

DR. PAULO H. BONIFÁCIO

Systematics and Ecology of Polychaeta

Languages: Portuguese, French and English

Brazilian, single, 34 years old

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EXPERIENCE

- 2019 Scientific research: "**Assessment of ecological impacts provoked by physic pressure on benthic habitats: sand mining**". Researcher at Observatoire Océanologique de Banyuls-sur-Mer, Sorbonne Université. Supervised by Céline LABRUNE. (Macrofauna identification, ecological analyses on R, spatial and temporal distribution related to sand extraction events).
- 2017-2019 Postdoctoral position: "**Diversity of abyssal polychaete assemblages from the nodule area of the North-eastern Pacific: spatial patterns, mechanisms of coexistence and preservation strategies**". Ifremer (Institut Français de Recherche pour l'Exploitation de la Mer). Supervised by Lénaïck MENOT. (DNA extraction and amplification of polychaetes sampled by box-corer; ecological analysis on R).
- 2015-2016 Postdoctoral position: "**Diversity, distribution, phylogeny and connectivity of deep-sea polynoids from the nodule area of the North-eastern Pacific**". Ifremer (Institut Français de Recherche pour l'Exploitation de la Mer). Supervised by Lénaïck MENOT. (Identification and DNA extraction of polynoids sampled with epibenthic sledge/ROV onboard of RV SONNE; phylogenetic analysis using MrBayes, RAxML and PAUP).

FORMATION

- 2011-2015 PhD thesis: "**The spatiotemporal variation of benthic macrofauna composition in the Gulf of Lions**". Doctoral school of Sciences and Environment at University of Bordeaux, France. Supervised by Antoine GRÉMARE and Céline LABRUNE. (Local and regional scale sampling; identification of benthic macrofauna; data analysis on PRIMER and R; structuring factors).
- 2007-2009 MSc dissertation: "**Polydorids (Polychaeta, Spionidae) in *Crassostrea rhizophorae* from five rivers in Pernambuco coast**". Master's degree in Animal Biology at Federal University of Pernambuco, Brazil. Supervised by José R B SOUZA. (Sampling and identification of polychaetes from 5 rivers along the coast of Pernambuco; data analysis on PRIMER; description of shell-boring polydorinis; infestation and frequency rates).
- 2005-2007 BSc monograph: "**Onuphidae (Annelida, Polychaeta) from Pernambuco coast and REVIZEE program**". Bachelor's degree in Biological and Environmental Sciences at Federal University of Pernambuco, Brazil. Supervised by José R B SOUZA. (Identification of polychaetes from the north-eastern coast of Brazil at family levels and description of onuphids and spionids).

SHORT FORMATIONS

- 2018 "**Taxonomic workshop on Lumbrineridae and Nephtyidae (Annelida)**" by Ascensão RAVARA and Eivind OUG. RESOMAR workshop at Arcachon Marine Station, Arcachon, France.
- 2018 "**Taxonomic workshop on Bivalvia (Mollusca)**" by Graham OLIVER, Anna HOLMES and Andy MACKIE. RESOMAR workshop at IUEM, Brest, France.
- 2017 "**Taxonomic workshop on Tanaidacea (Crustacea)**" by Immaculada FRUTOS and Patricia ESQUETE. RESOMAR workshop at Cresco/Ifremer, Dinard, France.

- 2016 "**Taxonomic workshop on Terebellidae (Polychaeta)**" by Pat HUTCHINGS. RESOMAR workshop at UMR BOREA, Caen, France.
- 2015 "**Taxonomic workshop Syllidae (Polychaeta)**" by Guillermo SAN MARTIN and Frédéric OLIVIER. RESOMAR workshop at LECOB/UPMC, Banyuls-sur-Mer, France.
- 2014 "**Spionidae: Morphology and Taxonomy**" by Vasily RADASHEVSKY. RESOMAR workshop at DIVCO-UMR 7144/UPMC, Roscoff, France.
- 2013 "**Scaleworms: Aphroditoidea**" by Ruth BARNICH. RESOMAR workshop at LIENSs-UMR 7266, University of La Rochelle, La Rochelle, France.
- 2009 "**Benthic macrofauna**" by Jean-Michel AMOUROUX. LECOB-UMR 8222/UPMC, Banyuls-sur-Mer, France.
- 2007 "**Reproduction biology of Polychaeta and systematic of Spionidae**" by Vasily RADASHEVSKY, Paulo PAIVA and Christine RUTA. NUPEM/UFRJ, Rio de Janeiro, Brazil.
- 2006 "**Phylogenetic systematics of Polychaeta**" by Kirk J FITZHUGH. 1st Latin-American Symposium of Polychaeta at CEBIMAR/USP, São Paulo, Brazil.

