

## Curriculum vitae

**Name:** Ian Robert Bricknell  
**Date of Birth:** 15 July 1961  
**Age at 1 January 2007:** 45  
**Marital status:** Married.

### Educational History

1986-1989 University of Lancaster PhD Supervised by Prof. W.T.W. Potts "The Ion Transporting Cells of Aquatic Insects" awarded August 1990.  
1983-1986 University of Reading B.Sc. (First Class Honours) Pure Zoology, final year project (supervised by the Late L.B. Halstead) "The Paeleopathology of Pleistocene Probocidiens."  
1980-1983 Luton College of Higher Education (now Luton University) HND Medical Microbiology (merit)  
1977-1979 Luton VI<sup>th</sup> Form College 3 'A' levels 1 'S' level  
1972-1977 Denbigh High School Luton 8 GCE 'O' levels including English and Mathematics

### Employment History

2007 to date Libra Professor of Aquaculture Biology School of Marine Sciences, University of Maine.  
2000 - 2007 Fisheries Research Services (FRS) Marine Laboratory, Aberdeen (the FRS Marine Laboratory is an executive agency of the Scottish Executive), Principal Scientist (Department Head), Aquaculture & Aquatic Animal Health.  
1992-2000 Fisheries Research Services (FRS) Marine Laboratory, Aberdeen (the FRS Marine Laboratory is an agency of the Scottish Executive), Senior Scientist, Aquaculture & Aquatic Animal Health.  
1989-1992 FRS Marine Laboratory, Aberdeen, Higher Scientific Officer, Fish Immunology Section. Start date October 2<sup>nd</sup> 1989  
1983-1989 University education  
1982-1983 Public Health Laboratory Service, Luton and Dunstable Hospital: Basic Grade MLSO, Immunology Department.  
1979-1982 Public Health Laboratory Service, Luton and Dunstable Hospital: Junior (Grade B) MLSO, Immunology Department.

### Current Areas of Responsibility

Libra Professor of Aquaculture Biology, School of Marine Science, University of Maine, Director Aquaculture Research Institute University of Maine, current research team, 2 Post Doctoral Research Fellows, 1 PhD Student, 2 Graduate Students

### Previous Responsibilities

Group Leader of the Fish Immunological Diagnostics department at the FRS Marine Laboratory's Aquaculture & Aquatic Animal Health programme based at the Marine Laboratory Aberdeen. The departments' main role is to provide advice to government ministers and industry on current research and policy issues in fish immunology and disease control, the feasibility of new fish, shellfish & algae, such as halibut, for commercial aquaculture and fish vaccinology. Duties included the day to day management of a staff of 8 scientists, 2 Post Doctoral Research Fellows, 4 technicians and 4 PhD students. Management of the FRS Marine Laboratory's fish immunology laboratory, Aberdeen. Management of the FRS Marine Laboratory's Experimental Fish Research Station, Aultbea, WesterRoss.

Scientific input into the following projects.

**PI:-** Fish alpha virus aetiology, epidemiology and diagnosis; Inflammatory processes in PD, CMS & HSMI. Infectious Salmon Anaemia Virus research programme, Halibut cultivation, disease and vaccination problems, larval survival and immunology, Cod cultivation, disease and vaccination problems, larval survival and immunology, *In vitro* methods for the culture of sea lice, the physiological basis for sea lice infection, novel vaccines against sea lice. The application of immunostimulants to improved larval fish survival, Sea lice biology and epidemiology, the natural infective pressure of sea lice on wild salmonid populations. The immune response of Atlantic Cod to *Lernaeocera branchialis* infection

**Expenditure directly controlled £566,000 (circa \$990,000) per annum**

### ICES Responsibilities

2006 Member ICES ConC Committee (Term of Office May 2006 to May 2009)  
2005 Chair ICES Mariculture Committee (Term of Office 1 January 2006 to 31 December 2008)  
2002-2005 UK Member ICES Mariculture Committee

1998-2002 UK Member of the ICES Working Group Marine Fish culture (WGMAFC)

## Attributes and Awards

Presidential Award of the American Plecoptera Society (1992)  
University prize (Reading University) in Zoology 1986.  
Co-winner of the Alison Grisley Prize (Reading University) 1985.  
President of the Zoological Society of Reading University 1985-1986.

## Research grants and awards

### Core Funded

FC1199	Alpha viruses detection and diagnosis (2006-2009)
FC1198	Sea lice infective pressures (2005-2009)
FC1194	Seasonal Influences on Disease Susceptibility (2003-2004)
FC1193	Sea Lice Epidemiology And Biology (2003-2007)
FC1183	Molecular And Immunological Characterisation Of Scottish ISAV (2002-3)
FC1186	Developmental Immunity Of Larval Fish (2000-2004)
FC1173	Characterisation Of Scottish IPNV (1998-2002)
FC427	Vaccines Against Sea Lice (1994-2000)
FC286	Halibut Cultivation (1992-2000)
FC486	Vaccines against <i>Aeromonas salmonicida</i> (1989-1996)
C028	New Vaccines against Enteric Red Mouth Disease (1997-2000)
C682	Immunostimulants and Larval Fish (2001-2004)
C035	Applications of Artificially Culture Salmon Skins For the Maintenance Of Sea Lice (1996-2003)

