JÉRÉMY T. CARLOT

Postdoctoral Fellow in marine functional diversity

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PROFILE

Born on the French west coast, my childhood connection to the ocean fueled my dedication to marine environments. During my bachelor's degree, I had the opportunity to visit reef island ecosystems, where I sadly witnessed their vulnerability to climate change. In this context, I decided to pursue a Ph.D. on coastal protection in French Polynesia, focusing on benthic functionality and communities. My work involves a combination of fieldwork, experiments, and advanced statistical modelling across local and large spatial scales. In addition to my research pursuits, I possess a profound affection for data analysis and visualization, finding immense satisfaction in transforming complex datasets into impactful visual representations.

PROFESSIONAL EXPERIENCE

2022. **Research Fellow** in Marine Functional diversity in the face of global changes at the Laboratoire d'Océanographie de Villefranche (LOV) & the Marine Ecological Data Analysis and Synthesis (MEDAS) Center, France & Italy – CURRENT POSITION

2021. **Research Fellow** in 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. **Investigator** in Marine litter quantification and water quality 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**
Paris Sciences et Lettres (PSL) University hosted at the 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

ADDITIONAL TRAINING

2024. Functional trait diversity: calculating and interpreting a key component of biodiversity (16 hours).
Transmitting Science, Remote.

2022. Biodiversity knowledge synthesis: an introduction to meta-analyses and systematic reviews (35 hours).
Centre for Biodiversity Synthesis and Analysis (CESAB), Montpellier, France.

SCHOLARSHIPS, GRANTS & AWARDS

- European Marine Biological Resource Centre, Italy (EMBRC-IT) Grant (XXXX€) – Excellent Research Project Proposal 30720 - Synergies of Benthic Communities to Ocean Acidification - May 7th, 2024
https://embrc.it/en/embrc-it-launches-a-call-for-funded-transnational-access/
- Institut de Ciènces del Mar Award (1000€) – Top 5 highest-quality Expressions of Interests
Training to write a MSCA proposal & UN Ocean Decade - Barcelone, Spain - April 8th to 12th, 2024
https://www.icm.csic.es/calls/postdoctoral-fellowships-ocean-sciences-2024
- Societé Française d'Ichtyologie scholarship (500€) – Top 5 best student's abstract
Study of the fish distribution in French Polynesia - Marseille, France - May 26th and 27th, 2016
http://sfi-cybium.fr/fr/sfi-infos-n°-78-79-juin-septembre-2016

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)
  - Benthic metabolism incubation experiments (photosynthesis, calcification, respiration, nutrient cycling)
  - Reef fish capture using 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, Mixed Models) and multivariate analysis (NMDS, PCA, CA, PCoA, RDA, GPA)
- Cartography (ArcGIS & QGIS softwares)
  - Spatial analysis (*e.g.*, buffer, intersection, union)
  - Cumulative impacts
- Image analysis (Agisoft Metashape 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.
  - Catalan: Basic understanding
  - Italian: Basic understanding
- Diving and driving diplomas
  - Diver Class 1B (French working diploma, revised in 2022), N3 FFESSM (> 850 accounted dives in total)
  - Driving and Boating Licenses.

LECTURES (36 HOURS)

- *University Lecturer of 4 courses on Reproducible Science & Statistics (CNRS/CESAB)*
  - The use of Bayesian statistics in ecology (1 hour) — Lab on-demand (2024)
  - How to do reproducible science? The GitHub endeavour (4 hours) — Lab on-demand (2023)
  - A fully reproducible workflow for meta-analyses in R (4 hours) — Lab on-demand (2023)
  - Preliminary results from a meta-analysis using natural analogs (1 hour) — CESAB Formation (2023)
- *University Lecturer of 5 courses on Coral Reefs (EPHE)*
  - Coastal protection and reef functioning (MOOC) — MSc class (2021-2024)
  - Functional ecology in Corals Reefs (4 hours) — MSc class (2020-2021)
  - 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)
  - Fish distribution in French Polynesia (MOOC) — MSc class (2016-2024)

