Amélie Lehuen, Ph.D. - Estuarine ecosystems

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am-lh

Amelie-Lehuen

Education

2020-2023 – Doctoral thesis in Physiology and biology of organisms - populations - interactions

Caen University – ED497 nBISE – Laboratory of biology of organisms and aquatic ecosystems (BOREA) MNHN, CNRS 8067, SU, IRD 207, UCN, UA, Caen – Director: Dr. Francis Orvain

- Marine Ecosystem Engineers Long-Term Evolution ModelING in resPOnse to climate change and sediment Transport in Seine Estuary.
- Partners: IFREMER Brest; NIOZ Netherlands; Italian National Research Council, Italy, Cellule de Suivi du Littoral Normand, Maison de l'estuaire.

2019-2020 - MSc Ocean Sciences, Coastal Living Resources Exploitation – Caen University

- Coastal ecosystems and food webs, Coastal areas: Knowledge and sustainable management
- Physiology of marine organisms, Exploitation of fish, shellfish, and algal species

2018-19 - BSc Professions of environmental protection & management Ecological restoration & sustainable development - Caen University of Technology

- Natural habitats rehabilitation: Marine ecosystems management, Impact study, Ecological restoration, GIS; Habitats analysis; Sustainable Development and Environmental Management.
- Tutored project: Primary production analysis of microphytobenthos on the Orne estuary foreshore and spectral data acquired by GIS.

2004 - Engineer degree – Rouen National Institute of Applied Sciences (INSA)

- Fine Chemistry and Engineering Department – specialism in Materials and Polymers

Professional experience

2021 (ongoing) Association Treasurer GEMEL Normandie

Finances: Cash flow monitoring, budget forecasts, annual balance sheet. Implementation of cost accounting. Discussions with chartered accountant and statutory auditor.

Social management: 3 permanent employees (contract reviews, individual interviews), recruitment of temporary contracts.

Association: Set up of a Local Aid Scheme (DLA), development of organizational tools and practices to monitor projects, workload, costs, and volunteer activities.

2020-2023 – PhD Researcher – Caen University

Marine Ecosystem Engineers Long-Term Evolution ModelING in resPOnse to climate change and sediment Transport in Seine Estuary (MELTING POTES).

2020-2022 (46h) - Vacation teaching IUT Grand Ouest Normandie Caen campus 2

2021-22 - L3: Tutored project
2020-21 - L2: Applied computer data analysis, Environmental analysis; L3: Marine ecosystem management & marine biology, Tutored project

2020 (9 months) – Research engineer – internship and fixed-term contract – Laboratory of biology of aquatic organisms and ecosystems (BOREA) MNHN, CNRS 8067, SU, IRD 207, UCN, UA, Caen

Prediction of the distribution of macrozoobenthic species in the Seine estuary in response to hydro-morpho-sedimentary changes: first applications on the population of cockles, *Cerastoderma edule*. Definition of optimal ecological niches by quantile regression.

2019 (6 months) – Benthic technician – internship – GEMEL-Normandie – Luc sur Mer

Evaluation of a stock of bivalves and associated fauna following a scientific reserve creation on the west coast of Cotentin.

Skills

IT

Relational databases (Access, SQL)

SIG

Bioturbation
Macrozoobenthos
Estuary, Coastal
Intertidal, Mudflat

Species Distribution Model (SDM)
Optimal Ecological Niches
Quantile regression
Suitability index

Erosion model
Hydro-morpho-sedimentary model
Metabolic rate
Data analysis
Geo-statistics

Organization - management
Full project management
Schedule building and monitoring
Budget definition and control
Leading a multidisciplinary team

Communications

Publications

Lehuen, A. and Orvain, F. (2024) A cockle-induced bioturbation model and its impact on sediment erodibility: A meta-analysis, Science of The Total Environment, 912, p. 168936. https://doi.org/10.1016/j.scitotenv.2023.168936.

Lehuen, A., Dancie, C., Grasso, F., et al., 2023. A quantile regression approach to define optimal ecological niche (habitat suitability) of cockle populations (*Cerastoderma edule*). *Unpub*.

Lehuen A., Oulhen R.M., Zhou Z., de Smit J., Cozzoli F., Bouma T., Orvain Francis, 2023. Multispecies macrozoobenthic seasonal bioturbation effect on sediment erodibility. *Unpub*.

Posters

August 2022 - Nereis park – Logonna-Daoulas, France

Lehuen, A., Dancie, C., Grasso, F., et al., 2022. A modelling approach for predicting species distribution in Seine estuary by applying an Optimal Ecological Niche model: First application to *Cerastoderma edule* population.

Lehuen, A. et Orvain, F., 2022. Bioturbation model of *Cerastoderma edule* based on metabolic activity and sediment composition: a meta-analysis.

Lehuen, A. et Orvain, F., 2022. MELTING POTES Marine Ecosystem Engineers Long-Term Evolution: A ModelING study of benthic faunal activity and distribution in resPOnse to climate change and sediment Transport in Seine Estuary.

September 2022 - ECSA59 – San Sebastian, Spain

Lehuen, A., Dancie, C., Grasso, F., et al., 2022. A modelling approach for predicting species distribution in Seine estuary by applying an Optimal Ecological Niche model: First application to *Cerastoderma edule* population.

Expertise

Mai 2023 (4 days) - NEO workshop – ILICO - Caen

Study of "Optimal Ecological Niche" species distribution models and inter-SNO (Systèmes National d'Observation) taxonomic and functional distribution: Coupling of hydro-biological data (low-frequency SOMLIT and high-frequency COASTHF) with planktonic (PHYTOBS) and benthic (BENTHOS) species distribution data in coastal ecosystems of mainland France. Workshop for 15 people.

Previous experience

2018 (8 months) – QHSE engineer – GB Ouest – Revima-APU Project – Caudebec en Caux

Creation of chemicals database, collective and individual protections rationalization, study of REACH exposure scenarios.

2011-2017 (6 years) – Utilities Project Manager – GB Ouest –Chevron Oronite Project – Le Havre

3 years global improvement plans management, 15 projects in parallel, 1,5M€ budget per year, development and sharing of project management tools.

2010-2011 (6 months) – Process Improvement engineer – Lubrizol – Rouen

Health, Safety and Environment project management.

2010 (8 months) – Environment engineer – Petroplus – Petit Couronne Refinery

Monitoring and improvement of flow and performance of the refinery Waste Water Treatment Plant. Communication of indicators.

2007-2009 (1,5 year) – Process Control engineer – Lubrizol – Rouen

Development of statistical process analysis tools on Statgraphics, alarm dashboard.

2007 (5 months) – R&D Process engineer – Cristal-Millennium Inorganic Chemicals – Le Havre

Stabilization and optimization of the white gypsum unit, industrial tests, US communication.

2004-2005 (2 years) – Process Improvement engineer – Lubrizol – Rouen

Continuous improvement projects. Production support and project management. Analysis of nonconformities.

Interests

Permaculture

2019: Permaculture Design Course – CDFP l'Escargotier, Le Havre

Music

2017 & 19: Jazz singing masterclass – Jazzitudes, Lisieux

10 years of musical practice in band as singer and guitarist

2012-17: Monthly open mike: Lavomatic Tour

Dance

2004-12: Mandingue and Sabar weekly practice – Kaï Danse, Rouen

2012-14: Contemporary dance shows – Le Phare, Le Havre