SCIENTIFIC ARTICLES

- 2020 Goullieux, B., **Bonifácio, P.**, Lavesque, N. *Idunella bacheleti* sp. nov., a new Liljeborgiidae species (Crustacea: Amphipoda) from the Capbreton Canyon (Bay of Biscay, NE Atlantic Ocean). *Cahiers de Biologie Marine*
- 2020 **Bonifácio, P.**, Martinez-Arbizu, P., Menot, L. Alpha and beta diversity patterns of polychaete assemblages across the nodule province of the eastern Clarion-Clipperton Fracture Zone (Equatorial Pacific). *Biogeosciences*
- 2020 Guggolz, T., Meißner, K., Schwentner, M., Dahlgren, T.G., Wiklund, H., **Bonifácio, P.**, Brandt, A. High diversity and pan-oceanic distribution of deep-sea polychaetes: *Prionospio* and *Aurospio* (Annelida: Spionidae) in the Atlantic and Pacific Ocean. *Organisms Diversity & Evolution*
- 2019 **Bonifácio, P.** & Menot, L. New genera and species from the Equatorial Pacific provide phylogenetic insights into deep-sea Polynoidae (Annelida). *Zoological Journal of the Linnean Society*
- 2019 **Bonifácio, P.**, Grémare, A., Amouroux, J-M., Labrune, C. Climate-driven changes in macrobenthic communities in the Mediterranean Sea: A 10-year study in the Bay of Banyuls-sur-Mer. *Ecology and Evolution*.
- 2019 Radashevsky, V.I., Pankova, V.V., Malyar, V.V., Neretina, T.V., Wilson, R.S., Worsfold, T.M., Diez, M.E., Harris, L.H., Hourdez, S., Labrune, C., Houbin, C., Kind, B., Kuhlenkamp, R., Nygren, A., **Bonifácio, P.**, Bachelet, G. Molecular analysis and new records of the invasive polychaete *Boccardia proboscidea* (Annelida: Spionidae). *Mediterranean Marine Science*
- 2019 Labrune, C., Lavesque, N., **Bonifácio, P.**, Hutchings, P. New species of *Pista* Malmgren, 1866 (Annelida, Terebellidae) from the Western Mediterranean Sea. *ZooKeys*
- 2018 **Bonifácio, P.**, Lelièvre, Y., Eomnes, E. A new species and phylogenetic insights in *Hesiospina* (Annelida, Hesionidae). *Zootaxa*
- 2018 **Bonifácio, P.**, Grémare, A, Gauthier, O., Romero-Ramirez, A., Bichon, S., Amouroux, J-M., Labrune, C. Long-term (1998 vs. 2010) large-scale comparison of soft-bottom benthic macrofauna composition in the Gulf of Lions, NW Mediterranean Sea. *Journal of Sea Research*
- 2017 De Smet, B., Pape, E., Riehl, T., **Bonifácio, P.**, Colson, L., Vanreusel, A. 2017. The community structure of deep-sea macrofauna associated with polymetallic nodules in the eastern part of the Clarion-Clipperton Fracture Zone. *Frontiers in Marine Science*

