Camille LECLERC, Ph.D.

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RESEARCH INTERESTS

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

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

PROFESSIONAL EXPERIENCE

Nov. 2023 – present	***Postdoctoral researcher*** at Physical and Environmental Geography unit (UMR 6042), Clermont-Ferrand (France). Supervised by Anne Bonis. *Effects of environmental conditions on the food web structure in a eutrophic agricultural marshland (Marais poitevin).*
Mar. 2020 – Oct. 2023 (44 months)	***Postdoctoral researcher*** at Risks, ECO-systems, Vulnerability, Environment, Resilience unit (UMR RECOVER), Aix-en-Provence (France). Supervised by Arnaud Sentis and Victor Frossard. *Using food web structure as a functional indicator of climate change.*
Jan. 2017 – Dec. 2019 (36 months)	***PhD fellow*** at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay. *Insular endemic biodiversity in the face of global change.* Ph.D. publicly defended the 10th of December, 2019. *Examination board:* *Pr. P. Leadley, Université Paris-Saclay, ESE – UMR 8079, Orsay, France (President)* *Dr. V. Devictor, CNRS, ISEM – UMR 5554, Montpellier, France (Referee)* *Dr. A.S.L. Rodrigues, CNRS, CEFE – UMR 5175, Montpellier, France (Referee)* *Dr. F. Rigal, Université de Pau et des Pays de l'Adour, IPREM – UMR 5254, Pau, France (Examiner)* *Pr. D. Schmeller, Université Toulouse III Paul Sabatier, ECOLAB – UMR 5245, Toulouse, France (Examiner)* *Dr. C. Bellard, CNRS, ESE – UMR 8079, Orsay, France (Advisor)* *Dr. F. Courchamp, CNRS, ESE – UMR 8079, Orsay, France (Co-advisor)*
Oct. 2016 – Dec. 2016 Apr. 2016 – Jul. 2016 (7 months)	***Research assistant*** at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. *Understanding island diversity in the face of global change (designing the doctoral project).*
Oct. 2014 – Mar. 2016 (18 months)	***Civic service*** for SUBANTECO scientific program at Kerguelen archipelago (French Southern Territory). Supervised by David Renault.
Sept. – Sept. 2014 (13 months)	***Research assistant*** at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. *Combined impacts of global changes on biodiversity across the United States.*
Oct. 2012 – Jun. 2013 (9 months)	***Intership*** at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. *Population dynamics and conservation of the Tibetan antelope (Pantholops hodgsonii).*
Feb. 2012 – Jul. 2012 (6 months)	***Intership*** at the Ecology, Systematic, Evolution unit (UMR 8079), Orsay (France). Supervised by Céline Bellard and Franck Courchamp. *Climate change on global biodiversity hotspots.*
Apr. 2011 – Jun. 2011 (3 months)	***Intership*** at the Station for Theorical and Experimental Ecology (UAR 2029), Moulis (France). Supervised by Dirk Schmeller. *Effects of aquatic environment and vegetation on the survival of zoospores of the chytrid fungus (Batrachochytrium dendrobatidis).*

Jul. 2010 – Aug. 2010 (2 months)	***Intership*** at the Centre of Biological Studies Chizé (UMR 7372), Chizé (France). Supervised by Olivier Lourdais *Climatic adaptations of wetland invertebrates: Raft spider (Dolomedes fimbriatus).*

RESEARCH INDICATORS

- **20** original publications in peer reviewed journals (7 as lead author, 1 as last author)
- **1266** citations (H-index: 13)
- **11** communications at international and national conferences, workshops and seminars (9 oral presentations and 2 poster presentations)
- Subject Matter Editor of *Ecological Monographs*. Guest Editor for *Ecology*. Scientific reviewer for 18 journals.

PUBLICATIONS

Peer-reviewed publications

Bonnaffé W.*, Danet A.*, **Leclerc C.***, Frossard V., Edeline E. & Sentis A. (Accepted). The interaction between warming and enrichment accelerates food-web simplification in freshwater systems. *Ecology Letters*. (*equal contribution).

Bazin S., Diouloufet V., Molina A., Peroux T., Lassus R., Montoya J.M., Blanchet S., Edeline E., Jacquet S., Rasconi S., Fayolle S., Campana M., Zambeaux T., **Leclerc C.**, Morla J., Daufresne M. & Sentis A. (Accepted). Direct effect of artificial warming on communities is stronger than its indirect effect through body mass reduction. *Oikos*.

