

## **Applied Marine Biological Sampling (AMBS) Module and CPD Course Descriptor and Instructor Biographies**

### **Module Duration**

The module duration is 4 weeks from the 20th of March to the 17th of April 2018 with shipboard training elements taking place from the 20<sup>th</sup> to 23<sup>rd</sup> of March.

**Maximum Number of Places: 12**

### **Module Topics**

This accredited module provides the learner with the detailed practical knowledge and skills necessary to design and implement offshore biological sampling and data collection campaigns. Core topics include:

- Applications and requirement for applied marine biological sampling and data collection skills.
- Sampling and data collection campaign design and planning.
- Fisheries catch, bycatch and discard identification, sampling and recording.
- Visual methods for identifying, recording and surveying Marine Mammals.
- Acoustic methods for detection, identification and surveying Marine Mammals.
- Seabird identification, data collection and surveying methodologies.
- Environmental and Ecological Impacts of Marine Industries.

### **Module Timeline**

Week 1 (19th -23rd March). Week one centres on four days of instruction and practical sessions aboard the RV Celtic Voyager from the 20<sup>th</sup> to 23<sup>rd</sup> of March.

Weeks 2- 4 (26<sup>th</sup> March to the 20<sup>th</sup> of April). These weeks to consist of mentored distance learning concluding in submission of cruise reports for assessment.

### **Module Learning Outcomes**

On completion of the module participants will have the ability to:

1. Develop and expound rationale for observer programmes and marine biological sampling and data collection.
2. Organise fisheries hauls for length and age based sampling of bycatch, discard and retained components of the catch.
3. Operate software for marine mammal detection and monitoring and expound knowledge of their applications.
4. Demonstrate visual surveying methods and ID skills for marine mammals.
5. Demonstrate surveying and data collection methodologies for marine birds.
6. Design and implement offshore biological sampling and data collection campaigns.
7. Collate and deliver marine biological data in standardised formats for EIAs and national and international databases.

### **Module Assessment**

AMBS is a special purpose postgraduate award and assessment is based on the submission of a complete cruise report for the training survey by the end of week four.

### **Module Accreditation**

The accrediting body is Galway-Mayo Institute of Technology. Successful completion of the module is graded at 5 ECTS (European Credit Transfer System) at NFQ (National Framework of Qualifications) postgraduate level 9.

### **Pre-requisites for joining the module**

Applicants should have a primary or postgraduate degree in a marine related science or have significant professional interest in marine data collection.

### **Course Fees**

Module fees are set at €500 and are payable to Lifelong Learning at Galway-Mayo Institute of Technology.

### **Application Forms**

Application forms are available online at:

<https://smartseaschool.wufoo.eu/forms/smart-gmit-ambs-2018/>

## Instructor Biographies

### Dr Simon Berrow

Simon Berrow is a full time lecturer at GMIT and is acting CEO and chief science officer for the Irish Whale and Dolphin Group of which he was founding member in 1990. He is principal investigator on the [Observe-Acoustic Project](#) which aims to “provide robust scientific knowledge with respect to protected species occurrence and ecology along the Irish Atlantic Margin”. He shares this responsibility with Dr Joanne O’Brien in which GMIT is the lead partner in collaboration with the Marine Institute, JASCO Applied Sciences, Sea Mammal Research Unit Ltd. and the Irish Whale and Dolphin Group.

Dr Berrow’s experience extends from Antarctic research with the British Antarctic Survey in South Georgia to undertaking consultancy for government agencies and NGOs, examples of which include inshore surveys for harbour porpoises for the National Parks and Wildlife Services (NPWS) and his membership of the Celtic Sea Herring Management Advisory Committee. Simon is also project officer with the [Shannon Dolphin and Wildlife Trust](#).

### Dr Joanne O’Brien

Dr Joanne O’Brien is a full time lecturer at the Galway Mayo Institute of Technology delivering modules in Animal Behaviour (specifically underwater acoustics and cetaceans) and Environmental Legislation on the Applied Freshwater and Marine Biology Degree. Her doctoral dissertation addressed the inshore distribution and abundance of small cetaceans on the West Coast of Ireland as part of site assessments for special area of conservation status.

