

AURÉLIE GOUTTE

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DIPLOMA

2019: **HDR** (Habilitation to Direct Researches)

Wildlife ecotoxicology : causes and consequences of pollutants at the individual and population levels

Jury : S. Betoulle, R. Scheifler, J. Gasparini, S. Meylan, S. Derenne,

2010: **Ph.D** in evolutionary ecophysiology, Centre d'Etudes Biologiques de Chizé, CNRS

Endocrine mechanisms underlying the timing of breeding in polar seabirds

Jury : D. Bouchon, E. Cam, O. Chastel, A. S. Kitayski, T. Raclot, H. Weimerskirch

2007: Master degree in Ecology and Evolutionary Biology, University of Montpellier II, France

2007: Engineering degree in Environmental and agronomical sciences, SupAgro Montpellier

PROFESSIONAL EXPERIENCE

Since 2014 : Maître de conférences, Ecole Pratique des Hautes Etudes, UMR 7619 METIS

2012-2014 : Postdoctoral fellow, CNRS, Centre d'Etudes Biologiques de Chizé, France

Population-level responses to heavy metals and persistent organic pollutants in polar seabirds

2010-2012 : Postdoctoral fellow, University Pierre & Marie Curie, Paris, France

Development of new sea ice biomarkers within Antarctic marine ecosystems

2007-2010: Ph.D in evolutionary ecophysiology, Centre d'Etudes Biologiques de Chizé, CNRS

Endocrine mechanisms underlying the timing of breeding in polar seabirds

SCIENTIFIC EXPERTISE

Since 2019 : Member of the scientific board of the ECOPHYTO program (French National Action Plan to reduce pesticide use)

Since 2019 : Member of the board at the EPHE Doctoral School

Since 2017 : Member of the National Nature Protection Council (CNPN)

2017 : Member of the HCERES committee for the evaluation of the laboratory BELCA (Ecotoxicologie et Bioindication des Milieux Aquatiques), IRSTEA

2015-2019 : Member of the Executive Committee of the PIREN-Seine program (Interdisciplinary Environmental Research Programmes – Seine river)

Grant reviewer for research funding programmes :

ANR (2021), ECOPHYTO (2020, 2021), ANSES (2020), IPEV (2015)

Referee for the following journals : Proceeding of the Royal Society B, Ecological Application, Nature Scientific Report, PLOS ONE, Hormones and Behaviour, General and Comparative Endocrinology, Marine Ecology Progress Series, Comparative Biochemistry and Physiology, Science of the Total Environment, Environmental Pollution, Chemosphere, Environmental Research, Journal of Ornithology, Oecologia, Avian conservation and Ecology, Journal of Avian Biology, Journal of Experimental Marine Biology and Ecology, Ardeola, Environmental Sciences Group, Toxics.

RESEARCH FUNDING

11 projects since 2015 (3 as Principal Investigator, 7 as co-PI and 1 as Work-Package Leader)

- 2021-2024 : Effects of pesticides exposure in the European pond turtle (WPL, 400 k€, OFB)
- 2020-2022: Long-term effect of an experimental exposure of bullheads to the herbicide S-metolachlore, in an agricultural watershed (PI, 38 k€, EC2CO-CNRS)
- 2020-2023: Role of ichthyofauna as a vector for the dissemination of antibiotic-resistant bacteria in a highly urbanized river in the Seine basin. (co-PI, 188k€, MITI-CNRS)
- 2022: Transfer of antibiotics in a riverine food web (co-PI, 8 k€, PIREN-Seine)
- 2020: Capture-Mark-Recapture of bullheads in an agricultural watershed (co-PI, 8k€, PIREN-Seine)
- 2017-2020: Host-parasites transfer of micropollutants and eco-physiological consequences on a freshwater fish : case study of chub-acanthocephalan model (co-PI, 90k€, SU-ITE)
- 2018: Antimicrobial resistance in freshwater fish community (co-PI, 4k€, UMR METIS)
- 2018: Joint effect of parasitic infestation and PAHs exposure on European chubs (PI, 4k€, EPHE)
- 2017-2018: Comparison between environmental DNA and long-term electrofishing for freshwater fish monitoring in the Seine river (PI, 13 k€, SIAAP)
- 2016-2019: Trophic transfer of pollutants and their metabolites in river ecosystems. (co-PI, 50 k€, PIREN-Seine)
- 2015-2017: Environmental fate and effects of pollutants and their metabolites in fish. (co-PI, 180 k€, Water Agency Seine-Normandie)

