



Máster Universitario en Conservación Marina (MCONMARI)

(www.unioviedo.es/mcm/)

15 de Septiembre de 2022.

Por la presente se publica, por parte de la comisión académica, el Calendario para ofertas de prácticas profesionales (PP) y los trabajos fin de máster (TFM) y la elaboración y defensa de los trabajos fin de máster (TFM) en el curso 2022-2023 en el Máster Universitario en Conservación Marina (MCONMARI).

- a) Fechas de recepción de temas propuestos para PP y TFM por parte del coordinador.
19 de Septiembre 2022 - 1ro de Octubre de 2022.
- b) Fechas de publicación de la relación de tutores-temas igual o superior al número de estudiantes con derecho a realizarlos en cada curso académico, incluyendo el número de estudiantes que pueden escoger cada tema de manera individual o grupal.
7 de Octubre 2022
- c) Fechas de solicitud por parte del estudiante del tema y tutor de PP y TFM.
10 de Octubre 2022 -14 de Octubre 2022.
- d) Plazos de asignación del tema y del tutor para la realización de PP y TFM.
17 de Octubre 2022- 19 de Octubre 2022
- e) Fecha límite en la que se notificará al estudiante la adjudicación provisional de PP y TFM.
24 de Octubre 2022
- f) Fechas de presentación y resolución de reclamaciones contra la adjudicación provisional y adjudicación definitiva.
25 de Octubre 2022 – 28 Octubre 2022
- g) Plazos para el depósito de los TFM y el nombramiento de tribunales.
1ra Convocatoria TFM's Junio 2023.
Nombramiento tribunales: 20 de Mayo 2023
Depósito TFM's: 16 de Junio 2023.
Fecha Defensa: 23 de Junio 2023.
2da Convocatoria TFM's Julio 2023.
Nombramiento tribunales: 20 de Mayo 2023.
Depósito TFM's: 14 de Julio 2023.
Fecha Defensa: 21 de Julio 2023.

Prof. Yaisel J. Borrell
Coordinación MCONMARI.
Comisión académica.
15 de Septiembre de 2022.



Master's Degree in Marine Conservation (MCONMARI)

[\(www.unioviedo.es/mcm/\)](http://www.unioviedo.es/mcm/)

September 15, 2022.

On behalf of the academic committee hereby we publish the Calendar for Professional Practices (PP) and Master Thesis (TFM) offer and the elaboration and defense of the Master's thesis in the academic year 2022-2023 in the Master's Degree in Marine Conservation (MCONMARI).

a) Dates for receipt of proposed topics for PP and TFM by the academic coordinator.

September 19, 2022 - October 1, 2022.

b) Dates of publication of the list of tutors-topics equal to or greater than the number of students entitled to carry them out in each academic year, including the number of students who can choose each topic individually or in groups.

October 7, 2022.

c) Dates of application by the student for the topic and tutor of the PP and TFM.

October 10, 2022 - October 14, 2022.

d) Deadlines for the assignment of the topic and tutor for the completion of the PP and TFM.

October 17, 2022 - October 19, 2022.

e) Deadline by which the student will be notified of the provisional assignment of the PP and TFM topics.

October 24, 2022.

f) Dates of presentation and resolution of claims against the provisional and final assignments.

October 25, 2021 - October 28, 2022.

g) Deadlines for the deposit of the TFMs and the appointment of tribunals at the end of the course 22-23.

First Call TFMs June 2023.

Tribunal appointment: May 20, 2023.

TFMs Deposit: June 16, 2023.

Defense Date: June 23, 2023.

2nd Call TFMs July 2023.

Tribunal appointment: May 20, 2023.

TFMs Deposit: July 14, 2023.

Defense Date: July 21, 2023.

Prof. Yaisel J. Borrell
Coordinator MCONMARI.
Academic Commission
September 15, 2022.



MCONMARI

Thesis/Practices TOPIC PROVISIONAL ASSIGNMENTS

20/10/2022

Research lines for External Practices-TFMs.

Course 2022-2023.

(Offer: 29 + 2 topics)

(Ecology-Zoology (17) + Genetics (9) + Education/Pollution (3) + Practices Only (2))

ASSIGNED (9+1)

1. "Do they really know the ocean? Young citizens' perception of marine ecosystems". "¿Conocen realmente el océano? Percepción de los jóvenes ciudadanos sobre los ecosistemas marinos".

A drawing open contest about oceans was done in Salinas (Asturias), Valencia and Madrid. Children were asked to represent the ocean and all drawings were collected for perception analyses. The main aims will be 1) to identify how young citizens perceive the marine environment, 2) to enumerate the main problems/topics they can identify and 3) to describe recommendations for future marine conservation plans based on the compiled information.

Universidad de Oviedo, Biología Funcional, Genética
Master Thesis= 12 ECTS (Experimental, Data analysis).

Plazas: 1.

Supervisors: Laura Miralles (Genética-UNIOVI) / Asociación Cultural Surf Music and Friends

Contact: Laura Miralles <miralleslaura@uniovi.es>

Alumn@: Kevin Reagan

OFERTA DE PRÁCTICAS ECOLOGISTAS EN ACCIÓN

Master en Conservación Marina, Universidad de Oviedo. Curso 22-23

CAN AQUACULTURE BE SUSTAINABLE? A LITERATURE REVIEW

- Tipo: prácticas (6 semanas) remotas_online.
- Nº de plazas: 1 plaza

The purpose of the internship is to collaborate with the marine department of Ecologistas en Acción to define the organization's official position on aquaculture. The student will carry out a review of the scientific literature that will be presented and further discussed within the organization.

The student will be in charge of the tasks detailed above, with the supervisors and the marine team's support. New ideas and activities proposed by the students will be always welcome.



