MARINE LABORATORY DIRECTORS 1898 - 2011

CONTENTS

FOREWORD

Scotland has a long history of marine research. Integral to that history is the Marine Laboratory in Aberdeen. Touching 3 centuries and crossing a millennium, the Marine Laboratory has been delivering for the people of Scotland since 1898. Through its development, transformations and many names, the Marine Laboratory has been led by 8 past Directors. Each one has helped shape and hone the laboratory, ensuring that the ever changing priorities are met by the scientists, engineers and support staff who have worked at the Marine Laboratory. It should not be forgotten that freshwater fisheries was added to the remit with the joining of the Marine Laboratory and the Freshwater Fisheries Laboratory, located on the shores of Loch Faskally, in 1958.

Key to the success of both Laboratories has been the strong leadership provided by the 8 Directors. Each had their particular character, each oversaw major developments and they all worked to ensure that the best possible evidence was available to steer marine and freshwater policy in Scotland.

The influence of both Laboratories goes well beyond the Scotland's borders. The research undertaken by the Marine Laboratory has influenced developments in fisheries, aquaculture, oil and gas, our understanding of marine ecosystems and climate change and how we manage human activities impacting on the marine environment globally. At the same time, the research at the Freshwater Fisheries Laboratory has been of fundamental importance in our understanding of salmonids. Many students and visiting workers have spent time at both Laboratories and have taken with them to their subsequent place of work the skills and knowledge picked up in Scotland.

Continually evolving, the Marine Laboratory and the Freshwater Fisheries Laboratory continue to thrive. However, this is in no small part due to the dedication and leadership shown by the previous Directors whose indidvidal stories have been captured in this booklet.

Professor Colin Moffat
Head of Science
Marine Scotland
01 December 2016

In 2009, Fisheries Research Services, which incorporated both the Marine Laboratory and the Freshwater Fisheries Laboratory, was amalgamated with the Scottish Fisheries Protection Agency and the Marine Directorate of Scottish Government to form Marine Scotland, the Marine Management Organisation for Scotland. At that point the term 'Director' was changed to Head of Science.

Dr. THOMAS WEMYSS FULTON, MB, CM 1st Class Hons (1884 Edinburgh)

MD Gold Medal In Natural History (1887 Edinburgh)

Director from 1898 – 1923

FISHERY BOARD FOR SCOTLAND, BAY OF NIGG, ABERDEEN CIRCA 1908

THE GARLAND

INSIDE THE NIGG BAY FACILITY

Born in Edinburgh in 1855, Thomas Wemyss Fulton attended Edinburgh University Arts and Science Department and then the Faculty of Medicine before going on to work as an assistant to the oceanographer Sir John Murray. It was while working with Sir John that he first learned about marine research through the work of the Challenger Commission before being appointed to the Scottish Fishery Board in January 1888.

10 years later, he became the first Superintendent of the Board's scientific investigations - a position he retained until his retirement in 1923.

In 1899, a year after becoming Superintendent, the Fishery Board opened its new laboratory and hatchery at Nigg Bay. The Board already owned the research vessel *Garland*, which Dr Fulton used in various expeditions. However, because of their expanding research, the Board purchased two additional vessels - the coastal vessel *Enid* and the Mersey Class trawler *Explorer*,

which was converted to a research vessel. They also continued to charter local fishing vessels to assist in their expanding research efforts.

In his time as Superintendent Dr Fulton was the first to try fish marking experiments, specifically tagging plaice, to better understand movement and migration patterns of fish. These types of techniques have been essential for providing population estimates.

He also pioneered the use of drift bottles in 1893 to help demonstrate the relationship between marine currents and fisheries, and studied the problem of mature and undersized fish, the fertility of fish and the maturation of the ovarian egg of teleosteans.

In 1911 he wrote the book "*The Sovereignty of the Sea*", (Blackwood, Edinburgh, 1911). The sub-title "*An Historical Account of the claims of England to the Dominion of the British Seas, and of the Evolution of the Territorial Waters; with special reference to the Rights of Fishing and the Naval Salute*".

Reprinted as recently as 2010 and described by Professor DHN Johnson (expert in international law) as "probably the best history of the law of the sea that has ever been written" Dr Fulton gave an insightful account of fishing rights and the evolution of territorial waters.

