

DEB2019 1-12 April 2019 / Brest (France)

Sixth International Symposium and Thematic School
on DEB theory for metabolic organization

DEB2019 Thematic School List of participants



Arturo AGUIRRE-VELARDE

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Marine Ecophysiology Laboratory, IMARPE.

Esquina Gamarra y General Valle S/N Chucuito Callao.

Peru

Research interests : Research activity mainly on ecophysiology of aquatic organisms (marine bivalves and fishes): (1) effects of environmental variability on physiology, growth, reproduction and survival of marine species. (2) Energy budget modelling (energy and mass flows) as a tool to study the effects of the environment on physiology/metabolism, (3) especially stressors such as hypoxia and its metabolic consequences.

Keywords : *Bivalves, Hypoxia, Environmental stressors, Aquaculture, Peru.*



Nigel ANDREW

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Insect Ecology Lab, University of New England.

Zoology, W77, University of New England, Armidale, NSW, 2351.

Australia

Research interests : I am an insect ecologist based at the University of New England in Armidale, NSW, Australia. I study how ecology, physiology and behaviour is impacted by thermal stresses. My current research focuses on the thermal physiology of individuals and how to scale up thermal stress impacts among individuals, populations, and species.

Keywords : *Thermal biology, Microclimate, Thermolimit respirometry, Insects, Individual Based Models.*



Starrlight AUGUSTINE

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Akvaplan-niva, Fram High North Research Centre for Climate and the Environment.

Tromø.

Norway

Research interests : DEB theory development and applications, Impact of (multi-)stressors on marine organisms, patterns in sensitivity, development

Keywords : *Marine ecology, Ecotoxicology, Theoretical biology, DEB theory.*



Ligia AZEVEDO

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Global Ecotoxicology unit, BASF.

Speyerstr 2, 67117 Limburgerhof.

Germany

Research interests : My interests are to develop and apply ecological models within the context of ecotoxicology. I am taking this course to learn how Dynamic Energy Budget work and how they can help me address specific ecotoxicology questions risen during plant protection product registrations. For this course, I will be focusing on ectothermic terrestrial vertebrates

Keywords : *Ecotoxicology, Regulatory risk assessment, Ectothermic vertebrates, Toxicokinetic-toxicodynamic model, Endocrine disrupting chemicals.*



Hélène BAILLIF

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UMR 1224 ECOBIOP, Université Pau Pays de l'Adour.

Collège STEE - Côte Basque, 1 allée du Parc Montauray, 64600 Anglet.

France

Research interests : My internship is about the bioenergetic modelling for the environmental and genetic determinism of precocious maturation in Atlantic salmon (*Salmo salar* L.). In this aim, I'm working on building different bioenergetic models and compare them with simulations and experimental results of growth and maturation.

Keywords : *Modeling, Ecology, Aquatic, Animal, Programming.*



Romina Vanessa BARBOSA

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*LEMAR, Université de Bretagne Occidentale.
IUEM, Rue Dumont d'Urville 29280 Plouzané.
France*

Research interests : I am interested in the population dynamics and distribution of benthic species and about how climate change could affect them. I will use the DEB theory to simulate the interactions of mussel individuals with the environment and extrapolate their response to the population scale, which will allow me to evaluate the population response and the main underlying ecological processes involved.

Keywords : *Population dynamic, Individual-based model, Functional traits, Climate change, Species distribution range.*



Stechele BRECHT

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*Department of Animal Production, Laboratory of Aquaculture & Artemia Reference Center, Ghent University.
Coupure Links 653, B-9000 Gent.
Belgium*

Research interests : Marine scientist and engineer. PhD in native oyster aquaculture and oyster reef restoration. DEB model for creation of suitability maps for native oyster aquaculture and restoration based on satellite data. Identifying best areas for oyster restoration and aquaculture based on DEB and the marine spatial plan of Belgium.