### Externally funded

Value of external research grants obtained 2000-2008

2008-2010	NRAC Funded project "Investigations into the Potential Health and Economic Benefits of Bivalve/Finfish Co-Culture" (\$150,030)
2005-2007	SARF Funded Project: The Aetiology of CMS & HSMI (with <i>Prof S. Adams &amp; Prof H. Ferguson</i> £112,000)
2005-2008	FSBI Funded PhD studentship "The Immunology of <i>Lernaeocera branchialis</i> , (with <i>Dr J Bron &amp; Dr K. Thompson</i> £66,000)
2005	BMFA small research grant programme. Vaccination against <i>Vibrio anguillarum</i> 02β in Atlantic cod (£7,750)
2004-2007	SFIA & Schering Plough Funded PhD studentship: Characterisation of <i>Vibrio</i> sp. in Marine Aquaculture (with <i>Prof S. Adams &amp; Dr K. Thompson</i> £87,000)
2004	NRC Canada short project "Induction of Defence Proteins in Fish Mucus" £12,600 (with <i>Prof S Johnson</i> )
2004-2007	EWOS Funded Post doctoral fellowship Semio-chemicals and Host Identification in Salmon Lice (with <i>J. Mordue (Luntz)</i> , £106,000)
2003	Project Leonardo Grant for "ISH Detection of IPNV in gonadal tissue of Atlantic salmon" (£11,342)
2003-2007	Novartis funded PhD studentship the role of acetate synthesis in improving the <i>in vitro</i> culture of sea lice (£65,000)
2001-2002	BMFA grant "Non destructive assessment of the disease status of marine fish broodstock" £20,500
2001-2004	EU FAIR V Programme "Stimulation of fish larval defence mechanisms against infectious diseases" (With <i>R. Dalmo, J. Rombert, B. Gudmonsðottir, T. Bowden, &amp; G. Scapatliati</i> €1,400,000) URL <a href="http://www.nfh.uit.no/prosjektvis.aspx?id=87">http://www.nfh.uit.no/prosjektvis.aspx?id=87</a>
2000-2002	Aquahealth Limited funding, "The aggressins of sea lice as possible immuno-therapeutics" (With <i>C. Sommerville, T. Bowden &amp; R. Wootton</i> £145,000)
2000-2001	BMFA grant for a research technician on "Modelling the uptake of immuno-therapeutics in larval marine fish" £18,500
2000-2001	CEC Funding proposal "research into aspects of the diagnosis of infectious salmon anaemia (ISA) and survival of ISA virus in the marine environment." (With <i>R. Raynard &amp; C. Cunningham</i> £60,000)
2000-2003	FRS PhD. Studentship "Chemical ecology of the host seeking stage of sea lice" (with <i>J. Mordue (Luntz)</i> , £36,000)
2000-2003	ARC PhD. Studentship "The Physiological Basis for A Sea Louse Vaccine" (With <i>P Billingsley and R. Raynard</i> , £56,000)
1997-1999	Aquaculture Vaccines Ltd. Research Fellowship "The Protective Antigens of <i>Yersinia Ruckerii</i> ". (£104,908)
1997-2000	British Halibut Association Grant "The Potential Role of Probiotics and Immunostimulants in Halibut Culture" (With <i>Harry Birkbeck Glasgow University</i> £58,948)

1997-2000	Link (MAFF and SSGA) Aquaculture PhD Studentship "Immunological Interactions between Atlantic salmon and the Sea Louse" (£45,442)
1996-1999	DTI Technology Foresight Challenge Grant "Halibut Cultivation" (£134,000)
1997	Two Project Leonardo Grants "Immune Parameters of Atlantic Halibut" & "Antibody Responses in Atlantic Halibut" (£11,342)
1996	Project Leonardo grant "Complement Stability In Marine Flatfish" (£4,370)
1994-1996	British Council M.Phil. Studentship ' <i>In Vitro</i> Methods for the Culture of <i>Lepeophtheirus Salmonis</i> .' (£24,745)
1992-1996	SOAEFD PhD Studentship 'The Regulation of the Immune System of Atlantic salmon' (£21,226)
1990-1994	Co-author of Four Annual Grants from the Scottish Salmon Growers Association Totalling £365,000 ( <i>With A.E. Ellis and A.L.S. Munro</i> )

## Teaching Experience

2009 SMS 598 Practical Experimental Design  
 2008 SMS 598 Current topics in Aquatic Animal Diseases  
 2008 SMS421 Fish health management (With Dr Kling)  
 2008 SMS550 Fisheries Oceanography (with Dr's Townsend & Zydlewski)

## Prior courses

**2006 to 2007** "Bioethics: The ethical use of animal experimentation" (as part of the final year course for the BSc Zoology & Biology). University of Aberdeen.

**1998 to date** "History of Aquaculture", "Aquaculture systems" and "Diseases of Emerging Aquaculture Species" modules: on the MSc "Marine and Fisheries Science: Sustainable management of living marine resources" at the University of Aberdeen.