Together with Dr Simon Berrow she is principal investigator on the [Observe-Acoustic Project](#) and is Chief Scientist on the Cetaceans on the Frontier series of research surveys on the continental shelf edge with the Irish EEZ. Joanne’s research extends to collaboration with Marshall Day Acoustics Ltd to sharpen resolution of cetacean and biological acoustic signals from background and anthropogenic ocean noise.

She also manages a number of projects such as harbour porpoise SAC monitoring and [ocean noise monitoring](#) and is one the most experienced researchers in Ireland in the field of marine bio-acoustics.

## **Bob Kennedy**

Dr Kennedy is a senior researcher at the [Marine Ecology Laboratory](#) at NUI Galway. His research on benthic ecology is focused on linking macrofaunal community structure and behaviour to bioturbation and ecosystem processes in soft sediments. Since 2005 he has been project manager of the Benthic Habitat Quality in Kinsale Harbour project in Kinsale Harbour which has been running since 1978. [The Kinsale Harbour project](#) is funded by Eli Lilly SA (Irish Branch) and is being carried out by the Department of Zoology at NUI Galway in conjunction with The Martin Ryan Institute. In the present term the project consists of five main work tasks.

- Continuing the benthic survey in Kinsale Harbour and approaches (ongoing since 1978)
- Consolidation and interrogation of the extensive time series, including GIS development
- Investigation of species roles in ecosystem process (biogeochemistry) in soft sediments
- Water quality model development for nutrients and hydrography
- Monitoring of intertidal communities, particularly mussel settlement dynamics

## **Laura Kavanagh**

Laura Kavanagh is a marine ecologist who has extensive experience working on offshore projects worldwide since 2009. She has worked for NGOs, industry, third level institutions and government agencies both as a researcher and consultant. She is a Joint Nature Conservation Committee (JNCC) accredited seabird surveyor and marine mammal observer and is also the administrator for the not for profit company the [Oiled Wildlife Response Network](#).

Laura has been involved in seabird surveys for proposed windfarms in the North Sea and off the Dublin and Wicklow coast, collecting and analysing data on the distribution, abundance and activity of seabirds for Environmental Impact Assessments. She has led a study monitoring the productivity of seabirds breeding at the Cliffs of Moher and determined breeding success in 2017. She is also involved in the National Survey of Breeding Hen Harrier in Ireland and has been a fieldworker for the Birdwatch Ireland Countryside Bird Survey since 2009.

## **John Boyd**

John Boyd is a fisheries biologist and marine scientist with the Strategic Marine Alliance for Research and Training ([SMART](#)). He has been involved in ship based training since 2008 and has been instrumental in the organization, design and delivery of the highly successful Science@Sea shipboard training courses since their inception. He coordinates shipboard training for undergraduate and postgraduate degree programmes at NUI Galway and UCC and also collaborates with partners at the Socio Economic Research Unit at NUI Galway on the EPA project [“Valuing the significant ecosystem services provided by Irish coastal, marine, and estuarine habitats”](#).

His background is in fisheries data collection, coordinating fisheries observer campaigns and conducting experimental fishery trials. He has acted as national sampling coordinator for pelagic fisheries and in this capacity has liaised extensively with NGO’s and government agencies. John has served as data correspondent to a number of ICES and ICCAT on herring, albacore tuna and other small pelagic species and as rapporteur to the Joint European Tuna Tagging Programme.

