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## **Table des matières**

1) Short Bio .....	2
2) Academic degrees .....	3
3) Scientific career .....	3
4) Team composition .....	3
5) Scientific publications.....	4
5.1. Publications in peer-reviewed international journals with impact factors .....	5
5.2. Peer-reviewed book chapters.....	8
5.3. Other scientific publications .....	8
5.4. Additional manuscripts submitted / in review in peer-reviewed journals:.....	9
6) Main research grants .....	9
7) International research collaborations.....	10
8) International communications .....	11
8.1 Plenary and Symposium Keynote speaker .....	12
8.2 Invited international seminars .....	12
9) Supervision of PhD theses .....	14
9.1. Main supervisor of 4 PhD projects: .....	14
9.2 Co-supervisor of 5 PhD projects:.....	14
9.3 Member of 14 PhD commissions in national and international commissions:.....	14
9.4. Member of 21 national and 8 international PhD defense juries:.....	15
10) Scientific distinctions.....	17
11) Study stays .....	17
12) Lecturing.....	18
13) Services to the society (in bold: mandates ongoing in 2022-2023) .....	18
13.1. Main positions in national, federal or regional institutions .....	18
13.2. Main organiser of conferences and events .....	19
13.3. Peer-Review assessment of scientific quality in national and international instances.....	19
13.4. Communication about Biodiversity to the national and international press.....	20

## 1) Short Bio

Prof. C. Nieberding holds a permanent position as a Professor of Terrestrial Ecology at UCLouvain (Belgium) since September 2008, and is the head of the team “Biodiversity, Ecology and Evolution”. Her research investigates the behavioural, physiological and molecular bases of adaptation of populations, and of speciation (development of new species) by means of sexual selection. Her expertise focuses on bioindicator groups of butterflies and of mammals. In the last five years, her research moved from fundamental ecology (how living organisms interact when there is no interference of human activity) to adaptation of populations to human-induced rapid environmental changes (“HIREC”), with focus on climate warming and degradation of natural forest habitats. Nieberding lab published high-ranked peer-reviewed articles on how animals respond to HIREC by either dispersal (moving towards a new favorable habitat to live when local conditions become harsh), or by behavioural change, including through learning. Nieberding lab is interested in documenting how even small-sized, short-lived and solitary species of insects can learn, i.e. change their behaviour over their lifetime, to face HIREC.

Nieberding lab focuses on behaviour, and has also expertise in a range of techniques including DNA sequencing for phylogenetics and phylogeography, transcriptomics, chemical ecology, field-based (including in Africa and Europe) and lab-controlled experimental designs. She published so far > 45 articles and reviews in peer-reviewed journals including *Trends in Ecology and Evolution* (1 paper), *Proceedings of the Royal Society* (4 papers), *Ecology Letters* (2 papers), *Functional Ecology* (1 paper) as well as book chapters with *Oxford university Press* and *Springer publishers*. She was part of national and international panels of experts for large-scale funding of scientific projects in Ecology (including ANR funding in France), and she is regularly invited to speak at symposims, seminars and conferences, as well to international and national PhD juries.

Caroline Nieberding also teaches ~120 hours yearly from Bsc 1 to Msc 2 levels for the master of Ecology (since 2008) and took over the interdisciplinary master of “Sustainable development” from climatologist Pr. Jean-Pascal van Ypersele’s retirement (since 2019), where she lectures on Evolution, Ecology, Animal Behaviour and Biogeography, sustainable development as well as directing the 3-months stage of all students from the sustainable development master. She is regularly invited to lecture Msc and PhD students classes abroad (Amsterdam University NL, Paris VI University France, Valencia university SP).

She was a scientific advisor for the International Society of Chemical Ecology (ISCE, 2015-2018). She is a scientific editor of the journal *Frontiers in Ecology and Evolution* section Chemical Ecology since 2014. She is member of the managing board of the *Peer Community in*, she helped founding PCI Zoology in 2020 and she is a scientific editor for PCI Evolutionary Biology, PCI Ecology and PCI Zoology. She is the President of the Belgian FNRS *Doctoral School of Biology, Ecology and Evolution* since 2012 for ~100 PhD students in Wallonia. She is scientific advisor of the Africa museum and the National Museum of Natural History, both hosting unique collections in natural history. She is part of the founding members of the *Louvain4Evolution* think-tank at UCLouvain; and organized citizen-aimed conferences on the Biodiversity crisis and on the theory of evolution by natural selection.

Since 2019, she informs about the Biodiversity crisis through multiple channels of communication including Belgian and French TV, radio, social networks (FB) and newspapers, through the organisation of transdisciplinary conferences on Biodiversity for the general society and interventions for our minister of Environment, as well as a national exhibit running all 2023 and extended to 2024 at Trainworld in collaboration with Baron François Schuiten and Prof. Jean-Pascal van Ypersele (climate expert). Please see list of services to society about communication on Biodiversity (point 10 below).

## 2) Academic degrees

- Oct 1997 - Sep 2001 : Master in Biological Sciences obtained with the Highest Honours every four years ("*Plus Grande Distinction*"), University of Liège, Belgium.
- Final undergraduate research in Plant Genetics (9 months), ranked 1<sup>st</sup> out of 37 students, obtained with Highest honours and the congratulations of the Jury; Award of *best Master thesis in Zoology* at University of Liège, Belgium.
- Oct 2001 – Jul 2005 : PhD in Evolutionary Ecology obtained with *with Highest Honours and Congratulations of the Jury* on July, 4<sup>th</sup>, 2005. Grant: Belgian National Scientific Research Foundation (FNRS) (one year as "boursier FRIA" and four years as "aspirante FNRS"), at University of Liège (2001-2005), Institute of Science of Evolution in Montpellier, France (2001-2003) and Centre for Biology and Management of Populations, France (2004).

## 3) Scientific career

- Aug 2005 - Aug 2008 Postdoctoral research in Evolutionary Ecology with Prof. P. M. Brakefield at the Institute of Biology, Leiden University (the Netherlands). Grants: **Marie Curie Intra-European Fellowship** (contract 039083 of the FP6-2005- Mobility-5) for 2006-2008, Aspirante FNRS for 2005-06 as well as **Chargée de Recherches FNRS: honorary position** for 2006-2009.
- From Sep 2008 Associate Professor in Terrestrial Ecology (permanent position) at the Université catholique de Louvain (Belgium). Head of the team "Biodiversity, Ecology and Evolution"; **2 maternity leaves in 2013 (4 months) and 2016 (4 months), and one parental leave in 2019 (2 months).**

## 4) Team composition

**Supervision of a total of 12 postdocs (2 ongoing; 4 with academic permanent positions now), 9 PhD students (several ongoing), > 30 Msc students (11 ongoing)**

All research team members can be found at <https://nieberdinglab.be/people/>

### In 2022-2023:

- Dr. Matteo Marcantonio, PDR-FNRS postdoc (2021-2024)
- Dr Stefano Masier, ARC postdoc (2022-2024)
- Doriane Muller (France), FRIA PhD student
- Simon Braem (Belgium), FRIA PhD student co-supervised with Prof. H Van Dyck (2018-2022)
- Valentine Chapelle (Belgium), FNRS PhD student co-supervised with Prof. F Silvestre (2018-2022)
- Pierre Dekaezemaeker, technician permanent staff for rearing insects
- Ongoing Msc students: Arkel Piret, Mathilde LeLevier, Martin Coulon, Mathias Blondlet, Argyris Kourtidis (Erasmus visiting student), Baptiste Gangneux, Océane Ascensio, Eva Tafforeau, Lucie Georgery, Julia Tesse, Quentin Pineau.

### Former Team members (funding):

- Dr. Raluca Voda (Romania), PDR FNRS postdoc (2021-2022)
- Dr. Bertanne Visser (the Netherlands), FRS-FNRS postdoc (2015-2019)  
*Now permanent FNRS research Associate at ULiege*
- Dr. Camille Turlure (France), ARC postdoc (2017-2019)
- Dr. K. Mitchell (Australia), postdoc (part 2012)  
*Next postdoc at Macquarie University (Australia)*

- Dr. E. Bitume (USA), FRIA PhD student (2008-2012) and ARC postdoc (2013)  
*Next postdoc at Colorado University (USA)*
- Dr. S. Heuskin (Belgium), FRFC postdoc (2011-2013)  
*Next permanent scientific staff at ULiege (Belgium)*
- Dr. I. Dublon (UK), FRFC postdoc (2014)  
*Next hired at Sveriges lantbruksuniversitet (Sweden)*
- Dr. A. Arun (India), ARC postdoc (2013-2015)  
*Now permanent lecturer at Puerto Rico University (USA)*
- Dr. MJ Holveck (France), FRS-FNRS postdoc (2012-2015)  
*Next postdoc at Montpellier University (France)*
- Dr. V. Baumlé (France), ARC postdoc (2013-2015)  
*Next postdoc at Namur University (Belgium)*
- G. San Martin, research assistant (2010)  
*Now permanent scientific staff at the CRA-w Institute of the Region Wallonne (Belgium)*
- P. Bacquet (France), FRIA PhD student (2008-2015)
- E. Bitume (USA), FRIA PhD student (2008-2012)
- AL Gauthier (France), FRIA PhD student (2012-2015)
- G. Amelot, ARC technician (2013-2014)  
*Now permanent technician in virology at Anses (Agence nationale de sécurité sanitaire) in Havre (France)*

