



56 HIGH STREET LYMINGTON
HAMPSHIRE SO41 9AH ENGLAND
TELEPHONE (0)1590 679016
FACSIMILE (0)1590 671573
E-MAIL mep@macalister-elliott.com
WEBSITE www.macalister-elliott.com

5 October 2009

Notification of Proposed Assessment Team for the SARPC toothfish fishery

MacAlister Elliott and Partners Ltd. (MEP) is undertaking the full MSC certification assessment process for the following fishery:

Fishery for toothfish *Dissostichus eleginoides* in the TAAF EEZ (around Kerguelen and Crozet islands) by members of SARPC.

To undertake the assessment process, MEP proposes the following team of experts:

- Dr Paul Medley
- Dr Terry Holt
- Dr Jo Gascoigne

The CV of each team member is available on request to MEP at the address above; a copy also follows at the end of this Notification.

All interested stakeholders are encouraged to contact Caroline Gregg at MEP's UK office via the above details, or Dr Jo Gascoigne in MEP's French office:

La Ville Juhel
22210 Plumieux
France
00 33 (0)296 25 51 08
00 33 (0)961 21 92 12
j.gascoigne@orange.fr

The deadline for consultations is 10 November 2009.

Jo Gascoigne

Position: Technical Director for seafood eco-certification, MacAlister Elliott and Partners; Honorary Research Fellow, School of Ocean Sciences, University of Wales Bangor

Birth: 4 May 1971, Leamington Spa, UK. British citizen

Key skills: Fisheries and aquaculture sustainability and policy; marine ecology and conservation biology; marine protected areas; marine environmental impact assessment; shellfish culture; fishing techniques and practices.

Languages: English (native), French (fluent), Spanish (fluent reading, medium spoken)

Employment

2007 – date: Expert in marine ecology, fisheries and shellfish culture. Projects to date (ongoing and completed) include:

- Team leader and expert for Marine Stewardship Council (MSC) assessments of i) Euronor North Sea and Arctic saithe fishery; ii) Menai Strait mussel fishery; and iii) yellow mullet fishery in the Parc National Banc d'Arguin, Mauritania (one of Africa's largest marine protected areas); the latter being a case study for a new risk-based methodology for MSC assessment of data-deficient fisheries
- MSC pre-assessment for numerous fisheries, including demersal fish, large and small pelagics, highly migratory species, molluscs, crustaceans, freshwater fish; locations including France, UK, Spain, South Africa, Indian Ocean, Southern Ocean, transboundary
- Review of fisheries impacts of oil spill, Côte d'Ivoire
- Review of best practice for ecotourism development in sensitive coral reef environments
- Developing a management and monitoring programme for a marine protected area, Oman
- Sustainability and carrying capacity of bottom mussel culture, Ireland
- Incorporating aquaculture into the EU framework for ecosystem fisheries management
- Accessibility of marine environmental data in France
- Review of techniques for assessing catch weight on board EU fishing boats (interviews with French, Belgian and Dutch vessel owners, producer organisations and fisheries managers)
- Review of oceanographic and marine data availability in France, with analysis of data policies of main data holders
- Marine benthic component of the Best Practical Environmental Option report for disposal of the wreck of the Napoli
- Conflicts between dredging and shellfish culture in Poole Harbour
- EU fisheries policy and recruitment
- Quantitative survey of fisheries in the Thames estuary
- Review of fisheries activity in the Bay of Cadiz, Morocco and the Canary Islands
- Various short studies on the environmental impacts of cable and pipeline laying, shipping accidents and dumping at sea

Also: Honorary Research Fellow at the School of Ocean Sciences, University of Wales Bangor. Ongoing research projects include:

- Impact of mussel culture on plankton and sediment dynamics in the Menai Strait (see below; papers in preparation)
- Population dynamics and extinction risk at low density: Using population parameters to predict the probability of Allee effects, sustainability and extinction risk under exploitation, consequences of rarity for population dynamics in species with different types of mating system (collaborations with Franck Courchamp, Université Paris Sud and Ludek Berec, Institute of Entomology, Ceske Budejovice, Czech Republic).

- Recovery of populations of scallops, sea fan and other benthic species in fisheries closed areas, Lyme Bay (NERC grant with two collaborators).

2003 – 2007: Postdoctoral Research Fellow / Research Lecturer, School of Ocean Sciences, University of Wales Bangor.

Research projects:

- Carrying capacity of the Menai Strait for mussel culture (includes informal co-supervision of a PhD student). Combining the study of physical processes (net flow, turbulent mixing and sediment transport) and biological processes (chlorophyll concentration and depletion, mussel feeding behaviour, density dependence and self-organised patterning, interspecific competition between suspension feeders) to assess the carrying capacity of the system for shellfish culture in the Menai Strait. Collaborations developed with Johan van de Koppel (Netherlands Institute for Ecology), John Widdows (Plymouth Marine Lab), Andrew Folkard (Lancaster Univ.), Rom Lipcius (Virginia Institute of Marine Science) and the Countryside Council for Wales.
- The ecology of seed mussel beds: assessing the importance of ephemeral seed mussel settlement for vertebrate and invertebrate predator populations and the ecological consequences of partial harvesting of these beds by the mussel industry. Collaboration with the NW and N Wales Sea Fisheries Committee.

