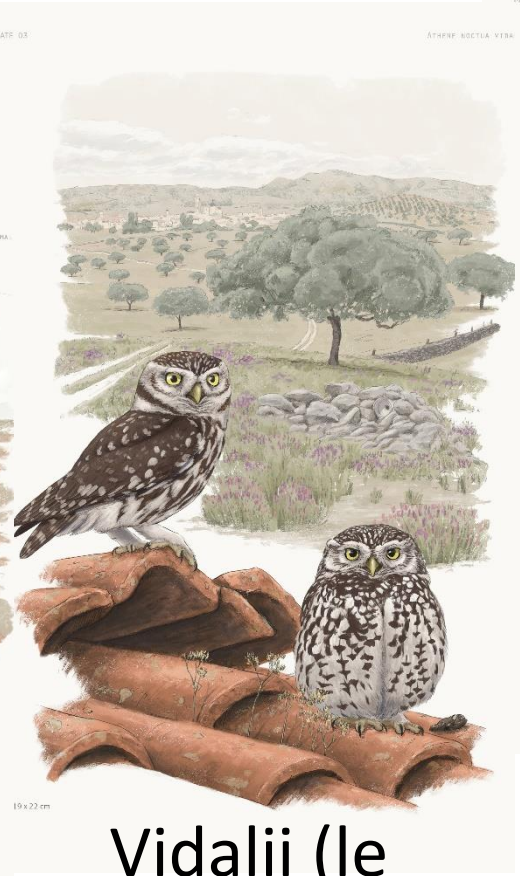
Morphologie & couleurs



Ludlowi (max)

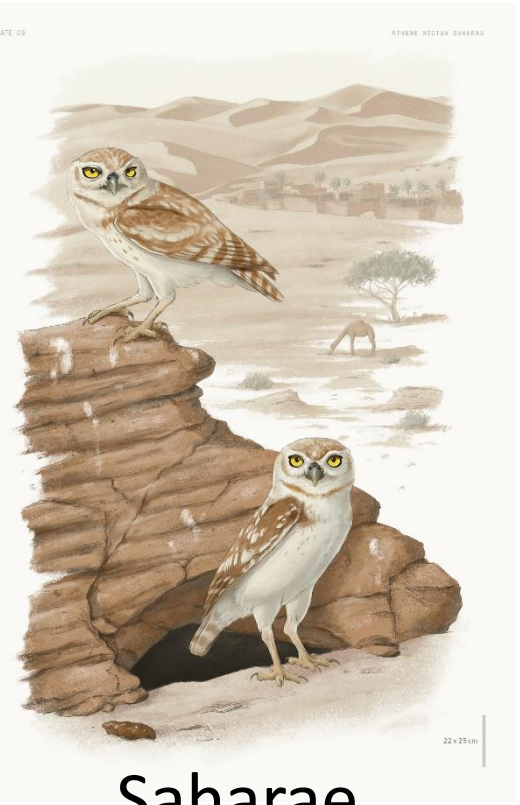


Somalensis (min)



Vidalii (le plus sombre)

Bactriana (grisâtre)



Saharae (jaune)

https://search.macaulaylibrary.org/catalog?taxonCode=litowl1&q=Little%20Owl%20-%20Athene%20noctua

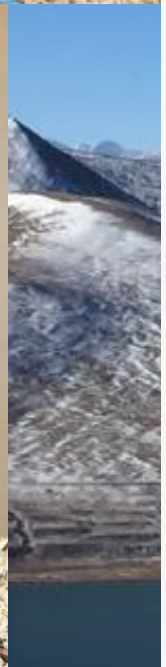


PLATE 18

ATHENE NOCTUA LUDLOWI

32x 36 cm

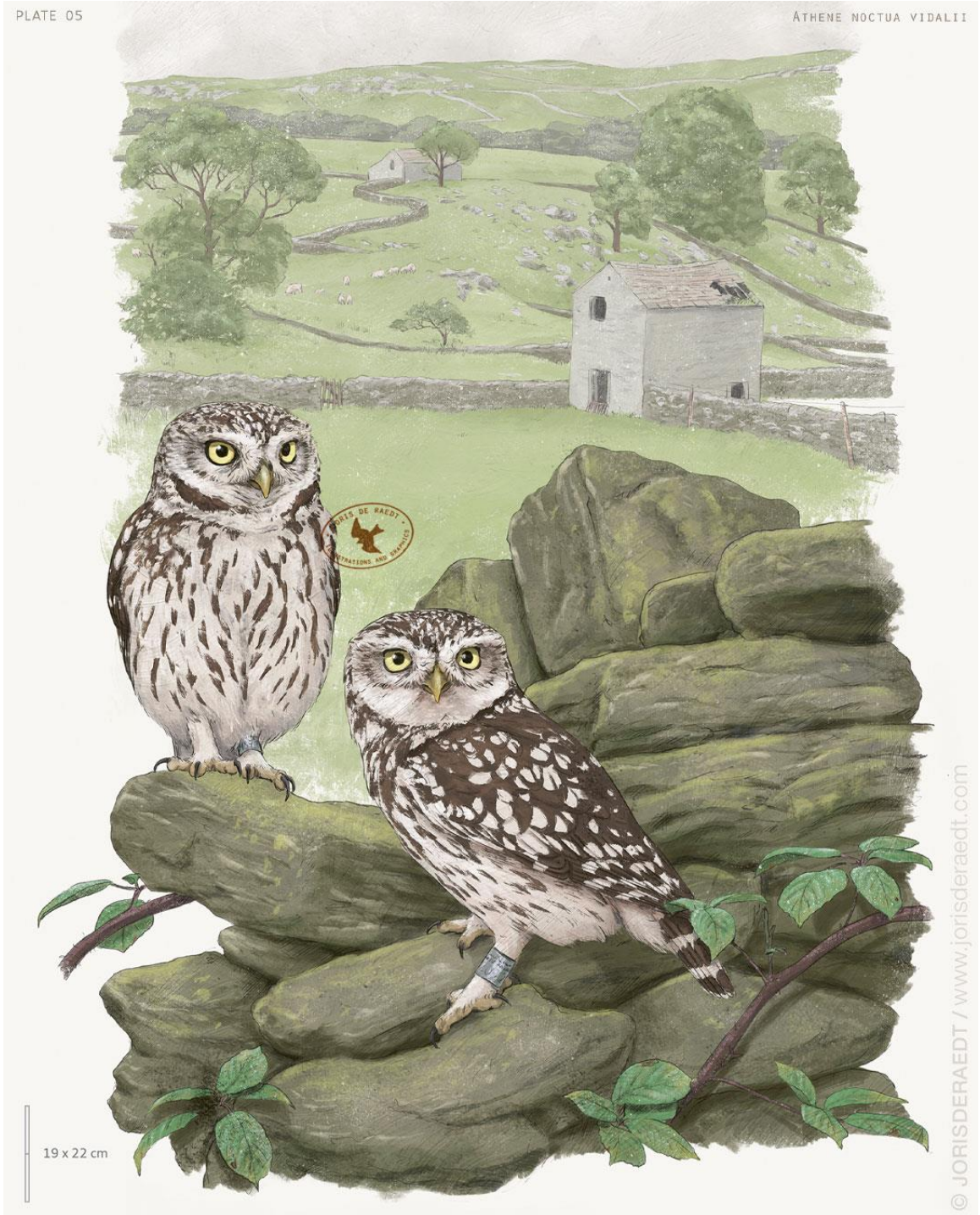
PLATE 12

ATHENE NOCTUA SOMALIENSIS

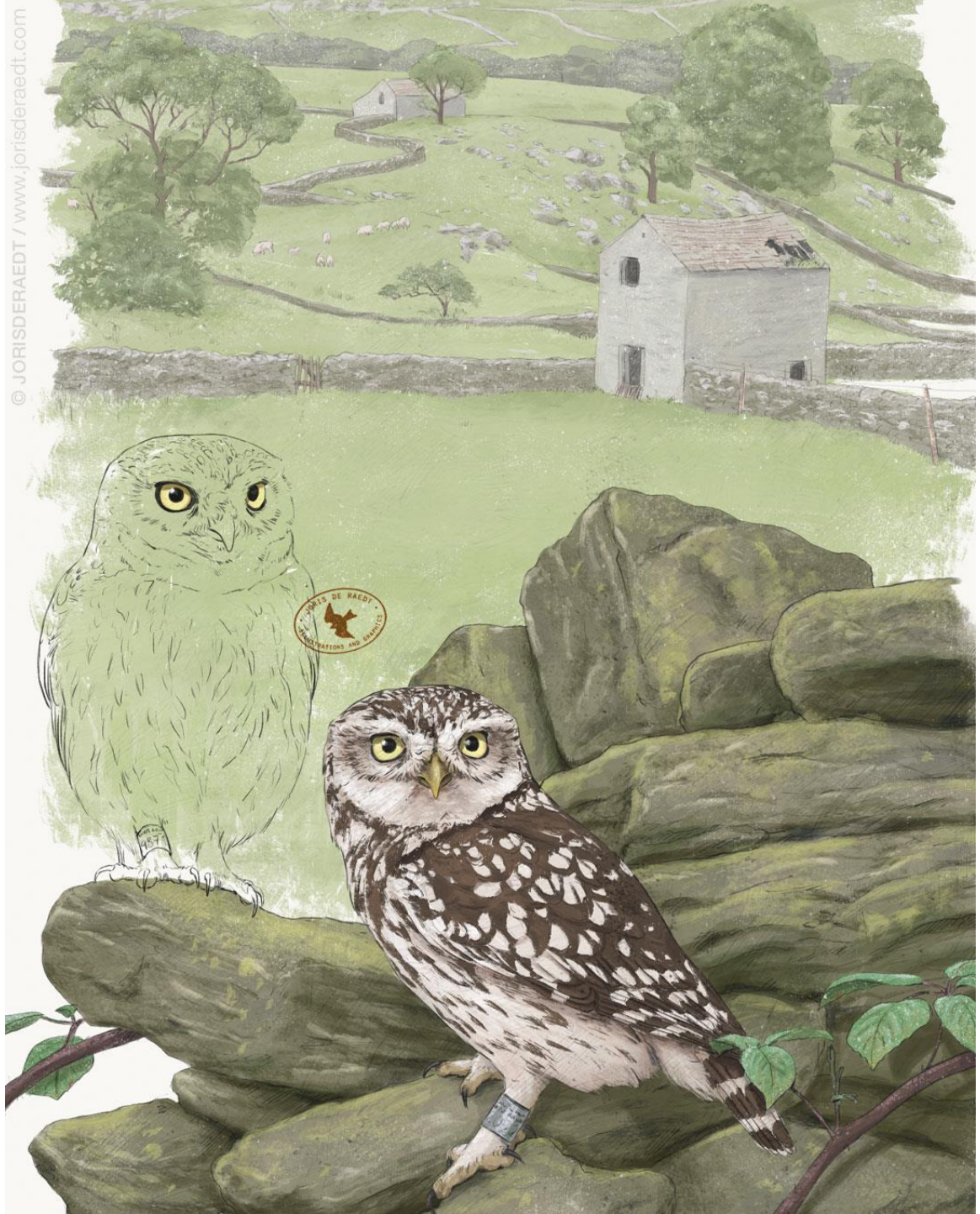
16 x 18 cm

PLATE 05

ATHENE NOCTUA VIDALII



19 x 22 cm



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Trouvez les 7 différences … 1863 vs 2022

Athene noctua
Heuglin, 1863

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1863 vs 2024

Athene noctua spilogastra

Suzie, 2021

La génétique

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A.n.impasta

A.n.sarda

A Study on Genetic Polymorphisms Within *Athene noctua* *

QU Yan-Hua LEI Fu-Min[2] YIN Zuo-Hua

(Institute of Zoology, Chinese Academy of Sciences,19 Zhongguancu Lu, Haidian, Beijing 100080. E-mail:leifm @panda.ioz.ac.cn)

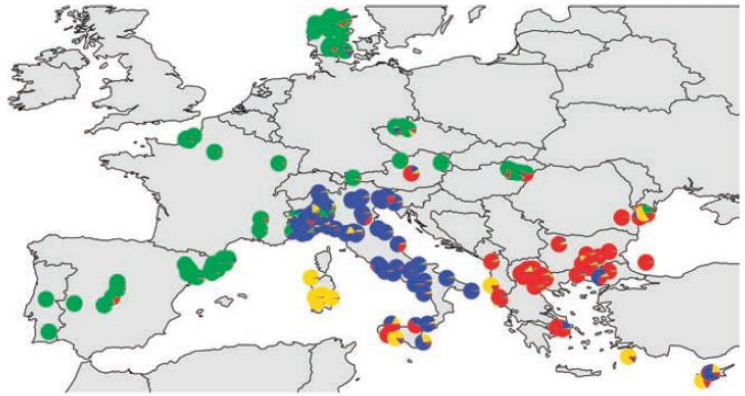


Figure 1. Sampling sites and genotype structure of individuals. Pie charts show the proportion of the four clusters calcul analysis ($K = 4$, same colours as Fig. 3) in each sampled population.