## Timetables for Celtic Voyager Module Activities

Indicative timetable for day 1 Fisheries, Seabirds and Macroenthos

Vessel Ops	Start	End	Group Green	Group Red	Duration (mins)
Alongside	08:15	08:30	Students Join vessel		15
Alongside	08:30	08:45	On-board Safety Tour		15
Depart & Passage	08:45	09:45	Tool Box Talks		30
Passage	09:45	10:00	Briefing		15
Passage	10:00	10:15	Kit Up		15
			Beam Trawl Tow		
Fisheries Station	10:15	12:15	Fisheries Sampling and Data Collection	Seabirds Data ID and Census Data Collection	120
Passage	12:15	14:45	Lunch		30
Anchor	12:45	13:15	Mini ROV		30
Passage	13:15	15:15	Seabirds Data ID and Census Data Collection	Fisheries Sampling and Data Collection	120
Passage	15:15	15:30	Break		15
Passage	15:30	16:00	Data screening and inputting		30
Passage	16:00	16:30	Presentation of Scenario for Seabird and Fisheries Survey in context of EIA		30
Passage	16:30	17:00	Planning Meeting for Day 2 on the basis of responding to the Scenario		30
Dock	17:00	17:15	Clean Up and Disembark		15

Indicative timetable for day 2 Fisheries, Seabirds and Macrobenthos

Vessel Ops	Start	End	Group Green	Group Red	Duration (mins)
Alongside	08:15	08:30	Students Join vessel		15
Alongside	08:30	09:45	Students divide into teams and formulate sampling plan for EIA scenario		75
Depart & Passage	09:45	10:00	Kit Up		15
Fisheries Station	10:00	12:00	Fisheries Sampling and Data Collection	Seabirds Data ID and Census Data Collection	120
Passage	12:00	12:30	Lunch		30
Anchor	12:30	13:00	Mini ROV (if not done on first day)		30
Passage	13:00	15:00	Seabirds Data ID and Census Data Collection	Fisheries Sampling and Data Collection	120
Passage	15:00	15:15	Break		15
Passage	15:15	16:15	Final Data screening and inputting		60
Passage	16:15	17:00	Data Presentation and Recap		15
Dock	17:00	17:15	Clean Up and Disembark		15

Indicative timetable for day 1 Marine Mammal Components

Vessel Ops	Start	End	Group Green	Group Red	Duration (mins)
Alongside	08:15	08:30	Students Join vessel		15
Alongside	08:30	08:45	Briefing		15
Depart & Passage	08:45	09:45	Acoustic Survey Design (SB)		60
Passage	09:45	10:30	Acoustic Monitoring (JO'B)		45
Passage	10:30	12:15	Distance Sampling		105
Passage	12:15	12:45	Lunch		30
Anchor	12:45	13:15	Distance estimation and trials		30
Passage	13:15	15:00	Distance Sampling		105
Passage	15:00	15:30	Break		30
Passage to Berth	15:30	16:30	Data download		60
Passage to Berth	16:30	17:00	Debrief and Discussion		30
Dock	17:00	17:15	Clean Up and Disembark		15



Indicative timetable for day 2 Marine Mammal Components

Vessel Ops	Start	End	Group Green	Group Red	Duration (mins)
Alongside	08:30	09:00	Students Join vessel		15
Passage	09:00	10:00	Presentations on applications of marine mammal data collection. Recent IWDG and GMIT collaborations including OBSERVE Programme		90
CTD Stn 2- Passage West	10:00	10:15	Break		15
Survey Area (Approaches)	10:15	12:00	Student led data collection practicals with visual methods		75
	<b>12:00</b>	<b>12:45</b>	<b>Lunch</b>		<b>45</b>
Survey Area (Approaches)	12:45	15:15	Student led Cetacean Acoustic Surveying Practical		150
<b>Passage</b>	<b>15:15</b>	<b>16:30</b>	Data Collation and Organisation for Cruise Report		30
<b>Passage</b>	<b>16:30</b>	<b>17:00</b>	Lab Clean-up		30

## Further Information

Queries about Applied Marine Biological Sampling should be addressed to [smart@gmit.ie](mailto:smart@gmit.ie)

## Strategic Marine Alliance for Research and Training

Galway-Mayo Institute of Technology (GMIT) is a core partner of the Strategic Marine Alliance for Research and Training (SMART). SMART consortium members are GMIT, National University of Ireland, Galway (NUI Galway), the Marine Institute and University College Cork (UCC).

## Support and Funding for the Module

Shiptime on the Celtic Voyager for AMBS 2018 is supported by the Marine Institute, and funded under the Marine Research Programme of the Irish Government.