Teaching:

- M.Sc. Physical Oceanography, Marine Biology and Shellfish Biology: Module on the interaction of physical oceanography and biology (lectures, field trip and data analysis)
- M.Sc. Conservation and Resource Management: Population consequences of rarity, extinction risk (lectures)
- Undergraduate Marine Biology: Allee effects in fisheries (2nd year lectures), Invertebrate fisheries and management of artisanal fisheries (3rd year lectures).

2002 – 2003: Teaching assistant, Virginia Institute of Marine Science, USA

Teaching assistant to post-graduate core courses in statistics and experimental design, marine ecology and oceanography during final year of PhD. Gave lectures and ran practicals and Q&A sessions, gave tutorials, set and marked assignments and exams and helped students plan project field work.

1995 – 1999: Marine biologist, MacAlister Elliott and Partners Ltd. UK

Biologist in the environment department of a marine consultancy, involved in the following projects:

- Stock assessment and management of the Bahamian spiny lobster, queen conch and Nassau grouper fisheries (lead consultant). Bahamian Department of Fisheries and the Bahamas Reef Environment Education Foundation (BREEF).
- Community-driven design of a marine reserve network for central Andros Island, Bahamas (lead consultant). BREEF and a central Andros community group.
- Design of a fisheries development project, Eritrea (environmental specialist). Funded by FAO.
- Preliminary environmental impact assessment for container port development, Aden, Yemen (team leader). Funded by private sector.
- Planning and environmental impact assessment for harbour improvements, Cornwall (lead consultant). Collaboration with fishermen's group.
- Fisheries development, management and infrastructure provision, Yemen (UK project manager). Funded by World Bank and EU.

1994 – 1995: Intern, European Commission, Brussels and Tanzania

Unit for natural resources development projects for Eastern and Southern Africa. Bilingual working environment (English and French).

Education

Ph.D. 1999 – 2003

A theoretical and experiment study of Allee effects. A study on population dynamics, reproductive biology, sustainability of fisheries and extinction risk in marine populations, with specific focus on the queen conch *Strombus gigas*.

Marine Conservation Biology Group, Virginia Institute of Marine Science (VIMS), College of William and Mary, USA. Field work at the Caribbean Marine Research Centre, Bahamas, with extensive scientific diving. Also field assistant on project on physical-biological interactions in coral metabolism, involving saturation diving.

M.Phil. 1994

Ecological and economic impacts of forestry in the Flow Country, Scotland.
Department of Geography, University of Cambridge, UK.

M.A. 1990 – 1993

Natural Sciences (Zoology and Ecology), Corpus Christi College, University of Cambridge, UK.

Grants, fellowships and awards

- British Ecological Society Small Grant (£1200) for study of self-organisation in seagrass beds, with Andrew Folkard (Lancaster) and Rom Lipcius (VIMS), 2006
- Double Allee effects in the endangered island fox – successful postdoc application to French govt. with Franck Courchamp, 2003 (accepted post in Bangor instead)
- Zeigler Student Achievement Award, VIMS, 2003
- Winner, New Scientist / Wellcome Trust Millennium Essay Competition, 2002
- International Women's Fishing Association Ryan Kelley Memorial Scholarship, 2001
- International Society for Reef Studies PhD Fellowship, 2000
- Hargis Fellowship, VIMS, 2000
- Corpus Christi College Scholarship 1992-3

Field skills

- Chief scientist on five research cruises on the *RV Prince Madog*.
- Experienced scientific diver (more than 300 dives including fish, benthos and habitat surveys). Training in saturation diving and two 7-day stays in the Aquarius underwater habitat. Nitrox certified.
- Experienced small boat operator.
- Experience of multiple marine field instruments and sampling techniques including towed and fixed camera gear, various fishing gears, coring, sidescan sonar, *in vivo* and *in vitro* fluorometry, ADCPs and CTDs.

Publications

Gascoigne J., Berec L., Gregory S. and Courchamp F. 2009. Dangerously few liaisons: a review of mate-finding Allee effects. *Population Ecology*, in press.

Van de Koppel J., Gascoigne J., Theraulaz G., Rietkerk M., Mooij W.M. and Herman P.M.J. 2008. Experimental evidence for spatial self-organisation and its emergent effects in mussel bed ecosystems. *Science*, 322, 739-742.

Courchamp F., Berec L. and Gascoigne J. 2008. Allee effects in ecology and conservation. Oxford University Press. Favourably reviewed in *TREE* and *PLoS Biology*. See <http://www.oup.com/uk/catalogue/?ci=9780198570301>.

Gascoigne J., Beadman H.A., Saurel C. and Kaiser M.J. 2005. Density dependence, spatial scale and patterning in sessile biota. *Oecologia* 145, 371-381.

Gascoigne J. and Lipcius R.N. 2005. Periodic dynamics in a two-stage Allee effect model are driven by tension between stage equilibria. *Theoretical Population Biology* 68, 237-241.