SUPERVISION (5 STUDENTS)

- MSc. Students (5 students)

2024. Hernandez Ramirez Karla Abril. *Understanding ocean acidification effects on coastal marine ecosystems.*

2023. Torchy Romane. *Benthic functioning in the face of global change, a meta-analysis.*

2021. Cyril Hautecoeur. *Lack of vertical accretion capacity to keep up with future sea level rise.*

2019. Martin Alessandrini & Hmeniko Tourancheau. *Study of the growth of 3 coral species (Acropora hyacinthus, Pocillopora verrucosa and Porites lutea) in a context of climate change.*

CONTRIBUTED TALKS (10 CONTRIBUTIONS)

- **Carlot., J.** et al. *Species trait impairment in the Mediterranean Sea following mortality events*
  European Coral Reef Symposium (ECRS) (Naples, Italy) – July 2024
- **Carlot., J.** et al. *Shallow Temperate Reefs introduction* ✱
  European Coral Reef Symposium (ECRS) (Naples, Italy) – July 2024
- Teixido., N. et al. *Coral populations naturally occur in high pCO_2 environments on the coast of Ischia*
  European Coral Reef Symposium (ECRS) (Naples, Italy) – July 2024
- Comeau., S. et al. *Crustose coralline algae contribution to coral reef carbonate production*
  European Coral Reef Symposium (ECRS) (Naples, Italy) – July 2024
- Ponti, M. et al. *T-MEDNet: a collaborative network to track mass mortality events in the Mediterranean Sea*
  8th European Conference on Scientific Diving (ECSD8) (Heraklion, Greece) – April 2024
- Teixido., N. et al. *A window to the future: field research at unique CO_2 vents along the coast of Ischia (Italy)*
  8th European Conference on Scientific Diving (ECSD8) (Heraklion, Greece) – April 2024
- Palmisciano., M. et al. *Exploring the mechanisms of emergent community shifts along a CO_2 gradient*
  Western Society of Naturalists Conference (WSNC) (Monterey, California) – November 2023
- Boada., J. et al. *From macrophyte collapses to global environmental change mitigation agents*
  International Temperate Reefs Symposium (ITRS) (Hobart, Tasmania) – July 2023
- **Carlot., J.** et al. *Coral structural complexity loss highly threatens the coastline*
  International Coral Reef Symposium (ICRS) (Bremen, Germany) – July 2022
- **Carlot., J.** et al. *Coral carbonate production from juveniles assists coral reef recovery*
  International Coral Reef Symposium (ICRS) (Bremen, Germany) – July 2021

✱ *Co-chairing the session*

INVITED TALKS (4 PRESENTATIONS)

- *Ecological trait erosion in the Mediterranean Sea due to Mass Mortality Events*
  Laboratoire d'Océanographie de Villefranche sur mer (LOV) (Villefranche sur mer, France) – February 2024
- *Benthic Functioning in the face of global changes*
  Marine Ecological Data Analysis and Synthesis (MEDAS) Center (Ischia, Italy) – October 2022
  Centre de Recherches Insulaires et Observatoire de l'Environnement (CRIOBE) (Perpignan, France) – November 2022
- *Coastal protection: How to define scenarios of coastal protection for a reef island*
  Instituto Español Océanograficó (IEO) de los Baleares (Palma, Spain) – January 2020

REVIEWING CONTRIBUTIONS (25 REVIEWS)

Global Change Biology (2), Communications Earth & Environment (1), Functional Ecology (2), Coral Reefs (5), Scientific Reports (2), PeerJ (1), Marine Ecology Progress Series (2), Egusphere (2), Marine Biology (4), Journal of Experimental Marine Biology and Ecology (1), Hydrobiologia (1), Restoration Ecology (2)

PUBLICATIONS (14 PUBLICATIONS)

Current statistics from Google Scholar page: 330 citations, H-index = 9

1) Peer-reviewed articles (14 publications)