IBIS
BOU international journal of avian science
Ibis (2014), **156**, 639–657

Phylogeography and Pleistocene refugia of the Little Owl *Athene noctua* inferred from mtDNA sequence data

IRENE PELLEGRINO,[1]* ALESSANDRO NEGRI,[1] MARCO CUCCO,[1] NADIA MUCCI,[2] MARCO PAVIA,[3] MARTIN ŠÁLEK,[4] GIOVANNI BOANO[5] & ETTORE RANDI[2]

Articles

Journal of Avian Biology 46: 001–014, 2015
doi: 10.1111/jav.00679

Subject Editor: Javier Perez-Tris. Editor-in-Chief: Jan-Åke Nilsson. Accepted 5 March 2015

Evidence for strong genetic structure in European populations of the little owl *Athene noctua*

Irene Pellegrino, Alessandro Negri, Giovanni Boano, Marco Cucco, Torsten N. Kristensen, Cino Pertoldi, Ettore Randi, Martin Šálek and Nadia Mucci

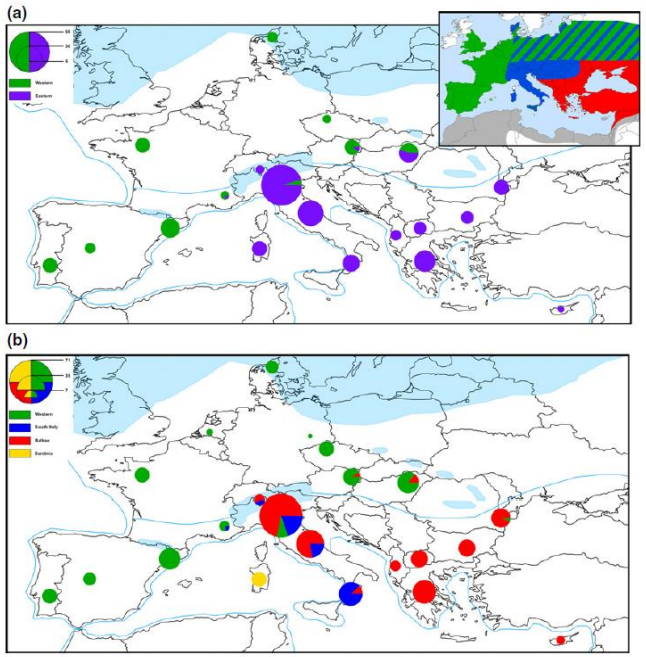


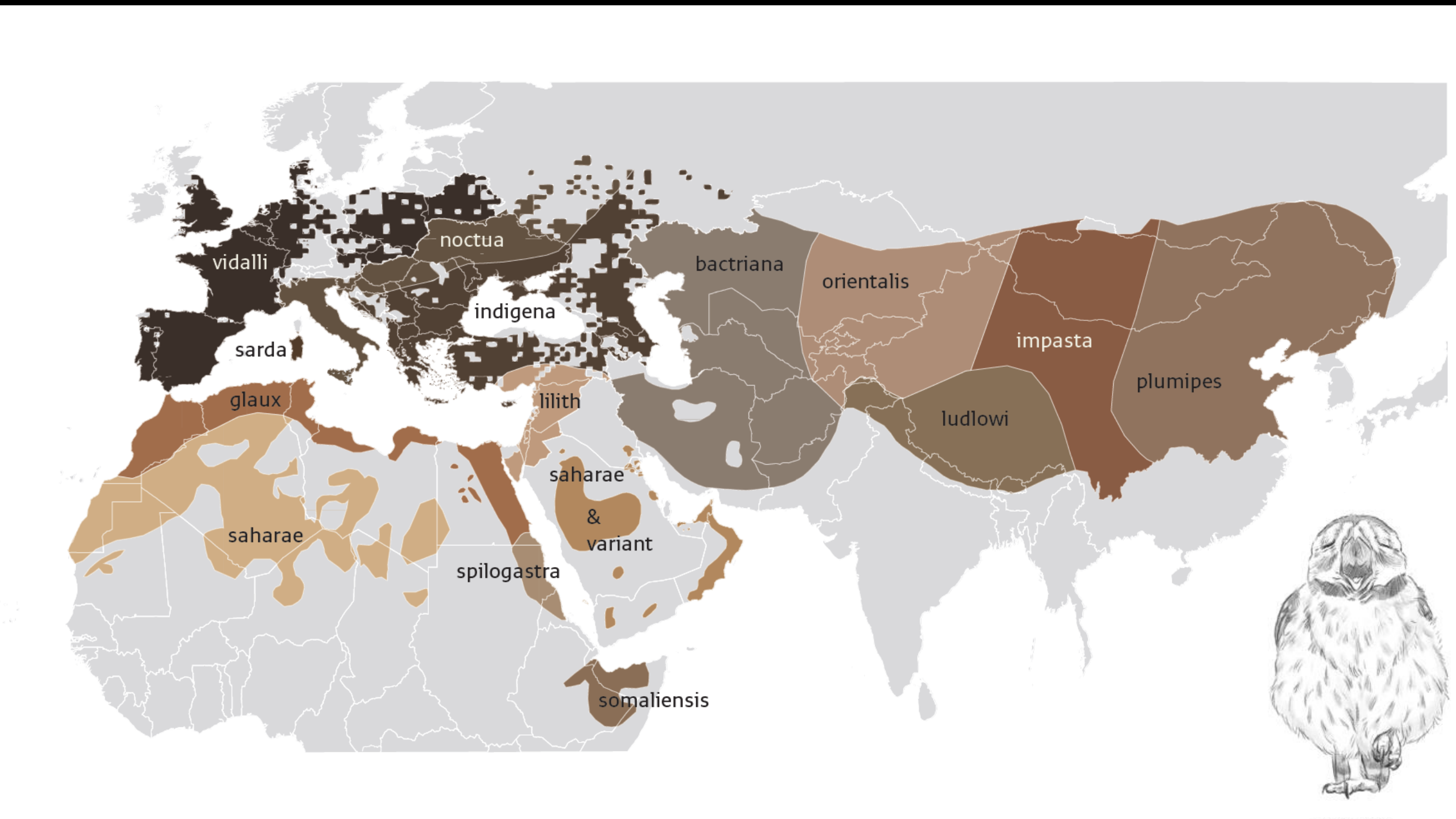
Figure 3. Putative subspecies distributions according to Cramp (1985) and Vaurie (1960) are shown on the top right: green: *Athene noctua vidalii*; blue: *Athene noctua noctua*; red: *Athene noctua indigena*. In the hatched area, Vaurie (1960) reports *A. n. noctua* and Cramp (1985) *A. n. vidalii*. In Cyprus, the literature suggests the presence of *Athene noctua lilith*. (a) COI haplogroups distribution at sampled sites. Pie charts represent the proportion of individuals in the western and eastern clades, respectively. (b) CR1 haplogroup distribution. Pie charts represent the proportion of individuals in each of the four clades recovered. The shaded area indicates the extension of ice sheets during the last glacial maximum (redrawn from Taberlet *et al.* 1998): lowered seashore is depicted by a thinner line at the 100-m submarine contour. A full colour version of this figure is available at *Ibis* online.

PLATE 19

ATHENE NOCTUA IMPASTA

A.n.impasta

26 x 30 cm


vidalli
noctua
indigena
sarda
glaux
saharae
lilith
saharae
&
variant
spilogastra
somaliensis
bactriana
orientalis
impasta
ludlowi
plumipes

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The Little Owl

L’étude de la variante arabe du *A.n.lillith*, semblable au *A.n.glaux*, reste à étudier

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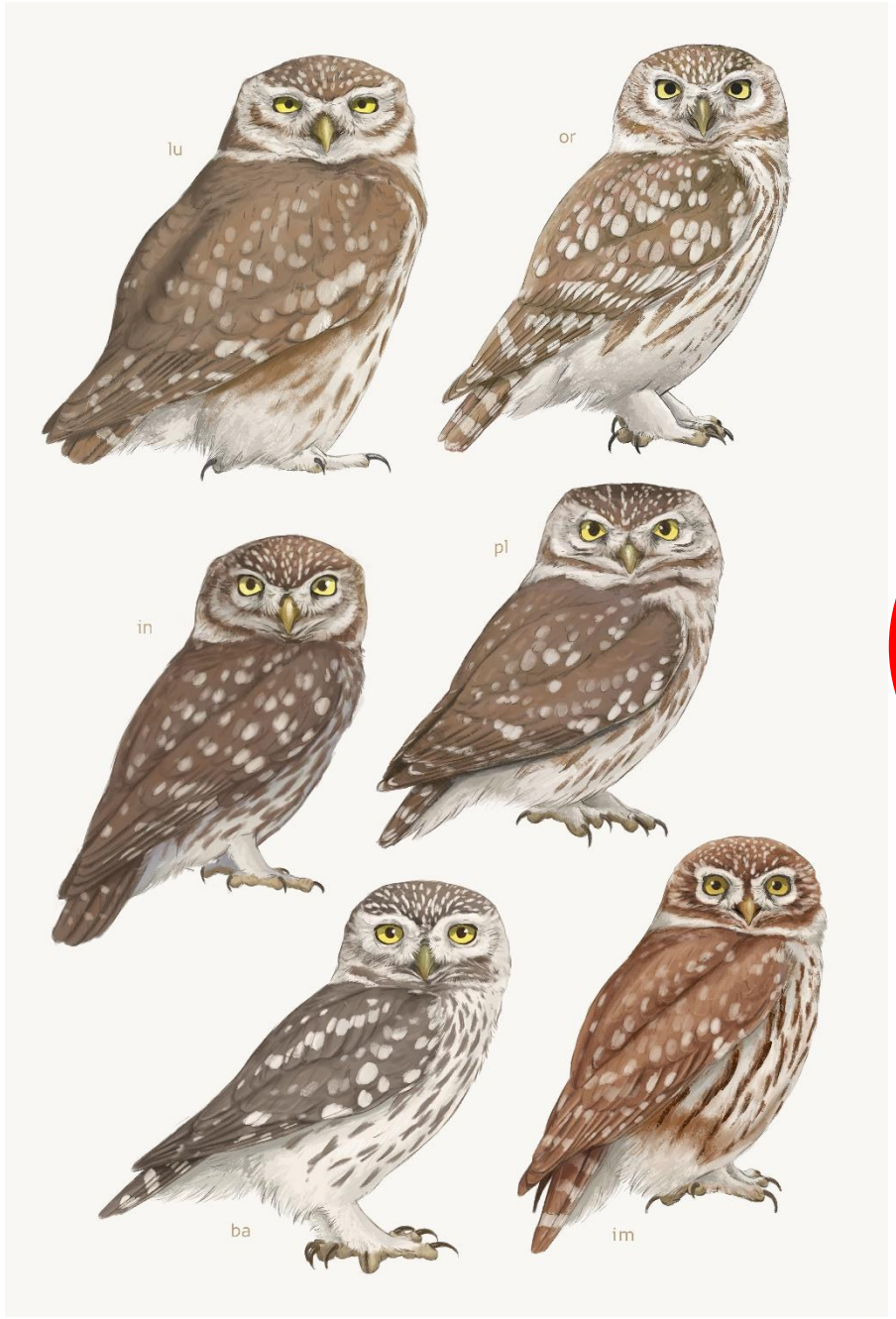
Division suggérée d'*A. spilogastra* en Éthiopie et au Somaliland avec deux sous-espèces *A. s. spilogastra* et *A. s. somaliensis*) reste à étudier.



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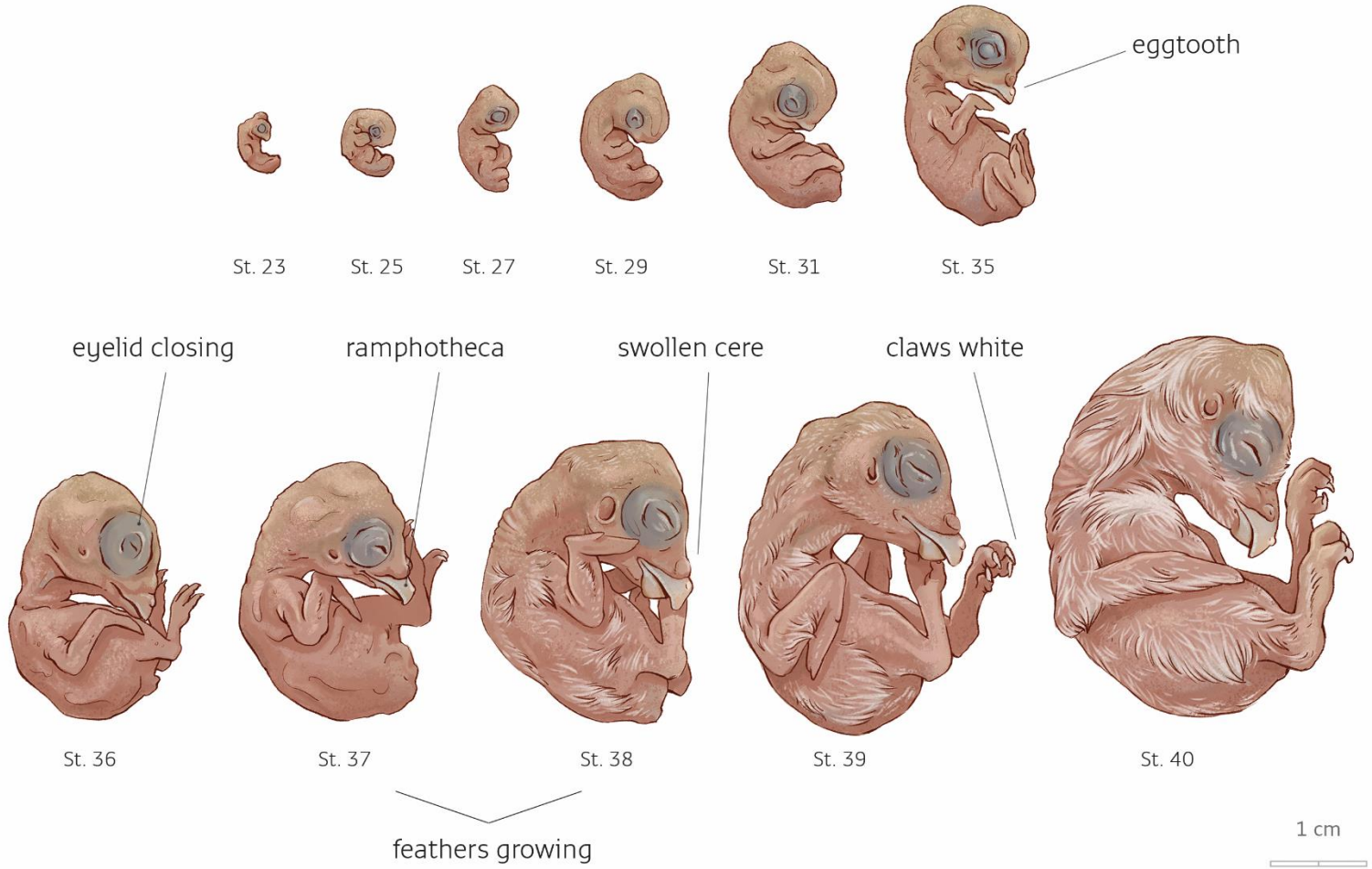
Embryologie