Contacts:

- Eneko Aierbe, co-coordinador del área marina de Ecologistas en Acción. Mail: mar@ecologistasenaccion.org. TLF: 665 70 50 02
- Cecilia del Castillo, co-coordinadora del área marina de Ecologistas en Acción. Mail: pesca@ecologistasenaccion.org. TLF: 625 29 57 96

2. "Genetic tools for the study of resident cetaceans in the Macaronesian islands". "Herramientas genéticas para el estudio de cetáceos residentes en las islas Macaronésicas".

The main aim of this study will be to identify any possible genetic population structure of resident pilot whales or bottlenose dolphins in different archipelagos from the Macaronesian region.

Universidad de Oviedo, Biología Funcional, Genética

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Laura Miralles (Genética -UNIOVI) / Yaisel J. Borrell (Genética-UNIOVI)

Contact: Laura Miralles <miralleslaura@uniovi.es> / "YAISEL JUAN BORRELL PICHES" <borrellyaisel@uniovi.es>

Alumn@: **Margherita Sofia Panzuto**

3. "Fine-scale distribution of relict populations of the knotted wrack *Ascophyllum nodosum* (L.) Le Jolis in Asturian estuaries". "Distribución a escala fina de las poblaciones relictas del alga negra *Ascophyllum nodosum* (L.) Le Jolis en las rías asturianas".

Ascophyllum nodosum is one of the major seaweed resources of many North Atlantic countries, where it is traditionally harvested. Because of their large size and branched structure, they offer shelter from desiccation and provide spatial heterogeneity to a diverse assemblage of consumers and algae which occupy the upper intertidal. In addition, *A. nodosum* individuals may last for as long as 14 years, and its age can be reconstructed by inspection of the number of air bladders of their tallus, providing an extraordinary opportunity for the study of the population dynamics of a marine species. It also adds the intriguing possibility that a register of past growth conditions is recorded in the morphology and elongation of the growth segments.

Until the end of the XXth century, thriving populations of *A. nodosum* were an important element of the landscape in Asturian estuaries. However, these populations have been in a steady decline during the last 20 years, possibly by a combination of climate change and increased herbivory. There are presently a few healthy relict populations and some others where only the holdfasts remain, but the location and extent of those populations and the environmental conditions allowing their presence has not been mapped to date.

This Thesis will focus on the fine-scale mapping of relict *A. nodosum* populations in Asturian estuaries. This information will be supplemented with environmental data at the relevant scales, either measured in situ, from cartographic maps, from high resolution aerial images or from satellite sensors. Habitat modeling methods will be used to relate presence/absence patterns with characteristics of the environment. The thesis requires field sampling and data analysis skills.

Universidad de Oviedo, Biología de Organismos y Sistemas-Ecología.

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: José Luis Acuña (Ecología-UNIOVI) / Fernando Gonzalez (Ecología-UNIOVI).

Contact: José Luis Acuña. <acuna@uniovi.es> / Fernando González <fgtaboda@gmail.com>



Alumn@: Carlos Durán Ruiz.

4. "Arthropod diversity from the Central Cantabrian Sea and the Aviles Canyons System". "Diversidad de los artrópodos del Mar Cantábrico Central y el Sistema de Cañones de Avilés".

Arthropods are one of the most dominant benthic invertebrate groups of marine habitats worldwide. This project aims to characterise the diversity of arthropods from the Central Cantabrian Sea and the Avilés Canyons System. This study represents a wide chance of research to further explore marine biodiversity and conservation/protection of endangered deep-sea habitats.

Universidad de Oviedo. Biología de Organismos y Sistemas. Zoología (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Andrés Arias (Zoología-UNIOVI).

Contact: "ANDRES ARIAS RODRIGUEZ" <ariasandres@uniovi.es>

Alumn@: Álex Gutiérrez Torre

5. "Hull fouling as an introduction vector for non-native species in the Cantabrian Sea". "Las encrustaciones del casco de los barcos como vector de introducción de especies no nativas en el mar Cantábrico".

This project aims to characterise the diversity of the fouling fauna from ports of the Cantabrian Sea, as well as to determine the importance of hull fouling as a vector for distributing marine organisms, including non-native species, in this area. During the practice, ship hulls inventory in the Asturian coast will be developed. Samples will be individualized and visually identified.

Universidad de Oviedo. Biología de Organismos y Sistemas. Zoología (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Andrés Arias (Zoología-UNIOVI) / Deva Menéndez Teleña (Dpto. de Ciencia y Tecnología Náutica, UNIOVI)

Contact: "ANDRES ARIAS RODRIGUEZ" <ariasandres@uniovi.es> / DEVA MENENDEZ TELEÑA menendezdeva@uniovi.es

Alumn@: Adriana Vaquero Llera

6. "DNA effects in Artemia salina as model organism under microplastics exposure". "Efectos en el ADN de Artemia salina como organismo modelo bajo exposición a microplásticos".

The main objective of this work will be to analyse the effects at genomic level of the presence of microplastics at different concentration in the crustacean *A. salina*. During the practice, a mesocosms analysis will be developed in the Bioparc-Aquarium of Gijon with *A. salina* individuals and different microplastics concentration, from 0 (control), until a saturated concentration for this species. The TFM work will include the DNA extraction of the specimens, the quantification and the analyses of DNA degradation to evaluate the microplastics effect at genomic level.



Universidad de Oviedo. Biología Funcional. Genética / BIOPARC Acuario de Gijón (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Alba Ardura (Genética-UNIOVI) / Susana Acle (Bioparc Acuario de Gijón).

Contact: "ALBA ARDURA" <arduraalba@uniovi.es> / "SUSANA ACLE" <susana.acle@acuariodegijon.es>

Alumn@: Jose Enrique Madrid Ros.

7. "Large scale shifts in environmental predictability across the North Atlantic".

"Cambios a gran escala en la previsibilidad ambiental en el Atlántico Norte".