#### Visiting researchers:

- L. Pereira (Portugal), visiting Msc student (2009)
- R. Callejon (Spain), visiting PhD student (2010)
- G. Perez (France), visiting MSc student (2011)
- Dr. I. Karl (Univ. Greiswald, Germany), visiting postdoc (2011)
- Dr. K. Michiyo (Soken Institute, Japan), visiting academic staff (2012)
- Dr B. Visser (Tours University, France), visiting postdoc (2014)
- Aurélien Vielfaure (France), visiting Msc student from Agro Sup Dijon (2021)
- Baptiste Gangneux (France), visiting Msc student from Agro Sup Dijon (2022)
- Argyris Kourtidis (Greece), visiting EU-Erasmus funded Msc student (2022-2023)

## 5) Scientific publications

Besides the **42 published papers** in the primary literature (i.e. international journals with impact factor) and **3 peer-reviewed book chapters**, there are also another **8 manuscripts** of this category currently in preparation (data analysis has been done). Further also **3 other scientific papers** (e.g. invited reviews in national proceedings).

Profile at Research Gate: [https://www.researchgate.net/profile/Caroline\\_Nieberding2](https://www.researchgate.net/profile/Caroline_Nieberding2)

Impact factors of each article are provided by the website of the journal, and interquartile ranges are provided by Scimago.

Indicator	Google Scholar
Number of years of scientific seniority	20
Number of published papers	45
Total number of citations	2415
Average number of citations	54
<b>H-index</b>	<b>22</b>

### 5.1. Publications in peer-reviewed international journals with impact factors

1. Michaux JR, Magnanou E, Paradis E, **Nieberding C**, Libois R (2003) Mitochondrial phylogeography of the woodmouse (*Apodemus sylvaticus*) in the western Palearctic region. **Molecular Ecology** 12 685-693. *Impact factor (I. F.): 6.5. Interquartile range (IQ): Q1.*
2. **Nieberding C**, Morand S, Libois R, Michaux J (2004) A parasite reveals cryptic phylogeographic history of its host. **Proceedings of the Royal Society of London B** 271 2559-2568. *I. F. 5.7. IQ: Q1.*
3. **Nieberding C**, Libois R, Morand S, Douady C, Michaux JR (2005) Phylogeography of a Nematode (*Heligmosomoides polygyrus*) in the Western Palearctic region: persistence of Northern cryptic populations during ice ages? **Molecular Ecology** 14 765-777. *I. F. 6.5. IQ: Q1.*
4. **Nieberding CM**, Goüy de Bellocq J, Morand S (2005) The biogeography of host-parasite interactions: from nested assemblages to comparative phylogeography. **Mammal study** 30: S87-S93, Reports of the Symposia of the International Mammalogical Congress, Japan. *I.F. 0,8. IQ: Q2.*
5. Deffontaine V, Libois R, Kotlík P, Sommer R, **Nieberding C**, Searle JB, Michaux JR (2005) Beyond the Mediterranean Peninsulas: Evidence of Central European glacial refuges for a temperate forest mammal species, the bank vole (*Clethrionomys glareolus*). **Molecular Ecology** 14 1727-1739. *I. F. 6.5. IQ: Q1.*
6. **Nieberding C**, Libois R, Morand S, Michaux J (2006) Parasites and the insular syndrome: the colonisation of the western Mediterranean islands by *Heligmosomoides polygyrus* (Dujardin, 1845). **Journal of Biogeography** 33: 1212-1222. *I.F. 4.8. IQ: Q1.*
7. **Nieberding C**, Olivieri I (2007) Parasites: proxies for host history and ecology? **Trends in Ecology and Evolution** 22 156-165. *I.F. 17,1. IQ: Q1.*
8. **Nieberding C**, Durette-Desset MC, Libois R, Vanderpoorten A, Deffontaine V, Feliu C, Morand S, Michaux JR (2008) Geography and host biogeography matter for understanding the phylogeography of a parasite. **Molecular Phylogenetics and Evolution** 47 538-554. *I. F. 4,4. IQ: Q1.*
9. **Nieberding C**, Schneider MV, de Vos H, Lassance JM, Estramil N, Andersson J, Bång J, Hedenström E, Lofstedt C, Brakefield P (2008) Male sex pheromones in the butterfly *Bicyclus anynana*: towards an evolutionary analysis. **PLoS ONE** 3(7):e2751. *I.F. 4.4. IQ: Q1.*
10. Callejón R, de Rojas M, **Nieberding C**, Foronda P, Feliú C, Guevara D, Cutillas C (2010) Molecular evolution of *Trichuris muris* isolated from different Muridae hosts in Europe. **Parasitology Research**, 107: 631-641 *I. F. 1.47. IQ: Q1-Q2.*
11. Bitume EV, Bonte D, Magalhaes S, Van Dongen S, San Martin, G, Olivieri I, **Nieberding C**

- (2011) Heritability and artificial selection on ambulatory dispersal in *Tetranychus urticae*. **PLoS ONE** 6(10): e26927. *I. F.* 4.4. *IQ:* Q1.
12. San Martin G, Bacquet P, **Nieberding CM** (2011) Mate choice and sexual selection in a model butterfly species, *Bicyclus anynana*: state of the art, **Proc. Neth. Entomol. Soc. Meet.** 22: 9-22. No IF, no IQ.
  13. **Nieberding C**, Fischer K, Saastamoinen M, Allen C, Wallen E, Hedenström E, Brakefield P (2012) Cracking the olfactory code of a butterfly: the scent of ageing. **Ecology Letters** 15: 415–424. *I. F.* 17.5. *IQ:* Q1.  
*Scored by Gabriele Sorci, a Member of the Faculty of 1000 (F1000), as a “must read” in the top 2% of published articles in biology and medicine in 2012. The F1000 rating is widely used to find significant new research articles (see <http://f1000.com>).*
  14. Perez G, Libois R, **Nieberding CM** (2013) Phylogeography of the European dormouse. **Journal of Mammalogy** 91(1): 233–242. *I. F.* 2.3. *IQ:* Q1-Q2.
  15. Bitume E, Olivieri I, Ronce O, Bonte D, **Nieberding CM** (2013) Density and genetic relatedness increase dispersal distance in a sub-social organism. **Ecology letters** 16: 430-437 *I.F.* 17.5. *IQ:* Q1.
  16. Van Bergen E, Brakefield PM, Heuskin S, Zwaan B\*, **Nieberding CM\*** (2013) The scent of inbreeding: a male sex pheromone betrays inbred males. **Proceedings of the Royal Society of London B** 280 : 1471-2954. *I.F.* 5.5 (\*co-last authors). *IQ:* Q1 .
  17. Bitume E, Ronce O, Olivieri I, Bonte D, **Nieberding CM** (2014) Dispersal distance is influenced by parental and grand-parental density. **Proceedings of the Royal Society of London**. 281: 20141061. *I.F.* 5.5. *IQ:* Q1.
  18. Heuskin S, Vanderplanck M, Bacquet P, Holveck MJ, Kaltenpoch M, Engl T, Taverne C, Lognay G, Nieberding CM (2014) The composition of cuticular compounds indicates body parts, sex and age in the model butterfly *Bicyclus anynana* (Lepidoptera). **Frontiers in Ecology and Evolution** 2:37. *I.F.:* 3. *IQ:* Q1.
  19. Arun A, Baumlé V, Amelot G, Nieberding CM (2015) Selection and validation of reference genes for qRT-PCR expression analysis of candidate genes involved in olfactory communication in the butterfly *Bicyclus anynana*. **PLoS ONE** 10(3): e0120401. *I.F.* 3.5. *IQ:* Q1.
  20. Bacquet\* P, Brattström\* O, Wang H-L, Löfstedt C, Brakefield P, **Nieberding CM** (2015) Selection on male sex pheromone composition drives butterfly reproductive isolation. \* co-first authors. **Proceedings of the Royal Society of London**, 282 20142734. *I.F.* 5.7. *IQ:* Q1.
  21. Holveck MJ, Gauthier AL, **Nieberding CM** (2015) Dense, small and male-biased cages exacerbate male–male competition and reduce female choosiness in *Bicyclus anynana*. **Animal Behaviour** 104: 229–245. *I. F.* 3.0. *IQ:* Q1.
  22. Bacquet PMB, De Jong M, Brattström O, Wang HL, Molleman F, Heuskin S, Lognay G, Löfstedt C, Brakefield PM, Vanderpoorten A\*, **Nieberding CM\*** (2016) Differentiation in putative male sex pheromone components across and within populations of the African butterfly *Bicyclus anynana* as a potential driver of reproductive isolation. \* co-last authors. **Ecology and Evolution** 6064-6084. *I. F.* 2.5. *IQ:* Q1.