- Les oreilles asymétriques disparaissent deux jours avant l'éclosion



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Morphologie

Day 0 – Still wet hatchling

Day 1

Day 18

Day 23

Day 5

Day 7

Day 29

Day 31

Day 9

Day 14

Day 38

Adult

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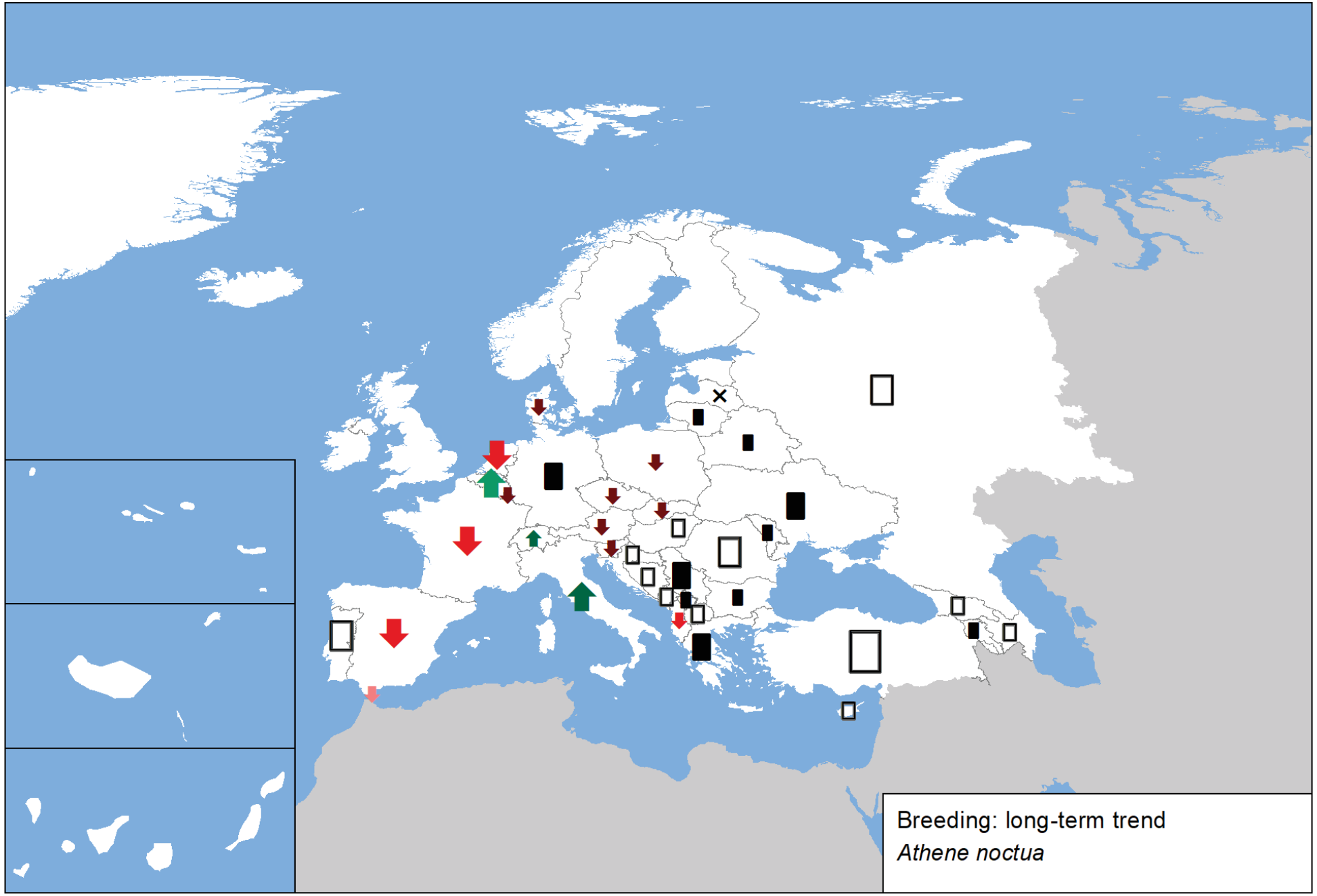

Figure 5.6
Taille des populations reproductrices et tendances à long terme en Europe (BirdLife International 2015).

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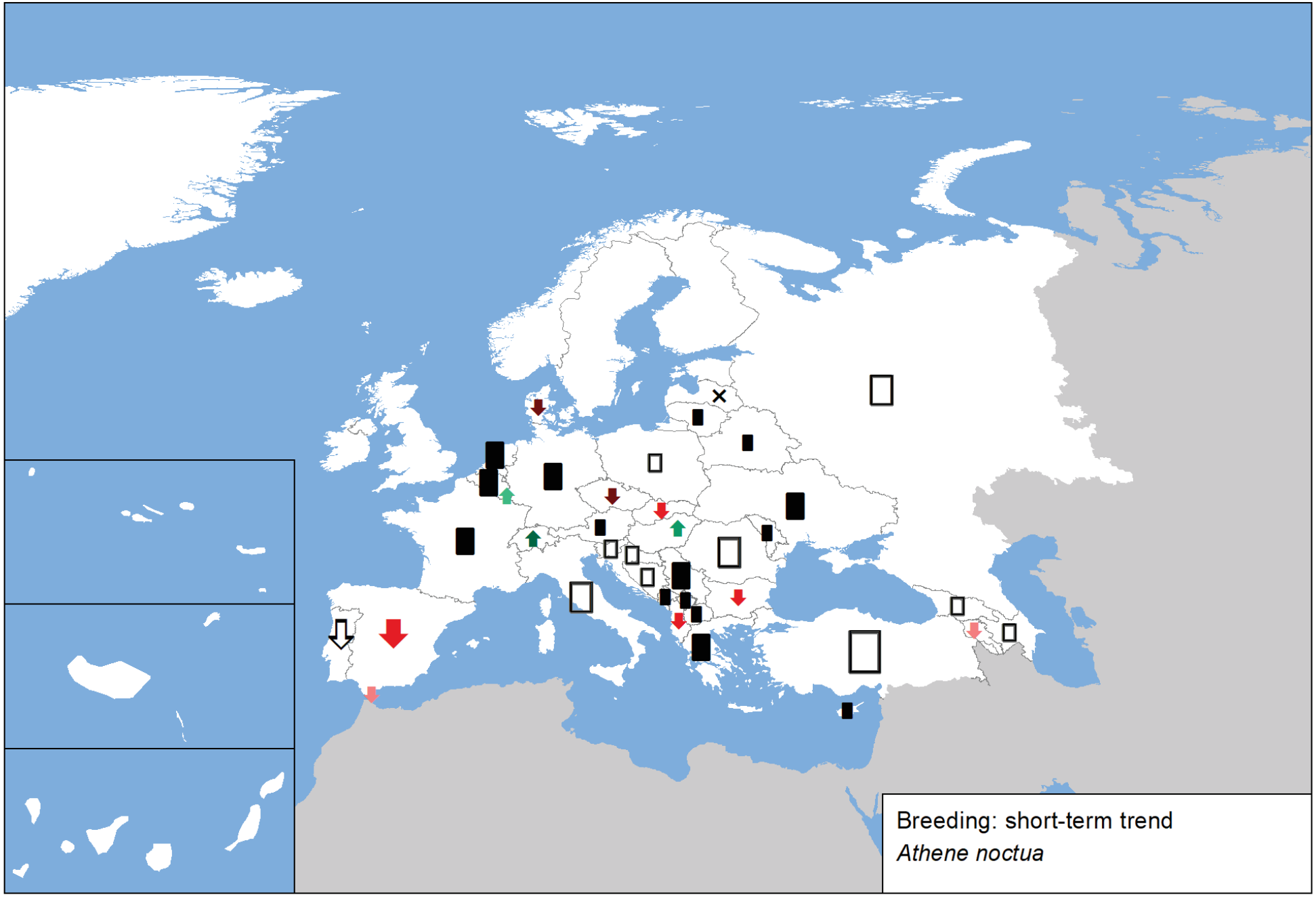

Figure 5.5
Taille des populations reproductrices et tendances à court terme Europe (BirdLife International 2015).

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EBBA2

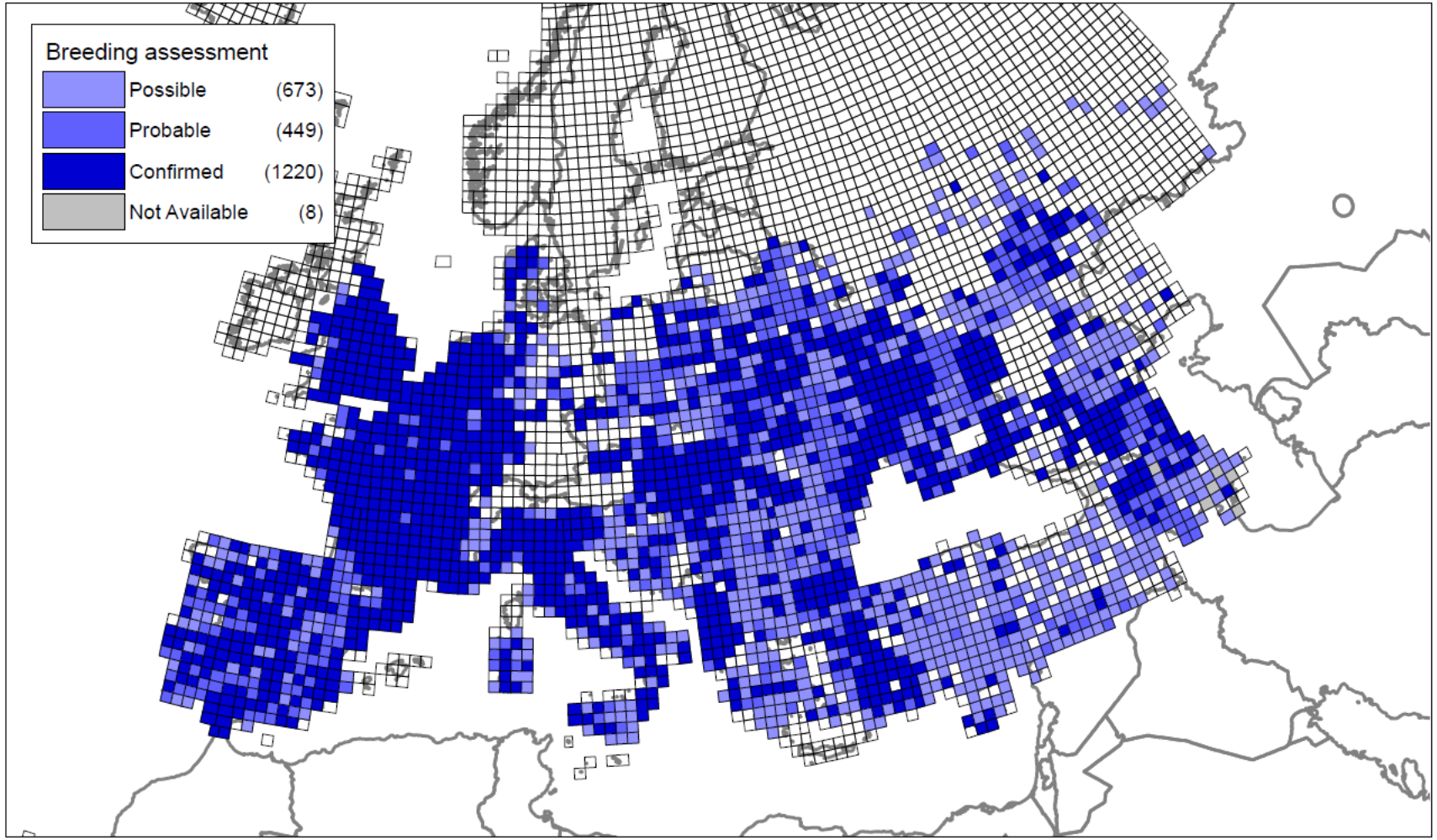

Figure 5.2 Répartition européenne de la Chouette chevêche dans des cellules de grille de 50 à 50 km (d'après Keller et al. 2020).(A) Preuve de reproduction.