- Gascoigne J. and Lipcius R.N. 2004. Conserving populations at low abundance: delayed functional maturity and the Allee effect in reproductive behaviour of the queen conch *Strombus gigas*. Marine Ecology Progress Series, 284, 185-194.
- Gascoigne J. and Lipcius R.N. 2004. Allee effects driven by predation. Journal of Applied Ecology, 41, 801-810.
- Gascoigne J. and Lipcius R.N. 2004. Allee effects in marine systems. Marine Ecology Progress Series 269, 49-59.
- Krivtsov V., Gascoigne J. and Jones S.E. 2008. Harmonic analysis of suspended particulate matter in the Menai Strait (UK). Ecological Modelling 212, 53-67.
- Rippeth T.P., Gascoigne J., Green J.A.M., Inall M.E., Palmer M.R., Simpson J.H. and Wiles P.J. 2007. Turbulent dissipation of coastal seas. Science, e-Letter 7 June 2007, see www.sciencemag.org/cgi/eletters/313/5794/1768.
- Angulo E., Roemer G.W., Berec L., Gascoigne J. and Courchamp F. 2007. Double Allee effects and extinction in the island fox. Conservation Biology in press.
- Saurel C., Gascoigne J., Palmer M.R. and Kaiser M.J. 2007. In situ mussel feeding behaviour in relation to multiple environmental factors: Regulation through food concentration and tidal conditions. Limnology and Oceanography in press.
- Simpson J.H., Berx B., Gascoigne J. and Saurel C. 2007. The interaction of tidal advection and diffusion and mussel filtration in a tidal channel. Journal of Marine Systems in press.
- Medio D., Shepperd C.R.C. and Gascoigne J. 2000. The Red Sea. In *Coral Reefs of the Indian Ocean*. T.R. McClanahan, C.R.C. Shepherd and D.O. Obura (eds.), OUP: 231-255

Publications in review or preparation

- Gascoigne J., Saurel C., Williams E., Wiles P., Jones S. and Kaiser M. Processes controlling the vertical structure of chlorophyll in the water column over a shellfish bed.
- Folkard A. and Gascoigne J. Flume simulation of flow over spatially-patterned beds of mussels.

Popular science writing

- Gascoigne J. Sex and the Single Snail. New Scientist, 2002.
- Gascoigne J. and van de Koppel J. Patterning in Attached Organisms: from Tiger Bush to Mussel Beds? Ocean Challenge 14, 2005.

Paul A H Medley

Date Of Birth: 13 March 1963

Nationality: British

1 Summary of Experience

My main experience is mathematical modelling of fisheries and ecological systems and data management, including data acquisition to fit and test models. Bioeconomic modelling, with particular reference to interactions between different tuna fishing fleets, formed the main subject of my PhD thesis. Since then I have concentrated on tropical fisheries, and developing new techniques for multispecies stock assessment based on maximum likelihood, Bayesian methods and decision theory. I have worked on a number of fisheries in detail including lobster, conch, shrimp, squid and flood plains. I have been an invited expert for a number of stock assessment working group meetings and stock assessment reviews.

My first degree included computer science, and I have continued to develop my programming and data handling skills. For example, I have been working on spatial data management, through implementation of a Geographical Information System (GIS) for natural resources management, on numerical tools for new stock assessment techniques, a Caribbean fisheries database and a decision analysis for stock assessment.

I have a wide practical experience in marine biology, including design and implementation of surveys and fisheries experiments using SCUBA and small research vessels. This includes addressing wider environmental issues of ecological management, including maintenance of marine biodiversity.

On British Overseas Development Administration fisheries management projects in the Turks and Caicos Islands and elsewhere in the Caribbean, I developed new methods for the stock assessments of exploited species, as well as a new science programme. I was directly involved in fisheries and environmental management, and in the decision making process involving discussions with politicians, civil servants and the fishing community. Experience in small scale fisheries has led to the development of new software and other tools (Participatory Fisheries Stock Assessment) suitable for small scale co-managed fisheries.

I have been involved in developing the MSC certification methodology and various MSC assessments, including North Sea pelagics, Netherlands Sole, Antarctic toothfish, icefish and krill.

2 Education

1985-1989 PhD, Biology. Imperial College of Science, Technology and Medicine, University of London, UK. *Interaction between Longline and Purse Seine in the South-West Pacific Tuna Fishery.*

1981-1984 University of York, York, UK. (Department of Biology)
BSc (Hons, First Class) in Biology and Computer Science.

3 Computing Experience

Languages: Assembly languages (Macro-10; Macro-11; Z80), Pascal, C, Fortran, Turbo Pascal (object orientated), Borland Delphi 7, Visual Basic for Applications.

Databases: Visual FoxPro; MS Access

GIS: ArcView 2.1 (Avenue script language); IDRISI

Spreadsheets: Lotus 123; QuattroPro; MS Excel

Statistics

Packages: SPSS; R; Minitab.

4 Non-Academic Qualifications

UK driving licence;
Gliding and hang-gliding certificates;
Certified SCUBA diver

5 Experience

Guyana and Suriname, 2007 – 2009, Seabob Shrimp Fishery, Morubel nv

Consultant supporting a data collection initiative leading to a stock assessment and fishery advice for processing and government sectors. The current objective is to complete a stock assessment for June 2009 CRFM Scientific Meeting.

