

# JÉRÉMY T. CARLOT

## Postdoctoral Fellow in marine functional diversity

Phone number : +33 659 915 659 or +34 640 627 439 E-mail : [jay.crlt02@gmail.com](mailto:jay.crlt02@gmail.com)

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### **PROFILE**

I was born on the French west coast. Since my childhood, I have dedicated a great place in my heart to the ocean. As both a swimmer and a beach lover, I used to spend every free time either in a swimming pool to keep training or on the beach to go surfing, observing waves rolling, or meeting littoral species. Enjoying traveling, I've visited reef islands ecosystems during my bachelor and sadly found how these ecosystems are vulnerable to climate change. In this context, I decided to start a Ph.D. on coastal protection in French Polynesia. I focus now on benthic functionality and benthic communities. My works involve a combination of fieldwork, experiments, and advanced statistical modelling across local and large spatial scales.

### **PROFESSIONAL EXPERIENCE**

- 2022. Research Fellow. Marine Functional diversity in the face of the climate change at Laboratoire d'Océanographie de Villefranche (LOV) & Centro Marine Ecological Data Analysis and Synthesis (MEDAS), France & Italy
- 2021. Research Fellow. Spatio-temporal variability of coral reefs at the global scale: causalities, idiosyncrasies and implications for ecological indicators at Fondation pour la Recherche sur la Biodiversité (FRB), France
- 2017. Marine litter quantification and water quality Investigator at Surfrider Foundation Europe (SFE), France
- 2014. Coastal warden at Conservatoire de l'Espace Littoral et des Rivages Lacustres (CELRL), France

### **EDUCATION**

- 2021. Ph.D. on coral reefs accretion, sea-level rise and waves energy in the face of global changes at Centre de Recherches Insulaires et Observatoire de l'Environnement (CRIOBE), French Polynesia and France
- 2016. MSc in Biodiversity, Management and Environment on Coral Reefs with *great honours*, rank: 6/17  
Ecole Pratique des Hautes Etudes, Paris, France  
Main subjects: Coral reef biodiversity, Biodiversity of evolution, fishery & coral reef management
- 2015. MSc in Ecosystem Approach in Fisheries with *great honours*, rank : 5/23  
Ecole Nationale Supérieure d'Agrocampus-Ouest (*top school*), Rennes, France  
Main subjects: Marine biology, Fisheries management, Bayesian statistics

### **SCHOLARSHIPS**

- Study of the fish distribution in French Polynesia - Société Française d'Ichtyologie scholarship  
<http://sfi-cybium.fr/fr/sfi-infos-n°-78-79-juin-septembre-2016> – Marseille, France - May 26<sup>th</sup> and 27<sup>th</sup>, 2016  
Grant: 500€

### **SPECIALIZED SKILLS**

- Fieldwork and Laboratory
  - Coral growth measures by staining (*in situ*), by alkalinity anomaly method (*ex situ*)
  - Benthic complexity definition (chain-tape method and photogrammetry)
  - Coral underwater identification (genus level for coral, family level for reef fishes)
  - Coral metabolism incubation experiments (photosynthesis, calcification, respiration)
  - Reef fish capture thanks to clove oil technics
- Statistics (R software)
  - Bayesian, frequentist and descriptive statistics
  - Huge database management, homogenization and use of GitHub and GitLab for better reproducibility
  - Advanced knowledge in modelling (General Linear Model, General Additive Models, Mixt Models) and multivariate analysis (PCA, CA, PCoA, RDA, PGA, NMDS)

- Cartography (ArcGIS & QGIS softwares)  
- Spatial analysis
- Image analysis (Agisoft Photoscan and ImageJ softwares)  
- Photogrammetry (e.g., Transect or species)  
- Measures of precision (i.e., length, volume and surface definition)
- Languages  
- French: mother tongue  
- English: Fluent speaking, reading, and writing.  
- Spanish: Fluent speaking, reading, and writing.
- Diving and driving diplomas  
- Diver Class 1B (French working diploma, revised in 2022), N3 FFESSM (> 600 accounted dives in total)  
- Driving and Boat Licenses.