- 2017 Lavesque, N., Daffe, G., **Bonifácio, P.**, Hutchings, P. A new species of the *Marphysa sanguinea* complex from French waters (Bay of Biscay, NE Atlantic) (Annelida, Eunicidae). *Zookeys*
- 2017 Lavesque, N., **Bonifácio, P.**, Londoño-Mesa, M. H., Le Garrec, V., Grall, J. *Loimia ramzega* sp. nov., a new giant species of Terebellidae (Polychaeta) from French waters (Brittany, English Channel). *Journal of the Marine Biological Association of the United Kingdom*
- 2017 Souza, J.R.B., **Bonifácio, P.**, Assis, J.E. Infestation of *Crassostrea* cf. *brasiliiana* by boring-polychaete polydorids in estuaries from Northeastern Brazil. *Journal of Environmental Analysis and Progress*
- 2016 Glover, A., Dahlgren, T., Taboada, S., Paterson, G., Wiklund, H., Waeschenbach, A., Copley, A., Martínez, P., Kaiser, S., Schnurr, S., Khodami, S., Raschka, U., Kersken, D., Stuckas, H., Menot, L., **Bonifacio, P.**, Vanreusel, A., Macheriotou, L., Cunha, M., Hilário, A., Rodrigues, C., Colaço, A., Ribeiro, P., Błażewicz, M., Gooday, A., Jones, D., Billett, D., Goineau, A., Amon, D., Smith, C., Patel, T., McQuaid, K., Spickermann, R., Brager, S. The London Workshop on the Biogeography and Connectivity of the Clarion-Clipperton Zone. *Research Ideas and Outcomes*
- 2017 Khedhri, I., Tovar-Hernández, M.A., **Bonifácio, P.**, Ahmed, A., Aleya, L. First report of the invasive species *Branchiomma bairdi* McIntosh, 1885 (Annelida: Sabellidae) along the Tunisian coast (Mediterranean Sea). *BioInvasions Records*
- 2016 Le Garrec, V., Grall, J., Chevalier, C., Guyonnet, B., Jourde, J., Lavesque, N., **Bonifácio, P.**, Blake, J.A. *Chaetozone corona* (Polychaeta, Cirratulidae) in the Bay of Biscay: a new alien species for the North-east Atlantic waters? *Journal of the Marine Biological Association of the United Kingdom*
- 2016 Romero-Ramirez, A., **Bonifácio, P.**, Labrune, C., Grémare, A. Assessment of marine ecological quality in the Gulf of Lions based on indices derived from benthic macrofauna and sediment profile images. *Marine Pollution Bulletin*
- 2015 **Bonifácio, P.**, Lavesque, N., Bachelet, G., Parapar, J. *Anobothrus amourouxii* sp. nov., a new species of Ampharetidae (Polychaeta) from the Capbreton Canyon (Bay of Biscay, NE Atlantic Ocean). *Journal of the Marine Biological Association of the United Kingdom*
- 2015 Sardá, R., Serrano, L., Labrune, C., Gil, J., March, D., Amouroux, J-M., Taboada, S., **Bonifácio, P.**, Grémare, A. Shallow-water polychaete assemblages in the Northwestern Mediterranean Sea and their possible use in the evaluation of good environmental status. *Memoirs of Museum Victoria*
- 2015 Jourde, J., Sampaio, L., Barnich, R., **Bonifácio, P.**, Labrune, C., Quintino, V., Sauriau, P-G. *Malmgrenia* sp. nov., a new *Malmgrenia* species (Polychaeta: Polynoidae) from western Mediterranean and North-East Atlantic with a key to the North-East Atlantic and Mediterranean *Malmgrenia* species. *Journal of the Marine Biological Association of the United Kingdom*
- 2014 **Bonifácio, P.**, Solveig, S., Labrune, C., Amouroux, J.-M., Escoubeyrou, K., Buscail, R., Romero-Ramirez, A., Lantoine, F., Vétion, G., Bichon, S., Desmalades, M., Rivière, B., Deflandre, B., Grémare, A. Spatiotemporal changes in surface sediment characteristics and benthic macrofauna composition off the Rhône River in relation with its hydrological regime. *Estuarine, Coastal and Shelf Science*
- 2014 Lavesque, N., Gouillieux, B., de Montaudoin, X., Bachelet, G., **Bonifácio, P.**, Simonet, E. Premier signalement de l'espèce introduite *Grandidierella japonica* Stephensen, 1938 (Crustacea: Amphipoda : Aoridae) dans le bassin d'Arcachon. *An aod - les cahiers naturalistes de l'Observatoire marin*
- 2014 Lavesque, N., **Bonifácio, P.**, Meißner, K., Blanchet, H., Gouillieux, B., Dubois, S., Bachelet, G. New records of *Spio symphyta* and *Spio martinensis* ("Polychaeta": Canalipalpata: Spionidae) from Arcachon Bay (France), NE Atlantic. *Marine Biodiversity*
- 2014 Khedhri, I., Lavesque, N., **Bonifácio, P.**, Djabou, H., Afli, A. First record of *Naineris setosa* (Verrill, 1900) (Annelida: Polychaeta: Orbiniidae) in the Western Mediterranean Sea. *BioInvasions Records*
- 2013 Lavesque, N., Sorbe, J.-C., Bachelet, G., Gouillieux, B., de Montaudouin, X., **Bonifácio, P.**, Blanchet, H., Dubois, S. Recent discovery of *Paranthura japonica* Richardson, 1909 (Crustacea: Isopoda: Paranthuridae) in European marine waters (Arcachon Bay, Bay of Biscay). *BioInvasions Records*

