

## Camille LECLERC, Ph.D.

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INRAE – UMR RECOVER  
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### RESEARCH INTERESTS

Macroecology / Global Changes / Multiple facets of biodiversity / Vulnerability assessment / Conservation Biology / Community Ecology / Biogeography

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### EDUCATION

2017 – 2019	PhD in biology, Doctoral School n°567 Plant Sciences: from genes to ecosystems University of Paris Saclay, Orsay, France
2010 – 2012	MSc in ecology, biodiversity and evolution, specialized in conservation biology University of Paris Sud, Orsay, France
2007 – 2010	BSc in ecology University of Paris Sud, Orsay, France

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### PROFESSIONAL EXPERIENCE

Mar. 2020 – present	<b>Postdoctoral researcher</b> at Risks, ECO-systems, Vulnerability, Environment, Resilience unit (UMR RECOVER), Aix-en-Provence (France). Supervised by Arnaud Sentis and Victor Frossard. <i>Using food web structure as a functional indicator of climate change.</i>
Jan. 2017 – Dec. 2019 (36 months)	<b>PhD fellow</b> at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay. <i>Insular endemic biodiversity in the face of global change.</i> Ph.D. publicly defended the 10 <sup>th</sup> of December, 2019.  <i>Examination board:</i> <i>Pr. P. Leadley, Université Paris-Saclay, ESE – UMR 8079, Orsay, France (President)</i> <i>Dr. V. Devictor, CNRS, ISEM – UMR 5554, Montpellier, France (Referee)</i> <i>Dr. A.S.L. Rodrigues, CNRS, CEFÉ – UMR 5175, Montpellier, France (Referee)</i> <i>Dr. F. Rigal, Université de Pau et des Pays de l'Adour, IPREM – UMR 5254, Pau, France (Examiner)</i> <i>Pr. D. Schmeller, Université Toulouse III Paul Sabatier, ECOLAB – UMR 5245, Toulouse, France (Examiner)</i> <i>Dr. C. Bellard, CNRS, ESE – UMR 8079, Orsay, France (Advisor)</i> <i>Dr. F. Courchamp, CNRS, ESE – UMR 8079, Orsay, France (Co-advisor)</i>
Oct. 2016 – Dec. 2016 Apr. 2016 – Jul. 2016 (7 months)	<b>Research assistant</b> at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. <i>Understanding island diversity in the face of global change (designing the doctoral project).</i>
Oct. 2014 – Mar. 2016 (18 months)	<b>Civic service</b> for <a href="#">SUBANTECO scientific program</a> at Kerguelen archipelago (French Southern Territory). Supervised by David Renault.
Sept. – Sept. 2014 (13 months)	<b>Research assistant</b> at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. <i>Combined impacts of global changes on biodiversity across the United States.</i>
Oct. 2012 – Jun. 2013 (9 months)	<b>Internship</b> at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. <i>Population dynamics and conservation of the Tibetan antelope (<i>Pantholops hodgsonii</i>).</i>
Feb. 2012 – Jul. 2012 (6 months)	<b>Internship</b> at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. <i>Climate change on global biodiversity hotspots.</i>
Apr. 2011 – Jun. 2011 (3 months)	<b>Internship</b> at the Station for Theoretical and Experimental Ecology (UAR 2029), Moulis (France). Supervised by Dirk Schmeller. <i>Effects of aquatic environment and vegetation on the survival of zoospores of the chytrid fungus (<i>Batrachomyces dendrobatidis</i>).</i>
Jul. 2010 – Aug. 2010 (2 months)	<b>Internship</b> at the Centre of Biological Studies Chizé (UMR 7372), Chizé (France). Supervised by Olivier Lourdaux <i>Climatic adaptations of wetland invertebrates: Raft spider (<i>Dolomedes fimbriatus</i>).</i>

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## PUBLICATIONS

### Submitted manuscripts or in preparation

**Leclerc C.**, Reynaud N., Danis P.-A., Moatar F., Daufresne M., Argillier C., Usseglio-Polatera P., Verneaux V., Dedieu N., Frossard V. & Sentis A. (resubmitted after major revision). Temperature, productivity and habitat characteristics collectively drive lake food web structure. *Global Change Biology*.