## **TEACHING AND SUPERVISING**

- University Lecturer of 5 courses EPHE (Coral Reefs)
  - Coral growth and Coastal protection in Corals Reefs (4 hours) MSc class (2020 & 2021)
  - Diversity-Habitat Relationship in Corals Reefs (8 hours) MSc class (2019)
  - Functional ecology in Corals Reefs (4 hours) MSc class (2019 & 2021)
  - Fish distribution in French Polynesia (MOOC) MSc class (2016-2023)
  - Coastal protection and reef functioning in the face of global change (MOOC) MSc class (2016-2023)
- Supervision of 4 students:
  - Hmeniko Tourancheau (MSc. Student) 2019
  - Martin Alessandrini (MSc. Student) 2019
  - Cyril Hauteceur (MSc. Student) 2021
  - Torché Romane (MSc. Student) 2022

## **INVITED TALKS**

- Coastal protection: How to define scenarios of coastal protection for a reef island  
Instituto Español Océanográfico (IEO) de los Baleares (Palma, Spain) – January 2020
- Little by little, we are going far: coral carbonate production from juveniles assists coral reef recovery  
International Coral Reef Symposium (ICRS) (Bremen, Germany) – July 2021
- Coral structural complexity loss highly threatens the coastline  
International Coral Reef Symposium (ICRS) (Bremen, Germany) – July 2022
- Benthic Functioning in the face of global changes  
Centro Marine Ecological Data Analysis and Synthesis (MEDAS) (Ischia, Italy) – October 2022  
Centre de Recherches Insulaires et Observatoire de l'Environnement (CRIOBE) (Perpignan, France) – November 2022

## **REVIEWING CONTRIBUTION**

Global Change Biology (1), Functional Ecology (1), Coral Reefs (5), Scientific Reports (1), Marine Ecology Progress Series (2), Ecosystems (2), Marine Biology (3), Journal of Experimental Marine Biology and Ecology (1), Hydrobiologia (1)

## **PUBLICATIONS**

### **Peer-reviewed articles**

12. Cornwall, C. E., **Carlot, J.**, Branson, O., Courtney, T. A., Harvey, B. P., Perry, C. T., Andersson, A. J., Diaz-Pulido, G., Johnson, M. D., Kennedy, E., Krieger, E. C., Mallela, J., McCoy, S. J., Nugues, M. M., Quinter, E., Ross, C. L., Ryan, E., Saderne, V., Comeau, S. (2023) Increasing importance of crustose coralline algae

to coral reef carbonate production under ongoing climate change. *Communications Earth & Environment*. <https://doi.org/10.21203/rs.3.rs-2327274/v1>