UK, March-July 2008, Flying Fish Stock Assessment, UN FAO

Lead stock assessment scientist at the WECAFC working group meeting in Tobago, including data preparation, analysis and completing a report.

USA/UK, 2008-2009 Stock Assessment Review Program, CIE University of Miami

I served on the review panels for South East US (SEDAR 16 and SEDAR Caribbean Data Workshop), North East GARM III Models Meeting.

Caribbean, April-July 2008, Review Data Collection and Data Management for the Guyana Montserrat St. Lucia and Grenada, Caribbean Regional Fisheries Mechanism

Consultant scientist conducting a review of data collection methods and supporting the data management, particularly use of the CARIFIS database.

Caribbean, 2006-2009, Annual CRFM Scientific Meeting, Caribbean Regional Fisheries Mechanism

Consultant scientist conducting stock assessment workshops and reporting to the first three annual CRFM meeting serving the region by providing scientific advice for the management of fish stocks. Also, a member of the ad hoc methods working group which meets separately.

UK, 2007 - 2008, Marine Stewardship Council Certification, Various certifiers

Reviewer of a number of fisheries for pre-assessment and North Sea herring and the North Atlantic mackerel, Ross Sea toothfish, South Georgia toothfish and icefish, and Antarctic krill for full assessment.

USA/UK, 2004-2007 Stock Assessment Review Program, CIE University of Miami

I served on the review panels for Chesapeake Blue Crab Stock Assessment (August 8-11, 2005), for SEDAR 8 assessments of Florida and US Caribbean fisheries for spiny lobster and yellowtail snapper (May 14-20, 2005), STAR Pacific Hake (January 2006), WCPO Yellowfin Tuna (October 2006) and SEDAR 12 red grouper (January 2007), Alaska flatfish (June 2007), STAR Canary Rockfish/Arrowtooth Flounder (August 2007), and Pacific Halibut (July 2007).

UK, January-December 2006, Testing a Catch-Only Stock Assessment Method, UN FAO

Carry out a series of tests on a new method of stock assessment for catch-only time series, including developing a new fitting method.

UK, September 2006, ACP Fish II Feasibility Study, Poseidon

Consultant to update the feasibility study for EU project ACP Fish II.

South Pacific, February 2006, EC South Pacific Inshore Fisheries Project Mid-Term Review, MRAG

The aims of the evaluation were to determine the efficiency, effectiveness and impact of the PROCFish/C project in meeting its objectives, and the sustainability of the outcomes, as well as ascertain the need for an extension.

Mexico, September 2006, WECAFC Spiny Lobster, UN FAO

Consultant on the Western Central Atlantic Fishery Commission 2006 Assessment and Management Workshop on the Caribbean Spiny Lobster.

UK, March-December 2005, Guidelines for Certification of Small Scale / Data Deficient Fisheries, Marine Stewardship Council

Consultant in the development of guidelines document for certifiers to set out a methodology to certify under the MSC small scale fisheries which may use non-standard management and assessment methods, but still have sustainable fisheries.

Denmark, September 2005, North Sea Commission Fisheries Partnership Meeting

Attended meeting where ICES scientific working presented a variety stock assessments to fishermen representatives. I provided technical support and comment to fishermen as independent scientist.

UK, April-November 2005, ParFish Project, MRAG

Dissemination, including developing teaching materials and a workshop in Mangalore, India, of the new ParFish stock assessment methodology guidelines and software. The methodology is most suitable for small scale fisheries and community based fisheries management. The project was funded under the Fisheries Management and Science Programme, Department for International Development, UK Government.

UK, April-November 2005, Fisheries Enhancement Decision Tool Software, Imperial College London

Development of decision support tool software for the analysis of stock enhancement using hatchery fish. The project was funded under the Fisheries Management and Science Programme, Department for International Development, UK Government.

Barbados, March 2005, Stock Assessment Methods Meeting, Caribbean Regional Fisheries Mechanism

Member of the methods working group and participant in the first meeting to develop appropriate stock assessment methods for the Caribbean region.

Trinidad and Tobago, January 2005, Joint Venezuela / Trinidad and Tobago Shrimp Stock Assessment Workshop, UN FAO

Consultant and advisor for the stock assessment meeting between Trinidad and Venezuela which advised on the management of the shared shrimp resources.

Caribbean, February 2005, May 2006, Queen Conch Fisheries Management Manual, UN FAO

Author of a manual to advise developing countries in the Caribbean on management of queen conch (*Strombus gigas*) which is protected under CITES Appendix II. The manual advises countries and CITES on expectations to continue export under CITES arrangements.

USA, 2001-2003 Stock Assessment Review Program, CIE University of Miami

Served on the US Government SARC panel (June 2003), STAR panel (April 2002) and reviewer of the Pacific Dolphin by-catch assessments (November 2001, June/July 2002) as an external reviewer.

South Pacific, November 2004, EC South Pacific Tuna Project Mid-Term Review, MRAG

The objectives of the evaluation were to determine the efficiency, effectiveness and impact of PROCFish/O in meeting its objectives and the sustainability of the outcomes and to ascertain the need for an extension in time and other resources in order to effect a smooth transfer of activities to the WCPFC (and, for some activities, to its member ACP States and OCTs).