TEACHING ACTIVITIES

- Ecologie aquatique et écotoxicologie, Master EPHE (co-responsable de l'UE)
- Services et gestion écosystémiques, Master EPHE (co-responsable de l'UE)
- Enjeux environnementaux et sanitaires, Master EPHE
- Contaminants organiques, Master, Sorbonne Université
- Ecotoxicologie, Master, Sorbonne Université
- Perturbations de l'équilibre cellulaire, Licence PSL
- Services écosystémiques, Licence PSL (responsable du module)
- Toxicologie / Ecotoxicologie, Licence PSL (co-responsable du module)

STUDENT/POST-DOC SUPERVISIONS

- 1 invited post-doc : Raphael Santos (2016)

- 3 PhD students :

Noëlie Molbert (2017-2020) : *Host-parasites transfer of micropollutants and eco-physiological consequences on a freshwater fish : case study of chub-acanthocephalan model* (co-direction, Jean-Marie Mouchel UMR 7619 METIS)

Etienne Marchand (2020-) : *Role of ichthyofauna as a vector for the dissemination of antibiotic-resistant bacteria in a highly urbanized river* (co-direction, Fabienne Petit M2C, Rouen)

Leslie-Anne-Merleau (2021-) : *Physiological, behavioural, demographical effect of pesticides' exposure in European Pond turtles* (co-direction, Olivier Lourdais, CEBC & Marion Vittecoq, TdV)

- 8 Master students : Yvann Foucault (2021), Nicolas Martin (2021), Louisiane Burkart (2019), Etienne Marchand (2019), Andrea Adequin (2018), Victor Lachaux (2017), Noëlie Molbert (2017), Claire Fourgous (2015)

- 4 Undergraduate students : Marwa Khabou (2019), Garance Despréaux (2018), Sara Labrousse (2011), Floriane Cargouët (2011)

- EPHE Pedagogical advisor :

Diplôme EPHE : Soulie Anne-Sophie (2019), Chifflet-Belle Pascaline (2019)

Master EPHE/PSL : Oullion Brice, Eon Agathe, Belhoucine Manal, Louise Jullien

PARTICIPATION TO DEFENSE JURYS

- Examiner for 5 PhD thesis:

Jeremy Lemaire, La Rochelle Université, 26/10/2021

Louise Prouteau, La Rochelle Université, 27/09/2021

Sophie Dupont, La Rochelle Université, 18/09/2019

Pierre Blévin, La Rochelle Université, 11/09/2018

Héloïse Guillot, La Rochelle Université, 26/10/2017

- Referee for 2 PhD thesis:

Jeffrey Carbillet, INRA Toulouse, 16/12/2019

Norith Eckbo, University of Oslo, 10/09/2019

- President of the jury for 5 EPHE Diploma defense:

● Benoit Vallas (05/10/2021) ● Christophe de Franceschi (11/12/2020) ● Adeline Dumet (27/11/2020) ● Christophe Hanot (10/01/2020) ● Alexandre Cregu (19/03/2019)

- Other : Member of the jury for the defense of Axel Ganivet's Architecture Diploma, 20/06/2017

PEER-REVIEWED PUBLICATIONS

H-index : 19, 1315 citations (the students I have supervised are underlined)