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EBBA2

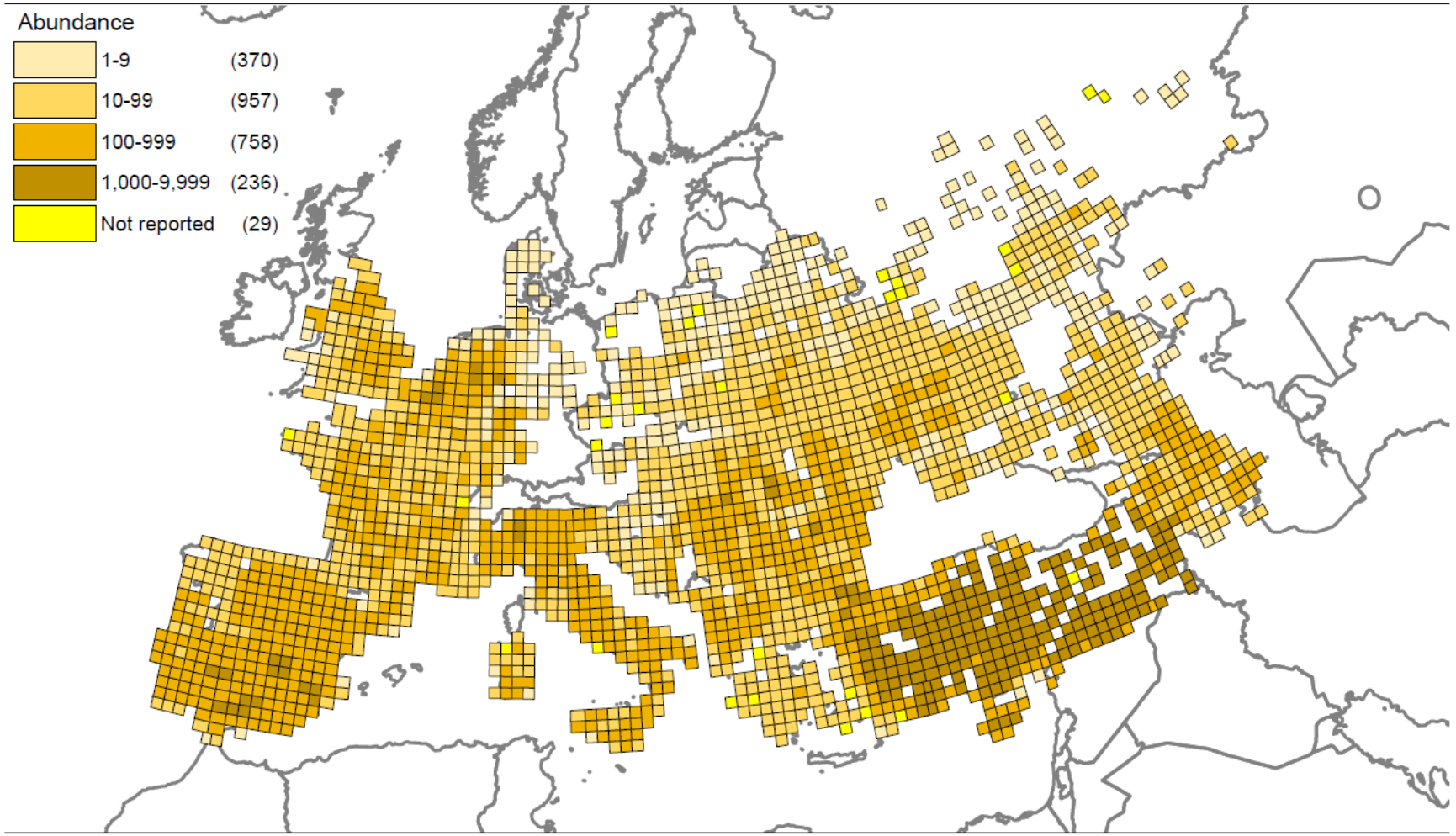

Figure 5.2 Répartition européenne de la Chouette chevêche dans des cellules de grille de 50 à 50 km (d'après Keller et al. 2020). (B) Abundance.

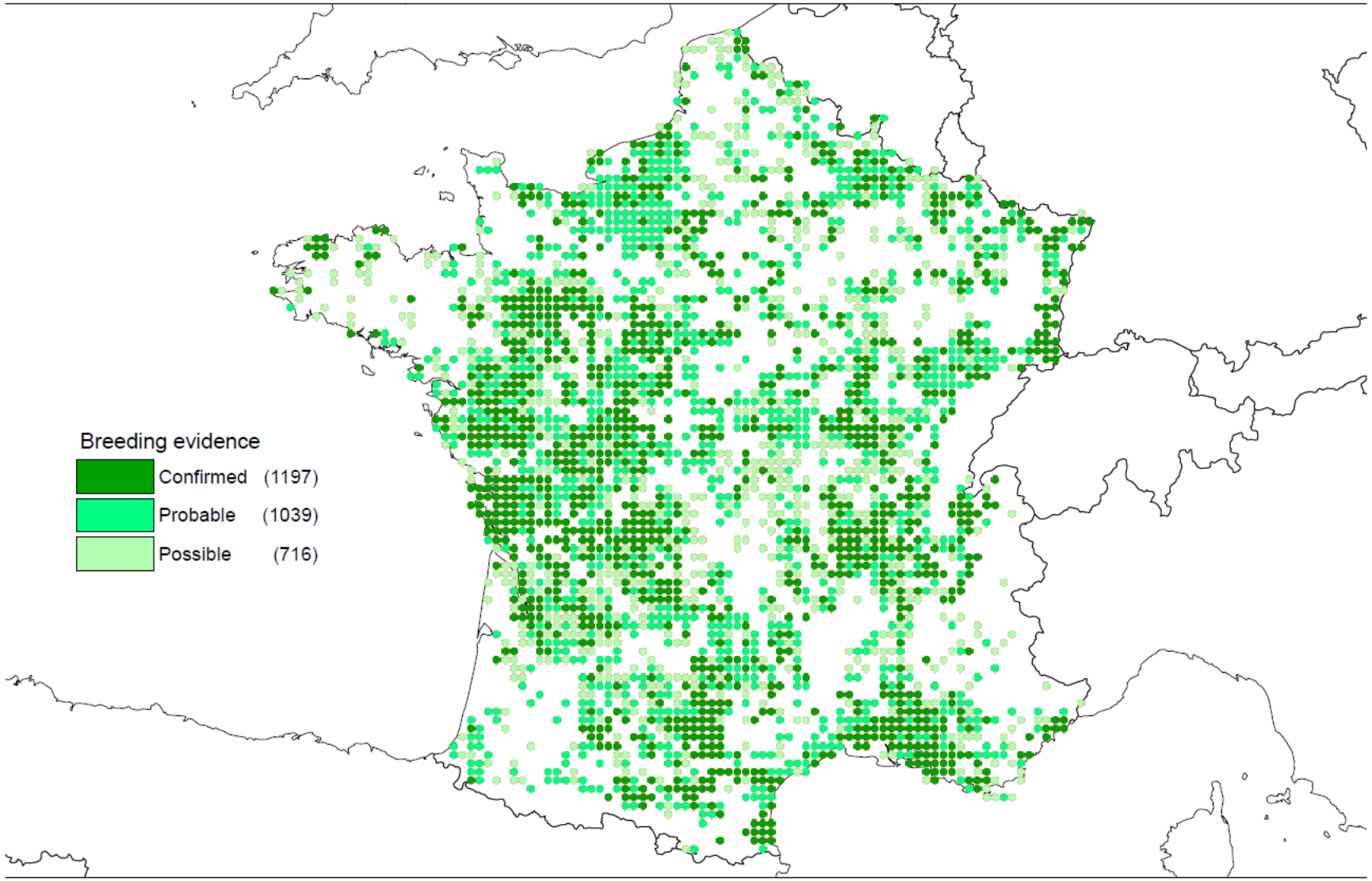

Figure 5.21 Répartition de la Chouette chevêche en France 2005–2012 (d'après Issa and Muller 2015).

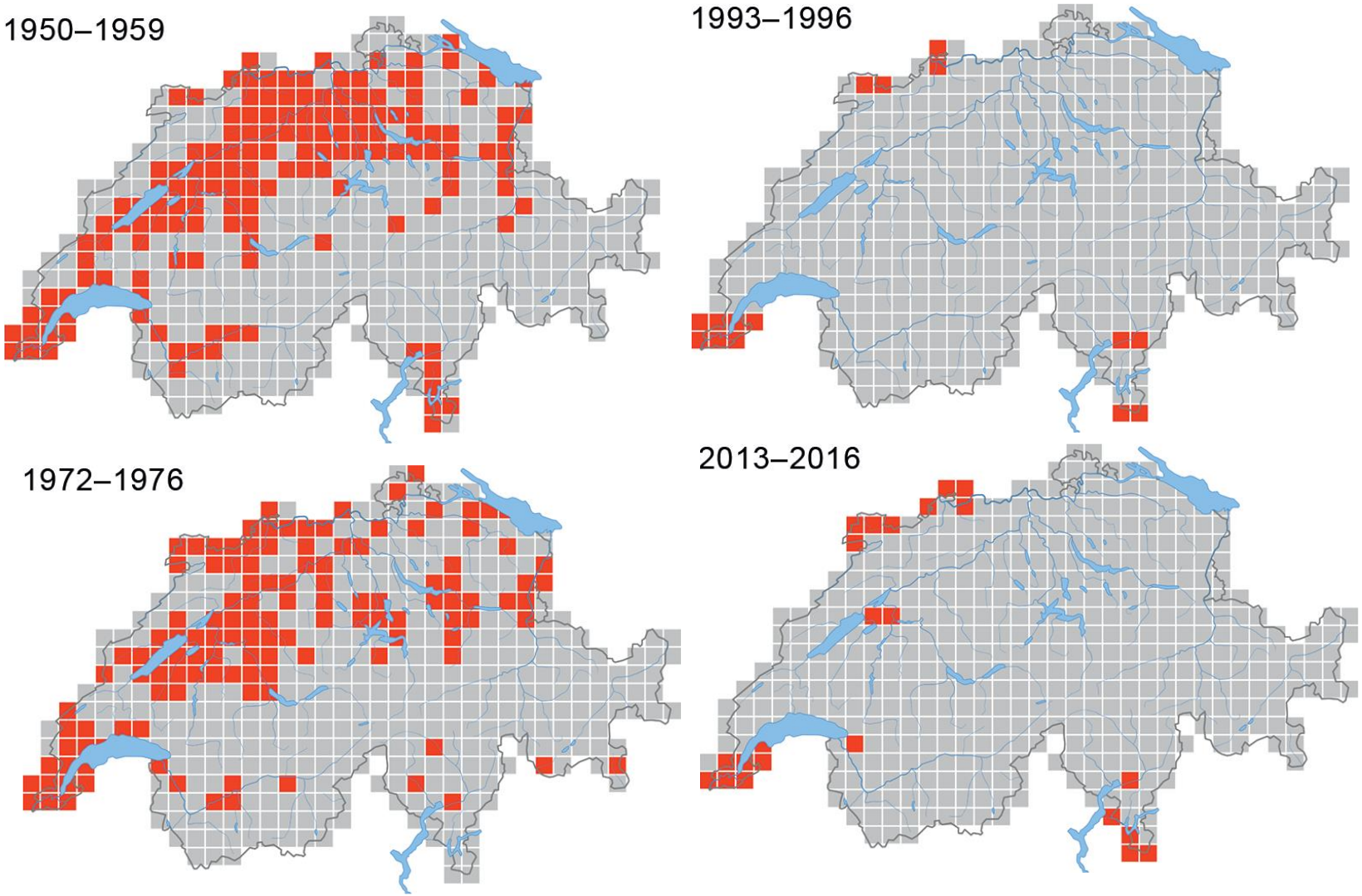

Figure 5.27 Répartition de la Chouette chevêche en Suisse de 1950 à 1959, de 1972 à 1976, de 1993 à 1996 et de 2013 à 2016 d'après Knaus et al. 2018. Reproduit avec l'autorisation de Vogelwarte, Sempach, Switzerland. www.vogelwarte.ch.

