

Hubert du Pontavice

28 years old

French nationality

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CURRENT POSITION

Postdoctoral Research Associate

2020-Now

Princeton University - Atmospheric and Oceanic Sciences Program (Princeton, USA)

NOAA - Northeast Fisheries Science Center (Princeton, USA)

Improving U.S. Northeast marine fishery stock assessments using regional ocean models

PREVIOUS POSITIONS

Postdoctoral Research Associate

Sept-Dec 2020

Agrocampus Ouest - Ecology and Ecosystem Health Research Unit (Rennes, France)

Development of a new version of EcoTroph integrating climate change and fishing effort

Ph.D. in marine ecosystem modeling

2016-2020

Agrocampus Ouest - Ecology and Ecosystem Health Research Unit (Rennes, France)

University of British Columbia - Changing Ocean Research Unit (Vancouver, Canada)

- Co-supervisor: Didier GASCUEL (Agrocampus Ouest)
- Co-supervisor: William CHEUNG (University of British Columbia)

Impacts of climate change on the trophic functioning of the world ocean

1. Analysis of the effects of warming on biomass flows in all coastal marine ecosystems using two trophic parameters: trophic transfer efficiency and biomass residence time
2. Projection of the impacts of the expected changes in ocean conditions on total consumer biomass, predator biomass and trophic structure using the EcoTroph model (a trophic- level-based model) and three Earth System Models under different emissions scenarios.
3. A focus on the European continental shelf to investigate the future changes in biomass flow and fishing catch using a regional coupled hydrodynamic-ecosystem model.

Master's of research intern.

2016-2020

IFREMER - French Research Institute for Exploitation of the Sea (Boulogne-sur-Mer, France)

Spatio-temporal dynamic of the exploitation of *Solea solea*, in the Eastern English Channel

- Investigation of the spatial patterns of growth of *Solea solea* to inform the stock structuration of this species in the Eastern English Channel.
- Spatio-temporal analysis of French common sole fisheries in Eastern English Channel (landings, catches and discards) with a focus on length structure.

PUBLICATIONS

du Pontavice, H., Gascuel, & Cheung, W. W. L. (In Prep.). Climate-induced changes in ocean productivity and food webs functioning may deeply affect European fisheries catch.

du Pontavice, H., Gascuel, D., Reygondeau, G., Stock, C., D., & Cheung, W. W. L. (In Press). Climate-induced decrease in biomass flow in marine food webs may severely affect predators and ecosystem production. *Global Change Biology*.

Eddy T. D., Bernhardt J. R., Blanchard J. L., Colléter M., Cheung W. L. L., **du Pontavice H.**, Fulton E. A., Gascuel D., Kearney K. A., Petrik C. M., Roy T., Rykaczewski R. R., Selden R., Stock C. A., Wabnitz C. C.C., Watson R. (2020). Energy flow through marine ecosystems: confronting transfer efficiency. *Trend in Ecology and Evolution*. <https://doi.org/10.1016/j.tree.2020.09.006>

Tagliabue A., Barrier N., **du Pontavice H.**, Kwiatkowski L., Aumont O., Bopp L., Cheung W.W.L., Gascuel D., Maury O. (under review). An iron cycle cascade governs the response of tropical Pacific ecosystems to climate change. *Global Change Biology*. <https://doi.org/10.1111/gcb.15316>

du Pontavice, H., Gascuel, D., Reygondeau, G., Maureaud, A., & Cheung, W. W. L. (2019). Climate change undermines the global functioning of marine food webs. *Global Change Biology*. <https://doi.org/10.1111/gcb.14944>

Olmos, M., Payne, M. R., Nevoux, M., Prévost, E., Chaput, G., **du Pontavice, H.**, Guitton, J., Sheehan, T., Mills, K., Rivot, E. (2019). Spatial synchrony in the response of a long range migratory species (*Salmo salar*) to climate change in the North Atlantic Ocean. *Global Change Biology*. <https://doi.org/10.1111/gcb.14913>

du Pontavice, H. (2019). Changing biomass flows in marine ecosystems: from the past to the future. In *Predicting Future Oceans* (p. 121-128). <https://doi.org/10.1016/B978-0-12-817945-1.00012-5>

Randon, M., Réveillac, E., Rivot, E., **du Pontavice, H.**, & Le Pape, O. (2018). Could we consider a single stock when spatial sub-units present lasting patterns in growth and asynchrony in cohort densities? A flatfish case study. *Journal of Sea Research*. <https://doi.org/10.1016/j.seares.2018.09.012>

du Pontavice, H., Randon, M., Lehuta, S., Vermard, Y., & Savina-Rolland, M. (2018). Investigating spatial heterogeneity of von Bertalanffy growth parameters to inform the stock structuration of common sole, *Solea solea*, in the Eastern English Channel. *Fisheries Research*. <https://doi.org/10.1016/j.fishres.2018.05.009>

Maureaud, A., Gascuel, D., Colléter, M., Palomares, M. L. D., **du Pontavice, H.**, Pauly, D., & Cheung, W. W. L. (2017). Global change in the trophic functioning of marine food webs. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0182826>

RESEARCH PROJECT & PROGRAM

FISH-MIP - Fisheries and Marine Ecosystem Model Intercomparison Project since 2018

<https://www.isimip.org/about/marine-ecosystems-fisheries/>

Ongoing projects:

- Understanding the differences in the prediction of the effects of climate change between ecosystem models (Heneghan et al., in revision, *Progress in Oceanography*)
- Consequences of the next generation earth system models for marine ecosystems (Novaglio et al., in prep.)