37. Tartu S, Blévin P, Bustnes J, Chierici M, Fransson A, Gabrielsen G, **Goutte A**, Sauser C, Sire J, Bustamante P, Angelier F, Bech C, Moe B, Barbraud C, Chastel O (in revision) A U-turn for mercury concentrations over 20 years: how do environmental conditions affect exposure in Arctic seabirds?
36. Léandri-Breton DJ, Tarroux A, Elliott K, Legagneux P, Angelier F, Blévin P, Bråthen VS, Fauchald P, **Goutte A**, Jouanneau W, Tartu S, Moe B, Chastel O (2021) Long-term tracking of an Arctic-breeding seabird indicates high fidelity for pelagic wintering areas. *Marine Ecology Progress Series* <https://doi.org/10.3354/meps13798>
35. Molbert N, Agostini S, Alliot F, Angelier F, Biard C, Decencièrre B, Leroux-Coyau M, Millot A, Ribout C, **Goutte A**. (2021) Parasitism reduces oxidative stress of fish host experimentally exposed to PAHs. *Ecotoxicology and Environmental Safety* 219, 112322, <https://doi.org/10.1016/j.ecoenv.2021.112322>
34. Burkart L, Olivier A, Lourdais O, Vittecoq M, Blouin-Demers G, Alliot F, Le Gac C, Martin N, **Goutte A**. (2021) Determinants of legacy POPs levels in the European pond turtle (*Emys orbicularis*) in the Camargue wetland, France. *Environmental Toxicology and Chemistry* <https://doi.org/10.1002/etc.5077>
33. Colin Y, Berthe T, Molbert N, Guigon E, Vivant AL, Alliot F, Collin S, **Goutte A**, Petit F. (2021) Urbanization constrains skin bacterial phylogenetic diversity in wild fish populations and correlates with the proliferation of aeromonads. *Microbial Ecology*. <https://doi.org/10.1007/s00248-020-01650-2>
32. Molbert N, Angelier F, Alliot F, Ribout C, **Goutte A**. (2021) Fish from urban rivers and with high pollutant levels have shorter telomeres. *Biology Letters*. 17(1):20200819