Comportement

- Vivez le printemps!
  - Mouvements entrants et sortants n=17 saisons
  - Ensemble de données exceptionnel n = 34 916 éléments de proie

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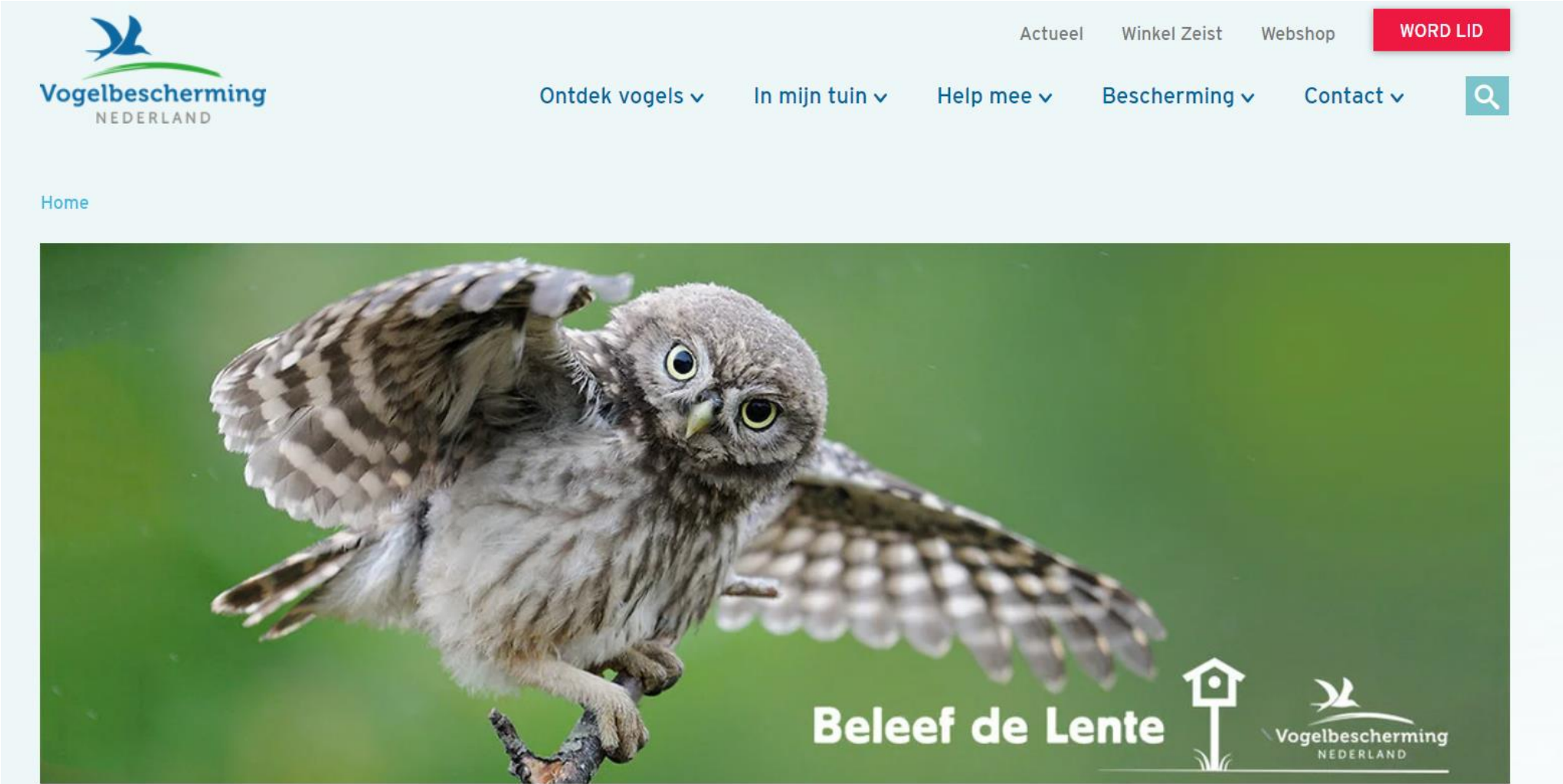

Nourriture

Sélection de l'habitat

- Différentes échelles spatiales (Apolloni et al. 2018)
  - Près du nid
  - Zone de chasse
  - Paysage environnant
- Modèles multi-échelles
  - Différentes échelles combinées dans un seul modèle (Fattebert et al. 2018)
- Comparaisons transfrontalières
  - Suisse versus Bavière (Tschumi et al. 2020)
- Impact proactif de l’évaluation de la remembrement réattribution des terres
  - Belgique - Gooik (Onckelinx & Everaert, 2018)

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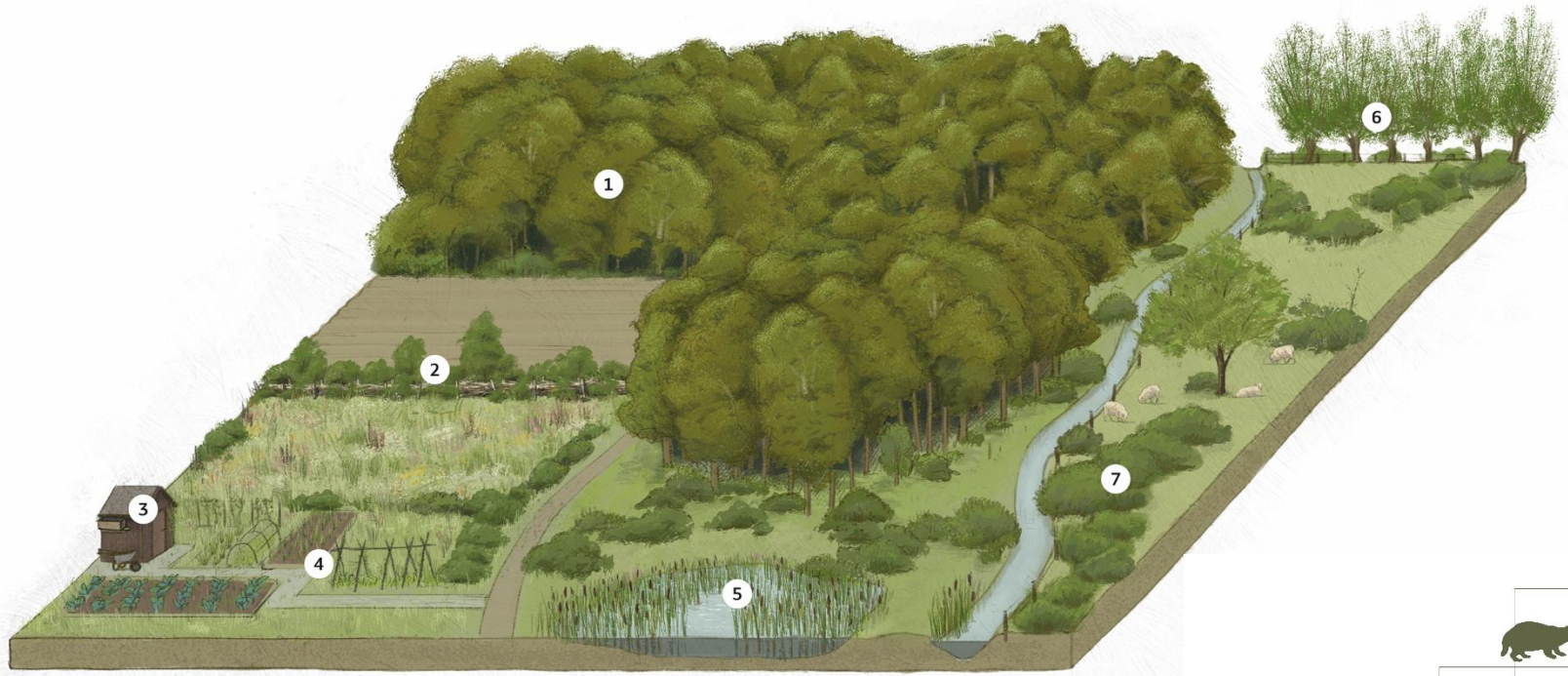
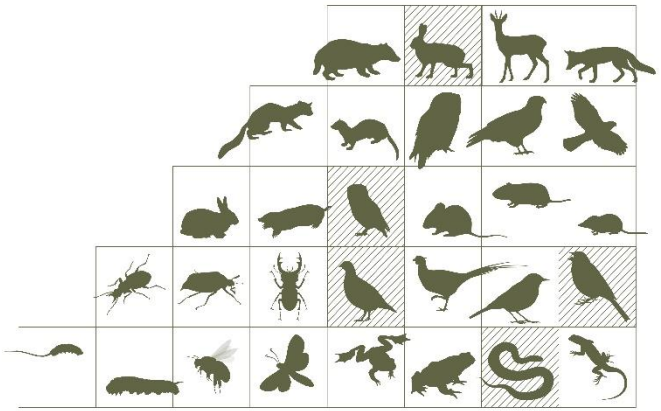
Gestion & Conservation Benelux





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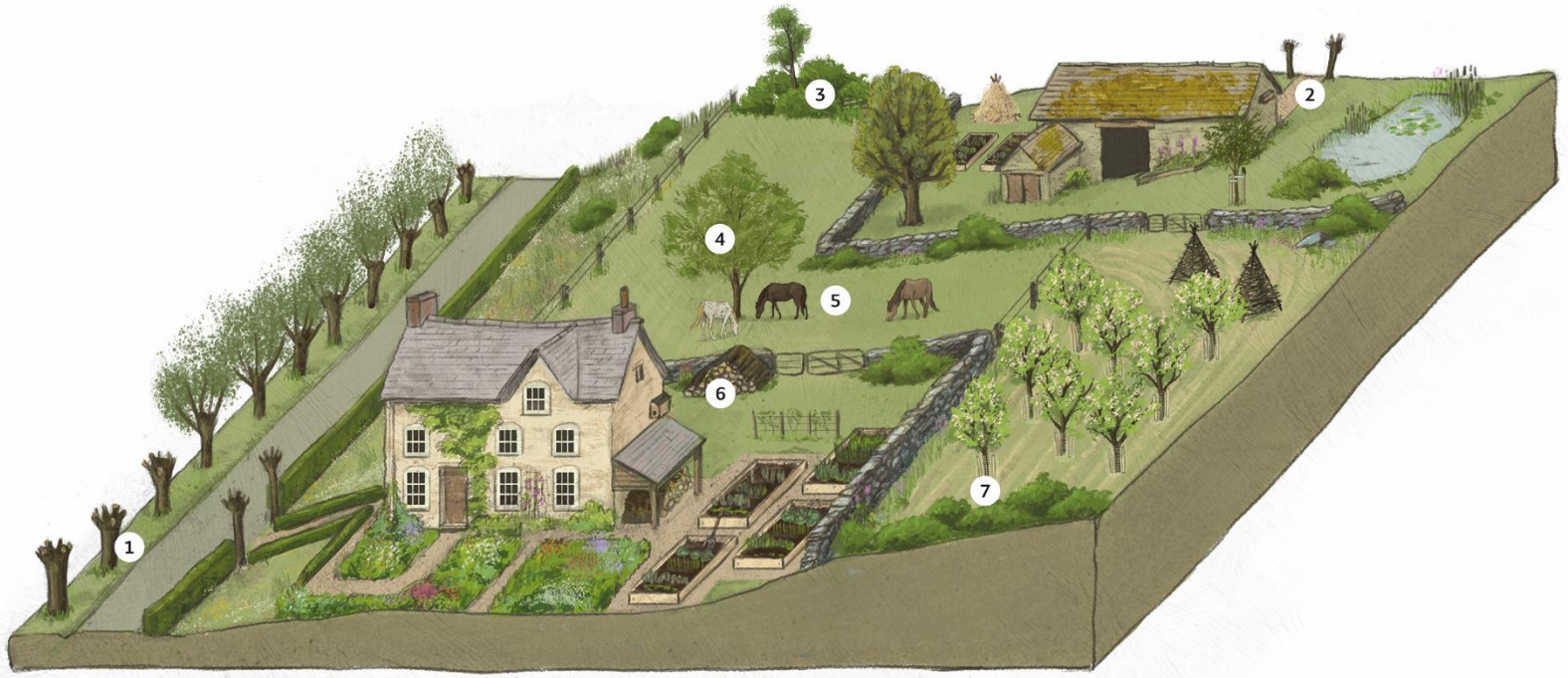
Gestion & Conservation UK



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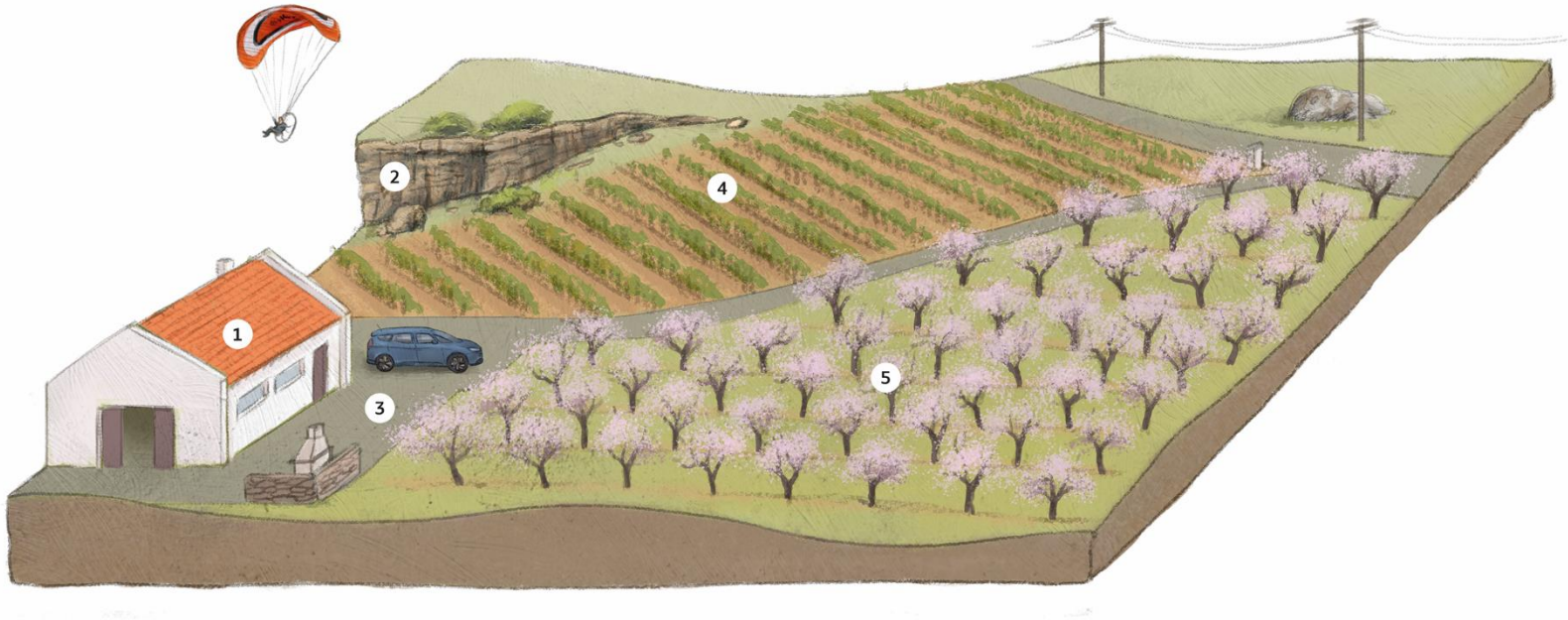
Gestion & Conservation Portugal