Leclerc C., Reynaud N., Danis P.-A., Moatar F., Daufresne M., Argillier C., Usseglio-Polatera P., Verneaux V., Dedieu N., Frossard V. & Sentis A. (2023). Temperature, productivity and habitat characteristics collectively drive lake food web structure. *Global Change Biology*, 29 (9): 2450-2465. https://doi.org/10.1111/gcb.16642

Renault D., **Leclerc C.**, Colleu 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. (2023). Réseaux trophiques des plans d'eau métropolitains : Le changement climatique impact les structures trophiques et de taille des communautés de piscicoles lacustres, suivies dans le cadre de la mise en application de la Directive Cadre sur l'Eau, par le biais d'effets induits par les invasions biologiques. *OFB/INRAE/USMB/Pôle ECLA*, 29 pages.

Leclerc C., Frossard V. & Sentis A. (2022). 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*, 37 pages.

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.

Book chapters

Leclerc C., Courchamp F. & Bellard C. (2023). Vulnérabilité des milieux insulaires aux changements globaux. In A. Pomade *et al.* (Eds.), Vulnérabilités environnementales : perspectives pluridisciplinaires, *L'Harmattan*, pp. 147-163.

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

COMMUNICATIONS AT INTERNATIONAL AND NATIONAL CONFERENCES, WORKSHOPS AND SEMINARS

Janv. 2024 (oral presentation)	*1st Workshop of the CESAB group – RIVAGE, Montpellier, France.* **Leclerc C.**, *et al.* "*Endemic insular biodiversity facing global change".* **Leclerc C.**, *et al.* "How to aggregate the vulnerability components".
May 2023 (oral presentation)	*Kick-off meeting of the CESAB group – RIVAGE, online.* **Leclerc C.**, *et al.* "*The vulnerability concept and its application to islands".*
Nov. 2022 (oral presentation)	*SFE² GfÖ EEF Joint meeting – International Conference on Ecological Sciences*, Metz, France. **Leclerc C.**, *et al.* "Temperature, productivity and habitat characteristics collectively drive lake food web structure".
Nov. 2021 (oral presentation)	*GDR TheoMoDive*, Aix-en-Provence, France. **Leclerc C.**, *et al.* "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*, online. **Leclerc C.**, *et al.* "Reconstructing the food webs in French lakes using data collected under the Water Framework Directive".
Jan. 2019 (oral presentation)	*9th Biennal Conference International Biogeography*, Málaga, Spain. **Leclerc C.**, *et al.* "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.**, *et al.* "Insular threat associations within taxa worldwide".
Feb. 2017 (poster)	*4th Young Natural History scientists' Meeting*, Paris, France. **Leclerc C.**, *et al.* "Major threats that imperil insular ecosystems".
Jul. 2014 (oral presentation)	*Island Biology*, Honolulu, Hawaii. **Leclerc C.**, *et al.* "Impact of sea-level rise on insular ecosystems".
Feb. 2014 (poster)	*1st Young Natural History scientists' Meeting*, Paris, France. **Leclerc C.**, *et al.* "Climate change, sea-level rise, and conservation priorities: The case of the 35th biodiversity hotspot".

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)

MENTORING AND TEACHING ACTIVITIES

Supervising:

2024 (6 months) Antoine Perricher (Master student 2nd year – Aix-Marseille Université) – Spatial structure of ecological networks in aquatic ecosystems. Co-supervision (10%) with Arnaud Sentis and Nathalie Reynaud.

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

RESPONSIBILITIES AND OTHER INVOLVEMENTS

Administrative and associative responsibilities:

Mar. 2023 – Oct. 2023 (10 months) Representative of non-permanents (PhD student, Postdoctoral researcher, contract worker) at the Unit Council of the Risks, ECO-systems, Vulnerability, Environment, Resilience unit (Aix-en-Provence, France).

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 (SFE²)

2019 – present International Biogeography Society (IBS)

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 (40k€)
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 (48k€)
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 (44k€) 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€) – *9th Biennal Conference International Biogeography*, Málaga, Spain.
2017	Best Poster Presentation (200€) – *4th Young Natural History scientists' Meeting*, Paris, France. (https://www.sfecologie.org/2017/03/11/laureats-sfe-jeunes-chercheurs-sciences-naturelles/)

REFERENCES

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