23. **Nieberding CM**, van Alphen JM (2017) Culture in Bumblebees. **Peer Community in Evolutionary Biology**. doi: 10.24072/pci.evolbiol.100001. No IF, No IQ.
24. **Nieberding CM**, Holveck MJ (2017) Laboratory social environment biases mating outcome: a first quantitative synthesis in a butterfly. **Behavioral Ecology and Sociobiology** 71: 117. *I.F.* 2.4. *IQ:* Q1.
25. **Nieberding CM**, Holveck MJ (2018) Unnatural experimental conditions inflate the importance of male courtship activity on mating success in a butterfly. Commentary on Kehl et al. "Young male mating success is associated with sperm number but not with male sex pheromone titres". **Frontiers in Zoology**, 15:18. *I.F.* 2.9. *IQ:* Q1.
26. **Nieberding CM** and Visser B (2018) Incestuous insects in nature despite occasional fitness costs. **Peer Community in Evolutionary Biology**. doi: 10.24072/pci.evolbiol.100047. No IF, no IQ.
27. **Nieberding CM**, Van Dyck H, Chittka L (2018) Adaptive learning in non-social insects: from theory to field work, and back. Invited review in **Current Opinion in Insect Science** 27: 75-81 *I.F.* 3.7. *IQ:* Q1.
28. Visser B, Hance T, Noël C, Pels C, Kimura MT, Stökl J, Geuverink E, **Nieberding CM** (2018) Variation in lipid synthesis, but genetic homogeneity, among *Leptopilina* parasitic wasp populations. **Ecology and Evolution** 8:7355–7364. *I.F.* : 2,5. *IQ:* Q1.
29. **Nieberding CM**, San Martin G, Saenko S, Brakefield PM, Visser B (2018) Sexual selection contributes to partial restoration of phenotypic robustness in a butterfly. **Scientific Reports** 8 : 14315. *I.F.*: 4,6. *IQ:* Q1.
30. Visser B\*, Dublon I\*, Heuskin S, Laval F, Bacquet PM, Lognay G, **Nieberding CM** (2018) Common practice tissue extraction in solvent does not reflect actual emission of a sex pheromone during courtship in a butterfly.\* co-first authors. **Frontiers Ecology and Evolution** 6:154. . *I.F.*: 3. *IQ:* Q1.
31. Dion E, Monteiro A, **Nieberding CM** (2019) The Role of Learning on Insect and Spider Sexual Behaviors, Sexual Trait Evolution and Speciation. Invited review in **Frontiers Ecology and Evolution** 6:225. . *I.F.*: 3. *IQ:* Q1.
32. Muller D, Elias B, Collard L, Pels C, Holveck MJ\*, **Nieberding CM\*** (2019) Visual and chemical secondary sexual wing traits of across seasonal forms in the polyphenic butterfly *Bicyclus anynana*: how different are intermediate forms? **PLoS ONE** 14 : e0225003.\* last co-authors. *IQ:* Q1.
33. Visser B, Alborn HT, Rondeaux S, Haillot M, Hance T, Rebar D, Riederer JM, Tiso S, van Eldijk TJB, Weissing FJ, **Nieberding CM** (2021) Phenotypic plasticity explains apparent reverse evolution of fat synthesis in parasitic wasps. **Scientific Reports**: 7751. *I.F.*: 4,6. *IQ:* Q1.
34. Braem S, Turlure C, **Nieberding CM**, Van Dyck H (2021) Oviposition site selection and learning in a butterfly under niche expansion: an experimental test. **Animal Behaviour** 180: 101e110. *I.F.*: 3,0. *IQ:* Q1.
35. **Nieberding CM**, Marcantonio M, Voda R, Enriquez T, Visser B (2021) The Evolutionary Relevance of Social Learning and Transmission in Non-social Arthropods with a Focus on Oviposition-Related Behaviors. Invited review, **Genes** 12: 1466. <https://doi.org/10.3390/genes12101466>. *I.F.*: 3,9. *IQ:* Q1-Q2.
36. **Nieberding CM**, Kaisin A, Visser B (2022) Inbreeding and learning affect fitness and colonization



- of new host plants, a behavioral innovation in the spider mite *Tetranychus urticae*. **Entomologia Generalis** 42: 531 – 538. *I.F.* 6,9. *IQ:* Q1.
37. Enriquez T, Lievens V, **Nieberding CM** & Visser B (2022) Pupal size as a proxy for lipid content in lab-reared and field-collected *Drosophila* species. **Scientific Reports** 1: 12855. *I.F.* : 4,6. *IQ:* Q1.
  38. **Nieberding CM**, Beldade P, Baumlé V, San Martin G, Arun A, Lognay G, Montagné N, Bastin-Héline J, Jacquin-Joly E, Noirot C, Klopp C, Visser B (2022) Mosaic evolution of molecular pathways for sex pheromone communication in a butterfly. **Genes** 13 : 1372. *I.F.* : 3,9. *IQ:* Q1-Q2.
  39. Holveck MJ, Muller D, Timmerman A, Visser B, Pels C, Timmermans A, Colonval L, Jan F, Crucifix M, **Nieberding CM** (2023) Warmer temperature produces maladaptive learning of sexual preference in a butterfly. **Functional Ecology**. <https://doi.org/10.1111/1365-2435.14242>. *I.F.* : 6,3. *IQ:* Q1.
  40. Marcantonio M, Voda R, Da Re D, Igot Q, Dennis RLH, Vielfaure A, Vanwambeke S, Nieberding CM (2023) The Effect of Habitat on Insect Movements: Experimental Evidence from Wild-Caught Butterflies. **Insects** 14: 737. [10.3390/insects14090737](https://doi.org/10.3390/insects14090737). *I.F.* : 3,1. *IQ:* Q1.
  41. Braem S, Crucifix M, **Nieberding CM**, Van Dyck H (2023) Microclimatic buffering in forest, agricultural, and urban landscapes through the lens of a grass-feeding insect. **Ecosphere** 14: e4611. *I.F.* : 2,8. *IQ:* Q1.
  42. Visser B, Le Lann C, Hahn DA, Lammers M, Nieberding CM, Alborn HT et al (2023) Many parasitoids lack adult fat accumulation, despite fatty acid synthesis: A discussion of concepts and considerations for future research. **Current Research in Insect Science**: 100055. *I.F.* : 2,4. *IQ:* Q1-Q2.

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## 5.2. Peer-reviewed book chapters

43. **Nieberding C**, Morand S (2006) Comparative phylogeography: the use of parasites for insights into host history, in **Micromammals and macroparasites: from evolutionary ecology to management**. S. Morand, B. R. Krasnov and R. Poulin Eds, **Springer Editions**, pp. 277-293.
44. **Nieberding C**, Jousset E, Desdevises Y (2010) The use of co-phylogeographic patterns to predict the nature of interactions, and vice-versa. In: **The geography of host-parasite interactions**. S. Morand and B. Krasnov Eds, **Oxford Univ. Press**.
45. **Nieberding CM** (2023) Pandémie COVID-19 et crise de biodiversité : causes, conséquences et transition vers une coexistence durable entre humains et écosystèmes naturels. Article de synthèse invité par **Unesco Belgique**, en français, sous presse.

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## 5.3. Other scientific publications

46. **Nieberding CM**, Morand S, Libois R, Michaux JR (2005) A parasite reveals cryptic phylogeographic history of its host: the colonization of the Western Mediterranean islands. Proceedings of the IX European Multicollloquium of Parasitology (EMOP IX), Valencia Spain, in **Multidisciplinarity for**



#### 5.4. Additional manuscripts submitted / in review in peer-reviewed journals:

47. Holveck MJ, Saastamoinen M, Heuskin S, Lognay G, **Nieberding CM** (in prep) Condition-dependence of multimodal secondary sexual signals in a butterfly.
48. Bitume E, San Martin G, Ophélie Ronce, Bonte D, Isabelle Olivieri, **Nieberding CM** (in prep) Evolvability of dispersal and its plasticity in response to heterogeneity in density.
49. Bitume E, **Nieberding CM** (in prep) Absence of evolution in dispersal propensity in response to artificial selection in the spider mite *Tetranychus urticae*.
50. Bitume E, **Nieberding CM** (in prep) Density and not number of individuals matter to induce dispersal in the spider mite *Tetranychus urticae*.
51. Turlure C, Van Dyck H\*, **Nieberding CM\*** (in prep) Social learning for habitat selection for oviposition in a butterfly with positive demographic trends, *Pararge aegeria*. (\* co-last authors)
52. Marcantonio M, Masier S, Scheifler M, Visser B, Nieberding CM (in prep) Habitat fragmentation affects exploration, movement and egg-laying activities in a wild, field-caught Belgian butterfly: a test in semi-natural settings.