- 2010 Santos, J.P., da Silva, S.M., **Bonifácio, P.**, Esteves, E.L., Pinheiro, U.S., Muricy, G. A new species of *Thorecta* (Porifera: Demospongiae) from the western Atlantic, with remarks on the taxonomy of the genus. *Journal of the Marine Biological Association of the United Kingdom*
- 2008 Souza, J.R.B. de, Lavoie, N., **Bonifácio, P.**, Rocha, C.M.C.D. Distribution of *Ocypode quadrata* (Fabricius, 1787) on sandy beaches of north-eastern Brazil. *Atlântica*

SCIENTIFIC ARTICLES IN PREPARATION

- Bonifácio, P.** & Menot, L. Diversity and distribution of polynoids (Annelida: Polynoidae) across the nodule province of the Clarion-Clipperton Fracture Zone in the Equatorial Pacific.
- Droual, G. & **Bonifácio, P.** A new species of *Atherospio* (Annelida: Spionidae) from French waters (English Channel).

INVITATIONS TO INTERNATIONAL WORKSHOPS

- 2019 **Bonifácio, P.** & Menot, L. Alpha and beta diversity patterns of polychaete assemblages across the nodule province of the eastern Clarion-Clipperton Fracture Zone (Equatorial Pacific). *Deep CCZ Biodiversity Synthesis Workshop, United States.* (Oral)
- 2019 **Bonifácio, P.** & Menot, L. Evaluating the diversity of polychaetes (Annelida) across the nodule province of the CCFZ - some limitations -. *Workshop & Mini-Symposium: Deep-sea taxonomy under pressure, Germany.* (Oral)

ORAL AND POSTER COMMUNICATIONS

- 2018 **Bonifácio, P.** & Menot, L. Alpha and beta diversity of polychaete assemblages across Clarion- Clipperton Zone. *15th Deep-Sea Biology Symposium. Monterey, United States.* (Oral communication).
- 2018 Dahlgren, T.G., Wiklund, H., Glover, A., Smith, C., Jones, D., Janssen, A., Arbizu, P.M., Neal, L., **Bonifacio, P.**, Taboada, S., Menot, L., de Smet, B., Vanreusel, A., Pape, E., Ravara, A., Cunha, M. High Genetic Diversity and Connectivity in Common CCZ Taxa. *15th Deep-Sea Biology Symposium. Monterey, United States.* (Oral communication).
- 2018 **Bonifácio, P.** & Menot, L. Polynoids from Clarion-Clipperton Fracture Zone: new species and phylogenetic insights. *15th Deep-Sea Biology Symposium. Monterey, United States.* (Poster).
- 2018 **Bonifácio, P.** & Menot, L. Diversity patterns and community composition of polychaete assemblages (Annelida) across the nodule province of the Clarion-Clipperton Fracture Zone (Equatorial Pacific). *Workshop NAPOLEON – NemAtodes from deeP-sea pOLymEtallic nOdules: implications to improve miNing practices. Brest, France.* (Oral communication).
- 2016 **Bonifácio, P.**, Neal, L., Menot, L. Diversity of polynoids (Polynoidae: Polychaeta) from Pacific and Southern Oceans. *IPC12 International Polychaeta Conference. Cardiff, Wales.* (Oral communication).
- 2016 **Bonifácio, P.** & Wiklund, H. Introduction to Polychaeta. *Meioscool2016: Meiofauna Summer School. Brest, France.* (Oral communication).
- 2016 **Bonifácio, P.**, Neal, L., Menot, L. Diversity and distribution patterns of Polynoidae (Annelida) across the Clarion-Clipperton Zone. *Workshop on the Biogeography and Connectivity of the Clarion-Clipperton Zone. London, United Kingdom.* (Oral communication).
- 2016 **Bonifácio, P.**, Neal, L., Menot, L. Diversity of polynoids (Polynoidae: Polychaeta) from Pacific and Southern Oceans. *JPI Oceans meeting, Ghent, Brussels.* (Poster)

- 2015 **Bonifácio, P.**, Neal, L., Menot, L. Diversity of polynoids (Polynoidae: Polychaeta) from Pacific and Southern Oceans. MIDAS meeting, Sintra, Portugal. (Poster)
- 2014 **Bonifácio, P.**, Lavesque, N., Bachelet, G., Barnich, R., Parapar, J., Grémare, A. New records of deep-sea Polychaeta (Annelida) from the Capbreton Canyon (Bay of Biscay, NE Atlantic). XIV International Symposium on Oceanography of the Bay of Biscay, Bordeaux, France (Poster).
- 2012 Grémare, A., Deflandre, B., Schmidt, S., Maire, O., Romero-Ramirez, A., Metzger, E., Viollier, E., Cesbron, F., Labrune, C., Amouroux, J-M., Lavesque, N., **Bonifácio, P.**, Lecroart, P., Duchene, J-C., Richard, M., Poirier, D., Coste, L., Bichon, S. Assessing the effect of macrobenthos diversity on the mineralisation of sediment organic matter. Goldschmidt Conference, Montreal, Canada (Oral communication).