### Peer-reviewed publications

Renault D., **Leclerc C.**, Collet M.A., Boutet A., Hotte H., Colinet H., Chown S.L. & Convey P. (2022). The rising threat of climate change for arthropods from Earth's cold regions: Taxonomic rather than native status drives species sensitivity. *Global Change Biology*, 28 (20): 5914-5927. <https://doi.org/10.1111/gcb.16338>

**Leclerc C.**, Magneville C. & Bellard C. (2022). Conservation hotspots of insular endemic mammalian diversity at risk of extinction across a multidimensional approach. *Diversity and Distributions*, 28 (12): 2754-2764. <https://doi.org/10.1111/ddi.13441>

Marino C., **Leclerc C.** & Bellard C. (2022). Profiling insular vertebrates prone to biological invasions: what makes them vulnerable?. *Global Change Biology*, 28 (3): 1077-1090. <https://doi.org/10.1111/gcb.15941>

Bellard C., Bernery C. & **Leclerc C.** (2021). Looming extinctions due to invasive species: Irreversible loss of ecological strategy and evolutionary history. *Global Change Biology*, 27 (20): 4967-4979. <https://doi.org/10.1111/gcb.15771>

**Leclerc C.**, Courchamp F. & Bellard C. (2020). Future climate change vulnerability of endemic island mammals. *Nature Communications*, 11: 4943. <https://doi.org/10.1038/s41467-020-18740-x>

**Leclerc C.**, Villéger S., Marino C. & Bellard C. (2020). Global changes threaten functional and taxonomic diversity of insular species worldwide. *Diversity and Distribution*, 26 (4): 402-414. (selected as [Editor's choice](#)). <https://doi.org/10.1111/ddi.13024>

**Leclerc C.**, Courchamp F. & Bellard C. (2018). Insular threat associations within taxa worldwide. *Scientific Reports*, 8: 6393. <https://doi.org/10.1038/s41598-018-24733-0>

Bellard C., **Leclerc C.**, Hoffmann B.D. & Courchamp F. (2016). Vulnerability to climate change and sea-level rise of the 35th biodiversity hotspot, the Forests of East Australia. *Environmental Conservation*, 43 (1): 79-89. <https://doi.org/10.1017/S037689291500020X>

Bellard C., **Leclerc C.**, & Courchamp F. (2015). Combined impacts of global changes on biodiversity across the USA. *Scientific Reports*, 5: 11828. <https://doi.org/10.1038/srep11828>

Bellard C., Russell J., Hoffmann B.D., **Leclerc C.** & Courchamp F. (2015). Adapting island conservation to climate change – Response to Andréfouët et al. *Trends in Ecology & Evolution*, 30 (1): 2-3. <https://doi.org/10.1016/j.tree.2014.11.003>

González-Muñoz N., Bellard C., **Leclerc C.**, Meyer J.-Y. & Courchamp F. (2015). Assessing current and future risks of invasion by the “green cancer” *Miconia calvescens*. *Biological Invasions*, 17 (11): 3337-3350. <https://doi.org/10.1007/s10530-015-0960-x>

**Leclerc C.\***, Bellard C.\*, Luque G.M. & Courchamp F. (2015). Overcoming extinction: understanding processes of recovery of the Tibetan antelope. *Ecosphere*, 6 (9): 1-14. (\*equal contribution). <https://doi.org/10.1890/ES15-00049.1>

Bellard C., **Leclerc C.** & Courchamp F. (2014). Impact of sea level rise on the ten insular biodiversity hotspots. *Global Ecology & Biogeography*, 23 (2): 203-212. <https://doi.org/10.1111/geb.12093>

Bellard C., **Leclerc C.**, Leroy B., Bakkeness M., Veloz S., Thuiller W. & Courchamp F. (2014). Vulnerability of Biodiversity hotspots to global change. *Global Ecology & Biogeography*, 23 (12): 1376-1386. <https://doi.org/10.1111/geb.12228>

Courchamp F., Hoffmann B.D., Russell J., **Leclerc C.** & Bellard C. (2014). Climate change, sea-level rise, and conservation: keeping island biodiversity afloat. *Trends in Ecology & Evolution*, 29 (3): 127-130. <https://doi.org/10.1016/j.tree.2014.01.001>

Schmeller D.S., Blooi M., Martel A., Garner T.W.J., Fisher M.C., Azemar F., Clare F.C., **Leclerc C.**, Jäger L., Guevara-Nieto M., Loyau A., & Pasmans F. (2014). Microscopic aquatic predators strongly affect infection dynamics of a globally emerged pathogen. *Current Biology*, 24 (2): 176-180. <https://doi.org/10.1016/j.cub.2013.11.032>