#### 6) Main research grants

**Total budget obtained 2,270,000 euros functioning; 170,000 euros equipment ; 160,000 euros salary; ~50,000 for teaching development.**

- 1) Marie Curie IEF (European) funding for my postdoc position (Leiden Univ., 2006-2008, Budget: salary + functioning 15,000 euros)
- 2) Chargé de recherches (FNRS) funding for my postdoc position (Leiden Univ., 2006-2009, Budget: functioning 15,000 euros)
- 3) FSR (UCLouvain) Start funding « Jeune académique » (FSR UCL, 2008, Budget: 45.000 euros)
- 4) ADPI (UCLouvain): “Alternative ways of constructing climate cells in order to reduce their environmental impact (UCLouvain, 2009, Budget : 10,850 euros)
- 5) FRFC-project (FNRS) in coll. with Dr. A. Vanderpoorten (ULg) : “Neutral or adaptive evolution? Relative contribution of the two processes in reproductive isolation and diversification using the model butterfly genus *Bicyclus* (Nymphalidae)” (FNRS Project, Period: 2010-2015, **Budget: 80,000 euros**)
- 6) ARC (Fédération Wallonie-Bruxelles): “Integrating evolution into ecological responses: changing life styles of organisms in changing environments” (PIs: H. Van Dyck, N. Schtickzelle, C. Nieberding; Spokesman: H. Van Dyck) (Period: 2010-2015; **Budget: 873,000 euros**)
- 7) FRFC-project (FNRS) in coll. with Pr. G. Lognay (ULg): “Analysis of Semiochemicals in Lepidoptera” (FNRS Project, Period: 2011-2016, **Budget: 130,000 euros**)
- 8) CDR funding (FNRS): “Molecular analysis of adaptive phenotypic plasticity in olfactory communication” (FNRS, Period: 2013, Budget: 30,000 euros)
- 9) CDR funding (FNRS): “Investigating the olfactory perception machinery in insects using transcriptomics and functional genetics in the butterfly *Bicyclus anynana*” (FNRS, Period: 2014, Budget: 30,000 euros)
- 10) Coordinator of CDR funding (FNRS): “The evolutionary loss and regain of lipid synthesis” (Period: 2017-2019, Budget: 60,000 euros)
- 11) ARC (Fédération Wallonie-Bruxelles): “Learning as a key driver of adaptation to human-induced rapid environmental change: a behavioural biogeographic approach” (PIs: H. Van Dyck, C. Nieberding, Michel crucifix, Sophie Vanwambeke; Spokesman: H. Van Dyck) (Period: 2017-2023; **Budget: 670,000 euros**).

- 12) PDR project (FNRS) in coll. with Dr. Bertanne Visser (UCLouvain): “Plastic lipid synthesis in parasitic wasps” (period: 2020-2024, **Budget: 272,000 euros**).
- 13) PDR project (FNRS): “Survival of the smartest: rapid adaptation of butterflies to reduced habitat suitability in Belgium” (period: 2021-2025, **Budget: 252,000 euros**).

#### Funding for Teaching and Education:

- 14) Paid undergraduate assistant (“élève-monitrice”) in *Zoology* for Prof. M. Chardon at Liège Univ. (Belgium) in 1999-2001.
- 15) FSR (UCL) funding to organize “meet the expert” seminars for the doctoral school Biology, Ecology and Evolution (FNRS, Period: 2009, Budget: 1,800 euros)
- 16) FDP (UCL) funding to renovate the Bsc course LBIO1231A “Compléments de Biologie animale” in collaboration with Profs. JF Rees, C. Remacle, T. Hance (UCL, Period: 2010-2012, **Budget: 40,000 euros**)
- 17) FNRS funding to organize training for the Doctoral School in “Biodiversity, Evolution, Ecology” (BEE; yearly Budget: 3,750 euros)

#### Main attempted grants application (not obtained):

- 18) **ERC Starting Grant-call 2014:** “Epigenetics and the evolution of behavioural plasticity in ecologically-relevant environments. Acronym: EPIC”. Submitted during my maternity leave. Ranked B.
- 19) **COST EU-call 2020 and 2022:** “European Network In CHEmical Ecology: translating the language of life into sustainability, Acronym: E-NICHE”. International network spokesperson: Prof. Anne-Genevieve de Bagnères-Urbany (CEFE, France). International teams from almost all EU countries. Rejected.
- 20) **EOS - Excellence of Science national-call 2021:** “Microbiome landscapes: drivers and consequences for adaptation of host populations to environmental gradients”. UCLouvain spokesperson: C. Nieberding. National network spokesperson: Prof. E. DECAESTECKER (KULeuven); Application form 40005637. National teams from 6 universities. Rejected at step 1.
- 21) **Biodiversa EU-call 2021-2022:** “Restoration and toolbox for landscape planning to bring biodiversity back into intensively used farmlands. Acronym: BIODIVERSIFARM”. International network spokesperson: C. Nieberding. International teams from 3 countries. Rejected at step 2.

## 7) International research collaborations

**My international training and career (including EU-Marie Curie postdoctoral funding) in France and the Netherlands from 2002 to 2008 full time, and then thanks to sabbatical stays and field work in the UK, Sweden, Eastern Europe and sub-Saharan Africa, have provided me with a large network of amazing international collaborators, in addition to my Belgian fellow colleagues in Flanders and Wallonia (as can be checked in my list of publications).**

- Collaborators on butterfly biology and behavioural learning:

Prof. Lars Chittka, Queen Marie University of London (UK) – sabbatical stay in 2016.  
 Prof. Ellouise Leadbeater, Royal Holloway University of London (UK)  
 Prof. Katharina Riebel, Leiden Univ. (NL)  
 Dr. Roger Dennis, IESR Staffordshire Univ. (UK)  
 Prof. A. Monteiro (since 2015) YALE-NUS-College (Singapore)  
 Prof. Marjo Saastamoinen, Helsinki Univ. (Finland)

- Collaborators on olfactory communication and chemical ecology

Prof. P. Brakefield (since 2005) Cambridge Univ. (UK)

Prof. C. Löfstedt, Drs JM Lassance and M Lienard (since 2005) Lund Univ. (Sweden)

Prof.E. Hedenström (since 2006) Sundsvall Univ. (Sweden)

Prof. K. Fischer (since 2006) Greifswald Univ. (Germany)

Prof. G. Lognay (2009-2020) Liège Univ. (Belgium)

- Collaborators on dispersal biology:

Prof. I. Olivieri (since 2005-2016) and Dr. O. Ronce; Montpellier Univ. (France)

Prof. D. Bonte (since 2008); Ghent University

- Collaboration on evolutionary genetics and transcriptomics

Prof. Patricia Beldade, Lissabon Univ. (Portugal)

Dr C. Klopp (since 2010) head of -omic platform at INRA Toulouse (France)

- Collaboration on molecular phylogenetics

Dr. C. Douady (2005) Lyon Univ. (France)

Dr. A. Vanderpoorten (since 2006) Liège Univ. (Belgium)

- Collaboration on host-parasite interactions

Prof. S. Morand (since 2004) Montpellier Univ. (France)

Prof. Y. Desdevises(since 2008), director of the Observatoire Océanologique of Sorbonne Univ. (France)

Prof. M.-C. Durette-Desset (since 2004) Museum national d'Histoire naturelle (France)

Prof. C. Feliu (since 2003) Barcelona Univ. (Spain)

- Collaboration on statistical issues

Dr. S. Van Dongen (2006) Antwerp Univ. (Belgium)

Dr. G. san Martin (since 2010), CRA-w (Belgium).

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## 8) International communications

My concern about the ongoing climate and biodiversity crises have led me to decline taking flights for conferences and seminars since 2017, and to propose as an alternative online lectures. Most organisers have declined the online option and I flew only once for work since 2017 (and once for private issues). A number of invited talks have also been cancelled since March 2020 related to COVI-19 pandemy. Yet habits change since COVID-19.

### Summary of main seminars and lectures:

- **3 plenary or symposium international invited seminars**

- **> 30 invited seminars at international conferences and universities**

- **27 oral communications at international conferences and universities (not listed)**

- **Regularly invited for teaching lectures:**

- Invited lectures in 2006-2008 on host-parasite evolution and on sexual selection at the Bsc level and in Evolutionary biology at the Msc level in **Leiden** University.

- Invited lecture in 2007 on host-parasite evolution at the Msc level at **Valencia** University.

- Invited lecturer in 2010-2011 for the course BIO1352A, integrated Field Ecology, at **UCLouvain** (Bsc 3 level; 35 hours).
- Invited lecturer in 2019 and 2020 on sexual selection at **Paris VI and Amsterdam** Universities.
- Invited lecturer in 2021-2022 for the Bsc 1 course in Evolution at **Namur** University (100 students, 15 hours).