14. Raick, X., Krimou, S., Mery, E., **Carlot, J.**, Carpentier, C., Sowinski, J., Sowinski, L., Minier, L., Roux, N., Maueau, T., Bertucci, F. & Lecchini, D. (2024) Restoring the reef: coral restoration yields rapid impacts on fish assemblages. Estuarine, Coastal and Shelf Science. https://doi.org/10.1016/j.ecss.2024.108734
13. Teixidó, N., **Carlot, J.**, Alliouane, S., Ballesteros, E., Gambi, M C., Gattuso, J. P., Kroeker, K., Micheli, F., Mirasole, A., De Vittor, C., Parravacini, V. & Villéger, S. (2024) Functional changes across marine habitats due to ocean acidification. Global Change Biology. https://doi.org/10.1111/gcb.17105
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) Crustose coralline algae can contribute more than corals to coral reef carbonate production. Communications Earth & Environment. https://doi.org/10.1038/s43247-023-00766-w

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., Pérez-Rosales, G., 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

2) Non-peer-reviewed publications (2 publications)

2. Karkarey, R., Maire, E., Graham, N. A. J., Parravicini, V., Brandl, S. **J., Carlot**, J. & Keith, S. (2023) Community asynchrony stabilizes mesopredatory coral reef fish abundance in the face of global change. Authorea. https://doi.org/10.22541/au.169824820.03836918/v1

1. **Carlot, J.,** Rovere, A., Dormy, E., Biausque, M. & Parravicini, V. (2021) Les derniers gardiens de la côte *in Étonnants récifs*. CNRS Éditions. EAN: 9782271139092.

3) Submitted articles in peer-review process (3 publications)

3. **Carlot, J.,** Galobart, C., Gomez-Gras, D., Santamaria, J., Golo, R., Sini, M., Cebrian, E., Gerovasileiou, V., Ponti, M., Turicchia, E., Comeau, S., Rilov, G., Tamburello, L., Pulido Mantas, T., Cerrano, C., Ledoux, J-B., Gattuso, J-P., Ramirez-Calero, S., Millán Agudo, L., Montefalcone, M., Katsanevakis, S., Garrabou, J. & Teixidó, N. Erosion of trait diversity across the Mediterranean Sea following mortality events

Journal targeted: Nature Ecology and Evolution

2. Pérez-Rosales, G., Rouzé, H., Pichon, M., Bongaerts, P., Bregere, N., **Carlot J.**, UTP Consortium, Parravicini, V. & Hédouin, L. Differential strategies developed by two light-dependent scleractinian corals to extend their vertical range to mesophotic depths
Journal targeted: Coral Reefs

1. 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: Global Ecology and Biogeography

4) Acknowledged in peer-reviewed articles (3 publications)

3. Pernet, F., Dupont, S., Gattuso, J-P., Metian, M., & Gazeau, F. (2024) Cracking the Myth: Bivalve Farming is not a CO_2 Sink. Reviews in Aquaculture. https://doi.org/10.1111/raq.12954

2. Schiettekatte, N. M. D., Brandl S. J., Casey J. M., Graham N. A. J., Barneche, D. R., Burkepile, D. E., Allgeier, J. E., Arias-Gonzaléz, J. E., Edgar, G. J., Ferreira, C. E. L., Floeter, S. R., Friedlander, A. M., Green, A. L., Kulbicki, M., Letourneur, Y., Luiz, O. J., Mercière, A., Morat, F., Munsterman, K. S., Rezende, E. L., Rodríguez-Zaragoza, F. A., Stuart-Smith, R. D., Vigliola, L., Villéger, S. & Parravicini V. (2022) Biological trade-offs underpin coral reef ecosystem functioning. Nature Ecology and Evolution. https://doi.org/10.1038/s41559-022-01710-5

1. Picone, F., Buonocore, E., Claudet, Chemello, J. R., Russo G. F. & Franzes, P. P (2020) Marine protected areas overall success evaluation (MOSE): A novel integrated framework for assessing management performance and social-ecological benefits of MPAs. Ocean & Coastal Management. https://doi.org/10.1016/j.ocecoaman.2020.105370

MAIN COLLABORATORS

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