UK, May-December 2004, PFSA, MRAG

Developing software and tool kit supporting Participatory Fisheries Stock Assessment. The software applies decision theory based on interviews with fishers (multi-attribute decision making) and standard fisheries data and new modeling techniques. The project intends to develop additional support materials, a “user friendly” interface and more easily understood outputs.

UK, May-September 2004, Advisor to United Nations, Industrial Economics Inc.

Consultant scientist reviewing claims and providing advice to the United Nations regarding compensation for the 1992 Iraq oil release.

Caribbean, November 2003 -January 2004, Shrimp and Groundfish Workshops, Caribbean Regional Fisheries Mechanism

Lead consultant scientist conducting stock assessment workshops for Guyana, Suriname, Belize, Jamaica and Trinidad on shrimp and groundfish resources.

Caribbean, November 2003 -January 2004, Shrimp and Groundfish Workshops, Caribbean Regional Fisheries Mechanism

Lead consultant scientist conducting stock assessment workshops for Guyana, Suriname, Belize, Jamaica and Trinidad on shrimp and groundfish resources.

USA, February 2004, Coral Reef Fish Stock Assessment Workshop, Western Pacific Fishery Management Council

Served as an expert panellist advising WPFMC on how to meet its National Standards 1 requirements for coral reef fisheries.

USA, 2000-2003 Stock Assessment Review Program, CIE University of Miami

Served on the US Government STAR panel (June 2000), 32nd SARC panel (November 2000), SARC panel (June 2003), STAR panel (April 2002) and reviewer of the Pacific Dolphin by-catch assessments (November 2001, June/July 2002) as an external reviewer.

UK, August 2001-November 2003, Marine Resources Assessment Group

Research project to improve decision-making in small-scale developing country fisheries, based upon a pragmatic Bayesian approach, including priors estimated from stakeholder interview data, as well as rigorous fisheries sampling and experimental work. Methods are developed within a software program PFSA which applies decision to support decision-making in co-managed fisheries.

Cuba, September 2002, FAO

2002 Assessment and Management Workshop on the Caribbean Spiny Lobster.

UK, July 2001, Moody Marine Ltd.

Marine Stewardship Council assessment of South Georgia Patagonian toothfish, including assessment of the interaction between the fishery and bird populations.

Caribbean, August 2001-December 2002, CARICOM Fisheries Unit

Help design, then implement new fisheries database (Delphi application, Visual FoxPro Server) “CARIFIS 1.0” for the CARICOM region.

Caribbean, August-December 2001, CARICOM Fisheries Unit

Advisor to Bahamas and Dominican Republic on data collection programme, including sampling theory and strategy and data management.

UK, December 2000, University of British Columbia

Project to estimate discards from demersal trawls in the North Atlantic with the "Sea-Around Us Project"

UK, November 2000, FAO

Technical editor for Klyashtorin, L. B. (2000) Climate Change and Long Term Fluctuations of Commercial Catches: The Possibility of Forecasting.

Venezuela, October 2000, FAO

2000 Assessment and Management Workshop on the Shrimp and Groundfish Fisheries on the Brazil-Guianas Shelf. Editor of the final report.

Mexico, September 2000, FAO

2000 Assessment and Management Workshop on the Caribbean Spiny Lobster.

Oman, August/September 2000, MEP

Stock assessment of 10 commercial stocks exploited by the demersal trawl fishery and analyses of biological sample data.

Rome, June 2000, FAO

Editor/contributor for the "Status of World Fisheries and Aquaculture 2000" report.

Spain, May 2000, ICCAT

ICCAT Working Group on Assessment Methods.

UK, 1998-2000, UN FAO

Contributor / editor / reviewer for DANIDA Stock Assessment Training Programme Documents: 'Guidelines for Routine Capture Fisheries Data Collection', 'Manual for VPA', 'Spiny Lobster Workshop Proceedings' and 'Guidelines for Regional Working Groups'.

Oman, October 1999, MEP

Advice to Oman Fishing Company on scientific assessment of their demersal fishery.

UK, September - December 1999, FAO

Editor / reviewer of the 'FAO Brazil-Guianas Shrimp and Groundfish 1999 Working Group Report' and "Sampling Manual".

Belize, March – April 1999, CFMC

Workshop leader / report editor of the CFMC/CFRAMP Stock Assessment Workshop for Queen Conch, Belize City, March 1999.

UK, March 1999, MEP

Stock assessment specialist; member of the MEP/SGS Marine Stewardship Council certification team to assess the Thames-Blackwater Estuary Herring Fishery

Ireland, July 1998, MEP

Fisheries scientist; Profile of the inshore fishery for the development of a management strategy within the EU Common Fisheries Policy.

Mexico, June 1998, FAO

Fisheries Scientist; FAO/CFRAMP Stock Assessment Workshop on Caribbean Spiny Lobster

UK, March - June 1999, MRAG

Fisheries Scientist; Stock Assessment Techniques for Co-Management: Develop operational model for Tonga drop-line grouper fishery to study alternative ways in which the fishery might be developed.