**1999 to date** "Vaccines Against Fish Parasites" Module 4: Bi-annual Fish Immunology Course, Université de Wageningen, Wageningen, Netherlands.

**1994 to date** "Practical Applications of Lower Vertebrate Immunology": (as part of the Developmental Immunology course): Taught to BSc Immunology, Medicine, and Veterinary Sciences students, University of Glasgow.

**1990 to 2001** "Fish Immunology" and "Immunological detection of fish diseases" B.Tech Aquaculture Scottish Agricultural College Aberdeen

## Membership of Professional and Academic Bodies.

Fellow of the Royal Entomological Society (*by invitation*).  
 Associate of the Institute of Medical Laboratory Sciences (*by examination*)  
 Member of the European Association of Fish Pathologists.  
 Member of the Palaeontology Association.

## Membership of other organisations.

Member of The Maine Aquaculture Innovation Center's Board of Directors 2008 to date, Maine Sea Grant Shellfish Working Group 2008 to date, Maine Aquaculture Association Mariculture Steering Committee 2007 to date, Chair Scientific Committee 7<sup>th</sup> NOFFI Fish Immunology Conference, Stirling University, June 2007, Paisley University, Biological Sciences Subject Health Review Committee Member 2006, AHJWG committee 1999-2007, Chair AHJWG working group on interactions between aquaculture species 2003-2005, Member of the ICES Marine Fish Culture Working group 1999-2003 SEERAD representative on the following:- CSG halibut scientific steering committee, CSG scallop scientific steering committee, CHABOS Lectin working group 1996-97, SSGA furunculosis working group 1992-1997, Technology Foresight halibut cultivation committee 1991-1998, cod farming demonstration consortium 1997-2000.

# Referees.

<p>Dr A.E. Ellis Senior Principal Scientific Officer Immunology &amp; Vaccines Group FRS Marine Laboratory PO box 101 Victoria Road Torry Aberdeen AB11 9DB United Kingdom Tel: +44 (0) 1224 876544 Fax: +44 (0)1224 295667 e-mail: a.e.ellis@marlab.ac.uk</p>	<p>Prof Alexandra Adams Institute of Aquaculture Fish Immunology Group University of Stirling Stirling FK9 4LA United Kingdom Tel: +44 (0)1786 467870 Fax: +44 (0)1786 472133 e-mail: alexandra.adams@stir.ac.uk</p>	<p>Prof S Johnson NRC Institute for Marine Bio-sciences Dalhousie University 1411 Oxford Street Halifax: Nova Scotia B3H 3Z1 Canada Tel: +1(902) 426-8332 Fax: +1 (902) 426-9413 e-mail: Stewart.Johnson@nrc.ca</p>
<p>Prof Giuseppe Scapigliati Associate Professor of Animal Biotechnology and Applied Zoology Dipartimento di Scienze Ambientali University of Tuscia I-01100 Viterbo, Italy Tel: +39-0761-357137 / 030 Fax: +39-0761-357030 e-mail: scapigg@unitus.it</p>	<p>Dr R. Wootten Deputy Director Institute of Aquaculture University of Stirling Stirling FK9 4LA United Kingdom Tel: +44 (0)1786 467870 Fax: +44 (0)1786 472133 e-mail: rw3@stir.ac.uk</p>	<p>Prof C. Sommerville Dean of Science University of Stirling Stirling FK9 4LA United Kingdom Tel: +44 (0)1786 467870 Fax: +44 (0)1786 472133 e-mail: cs3@stir.ac.uk</p>
<p>Prof J Castell Fish Nutrition Unit DFO Brandy Cove St Andrews New Brunswick Canada Tel: +1 (902) 426-3550 Fax: +1 (902) 426-5995 e-mail: Castell.J@mar.dfo-mpo.gc.ca</p>	<p>Prof W.T.W. Potts Prof Emeritus University of Lancaster c/o The Nook Caton Lancaster United Kingdom Tel: +44 (0)1524 770500 e-mail: w.potts@lancs.ac.uk</p>	<p>Prof Bergljót Magnadóttir, Head of the Department of Virology and Molecular Biology Institute for Experimental Pathology, University of Iceland, Keldur v. Vesturlandsveg, IS-110 Reykjavík, Iceland. Telephone: (+354) 567 4700, fax: (+354) 567 3979, e-mail: bergmagn@mail.rhi.hi.is</p>

## Publications

(Not including symposiums, proceedings etc., which exceed another 75 proceedings/presentations)

Barker S., Johnson S.C. & **Bricknell, I.R.**

The Acute Phase Protein Cascade Following (*Lepeophtheirus salmonis*, Kroyer 1837) Settlement.  
Fish and Shellfish Immunology (*in Prep*)

David T. Gillett, Remi M. L. Gratacap, **Ian R. Bricknell**, Tim J. Bowden and Stewart C. Johnson  
Characterization and expression of the recombination activating gene 1 (RAG1) of the Atlantic halibut (*Hippoglossus hippoglossus*)  
Development and Comparative Immunology (*in Prep*)

**I.R. Bricknell**, P. Cook, K Adamson, T.J. Bowden & J.E. Bron

Function of Atlantic salmon (*Salmo salar* L.) serum antibodies under the physiological environments encountered in the digestive tract of the sea louse (*Lepeophtheirus salmonis*, Kroyer)  
Fish & Shellfish Immunology (*In Prep*)

