

# Stakeholder-Researcher Knowledge Transfer Workshop



# IBIS

Integrated Aquatic  
Resources Management  
Between Ireland, Northern  
Ireland & Scotland

10am-5pm  
Thursday 14 March 2013  
Exploris Aquarium  
Portaferry  
Northern Ireland



**Northern Ireland  
Executive**

[www.northernireland.gov.uk](http://www.northernireland.gov.uk)

Ireland's EU Structural Funds  
Programmes 2007 - 2013

Co-funded by the Irish Government  
and the European Union

# Programme Thursday 14 March 2013



09:45	REGISTRATION		
10:00	John Pollock	Acting Chief Executive Loughs Agency	Welcome
10:05	Colin Adams David Roberts Paddy Boylan	University of Glasgow Queen's University Belfast Loughs Agency	Summary of completed Masters projects
	Chair: Dai Roberts		
	Cass Bromley Nadescha Zworschke Mark McCullough	Queen's University Belfast	Researcher Presentations
11:30	COFFEE	DISPLAY of posters outlining	PhD research
12:00	Chair: Colin Adams		
	Oliver Hooker Matt Newton	University of Glasgow	Researcher Presentations
	Joanne Clarke Nina O'Hanlon		Researcher introductions
13:00	LUNCH		
14:00	Chair: Dai Roberts		
	Julia Calderwood Carina Gsottbauer Laura Hinchliff	Queen's University Belfast	Researcher Presentations
15:15	COFFEE	DISPLAY of posters outlining	PhD research
15:45	Chair: Colin Adams		
	James Barry Travis Van Leeuwen	University of Glasgow	Research presentations
	Chairs: Colin Adams and Dai Roberts		
	Julie Miller Martin Hughes Hannele Honkanen Sinead O'Reilly Elizabeth Clements Jessica Fordyce	University of Glasgow	Introductions to new Masters researchers
	Aoibheann Canavan Lawrence Eagling Simon Guist Luke Murphy	Queen's University Belfast	
16.30	Open Discussion.	Chair: Paddy Boylan	
17.00	CLOSE		

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14-15	QUB Marine Lab; Loughs Agency
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p.8-9	• toolbox: Copyright classroomclipart.com
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## IBIS: project summary



A partnership between the Loughs Agency (Lead Partner), the University of Glasgow and Queen's University Belfast has created an £8m cross-border project. IBIS ([Integrated Aquatic Resources Management Between Ireland, N Ireland and Scotland](#)) will help protect aquatic resources across Northern Ireland, the Border Region of Ireland and Western Scotland.

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Funded from August 2011, IBIS will deliver 70 years of applied research in doctoral and masters projects, 16 Continuing Professional Development courses and 12 Knowledge Transfer workshops by June 2015 – leaving a legacy of expertise in sustainable aquatic resources management in the three jurisdictions.

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Research, education and training are provided at SCENE (the Scottish Centre for Ecology and the Natural Environment, University of Glasgow) on Loch Lomond and at the Marine Laboratory in Portaferry (Queen's University Belfast).

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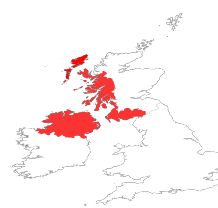
An IBIS Advisory Group is drawn from the main governmental and non-governmental environmental agencies in Ireland, N.Ireland and Scotland, to help IBIS address the needs of stakeholders, and to complement ongoing and planned work by other organisations.

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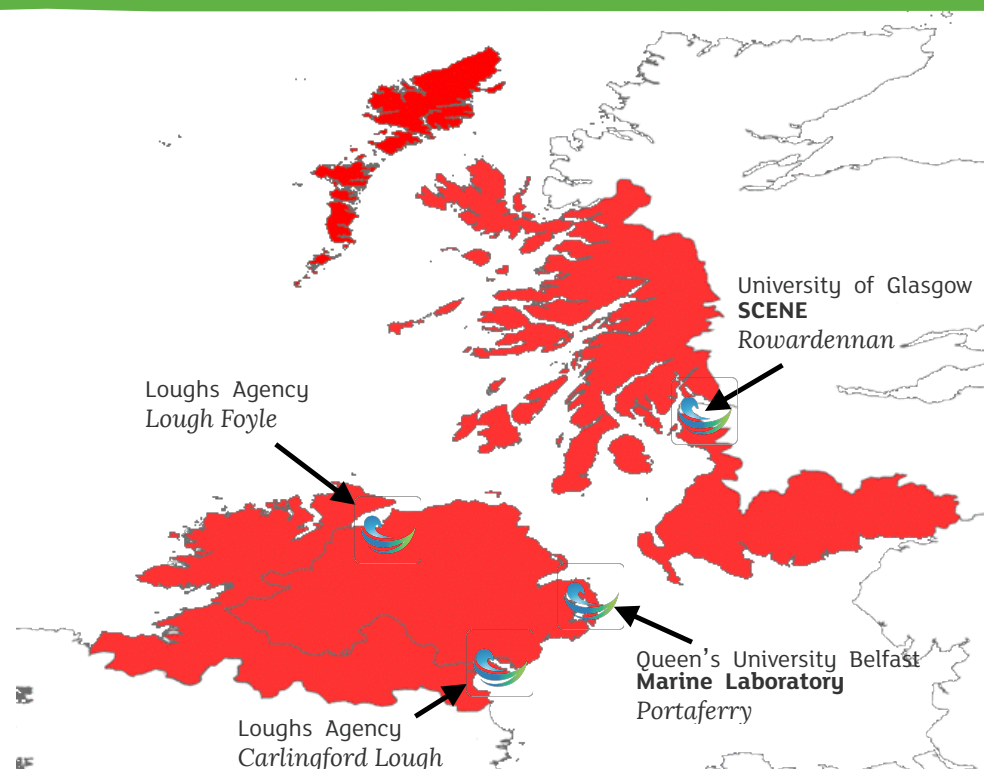
The ethos of IBIS is to assist environmentally sustainable economic development across the INTERREG IVA area through evidence-based management of aquatic resources. The data generated will enter the public domain through the statutory agencies, be made available to stakeholders through Knowledge Transfer workshops, and published in newsletters and online.