TAGGED PLAICE

CLOSE UP OF TAG

DRIFT BOTTLE

Dr. ALEXANDER BOWMAN, CMG, DSc, FRS. DSc (Lond), Hon DSc (Hull), Hon LLD (Aberd)

Director from 1923 – 1933

FISHERIES RESEARCH UNIT AT WOOD STREET

RESEARCH VESSEL, GOLDSEEKER

Alexander Bowman began his working career in his father's business before training to be a teacher in Aberdeen at the Free Church Training College. It was after this that he decided to go to University to study for a degree in Science.

He graduated from the University of Aberdeen with distinction in Zoology, and was awarded the Fullerton Research Scholarship in Natural Science. He left to take up a post at the Fisheries Research Unit as a naturalist in 1904 before he had completed his scholarship.

Dr Bowman was present during the move from Nigg Bay to Wood Street and became Superintendent of the Unit in 1923.

He was a natural fisheries scientist with a clear understanding of commercial trawls and seines and their selective characteristics, as demonstrated in his thesis submitted in 1908 for his DSc. In particular this showed some of his pioneering work on experimental study of fish stocks, notably the otter trawl and its effects on fish.

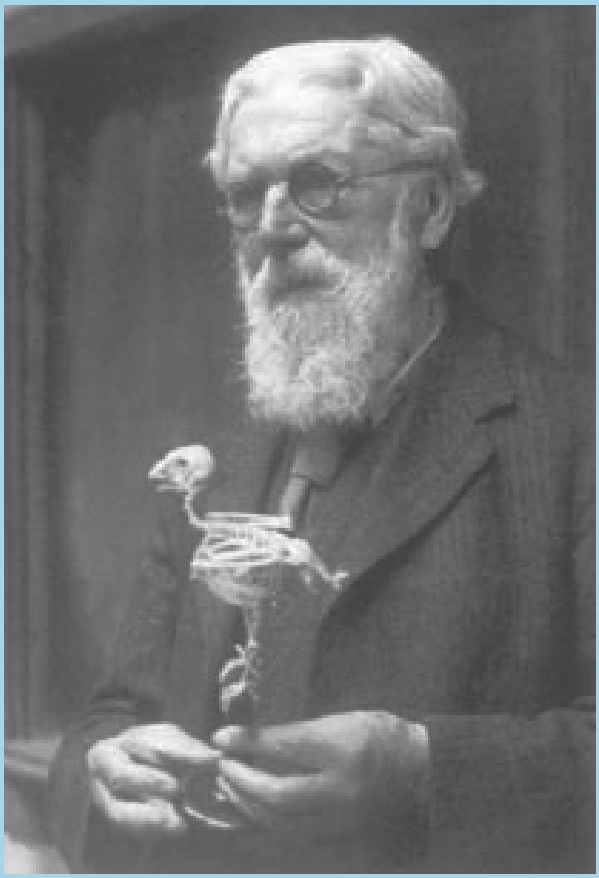
He worked in collaboration with Sir D'arcy Thompson, a scientific member of the Fisheries Board, on the research steamer *Goldseeker* gathering a vast collection of marine artefacts during the voyages of the vessel. These helped in explaining the movements of waters, changes of salinity, and the distribution of food materials, all of which helped to interpret the movement of fish.

He also worked on solving other practical fishery problems such as forecasting future yields, the effects of the size of mesh in influencing escapes of undersized fish and clarification on the reasons behind large fluctuations in supply of fish.

His work on haddock (*Melanogrammus aeglefinus*) has formed the foundation of most thorough going knowledge of one of our most important food fishes.

He did eventually make use of his teacher training when he was appointed lecturer in scientific studies of fisheries by the University of Aberdeen.

In 1925 he was appointed Chairman of the North Sea Committee of International Council for the Exploration of the Sea (ICES), which he considered to be a great honour.
He was considered by many to be one of the best fishery experts of his time.



SIR D'ARCY THOMPSON

CLOSE UP OF TAG

NIGG BAY

DR. ROBERT SELBIE CLARK, MA, BSc, DSc

Director from 1934 – 1948

PHOTOGRAPH OF THE LABORATORY WOOD STREET ENTRANCE BETWEEN THE 1930'S AND 40'S

CLARK (3RD LEFT FRONT ROW) AND STAFF STANDING ROUGHLY WHERE THE EXIT TO THE BACK CAR PARK IS TODAY

Born in Aberdeen in 1882, Robert Selbie Clark was educated at Aberdeen Grammar School and graduated with an MA from the University of Aberdeen in 1908. He went on to attain a BSc in 1911, and then held the post of Zoologist at the Scottish Oceanographic Laboratory, Edinburgh. It was here that he worked on some of the specimens and samples that William Spiers Bruce had brought back from his polar expedition to Antarctica on the *SY Scotia*, some of which survive to this day and are kept in the National Museums collection centre in Granton Edinburgh.