UK, March - April 1999, MRAG

Fisheries Scientist; Stock Assessment Techniques for Co-Management: Develop decision analysis/Bayesian based methods for use with Community Fishing Rights Areas in the Pacific using information from questionnaires and depletion experiments to local management decisions.

Anguilla, September - August 1999, MEP

Team Leader; DFID Project to Develop Offshore Fisheries: The project assists the Anguilla Department of Fisheries and Marine Resources develop a management plan for inshore and offshore resources.

Belize, April 1997, FAO

Fisheries Scientist; FAO/CFRAMP Workshop for Spiny Lobster: To provide technical assistance in data analysis and stock assessment for countries in the Caribbean region with the aim of ultimately setting up a working group for spiny lobster.

TCI, September 1996 - August 1997

Fisheries Scientist; Completion of various projects: Assessment of the 1997 conch quota and implementation of an ITQ system for the TCI, bayesian decision theory to set a closed season for spiny lobster assessment, a new multispecies stock assessment method using depletion models, using spatial data to assess CPUE as an index of abundance and using Bayesian decision theory to assess sustainable limits tourist diving on coral reefs.

TCI, June - August 1996, ODA

Fisheries Scientist; Fisheries Management Plan for the Turks and Caicos Islands: Updating the Fisheries Management Plan, and writing a summary document and step-by-step guide for stock assessment.

TCI, Oct 1995, ODA

Fisheries Scientist; Deskstudy on tropical Marine Biological Diversity: Document on tropical marine biodiversity prepared for ODA to be presented at the second meeting of the governments party to the Convention on Biological Diversity in Jakarta in Nov. 1995.

TCI, July 1995 - Dec 1996, TCIG

GIS Specialist: Development and implementation of a custom designed Geographical Information System for the Government of the Turks & Caicos Islands, Ministry of Natural Resources including staff training in GIS use.

TCI, 1992-95, ODA

Fisheries Scientist, Technical Cooperation: Lobster and conch stock assessment for the Turks and Caicos Islands artisanal fishery, including development and implementation of a relational database for catch, effort, social and economic data, and training staff in fisheries science and management. Working for the British Overseas Development Administration (ODA) as a technical advisor.

UK, 1992, MRAG

Fisheries Scientist: Shrimp bioeconomics and the impact of aquaculture on the capture fishery and fleet dynamics.

UK, 1991/92, MRAG

Fisheries Scientist: Coral Reef Fisheries Review and Database

Bangladesh, 1991, ODA

Fisheries Scientist: Bangladesh Flood Action Plan Study 17: design study formulating a 2-year programme estimating the impact of flood control measures on the inland capture fishery.

Saudi Arabia, 1991, HAR/IUCN

Mathematical ecologist: Saudi Arabian Gulf Oil Spill: ecological impact assessment survey

UK, 1991, MRAG/IIED

Population modeler: Research project on risk in Zimbabwe arid cropping and grazing systems. Joint project with the International Institute for the Environment and Development, UK.

Solomon Islands, 1990-91, MRAG/FFA

Fisheries Scientist: South Pacific tuna bioeconomic research concentrating on the interaction between different fishing gear types, the tuna market and estimation of fair licence fees using the fisheries Oracle database. Based at the Forum Fisheries Agency, Honiara, Solomon Islands.

UK, 1990, RRAG

Fisheries Bioeconomist: A variety of work with the Renewable Resource Assessment Group including development of a coral reef fisheries experiments, tuna bioeconomics research and teaching graduate students fisheries science.

Saudi Arabia, 1990, HAR

Marine Biologist: Environmental impact assessment of a pier extension, Yanbu, Saudi Arabia.

Tanzania, 1989-90, Frontier UK

Mathematical Ecologist: Study of the coral reef ecology of Mafia Island, Tanzania, and development of databases and mathematical techniques for the analysis of highly diverse communities.

Djibouti, 1987, TMRU/FAO

Fisheries Scientist: Quantitative base line survey of aquarium coral reef species of Djibouti to advise on the establishment and management of an ornamental fish trade.

UK, 1986, MRAG

Fisheries Scientist: Licensing consultancy with the Falkland Islands Government helping to establish a licensing regime for foreign vessels fishing within Falklands Island waters.

UK, 1986, MRAG/IUCN

Fisheries Scientist: Analysis of the economics of the Kuwait shrimp fishery and recommendations for management imposing a closed season.

UK, 1986, RRAG

Fisheries Scientist: Organisation of a pilot project and database, jointly with the UK's Freshwater Biological Association, with the aim of analysing population trends of fish in Lake Windermere through an ongoing gill net and fish trap sampling programme.

UK, 1984-85, TMRU

Research assistant: Identification of species assemblages and measuring the impacts of pollution and fishing on tropical marine communities. Work included development of a relational database for data storage and manipulation.

Saudi Arabia, 1983/84, TMRU

Mathematical ecologist: Quantitative survey of coral reefs, mangroves and seagrass beds in the Southern Red Sea.

6 Publications

Medley, PAH. 2005 Manual for the Monitoring and Management of Queen Conch, FAO Fisheries Circular In Print.