Campbell C. Pert, A. Jennifer Mordue (Luntz), Robert J. Fryer, Bríd O'Shea and **Ian R. Bricknell**

The Settlement and Survival of the Salmon Louse, *Lepeophtheirus salmonis* L. (Copepoda: Caligidae) on Atypical Hosts.  
Dis Aquat Org. (*in Press*)

Bríd O'Shea, J.A. Mordue (Luntz) & I. R. Bricknell

Host Identification and Settlement of the Infective Copepodid Stage of the Salmon Louse, *Lepeophtheirus salmonis* (Krøyer, 1837)  
Aquaculture (Accepted awaiting publication)

Campbell C. Pert, A. Jennifer Mordue (Luntz), Keith Walton, Elaine Meldrum and **Ian R. Bricknell**

The Effects of Common Fish Anaesthetics on *Lepeophtheirus salmonis* (Copepoda: Caligidae)  
Aquaculture (Accepted awaiting publication)

Patricia Noguera, Catherine Collins, David Bruno, Campbell Pert, Anna Turnbull, Alison McIntosh, Katherine Lester, **Ian Bricknell**, Stuart Wallace, & Paul Cook

Red vent syndrome in wild Atlantic salmon *Salmo salar* in Scotland is associated *Anisakis simplex sensu stricto* (Nematoda: Anisakidae)  
Dis Aquat Org Vol. 87 (3) 199–215

Gratacap, R.M.L., Thompson, K.D., **Bricknell, I.R.** & Adams, A. (2009) Lipopolysaccharide extraction: a phenol alternative.

Journal of Fish Diseases, 32, 811-814.

Basti, D., **Bricknell, I.**, Beane, D. & Bouchard, D. (2009)

Recovery from a near-lethal exposure to ultraviolet-C radiation in a scleractinian coral.  
Journal of Invertebrate Pathology, 101, 43-48.

Campbell C. Pert, A. Jennifer Mordue (Luntz), Robert J. Fryer, Bríd O'Shea, **Ian R. Bricknell** 2009

The settlement and survival of the salmon louse, *Lepeophtheirus salmonis* (Krøyer, 1837), on atypical hosts  
Aquaculture 288 321–324

McCarthy, U.M., Bron, J.E., Brown, L., Pourahmad, F., **Bricknell, I.R.**, Thompson, K.D., Adams, A., Ellis, A.E., 2008.

Survival and replication of *Piscirickettsia salmonis* in rainbow trout head kidney macrophages.  
Fish & Shellfish Immunology 25, 477-484.

McCarthy UM, Urquhart KL, **Bricknell IR** 2008

An improved in situ hybridization method for the detection of fish pathogens  
Journal of Fish Diseases 31(9) 669-677

K. Urquhart, C. C. Pert, R. Kilburn, R. J. Fryer, and **I. R. Bricknell** 2008

Prevalence, abundance, and distribution of *Lepeophtheirus salmonis* (Krøyer, 1837) and *Caligus elongatus* (Nordmann, 1832) on wild sea trout *Salmo trutta* L.  
ICES Journal of Marine Science, 65, 171-173.

B. O'Shea, A.J., Mordue (Luntz), R.J Fryer, & **I.R. Bricknell** 2006

Determination of the Surface Area of a Fish

**I.R. Bricknell**, S. Dalesman, B. O'Shea, C.C. Pert, & J. Mordue 2006

The Effect of Environmental Salinity on Sea lice (*Lepeophtheirus salmonis*) Settlement Success  
Dis Aquat Org. 71(3):201-12

McBeath, S. J., Ellis, L. M., Cook, P. F., Wilson, L., Urquhart, K. L. and **Bricknell, I. R.**

Rapid development of polyclonal antisera against infectious salmon anaemia virus and its optimisation and application as a diagnostic tool.

J Fish Dis 29 (5), 293–300.

The Sea Bass (*Dicentrarchus labrax* L.): A Peripatetic Host of *Lepeophtheirus salmonis*? 2006

C.C. Pert, K. Urquhart and **I.R. Bricknell**

Bull EAFP 26(4) 163-165

Bergljót Magnadóttir, Bjarnheiður K. Guðmundsdóttir, Sigrún Lange, Slavko Bambir, Agnar Steinarsson, Matthias Oddgeirsson, Tim Bowden, **Ian Bricknell**, Roy Dalmo & Sigríður Guðmundsdóttir 2006

Immunostimulation of cod (*Gadus morhua* L.) larvae and juveniles

J Fish Dis 29 147-155

James Bron, Campbell Pert, Christina Sommerville, Hege Helleberg & **Ian Bricknell** 2006

Diseases of gadoid fish (an update)

Bulletin of the European Association of Fish Pathologists 26(1) 43-46

**I.R. Bricknell**, J.E. Bron & T.J. Bowden 2005

Diseases of Gadoid Fish in Cultivation: A Review

ICES Journal of Marine Science 63 253-266

Sigrun Lange, Slavko H. Bambir, Alister W. Dodds, Tim Bowden, **Ian Bricknell**, Sigrun Espelid, Bergljót Magnadóttir 2005

Complement component C3 transcription in Atlantic halibut (*Hippoglossus hippoglossus* L.) larvae.