As the energy contained in the troposphere increases due to global warming, extreme climatic events on relatively short time scales will become more frequent, thus blurring predictable environmental seasonality. In this proposal the student will assess long term trends in predictability across the whole North Atlantic for the main environmental variables that determine ecosystem functioning and fisheries' sustainability. Main tasks: Retrieval of large marine environmental spatiotemporal datasets, code writing (mainly in R), statistical analyses, report / manuscript writing.

Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología.

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Nicolas Weidberg (Ecología-UNIOVI) / Juan Bueno (Univ. Vigo).

Contact: Nicolas Weidberg <j_weidberg@hotmail.com>

Alumn@: Álvaro Fernández Moran

8. "Spatial and temporal patterns of stranding of neustonic drifters in the world ocean". "Patrones espaciales y temporales en los varamientos del neuston oceánico".

Oceanic neuston comprises an assemblage of species adapted to the unique set of conditions at the air-sea interface. Most neustonic species are surface drifters with vagrant adult life stages. Little is known about the biology of these species, including their spatial distribution and phenology. This bundle digs into the basic biology of two charismatic members of the oceanic neuston, the Portuguese man'o'war, *Physalia physalis* L., and the by-the-wind sailor, *Velella velella* L. Both species are voracious predators of fish larvae and they represent a direct threat to humans in coastal waters, where contact with their nematocysts can be fatal, especially in the case of *P. physalis*. The objective of this bundle is to first develop a professional practice involving training to map the distribution and phenology of strandings for each species. The second part of the bundle will analyze the resulting database to describe the overall distribution and timing of the strandings in relation to major ocean circulation patterns. The project is both a curiosity driven, basic research study that targets relatively unknown aspects of the biology of neuston, but it also has practical implications for the management of jellyfish in coastal areas.

- Computer work, no field trips.
- Possibility of remote work.
- Possibility of office work at Depto. B.O.S. at Universidad de Oviedo.

Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Fernando González (Grupo de Ecología y Biogeoquímica Marina (EBM) - UniOvi) / José Luis Acuña (Ecología-UNIOVI)



Contact: Fernando González <fgtaboada@gmail.com> / José Luis Acuña <acuna@uniovi.es>

Alumn@: Adam Michael Weber

9. “Seasonality and long-term changes of cyanobacteria in the NE Atlantic”.

“Estacionalidad y cambios a largo plazo de las cianobacterias en el Atlántico NE”.

The student will participate in the analysis of picophytoplankton samples aimed at assessing the seasonal patterns and temporal trends in the abundance and cellular characteristics of marine cyanobacteria (*Prochlorococcus* and *Synechococcus*) collected over 20 years at different sites along the inshore-offshore gradient (2-4300 m depth) of the southern Bay of Biscay.

Centro Oceanográfico de Gijón/Xixón (IEO, CSIC).

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Xosé Anxelu G. Morán (IEO) / José Luis Acuña (Ecología-UNIOVI)

Contact: Xosé Anxelu G. Morán <xelu.moran@ieo.csic.es> / José Luis Acuña. <acuna@uniovi.es>

Alumn@: Xinke Liu



VACANTS

Ecology-Zoology (11)

1. “Winter phytoplankton growth in the Central Cantabrian Sea: the role of the “Navidad” current”. “Crecimiento invernal del fitoplancton en el Mar Cantábrico Central: el papel de la corriente de Navidad”.

Phytoplankton account for approximately half of the total primary production in the planet, supporting many exploited species and having a key biogeochemical role. In temperate and polar areas, winter phytoplankton growth is very limited due to low light surface levels and intense water column mixing. However, in the Central Cantabrian Sea, a slope horizontal current called “Navidad” might interfere with this mixing, generating some stratification that favors phytoplankton growth. The goal of this professional practices and MSc Thesis bundle is investigating whether the “Navidad” current can enhance phytoplankton growth in winter in the Central Cantabrian Sea. To achieve this, a time series of in situ data, satellite information and outputs from biogeochemical models will be analyzed.

Computer work, no field trips. Possibility of remote work.

Universidad de Oviedo, Biología de Organismos y Sistemas-Ecología.

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Ricardo González-Gil (Observatorio Marino de Asturias, OMA) / Carlos Cáceres (Integrative Biology of Marine Organisms - Sorbonne University, Centre National de la Recherche Scientifique, Oceanological Observatory of Banyuls) / Fernando González (Grupo de Ecología y Biogeoquímica Marina (EBM) - UniOvi).

Contact: Ricardo González-Gil <rgonzalezgil@gmail.com> / Carlos Cáceres <carceres@obs-banyuls.fr> / Fernando González <fgtaboada@gmail.com>

Alumn@: ---

2. “Eukaryotic plankton diversity in the Southern Ocean and the Ross Sea”.

“Diversidad de plancton eucariótico en el Océano Austral y el Mar de Ross”.

The student will participate in the analysis of eukaryotic plankton diversity and taxonomic composition in the southwest Pacific sector of the Southern Ocean (SO) and the Ross Sea (45°-72° S). Bioinformatic and statistical tools will be used to analyze 18S rRNA sequences and oceanographic data collected during three recent voyages to investigate phyto- and micro-zooplankton population distribution and spatial patterns in relation to environmental variability in this vast region of the SO.

Centro Oceanográfico de Gijón/Xixón (IEO, CSIC).

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: ANDRES GUTIERREZ RODRIGUEZ (IEO) / Nicolas Weidberg (Ecología-UNIOVI)

Contact: ANDRES GUTIERREZ RODRIGUEZ <andres.gutierrez@ieo.csic.es> / Nicolas Weidberg <j_weidberg@hotmail.com>



Alumn@: ---

3. "Cryptical invasive seaweeds in the ocle (*Gelidium corneum*) collection fields in Asturias". "Algas invasoras crípticas en los campos de recolección del ocle (*Gelidium corneum*) en Asturias".