In 1914, Dr Clark joined Ernest Shackleton's crew onboard the *Endurance*, who were planning to cross Antarctica via the South Pole. Unfortunately the *Endurance* became trapped in ice and sank months later. Dr Clark, with the other *Endurance* crew members had already abandoned ship in the months before the sinking and had been living on floating ice. Happily all members of the expedition were saved but the vast and valuable collection of specimens that he had been at such pains to classify and study was not.

On his return to Scotland he married, then served as a Lieutenant on minesweepers in the Royal Naval volunteer reserve during the first world war.

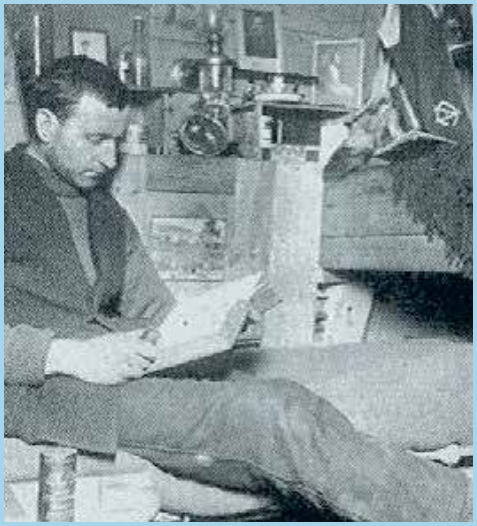
After the war, he worked at the Marine Biological Association at Plymouth, and later he joined the Marine Laboratory in Aberdeen in 1923. In 1924 he was selected to play cricket for Scotland. He gained a DSc in 1925, and became the Superintendent of Scientific Investigations for the Scottish Fishery Board. By 1934 he was the director of what was to become the Scottish Home Office Marine Laboratory, the basis of the organisation we are today. Under his charge the scientific staff of the Laboratory increased and developed a wide variety of research linked with the programmes of the International Council for the Exploration of the Sea (ICES).

During the Second World War he served on a number of important committees, particularly the small Interdepartmental Committee on Overfishing, whose report formed the basis of later international negotiations around this topic.

Dr Clark's early research interests were focussed on skates and rays (*Rajidae family*) and many regarded him as an expert in this area. Later when he joined the Marine Laboratory his interests were directed towards work on herring larvae (*Clupea harengus*) and haddock (*Melanogrammus aeglefinus*) stocks, and he contributed to many papers on these, and other topics over the years. He retired in 1948 and unfortunately died two years later.

ROBERT SELBIE CLARK

THE ENDURANCE

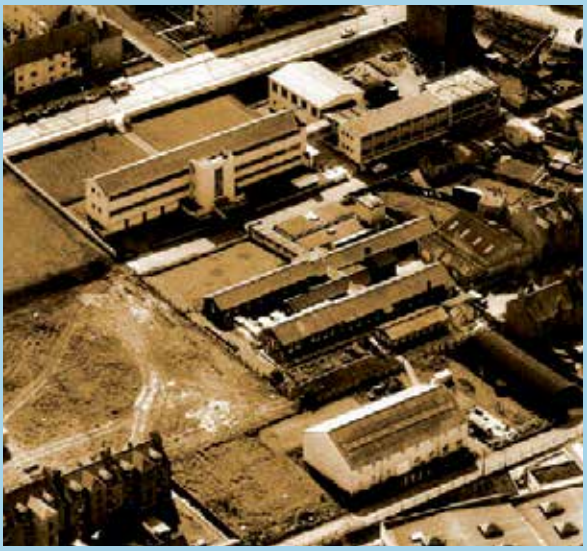


CABIN LIFE

SIR CYRIL EDWARD LUCAS,

CMG, DSc, FRS. DSc(Lond), HonDSc(Hull), HonLLD(Aberd)

Director from 1948 – 1970



EXPANSIONS OF THE FACILITIES AT THE MARINE LABORATORY SITE

Born in Hull on July 30 1909, Cyril Edward Lucas was educated at Hull Grammar School and later began his research career at the University College of Kingston-upon-Hull. While there he began working with Alister Hardy, the Professor of Zoology and Oceanography, on plankton research. Professor Hardy and Sir Cyril understood that determining the quantities and types of plankton in the sea, and relating this to the various factors which influence them, is the key to understanding the productivity of the oceans.