Keywords : *Ostrea edulis, Suitability mapping, Aquaculture, Reef restoration, Satellite forcing.*



Safa CHAABANI

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*Norwegian university of science and technology , Norwegian university of science and technology , (NTNU).
Voll Studentby, Vegamot 1, 7049 Trondheim.
Norway*

Research interests : My primary research interest is to identify the effect of multiple environmental stressors on the model organism *Daphnia*. The idea is to use the DEB theory to generate structured or individual-based population models that can serve as a basis to predict the impacts of toxicants and trophic control on populations.

Keywords : *Ecotoxicology, Marine ecology, Evolutionary biology, Daphnia, population dynamics.*



Alva CURTSDOTTER

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*School of Environmental and Rural Sciences, University of New England.
Armidale NSW 2351.
Australia*

Research interests : My current postdoc project aims to predict the effect of climate change on the abundance and spatial distribution of six potentially competing dung beetle species. To achieve this we will use a DEB-based Individual Based Model, to translate physiological measurements on individuals to population changes on the landscape level.

Keywords : *Theoretical ecology, Process-based modeling, Global change, Species interactions, Ecophysiology.*



Lola DE CUBBER

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*UMR 8187 Laboratoire d'Océanologie et de Géosciences, CNRS, univ. Lille,
ULCO.
28 avenue Foch, 62930 Boulogne sur mer.
France*

Research interests : My PhD topic is: Life-history traits of *Arenicola marina* and *A. defodiens*: implementation of a Dynamic Energy Budget model and sustainable management of these species.

Keywords : *DEB modelling, Polychaetes, Conservation, Life-history traits, Populations features.*



Rebecca DE LEIJ

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*Ocean and Earth Science, University of Southampton.
National Oceanography Centre, European Way, Southampton SO14 3ZH.
United Kingdom*

Research interests : Ph.D candidate in Antarctic Marine Ecology. My research focuses on an Antarctic sea urchin with the aim to understand how environmental drivers impact reproductive fitness. I am interested in how repeat, short-term heat stress impacts the urchin's energetic demands and hence reproductive potential. I would like to use DEB to explore these energetic shifts.

Keywords : *Reproduction, Antarctic, Sterechinus neumayeri, Climate change, Heat waves .*



Tyler FIRKUS

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*Department of Fisheries and Wildlife, Michigan State University.
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United States of America*

Research interests : I study the effects of anthropogenic and biotic stressors on fish reproduction. Currently looking to apply DEB theory to assess the effects of sea lamprey parasitism on lake trout, and ultimately scale those effects up to the population level.

Keywords : *Ecotoxicology, Reproductive physiology, Parasite-host interaction, Lake trout, Sea lamprey.*



Jonathan FLYE-SAINTE-MARIE

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*LEMAR, Université de Bretagne Occidentale.
IUEM, Rue Dumont d'Urville 29280 Plouzané.
France*

Research interests : My research focuses on the ecology and ecophysiology of benthic species and especially bivalves. Through approaches linking field observations, lab experiments and DEB modelling try to understand how environment (including stressors) controls organism's energetics and life-traits.

Keywords : *Marine ecology, Ecophysiology, Bivalve, Bionergetics, Stressors, Experimental and modelling approaches.*



Sylvie GAUDRON

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*UMR8187 LOG, Sorbonne Université.
Station marine de Wimereux, 28 avenue Foch, B.P. 80.
France*

Research interests : I am an associate professor at Sorbonne Université in Paris, France, where I teach animal biology. I do my research at UMR 8187 LOG based on the Channel Sea (North of France). I have been working on life-history traits of marine invertebrates for 20 years with special interests in bivalves and polychaetes from deep-sea chemosynthetic habitats.