31. Aviles A, Cordeiro A, Maria A, Bozzolan F, Boulogne I, Dacher M, **Goutte A**, Alliot F, Maibeche M, Massot M, Siaussat D (2020) Effects of DEHP on ecdysteroid pathway, sexual behaviour and offspring of the moth *Spodoptera littoralis*. *Hormones and Behavior* 125, 104808
30. **Goutte A**, Alliot F, C. Budzinski H, Simonnet-Laprade C, Santos R, Labadie P (2020) Trophic transfer of micropollutants and their metabolites in an urban riverine food web. *Environmental Science and Technology* 54(13), 8043-8050.
29. **Goutte A**, Molbert N, Guérin S, Richoux R, Rocher V (2020) Monitoring freshwater fish communities in large rivers using environmental DNA metabarcoding and a long-term electrofishing survey. *Journal of Fish Biology* 97(2), 444-452
28. Molbert N, Alliot F, Médoc V, Biard C, Meylan S, Jacquin L, Santos R, **Goutte A** (2020) Potential benefits of acanthocephalan parasites for chub hosts in polluted environments. *Environmental Science and Technology* 54(9):5540-5549.
27. Simonnet-Laprade C, Budzinski H., Maciejewski K, Le Menach K, Santos R, Alliot F, **Goutte A**, Labadie P (2019). Contribution of targeted and unknown precursors to the apparent biomagnification of perfluoroalkyl acids (PFAAs) in the food web of an urban river. *Environmental Science: Processes and Impacts* 21, 1864-1874
26. Molbert N, Alliot F, Santos R, Chevreuil M, Mouchel J-M, **Goutte A** (2019). Multi-residue methods for the determination of organic micropollutants and their metabolites in fish tissues from the Marne hydrographic network (France). *Environmental Toxicology and Chemistry* 38(9):1866-1878
25. Aviles A., Boulogne I, Durand N, Maria A, Cordeiro A, Bozzolan F, **Goutte A**, Alliot F, Dacher F, Renault D, Maibeche M, Siaussat D. (2019) Effects of DEHP on post-embryonic development, nuclear receptor expression, metabolites and ecdysteroids concentrations of *S. littoralis*, *Chemosphere*, 215:725-738
24. **Goutte A**, Meillère A, Barbraud C, Budzinski H, Labadie P, Peluhet L, Weimerskirch H, Delord K, Chastel O (2018) Demographic, endocrine and behavioral responses to mirex in the South polar skua. *The Science of the Total Environment* 631-632, 317-325
23. Fourgous C., Chevreuil M., Alliot F., Amilhat E. Faliex E. Paris-Palacios S. Teil M.J, **Goutte A.** (2016) Phthalate metabolites in the European eel (*Anguilla anguilla*) from Mediterranean coastal lagoons. *The Science of the Total Environment* 569-570, 1053–1059
22. Bustamante, P., Carravieri, A., **Goutte, A.**, Barbraud, C., Delord, K., Chastel, O., Weimerskirch, H., Cherel, Y. (2016) High feather mercury concentrations in the wandering albatross are related to sex, breeding status and trophic ecology with no demographic consequences. *Environmental Research* 144, 1-10.
21. **Goutte, A.**, Cherel, Y., Churlaud, C., Ponthus, J-P, Massé, G., Bustamante, P. (2015) Trace elements in Antarctic fish species and the influence of foraging habitats and dietary habits on mercury levels. *The Science of the Total Environment* 538, 743–749.
20. Costantini, D., **Goutte, A.**, Barbraud, C., Faivre, B., Sorci, G., Weimerskirch, H., Delord, K., Chastel, O. (2015) Demographic responses to oxidative stress and inflammation in the wandering albatross (*Diomedea exulans*). *PLOS ONE*, 10(8): e0133967
19. **Goutte, A.**, Barbraud, C., Herzke, D., Bustamante, P., Angelier, F., Tartu, S., Clément-Chastel, C., Moe, B., Bech, C., Gabrielsen, G.W., Bustnes, J.O., Chastel, O. (2015) Survival rate and breeding outputs in a high Arctic seabird exposed to legacy persistent organic pollutants and mercury. *Environmental Pollution* 200, 1-9.
18. **Goutte, A.**, Charrassin, J-B., Cherel, Y., Carravieri, A., De Grissac, S., Massé, G. (2014) Importance of ice algal production for top predators: new insights using sea ice biomarkers. *Marine Ecology Progress Series* 513, 269-275
17. Tartu, S., Bustamante, P., **Goutte, A.**, Bustnes, J.O., Cherel Y., Weimerskirch, H., Chastel, O. (2014) Age related mercury contamination and endocrine disruption in a long-lived Antarctic bird, the snow petrel. *PLOS ONE* 9(7): e103642.
16. **Goutte, A.**, Barbraud, C., Meillère, A., Carravieri, A., Bustamante, P., Labadie, P., Budzinski, H., Delord, K., Cherel, Y., Weimerskirch, H., Chastel, O. (2014) Demographic consequences of heavy metals and persistent organic pollutants in a vulnerable long-lived bird, the wandering albatross. *Proceedings of the Royal Society B* 281, 20133313
15. **Goutte, A.**, Cherel Y., Ozouf-Crosta C., Robineau C., Lanshere J., Massé G. (2014) Seasonal contribution of sea ice organic matter in the diet of Antarctic fishes: a diatom-specific Highly Branched Isoprenoid approach. *Polar Biology* 37, 903-910
14. **Goutte, A.**, Angelier, F., Bech, C., Clément-Chastel, C., Dell'Omo, G., Gabrielsen, G.W., Lendvai, Á.Z., Moe, B., Noreen, E., Pinaud, D., Tartu, S., Chastel O. (2014) Annual variation in the timing of breeding, pre-