Bellard C., **Leclerc C.** & Courchamp F. (2013). Potential impact of sea level rise on French islands worldwide. *Nature Conservation*, 5: 75-86. <https://doi.org/10.3897/natureconservation.5.5533>

### Technical reports

**Leclerc C.**, Frossard V. & Sentis A. (2021). Réseaux trophiques des plans d'eau métropolitains : Impact des facteurs environnementaux sur la structure des réseaux trophiques reconstruite à partir des données de suivi obtenues dans le cadre de la mise en application de la Directive Cadre sur l'Eau. *OFB/INRAE/USMB/Pôle ECLA*, 38 pages.

**Leclerc C.**, Frossard V. & Sentis A. (2020). Réseaux trophiques des plans d'eau métropolitains : Reconstruction de la structure des réseaux trophiques à partir des données de suivi obtenues dans le cadre de la mise en application de la Directive Cadre sur l'Eau. *OFB/INRAE/USMB/Pôle ECLA*, 35 pages.

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### Book chapters

- Leclerc C.**, Courchamp F. & Bellard C. (accepted). Vulnérabilité des milieux insulaires aux changements globaux. In A. Pomade *et al.* (Eds.), *Vulnérabilités environnementales : perspectives pluridisciplinaires*, *L'Harmattan*.
- Bellard C., **Leclerc C.** & Courchamp F. (2019). Case study 4: The effects of sea-level rise on habitats and species. In T.E. Lovejoy and L. Hannah (Eds.), *Biodiversity and Climate Change*, *Yale University Press*, pp. 125-127.

### Thesis

- Leclerc C.** (2019). Biodiversité endémique insulaire face aux changements globaux : états des lieux dans un contexte de conservation. *Université Paris-Saclay*, 185 pages. <https://www.theses.fr/en/2019SACLS507>

### Outreach publications

- Leclerc C.** (2018). Les principales conséquences du réchauffement climatique sur la biodiversité. *Cahiers de l'Atelier*, 558: 37-42.
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## SCIENTIFIC PRESENTATIONS

### International conferences:

- Nov. 2022  
(oral presentation) *SFE<sup>2</sup> GfÖ EEF Joint meeting – International Conference on Ecological Sciences*, Metz, France.  
**Leclerc C.**, Reynaud N., Danis P.-A., Moatar F., Daufresne M., Argillier C., Usseglio-Polatera P., Verneaux V., Dedieu N., Frossard V. & Sentis A. "Temperature, productivity and habitat characteristics collectively drive lake food web structure".
- Jan. 2019  
(oral presentation) *9<sup>th</sup> Biennial Conference International Biogeography*, Málaga, Spain.  
**Leclerc C.**, Villéger S., Courchamp F. & Bellard C. "Global changes threaten functional and taxonomic diversity of insular species worldwide".
- Oct. 2018  
(oral presentation) *SFEcologie – International Conference on Ecological Sciences*, Rennes, France.  
**Leclerc C.**, Courchamp F. & Bellard C. "Insular threat associations within taxa worldwide".
- Feb. 2017  
(poster) *4<sup>th</sup> Young Natural History scientists' Meeting*, Paris, France.  
**Leclerc C.**, Courchamp F. & Bellard C. "Major threats that imperil insular ecosystems".
- Jul. 2014  
(oral presentation) *Island Biology*, Honolulu, Hawaii.  
**Leclerc C.**, Bellard C. & Courchamp F. "Impact of sea-level rise on insular ecosystems".
- Feb. 2014  
(poster) *1<sup>st</sup> Young Natural History scientists' Meeting*, Paris, France.  
**Leclerc C.**, Bellard C., Hoffmann B.D. & Courchamp F. "Climate change, sea-level rise, and conservation priorities: The case of the 35<sup>th</sup> biodiversity hotspot".