Keywords : *Dispersal, Reproduction, Cold seeps, Colonisation, Larval development.*



Suncana GECEK

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*Laboratory for Informatics and Environmental Modelling, Institut Ruđer Bošković, Division for Marine and Environmental Research.
Bijenicka 54, 10000 Zagreb.
Croatia*

Research interests : My research work revolves around the advancement of numerical models and statistical tools for integrated impact assessment and management of environmental systems. My aim is to develop DEB-based model to better understand why and how, under certain environmental conditions, some species of phytoplankton accumulate high levels of neutral lipids.

Keywords : *Phytoplankton model, Neutral lipids synthesis, Nutrients, Light conditions, Temperature conditions.*



Charlene GUILLAUMOT

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BIOMAR, ULB.

*Building U, CP160/15, Université Libre de Bruxelles, 50, avenue FD Roosevelt, B-1050 Brussels.
Belgium*

Research interests : PhD student in collaboration between ULB (Université Libre de Bruxelles, Belgium) and the Université de Bourgogne Franche-Comté (France) I am working on Antarctic marine case studies. I use modelling to assess species ecological niches (Species Distribution Models, Dynamic Energy Budget models) and simulate the potential of species distribution and physiology to deal with future global environmental changes. I mainly try to develop and discuss about methodologies to evaluate the limits of these models applied to Southern Ocean case studies, where data availability is limited.

Keywords : *Antarctica, Benthic invertebrate, Global change, Species niche, Ecological modelling.*



Ines HABERLE

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*Division for Marine and Environmental Research, Institut Ruđer Bošković.
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Croatia*

Research interests : Starting in April, my PhD will partially focus on using DEB theory to develop physiological model for prediction of aquaculture fish growth and reproduction as functions of environmental conditions. In general, I am interested in impact of climate change on ecology, physiology and distribution of marine organisms and related conservation issues.

Keywords : *Biology, Marine biodiversity, Ecophysiology, Climate change, Marine conservation.*



Mike KEARNEY

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*School of BioSciences, University of Melbourne.
Victoria, 3010.
Australia*

Research interests : Understanding climatic constraints on the behaviour, distribution and abundance of organisms. Evolution of adaptation to different climates. Life history evolution. Metabolic ecology. Predicting and understanding microclimates.

Keywords : *Ecophysiology, biophysical ecology, thermal biology, microclimatology, evolutionary biology, herpetology, entomology.*



Bob KOOI

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The Netherlands, Faculty of Science VU University.

Faculty of Science VU University.

de Boelelaan 1085, 1081 HV Amsterdam

Research interests : Research interest. The use of mathematical models to solve problems in Life Sciences: Ecology, Evolution, Epidemiology and Biochemistry. Research emphasis is on modelling and application of sensitivity and non-linear dynamics analysis. Further, the link between individual and population level models, interactions between populations, competition, predator-prey, disease transmission for ecosystem structure and functioning.

Keywords : *DEB species individual model, Unstructured and structured population model, Deterministic and stochastic modelling, Bifurcation analysis, Ecosystem structure and functionin.*



Henri LAGARDE

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Ynsect, Genopole.

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France

Research interests : Master degree in data analysis and Agronomy at AgroParisTech, in apprentice at Ynsect (2nd year).

Keywords : *Mathematical modelling, Deb theory, Insects rearing, Animal science.*



Paulo LAGOS

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University of Otago, (UO).

310 Castle Street, Dunedin.

New Zeland

Research interests : My research interest centred around the effect of multiple environmental stressor, mostly ultraviolet radiation and temperature, on the physiology and energy budgets of krill

Keywords : *Krill, Lipids, Energy budget, Amino acids, Temperature.*



Dina LIKA

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Department of Biology, University of Crete.

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Greece

Research interests : The general area of my research is mathematical modelling of biological systems, DEB theory development and applications. Current focus is on the impact of climate changes and stressors on fish bioenergetics and on ecophysiology of mixotrophs and their impact on marine pelagic food webs.

Keywords : *Mathematical modelling, Fish bioenergetics, Phytoplankton physiology, Mixotrophy, Ecophysiology.*



Mathilde MAHÉ

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Mediterranean Institute of Oceanography, Aix Marseille University / GIPREB Syndicat Mixte.