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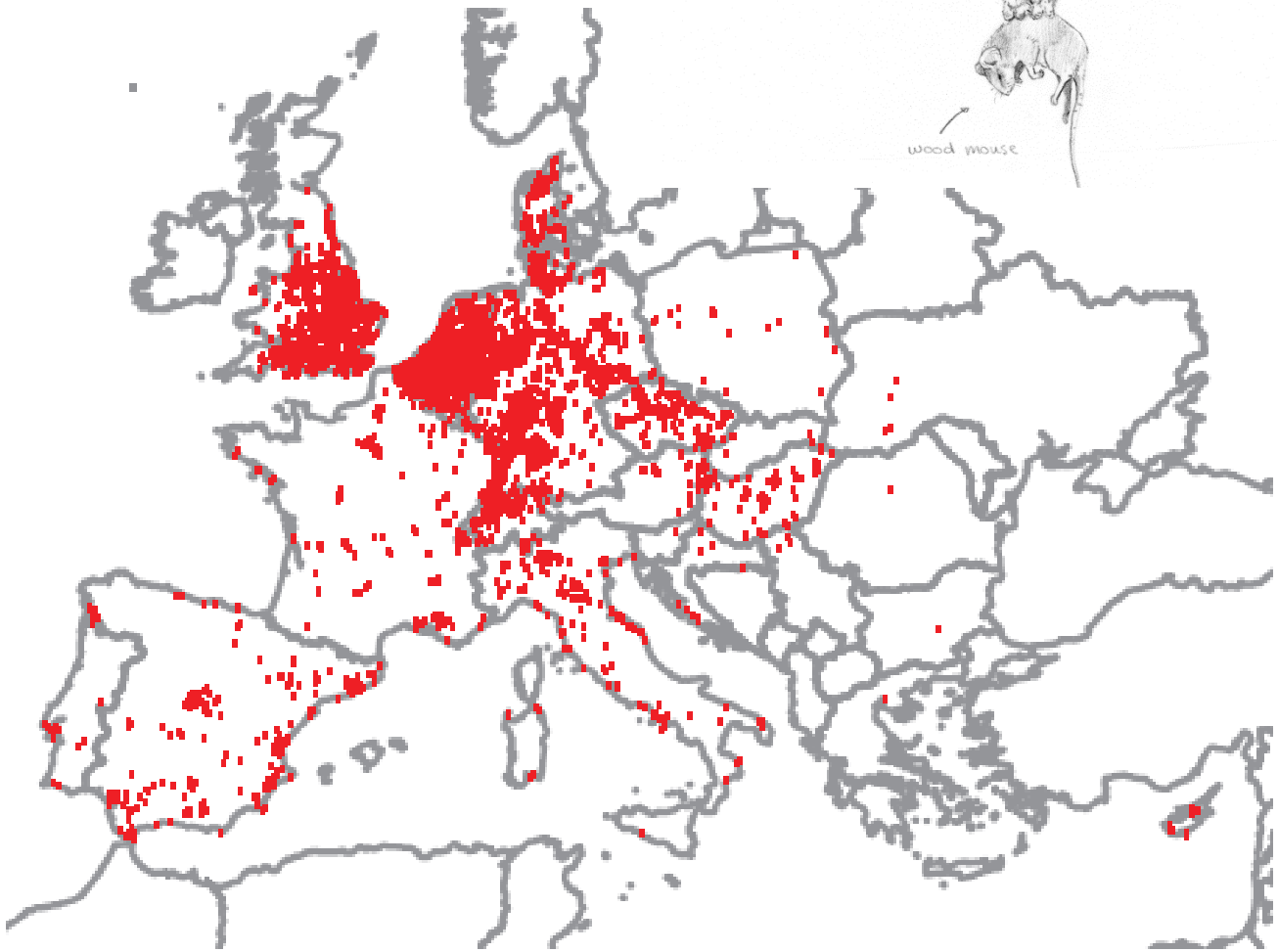
Baguage/Reprise

- 108.000 observations
- Depuis 1910
- Dispersion des oisillons
- Dispersion of adultes



www.ring.ac 6221 EURING

The European Union for Bird Ringing

Distances de dispersion

The Little Owl

Les males recherchent un territoire le plus vite que possible

Les femelles recherchent un partenaire avec un territoire

Table 10.9 Adult dispersal distances in km of dead and recovered Little Owls based upon the EURING Data Bank ring recovery database

Sex	Ringed as	Found Dead or Alive	Time after ringing	n	Distance in km									
					Mean	Min	Max	SD	Range	Q25	Median	Q75	Percentile 99.99	Percentile 99.95
Adult dispersal distances ≥ 0 km														
Female	Adult	Alive	>1 year	2057	2.33	0	179	8.87	179	0	0	2	179	113
Female	Adult	Alive	First year	634	1.40	0	117	5.77	117	0	0	0	117	117
Female	Adult	Dead	>1 year	373	5.56	0	442	26.92	442	0	2	3	442	442
Female	Adult	Dead	First year	150	5.02	0	178	19.68	178	0	0	3	178	178
Male	Adult	Alive	>1 year	388	2.45	0	112	10.13	112	0	0	2	112	112
Male	Adult	Alive	First year	195	0.97	0	25	2.73	25	0	0	0	25	25
Male	Adult	Dead	First year	55	3.40	0	59	9.50	59	0	0	3	59	59
Male	Adult	Dead	>1 year	92	5.59	0	86	13.33	86	0	2	3.5	86	86
Unknown	Adult	Alive	>1 year	2815	2.42	0	319	13.82	319	0	0	0	319	266
Unknown	Adult	Alive	First year	1404	2.66	0	285	14.73	285	0	0	0	285	285
Unknown	Adult	Dead	>1 year	721	8.65	0	332	25.93	332	0	2	6	332	332
Unknown	Adult	Dead	First year	722	8.11	0	262	24.94	262	0	2	6	262	262
Adult dispersal distances > 0 km														
Female	Adult	Alive	>1 year	498	7.15	2	113	13.28	111	2	3	6	113	113
Female	Adult	Alive	First year	141	6.04	2	117	10.96	115	2	3	6	117	117
Female	Adult	Dead	>1 year	139	13.21	2	442	42.96	440	2	3	8	442	442
Female	Adult	Dead	First year	61	12.08	2	178	29.59	176	2	4	7	178	178
Male	Adult	Alive	>1 year	110	6.55	2	92	14.60	90	2	3	4	92	92
Male	Adult	Alive	First year	43	4.35	2	25	4.40	23	2	3	5	25	25
Male	Adult	Dead	First year	21	6.10	2	29	7.89	27	2	3	5	29	29
Male	Adult	Dead	>1 year	32	12.31	2	86	19.62	84	3	5	9	86	86
Unknown	Adult	Alive	>1 year	474	12.05	2	319	30.75	317	2	3	7	319	319
Unknown	Adult	Alive	First year	280	13.15	2	285	30.85	283	2	4	11	285	285
Unknown	Adult	Dead	> 1 year	321	18.56	2	332	36.36	330	3	6	15	332	332
Unknown	Adult	Dead	First year	385	15.20	2	262	32.56	260	3	6	13	262	262

du Feu et al. 2016. Data is grouped by sex, either alive or dead at the last observation within or over one year after ringing as an adult bird (real age unknown)

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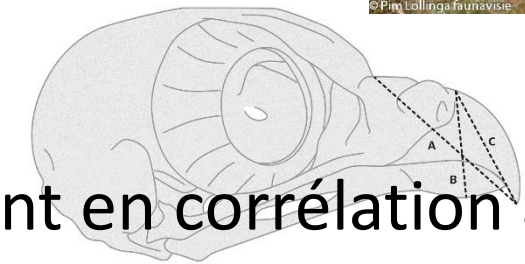
Expériences contrôlées

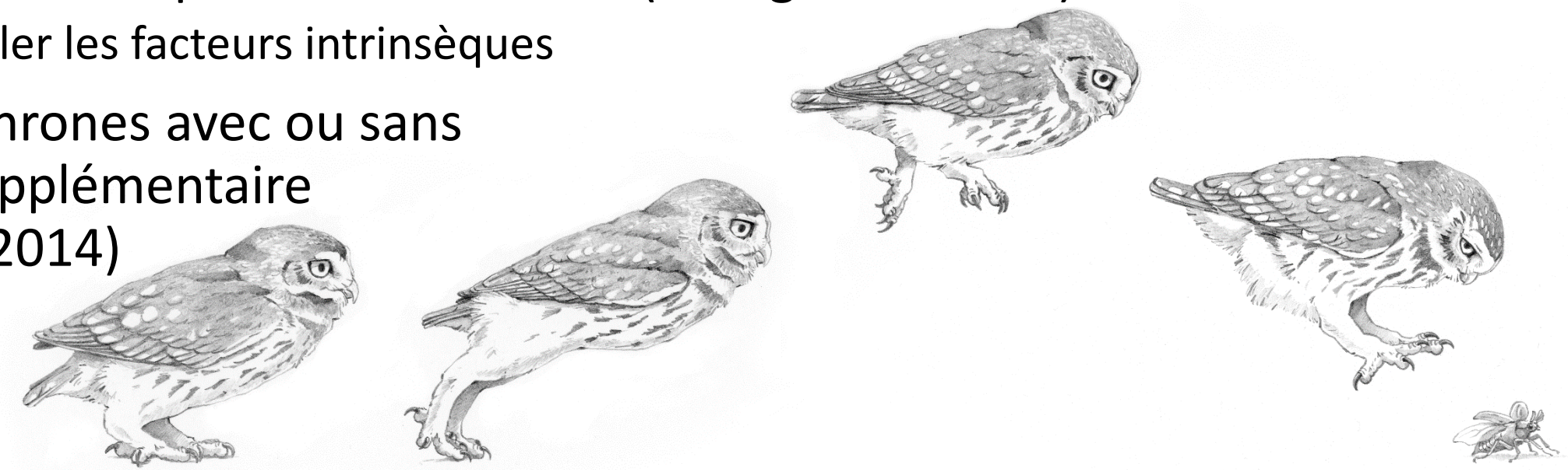


- Les becs plus jaunes des femelles adultes sont en corrélation avec les oisillons plus lourds (Aviles et al. 2012).
- Plus les oisillons ont de becs jaunes, plus ils reçoivent de nourriture (Aviles et al. 2012).
- Les oisillons femelles reçoivent plus de nourriture que les oisillons mâles (Tschumi et al. 2019).
- Probabilité de prédation anticipée lors de la sélection du site de nidification
  - Couleuvre de Montpellier (Parejo et al. 2018)

Expériences contrôlées

The Little Owl

- Expériences de supplémentation alimentaire (Thorup et al. 2010, Perrig et al. 2014, Grüebler et al. 2018))
- Echangement croisé partiel des oisillons (Perrig et al. 2014)
  - Pour contrôler les facteurs intrinsèques
- Nichées synchrones avec ou sans nourriture supplémentaire (Perrig et al. 2014)



Recherche multidisciplinaire

The Little Owl

- Relation entre la qualité de l'habitat et le succès de reproduction
  - Importance des sites de repos
  - Et de la prédation sur la qualité de l'habitat (Michel et al. 2016)
- L'hétérogénéité du paysage est essentielle (Michel et al. 2017)
- Meilleures informations sur les paramètres démographiques
  - Immigration/Émigration (Bock et al. 2013)

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Priorités de recherche

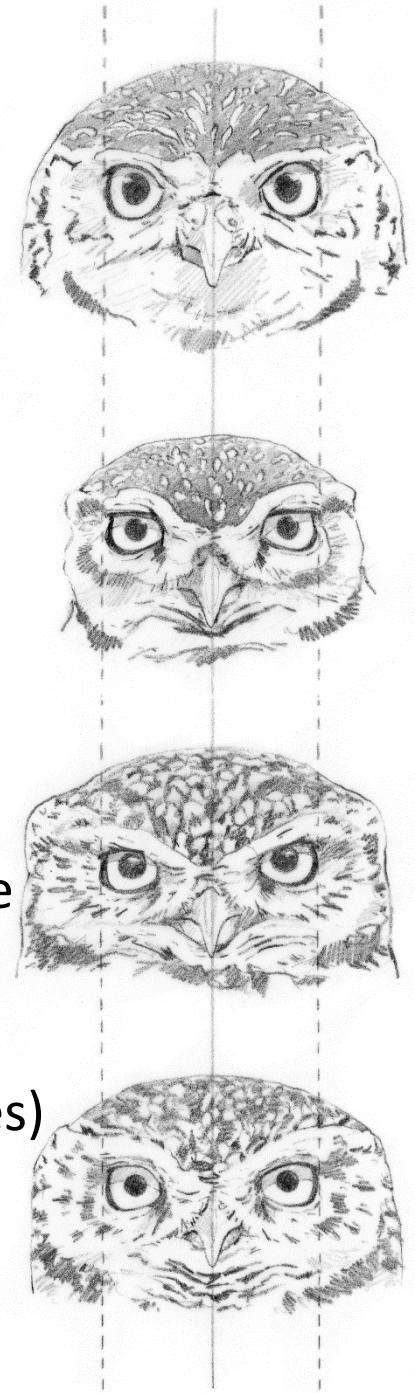
Figure 4.3. Feeding

- Réplication des expériences
- Coaching en méthodologie/statistiques
- Approche multidisciplinaire
- Recherche transfrontalière
- L'IA dans la reconnaissance des proies
- L'IA dans la classification des oiseaux en peluche
- RFID
- Application des connaissances en gestion
- Expansion géographique de la recherche