Invasive algae are those that proliferate in places outside their natural distribution area and that have managed to establish themselves and disperse in the new region, where they are harmful due to the lack of competitors and predators. Their presence has an impact on the ecosystem that must be carefully studied. In some geographical areas, the invasive species becomes dominant, causing a decrease in the abundance of local species and causing the displacement of native algae. Its interaction with the ocle (*Gelidium corneum*) is particularly important, given its economic importance in Asturias. Some of these invasive species may go unnoticed because they are morphologically similar to native species. One of the species is *Codium fragile*. Its presence has been detected for decades. But its distribution linked to the "ocle" has not been studied. The other species is *Rugulopterix okamuræ*. It is a species of great concern on the south-Atlantic coast of the Iberian Peninsula. Throughout 2020, 2021 and 2022, samples of *Codium* sp. and *Dyctiota* sp. have been collected and stored at -18°C, for later determination, either by genetic or morphological methods. This research is part of the ECOSIFOOD Project (MCI-20-PID2019-108481RB-I00).

Centro de Experimentación Pesquera (CEP, Principado de Asturias). Universidad de Oviedo, Biología de Organismos y Sistemas-Ecología

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Paloma Peón. Centro de Experimentación Pesquera (CEP, Principado de Asturias) / José Manuel Rico (Ecología-UNIOVI).

Contact: Paloma Peón paloma.peontorre@asturias.org / José Manuel Rico <ricojm@uniovi.es>

Alumn@: ---

4. "Characterization of the spider crab (*Maja squinado*) fishery in Asturias" "Caracterización de la pesquería de centollo (*Maja squinado*) en Asturias"

There is hope and evidence that small scale fisheries can be steered toward sustainability. However, management of those stocks is frequently hindered by a lack of objective scientific evaluation of the population size. In other words, they are data-poor fisheries. Recently, a range of emerging quantitative approaches allows the estimation of the population size from indirect information on the state of the stock. One such approaches are Generalized Depletion Models (GDM), which can use fish auction sales to approximate catch rate data and stock size. This thesis will apply GDM to the evaluation of a stock of spider crab (*Maja squinado*) in Asturias. The data consist of fish auction weights and prices. The stock evaluation will be used to determine seasonal population dynamics and produce sustainable management targets.

Computer work, no field trips. Possibility of remote work. Possibility of office work at the Centro de Experimentación Pesquera (CEP) to expand time series.

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS

Plazas: 1.



Supervisors: José Luis Acuña (Observatorio Marino de Asturias, OMA; Ecología-UNIOVI) / Ricardo González-Gil (Observatorio Marino de Asturias, OMA).

Contact: José Luis Acuña <acuna@uniovi.es> / Ricardo González-Gil <rgonzalezgil@gmail.com>

Alumn@: ---

5. “Characterization of the Mediterranean snakelocks sea anemone

(*Anemonia sulcata*) fishery in Asturias” “Caracterización de la pesquería de la anémona común (*Anemonia sulcata*) en Asturias”

There is hope and evidence that small scale fisheries can be steered toward sustainability. However, management of those stocks is frequently hindered by a lack of objective scientific evaluation of the population size. In other words, they are data-poor fisheries. Recently, a range of emerging quantitative approaches allows the estimation of the population size from indirect information on the state of the stock. One such approaches are Generalized Depletion Models (GDM), which can use fish auction sales to approximate catch rate data and stock size. This thesis will apply GDM to the evaluation of a stock of Mediterranean snakelocks sea anemone (*Anemonia sulcata*) in Asturias. The data consist of fish auction weights and prices. The stock evaluation will be used to determine seasonal population dynamics and produce sustainable management targets.

Computer work, no field trips. Possibility of remote work. Possibility of office work at the Centro de Experimentación Pesquera (CEP) to expand time series.

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS

Plazas: 1.

Supervisors: José Luis Acuña (Observatorio Marino de Asturias, OMA; Ecología-UNIOVI) / Ricardo González-Gil (Observatorio Marino de Asturias, OMA).

Contact: José Luis Acuña <acuna@uniovi.es> / Ricardo González-Gil <rgonzalezgil@gmail.com>

Alumn@: ---

6. “Characterization of the spiny lobster (*Palinurus elephas*) fishery in

Asturias” “Caracterización de la pesquería de langosta (*Palinurus elephas*) en Asturias”

There is hope and evidence that small scale fisheries can be steered toward sustainability. However, management of those stocks is frequently hindered by a lack of objective scientific evaluation of the population size. In other words, they are data-poor fisheries. Recently, a range of emerging quantitative approaches allows the estimation of the population size from indirect information on the state of the stock. One such approaches are Generalized Depletion Models (GDM), which can use fish auction sales to approximate catch rate data and stock size. This thesis will apply GDM to the evaluation of a stock of spiny lobster (*Palinurus elephas*) in Asturias. The data consist of fish auction weights and prices. The stock evaluation will be used to determine seasonal population dynamics and produce sustainable management targets.

Computer work, no field trips. Possibility of remote work. Possibility of office work at the Centro de Experimentación Pesquera (CEP) to expand time series.

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS

Plazas: 1.



Supervisors: José Luis Acuña (Observatorio Marino de Asturias, OMA; Ecología-UNIOVI) / Ricardo González-Gil (Observatorio Marino de Asturias, OMA).

Contact: José Luis Acuña <acuna@uniovi.es> / Ricardo González-Gil <rgonzalezgil@gmail.com>

Alumn@: ---

7. "Management in the sea anemone *Anemonia viridis* in Asturias; is it sustainable?" "La estrategia de manejo con la anémona de mar *Anemonia viridis* en Asturias; ¿Es sostenible?"