Fish & Shellfish Immunology 20 (3) 285-94.

**Ian Bricknell** & Roy A. Dalmo 2005

The use of immunostimulants in fish larval aquaculture

Fish & Shellfish Immunology 19 (5) 457-472

Bowden, T.J., Butler R. and **Bricknell I.R.** 2004

Seasonal variation of serum lysozyme levels in Atlantic halibut (*Hippoglossus hippoglossus* L.)

Fish and Shellfish Immunology Fish & Shellfish Immunology 17(2): 129-135.

David W. Verner - Jeffreys, Robin J. Shields, **Ian R. Bricknell** and T. Harry Birkbeck 2004

Effects of different water treatment methods and antibiotic addition on larval survival and gut microflora development in Atlantic halibut (*Hippoglossus hippoglossus* L.) yolk-sac larvae

Aquaculture 232 (1-4): 129-143

**I.R. Bricknell**, H.E. Hayes, P. Billingsley, A.J. Vigneau, C. Sommerville & R.S. Raynard 2003

Vaccines Against the Salmon lice (*Lepeophtheirus salmonis*)- A Holy Grail, or just around the corner?

Journal of Parasitology 89(S) 149-157

M. Snow, R.S. Raynard, A.G. Murray, D.W. Bruno, J.A. King, R. Grant, **I.R. Bricknell**, N. Bain & A Gregory 2003

An Evaluation of current Diagnostic tests for the detection of infectious salmon anaemia virus (ISAV) following experimental water-borne infection of Atlantic salmon *Salmo salar* L.

Journal of Fish Diseases 26, 135-145

**I.R. Bricknell**, & T.J. Bowden 2003

Immunostimulants and their role in fish health management

Fish Farmer Magazine 26(1) 10-11

Timothy J Bowden, Katy Adamson, Philip MacLachlan, Campbell C Pert and **Ian R Bricknell** 2003

Long-Term Study of antibody response and injection-site effects of oil adjuvants in Atlantic halibut (*Hippoglossus hippoglossus* L.)

Fish & Shellfish immunology 14 363-369

David W. Verner - Jeffreys, Robin J. Shields, **Ian R. Bricknell** and T. Harry Birkbeck 2003

Changes in the gut-associated microflora during the development of Atlantic halibut (*Hippoglossus hippoglossus* L.) larvae in three British hatcheries.

Aquaculture 219 21-43

T.J. Bowden, D Menoyo-Luque, **I.R. Bricknell** & H Wegiland 2002

Efficacy of Different Administration Routes for Vaccination Against *Vibrio anguillarum* in Atlantic Halibut (*Hippoglossus hippoglossus* L.)

Fish & Shellfish Immunology 12 (3) 283-285

Louisa Wilson, Katy Adamson, Laura Ellis, Paul Cook, Sonia McBeath & **Ian Bricknell** 2002

An Alkaline Phosphatase-Based Method for the Detection of Infectious Salmon Anaemia Virus (ISAV) in Tissue Culture and Tissue Imprints

Journal of Fish Diseases 25:615-619

**I.R. Bricknell**, P.F. Bisset & T.J. Bowden 2002

The Function of Atlantic Salmon (*Salmo salar* L.) Antibodies Under Extremes of pH and Osmolarity.

Fish & Shellfish Immunology 13:215-219

Hiney M., Rodger H., **Bricknell I.**, Casburn P. & Mulcahy D. 2002

Aquaculture development and regulation: incompatibility or harmony?

Bulletin of the European Association of Fish Pathologists 22:178-184

Robert S Raynard, **Ian R Bricknell**, Peter F Billingsley, Alasdair J Nisbet, Antoine Vigneau and Christina Sommerville 2002

Development of vaccines against sea lice

Pest Management Science 58:569-575

D.A. Smail, R. Grant, K. Ross, **I.R. Bricknell** & T.S. Hastings 2001

The use of haemabsorption for the isolation of infections salmon anaemia virus on SHK-1 cells from Atlantic salmon (*Salmo salar* L.) From Scotland

Bulletin of the European Association of fish Pathologists 20(5) 212-214

T. J. Bowden, K. Lester, P. MacLachlan and **I. R. Bricknell** (2000)

Preliminary Studies into the Short-Term Effects of Adjuvants on Atlantic Halibut (*Hippoglossus hippoglossus* L.)

Bulletin of the European Association of fish Pathologists 20(4) 148-152

M. Snow, C. O. Cunningham **I. R. Bricknell.** (2000)

Susceptibility of Juvenile Atlantic Cod (*Gadus morhua*) to Viral Haemorrhagic Septicaemia Virus Isolated from Wild Caught Atlantic Cod.

Diseases of Aquatic Organisms 41:225-229

**Bricknell I.R.**, Bowden, T.J., Verner-Jefferys D.W., Bruno D.W., Shields R.S., and Ellis A.E. (2000)

Susceptibility of Juvenile and sub-adult Atlantic halibut (*Hippoglossus hippoglossus*, L.) to infection by *Vibrio anguillarum* and efficacy of protection induced by vaccination.