Citizen Science

The Little Owl

- Prendre des photos standardisées des becs
- Photos de forme de tête mâle/femelle
- Pourcentage d'immigrants bagués/non bagués (démographie/source/sink)
- Inventaire des sites de repos
- Expérimentez avec l'ajout ou non de nichoirs supplémentaires comme site de repos
- Expérimenter l'impact possible des latrines de la fouine (avec ou sans)
- Complément alimentaire (compromis entre les distances et la taille des proies)
- Réplication des recherches sur les relations entre Hulotte/Chevêche



The Little Owl

Conservation domaine vital

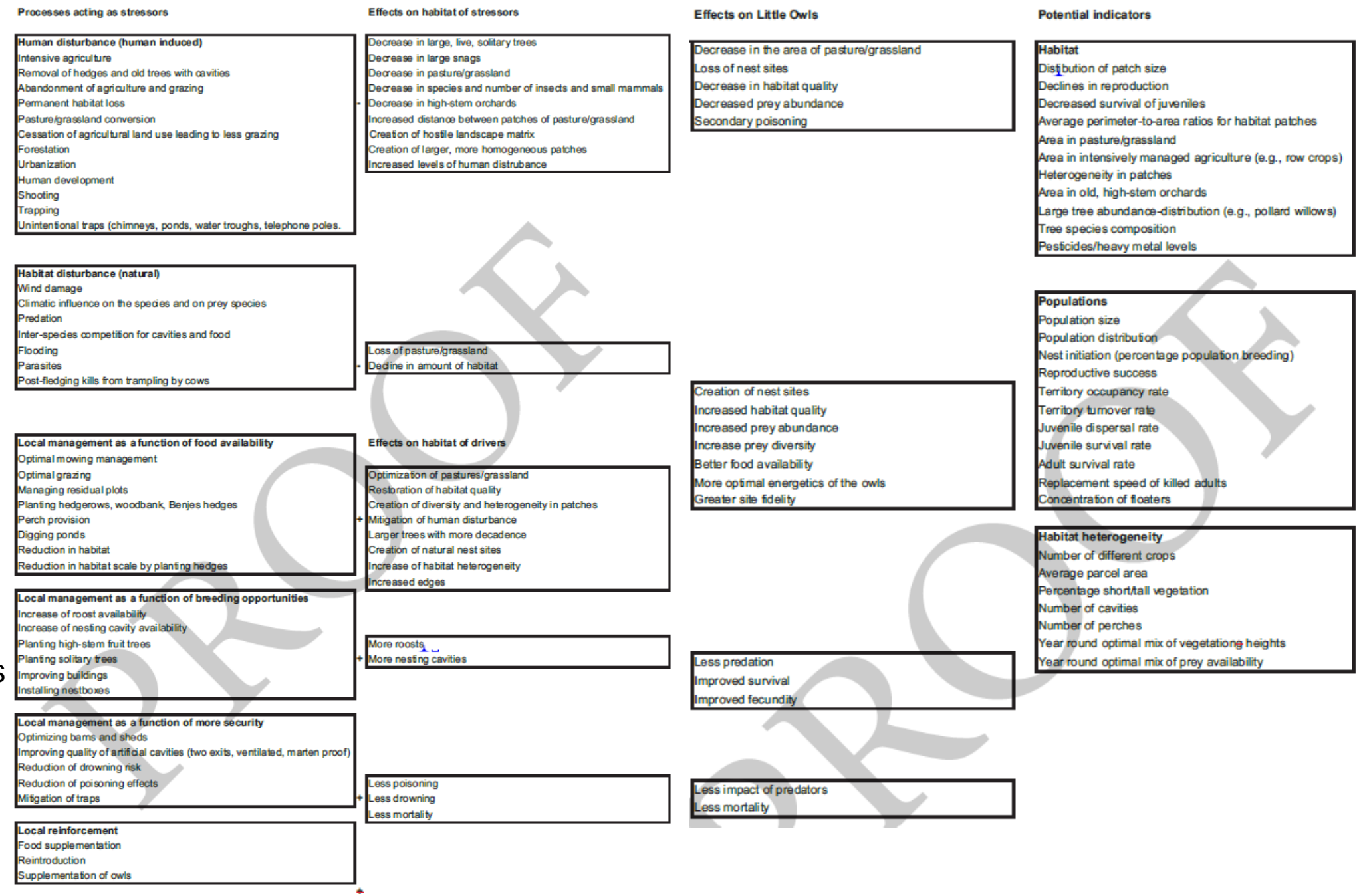


Figure 11.7 Modèle conceptuel des effets des facteurs de stress et des facteurs naturels et anthropiques sur la Chouette chevêche à l'échelle du domaine vital

FULLY REVISED IN 2022

The Little Owl

Conservation à l'échelle du paysage

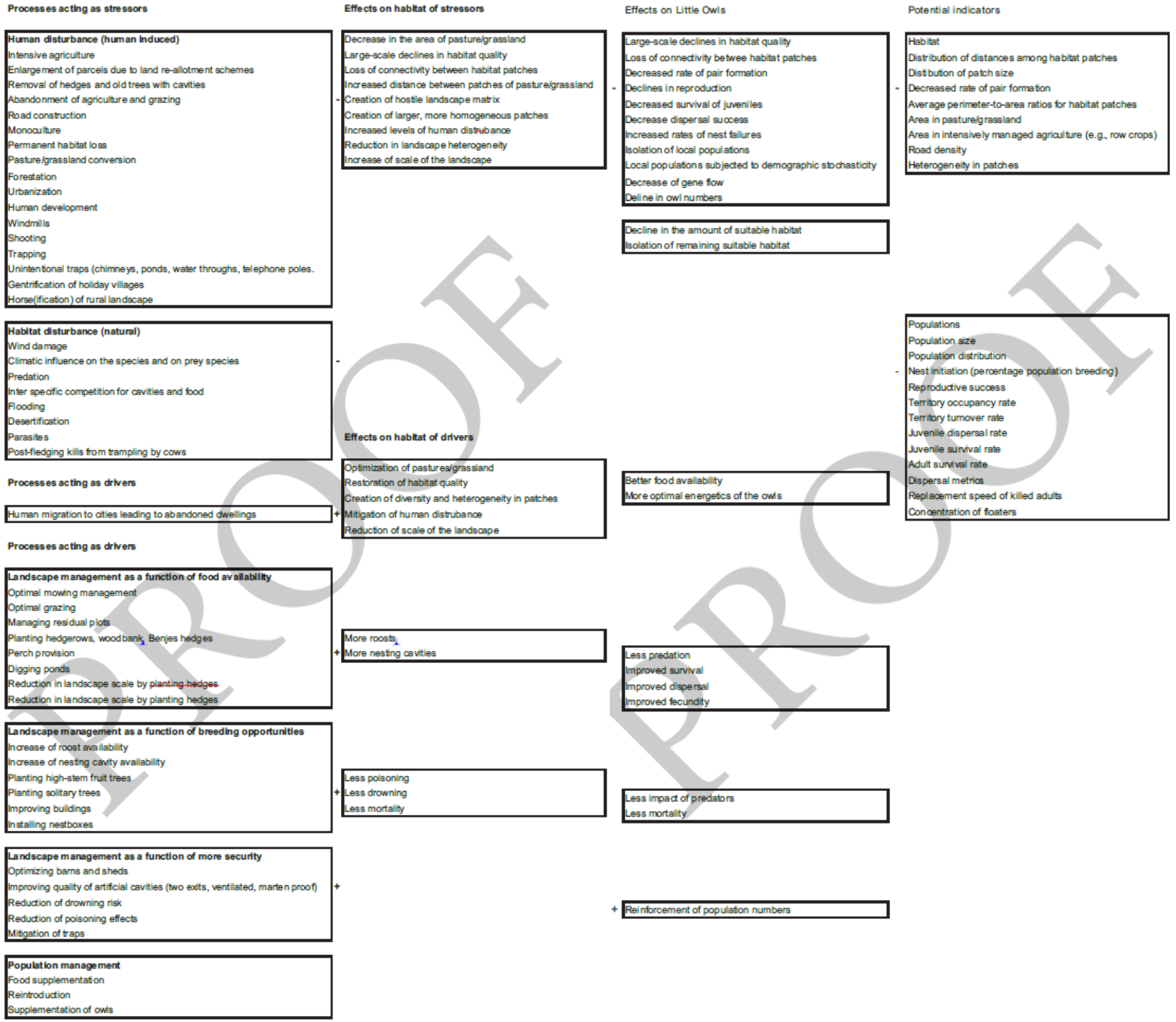


Figure 11.8
Modèle conceptuel des effets des facteurs de stress naturels et anthropiques sur la Chouette chevêche à l'échelle du paysage.

FULLY REVISED EDITION COMING IN 2022

The Little Owl

Conclusion

Figure 4.3. Chicks

- Explosion de la littérature
- Excellente coopération avec EBBA, BirdLife, BTO et les équipes nationales pour utiliser leurs excellentes données et informations standardisées
- Regroupement de nombreuses informations
- Utilisation maximale des données existants (images et vocalisations - géocodés et horodatées)
- Illustrations de haute qualité et standardisées
- **Merci à tous ces bénévoles qui ont contribué**

The Little Owl

Population dynamics, Behavior and Management of Athene noctua

Understanding of the basic biology of owls is poor compared to that of other bird species. The Little Owl, Athene noctua, has become one of the best models for biological and conservation research, due to its commonness and the fact that it occupies nest-boxes very easily. In this unique book the authors synthesise the substantial literature, and detail current information regarding the Little Owl. They discuss its wide-ranging ecology, genetics and subspecies and population status by country. In addition, they outline a strategy and monitoring program for its conservation. The book features an outstanding bibliography of literature on the Little Owl, listing publications dated from 1769 to the present day, in many languages, including Russian, English, French, Dutch, German, Spanish and Italian. Whilst being an invaluable resource for academic researchers, its straightforward style holds undoubted appeal for amateurs and enthusiasts.

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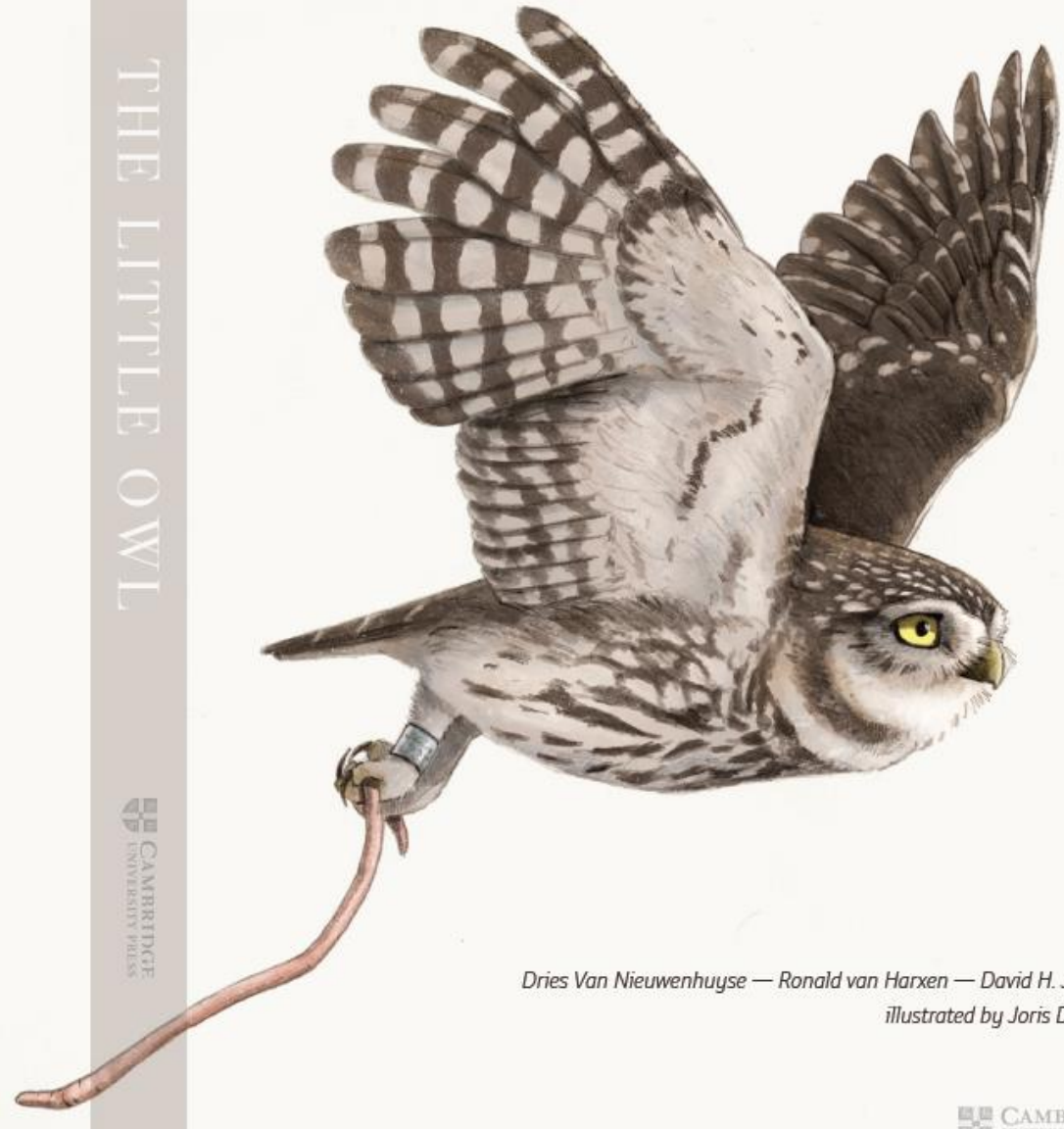
THE LITTLE OWL