13 cours Mirabeau, 13130 Berre-l'Etang.

France

Research interests : I started my Ph.D. in April 2018. My project focuses on the biological knowledge improvement of Manila clam (*Ruditapes philippinarum*) into Berre lagoon (reproduction period, growth rate, morphology?). Another goal of my Ph.D. is to develop a management model of this species using a DEB model.

Keywords : *Marine biology, Manila clam, Berre lagoon, Management model.*



Nina MARN

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Division for Marine and Environmental Research, Institut Ruđer Bošković.

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Croatia

Research interests : Conservation and marine biology, applications of DEB theory. For my PhD research I used DEB theory to model loggerhead turtles.

Keywords : *Biology, Oceanology, Marine biology.*



Gonçalo MARQUES

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Instituto Superior Técnico, Universidade de Lisboa.

Lisbon.

Portugal

Research interests : My main research interests are centered on the development of DEB theory integrating contributions from Organism Biology, Physiology and Thermodynamics, as well as Ecotoxicology. Two of the main points I'm focusing now are: improving the parameter estimation process and making use of information of phylogenetically close species for parameter estimation.

Keywords : .



Adrian MOORE

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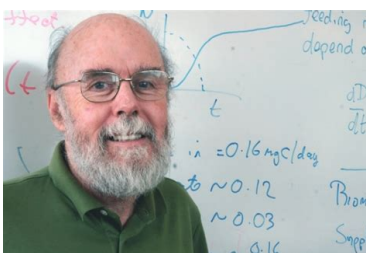
Department of Ecology, Evolution and Behaviour, University of Minnesota - Twin Cities.

1475 Gortner Ave, Saint Paul, MN 55108.

United States of America

Research interests : I am interested in applying DEB theory and IBMs to improve the process of risk assessment for imperiled freshwater mussel (Unionid) populations and better understanding population responses to a variety of stressors.

Keywords : *Risk assessment, Freshwater mussels, Toxicology, Population dynamics, Ecology.*



Roger NISBET

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University of California, (UCSB).

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United States of America

Research interests : Many areas of ecological theory and modeling with emphasis on models that relate processes at different levels of biological and ecological organization. Current work focuses both on fundamentals of DEB and DEB-inspired theory and on its application in ecotoxicology and nanotoxicology

Keywords : .



Sylvie ODDOU-MURATORIO

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France

Research interests : I am a population geneticist studying the contribution of genetic adaptation to the response of forest tree populations to environmental variations over a small number of generations. My work mainly focusses on the "real time" estimation of the eco-evolutionary processes contributing to adaptation, and the process-based modeling of adaptive dynamics.

Keywords : *Population genetics, Quantitative genetics, Ecophysiology, Modeling, Predictive ecology.*



Laure PECQUERIE

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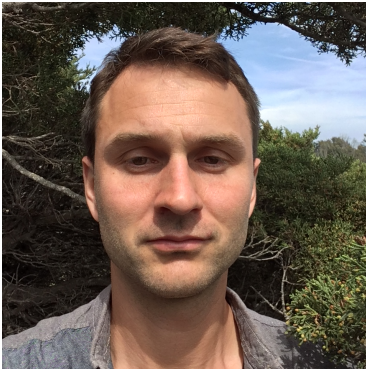
LEMAR, Institut de Recherche pour le Développement.

IUEM, Rue Dumont d'Urville 29280 Plouzané.

France

Research interests : DEB theory development and applications, Impact of (multi-)stressors on marine organisms, fish population dynamics in upwelling ecosystems.

Keywords : *Marine ecology, Fisheries ecology, Theoretical biology, DEB theory.*



Ferdinand PFAB

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Ecology, Evolution, and Marine Biology, University of California.

Santa Barbara, CA 93106.