Medley, PAH. 2005 EnhanceFish Software Version 1.0. Download from <http://www.fmsp.org.uk/Software.htm>

Medley, PAH. 2005 ParFish Software. Version 2.0. Download from <http://www.fmsp.org.uk/Software.htm>

Lassen, H, Medley, PAH. 2001 Virtual Population Analysis: A practical manual for stock assessment. FAO Fisheries Technical Paper 400. 129pp.

Medley PAH, 1998. A decision theory case study: choosing a season opening for a spiny lobster (*Panulirus argus* L.) fishery. *Fisheries Science* 36: 159-170.

Medley PAH, Ninnes CH, 1999. A stock assessment for conch (*Strombus gigas* L.) fishery in the Turks and Caicos Islands. *Bulletin of Marine Science* 64(3), 399-406.

Medley PAH, Ninnes CH, 1997. A recruitment index and population model for spiny lobster (*Panulirus argus*) using catch and effort data. *Canadian Journal of Fisheries and Aquatic Sciences* 54: 1414-1421.

Gaudian G, Medley PAH, 1995. Diver carrying capacity and reef management in the Turks & Caicos Islands. *Bahamas Journal of Science*, 3 (1): 9-14.

Ninnes C, Medley PAH, 1995. Lobster and Conch Management in the Turks and Caicos Islands. Proceedings of the CFRAMP Workshop, Jamaica. October 1995.

Gaudian G, PAH Medley, 1995. Marine Biological Diversity. Report to *Overseas Development Administration* presented at the 2nd Government Party to the CBD meeting in Jakarta. 50pp.

Medley PAH, Ninnes C, 1995. Fisheries Management in the Turks and Caicos Islands. South Pacific Commission / Forum Fisheries Agency Regional Workshop on Fisheries Management.

Gaudian G, Medley PAH, Ormond RFG, 1995. Estimation of the size of a coral reef fish stock. *Marine Ecology Progress Series* 122: 107-113.

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Family name: Holt
First names: Terence James
Date of birth: 10/02/1959
Nationality: British
Civil status: Married 2 children
 (& no. of children)

Language (5 highest to 1 lowest)	<i>Reading</i>	<i>Speaking</i>	<i>Writing</i>
English	5	5	5
French	1	2	1
German	1	2	1
Arabic		2	

Computer Literacy: Very competent with Word, Excel, Powerpoint. Moderately competent with Access database. Very competent with GIS Arcview 3.2a

Present Position: Technical Director (Marine) CMACS Ltd

Years with firm: 2003 to date as CMACS Ltd but similar roles and clients for a further 12 years before that as CMACS (University of Liverpool).

Specific Country Experience:

<i>Country</i>	<i>Periods and Duties</i>
Egypt	Numerous short visits to University of the Suez Canal, 1989 to present. 2 Short desk studies for British Gas re Mediterranean gas exploration later 1990's. Contributed to two small EIAs for marina developments on the Red Sea and had two short trips to the Red Sea Hurghada region setting up and running coral transplant experiments for British Gas. Married to an Egyptian marine biologist, speak some Egyptian Arabic.
Maldives	6 month visit in 1990-1991 for Commonwealth Secretariat to look at potential for seaweed cultivation including investigation of previous failed attempts
Vietnam	Two visits to Ho Chi Minh City and Mekong Delta 2006 and 2008 assessing Ben Tre clam fishery against MSC standards on behalf of WWF and Ben Tre Fisheries Department
Falkland Islands & Georgia	Ten day visit for assessment of Patagonian Toothfish fishery against MSC standards
Other	Short working visits to Denmark, Morocco, Madagascar, Oman, Korea, Helgoland Korea, Channel Islands and France

Professional Experience Record (recent first)

Date: 2003-present ,
Location: Isle of Man
Organisation: CMACS Ltd
Position: Director
Description: Dr Holt is responsible for the co-ordination and management of coastal and marine projects within CMACS Ltd. He is a specialist in marine ecology and phycology with particular experience of managing large scale environmental survey and water quality monitoring projects. His main areas of work include environmental assessments, environmental monitoring programmes, MSC assessments of fisheries against sustainable standards, aquaculture projects (including algae), and conservation strategy. He is based at Port Erin in the Isle of Man.

Date: 1998 - 2003
Location: Isle of Man
Organisation: Centre for Marine and Coastal Studies (CMACS), University of Liverpool.
Position: Senior Environmental Consultant,
Description: Co-ordination and management of coastal and marine projects within CMACS (part of ERC, Environmental Research and Consultancy, an environmental assessment arm of the University of Liverpool). Also carried out occasional teaching duties re honours and PhD marine biology course.

Date: 1991-1998
Location: Isle of Man
Organisation: Port Erin Marine Laboratory, University of Liverpool
Position: Environmental Consultant
Description: Projects included environmental assessments, environmental monitoring programmes, assessment of the sensitivity of marine communities, and marketing and feasibility studies in relation to commercial seaweed activities. Also carried out some teaching duties re honours and PhD marine biology course.

Date: 1986-1996
Location: Isle of Man
Organisation: Kelp Farm Ltd
Position: Director
Description: Involved in all technical and commercial aspects of farming, processing and selling seaweeds for food, mainly based in the Isle of man but also one year in the west of Scotland.