STUDENTS

G. Campbell. University of the West Indies, Mona, Jamaica. International Seabed Authority Internship at the Ifremer (May 14, 2018 – July 13, 2018). (DNA barcoding of polychaetes).

J. Hamoniaux. Université de Bretagne Occidentale, Brest, France. Volunteer stage at the Ifremer. (April 24, 2018 – May, 4, 2018). (Sorting and morphological identification of polychaetes from CCFZ).

JOURNAL REFEREE

Deep Sea Research Part I Oceanographic Research Papers; Revista de Biologia Tropical; Journal of the Marine Biological Association of the UK; Diversity; ZooKeys and Zootaxa.

REPORTS

- 2019 Smith, C. R., Washburn, T., Menot, L., **Bonifácio, P.**, Pape, E., Bribiesca-Contreras, L., Dahlgren, T., Fukushima, T., Glover, A., Ju, S. J. and Yu, O. H. SEDIMENT MACROFAUNA – A synthesis of sediment macrofaunal biodiversity in the Clarion-Clipperton Zone, in Deep CCZ Biodiversity Synthesis Workshop Report. ISA
- 2019 Labrune C., **Bonifácio P.**, Gallegos L., Amouroux J-M. Rapport final: Evaluation des impacts écologiques engendrés par pressions physiques sur les habitats benthiques : cas de la pêche et de l'extraction. IMPECAPE
- 2019 Florian, B., Menot, L., **Bonifácio, P.**, Zeppilli, D., Bermell, S., Ybert, S. Rapport annuel sur les activités menées par l'Ifremer dans le cadre du contrat d'exploration des nodules polymétalliques conclu, au nom de la France, avec l'Autorité Internationale des Fonds Marins (AIFM). Période du 1er janvier au 31 décembre 2018. REM/2019-001
- 2017 Besson, F., Menot, L., Alix, A., **Bonifacio, P.**, Ybert, S. Rapport annuel sur les activités menées par l'Ifremer dans le cadre du contrat d'exploration des nodules polymétalliques conclu, au nom de la France, avec l'Autorité Internationale des Fonds Marins (AIFM) - Période du 1er janvier au 31 décembre 2016. REM/2017-007.
- 2014 De Montaudouin, X., Cast, C. S., **Bonifácio, P.**, Lavesque, N., Gouillieux, B. Rechargement et restauration des plages du Pyla sur Mer : impact sur les peuplements benthiques (année 11). Report for the Syndicat Intercommunal du Bassin d'Arcachon

PARTICIPATION IN PROJECTS

- 2015-2019 “Managing Impacts of Deep-sea Resource exploitation – MIDAS”, European Framework at Ifremer. Supervised by Lénaïck MENOT.
- 2015-2019 “JPI Healthy and Productive Seas and Oceans – JPI Oceans” through Ecological aspects of deep-sea mining, European Framework at Ifremer. Supervised by Lénaïck MENOT.

- 2011-2014 "Biological indicators of marine environment - IBIS" in Benthic Ecogeochemistry Laboratory (LECOB) at Observatoire Océanologique de Banyuls-sur-Mer, France. Supervised by Céline LABRUNE and Antoine GREMARE.
- 2011-2014 "Biodiversity platform" in Oceanic and Continental Environments and Paleo-environments Laboratory (EPOC-UMR 5805) at University of Bordeaux, France. Supervised by Guy BACHELET.
- 2012-2014 "The effect of biological diversity on organic matter remineralization at the water/sediment interface in the Bay of Biscay - BIOMIN-3" in Oceanic and Continental Environments and Paleo-environments Laboratory (EPOC-UMR 5805) at University of Bordeaux, France. Supervised by Antoine GRÉMARE and Bruno DEFLANDRE.
- 2007-2011 "Identification of Polychaeta fauna in surveys of monitoring of benthic macrofauna along north-eastern and south-eastern coast of Brazil" (freelance). Supervised by André ESTEVES.
- 2009-2011 "Taxonomy of Demospongiae (Porifera) from Potiguar Basin" in Laboratory of Porifera at Federal University of Pernambuco, Brazil. Supervised by Ulisses PINHEIRO.