UNIVERSIDAD DE GRANADA

Departamento de Ecología

Ecología Funcional (RNM 367)

Personal

- Responsable del grupo:
  - Presentación Carrillo Lechuga
- Miembros:
  - Manuel Villar Argaiz
  - Juan Manuel Medina Sánchez
  - Carmen Rojo García Morato
  - María Antonia Rodrigo Alacreu
  - Irene Dorado García
  - Walter Eduardo Helbling
  - Virginia Estela Villafañe
  - Marco Jabalera Cabrerizo
  - Juan Manuel González Olalla
  - María Vila Duplá

Líneas de investigación

El Grupo Ecología Funcional RNM 367 del Plan Andaluz de Investigación centra su actividad en el estudio a largo plazo de los lagos de Alta montaña de Sierra Nevada por su carácter de sensores de cambio climático. Una señal de identidad de este grupo es la realización de estudios experimentales in situ utilizando mesocosmos, donde se evalúan sobre escalas temporales media-larga, los efectos interactivos de múltiples factores de estrés (incremento de temperatura , CO2, radiación ultravioleta, entradas atmosférica de P, aerosoles) sobre los ciclos biogeoquímicos (C,N y P) y la diversidad de ecosistemas acuáticos marinos y continentales vulnerables al cambio global. La relación existente entre las respuestas a nivel molecular (ADN, ARN, Enzimática) estructural (composición taxonómica, abundancia de especies, biomasa y composición elemental (C:N:P) de distintos grupos tróficos y las respuestas a nivel funcional (producción, respiración, productividad, tasa de crecimiento) son las principales perspectivas de análisis seguidas por los miembros de este grupo.

Proyectos de investigación

- **Eficiencia de la desnitrificación en la eliminación de especies reactivas de nitrógeno en ecosistemas acuáticos de montaña. Código: A-RNM-237-UGR18**
  - Entidad financiadora: Programa Operativo FEDER Andalucía 2014-2020
  - Investigador Principal: Juan Manuel Medina Sánchez (UGR)
  - Duración: 01/01/2020-31/12/2021
  - Financiación recibida: 14.900 €
- **74 Oasis glaciares de alta montaña en Sierra Nevada: una campaña de ciencia ciudadana por todo lo alto. Código: FCT-18-13095**
  - Entidad financiadora: Fundación Española para la Ciencia y la Tecnología (FECYT)
  - Investigador Principal: Manuel Villar Argaiz
  - Duración: 01/04/2019-30/06/2020
  - Financiación recibida: 10.000 €
- **Impactos del cambio global sobre el metabolismo MIXOtrófico de fitoplancton de ambientes COSTeros (MIXOCOST) Código: CEIJ-008**
  - Entidad financiadora: Ayudas a proyectos de investigación “Jóvenes investigadores CEI-MAR 2018”
  - Investigador Principal: Marco Jabalera Cabrerizo
  - Participantes: Presentación Carrillo y Juan Manuel Medina Sánchez
  - Duración: 01/01/2019-31/03/2020
  - Financiación recibida: 3.750 €
- **Metabolismo de los ecosistemas acuáticos del Sur de la Península Ibérica: Nuevos equilibrios frente al cambio global.**
  - Entidad financiadora: Ministerio de Economía y Competitividad y FEDER (CGL2015-67682-R).
  - Inv.Principal: Presentación Carrillo y Juan Manuel Medina Sánchez.
  - Duración: 2016-2018.
  - Subvención: 142.000 €
- **Estudio integrado de sistemas acuáticos como sensores de procesos de cambio en la cuenca hidrológica**
  - Entidad financiadora: Junta de Andalucía. Convocatoria proyectos de Excelencia (RNM-327)
  - Inv.Principal: M Villar-Argaiz
  - Duración: 2014-2018.
  - Subvención: 108.556,73 €.