## 8.1 Plenary and Symposium Keynote speaker

- Nieberding C** (2010) Pheromones and reproductive isolation; the butterfly *Bicyclus anynana* as a model; **Plenary invited talk** for the “Entomologendag” workshop, Ede, **Wageningen** (the Netherlands), December 17<sup>th</sup>.
- Nieberding C** (2016) Plasticity and the evolution of adaptive traits involved in reproductive isolation. **Plenary invited talk** at the « Journées Scientifiques de l’Institut d’écologie et des sciences de l’environnement », **Paris Sorbonne** (France), December 1<sup>st</sup>.
- Nieberding C** (2019) Maladaptive learning of mate preference in a butterfly facing climate change; **Plenary invited talk** for the Zoology 2019 & NVG conference “Learning and Memory in the Animal Kingdom – from nematodes to humans”, **Groningen** (the Netherlands), November 29<sup>th</sup>.

## 8.2 Invited international seminars

- Nieberding C**, Libois R, Douady C, Morand S, Michaux JR (2004) A parasite reveals cryptic phylogeographic history of its host. Museum of Natural history in **Bucharest**, Romania, May 13<sup>th</sup>.
- Nieberding C**, Libois R, Morand S, Michaux JR (2005) A parasite reveals cryptic phylogeographic history of its host. “Spotlight” seminars of the Institute of Biology of **Leiden** University, the Netherlands, October 6<sup>th</sup>.
- Nieberding C**, de Vos H, Schneider V, Lassance JM, Lofstedt C, Brakefield P (2007) Role of male sex pheromones in the courtship success of the butterfly *Bicyclus anynana*. Department of Biology, **Copenhagen** University, Denmark, July, 27<sup>th</sup>.
- Nieberding C**, Olivieri I (2007) Parasites: proxies for host history and ecology? Seminar for the Master Biodiversity; conservation and evolution. **Valencia** University, Spain, November 29<sup>th</sup>.
- Nieberding C**, de Vos H, Schneider MV, Lassance JM, Estramil N, Andersson J, Bang J, Hedenström E, Löfstedt C, Brakefield P (2008) Male sex pheromones of the butterfly *Bicyclus anynana*: role in sexual selection? “Spotlight” seminars of the Institute of Biology of **Leiden**, the Netherlands, January 10<sup>th</sup>.
- Nieberding C**, Olivieri I (2008) Parasites: proxies for host history and ecology? Seminar for the GDR “ComEvol” of the INRA of Versailles, **Paris**, France, March 26<sup>th</sup>.
- Nieberding C**, de Vos H, Schneider MV, Lassance JM, Estramil N, Andersson J, Bang J, Hedenström E, Löfstedt C, Brakefield P (2008) Male sex pheromones of the butterfly *Bicyclus anynana*: role in sexual selection? **Montpellier**, France, April 10<sup>th</sup>.
- Nieberding C**, Olivieri I (2008) Parasites: proxies for host history and ecology? Seminar for the “Groupe d’animation scientifique” of the Centre for Management and Biology of Populations (CBGP), **Montpellier**, France, April 12<sup>th</sup>.
- Nieberding C** (2008) Sexual selection in the butterfly *Bicyclus anynana*: what do females choose and how? Seminar for **Lille** (France), December 12<sup>th</sup>.
- Nieberding C** (2009) Reproductive isolation and speciation; the butterfly *Bicyclus anynana* as a model; Seminar for the Institute des Sciences de la Vie at **UCLouvain**, February 20<sup>th</sup>.

- Nieberding C** (2009) Reproductive isolation and speciation; the butterfly *Bicyclus anynana* as a model; Seminar for the research group URBO, University of **Namur** (FUNDP), May 18<sup>th</sup>.
- Nieberding C** (2010) Pheromones and reproductive isolation; the butterfly *Bicyclus anynana* as a model; Seminar for the 150th anniversary of **Gembloux** Univ., May 5<sup>th</sup>.
- Nieberding C** (2010) Sexual selection on olfactory communication and diversification in the African butterfly genus *Bicyclus*; Free University of **Brussels** (ULb), May 15<sup>th</sup>.
- Nieberding C** (2010) Sexual selection on olfactory communication and diversification in the African butterfly genus *Bicyclus*; seminar for the symposium “Speciation” organised for the presentation of the 2010 Dutch Zoology Prize and Annual Meeting of the Royal Dutch Zoological Society, Natural Museum of **Leiden** (the Netherlands), June 11<sup>th</sup>.
- Nieberding C** (2010) Evolution of the *Bicyclus* genus through sexual selection on male sex pheromones?; Seminar at the Biobutterfly congress, **Edmonton** (Canada), June 29<sup>th</sup>.
- Nieberding C** (2010) Evidence of sexual selection on olfactory communication by means of male sex pheromone production in a butterfly. Seminar at the Zoology Department in **Cambridge** (UK), November 2<sup>nd</sup>.
- Nieberding C** (2012) Sexual selection on olfactory communication. Seminar at the Institute of Evolution at **Montpellier** Univ. (ISEM, France), January 20<sup>th</sup>.
- Nieberding C** (2012) Cracking the olfactory code of a butterfly: From sexual selection to species diversification. Seminar at the Institute Gulbenkian for Cienca (IGC, **Lisbon**, Portugal), May 28<sup>th</sup>.
- Nieberding C** (2012) Mechanisms of reproductive isolation and species diversification. Seminar for the PhD course 'Frontiers in Evolution' at the K.U.Leuven (**Leuven**, Belgium), June 8<sup>th</sup>.
- Nieberding C** (2013) Transcriptomics of olfactory communication: a first case study in butterflies. Seminar at the workshop “Pararge Eco-evo-devo” (**London**, UK), January 22<sup>th</sup>.
- Nieberding C** (2013) Selection on male sex pheromone composition drives butterfly diversification. Seminar at the Institute of Evolution at **Montpellier** Univ. (ISEM, France), March 15<sup>th</sup>.
- Nieberding C** (2014) Evolution of olfactory communication. Seminar at **Brno** University (Czech Republic), April 17<sup>th</sup>.
- Nieberding C** (2017) Plasticity and the evolution of adaptive traits involved in reproductive isolation. Invited seminar at **Alnarp University** (Sweden), April 6<sup>th</sup>.
- Nieberding CM** (2016) Chemical communication in speciation : From mate choice to species diversification using the butterfly *Bicyclus anynana* as a model. Invited seminar in Prof Lars Chittka’s laboratory “Bee sensory and behavioural ecology”, at Queen Mary University, **London**, UK, June 16<sup>th</sup>.
- Nieberding CM** (2016) Plasticity and the evolution of adaptive traits involved in reproductive isolation. Invited plenary seminar at the Scientific Day of the Institute of Ecology and Environmental sciences of Paris, France, December 1<sup>st</sup>.
- Nieberding CM** (2017) Let’s bring (back) ecological complexity in sexual selection studies. Invited seminar in the Faculty of Science and Engineering at **Groningen** University, The Netherlands, October 12<sup>th</sup>.
- Nieberding CM** (2017) Let’s bring (back) ecological complexity in sexual selection studies. Invited seminar in the Department of Ecology at **Lille** University, France, November 11<sup>th</sup>.
- Nieberding CM** (2019) “We Change for Life”: the climate and biodiversity crises for **CBC Bank** investors, in tandem with **Prof JP van Ypersele** (climatologist), **Liège** University, November 12<sup>th</sup>.
- Nieberding CM** (2020) Maladaptive learning of mate preference in a butterfly facing climate change. Invited seminar at **Amsterdam** university (the Netherlands), May 12<sup>th</sup>.
- Marcantonio M, ..., **Nieberding CM** (2022) Habitat exploration, oviposition and butterfly decline: does habitat fragmentation matter? ASAB Winter Meeting at **Edinburgh** (UK), Dec 6<sup>th</sup>.

**Nieberding CM (2022)** Social learning for rapid adaptation to climate warming and habitat fragmentation using butterflies and spider mites as model systems. Invited seminar by the Institute of Biology (IBL) at **Leiden** university (NL), March 24<sup>th</sup>.

**Nieberding CM (2022)** Behavioural responses of animals to the 6<sup>th</sup> biodiversity extinction: do insects adapt to climate warming and habitat fragmentation? Invited seminar at Philosophy at **UCLouvain** university (Belgium), Dec 22<sup>th</sup>.

**Nieberding CM (2022)** Social learning and (mal)adaptation to the climate and land use crises. Invited seminar at **online lecture series organized by the Embassy of Belgium in Seoul**, May 5<sup>th</sup>.

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## 9) Supervision of PhD theses

**As an associate professor since 2008, I supervised 4 PhD projects, and co-supervised another 5 PhD projects, supervised > 30 Msc thesis projects and 20 Bsc projects as main promotor. I was also member of 14 PhD comitees and of 29 PhD juries examination, of which 8 in international universities, and of >20 master thesis juries.**

### 9.1. Main supervisor of 4 PhD projects:

- Ellyn Bitume (2008-2012), FRIA grant, for the research project "Genetic and environmental contributions to dispersal distance in the two-spotted spider mite, *Tetranychus urticae*". Co-tutelle with Prof. I. Olivieri (ISEM, Montpellier, France).
- Paul Bacquet (2008-2012), FRIA grant, for the research project "Importance of male sex pheromone in the processes of reproductive isolation and speciation in the butterfly genus *Bicyclus*". Co-promotor : Prof. Paul Brakefield (Cambridge, UK).
- Anne-Laure Gauthier (2011- 2013): FRIA grant application for the research project "Sélection sexuelle en communication olfactive: importance de la plasticité phénotypique dans le choix de partenaire chez *Bicyclus anynana*".
- Doriane Muller (2014-ongoing -covid 19 hit) : FRIA grant for the project : "Adaptive value of plasticity under sexual selection in changing environments in the butterfly *Bicyclus anynana*".