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IBIS receives funding of over £6m from the [Special EU Programmes Body \(SEUPB\)](#) that manages the INTERREG IVA Programme under “Priority 2 – Co-operation for a more sustainable cross-border region”, which is funded under the [European Regional Development Fund](#) and which includes match funding from the governments of Ireland and Northern Ireland. The University of Glasgow and its partners and collaborators are contributing an additional £2m towards the development of the new teaching building at SCENE.



## IBIS key locations



- Queen's University Belfast's marine laboratory is on Strangford Lough, a marine SAC (Special Area of Conservation)
- SCENE on Loch Lomond is at the centre of Scotland's first National Park
- Lough Foyle and Carlingford Lough are home to a wide range of important habitats and species, including over-wintering bird communities and salmon and seal populations.

The Loughs are also home to the important natural resources of wild shellfish beds including mussels and oysters, and areas used for shellfish farming.

## IBIS PhD projects



| PhD PROJECTS UNDERWAY |                                                                                                                                |                    |     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|
| 1                     | The population dynamics and migration of the European eel                                                                      | James Barry        | UoG |
| 2                     | The effect of small scale in-stream hydro-schemes on riverine fishes                                                           | Robert Brackley    | UoG |
| 3                     | Science-based management strategies for environmental and commercial sustainability of native oysters, <i>Ostrea edulis</i>    | Carolyn Bromley    | QUB |
| 4                     | Science-based management strategies for improving yield of blue mussels, <i>Mytilus edulis</i> , in benthic cultivation        | Julia Calderwood   | QUB |
| 5                     | Effects of Marine Protected Areas on animal populations, biodiversity and fisheries                                            | Joanne Clarke      | UoG |
| 6                     | The effect of in-stream barriers on the river migration of Atlantic salmon                                                     | Matt Newton        | UoG |
| 7                     | Seabirds as monitors of the intertidal habitat                                                                                 | Nina O'Hanlon      | UoG |
| 8                     | The ecology underpinning conservation management of rare freshwater fishes                                                     | Oliver Hooker      | UoG |
| 9                     | Developing molecular markers for application in the management of exploited stocks of the European oyster <i>Ostrea edulis</i> | Mark McCullough    | QUB |
| 10                    | Predicting impacts of near-future climate change on shellfish stock management                                                 | Carina Gsottbauer  | QUB |
| 11                    | Impacts of the natural spread of non-native oysters and interactions with native oysters                                       | Nadescha Zwerschke | QUB |
| 12                    | Life history strategies in the sea-trout <i>Salmo trutta</i>                                                                   | Travis Van Leeuwen | UoG |