In 1932, they arranged for their continuous plankton recorder to be towed routinely on southern North Sea routes by some 60 commercial ships as part of a five-year study.

The onset of war in 1939 saw an end to the survey but in 1946 a new programme of sampling with the continuous plankton recorder was put together. This important work continues today, based at the Sir Alister Hardy Foundation for Ocean Science at Plymouth.

In 1948, Sir Cyril was appointed Director of the Scottish Home Department Marine Laboratory in Aberdeen. He became responsible for providing scientific advice to the government on marine fisheries and for research into the fish stocks, including salmon (*Salmo salar*).

In 1958, he also became responsible for the Freshwater Fisheries Laboratory at

Pitlochry, the former Brown Trout Research Laboratory. He reorganised and extended the research programmes of both laboratories, He recruited a large number of young fishery scientists and oceanographers, many of whom went on to create their own successes, and to direct their own laboratories.

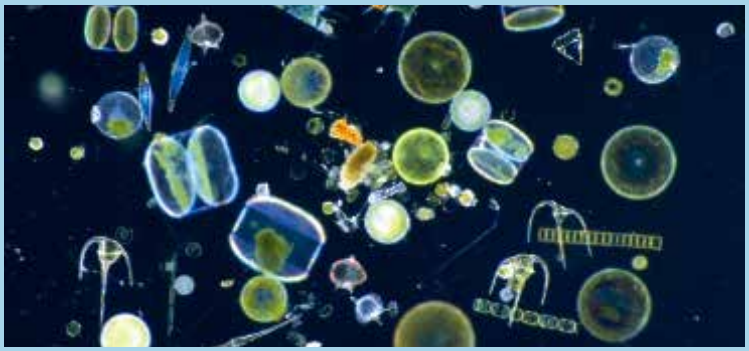
Sir Cyril's published work largely concerns marine plankton and fisheries research, appearing in various international scientific journals including *Bulletin of Marine Ecology*, of which he was joint editor. He continued to produce articles and papers after retirement.

Sir Cyril put much of his energy into the International Council for the Exploration of the Sea (ICES), the fisheries work of the Food and Agriculture Organisation of the United Nations, the International Commission for the Northeast Atlantic Fisheries and the Intergovernmental Oceanographic Commission.

To those who worked with him, Sir Cyril Lucas was modest, quietly spoken, quick to smile, but firm and with a strong sense of direction. He remembered almost everything he was told, which served him well in the relentless committees he served.

He was elected a Fellow of the Royal Society in 1966, appointed Companion of the Order of St Michael and St George (CMG) in 1956, and knighted 20 years later. He received honorary degrees from both Hull and Aberdeen.

CONTINUOUS PLANKTON RECORDER



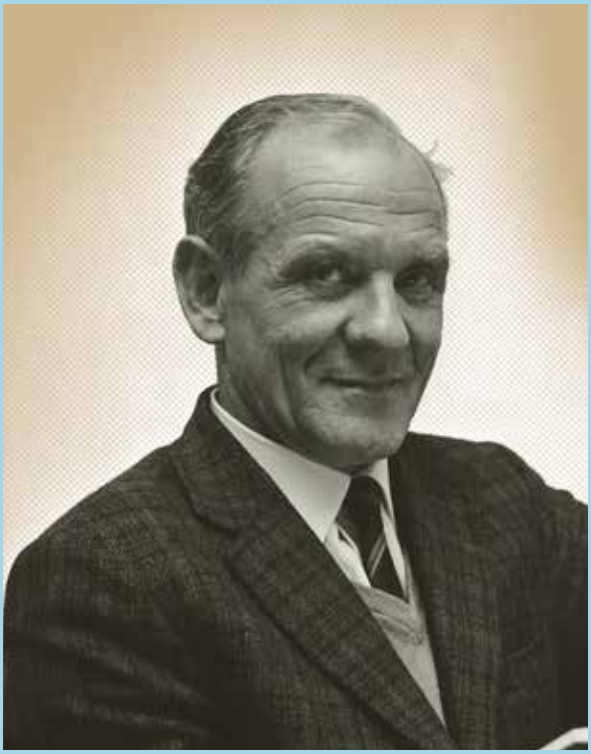
EXAMPLES OF PHYTOPLANKTON

SAGITTA ELEGANS

CALANUS FINMARCHICUS

PROF. BASIL BROCKETT PARRISH, CBE, BSc, HonDSC(Aberd), FIBiol

Director from 1970 – 1982



LETTER OF RECOMMENDATION

PARRISH PREPARING A NANSEN BOTTLE AND REVERSING THERMOMETER

C BLOCK BEING BUILT

Basil Brockett Parrish was born near Cambridge in 1922. After an education at Cambridge and County High School for boys, he took 1st class honours in Zoology at Reading University in 1943 where he then entered the Royal Air Force to do operational research.