11. Jouval, F., Adjeroud, M., Bigot, L., Bureau, S., Chabanet, P., Obura, D., Parravicini, V., Guilhaumon, F., Brandl, S. J., **Carlot, J.**, Penin, L. (2023) Recovery potential of coral reefs in the South-Western Indian Ocean. *Ecological Indicators*. <https://doi.org/10.1016/j.ecolind.2023.109952>
10. **Carlot, J.**, Vousdoukas, M., Karambas, T., Rovere, A., Lenihan, H. S., Kayal, M., Adjeroud, M., Hedouin, L., Parravicini V. (2023) Coral reef structural complexity loss exposes coastlines to waves. *Scientific Reports*. <https://doi.org/10.1038/s41598-023-28945-x>
9. Pérez-Rosales, G., Hernández-Agreda A., Bongaerts, P., Rouzé, H., Pichon, M., **Carlot, J.**, Torda, G., UTP consortium, Parravicini, V., Hédouin, L. (2022) Mesophotic depths hide high coral cover communities in French Polynesia. *Science of the Total Environment*. <http://dx.doi.org/10.1016/j.scitotenv.2022.157049>
8. Pérez-Rosales, G., Pichon, M., Rouzé, H., Villeger, S., Torda, G., Bongaerts, P., **Carlot J.**, UTP Consortium, Parravicini, V., Hédouin, L. (2022) Mesophotic coral ecosystems of French Polynesia are hotspots of alpha and beta generic diversity for scleractinian assemblages. *Diversity and Distributions*. <https://doi.org/10.1111/ddi.13549>
7. **Carlot, J.**, Rouzé, H., Barneche, D., Merciere, A., Espiau, B., Cardini, U., Brandl, S. J., Casey, J. M., Pérez-Rosales, G., Adjeroud, M., Hédouin, L., Parravicini, V. (2022) Scaling up calcification, respiration, and photosynthesis rates of six prominent coral taxa. *Ecology & Evolution*. <https://doi.org/10.1002/ece3.8613>
6. **Carlot, J.**, Kayal, M., Brandl, S. J., Casey, J. M., Lenihan, H. S., Adjeroud, M., Cardini, U., Merciere, A., Barneche, D., Rovere, A., Hedouin, L. & Parravicini, V. (2021) Juvenile corals underpin coral reef carbonate production after disturbance. *Global Change Biology*. <https://doi.org/10.1111/gcb.15610>
5. Morat, F., Wicquart, J., Schiettekatte, N., De Sinéty, G., Bienvenu, J., Casey, J., Brandl, S., **Carlot, J.**, Degregori, S., Mercière, A., Fey, P., Galzin, R., Letourneur, Y., Sasal, P., Vii, J. & Parravicini, V. (2020) Individual back-calculated size-at-age based on otoliths from Pacific coral reef fish species. *Scientific data*. <https://doi.org/10.1038/s41597-020-00711-y>
4. Parravicini, V., Casey, J., Schiettekatte, N., Brandl, S., Pozas-Schacre, C., **Carlot, J.**, Edgar, G., Graham, N. A. J., Harmelin-Vivien, M., Kulbicki, M., Strona, G. & Stuart-Smith, R. D. (2020) Delineating reef fish trophic guilds with global gut content data synthesis and phylogeny. *Plos Biology*. <https://doi.org/10.1101/2020.03.04.977116>
3. **Carlot, J.**, Rovere, A., Casella, E., Harris, D., Grellet-Munoz, C., Chancerelle, Y., Dormy, E., Hedouin, L., & Parravicini, V. (2020) Community composition predicts photogrammetry-based structural complexity on coral reefs. *Coral Reefs*. <https://doi.org/10.1007/s00338-020-01916-8>
2. Bruge, A., Barreau, C., **Carlot, J.**, Collin, H., Moreno, C., & Maison, P. (2018) Monitoring Litter Inputs from the Adour River (Southwest France) to the Marine Environment. *Journal of Marine Science and Engineering*. <https://doi.org/10.3390/jmse6010024>
1. Siu, G., Bacchet, P., Bernardi, G., Brooks, A. J., **Carlot, J.**, Causse, R., Claudet, J., Clua, E., Delrieu-Trottin, E., Espiau, B., Harmelin-Vivien, M., Keith, P., Lecchini, D., Maddi-Moussa, R., Parravicini, V., Planes, S., Ponsonnet, C., Randall, J. E., Sasal, P., Taquet, M., Williams, J., & Galzin, R. (2017) Shore fishes of French Polynesia. *Cybium*. <https://doi.org/10.26028/cybium/2017-413-003>

#### **Non-Peer-reviewed publications**

1. Étonnants récifs - Les écosystèmes coralliens | Les derniers gardiens de la côte – CNRS Éditions. [EAN: 9782271139092](https://doi.org/10.1017/9782271139092). **Carlot, J.**, Rovere, A., Dormy, E., Biaisque, M., Parravicini, V. Les derniers gardiens de la côte.

