Accredited Postgraduate Module in Applied Marine Biological Sampling and Data Collection

GMIT School of Science and Strategic Marine Alliance for Research and Training

Number of Places: 20
This module provides the learner with the detailed practical knowledge and skills necessary to design and implement biological sampling and data collection campaigns on marine commercial platforms. The module addresses:

- Applications of, and requirement for applied marine biological sampling and data collection skills
- Sampling and data collection campaign design and planning
- Platforms for marine sampling and data collection
- Discard and bycatch legislative and operational drivers
- Fisheries catch, bycatch and discard ID, sampling and recording
- Marine megafauna ID, recording and surveying methodologies
- Acoustic surveying methodologies
- Plankton ecology and oceanography
- Effects of marine industries on marine fauna and ecosystems
- Data recording, collation, QC, and presentation

Module Outline (5 ECTS at NFQ Postgraduate Level 9)
The module duration is 4 weeks from 29th September to 24th October 2014. Week 1 consists of three days of laboratory practicals in GMIT and four days shiptime divided between the Celtic Voyager and Celtic Mist off Cork and in the Shannon Estuary respectively. Weeks 2 to 4 consist of student centered distance learning concluding in the submission of project cruise reports.

Learning Outcomes- On completion of this Module you will have the knowledge to:
1. Develop and expound rationale for observer programmes and marine biological sampling and data collection.
2. Distinguish and identify retained, bycaught and discarded marine species.
3. Evaluate fishing and other vessels as observation and sampling platforms for seabirds cetaceans and other megafauna.
4. Design, implement and evaluate quantitative biological sampling and data collection campaigns.
5. Demonstrable identification skills of catch and bycatch species in North East Atlantic fisheries.
6. Demonstrable ability to extract, preserve and present aging, toxicological and other tissues from marine bycatch.
7. Demonstrable knowledge of applications and deployments of acoustic data collection instrumentation.
8. Organise, collate and present marine biological data to required governmental and NGO data collection standards.
Course Assessment
Assessment will be based on performance in practical exercises and submission of written assignments by 24\textsuperscript{th} of October 2014.

Award
Successful completion of the module results in an award of 5 ECTS (European Credit Transfer System) at NFQ level 9.

Requirements
Applications are evaluated on the basis of a relevant honours undergraduate degree, MSC/PhD programme, research interest, or significant professional experience. Places will be filled on a first come first serve basis subject to fulfillment of requirements.

Applications and further information
Application forms are available online at: http://www.smartseaschool.com/AMBS or by emailing smart@gmit.ie.

Fees
A course fee of €750 is payable to lifelong learning at GMIT for participation in the module. Payments are due in the first week of the 2014/2015 Academic Year beginning the 1\textsuperscript{st} of September.

Queries
Queries about the module should be addressed to smart@gmit.ie.
Applied Marine Biological Sampling and Data Collection Course
Instructor Biographies

Dr Ian O’Connor  Benthic Ecology and Senior Lecturer at GMIT
Ian O’Connor has organised and led a wide variety of training cruises for undergraduates, postgraduates and staff of state agencies using the national research vessels. He has jointly organised collaborative ship based training with NUIG and with the University of Ghent. He is the founder and team leader of the Marine Biodiversity Research Group in GMIT and an active researcher in rapid assessment techniques for benthic biodiversity and marine megafauna population distribution and enumeration.

Dr O’Connor was also the course co-ordinator for the BSc (Hons) in Applied Freshwater and Marine Biology at GMIT and serves on the Management Committee of the Erasmus Mundus International Joint Doctorate in Marine Ecosystem Health and Conservation, based at the University of Ghent. Dr O’Connor also conducts collaborative research with the Marine Institute, the Marine Biodiversity Research Group, and has successfully delivered on a range of tendered research projects for the Irish National Parks and Wildlife Service.

Dr Simon Berrow: Marine Mammals and Megafauna
Simon Berrow is a lecturer and researcher at GMIT and was instrumental in the founding of the Irish Whale and Dolphin Group (IWDG) in 1990 and in which he serves as Executive Officer. As co-coordinator of the IWDG in 1991 he initiated a cetacean stranding and sighting scheme throughout the island of Ireland in which continues to collect stranding data to the present day.

In 1995 he left Ireland to work on albatrosses, seals and penguins on South Georgia for the British Antarctic Survey. Simon’s research in the Antarctic also encompassed whale surveys for the International Whaling Commission. Since his return to Ireland Simon has been at the forefront of cetacean research and conservation and was instrumental in establishing the Shannon Dolphin and Wildlife foundation and Irish Basking Shark Study Group while maintaining his interest in seabirds.

Simon has over 80 publications in peer-reviewed journals and writes regularly for wildlife magazines. He was (2001-2005) a full member of the Heritage Council which prepares policy advice and encourages respect and research on all aspects of Ireland’s natural and built heritage and recently completed a term on the board of management of the National Biodiversity Data Centre.

Dr Joanne O’Brien: Bioacoustics for Mammals
Dr. Joanne O’Brien is a postdoctoral researcher and lecturer at the Galway Mayo Institute of Technology. She lectures on the Applied Freshwater and Marine Biology Degree, delivering modules in Animal Behaviour (specifically underwater acoustics and cetaceans) as well as Environmental Legislation.