In 1946 he joined the staff of the then Scottish Home Department's Marine Laboratory in Aberdeen (later Department of Agriculture and Fisheries for Scotland). Much of the year was spent at sea under extremely uncomfortable conditions. The laboratory itself had been a naval hospital during the second world war, part of it was brick-built and the remainder prefabricated huts. It was cramped and far from ideal.

Towards the end of the 1950s he became interested in management of fish stocks, especially related to the herring (*Clupea harengus*) fisheries, which were then in decline. He was also interested in many other aspects of fisheries biology, for example in the survival of young commercial fish, configuration of nets during fishing, and the behavioural responses of fish to nets. In 1957 he was Buckland Professor for the Scottish Fisheries Museum's Buckland Foundation, giving lectures on haddock (*Melanogramus faininuis*) to scientific and lay audiences. He was appointed Director of the Marine Laboratory in 1970, following the retirement of his predecessor Sir Cyril Lucas, and served as Director until 1982. During his career he played an enormous part in the affairs of the International Council for the Exploration of the Sea

(ICES). He was in turn Chairman of the Herring Committee (1958-62), Statistics Committee (1962-66), Consultative Committee (1967-70), Vice President (1973-76) and President (1976-79). He also convened several symposia and working groups and through ICES had close links with the International Commissions for the Northeast and Northwest Atlantic Fisheries. He also served as a member of the Advisory Committee on Marine Resources Research of the Food and Agriculture Organization of the United Nations.

Professor Parrish was appointed General Secretary of ICES in 1983. During his six years in office he introduced substantial changes to the running of the organisation and was a popular and effective figure. ICES became a source of advice to the North Atlantic Salmon Conservation Organization - an Agreement on Cooperation was agreed and signed with the Commission of the European Communities and the North Sea Task Force was established in partnership with the Oslo and Paris Commissions.

On his return to Aberdeen in 1989 Professor Parrish was appointed scientific consultant to the Scottish Fishermen's Federation and he was awarded an honorary DSc. by the University of Aberdeen in 1984. Previously he had been elected Fellowship of the Royal Society of Edinburgh (FRSE) in 1961 and appointed CBE (Commander of the British Empire) in 1978. He had interests outside his work, especially in sport and was a keen golfer and a fine hockey player and cricketer. He had the distinction of playing for a combined universities team at Lords during the war. He captained the Aberdeenshire cricket side for some years and was President of the Scottish Cricket Union and a member of the Marylebone Cricket Club (MCC).

SCOTIA 1971 - 1998

CLUPEA LAUNCH

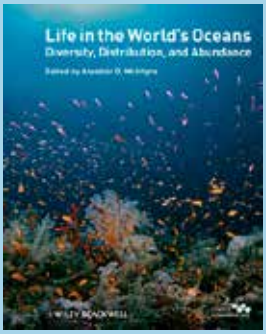
SCOTIA NAMING CEREMONY

CLUPEA 1968 - 2008

PROF. ALASDAIR DUNCAN MCINTYRE, CBE, BSc, DSc, FRSE, FIBiol, FRSA

Director from 1982 – 1987

SMITH MCINTYRE GRAB



Born in 1926, Alasdair McIntyre was educated in Helensburgh then graduated from Glasgow University in 1949 with first class honours in zoology – a subject he switched to in his second year. He joined the Marine Laboratory in 1951, where he remained for 36 years.

During his early years at the Marine Laboratory, Professor McIntyre's research and his scientific activities developed across a broad range of interests. Initially, he studied the halibut stocks in the North Atlantic but his interest in the investigation of the fauna on the seabed led to his efforts to improve the efficiency of marine instruments used for sampling. This resulted in the formation of the 'Smith-McIntyre grab', a sediment sampling instrument which has been used by successive generations of marine biologists.

He was one of the first to recognise the importance of the meiofauna that play a critical role in transforming the debris reaching the sea floor into food for the larger macrofauna. His Biological Review article "Ecology of Marine Meiobenthos" (Wiley, 1969) remains the starting point for their study. He also co-edited the handbook Methods for the Study of Marine Benthos, first produced in 1971 with former student, colleage and Emiritus Professor at the University of Crete, Anastasios Elettheriou.