Tesis Doctorales defendidas en el seno del grupo

- Doctoranda: María Vila Duplá
  - Título: **Impact of dust aerosols and rising temperature on plankton communities: identifying ecological tipping points in high mountain lakes**
  - Directores: Presentación Carrillo Lechuga y Manuel Villar Argáiz

    - Fecha de lectura: 10 de abril de 2025.
- Doctorando: Juan Manuel González Olalla
    - Título: **Phytoplankton facing global change: ecological and physiological perspectives**
    - Directores: Presentación Carrillo Lechuga y Juan Manuel Medina Sánchez
    - Fecha de lectura: 26 de noviembre de 2019.
    - Calificación: Sobresaliente Cum Laude por unanimidad. Mención de Doctorado Internacional.
- Doctorando: Marco Jabalera Cabrerizo
    - Título: **Non-additive effects of multiple global-change drivers on aquatic ecosystems of both Hemispheres**
    - Directores: Presentación Carrillo Lechuga y Walter Helbling
    - Fecha de lectura: 24 de marzo de 2017.
    - Calificación: Sobresaliente Cum Laude por unanimidad. Mención de Doctorado Internacional.

Publicaciones

- ### 2026
    - Jessica R. Corman, Halvor M. Halvorson, Casey Brucker, Molly S. Costanza-Robinson, J. Harrison Edwards, Eric K. Moody, Chad Petersen, Baker J. Angstman, Qiting Cai, Sarah M. Collins, Elise Ehlers, W. Reilly Farrell, Julia Keon, Amy C. Krist, Alexander L. Lewanski, Shuyi Lin, Amina Mohamed, Natalie Montano, Briante L. Najev, Emma D. Neill, Carly R. Olson, Elizabeth G. Peebles, Kayley Porter, Linnea A. Rock, Ella Roelofs, Sophie Schuele, Andrew D. Suchomel, Steve Thomas, Liza Toll, Benjamin B. Tumolo, Catherine E. Wagner, Binbin Wang, Eli N. Wess, Gültekin Yilmaz, Carla L. Atkinson, Brent J. Bellinger, John S. Brazner, Marco J. Cabrerizo, Andrew Camilleri, Fabien Cremona, Jean-Pierre Descy, Anton Drobotov, Bruce D. Dudley, Claudia Feijoó, Kelley A. Fritz, Darren P. Giling, Justin R. Hanisch, Katie Hossler, Tjaša Kanduč, Zin'ichi Karube, Giri R. Kattel, Lesley B. Knoll, Tyler J. Kohler, John S. Kominoski, Erik Kristensen, Danny C. P. Lau, Matthew J. Lundquist, Stephen E. MacAvoy, Nicolas Martyniuk, Rosana Mazzoni, Rahmat Naddafi, Vinicius Neres-Lima, Rebecca North, Priscila Oliveira-Cunha, Kelly Ortega-Cisneros, Ada Pastor, Cynthia Paszkowski, Richard Piola, Tamar Rachamim, Takashi Sakamaki, Orlando Sarnelle, Ursula M. Scharler, Garry Scrimgeour, Jonathan B. Shurin, Christopher F. Steiner, Kevin M. Theissen, Ross Thompson, Alexander Tolomeev, Inés G. Viana, Verónica D. Villanueva, Anne Watson, Egor Zadereev, Eugenia Zandonà. (2026). **Limno-STOICH: A comprehensive database linking the elemental stoichiometry of organisms with inland aquatic hábitats.** Limnology and Oceanography Letters, 11: e70105. https://doi.org/10.1002/lol2.70105
- ### 2025
    - Marco J. Cabrerizo, Juan Manuel González-Olalla, Juan Manuel Medina-

Sánchez, María Vila-Duplá, Presentación Carrillo. (2025). **Warming Fluctuations Strengthen the Photo-Phagotrophic Coupling in Mixoplanktonic Protists.** Microbial Ecology, 88: 138. https://doi.org/10.1007/s00248-025-02658-2