United States of America

Research interests : I am interested in mathematical models in different kind of biological contexts, such as population dynamics, evolution, metabolism in different environments, pest control in agriculture, epidemics and interactions of different pathogens.

Keywords : *Modeling, Ecology, Metabolism, Epidemiology, Evolution.*



Emilien POUSSE

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NEFSC's Milford Laboratory, NOAA Fisheries Northeast Fisheries Science Center.

212 Rogers avenue Milford CT 06460.

United States of America

Research interests : My main research interests are centered on the effects of biotic (harmful algae) or abiotic (pH) stressors on bivalves bioenergetics. To assess stressor effects, I couple experimental work studying physiological responses and modelling

Keywords : *Biology, Ecology, Ecotoxicology, Animal physiology, Bivalves.*



Charlotte RÉCAPET

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UMR 1224 ECOBIOP, Université Pau Pays de l'Adour.

Collège STEE - Côte Basque, 1 allée du Parc Montaury, 64600 Anglet.

France

Research interests : I seek to understand the maintenance of intraspecific diversity in life-history strategies, and in particular the role of energy metabolism and oxidative stress in mediating life-history trade-offs. My research combines field, experimental and modelling approaches on birds, rodents and more recently migratory fishes.

Keywords : *Individual variation, Life-history evolution, Gene-by-environment interaction, Evolutionary constraints, Ecophysiology.*



Cerren RICHARDS

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Physiological Diversity Lab , Memorial University of Newfoundland.

Marine Lab Rd, Logy Bay, NL A1K 3E6.

Canada

Research interests : I am developing energetic models for Northwest Atlantic seabirds with an interest in weather extremes. I aim to integrate multiple modelling approaches to quantitatively predict which species will be "winners" and "losers" if the duration or severity of heat waves and cold spells shift seasonally in the Northwest Atlantic.

Keywords : *Seabirds, Bioenergetics, Weather extremes, Thermodynamic modelling, Physiology.*



Alfredo RIOS

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Ynsect, Genopole.

1 Rue Pierre Fontaine, 91000 Evry.

France

Research interests : Insect ecology and physiology and their connections to the mass rearing of insects. Integrated pest management.

Keywords : *Entomology, Rearing, Population, Pest, Modeling.*



Nathanaël SANGARE

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Unité Ressources Marines en Polynésie, Ifremer.

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France

Research interests : I'm studying the life cycle of the pearl oyster *Pinctada margaritifera* together with the factors behind variations of spat collection and thus optimize cultural practices. In this context my main research interests include different fields as hydrodynamic and bivalves physiology.

Keywords : *Bivalve larvae, Physiology, Energetics, Pearl farming, Aquaculture.*



Claire SARAUX

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UMR IPHC DEPE, CNRS.

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France

Research interests : Researcher in marine ecology, I aim at explaining population dynamics depending on their environment and their interspecific interactions (mostly in seabirds and forage fish) through long-term correlative studies but also experimental and modeling approaches. Using longitudinal data, I also investigate trade-offs between life-history traits in context of food shortage.

Keywords : *Population dynamics, Life-history traits, Predator-prey interactions, Individual quality .*



Adriana SARDI

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Environnements et Paléoenvironnements Océaniques et Continentaux (EPOC) - UMR 5805, Université de Bordeaux.

Allée Geoffroy Saint-Hilaire - 33615 Pessac.

France

Research interests : My research interest is to gain insights into the effects of climate change and pollution in the marine ecosystem at a non-species-specific level. In my current research project, I want to use DEB models to describe the effects of contamination and increased seawater temperature on *Solea solea* physiology and relate these results with future predictions on quality of French nursery areas.

Keywords : *Climate Change, Organohalogenes, Growth model, Nursery areas, Solea solea.*



Quentin SCHULL

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Laboratoire halieutique marin (LHM), UMR MARBEC, Ifremer.

Sète.