#### **Submitted articles**

4. Teixidó, N., **Carlot, J.**, Alliouane, S., Ballesteros, E., Gambi, M. C., Gattuso, J. P., Kroeker, K., Micheli, F., Mirasole, A., Villéger, S., De Vittor, C., Parravicini, V. Functional biodiversity shifts within and across benthic habitats under ocean acidification  
Journal targeted: *Nature Ecology and Evolution*

3. Karkarey, R., Maire, E., Graham, N. A. J., Parravicini, V., Brandl, S. J., **Carlot, J.**, Keith, S. Community asynchrony stabilizes mesopredatory coral reef fish abundance in the face of global change  
Journal targeted: Ecology Letters
2. Brandl, S. J., **Carlot, J.**, Graham, N. A. J., Stuart-Smith R. D., Donovan, M. K., Keith, S. A., Edgar, G. J., Wicquart, J., Guilhaumon, F., Bigot, L., Job, S., Maréchal, J. P., Wickel J., Wilson S., Karkarey R., Arthur, R., Baird, A., Hoey A. S., Arias-Gonzalez, J. E., Mouillot, D., Adjeroud, M., Parravicini, V. Spatial context-dependency and system-wide state shifts over time characterize global coral reef regimes in the 21st century  
Journal targeted: PNAS
1. **Carlot, J.**, Hautecoeur, C., Perry, C., T., Jorissen, H., Nugues, M., Pérez-Rosales, G., Hedouin, G., Parravicini, V. Mo'orea's reefs might not keep up with sea level rise in the near future.  
Journal targeted: Limnology and Oceanography

## **MAIN COLLABORATORS**

– <b>Valeriano Parravicini,</b>	Professor (CRIOBE, France)	<a href="mailto:valeriano.parravicini@ephe.psl.eu">valeriano.parravicini@ephe.psl.eu</a>
– <b>Núria Teixidó,</b>	Ph.D. (SZN, Italy)	<a href="mailto:nuria.teixido@imev-mer.fr">nuria.teixido@imev-mer.fr</a>
– <b>Mehdi Adjeroud,</b>	Professor (IRD, France)	<a href="mailto:mehdi.adjeroud@ird.fr">mehdi.adjeroud@ird.fr</a>
– <b>Simon J. Brandl,</b>	Assoc. Professor (Austin, Texas)	<a href="mailto:simon.brandl@austin.utexas.edu">simon.brandl@austin.utexas.edu</a>
– <b>Jordan M. Casey,</b>	Assoc. Professor (Austin, Texas)	<a href="mailto:jordan.casey@austin.utexas.edu">jordan.casey@austin.utexas.edu</a>
– <b>Diego R. Barneche,</b>	Ph.D. (AIMS, Australia)	<a href="mailto:d.barneche@aims.gov.au">d.barneche@aims.gov.au</a>
– <b>Alessio Rovere,</b>	Professor (MARUM, Germany)	<a href="mailto:arovere@marum.de">arovere@marum.de</a>
– <b>Emmanuel Dormy,</b>	Professor (ENS, France)	<a href="mailto:emmanuel.dormy@ens.fr">emmanuel.dormy@ens.fr</a>
– <b>Ulisse Cardini,</b>	Ph.D. (SZN, Italy)	<a href="mailto:ulisse.cardini@szn.it">ulisse.cardini@szn.it</a>
– <b>Hunter S. Lenihan,</b>	Professor (UCSB, California)	<a href="mailto:hlenihan@ucsb.edu">hlenihan@ucsb.edu</a>
– <b>Mohsen Kayal,</b>	Assoc. Professor (IRD, Noumea)	<a href="mailto:mohsen.kayal@ird.fr">mohsen.kayal@ird.fr</a>
– <b>Laetitia Hédouin,</b>	Ph.D. (CRIOBE, French Polynesia)	<a href="mailto:laetitia.hedouin@criobe.pf">laetitia.hedouin@criobe.pf</a>