- breeding foraging areas and corticosterone levels in an Arctic population of black-legged kittiwakes. *Marine Ecology Progress Series* 496, 233-247
13. Jaeger, A., **Goutte, A.**, Lecomte, V.J., Richard, P., Chastel, O., Barbraud, C., Weimerskirch, H., Cherel, Y. (2014) Age, sex and breeding status shape a complex foraging pattern in an extremely long-lived seabird. *Ecology* 95, 2324-2333
 12. **Goutte, A.**, Bustamante, P., Barbraud, C., Delord, K., Weimerskirch, H. Chastel, O. (2014) Demographic responses to mercury exposure in two closely-related Antarctic top predators. *Ecology* 95, 1075–1086
 11. **Goutte, A.**, Chevreuil, M., Alliot, F., Eléaume, M., Chastel, O., Cherel, Y., Massé, G. (2013) Persistent organic pollutants in benthic and pelagic organisms off Adélie Land, Antarctica. *Marine Pollution Bulletin* 77, 82-89
 10. Tartu, S., **Goutte, A.**, Angelier, F., Clément-Chastel C, Moe, B., Bech, C., Gabrielsen, G.W., Bustnes, J.O., Bustamante, P., Chastel, O. (2013) Mercury disrupts luteinizing hormone release and underlies skipped reproduction in an Arctic seabird. *Biology Letters* 9(4):20130317
 9. **Goutte, A.**, Cherel, Y., Houssais M.N., Klein, V., Ozouf-Costaz, C., Raccurt, M., Robineau, C., Massé, G. (2013). Diatom specific highly branched isoprenoids as biomarkers in Antarctic consumers. *PLOS ONE* e56504
 8. Nordstad, T., Moe, B., Bustnes, J.O., Bech, C., Chastel, O., **Goutte, A.**, Trouvé, C., Herzke, D., Gabrielsen, G.W. (2012) POPs and baseline corticosterone levels in kittiwakes during three periods of the breeding season. *Environmental Pollution* 164, 219-226
 7. Frederiksen, M., et al. (2012) Multi-colony tracking reveals the non-breeding distribution of a pelagic seabird on an ocean basin scale. *Diversity and Distributions* 18, 530-542
 6. **Goutte, A.**, Kriloff, M., Weimerskirch, H., Chastel, O. (2011) Why do some adult birds skip breeding? A hormonal investigation in a long-lived bird. *Biology Letters* 7, 790-792
 5. **Goutte, A.**, Antoine, E., Chastel, O. (2011) Experimentally delayed hatching triggers a magnified stress response in a long-lived bird. *Hormones and Behavior* 59, 167-173
 4. **Goutte, A.**, Clément-Chastel C, Bech, C., Gabrielsen, G.W., Chastel, O. (2011) Experimentally reduced corticosterone release promotes early breeding in Black-legged kittiwakes. *Journal of Experimental Biology* 214, 2005-2013
 3. **Goutte, A.**, Antoine, E., Weimerskirch, H., Chastel, O. (2010) Age and the timing of breeding in a long-lived bird: a role for stress hormones? *Functional Ecology* 24, 1007-1016
 2. **Goutte, A.**, Angelier, F., Welcker, J., Moe, B., Clément-Chastel, C., Gabrielsen, G.W., Bech, C., Chastel, O. (2010) Long-term survival effect of corticosterone manipulation in Black-legged kittiwakes. *General and Comparative Endocrinology* 167, 246-251
 1. **Goutte, A.**, Angelier, F., Clément-Chastel C, Trouvé, C., Moe, B., Bech, C., Gabrielsen, G.W., Chastel, O. (2010) Stress and the timing of breeding: glucocorticoids- luteinizing hormone relationships in an arctic seabird. *General and Comparative Endocrinology* 169, 108-116

BOOK CHAPTERS

- IV. Carré C, Meybeck M, Garnier J, Chong N, Deroubaix J-F, Flipo N, Gob F, Goutte A, Le Pichon C, Seguin L, Tournebize J (2020) River basin vision: tools and approaches, from yesterday to tomorrow. *The Handbook of Environmental Chemistry*, Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-60438-4_438
- III. Bonnard M, Barjhoux I, Dedourge-Geffard O, Goutte A, Oziol L, Palos-Ladeiro M, Geffard A. (2020) Experience gained from ecotoxicological studies in the Seine River and its drainage basin over the last decade: applicative examples and research perspectives. *The Handbook of Environmental Chemistry*, Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-60438-4_384
- II. *Antarctique: une explosion de vie*, 2012, Museum of Natural History, Le Havre, M&F éditions, ISBN-13: 979-1092305012
- I. *Mondes polaires : Hommes et biodiversités. Des défis pour la science*, 2012, ed. Le Cherche Midi, ISBN-10: 2749123666

OUTREACH ACTIVITIES

Scientific mentor in schools :

2021-2022 : Collège JJ Rousseau, Criel with 'Les Savanturiers – École de la recherche'

2016-2017 : Collège F Dolto Paris with 'Les Savanturiers – École de la recherche'

2012 : Ecole Élémentaire Buffon, Paris

2009 : Lycée J. Desfontaines, Melle

Public presentation:

2020 : Public presentation & photo exhibition, Carré Belle Feuille, Boulogne Billancourt

2014 : Public presentation, Museum d'Histoire Naturelle du Havre

Media coverage of scientific results:

<https://www.cnrs.fr/inee/communication/breves/b363.html>

<https://www.actu-environnement.com/ae/news/pesticides-interdits-persistantscontamination-oiseaux-marins-antarctique-31315.php4>