France

Research interests : I'm interested in the evolution of life history traits in wild animal populations (mostly birds and fish). I aim to identify physiological and behavioral determinants of individual quality and their consequences at the population level in the context of global change.

Keywords : *Evolution, Life history traits, Phenotypic plasticity, Individual quality, Ecotoxicology.*



Hanna SCHUTSER

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Aquatic Ecotoxicology, Cambridge Environmental Assessments.

Cambridge Environmental Assessments, RSK ADAS Limited, Battlegate Road, Cambridge, CB23 4NN.

United Kingdom

Research interests : I am interested in the anthropogenic impacts on aquatic ecosystems (marine and freshwater), and currently focussing on the effects of pesticides and other stressors on freshwater invertebrate, algal and plant communities. I want to better understand how to bridge the gap between individual based laboratory studies, semi-field communities and natural ecosystems.

Keywords : *Aquatic ecotoxicology, Invertebrates, Freshwater communities, Pesticides.*



Neil SHERBORNE

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Syngenta, Jealott's Hill International Research Centre.

Jealotts Hill, Bracknell, RG42 6EY.

United Kingdom

Research interests : I am a postdoctoral researcher with Syngenta, an agrochemical company. My work is focused on ecotoxicology and toxicokinetic-toxicodynamic modelling. I am interested in developing and testing models using DEB theory that can be used in risk assessments of plant protection products to make better predictions about their environmental impact.

Keywords : *Ecotoxicology, Toxicokinetics-toxicodynamics, Aquatic, Fecundity, Populations.*



Jessica STUBBS

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School of Biological Sciences, The University of Western Australia.

35 Stirling Highway, PERTH WA 6009.

Australia

Research interests : I am interested in the foraging ecology and energetics of green turtles. In my PhD I aim to use DEB theory to investigate the influence of food availability and temperature on different aspects green turtle biology.

Keywords : *Green turtle, Environmental conditions, Climate change, Embryo energetics.*



Marie TRIJAU

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Radionuclide Ecotoxicology Laboratory, IRSN.

Centre d'Etudes Nucléaires de Cadarache, Bâtiment 186, BP 3, 13115 Saint-Paul-Lez-Durance Cedex.

France

Research interests : During my PhD, I used a DEBtox model to better understand and predict multigenerational effects of ionizing radiation in the crustacean *Daphnia magna*. My research interests are related to linking effects of environmental stressors among different scales of biological organization, from molecular to population scales, using mechanistic modelling approaches.

Keywords : *Ecotoxicology, Daphnia magna, Multigenerational effects, Ecological modeling.*



Karel VLAEMINCK

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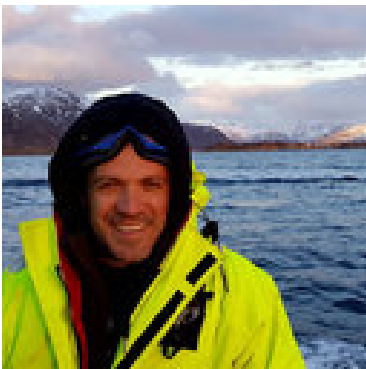
Laboratory of Environmental Toxicology and Aquatic Ecology, University of Ghent.

Campus Coupure, Building F - 2nd floor, Coupure Links 653, B9000 Ghent.

Belgium

Research interests : My research focusses on the use of individual-based population models for the risk assessment of chemical mixtures. I mainly focus on *Daphnia magna* as model species. Using DEB(tox) models, I am interested in the change of energy fluxes when species are exposed to mixtures of stressors in a population context.

Keywords : *Daphnia magna, Population dynamics, Ecotoxicology, DEB-IBM, Ecological modelling.*



Thomas YOANN

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LEMAR, Institut de Recherche pour le Développement.

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France

Research interests : How climate and environmental changes affects bivalves population dynamics and species distribution through DEB modelling.

Keywords : *Bivalves ecology, Climate change, DEB theory, Population dynamics, Species distribution.*