From the early 1960's Professor McIntyre, working with a group of researchers, began a decadal study of a sandy beach at Loch Ewe in the west of Scotland. The aim was to demonstrate how the food web, from plankton through benthos to fish, determined the annual production of juvenile plaice and its inter-annual variability.

His time as Director of Fisheries Research for Scotland was a challenging period, not only with the decline in fisheries but also with the expanding oil industry causing many turf issues concerning the marine environment. He became a leading authority on the international aspects of these questions and served as Chairman of the United Nations Joint Group of Experts on Scientific Aspects of Marine Pollution and as Chairman of the Advisory Committee on Marine Pollution of the International Council for the Exploration of the Sea.

Professor McIntyre was very active in the UK, chairing the Atlantic Frontier Environmental Forum that involved a wide range of industries and research organisations. He was President of the Scottish Association for Marine Science (SAMS) and the Alister Hardy Foundation for Ocean Science. The award of a Commander of the British Empire (CBE) in 1994 was recognition for these and many other achievements.

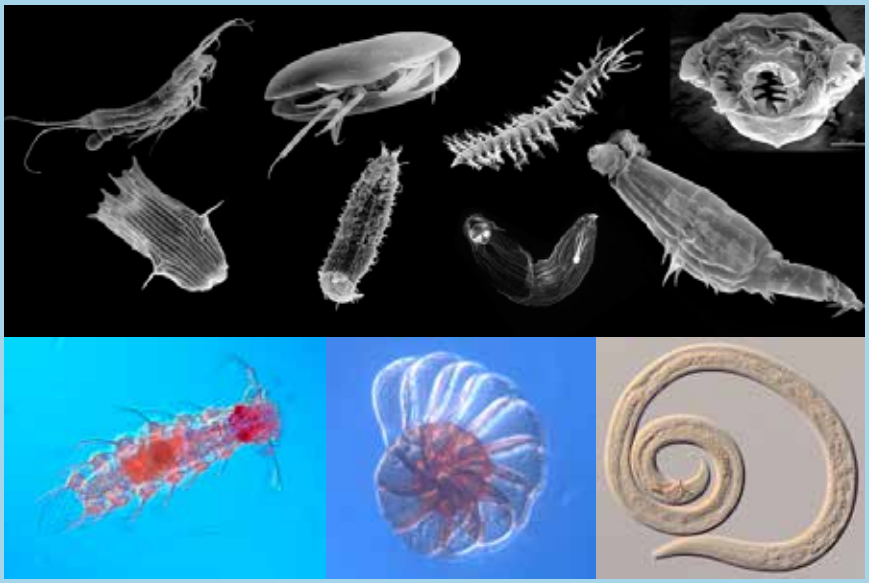
He supported the creation and development of SAMS as Vice-President and then President, and played a key role in the marine interests of Scottish Natural Heritage (SNH). As Emeritus Professor in the Zoology Department of University of Aberdeen, he helped found and develop their MSc courses in marine science. He also received honorary doctorates from the University of Stirling and Edinburgh Napier University.

Prof McIntyre produced a great number and variety of scientific papers, reports and edited volumes. Generations of marine biologists received help from him, whether as a teacher of students or PhD examiner. He was Editor-in-Chief of the *International Journal Fisheries Research* from 1987 until his death in 2010.

Prof McIntyre was heavily involved in the 10-year global initiative Census of Marine Life (COML), helping to set up the European component of this programme and establish the office at SAMS. During the programme's last year, he edited the synthesis volume "Life in the World's Oceans: Diversity, Abundance and Distribution", which brought together the work of over 2000 scientists from 89 nations around the globe. This volume, completed very shortly before his death, was launched at COML's Decade of Discovery symposium in London in 2010 and has been described as "one of the most important marine science books ever published".

In his spare time, Professor McIntyre was an enthusiastic supporter of Aberdeen Football Club, holding a season ticket for their home ground, Pittodrie Stadium. When he was not on the terraces, he found time to indulge his passion for gastronomy, becoming a wine, malt whisky and food connoisseur.