Fish & Shellfish Immunology 10:319-327

Ron Stagg, David Bruno, Carey Cunningham, Trevor Hastings & **Ian Bricknell** (1999)

Infectious Salmon Anaemia: Epizootiology and Pathology.

State Veterinary Journal 9(3) 1-5

Trevor Hastings, Gilles Olivier, Roland Cusack, **Ian Bricknell**, Åre Nylund, Martin Binde, Pauline Munro, Charles Allen (1999)

Infectious Salmon Anaemia

Bulletin of the European Association of fish Pathologists 19(6) 286-288

**Bricknell I.R.** Bowden, T.J., Bruno D.W., MacLachlan P., Johnstone R. and Ellis A.E. (1999)

Susceptibility of Atlantic halibut, *Hippoglossus hippoglossus*, (L.) to infection with typical and atypical *Aeromonas salmonicida*.

Aquaculture 175 1-13

**Bricknell I.R.** Bowden, T.J., King J. A. & Ellis A.E. (1999)

Duration of Protective Antibodies and the Correlation with Protection in Atlantic Salmon (*Salmo Salar* L.) Following Vaccination with An *Aeromonas Salmonicida* Vaccine Containing Iron Regulated Outer Membrane Proteins and Secretory Polysaccharide.

Fish Shellfish Immunol. 9 (2)139-151

O'Dowd A.M., **Bricknell I.R.**, Secombes C.J., & Ellis A.E. (1999)  
The Primary and Secondary Antibody Responses to Iron Restricted Outer Membrane Proteins Antigens Atlantic Salmon (*Salmo salar* L.) Immunised with A-layer Positive and A-layer Negative *Aeromonas salmonicida* Bacterins)  
Fish Shellfish Immunol. **9** (2) 125-138

Ferguson Y., **Bricknell I.R.**, Glover L.A., MacGregor D.M., and Prosser J.I. (1998)  
Transmission of *lux*-Marked and wild type *Aeromonas salmonicida* strains between Atlantic salmon (*Salmo salar* L.)  
FEMS Microbiology Ecology vol. 27 pp. 251-260

R. Vipond, **I.R. Bricknell**, Emma Durant, T.J. Bowden, A.E. Ellis, Mary Smith and S.M. MacIntyre, (1998)  
Defined deletion mutants can identify the major virulence factors of *Aeromonas salmonicida*.  
Infection and Immunity, **May 1998**, p1990-1998

**I.R. Bricknell**, T.J. Bowden and A.L. Langston, (1997)  
Halibut Health and Immunology  
Bulletin of the European Association of Fish Pathologists **17(6)** 267-269

Bowden, T.J., Butler R., **Bricknell I.R.** and Ellis A.E. (1997)  
Serum trypsin-inhibitory activity in five species of farmed fish  
Fish and Shellfish Immunology **7**, 377-385

Smail D.A. **Bricknell I.R.** and Patterson D. (1997)  
The inability to detect Infectious Pancreatic Necrosis Virus (IPNV) in crustacean diets for larval Atlantic halibut, *Hippoglossus hippoglossus* L..  
Bulletin of the European Association of Fish Pathologists **17(4)** 129-131

**Bricknell I.R.** Bowden T.J. Lomax, L. and Ellis A.E. (1997)  
Antibody response and protection of Atlantic salmon (*Salmo salar*) immunised with an extracellular polysaccharide of *Aeromonas salmonicida*  
Fish and Shellfish Immunology **7 (1)** 1-16

**Bricknell I.R.**, Bruno D. W. and Stone J. 1996  
*Aeromonas salmonicida* infectivity studies in goldsinny wrasse *Ctenolabrus rupestris*, L.  
Journal of Fish Diseases **19**, 469-474

**I. R. Bricknell**, D. W. Bruno, T.J. Bowden and P. Smith 1996  
Fat Cell Necrosis Syndrome in Atlantic Halibut (*Hippoglossus hippoglossus* L.).  
Aquaculture **144** 65-69

**Bricknell I.R.** and Bruno D. W. 1995  
Sudden fish death associated with Alcian Blue marking.  
Bulletin of the European Association of Fish Pathologists **15(3)** 1-2

**Bricknell I.R.** 1995  
A reliable method for the induction of experimental furunculosis  
Journal of Fish Diseases **18(2)** 127-133

R.S. Raynard, A.L.S. Munro, J. King, A. E. Ellis, D. W. Bruno, **I. R. Bricknell**, P. Vahanakki, R. Wotton, C. Sommerville, A. Petrie, B. Vivers, O. Andrade-Salas, W. Melvin, T. Amezaga, M. B. Labus, J.J. Coull, P. Relly, M.F. Mulcahy, M. O'Donoghue, and J. O'Connell. 1994  
Development of a vaccine for the control of sea lice (*Lepeophtheirus salmonis* and *Caligus elongatus*) in Atlantic salmon (*Salmo salar*)  
ICES **CM 1994/F:7**

**Bricknell I.R.** & Ellis A.E. 1993  
The development of an effective vaccine against furunculosis  
Fish Farmer **16(5)** 16-19