### National conferences:

- Nov. 2021  
(oral presentation) *GDR TheoMoDive*, Aix-en-Provence, France.  
**Leclerc C.**, Frossard V. & Sentis A. "Impact of environmental factors on lake food-webs structure".
- Nov. 2020  
(oral presentation) *Day of the Pole Research & Development on Lacustrine Ecosystems (ECLA) – OFB/INRAE/USMB*, virtual event.  
**Leclerc C.**, Danis P.-A., Reynaud N., Frossard V. & Sentis A. "Reconstructing the food webs in French lakes using data collected under the Water Framework Directive".
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## FURTHER QUALIFICATIONS

### Languages:

French (mother tongue), English (common and scientific)

### Data management:

Dataset cleaning, taxonomic cleaning and homogenization, Global data collection and synthesis, Database matching

### Data types:

Environmental (physical, chemical, threats) and Biological data (taxonomic, functional, phylogenetic, food web), Taxonomic data (masterlist, master taxonomy, synonyms list, fuzzy matching), Geospatial data (shapefiles, rasters, polygons, grids)

### Statistical modeling:

Linear models, Mixed effect models, Generalized linear models, Generalized additive models, Structural equation modeling Principal component analysis

### Computer languages & Software:

R, PostgreSQL, QGIS, Gephi, Inkscape

### Experimental and fieldwork skills:

Capture-mark-recapture (amphibians), Points transect method (plants), Field experiences in mountain area (French Pyrenees) and subantarctic area (Kerguelen archipelagos)

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## MENTORING AND TEACHING ACTIVITIES

### Supervising:

2019 (6 months) Camille Magneville (Master student 2<sup>nd</sup> year – Université de Rennes 1 / Agrocampus Ouest) – Assessment of multiple dimensions of insular biodiversity to establish conservation priorities. Co-supervision (50%) with Céline Bellard.

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## RESPONSABILITIES AND OTHER INVOLVEMENT

### Administrative and associative responsibilities:

Mar. 2018 – Mar. 2019 (12 months) Representative of non-permanents (PhD student, Postdoctoral researcher, contract worker) at the Unit Council of the Ecology, Systematic, Evolution unit (Orsay, France).

### Reviewer for peer-reviewed journals:

*Biodiversity and Conservation, Biological Invasions, Climatic Change, Conservation Biology, Diversity and Distributions, Ecology Letters, Forests, GeoResJ, Global Change Biology, Journal of Applied Ecology, Journal of Biogeography, Mammalian Biology, Nature Climate Change, PCI Ecology, Perspectives in Ecology and Conservation, PLoS ONE, Royal Society Open Science, Scientific Reports*

Review Editor for *Global Biodiversity Threats - Frontiers in Conservation Science*

### Editorial board activities for peer-reviewed journals:

2022 – present [Subject Matter Editor of Ecological Monographs](#)

### Membership in scientific societies:

2017 – present French Society of Ecology and Evolution ([SFE<sup>2</sup>](#))

2019 – present International Biogeography Society ([IBS](#))

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## AWARDS, GRANTS & FELLOWSHIPS

### Research funding

2023-2026 (36 months) [RIVAGE: Revisit Island Vulnerability during the Anthropocene Geologic Era](#)

Funds: FRB-CESAB

PIs: Céline Bellard & Daniel Kissling (consortium of 15)

*I co-designed the concept of the proposal, co-wrote the proposal and I have been data manager and co-leader of WP1.*

2023 (10 months) RETRO: Using food web structure as a functional indicator of climate change

Funds: *Pole Research & Development on Lacustrine Ecosystems (ECLA) – OFB/INRAE/USMB.*

PIs: Arnaud Sentis & Victor Frossard

*I co-designed the concept of the proposal, co-wrote the proposal and get the post-doctoral fellowship associated with this project.*

2022 (12 months) RETRO: Using food web structure as a functional indicator of climate change

Funds: *Pole Research & Development on Lacustrine Ecosystems (ECLA) – OFB/INRAE/USMB.*

PIs: Arnaud Sentis & Victor Frossard

*I co-designed the concept of the proposal, co-wrote the proposal and get the post-doctoral fellowship associated with this project.*

2021 (12 months) RETRO: Using food web structure as a functional indicator of climate change

Funds: *Pole Research & Development on Lacustrine Ecosystems (ECLA) – OFB/INRAE/USMB.*

PIs: Arnaud Sentis & Victor Frossard

*I co-designed the concept of the proposal, co-wrote the proposal and get the post-doctoral fellowship associated with this project.*

### Awards & others

2019 Student Travel Grant (190€) – 9<sup>th</sup> Biennial Conference International Biogeography, Málaga, Spain.

2017 Best Poster Presentation (200€) – 4<sup>th</sup> Young Natural History scientists' Meeting, Paris, France.  
(<https://www.sfecologie.org/2017/03/11/laureats-sfe-jeunes-chercheurs-sciences-naturelles/>)

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## REFERENCES

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### *Franck COURCHAMP*

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