Population dynamics, Behavior and Management of Athene noctua



Dries Van Nieuwenhuyse — Ronald van Harxen — David H. Johnson
illustrated by Joris De Raedt

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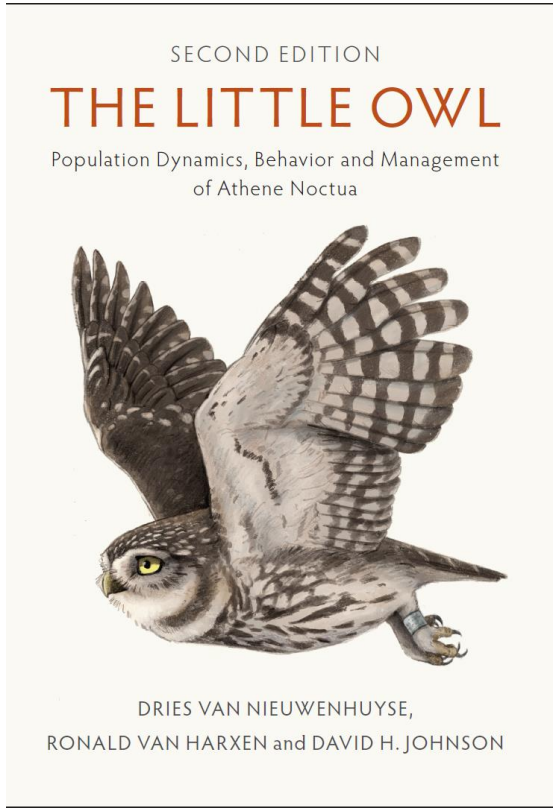
Figure 4.3. Courtship

2008 versus 2022

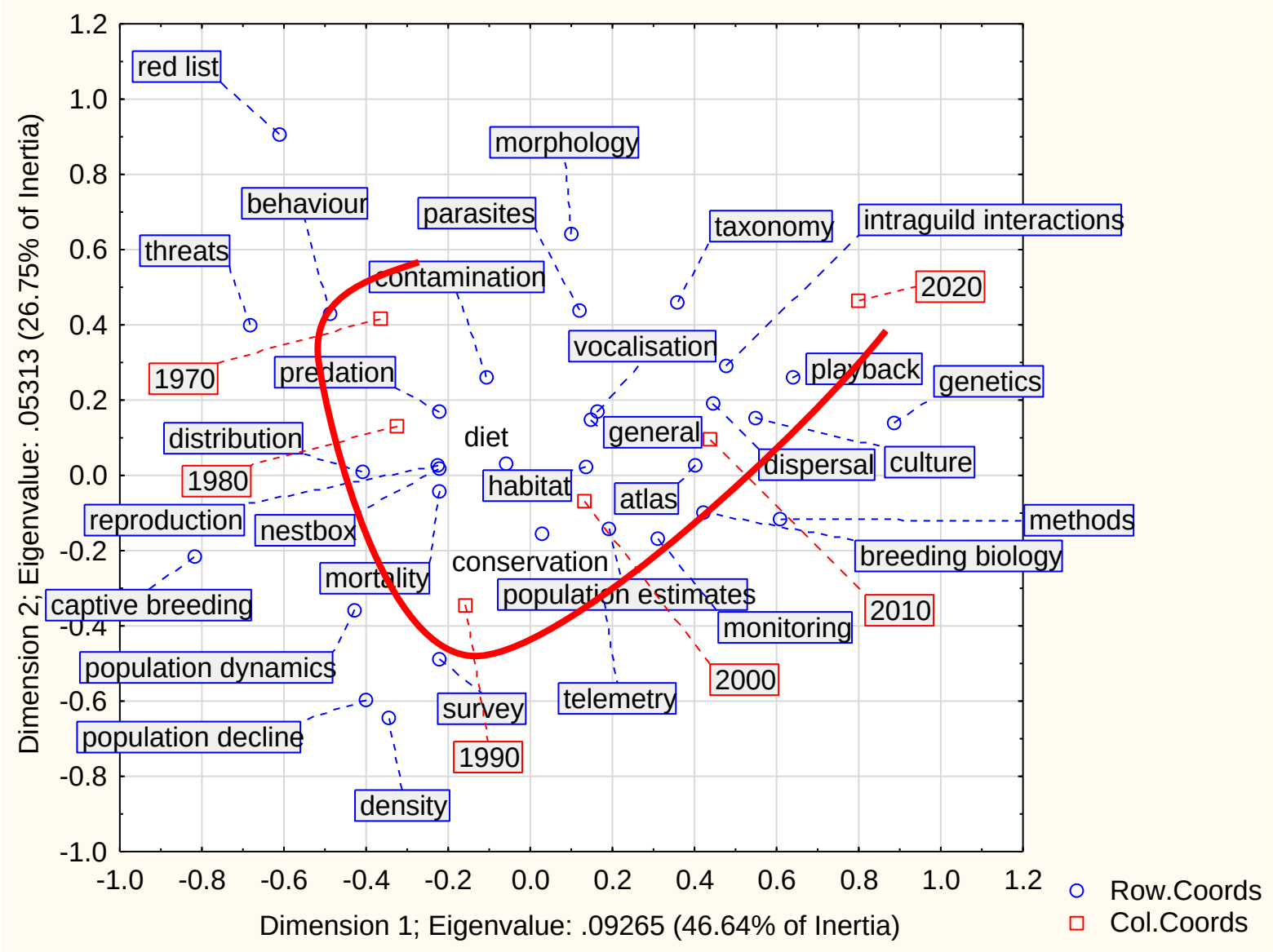
versus



The Little Owl

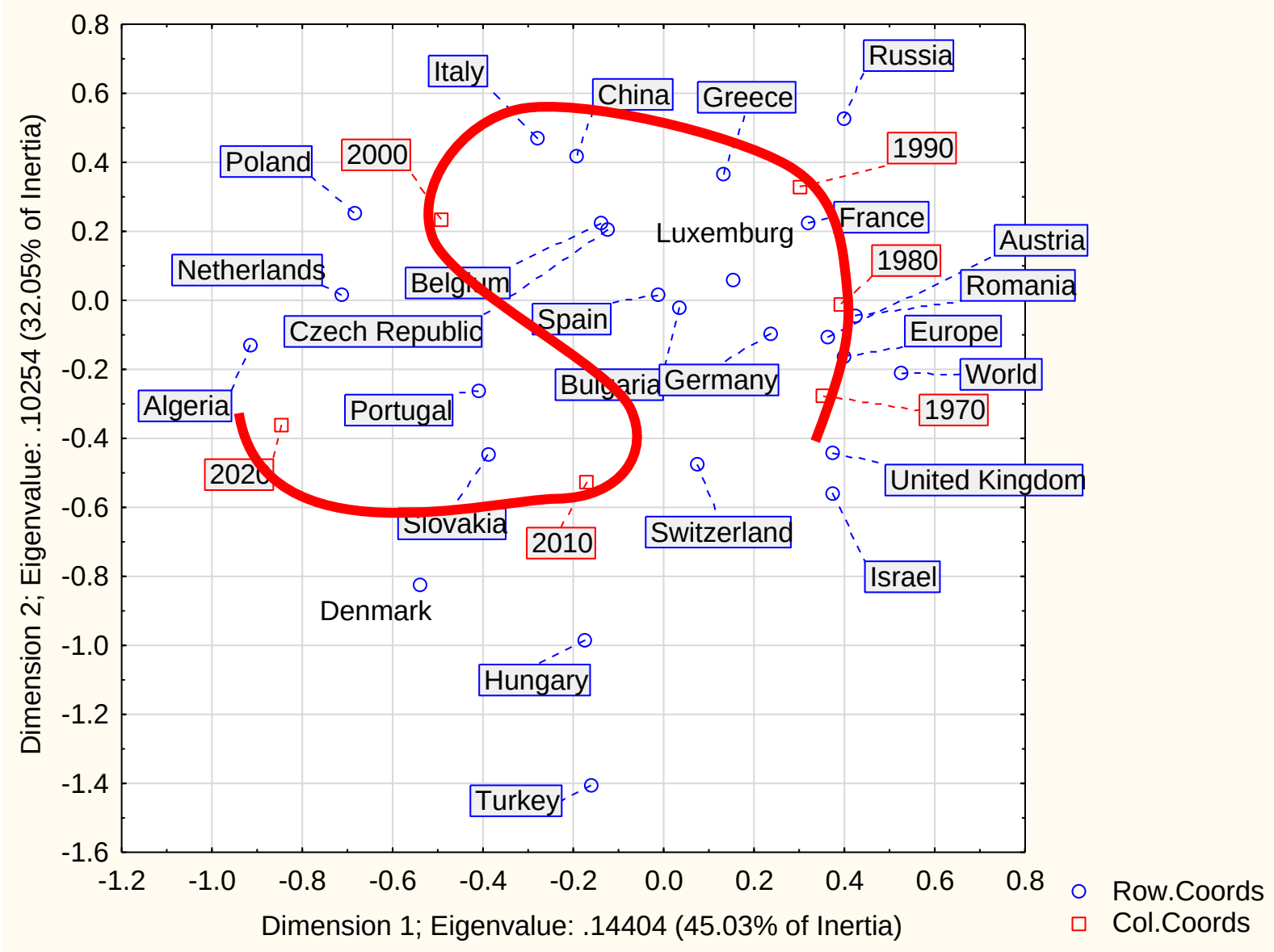
Littérature: Evolution des sujets

De 1901(2008) s à 3450 (2022) références en 14 ans

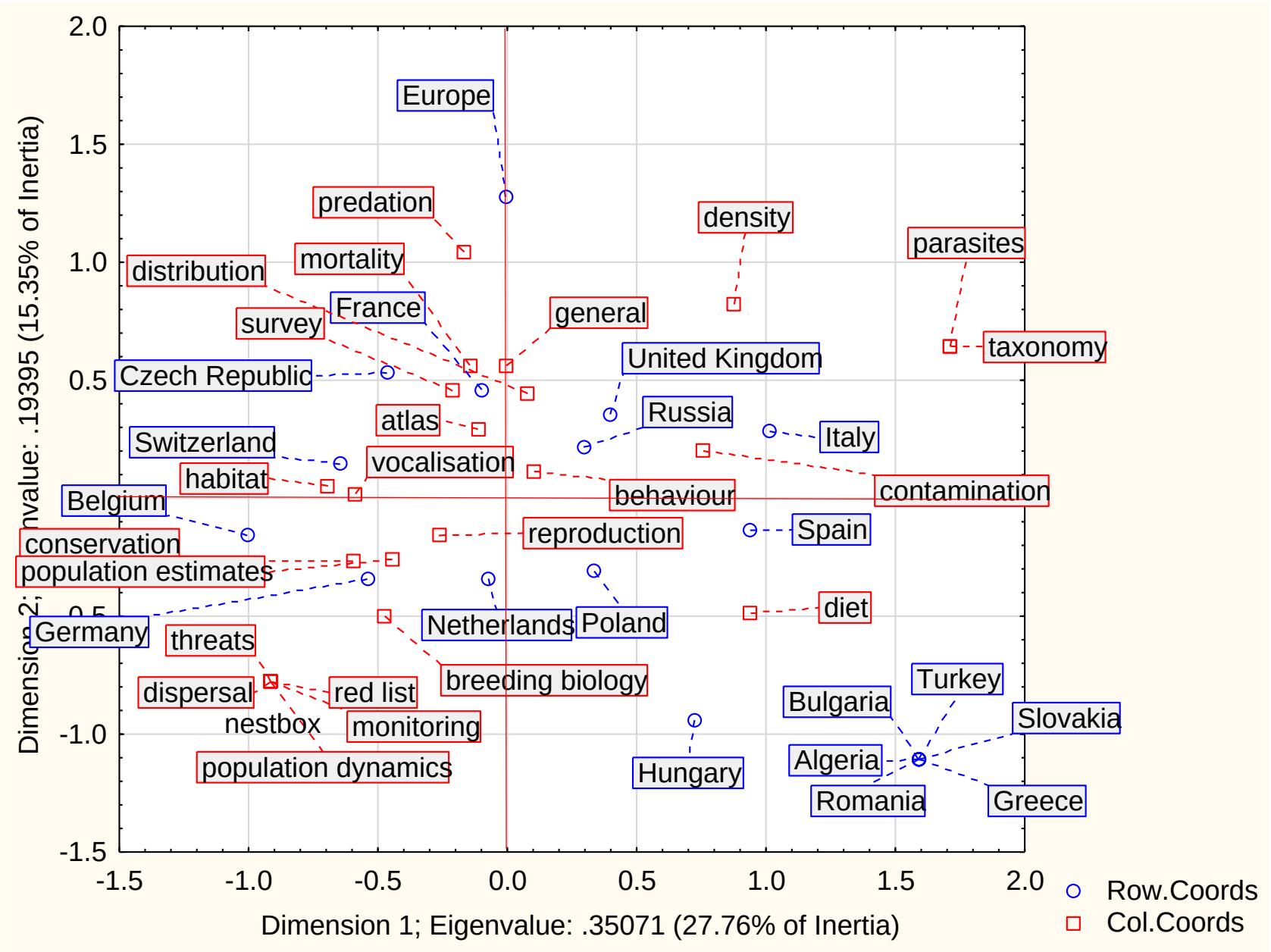


The Little Owl

Littérature: Evolution des pays



Littérature: Sujets par pays



SECOND EDITION

THE LITTLE OWL

Population Dynamics, Behavior and Management of Athene Noctua

DRIES VAN NIEUWENHUYSE,
RONALD VAN HARXEN and DAVID H. JOHNSON