Coleman G., Bennett A.J., Whitby P.W. and **Bricknell I.R.** 1993.  
A 70 kDa *Aeromonas salmonicida* serine protease -  $\beta$ -galactosidase hybrid protein as an antigen and its protective effect on Atlantic salmon (*Salmo salar* L.) against a virulent *A. salmonicida* challenge.  
Biochemical Society Transactions **21(49S)**



Ellis A.E., **Bricknell I.R.** & Munro A.L.S. 1992.  
Patent PCT/GB92/01016 Vaccines against *Aeromonas salmonicida*

**Bricknell I.R.**, Ellis A.E. & Munro A.L.S. 1992.  
Patent D/IPR/1G0024 Methods for the detection of the protective antigens of *Aeromonas salmonicida*.

**Bricknell I.R.**, Ellis A.E. & Munro A.L.S. 1992.  
The Current Status of a Scottish Furunculosis Vaccine.  
ICES **CM 1992/F:29**

Ellis A.E., **Bricknell I.R.** & Munro A.L.S. 1992.  
The Status of Furunculosis Vaccines.  
Bulletin of the Aquaculture Association of Canadian **92(1) 10-14**

Potts W.T.W. and **Bricknell I.R.** 1992.  
The Ionic Composition of Ion Transporting Cells in Stonefly Nymphs.  
Scanning Microscopy **6(1) 287-294**

**Bricknell I.R.** 1991.  
X-Ray Microanalysis as a Tool for Measuring Intracellular Ions  
Microscopy and Analysis **5(3) 7-13**

**Bricknell I.R.** & Potts W.T.W., 1989  
Silver Staining of Ion Transporting Cells  
**Practical Exercises in Biology Vol. 7** (W.T.W. Potts Ed.) Lancaster University Press, Lancaster.

**Bricknell I.R.** & Potts W.T.W., 1989  
The Distribution of the Mitochondria Rich Ion Transporting cells of British Plecoptera, In relation to the Habitat  
Entomologist **108(3) 176-183**

**Bricknell I.R.** & Potts W.T.W., 1988  
The Effects of Acidification on the Coniform Mitochondria Rich Ion Transporting Cells of Plecoptera  
Proceedings of the Royal Microscopic Society **23 107-108**

**Bricknell I.R.** & Potts W.T.W. 1988  
The Effects of Low pH on the Coniform Mitochondria Rich Ion Transporting Cells of Plecoptera.  
Institute of Physics Conference Series **93(3) 583-584**

**Bricknell I.R.** 1986.  
The Paeleopathology of Pleistocene Probocidiens  
Modern Geology **11(4) 186-202**

## Conference Abstracts

### *Invited papers/plenary lectures 2007*

Keynote lecture: Monitoring the Infective Pressure of *Lepeophtheirus Salmonis* (Krøyer 1837) on Wild Salmonid Populations in Loch Torridon, Scotland

**Ian R. Bricknell**, Campbell C. Pert, Paul Cook, Rachael Kilburn, Sonia McBeath

World Aquaculture Society San Antonio Texas Feb 27-March 3<sup>rd</sup> 2007 Special session SEA LICE- Infection Dynamics on Farms and Interactions with Wild Salmon

### *Invited papers/plenary lectures 2006*

Plenary lecture: The physiology of sea lice (*L. salmonis*) in relation to successful settlement on its host's

**I.R. Bricknell** & J.E. Bron

ICOPA XI, The Scottish Exhibition and Conference Centre (SECC), Glasgow Scotland UK.

6-11th August 2006

Sea Lice infection of salmonid smolts in estuaries

**I.R. Bricknell**

Invited speaker: University of Aberdeen Seminar series May 2006

*Flexibacter ovolyticus* and other emerging pathogens in the UK halibut industry

**I.R. Bricknell**

Plenary lecture BMFA VIII<sup>th</sup> annual conference, November 2006 Date & location TBC)

Biosecurity in ornamental aquaculture: keeping Koi Herpes virus out

**I.R. Bricknell**

Plenary lecture: OATA conference, 13<sup>th</sup>-14th November 2006 The Britannic Royal Hotel, Coventry

### *Selected recent papers/plenary lectures*

Advances in *Vibrio anguillarum* 02 $\beta$  vaccines in farmed Atlantic cod

**I.R. Bricknell** & K. Urquhart

Plenary lecture BMFA annual conference, Oban, November 8-9 2005

Rapid Detection of BKD in Salmonid Fish by IFAT

K. Urquhart\*, P. Cook, S. J. McBeath, J. E. Bron, and **I. R. Bricknell**

11<sup>th</sup> International meeting of the EAAP Copenhagen September 2005

Workshop 4 Diseases of gadoid fish

**Ian Bricknell** & James Bron (coordinators)

11<sup>th</sup> International meeting of the EAAP Copenhagen September 2005

0-119 Emergence of Disease risks to gadoid in culture

**Ian Bricknell**, Tim Bowden, S.C. Johnson & James Bron

11<sup>th</sup> International meeting of the EAAP Copenhagen September 2005

0-120 Parasites of Cultured gadoids: current perspectives and future prospects

James Bron, A.P. Shinn, S.C. Johnson & **Ian Bricknell**

11<sup>th</sup> International meeting of the EAAP Copenhagen September 2005

The Survival of the parasitic sea louse (*Lepeophtheirus salmonis*) to the infectious copepodid stage and their survival on atypical hosts

Campbell Pert, A. Jennifer Mordue (Luntz) & **Ian Bricknell**

11<sup>th</sup> International meeting of the EAAP Copenhagen September 2005

Immunostimulants in Aquaculture

**Ian Bricknell**, Tim Bowden & Roy Dalmo

Plenary lecture Aquatech Chile, Puerto Monte August 2005

Sea Lice (*Lepeophtheirus salmonis*) A European problem?