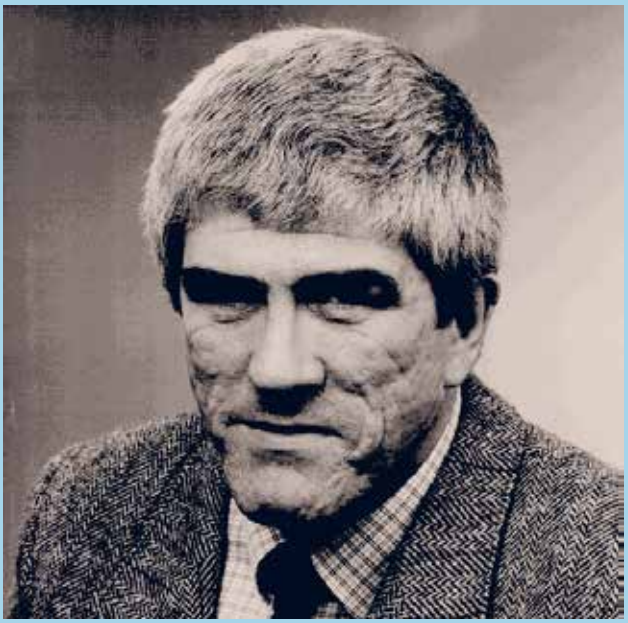
HALIBUT

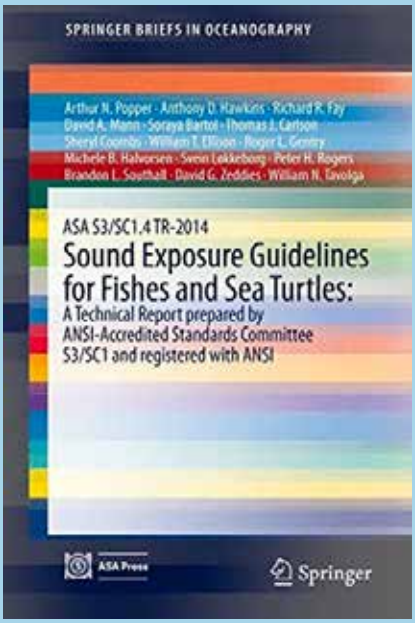


MEOBENTHOS

PROF. ANTHONY DONALD HAWKINS, CBE, FRSE, BSc., PH.D.

Director from 1987 – 2002





Born in 1942, Tony Hawkins gained his PhD at the University of Bristol and joined the Marine Laboratory in Aberdeen soon after its completion.

In 1978, he was awarded the A B Wood medal by the Institute of Acoustics. The A B Wood Medal is presented to an individual, annually, for "distinguished contributions to the application of underwater acoustics" and is presented in alternate years to European and North American scientists.

During his directorship, Professor Hawkins oversaw the development of the Fish Behaviour Unit (FBU) at the Marine Laboratory. The FBU allows the study of various fish behaviours in a controlled environment and enables the monitoring of the performance and catchability of survey gears. Towards the end of the 1990's Professor Hawkins was also heavily involved in the design and subsequent building of the research vessel *Scotia* (the fourth research vessel to hold that name). The new *Scotia* featured many design innovations which have been adopted by a number of academic institutes world-wide. One of these new features was containerised laboratories; a key feature that enables the ship to be adapted specifically to particular survey cruise requirements. The *Scotia* is still very much part of Marine Scotland's fleet, being only one of two research vessels, and it has contributed vastly to the marine science that has been undertaken since its launch in 1998.

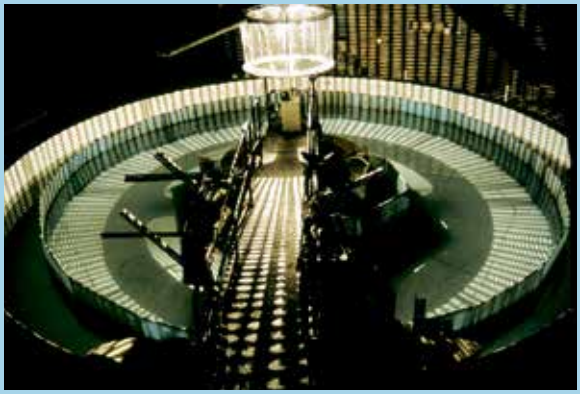
A Fellow of the Royal Society of Edinburgh, Professor Hawkins was awarded a Commander of the British Empire (CBE) in the Queen's Honours List of 2000 for services to education and science. He regularly collaborated with renowned scientists from all over the world and has had 80 papers published in a number of journals devoted to physiology, zoology

and marine biology. He has also contributed to books that look at the hearing abilities of the fish that supply the major fisheries, including 'Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report' and 'Examining Fish in the Sea: A European Perspective on Fish Hearing Experiments' published in 2014.