Joanne was work-package leader on the PReCAST project, responsible for developing acoustic monitoring techniques for cetaceans in Irish Atlantic waters. Joanne has carried out both passive and static acoustic monitoring of cetaceans around the Irish coast since 2004. She is one of the most experienced biologists in Ireland in the field of cetacean bioacoustics.
John Boyd: Fisheries Discard and Bycatch Data Collection
John’s background is in fisheries data collection, coordinating fisheries observer campaigns and experimental fishery trials. He has acted as national sampling coordinator for pelagic fisheries and in this capacity has served as data correspondent to a number of ICES and ICCAT stock assessment groups. As a fisheries data collector John has extensive shipboard experience of a diverse range of fisheries ranging from Japanese tuna longliners to all métiers within the Irish Fishing Fleet.

John’s present position is fisheries biologist, module designer and marine scientist with the Strategic Marine Alliance for Research and Training at GMIT. He has delivered ship based training since October 2008 and has been instrumental in the organisation, design and delivery of the highly successful Science@Sea shipboard training courses since their inception. He collaborates with a range of Irish Higher Education Institutes in the provision of technical support and leadership for shipboard training programmes for undergraduate and postgraduate students.

Dr Pauhla McGrane: Biological Oceanography Data Collection and Sampling
Dr Pauhla McGrane has worked at sea since 1990 and has a research background in Biological Oceanography, specifically the ecology and distribution of calcareous nannoplankton in the northeast Atlantic. As part of her research Pauhla participated in and led numerous oceanographic field campaigns across Europe and trans-Atlantic. She has been involved in a number of European Framework Programmes and was assistant workpackage leader on HABIT (Harmful Algal Blooms in Thin Layers), EUROFLEETS I and II and the IOC/SCOR Research Programme GEOHAB (Global Ecology and Oceanography of Harmful Algal Blooms).

She is the National Coordinator of the Strategic Marine Alliance for Research and Training (SMART) and since 2007 has been Chief Scientist and onboard oceanographer on over 80 National and International offshore training programmes. Pauhla serves on the Scientific Advisory Board of the Biological Institute of Helgoland which is a Marine Research and Training centre of excellence of the Alfred Wegener Institute for Polar and Marine Research (AWI).

Dr Róisin Nash: Benthic Ecology Sampling and Data Collection Methods
Róisin is a lecturer and researcher in GMIT. Prior to this she held a senior position in BEC Consultants and was manager of EcoServe environmental consultants for six years. The majority of her work has been in marine environments where she has gained substantial research, fieldwork and consultancy experience over a period of 15 years. Her marine consultancy experience extends to benthic ecology, biotope mapping, marine pollution, marine flora and fauna identification, marine conservation and marine renewable and non-renewable energy resources.

She has carried out over 30 marine surveys around the coast of Ireland collecting data for Environmental Impact Statements and for the production of habitat maps (biotope maps) based on JNCC guidelines for state and private clients alike. She has written and edited baseline surveys, Ecological Impact Assessments (EClAs), Appropriate Assessments (AAs) and subsequent Natura Impact Statements (NIS). Additionally Róisin has designed and delivered benthic components of SMART training surveys since 2010.
Ms Aleksandra Borawska: Seabird Surveying Methods
Aleksandra is a freelance seabird surveyor and marine mammal observer. She has been involved in various marine and land-based surveys and research projects of birds since 2007. These include ringing expeditions to Shiant Islands in Scotland, various bird ringing projects in Ireland, Irish Wetland Bird Survey (iWeBS) and the Bird Atlas census with Birdwatch Ireland, and vessel based seabird surveying off the coast of Ireland during two Cetaceans On The Frontier expeditions, surveying the populations of Ireland’s kingfishers and other river birds and the radio-tracking (together with other methods of data collection) of one of Ireland’s rarest breeding birds: the Twite.

Aleksandra has gained most of her experience in offshore ship-based bird surveys, following ESAS methodology, while working for a UK-based ecological consultancy between 2010 and 2012, where she was involved in Environmental Impact Assessment (EIS) surveys of proposed offshore wind farms. This important research looked at the distributions and densities of bird populations within the study area, the way these areas were used (temporal, weather and spatial patterns), the behavior and interactions between species of birds, mammals, ships and man-made structures. Aleksandra has also visually tracked Sandwich Terns to answer more specific questions about habitat use during the breeding season, using GPS and RIBs. In 2013, she joined the SMART Accredited Postgraduate Module in Applied Marine Biological Sampling and Data Collection to teach the seabird survey elements of the module.

Mr Hugo Boyle: Fishing Vessel Skipper
Hugo’s knowledge of commercial fishing and related industries stems from over thirty years as owner and skipper of the fishing trawler MFV De Linn. His fishing experience encompasses pelagic, demersal and benthic species in waters extending from the Bay of Biscay to the North Sea. In the course of a highly successful career he has witnessed the transformation of Irish commercial fisheries from local enterprises to an international industry supplying global markets.

Hugo is well placed to communicate his insights on the technological revolution that has transformed all aspects of the industry and the associated impacts on target and non target species. Hugo’s fishing experience gives him a profound insight into the mechanisms that drive discarding and marine bycatch, and the measures required for their mitigation and the sustainable exploitation of living marine resources.

Galway-Mayo Institute of Technology is a core partner of the Strategic Marine Alliance for Research and Training