**Ian Bricknell** & James Bron

Plenary lecture Aquatech Chile, Puerto Monte August 2005

Dealing with Emerging Fish Disease: Gadoid Diseases

**Ian Bricknell**, James Bron, Katy Urquhart & Tim Bowden  
Plenary lecture Aquatech Chile, Puerto Monte August 2005

Post Settlement Dynamics of the Parasitic Sea Louse, *Lepeophtheirus salmonis* (Copepoda: Caligidae)  
Brid O'Shea, A. Jennifer Mordue (Luntz) & **Ian Bricknell**  
9th international conference on copepoda, Tunis, Tunisia, July 2005

Sea Lice (*Lepeophtheirus salmonis*) Settlement Success at Low Salinity  
**Ian Bricknell**, Sarah Dalesman, Brid O'Shea, Campbell Pert & A. Jennifer Mordue (Luntz)  
9th international conference on copepoda, Tunis, Tunisia, July 2005

Growing Sea Lice in the laboratory  
**Ian Bricknell** & James Bron  
Plenary Lecture  
9th international conference on copepoda, Tunis, Tunisia, July 2005

The Use of Genomics, Proteomics and Immunology in Studies of the Parasitic Copepod (*Lepeophtheirus salmonis*)  
Fast MD, Bron JE, **Bricknell IR**, Ross NW, Johnson SC  
Plenary Lecture  
9th international conference on copepoda, Tunis, Tunisia, July 2005

**I.R. Bricknell**  
Disease of Gadoid fish: A Review  
Plenary Lecture  
BMFA VII<sup>th</sup> Annual Scientific Meeting  
Oban 2-3 November 2004

Disease Of Gadoid Fish In Cultivation: What Do We Know And What Do We Need To Know?  
**I.R. Bricknell** & T.J. Bowden  
Plenary Lecture  
ICES Mariculture of Gadoids Conference  
Bergen June 2004

Salmon Lice Settlement Success at Low Salinity  
**I.R. Bricknell**, S. Dalesman & J.A. Mordue  
6<sup>th</sup> Sea Lice Conference Huntsman Marine Science Centre St. Andrews New Brunswick Canada June 2003

Settlement of Salmon Lice on "Dead End" Hosts  
**I.R. Bricknell**, C.C. Pert & J.A. Mordue  
6<sup>th</sup> Sea Lice Conference Huntsman Marine Science Centre St. Andrews New Brunswick Canada June 2003

The physiological environment found in the gut of the sea louse (*L. salmonis*)  
**I.R. Bricknell**, J.E. Bron, P. Cook, K. Adamson, A.J. Vigneau, R.S. Raynard and P.F. Billingsley  
10<sup>th</sup> EAFP Meeting Malta September 2003  
*Winner of a 2003 EAFP Best Poster Award*

Do Infected Salmon Recruit More Sea Lice, *Lepeophtheirus salmonis*, Than Naïve Fish?  
Brid O'Shea, A.J. Mordue (Luntz) **I.R. Bricknell**  
10<sup>th</sup> EAFP Meeting Malta September 2003

The Fecundity Of The Salmon Louse, *Lepeophtheirus salmonis* and Their Survival On Atypical Hosts  
Campbell C. Pert, A. Jennifer Mordue (Luntz) and **Ian R. Bricknell**  
10<sup>th</sup> EAFP Meeting Malta September 2003

Host Preferences of the Salmon Louse, *Lepeophtheirus salmonis*  
Brid O'Shea, A.J. Mordue (Luntz), **I.R. Bricknell**  
6<sup>th</sup> Sea Lice Conference Huntsman Marine Science Centre St. Andrews New Brunswick Canada June 2003

The Impact of Salinity on Survival of *Lepeophtheirus salmonis*  
S.Dalesman, **I.R. Bricknell**, C. Pert, B. O'Shea and A.J. Mordue (Luntz)  
6<sup>th</sup> Sea Lice Conference Huntsman Marine Science Centre St. Andrews New Brunswick Canada June 2003

Ready Salted: Salmon Louse Aminopeptidase  
A.J. Vigneau, **I.R. Bricknell**, R.S. Raynard and P.F. Billingsley  
6<sup>th</sup> Sea Lice Conference Huntsman Marine Science Centre St. Andrews New Brunswick Canada June 2003

Vaccines Against Sea Lice: A Holy Grail or Just Around the Corner?

**I.R. Bricknell**

Plenary Lecture

ICOPA X Canada House, Vancouver, Canada July 2002