The extraction of the sea anemone or ortiguilla (*Anemonia viridis*, FORSSKÅL 1775) in the Principality of Asturias was regulated for the first time by Resolution of September 5, 2016, of the Ministry of Rural Development and Natural Resources. In it, it was established that the extraction be carried out exclusively on foot in the intertidal zone of the coast, a maximum daily extraction quota of 20 kg per fisherman and an annual closed season between April 1 and May 31. Since then, the CEP has been monitoring the extraction of the anemone based on declarations from shellfish collectors, the result of which indicates a decrease in catches with a negative trend for the resource and the consequent loss of yield. In view of these data, in May of this year the regulations were changed, establishing as business periods from July 1 to September 30, 2022 and from October 1, 2022 to June 30, 2023, reviewable depending on the state of the resource (Resolution of May 20, 2022). Extraction was also limited to 15 kg per collector per day. At the same time, in the spring of this year, a sampling protocol was established in quarries to improve information on the state of the resource. A total of 12 quarries considered representative were selected and the first sampling was carried out in all of them during the months of June/July. A new sampling period was scheduled for autumn 2022, at the start of the closed season, which will presumably take place between October and November. A new sampling was also proposed to be carried out in the months of April/May 2023. The main target in this work is to collect and analyze the data from the experimental samplings to infer the state of resource in Asturias.

Centro de Experimentación Pesquera (CEP, Principado de Asturias).

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Julio Arrontes (Ecología-UNIOVI) / María del Pino Fernández. Centro de Experimentación Pesquera (CEP, Principado de Asturias).

Contact: Julio Arrontes <arrontes@uniovi.es> / María del Pino Fernández <mariadelpino.fernandezrueda@asturias.org>

Alumn@: ---

8. "Determining the impact of socioeconomic development on reef systems in Honduras". "Determinando el impacto del desarrollo socioeconómico en los sistemas de arrecifes en Honduras".

The Honduran Caribbean is characterized by harboring some of the best-preserved reefs in the Mesoamerican reef region. However, these pristine areas are extremely vulnerable to local threats such as overfishing, poor water quality and unsustainable tourism practices. Despite the plethora of threats, the impact of local socioeconomic practices on reef health has yet to be determined. Students will work with 2 pre-existing data sets, an ecological reef health dataset and a socioeconomic dataset comprised by surveys to local fishing communities across the Honduran Caribbean to model the impact of human activities on reef health. Additionally, they will work with local actors to develop qualitative and quantitative research to determine



the capacity of management strategies to reduce their impact. Master theses carried out in this research line will be used to inform and evaluate best management practices in the country.

Specific competences required: Preference will be given to students with knowledge of Spanish. Basic knowledge on fisheries, reef systems and R computing software are desirable.

Location: Caribbean coast of Honduras, Central America. Can be done online if necessary.

Additional costs: Students must cover accommodation, meals, transportation to and from Honduras and health insurance.

Modality: Thesis and practices (30 ECTS). The topic can be reduced to be developed exclusively as practices (18 ECTS).

Coral Reef Alliance / Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Antonella Rivera (Coral Reef Alliance) / José Luis Acuña (UNIOVI-Ecología).

Contact: Antonella Rivera <arivera@coral.org> / José Luis Acuña <acuna@uniovi.es>

Alumn@: ---

9. “Developing a baseline assessment for 3 validated fish spawning aggregation sites in the Honduran Caribbean”. “Desarrollo de una primera evaluación para 3 sitios validados de agregación de desove de peces en el Caribe hondureño”.

Many commercial fish species migrate long distances to spawn at specific times and locations each year. In the Wider Caribbean 37 species are known to form fish spawning aggregations (FSA), including the commercially important and heavily exploited grouper and snapper species. Top predators are key to marine ecosystem health. Species that form FSAs concentrate their whole annual reproductive effort in to a small window a few days after the full moon of specific months of the year. Spawning occurs at the same site each year with several species often using the same area. The Mesoamerican Reef (MAR) is known to be heavily overfished with human population increase and mass-tourism creating an insatiable demand for fish. The periodic nature of FSAs, and the specific locations in which they occur, makes them easily exploited by fishers. Students will tidy 3 different databases and analyze data from 3 FSAs in Honduras. With this information student should determine the main spawning peak for the snapper-grouper complex and assess any possible relationship with temperature. This project aims to contribute to the long-term protection of the sentinel sites where fish spawning has been characterized.

Specific competences required: Preference will be given to students with knowledge of fisheries, reef systems and R computing software. If conducting fieldwork the student must have an advanced diver accreditation and be willing to cover costs for a nitrox diving course. Knowledge of Spanish is desirable.

Location: Caribbean coast of Honduras, Central America. Can be done online if necessary.

Additional costs: Students must cover accommodation, DAN insurance, meals, transportation to and from Honduras and health insurance. Modality: Thesis and practices (30 ECTS). The topic can be reduced to be developed exclusively as practices (18 ECTS).

Coral Reef Alliance / Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Antonella Rivera (Coral Reef Alliance) / José Luis Acuña (UNIOVI-Ecología).

Contact: Antonella Rivera <arivera@coral.org> / José Luis Acuña <acuna@uniovi.es>

Alumn@: ---



10. “Evaluating the impact of tourism on water quality in the Mesoamerican Reef region (MAR)”. “Evaluación del impacto del turismo en la calidad del agua en la región del Arrecife Mesoamericano (MAR)”.

The proliferation of macroalgae is one of the main problems facing the Mesoamerican Reef (MAR). The abundance of macroalgae is attributed to both top-down controls (reduced herbivory from parrotfish and urchins for example) and bottom-up controls, including pollution of coastal waters with excess nutrients from untreated and inadequately treated sewage, as well as agricultural runoff, emanating from massive watersheds and complex oceanography. This escalating problem is also an increasing risk to human health and to the tourism industry itself. The need for better data on the levels and sources of nutrient pollution in the critically endangered MAR ecosystem was clear before the onset of the global pandemic: although there are some water quality (WQ) data and monitoring programs, their distribution is patchy in space and time, with no coordinated sampling. The travel restrictions and local lockdowns implemented within the MAR countries as a result of the COVID-19 outbreak provided an unprecedented “natural experiment” to better understand one major source of nutrient pollution: tourism. The Coral Reef Alliance (CORAL) along with 20 other partners kick-started a coordinated monitoring program across the MAR.