### 9.2 Co-supervisor of 5 PhD projects:

- Sohini Vanjari (UK grant, 2011 – 2015): Prestigious Indian *Man Mohan Singh Scholarship*, "Pheromonal communication during courtship in *Heliconius melpomene*". Main promotor: Dr. C. Jiggins in Cambridge (UK).
- Virginie Tuillier (ARC 2011, FRIA 2012-2016): FRIA, "Contributions of genotype, environment and their interaction in dispersal in the protist *Tetrahymena thermophylla*". Main promotor Prof N. Schtickzelle (UCLouvain).
- Simon Braem (ARC 2017, FRIA 2017-2021): FRIA "Habitat selection in the speckled wood butterfly *Pararge aegeria*". Main promotor: Prof. H. van Dyck (UCLouvain).
- Valentine Chapelle (aspirante FNRS 2018-2023) "Adaptation and evolution with low genetic diversity: a combined field and laboratory study on DNA methylation variation in the mangrove rivulus *Kryptolebias marmoratus*". Main promoter: Prof. F. Silvestre (UNamur).
- Maude Quicray (aspirante FNRS 2022-2026) « Rapid evolution of lipid synthesis in Leptopilina insects". Main promotor: Dr. Bertanne Visser (ULiège).

### 9.3 Member of 14 PhD commissions in national and international commissions:

1. Robert Kisasa (2007-2010), « Eco-éthologie comparée des martins-pêcheurs des genres *Alcedo* et

- Ceryle de la région de Kinshasa, République Démocratique du Congo. **Kinshasa university and ULiège**. Supervisor: Prof. R. Libois.
2. Olou Toussaint Lougbegnon (2004-2008), "Synécologie des oiseaux de forêts et des milieux de substitution dans le sud du Bénin". **ULiège**. Supervisor: Prof. R. Libois.
  3. Gualbert Houemenou (2007-2012), « Caractérisation du rôle des micromammifères de la ville de Cotonou (Bénin) dans la transmission d'anthropozoonoses ». **Cotonou university and ULiège**. Supervisor: Prof. R. Libois.
  4. Anne Laudisoit (2004-2009), « Contribution à l'épidémiologie de la peste dans un foyer endémique, le district de Lushoto (Tanzanie) », Supervisor: Prof. R. Libois, Liège Univ.
  5. Grégoire Motte (2007-2011), « Etude des régimes alimentaires des chauves-souris en Wallonie. **ULiège**. Supervisor: Prof. R. Libois.
  6. Frank Pennekamp (2009-2013), « Metapopulation dynamics and viability in *Tetrahymena thermophila* microcosms". **UCLouvain**. Supervisor: N. Schtickzelle.
  7. Loulou Al Bittar (2010-2015), « Analyse de l'influence d'un contrôle biologique des pucerons en culture de betteraves à l'aide d'Hyménoptères parasitoïdes sur la propagation des maladies virales », **UCLouvain**. Supervisor: Prof. T. Hance.
  8. Arnaud Henrard (2010-2015) « Systématique et phylogénie des araignées Zodariidae (Araneae) inféodées aux forêts africaines dans un contexte biogéographique », **UCLouvain**. Supervisor: Prof. T. Hance.
  9. Benoît Tichoux (2011-2013) « Plasticité phénotypique adaptative des styles de vie du papillon *Pararge aegeria* (L.) relative à la latitude et au type d'habitat: Approche via analyse de normes de réaction thermiques », **UCLouvain**. Supervisor: Prof. H. Van Dyck.
  10. Marie Verhey (2011-2015) « Biogéographie historique de deux familles d'amphipodes cuirassés (Iphimediidae, Epimeriidae) de l'océan Austral". **UCLouvain**. supervisor: Prof. J. Mallefet.
  11. Virginie Tuillier (ARC 2011, FRIA 2012-2016): "Contributions of genotype, environment and their interaction in dispersal in the protist *Tetrahymena thermophylla*". **UCLouvain**. Supervisor: N. Schtickzelle.
  12. Anne-Sophie Voisin (2013-2017) « Plasticité phénotypique du poisson et aspects épigénétiques. **UNamur**. Supervisor: Prof. F. Sylvestre.
  13. Cassandra Marinosci (2013-2017) « Evolution des traits d'histoire de vie chez l'acarien phytophage *Tetranychus urticae* : evolution des stratégies d'allocation sexuelle de traits impliqués dans l'adaptation à un nouvel hôte » **Université de Montpellier II** (France). Supervisor: Prof. Isabelle Olivieri, Drs. Ophélie Ronce, Sara Magalhães
  14. Aurélien Kaiser (2014-2018), "Pace-of-life syndrome in anthropogenic environments: an experimental test with a butterfly under habitat expansion". **UCLouvain**. Supervisor: Prof. Hans Van Dyck.

#### 9.4. Member of 21 national and 8 international PhD defense juries:

1. Valérie Deffontaine (2008), « Histoire évolutive du campagnol roussâtre (*Myodes glareolus*) en Eurasie », **ULiège** (Belgium). PhD supervisor : Prof. R. Libois.
2. Audrey Coppée (2010), « *Bombus terrestris* : a complex of species or a species complex ?", **Mons Univ.** (Belgium). PhD supervisor : Prof. P. Rasmont.
3. Christophe Meskens (2011), "Interactions among Neotropical beetles (Coleoptera) and host plants: from feeding niche and host specificity to food web structure", **UCLouvain** (Belgium) and **Smithsonian tropical Research Institute** (USA - Panama). PhD supervisor: Prof. T. Hance.
4. Frédéric Hourlay (2011) « Etude phylogéographique du cincle plongeur, *Cinclus cinclus*, en région paléarctique », **ULiège** (Belgium). PhD supervisor: Prof. R. Libois.
5. Grégoire Motte (2011), « Etude des régimes alimentaires des chauve-souris en Wallonie », **ULiège** (Belgium). PhD supervisor: Prof. R. Libois.
6. Delphine Bourdais (2012), "Mating strategies of the aphid parasitoid *Aphidius matricariae*