- Villar-Argaiz, M., E. Bautista Herruzo, J. Larios Martín, A. Cordero, Marco J. Cabrerizo. 2025. **A practical toolkit for wetland management and conservation: Lessons from reclassifying urban land into a protected area**. Ecological Solutions and Evidence 6: e70119. – https://doi.org/10.1002/2688-8319.70119
- Tascón-Peña, O. Cabrerizo, M. J., Pérez-Lorenzo, M., Marañón, E. 2025. **Impact of thermal fluctuations on phytoplankton: an experimental multi-trait analysis across species**. Journal of Plankton Research, 47: fbaf021. 10.1093/plankt/fbaf021.
- Cabrerizo, M.J., Villafañe, V.E., Helbling, E.W., Blum, R., Vizzo, J. I., Gadda, A., Valiñas, M.S. 2025. **Multi-interacting global-change drivers reduce photosynthetic and resource use efficiencies and prompt a microzooplankton-phytoplankton uncoupling in estuarine communities**. Marine Environmental Research, 204: 106952. 10.1016/j.marenvres.2025.106952.
- Nava, V., Dar, J. Y., De Santis, V., Fehlinger, L., Pasqualini, J., Adekolurejo, O. A., Burri, B., Cabrerizo, M. J., Chonova, T., Cour, M., Dory, F., Drost, A. M., Figler, A., Gionchetta, G., Halabowski, D., Harvey, D. R., Manzanares-Vázquez, V., Misteli, B., Mori-Bazzano, L., Moser, V., Rotta, F., Schmid-Paech, B., Touchet, C. M., Gostynska, J. 2025. **Zooming in the plastisphere: the ecological interface for phytoplankton–plastic interactions in aquatic ecosystems**. Biological Reviews, 100: 834-854 . 10.1111/brv.13164.

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- Cabrerizo, M.J., Happe, A., Ahme, A., John, U., Olsson, M., Striebel, M. 2024. **Moderate and extreme warming under a varied resource supply alter the microzooplankton–phytoplankton coupling in North Sea coastal communities**. Limnology and Oceanography, 9: 2991–3002. 10.1002/lno.12718.
- González-Olalla, J.M., Vila-Duplá, M., Cabrerizo, M.J., González-Egea, Parra, G., Medina-Sánchez, J.M., Carrillo, P. 2025. **How does increasing temperature affect the toxicity of bisphenol A on Cryptomonas ovata and its consumer Daphnia magna?**. Ecotoxicology and Environmental Safety, 285: 117090. 10.1016/j.ecoenv.2024.117090.
- Happe, A., Ahme, A., Cabrerizo, M.J., Gerhard, M., John, U., Striebel, M. 2024. **The experimental implications of the rate of temperature change and timing of nutrient availability on growth and stoichiometry of a natural marine phytoplankton community**. Limnology and Oceanography, 69: 1769-1781. 10.1002/lno.12613

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- Helbling, E.W., Villafañe, V.E., Narvarte, M.A., Burgueño, G., Saad, J. F., González, R.A., Cabrerizo, M.J. 2024. **The impact of extreme weather events exceeds those due to global-change drivers on coastal phytoplankton assemblages**. Science of the Total Environment, 918: 170644. 10.1016/j.scitotenv.2024.170644.

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- Castellano-Hinojosa, A., Bedmar, E.J. & Medina-Sánchez, J.M. 2023. **Efficiency of reactive nitrogen removal in a model Mediterranean high-mountain lake and its downwater river ecosystem: Biotic and abiotic controls.** Science of The Total Environment, Volume 858, Part 2, 159901 https://doi.org/10.1016/j.scitotenv.2022.159901. https://www.sciencedirect.com/science/article/pii/S0048969722070012
- Ian Stone, Tony Weinke, Kaylynne Dennis, Nate Dugener, Clarisse Odebrecht, Juanma Medina-Sánchez and Bopi Biddanda (2023). **Saving Biodiversity to Save Our Life-Sustaining Biosphere. A review of the report "Living Planet 2022: Building a Nature-Positive Society", World Wildlife Fund, 2022.** The Inter Change Newsletter. https://www.gvsu.edu/rmsc/interchange/2023-april-stem-classroom-1726.htm

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- Cabrerizo, M.J., Marañón, E., Fernández-González, C., Alonso-Núñez, A., Larsson, H., Aranguren-Gassis, M. 2021. **Temperature fluctuation attenuates the effects of warming in estuarine microbial plankton communities.** Frontiers in Marine Science, 8: 656282. 10.3389/fmars.2021.656282.
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2019

- Cabrerizo, M.J., Medina-Sánchez, J.M., Villar-Argaiz, M., Carrillo, P. 2019. **Interplay between resistance and resilience governs the stability of a freshwater microbial food web under multiple stressors.** Science of the Total Environment, 691: 908-918. 10.1016/j.scitotenv.2019.07.173.
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