With this data students will organize only databases quantify any changes in water quality, particularly those parameters associated with sewage impacts, alongside the changes in tourism levels as countries opened their economies. The MAR normally hosts over 16 million tourists a year, making tourism the major economic driver in much of the region. Better understanding of – and the ability to conclusively demonstrate – the contribution of tourism to this problem can drive much-needed improvements in wastewater management.

Specific competences required: Preference will be given to students with knowledge of fisheries, reef systems and R computing software. Knowledge of Spanish is desirable.

Location: Online or Caribbean coast of Honduras, Central America.

Additional costs: Students must cover accommodation, meals, transportation to and from Honduras and health insurance.

Modality: Thesis and practices (30 ECTS). The topic can be reduced to be developed exclusively as practices (18 ECTS).

Coral Reef Alliance / Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Antonella Rivera (Coral Reef Alliance) / José Luis Acuña (UNIOVI-Ecología).

Contact: Antonella Rivera <arivera@coral.org> / José Luis Acuña <acuna@uniovi.es>

Alumn@: ---

11. "Population dynamics of the common octopus (*Octopus vulgaris* Cuvier) in Asturias: environmental drivers and density dependence". “Dinámica poblacional del pulpo común (*Octopus vulgaris* Cuvier) en Asturias: factores ambientales y dependencia de la densidad”.

Octopus vulgaris (Cuvier 1797) is a semelparous cephalopod species distributed along temperate and tropical coastal seas worldwide. It is a highly appreciated species that supports profitable fisheries through its range, including a small scale, artisanal fisheries in western Asturias. There is interest in extending the current



management of the fishery, largely based on traditional approaches, to include information about environmental variation toward the implementation and adoption of ecosystem management practices. This bundle offers an opportunity to develop skills on the practical management of marine populations. The professional practice is devoted to gaining familiarity with the biology of the common octopus through the review and the development of a database of environmental drivers relevant for its population dynamics. The second part of the bundle leverages on this database and on two decades of fisheries monitoring data to assess the potential contribution of alternative environmental drivers to develop effective ecosystem based management practices.

- Computer work, no field trips.
- Possibility of remote work.
- Possibility of office work at the Centro de Experimentación Pesquera to expand time series.

Universidad de Oviedo. Biología de Organismos y Sistemas. Ecología (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Fernando González (Grupo de Ecología y Biogeoquímica Marina (EBM) - UniOvi) / José Luis Acuña (Ecología-UNIOVI)

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Alumn@: ---



VACANTS

Genetics (7)

12. “Traceability tools for food control strategies in the commercialization of marine invertebrates from artisanal fisheries in Asturias, Bay of Biscay”.

“Instrumentos de trazabilidad para estrategias de control alimentario en la comercialización de invertebrados marinos procedentes de la pesca artesanal en Asturias, Golfo de Vizcaya”.

The lack of traceability studies of commercial marine species has been reported as a global problem. This is much more pronounced when we talked about commercialized marine invertebrates. Recent global analyzes reveal that, on average, 30% of seafood worldwide is poorly described or mislabeled (Pardo et al. 2016). Selling seafood with misleading labels or descriptions hinders the progress of sustainable, certified fisheries and can allow illegal and unregulated fishing practices to go unnoticed. In this context, the use of DNA provides a vital tool to study the different marine species, discourage the commercialization of those vulnerable or in danger of extinction and prevent the fraud of seafood products (Cuéllar-Pinzón et al. 2016, Lo & Shaw 2018). Main aim here will be to identify case studies of marine invertebrate’s species that can be affected by commercial fraud and to develop molecular techniques for detecting these fraudulent practices. This research is part of the ECOSIFOOD Project (MCI-20-PID2019-108481RB-I00).

Universidad de Oviedo. Biología Funcional. Genética.

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Yaisel J. Borrell (Genética-UNIOVI) / M. Trinidad Pérez (Genética-UNIOVI).

Contact: "YAISEL JUAN BORRELL PICHES" <borrellyaisel@uniovi.es> / "MARIA TRINIDAD PEREZ MENDEZ" <pereztrinidad@uniovi.es>

Alumn@: ----

13. "Genetic diversity in the polychaete *Hediste diversicolor* from the Cantabrian Sea and its possible application as a tool for the genetic improvement of the industrial cultivation of this species". “Diversidad genética en el poliqueto *Hediste diversicolor* en el mar Cantábrico y su posible aplicación como herramienta para la mejora genética del cultivo industrial de esta especie”.

The ragworm *Hediste diversicolor* (O.F. Müller 1776) (Polychaeta, Nereididae) occurs in naturally fragmented habitats, and it is an important member of brackish water ecosystems in which it plays a major role. Its dispersal capabilities are mainly limited by the sedentary life-style of the adults, the brooding behaviour of females, and the lack of pelagic larval stages. Studies carried out on heritable morphological traits and molecular markers showed a high degree of population differentiation at both local and regional spatial scales. At Santander (IEO, Planta del Bocal) many researchers have been working on projects closely linked to the sustainability of aquaculture from the environmental point of view and which revolves around polychaetes, specifically around the *H. diversicolor*, its use as a source of food for aquaculture fish and its role in reducing



the environmental impact of intensive fattening plants. The main target in this project is to preliminary analyze the genetic structuring of samples from this specie from different geographic origins and its possible application in improving the industrial cultivation of the specie. The goal of the practices will be the zootechnics of marine species for their incorporation in multi-trophic culture: culture of low trophic level fish (*Chelon labrosus*) and invertebrates (*Hediste diversicolor*, *Holoturia* spp) to acquire expertise in aquaculture techniques. The internship will be carried out at the CSIC-CN Spanish Institute of Oceanography, El Bocal Marine Culture Plant in Santander and the Master Thesis project will be conducted at the Genetics Area in the Department of Functional Biology (UNIOVI).