- (Hymenoptera, Aphidiinae). **UCLouvain** (Belgium). PhD supervisor: Prof. T. Hance.
7. Charlotte Havermans (2012) "DNA barcoding, phylogeography and phylogeny of the Lysianassoidea (Crustacea : Amphipoda) from the Southern ocean and the world's deep seas". **UCLouvain** (Belgium). PhD supervisor: Prof. J. Mallefet.
  8. Laurent Natalis (2013) "Reproductive barriers and their role in asymmetric *Rhinantus* hybridization". **UCLouvain** (Belgium). PhD supervisor: Prof. R. Wesselingh.
  9. Gualbert Houemenou (2013) « Caractérisation du rôle des micromammifères de la ville de Cotonou (Bénin) dans la transmission d'anthropozoonoses ». **Cotonou and ULiège** (Belgium). PhD supervisor: Prof. R. Libois.
  10. Simon Dellicour (2013) « Etude de l'histoire évolutive d'insectes phytophages, approche phylogéographique et développements méthodologiques ». **Free University of Brussels** (Belgium). PhD supervisor : Prof. P. Mardulyn.
  11. Frank Pennekamp (2014) "Swimming with ciliates - Dispersal and movement ecology of *Tetrahymena thermophile*". **UCLouvain** (Belgium). PhD Supervisor : Prof. N. Schtickzelle.
  12. Wasimuddin (2014) "Genetic variation of selected pathogens in the house mouse hybrid zone." **Masaryk Univ. and the Academy of Science** (Czech Republic). PhD supervisor: Prof. J. Bryja.
  13. Anna Chuine (2014) « Des mécanismes aux conséquences adaptative du choix du partenaire sexuel pour la comptabilité génétique ». **Université Claude Bernard à Lyon 1** (France). PhD Supervisor: Prof. Emmanuel Desouhant.
  14. Annelies de Roissart (2015) « The spatial and community context of dispersal and life history evolution in the spider mite *Tetranychus urticae* ». **University of Ghent** (Belgium). PhD supervisor: Prof. Dries Bonte.
  15. Nina Wauters (2015) "Genetical and ecological aspects of the invasion of the tropical fire ant *Solenopsis geminata* in the Galápagos Islands". **Free University of Brussels** (Belgium), PhD supervisor: Dr. Denis Fournier.
  16. Youri Martin (2015) "Predicting future species distributions: from correlations toward a better understanding of underlying processes". **UCLouvain**. PhD supervisor: Prof. H. Van Dyck.
  17. Francisco Gonzalez (2017) "Smells of Sociality: Insect Chemoreceptors, Sex and Habitat Cues". **Alnarp University** (Sweden), on April 7, 2017. PhD supervisor: Prof. P. Witzgall.
  18. Samuel Caro, PhD (2017) « Habilitation à diriger des recherches" Sciences du Vivant (HDR Life Sciences) for becoming a PhD promotor : « Mécanismes de la phénologie reproductrice chez les oiseaux : au carrefour du proximal et de l'ultime » at **Centre for Functional and Evolutionary Ecology (CEFE), Montpellier University** (France) on June 30<sup>th</sup>, 2017. President of the examination jury.
  19. Raissa de Boer (2017) "Inbreeding-Environment interactions throughout the life of a songbird". **Antwerp University** (Belgium), on Sept 29<sup>th</sup>, 2017. PhD supervisors: Profs. W. Müller and M. Eens.
  20. Laura Gajdzik (2017) « Assesment of adaptive capacities in damselfishes (Pomacentridae)". On Sept 8<sup>th</sup>, 2017 at **ULiège** (Belgium). Promotors: Dr. B. Frederich and Prof. E. Parmentier.
  21. Verheyte Marie (2017) "Systematics, phylogeography and historical biogeography of Eusiroidea (Crustacea, Amphipoda) from the Southern Ocean, with a special focus on the families Epimeriidae and Iphimediidae", on Sept 19<sup>th</sup>, 2017 at **UCLouvain and Royal Institute of natural History - RBINS** (Belgium). Promotors: Dr. C d'Udekem d'Acoz and Prof. J. Mallefet.
  22. Dubois Q (2017) "The conservation of the Cranberry Fritillary *Boloria aquilonaris* across space and over time: study of a boreo-montane butterfly from distribution to demography". On Nov 30<sup>th</sup>, 2018 at **UCLouvain** (Belgium). Promotors: Dr. C. Turlure and Prof. N. Schtickzelle.
  23. Cherasse S (2019) "Reproduction and immunity in ant queens". At **Free University of Brussels** (Belgium). Promotor: Prof. S. Aron.
  24. Henrard A (2019) "Systematics and phylogeny of the ant-eating spiders (Araneae ; Zodariidae) : a total evidence analysis". On June 24<sup>th</sup>, 2019 at **UCLouvain and Musée Royal d'Afrique Centrale** (Belgium). Promotors: Dr. Rudy Jocqué and Prof. T. Hance.
  25. Timothée Zidat (2019) "Communication chimique chez un mammifère social et monogame: rôle dans la sélection sexuelle et les relations entre groupes? ». On June 26<sup>th</sup>,

- 2019 at **University of Lyon** (France). Promotors : Profs. D. Allainé and G. Comte.
26. Stefano Masier (2020) "Dispersal heterogeneity and eco-evolutionary dynamics in experimental populations". On June 11<sup>th</sup> 2020 at **University of Ghent** (Belgium). Promotor: Prof. D. Bonte.
27. Tiziana Paola Gobbin (2020) "The role of parasites in host speciation". Joint PhD at **Universities of Groningen** (NL) and **Bern** (Switzerland). Promotors: Profs. Martine Maan and Ole Seehausen.
28. Mathilde Scheifler (2021) « Spécificité, diversité et évolution des communautés ectosymbiotiques chez les Sparidae (Teleostei) ». At **Sorbonne university** (France). Promotor : Prof Y. Desdevises.
29. Daniele Da Re (2022) "Modelling approaches for disease biogeography : investigating the spatio-temporal relationships of infectious disease systems". At **UCLouvain and Free University of Brussels** (Belgium). Promotors: Profs. Sophie Vanwambeke and Marius Gilbert.

## 10) Scientific distinctions

- 2001: Award of the *University of Liège* for the best Master thesis in Zoology (250 euros).
- 2002: Grant from the *French Community of Belgium (Concours des bourses de voyage)*, for a training in the laboratory of Prof. Douzery in Montpellier, France (4000 euros).
- 2005: Grant from the *Royal academy of Sciences of Belgium (Agathon De Potter foundation)*, for attending the IX International Congress of Mammalogy in Japan, August 1st to 5<sup>th</sup> (1000 euros).
- 2009: Grant from the *Royal academy of Sciences of Belgium (Agathon de Potter foundation)* for a field trip in Cameroun in April 2009 (400 euros).
- 2015: Best reviewer shortlist for the journal *Molecular Ecology*.

## 11) Study stays

- May 2003: Study of morphological systematics of *Heligmosomoides* genus (1 week) **Barcelona Univ.** (Spain), Prof. C. Feliu
- February 2002-January 2005: 16-week field work in various countries of **Western and Eastern Europe** to collected wild field mice and their parasite for my PhD project.
- June 2004: Study of morphological variability in *Heligmosomoides* genus (2 weeks), **Natural History National Museum of Paris** (France), Prof. M.C. Durette-Desset
- Nov 2005-Aug 2007: Study of pheromone composition in *Bicyclus* butterflies (4 weeks) Use of gas chromatography coupled to electro-antennograms (GC-EAD) and to mass spectrometry (GC-MS) **Lund Univ.** (Sweden) in Prof. C. Löfstedt's lab and in **Copenhagen Univ.** (Denmark), in Dr. P. D'Ettorre's lab.
- Feb 2007: Course on statistical computing using the R language (3 weeks) **Imperial College of Ascot** (England), Prof. M. Crawley.
- Aug 2007: Course on statistical genetics (1 week): Quantitative Genetics (3 days), at **ULiège** Profs. W. Muir & B. Walsh. QTL mapping (3 days), Profs. R. Doerge & Z.-B. Zeng
- March-Apr 2010: Development of a EST subtractive database for transcriptomics, for investigating the genetic bases of olfactory communication in *B. anynana* (2 months): **Leiden Univ.**, Dr. P. Beldade.
- April 2010: 2-week field work in **Cameroon** for collecting *Bicyclus* wild butterflies with the new team.
- July 2011: Analysis of transcriptome data for investigating the genetic bases of pheromone production and androconia development in *B. anynana* (4 days): **INRA Toulouse**, Dr. C. Klopp.
- May 2012 : Analysis of transcriptome data for investigating the genetic bases of pheromone production and androconia development in *B. anynana* (2weeks): **Gulbenkian Institute of Science**, Lisbon, Dr. P. Beldade.
- 2011-2013: Frequent 1-week stays for the analysis of evolution of dispersal in the spider mite *Tetranychus urticae* : at **Institute of Evolutionary Sciences (ISEM)**, Montpellier, Prof. I. Olivieri.
- 2016: three-week sabbatical stay at **Queen Mary University in London** in the laboratory of Prof. L. Chittka (UK).

## 12) Lecturing

I lecture yearly between 100 to 160 hours, and supervise ~ 50 hours of practical classes.

I teach about ~ 300 students from first (Bsc1) to last (Msc2) year in the *Master of Ecology* ("BOE") since 2008, as well as ~ 25 pre-selected students for the complementary *Master in "Sustainable development"*, which I took over since 2020 from my climatologist colleague Pr. Jean-Pascal van Ypersele in preparation of his retirement.

I have been lecturing various courses over the last 15 years at UCLouvain, where the lecture assignments are rolled partly every 2-5 years, ranging from "Invertebrate Zoology", "Molecular Ecology", "Transcriptomics", "Biogeography", "Ecology" and "Evolution" from Bsc 1st to Msc 1<sup>st</sup> year students, "Ecology and Society", "Diversity of terrestrial biomes" and "Animal Behaviour".

**Current lecture program (2022-2023) in Master "Ecology (<https://uclouvain.be/prog-2023-boe2m>):**

LBIO1110 : Evolution et diversité (Bsc 1, 15 +10 hours; ~ 200 students/yr), LBIO1114: Introduction à la Biologie (Bsc 1, 10 + 0 hours; ~ 20 students/yr), LGEO1332 Biogéographie (Bsc 3, 22.5 + 12 hours; ~ 60 students/yr), LBIO1317 Functional Ecology (Bsc 3, 17.5 + 0 hours ; ~ 60 students/yr), LSC2004 Evolution humaine (Bsc3, 10 + 0 hours; ~ 40 students/yr), LBOE2191: Sustainable solutions for protecting the biodiversity in Wallonia and worldwide (Msc, 24 + 0 hours; ~ 25 students/ yr), - LBOE2111 Evolution (Msc1, 12 + 0 hours; ~ 30 students/yr), - LBOE2124 Molecular Ecology (Msc, 18 + 28 hours; ~ 20 students/yr).

**Current lecture program (2022-2023) in Master in "Sustainable development" (<https://uclouvain.be/prog-2023-envi2mc>):**

LENVI2101 Societies, populations, environment, development: interdisciplinary issues and approaches (Msc 1, 10 heures en « jeu de rôles » interdisciplinaire) ; LENVI2022 Coordination of the "Seminars in environmental science and management"; LENVI2199 et 2099 co-supervision of the 3-month experimental stage for all students of the Master.