Currently Associate Professor within the Environmental Research Institute, one of several research institutions that form the University of the Highlands and Islands, Professor Hawkins is a also a member of a group established by the Acoustical Society of America to prepare guidelines for assessing the effects of sound on fishes and turtles. He is also an adviser to the Joint Industry Program on Sound and Marine Life for the International Association of Oil and Gas Producers. With a strong interest in the impact of marine renewable energy on fish and fisheries, Professor Hawkins recently completed a study of the effects of pile driving upon free-living sprat and mackerel, in a project funded by the UK Department for Environment, Food and Rural Affairs. For the first time for any species of fish, a full analysis was prepared relating the level of response by wild unconstrained fishes to different sound levels.

Professor Hawkins has a strong interest in fisheries science and is currently Rapporteur to the North Sea Advisory Council, working with fishers and other stakeholders to provide advice to member states and the European Commission on the management of fisheries in the North Sea – one of the most heavily fished areas in the World. Following his departure from the Scottish Government in 2002, Tony founded Loughine Limited, a research and biotechnology company which collaborates with global institutes to provide scientific advice for fisheries management. The company draws on insights from existing research projects and management processes for marine environmental management and then communicating those insights to scientists and decision makers alike.

SCOTIA AND *CLUPEA*



FISH BEHAVIOUR UNIT

IMAGES OF CONTAINERISED LABS ON THE *SCOTIA*

PROF. ROBIN COOK, BSc Hons, D Phil

Director from 2002 – 2009, Head of Science, Marine Scotland 2009 - 2011

HULL OF *ALBA NA MARA*

ALBA NA MARA

MARINE RESEARCH VESSEL *ALBA NA MARA* NAMING CEREMONY APRIL 2008

Robin Cook graduated from Durham University in 1973 with a BSc (Hons) in Zoology. He then went on to obtain a doctorate in population dynamics from Oxford University in 1977.

Professor Cook began in the demersal fish section of the Department of Agriculture and Fisheries for Scotland, Marine Laboratory, as a Stock Assessment Scientist. From 1987 to 1989, he took over the Population Studies unit as the Section Leader, a post he held until he moved on to become the Head of the Fish Resources Team. In 1998, he was promoted to the role of Programme Manager for Fisheries Management, which he retained until his appointment as Marine Fisheries Advisor in 2001. In 2002, Professor Cook took up the role of Chief Executive of Fisheries Research Services (FRS) where he also acted as chief scientific advisor to the Scottish Executive on fisheries and the aquatic environment, and was the Scottish Delegate to the International Council for the Exploration of the Sea (ICES).

To date, Professor Cook has published 47 papers in peer-reviewed journals, 38 of which were during his employment at the Marine Laboratory. He also contributed to two books entitled “Responsible Fisheries in the Marine Ecosystem” in 2003 and “An International Compendium of Scallop Biology and Culture” in 1991.

BLOCK A, PRIOR TO REFURBISHMENT

BLOCK A, REFURBISHED AND UPDATED

ELLIS BUILDING NAMING CEREMONY

During his time as Chief Executive of Fisheries Research Services, and latterly Marine Scotland Science, Professor Cook held a number of selected government positions, including:

- Chair of the UK Co-ordinator of Fisheries R&D working group on fish stock recruitment modelling;
- Chair of the Sustainability working group of the Ministerial Sea Fisheries Strategy Advisory Group;
- Scottish Government member of the UK Marine Science Coordination Committee; and
- Member of Marine Fisheries Science Advisory Group for the UK Department of the Environment and Rural Affairs (Defra).

Professor Cook is a keen cyclist and could often be seen, in all weathers, cycling to and from work, as well as exploring the many areas around Scotland that can only be appreciated far from the beaten track. When he left the Marine Laboratory in 2011, he had only one goal - to cycle from Lands' End to John O' Groats; an ambition he has now realised and which subsequently led to a lone cycling tour of the west coast of the United States of America.

Professor Cook has retained good collaborative ties with colleagues here at the Marine Laboratory. He has worked on many projects with a number of our scientists, as recently as 2015, where he was first author on the paper "Grey seal predation impairs recovery of an over-exploited fish stock" published in the Journal of Applied Ecology.

Currently engaged as Senior Research Fellow for University of Strathclyde, Glasgow, Professor Cook is still highly active in the global fisheries community; contributing greatly in research and advice for the sustainable management of the sea.