Instituto Español de Oceanografía-Santander/Universidad de Oviedo, Biología Funcional, Genética

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Inmaculada Rasines (IEO Santander) / Yaisel J. Borrell (Genética-UNIOVI)

Contact: Inmaculada Rasines inma.rasines@ieo.csic.es / Yaisel J. Borrell <borrellyaisel@uniovi.es>

Alumn@: ---

14. "Biodiversity adhered to ship hulls: molecular tools for cryptic species identification". "Biodiversidad adherida a cascos de barcos: herramientas moleculares para la identificación de especies crípticas".

The main objective of this work will be to identify, at the species level, the different specimens that can end up attached to the hulls of ships in the Asturian coast. Molecular tools will be developed when visual identification is not possible. During the practice, ship hulls inventory in the Asturian coast will be developed. Samples will be individualized and visually identified. The TFM work will include the DNA extraction of the specimens belonging to cryptic species whose visual identification is not possible, PCR and editing of barcodes for subsequent genetic identification through the use of genetic databases.

Universidad de Oviedo. Biología Funcional. Genética.

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Alba Ardura Gutiérrez (Genética-UNIOVI) / Verónica Soto López (Dpto. de Ciencia y Tecnología Náutica, UNIOVI)

Contact: "ALBA ARDURA" <arduraalba@uniovi.es> / "VERONICA SOTO LOPEZ" <sotoveronica@uniovi.es>

Alumn@: ----

15. "Mislabeling of sharks and rays in fishing landings". "Etiquetado erróneo de tiburones y rayas en los desembarques de pesca".

Distribution data of some pelagic, demersal and benthonic species of sharks and rays relies only on fishing landings' information. However, it is common that species were not correctly identified by fishermen, neither on fishing markets. The main aim of this study will be to identify the species that arrives to several Fishing Ports using genetic markers.

Universidad de Oviedo, Biología Funcional, Genética

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Laura Miralles (Genética-UNIOVI) / Yaisel J. Borrell (Genética-UNIOVI)

Contact: Laura Miralles <miralleslaura@uniovi.es> / "YAISEL JUAN BORRELL PICHES" <borrellyaisel@uniovi.es>

Alumn@: ---



16. "Genomics applied to the conservation of economically relevant fish:

Hake". "Genómica aplicada a la conservación de peces económicamente relevantes: Merluza".

Hake (*Merluccius genus*) is of great interest due to its high economic value and is one of the most consumed fish in Europe, especially in Spain. This genus comprises 12 species distributed along the Atlantic and the West and Southern part of the Pacific Ocean. Total amount of hake landings pass the million tonnes per year. Declines in their stocks have reported since the 1990s in several species (Pitcher & Alheit, 1995).

Many of the hake species overlap their range of distribution with at least another congeneric species (e.g. *Merluccius polli*/M. *senegalensis* in northern Africa; M. *bilinearis* and M. *albidus* in North America), being generally caught in mixed-stock fisheries. Due to the overlapping range of distribution and their similar morphology, accidental mislabelling occurs between sympatric species (García-Vázquez et al., 2011; Machado-Schiaffino et al., 2008). Moreover, introgressive hybridization has been detected between closely related species of the *Merluccius* genus (Machado-Schiaffino et al. 2010; Miralles et al. 2014).

Further work is necessary to study in much more detail the population structure of these species in order to provide useful information for the sustainable management and conservation of these stocks. Therefore, the main aim of this study is to develop species-specific and population-specific markers (SNPs) by using a combination of genomics tools (Sanger sequencing and ddRAD-seq). Working with several thousand markers will allow not only to identify species or populations but also to better infer key demographic parameters (e.g. connectivity, effective population sizes) that are crucial for the conservation of these species.

Universidad de Oviedo, Biología Funcional, Genética

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Gonzalo Machado-Schiaffino (Genética-UNIOVI)

Contact: Gonzalo Machado-Schiaffino <machadogonzalo@uniovi.es>

Alumn@: ---

17. "Microbiome modulation as a fish welfare and health marker in aquaculture".

"La modulación del microbioma como marcador del bienestar y la salud de los peces en la acuicultura".

The master thesis will be focused on the use of microbiome analysis as a potential fish health and welfare indicators in aquaculture of marine fish. The thesis work includes laboratory work preparing DNA libraries as well as bioinformatic analysis of NGS data, in the NC Spanish Institute of Oceanography - Oceanographic Center of Gijón.

Instituto Español de Oceanografía. CN IEO-CSIC, Centro Oceanográfico de Gijón.

Prof. Practices+ Master Thesis=18 + 12 ECTS (Experimental).

Availability: 1 position

Supervisors: Alma Hernández de Rojas (IEO), M. Trinidad Pérez (Genética-UNIOVI).

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Alumn@: ----



18. "Detection of environmental DNA from marine species based on the use of metallic nanoparticles and isothermal amplification strategies: LAMP and MNAzymes". "Detección de ADN medioambiental de especies marinas basadas en el empleo de nanopartículas metálicas y estrategias de amplificación isotérmicas: LAMP y MNAzymes".