“Nereus Fellow” in the NIPPON FOUNDATION – NEREUS PROGRAM 2017-2020

<https://nereusprogram.org/>

EDUCATION

Master of Science Degree - Diplôme d'Ingénieur Agronome

2013-2016

Degree with a major in Fisheries and Aquatic Sciences

Agrocampus Ouest (Rennes, France)

Modules included:

- Statistics and GIS for fisheries and aquatic sciences
- Fisheries and Ecosystem Modelling
- Fish Population Dynamic
- Ecosystem Approach to fisheries
- Fisheries management

Lycée Chateaubriand (Rennes, France)

2010-2013

Preparatory classes BCPST (Biology, Chemistry, Physics and Earth Sciences) to prepare the nationwide exam for entry in the French *Grandes Ecoles*.

PROGRAMMING AND IT ABILITIES

- Strong experience in **R** (programming, statistical analysis, spatial analysis, mapping and model building)
- Database management (**Postgres, Postgis**)
- **SQL** Language
- GIS software: **QGIS**
- Versioning software **GIT** and open source platform **GitHub**
- Operating systems: **Windows** and **Linux** (Ubuntu and Fedora)

STATISTICAL ABILITIES

- Multivariate data analysis (PCA, CA, MCA)
- Linear and additive models (GLM, GAM)
- Fit of linear and non-linear models (NLME, GNLS, NLS)

COMMUNICATIONS

Du Pontavice, H., Gascuel, D., Reygondeau, G., Hervann, P.-Y., Cheung, W. "Toward a global decrease in biomass flow in marine food webs, over the 21st century?". Future Oceans2, IMBeR, 17-21 June 2019, Brest, France.

Garric, S., Vermard, Y., **du Pontavice, H.**, Huret, M., Gascuel, D., Allain G., Doray, M. "Première évaluation du potentiel de production halieutique des eaux de la Zone Economique Exclusive française en 2050". Colloque Recherche halieutique et développement durable, AFH, 26-28 June 2019, Caen, France.

Olmos, M., Payne, M., Nevoux, M., Prévost, E., Chaput, G., **du Pontavice, H.**, Guitton, J., Rivot, E. "Spatial synchrony in the response of a long distant migratory species (*Salmo Salar*) to climate change in the North Atlantic Ocean". Colloque Recherche halieutique et développement durable, AFH, 26-28 June 2019, Caen, France.

Du Pontavice, H., Gascuel, D., Reygondeau, G., Hervann, P.-Y., Cheung, W. "Toward a global decrease in biomass flow in marine food webs over the 21st century?". Colloque Recherche halieutique et développement durable, AFH, 26-28 June 2019, Caen, France.

Du Pontavice, H., Reygondeau, G., Cheung, W. 2018. "Temperature effects on the transfers of biomass in marine food webs". 4th Climate Change Symposium, PICES, 4-8 June 2018, Washington, USA.

Du Pontavice, H., Gascuel, D., Reygondeau, G., Hervann, P.-Y., Cheung, W. 2018. "Towards faster and less efficient biomass transfers in marine food webs?". SFEcologie-2018 International conference of ecological sciences, 23-25 October 2018, Rennes, France (3rd prize).

Gascuel, D., **du Pontavice, H.**, Hervann, P.-Y. 2018. "Using trophic models to assess fisheries and climate change impacts, Symposium: Ecological models in fisheries sciences: from knowledge to

management". SFEcologie-2018 International conference of ecological sciences, 23-25 October 2018, Rennes, France.

Le Pape, O., Archambault, B., Baulier, L., Savin- Rolland, M., Rochette, S., Vermard, Y., Lehuta, S., Veron, M., Randon, M., Hunter, E., **du Pontavice, H.**, Reveillac, E., Rivot, E. 2017. "Life-cycle connectivity of an exploited marine fish: implications on (sub)population dynamics and management impacts". Imarco 2017 - 3rd international marine connectivity conference, Sept 2017, Brussel, Belgium.

Du Pontavice, H., Gascuel, D., Maureaud, A., Cheung, W. 2017. "Impact de la pêche et des changements climatiques sur le fonctionnement trophique de l'océan mondial". Colloque Pêches et changements globaux, AFH, 28-30 June 2017, Nantes, France.

TEACHING AND STUDENT SUPERVISION

Master 1 internship: Stomachs vs Models: Do food-web models well predict dietary changes through time? <i>Agrocampus Ouest, Rennes, France</i>	Sept - Dec 2020
Master 2 internship: The effects of climate change on marine trophic amplification. <i>Agrocampus Ouest, Rennes, France and University of British Columbia, Vancouver, Canada</i>	Feb - July 2020
Lecture: Introduction to data limited stock assessment, <i>MSc. Fisheries and Aquatic Sciences, Agrocampus Ouest, Rennes, France</i>	3h - Oct 2018 & 2019
Online teaching (MOOC): The effects of fishing on marine ecosystems and an introduction to Ecopath, Ecosim & EcoTroph, <i>MSc. MARRES, Université Côte d'Azur, Nice, France</i>	Oct 2019 & 2020

OUTREACH & MEMBERSHIP

AFH – Association Française d'Halieutique (French Association of Fisheries Scientists), governing body member, 2017-now

Rennes Science Festival, two presentations to public on the effects of climate change on marine ecosystems, Rennes, France, 2018

Pint of Science Festival, Organisation of three conferences on the topic "Planet Earth", Rennes, France, 2017