## 13) Services to the society (in bold: mandates ongoing in 2022-2023)

### 13.1. Main positions in national, federal or regional institutions

\* 2013 – ongoing : **President of the FNRS doctoral school in "Biodiversity, Ecology and Evolution"**

\*2017- ongoing (2023): **Member of the scientific commission of the Royal Museum of Central Africa**, which has a large collection in the Biology and Geology sections.

\* 2018 – ongoing: **Member of the steering committee of the interdisciplinary "Louvain4Evolution" think-tank, UCL**, dedicated to transfer transdisciplinary evolutionary thinking to the Belgian Society. I was the main organizer for two conferences that attracted about 100 people each from the general society (see below point 10.2)

\* 2018 – ongoing : **Member of the coordinating scientific team of the Peer Community in (PCI)** dedicated to highlight excellent, peer-reviewed, open access and free to publish science in biological sciences (<https://evolbiol.peercommunityin.org/about/about>)

- \* 2018 – ongoing: **Member of the scientific board of the Royal Belgian Zoological Society** ([http://rbzs.be/?page\\_id=121](http://rbzs.be/?page_id=121)), which organizes a yearly conference and delivers prizes to Msc and PhD students in Zoology.
- \* 2019-ongoing (2025): **Member of the scientific commission of the National Museum of Natural Sciences of Belgium** (arrêté royal publié au moniteur C 2019-13/683)
- \* 2019- 2022: President (2020-2021) and Vice-president (2019) of the FRIA scientific committee for PhD applications in the Fédération Wallonie-Bruxelles, at the Fonds national de la Recherche Scientifique (FNRS)
- \* 2016-2018: Member of scientific commission on wildlife trade for the Federal Public Service Health, Food Chain Safety and Environment, and dedicated to quantify the impacts of wildlife trade at global and local levels.

### 13.2. Main organiser of conferences and events

- \* 2019: Conference on the climate and biodiversity crises “How human activities cause biodiversity loss : Interactions and relative contributions of human activities; What do we know, what do we need to know ?” at UCLouvain on October 24<sup>th</sup>, **2019** (300 participants). <https://uclouvain.be/fr/node/64037>
- \* 2019 - ongoing: **Coordination of the “We Change For Life” initiative** at <https://wechangeforlife.org/>, in which 250 Belgian scientists testify about their lifestyle changes for protecting the planet in **2019** (in NL, FR and EN). This is an initiative led together with Prof. JP van Ypersele (climatologist and former vice-president IPCC) and Dr. Lucette Flandroy (Biologist former expert at the federal government).
- \* 2019: Scientific Presidency of the “One World One Health” Conference “Dead or Alive: Towards a Sustainable Wildlife Trade” organised by the Federal Public Service Health, Food Chain Safety and Environment and the Belgian Biodiversity Platform, December 4<sup>th</sup>, 2019, and dedicated to quantify the impacts of wildlife trade at global and local levels.
- \* 2019: Organisation with the Louvain4Evolution interdisciplinary group at UCLouvain of the 1-day conference for the general citizens on the Theory of Evolution “Les preuves irréfutables de l'Evolution biologique, au cœur de la biologie moderne”, Brussels – Woluwé, April 1<sup>st</sup> (<https://uclouvain.be/fr/chercher/louvain4evolution/les-preuves-de-l-evolution-biologique.html>).
- \* 2018: Organisation with the Louvain4Evolution interdisciplinary group at UCLouvain of the 2-day conference for the general citizens on the Theory of Evolution “Coopération ou compétition, qui mène la danse? Deux moteurs de l'évolution des espèces et de nos sociétés”, Brussels – Woluwé, May 28<sup>th</sup> and 29<sup>th</sup> (<https://uclouvain.be/fr/chercher/louvain4evolution/cooperation-ou-competition-qui-mene-la-danse-deux-moteurs-de-l-evolution-des-especes-et-de-nos-societes.html>).

### 13.3. Peer-Review assessment of scientific quality in national and international instances

- \* 2014 - ongoing **Scientific Editor** for the **journal Frontiers in Ecology and Evolution**, section “Chemical Ecology”

\* **2016-ongoing: Scientific Editor** for the peeri-review, open access and free to publish initiative **Peer Community in**, in Evolutionary Biology (PCI Evol Biol), in Ecology (PCI Ecol) and in Entomology (PCI Entomology).

\* **2008- ongoing: Referee** for the following **international science foundations**:

- \* FRB, Fondation pour la recherche sur la biodiversité (France) in 2009
- \* FRIA-FNRS for the PhD grant attributions at FRIA (Belgium) in 2009
- \* Estonian Science Foundation in 2010
- \* French Action Nationale de la Recherche (ANR) since 2011
- \* French Scientific Council Cefipra in 2012
- \* Czeck Science Foundation in 2014
- \* French Institute of national agronomy (INRA) in 2015
- \* NERC (UK) in 2019

\* **2003- ongoing: Referee for the peer reviewed journals (> 60 manuscripts):**

*Since 2016, I have declined most requests to become to peer-review manuscripts (as for Nature Communications) because I have decided to serve the open access peer reviewing system, such as Peer Community in Evolutionary Biology, Ecology and Entomology.*

Biological Journal of the Linnaean Society; BMC Evolutionary Biology; Ecological Entomology; Entomologia Generalis, Evolution; Evolutionary Applications; Heredity; Frontiers in Ecology and Evolution; International Journal for Parasitology; Journal of Animal Ecology; Journal of Economic Entomology; Journal Evolutionary Biology; Journal of Chemical Ecology; Journal of Insect Science; Journal of Biogeography; MEEGID journal; Molecular Biology and Evolution; Molecular Phylogenetics and Evolution; Molecular Ecology; New Phytologist; PLoS Genetics; PCI Evol Biol; Scientific Reports; Veterinary Parasitology; Zoologica Scripta,...

Best “1000 referee” for the journal Molecular Ecology in 2010.

\* **2017-2020: member of the scientific panel from the “Action nationale de la Recherche” (ANR)** of the French National Scientific Centre (CNRS). This involves 6 days a year in the commission in Paris and about 10 days of peer-reviewing of about 160 large scale grant applications for the panel every year.

\* **2014 -2017 Scientific advisor (Councillor)** of the International Society of Chemical Ecology, organizer of the annual international *congress of Chemical Ecology* and publisher of the flagship *Journal of Chemical Ecology*

\* **2016-2020: Involved in the renovation of the Bachelor and Master programs at UCLouvain** notably for investing in statistical update tools and approaches (using R) from Bsc 1 year and for investing in disseminating the Evolution theory since Bsc 1 (course LBIO1110 Evolution et Diversity, LBIO1310 Evolution), which used to be taught only to Msc students in Ecology.

#### 13.4. Communication about Biodiversity to the national and international press

Please consult my webpage <https://nieberdinglab.be/media/> for more information about my investment since 2019 in communication over the Biodiversity crisis through multiple channels

including Belgian and French TV, radio, social networks (FB) and newspapers. This work adds to my investment in lecturing in the Master of “Sustainable development” at UCLouvain since 2019, to the organisation of transdisciplinary conferences on Biodiversity for the general society and to the supervision of >10 Msc theses in my laboratory on the question of biodiversity restoration in Belgian farmlands and forests.

**Key elements include:**

\*2023 – 2024: **Scientific advisor for communication on the Biodiversity crisis at the “Animalia” temporary exhibit at the Trainworld museum in Brussels** (Belgium), under the supervision of Baron François Schuiten’s scenographic team. Initial duration from February to November 2023, expanded until 2024 thanks to success in number of visits. Teaser: <https://www.youtube.com/watch?v=m-7kgEE2LZU>

\* 2020-ongoing: **Member of the Carta Academica** ([www.cartaacademica.org](http://www.cartaacademica.org)), a Belgian group of experts from the academic field who involves time and energy to communicate their expertise to the Belgian society, notably through a weekly article published in the journal *Le Soir*.

\* 2010 - ongoing: **Expertise through interviews provided regularly to journalists from the European journals *Le Soir*, *Le Monde*, Belgian radios such as *la La Première*, as well as TV5 Monde and RTBF (broadcast “Alors on change” by journalist Gwennaëlle Dekegeleer).**

\* 2021: Conference at a public debate with the Minister of Environment Tellier and the Director of Belgian natural reserves to discuss the causes and solution of the ongoing biodiversity crisis and its link with the COVID-19 pandemy (200 participants).

\* 2021 : Interview for RTBF (Belgian national TV cable) documentary “ Le monde respire”, that won the « Prix Spécial TV5 Monde » of the best French speaking documentary.

\* 2019: Presentation of the “We Change For Life” Initiative to the Queen Mathilde of Belgians, at the “Day of Transition” at UCLouvain (with TV braodcast), December 12<sup>th</sup>

\* 2019: Presentation of the “WeChangeForLife” Initiative for a large audience of general citizens in an evening conference organised by CBC bank with Prof. JP van Ypersele (climatologist and forme vice-chair of the IPCC panel), Liège, November 12<sup>th</sup>