Date: 1992-1993
Location: Isle of Man
Organisation: Port Erin Marine Laboratory, University of Liverpool
Position: Part time lecturer
Description: Part time Lecturer, also supervised honours projects and co-supervised PhD students

Date: 1985-1986

Location: Leyburn, N Yorkshire
Organisation: Nature Conservancy Council
Position: Surveyor
Description: Phase I botanical surveys of the Yorkshire Dales National Park.

Date: 1984-1985
Location: Whitby and Scarborough
Organisation: Scarborough Borough Council
Position: Borough Council employee
Description: Botanical surveys and public interpretation, Yorkshire coast

Publications:

Numerous technical reports EIAs etc but no academic publications in recent years

Any other relevant notes or comments:

KEY EXPERIENCE The following detail key areas of Dr Holt's experience and expertise:

Baseline survey, monitoring and assessment of environmental impacts particularly on benthic systems. Experience in the Irish Sea (Hamilton Oil, BHP Ltd, BP Ltd, Shell, British Gas, Marathon Oil, Esso Exploration and Production, Burlington Resources, Elf Enterprise Caledonia Ltd, Lasmo, Harland and Wolf, National Windpower, Seascope, Dong Energy), Ireland (Harland and Wolf, Renewable Energy Systems, Hydrosurveys/GEC), North Sea (PowerGen; Farm Energy; E.On; GGOWL), Eastern Atlantic, south east Mediterranean and Egyptian Red Sea (British Gas, Zaafo), plus numerous similar surveys in relation to various activities including offshore windfarms, oil and gas exploratory drilling, major sewage disposal schemes, pipelines and seabed cables, marine current turbines and offshore radio platforms, ports, marinas and harbours. Includes considerable experience at sea with a wide variety of survey, sampling and fishing gears including Day grabs, Van Veen grabs, beam and otter trawls, SPI, video and sidescan sonar. Experienced in intertidal surveys at a variety of levels, including use of GIS and aerial photography. Have spent time at sea on a wide variety of research, diving, fishing and fisheries protection vessels. Have attended MMO course and have experience of MM surveys in Irish Sea.

Sustainable fisheries assessment. Dr Holt has been involved in ERCs assessments of fisheries (usually sub-contracted to Moody Marine) to the Marine Stewardship Council (MSC) standards for sustainable and well managed fisheries from 2001 until the present. Has been involved in pre-assessments and full assessments of mollusc and finfish fisheries in UK, the sub-Antarctic and Vietnam and recently contracted to carry out assessment of mussel and queen scallop fisheries in Isle of Man, Denmark and Faroes. Contributed to development of generic scoring guidelines for the MSC and taken part in a workshop aimed at refining assessment methods. Carried out preliminary assessment of a number of U.S. aquarium fish wholesalers and retailers against sustainability standards on behalf of MAC (Marine Aquarium Council) in order to investigate appropriateness of draft standards. Has undergone training in assessment of fishing vessels/crew under the Sea Fish Industry Authority's Responsible Fishing Scheme.

Other fisheries / aquaculture related activities Installed mussel cultivation systems into disused docks as part of remediation programmes; visited mussel and scallop

culture systems to investigate potential for multi-species culture; acted as expert assessor to advise Inspector in a public enquiry re possible effects of marine development on mussel cultivation; carried out surveys before and after pipeline and cable laying to determine effects on commercial stocks of whelks, scallops, crabs and lobsters; carried out desk assessments including summaries of commercial fisheries concerns for numerous projects. Have used sidescan sonar to collect evidence of illegal dredging within a no fishing area. Co--supervised a PhD on effects of pollution on a former salmon stream.

Multi-disciplinary project management. Spent 30 months co-ordinating and carrying out environmental assessments and surveys for the Isle of Man's all-island sewage treatment programme, covering marine & freshwater ecology and water quality, terrestrial ecology, public health, and cultural heritage, plus input to public enquiry. Increasing numbers of more recent baseline surveys and assessment are multidisciplinary.

Marine conservation strategy and strategic assessment. Preparation of reports for UK Conservation Agencies on the sensitivities of specific marine communities to human activities, heavily involved in drafting of biodiversity action plans for UK and Isle of Man, and production of summaries of marine biological information for specific geographical areas. Involved in marine monitoring programmes especially re *Modiolus* reef areas. Presently involved in strategic environmental assessment of UK waters in relation to offshore renewable energy and oil and gas development.

Commercial seaweed activities. Over ten years experience cultivating seaweeds in Britain, including four years as director of a company farming seaweeds in the Irish Sea and selling into the U.K. food market (including Sainsbury's and Morrison's supermarket chains). Included research, pilot scale and commercial scale seaweed cultivation operations, and covered general management roles, as well as food product development, marketing and advertising.

Advisor on technical, environmental and commercial viability of proposals for seaweed utilization and cultivation in Maldives, Morocco, Madagascar, Ireland, Helgoland, Kiribati, Oman and Isle of Man. Visted Korea and France to source commercial seaweed products and visit producers

Has also lectured on commercial aspects of seaweeds at University of Liverpool (Marine Biology Honours); taught on a one week residential course on seaweed cultivation in Gran Canaria, Spain; co-authored a chapter of a book on "Seaweed Resources of the World".