Artisanal fisheries are seriously threatened by socioeconomic factors and by events related to climate change and the overexploitation of fishing resources. In particular, traceability in fisheries is alarmingly poor and on average 30% of seafood products worldwide are poorly described or labelled. Genetics can help solve urgent problems such as the correct definition of stocks and/or forensics and/or fishing traceability. Genomic studies in octopus and barnacles carried out in the Department of Functional Biology of the University of Oviedo, have generated genetic markers of geographic origin, environmental DNA type and barcode for species in exploitation. Therefore, it is necessary to have fast, simple and highly sensitive tools that allow the detection of environmental DNA that can be related to traceability of origin in species of commercial interest such as octopus (*O. vulgaris*) and barnacles (*P. pollicipes*). For this, it is proposed to develop and apply new biotechnological methodologies that allow rapid detection, quantification and characterization of marine species in exploitation or in serious conservation problems. The student will gain experience in the optimization of experimental parameters related to the amplification strategies used such as Loop Mediated Isothermal Amplification (LAMP) and Multicomponent Nucleic Acid Enzymes (MNAzymes).

Universidad de Oviedo. Biología Funcional. Genética / Analytical and Bioanalytical Spectrometry Group (GEAB) of the Department of Physical and Analytical Chemistry of the Oviedo University (18 + 12 ECTS. Experimental).

Plazas: 1.

Tutores: Yaisel J. Borrell (Genética-UNIOVI) / María Teresa Fernández Fernández-Argüelles (GEAB-UNIOVI).

Contact: "YAISEL J. BORRELL" <borrellyaisel@uniovi.es> / "María Teresa Fernández Fernández-Argüelles" <fernandezteresa@uniovi.es>

Alumn@:



VACANTS

Education and Pollution (2)

19. “Anisakis: genetic & educational tools for its detection and control”. “Anisakis: herramientas genéticas y educativas para su detección y control”.

Food safety is currently one of the main demands of consumers, supported by national and international legislation. Knowledge of the state of the fish we consume is therefore essential, both for stakeholders and citizens. The tools based on DNA and metabarcoding are presented as an ideal tool for the unequivocal determination of identity of the fish that reaches our tables (Hebert et al., 2003). This method eliminates the need for individualization, which is not always easy, especially in parasite communities. In addition to the difficulty in taxonomic identification, these parasites can go unnoticed in a latent state at low densities, and yet maintain their parasitizing and dispersal capabilities. In these cases, tools based on environmental DNA can be a solution; these have been validated for the detection of different species present in the environment: water, soil, complex food matrices... (Darling & Blum, 2007). In addition to identifying these parasites using the techniques and tools of biology, it is necessary to facilitate consumer education so that they can be sure of the product they consume and the health effects they entail (Bao et al., 2018).

OBJECTIVE 1: Compare the results obtained with previous studies on parasitic communities of fresh fish and observe their evolution over time to generate a database of the different species of parasites found in relation to the species of fish analyzed. Design species-specific genetic markers for the detection and quantification in fishing areas of the parasites identified through environmental DNA and metabarcoding.

OBJECTIVE 2: Design educational instruments to increase consumer knowledge and education on the treatment of fish to avoid anisakiasis. Put these teaching tools into practice in previously selected real schools

Universidad de Oviedo, Biología Funcional, Genética; Educational Sciences

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Alba Ardura (Genética-UNIOVI) / Eduardo Dopico (Education-UNIOVI)

Contact: “Alba Ardura” <arduraalba@uniovi.es> / “Eduardo Dopico” <dopicoeduardo@uniovi.es>

Alumn@:

20. “Marine litter and biosecurity. A case study in Asturias coast”. “Basura marina y bioseguridad. Un estudio de caso en la costa de Asturias”.

The objective of this proposal is to understand the role of floating litter in the dispersal of non-indigenous and nuisance species, focusing on Asturias coast as a case study. The student will develop field, laboratory and computer/desk work, involving field sampling, species identification with the help of DNA, data analysis and scientific writing. The development of a tool to enable citizen science around species rafting on marine litter may be envisaged, in collaboration with local NGO.

Universidad de Oviedo, Biología Funcional, Genética

Prof. Practices + Master Thesis, 18 + 12 = 30 ECTS (Experimental, Laboratory).

Plazas: 1.

Supervisors: Eva García Vázquez (Genética -UNIOVI)



Contact: Eva García Vázquez <egv@uniovi.es>

Alumn@: ---



VACANTS

Professional Practices offers (1) (only 18 ECTs).

1. OFERTA DE PRÁCTICAS ECOLOGISTAS EN ACCIÓN

Master en Conservación Marina, Universidad de Oviedo. Curso 22-23

"SIN MALA ESPINA": A SUSTAINABLE FISH CONSUMPTION GUIDE

- Tipo: prácticas (6 semanas) remotas_online.
- Nº de plazas: 1 plaza

A decade ago, Ecologistas en Acción elaborated a sustainable fish consumption guide. The guide "Sin Mala Espina " (accessible on [pdf here](#)) summarizes the main features of commercial fish species, such as their biology, distribution and the fishing techniques used to catch them. In agreement with the scientific estimates of the status of fish populations, the guide gives recommendations on whether species should be consumed or not, and if they are to be consumed, how to do it more sustainably—for instance, avoiding individuals from certain fishing grounds or being captured with certain harmful gear.

An update of the guide is now required because since 2010 new legislation has been implemented across the European waters such as the Common Fisheries Policy or the Management Plan for demersal species in the Mediterranean. But also, adding somehow how climate change impacts the different species may be worth exploring. Finally, the student might organize an online event to present the guide's update and encourage a debate on sustainable consumption.

The student will be in charge of the tasks detailed above, with the supervisors and the marine team's support. New ideas and activities proposed by the students will be always welcome.

Contacts:

- Eneko Aierbe, co-coordinador del área marina de Ecologistas en Acción. Mail: mar@ecologistasenaccion.org. TLF: 665 70 50 02
- Cecilia del Castillo, co-coordinadora del área marina de Ecologistas en Acción. Mail: pesca@ecologistasenaccion.org. TLF: 625 29 57 96