## IBIS masters projects



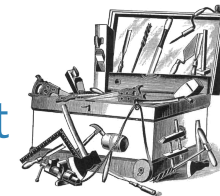
| MASTERS PROJECTS UNDERWAY  |                    |                                                                                                                                                          |     |
|----------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1                          | Aoibheann Canavan  | Interactions between shorebirds and aquaculture in Carlingford Lough                                                                                     | QUB |
| 2                          | Elizabeth Clements | Some aspects of the ecology of the freshwater pearl mussel, <i>Margaritifera margaritifera</i>                                                           | UoG |
| 3                          | Lawrence Eagling   | Developing best practices for <i>O. edulis</i> fisheries in Loch Ryan                                                                                    | QUB |
| 4                          | Jess Fordyce       | Environmental triggers of smolting and population genetics of trout, <i>Salmo trutta</i>                                                                 | UoG |
| 5                          | Simon Guist        | Developing best practices for <i>C. gigas</i> producers                                                                                                  | QUB |
| 6                          | Hannele Honkanen   | Modelling the early life stages of salmon to improve conservation limit estimations                                                                      | UoG |
| 7                          | Martin Hughes      | The ecology underpinning the management of large (ferox) brown trout                                                                                     | UoG |
| 8                          | Julie Miller       | Conservations limits & Atlantic Salmon ( <i>Salmo salar</i> )                                                                                            | UoG |
| 9a                         | Luke Murphy        | Interactions between shellfish fisheries and wildfowl on Lough Foyle                                                                                     | QUB |
| 9b                         |                    | Cormorant predation on Atlantic salmon smolts on Foyle catchment                                                                                         |     |
| 10                         | Sinead O'Reilly    | Eradication methods for aquatic invasive species                                                                                                         | UoG |
| MASTERS PROJECTS COMPLETED |                    |                                                                                                                                                          |     |
| 1a                         | Carolyn Bryce      | The use of the River Invertebrate Classification Tool (RICT).                                                                                            | UoG |
| 1b                         |                    | Impact of multiple barriers on salmon catchment penetration                                                                                              |     |
| 2a                         | Jenny McLeish      | Impact of predation on Atlantic Salmon and Brown Trout Stocks of the Lough Foyle Catchment - a Bioenergetics Modelling Application                       | UoG |
| 2b                         |                    | Anguilliacoides crassus infections in eels in Scotland and Ireland                                                                                       |     |
| 3                          | Colleen Massey     | Fat Content and Fecundity in the European Eel <i>Anguilla anguilla</i>                                                                                   | QUB |
| 4                          | Victoria McCready  | Operating costs in the Lough Foyle Oyster Fishery                                                                                                        | QUB |
| 5                          | Daryl Gunning      | Key population characteristics and fecundity relationships in European lobsters to inform future stock management                                        | QUB |
| 6                          | Laura Hinchliff    | The effect of infection with the swim bladder parasite, <i>Anguillicola crassus</i> , on the lipid content of the European eel, <i>Anguilla anguilla</i> | QUB |
| 7                          | Carrie Craven      | Aquaculture vs. other anthropogenic disturbances: The effects on water birds on Carlingford Lough                                                        | QUB |



## Tools emerging from IBIS for

1. Biology and breeding of oyster broodstock
2. Broodstock sourcing and working with Bonamia
3. Candidate seabird species feeding in intertidal habitat and alternative foraging habitats
4. Change to L.Agency's biological sampling / identification procedures to comply with RICT.
5. Changes to geomorphology related to low-head, run-of-river hydropower installations
6. Channel use at barriers of upstream migration salmon
7. Comparison of model of Atlantic salmon conservation limits in Foyle area to other models
8. Correlations between temperature, chlorophyll and oyster growth
9. Current and historical management of native oysters
10. Damage to aquatic fauna by Archimedean screw turbines, and other physical effects
11. Database identifying bird populations on Lough Foyle
12. Database relating to bird populations on the lough
13. Databases from field surveys of lobster populations
14. Databases from surveys of water bird populations on Carlingford Lough
15. Definition of a unit of conservation importance for more rare fish in IBIS area.
16. Description of fish populations associated with different inshore habitats
17. Determination if MPAs are effective in increasing commercial fish abundance and biomass.
18. Determination of age and population structure of oyster stock
19. Development and assessment of molecular tools to monitor *O. edulis* populations/stocks
20. Difference in species assemblages on aquaculture v. non-aquaculture sites
21. Differential survival of *O. edulis* populations affected by *Bonamia ostreae*: genetic evidence
22. Differentiation between resident and migratory brown trout during early ontogeny
23. Difficulty of barrier ascent of 3 Foyle Catchment barriers to upstream movement
24. Does MPA abundance change create "spillover" effect of commercial fish into fished areas.
25. Ecological constraints on rare freshwater fishes of high conservation status
26. Effective environmental flow management protocols at low-head hydro installations
27. Effectiveness of fish passage facilities at low-head hydro installations
28. Effects of parasite infection on swimbladder function
29. Efficacy of current conservation strategies of wild fish in the IBIS programme area.
30. Establish a code of practice to sustainably manage the Pacific oyster
31. Evidence to help achieve EU targets for long term recovery of the European eel
32. Expanded knowledge of location, movement and abundance of oyster spat
33. Faster/ more accurate identification of native oyster larvae in plankton
34. Foyle/Carlingford sites with substandard macroinvertebrate community structure
35. Growth areas for shellfish fisheries less sensitive to future climate change
36. Guidance on broodstock size needed for feeding larvae into oyster fishery
37. Guidelines for mitigation of predators to blue mussels in benthic cultivation
38. Guidelines for optimal practices for relaying of seed mussels onto on-growing sites.
39. Guidelines for optimum transport conditions/handling procedures for seed mussels
40. Identification of cormorant removal techniques
41. Identification of effects of different types / levels of fishing in MPAs

## aquatic resources management

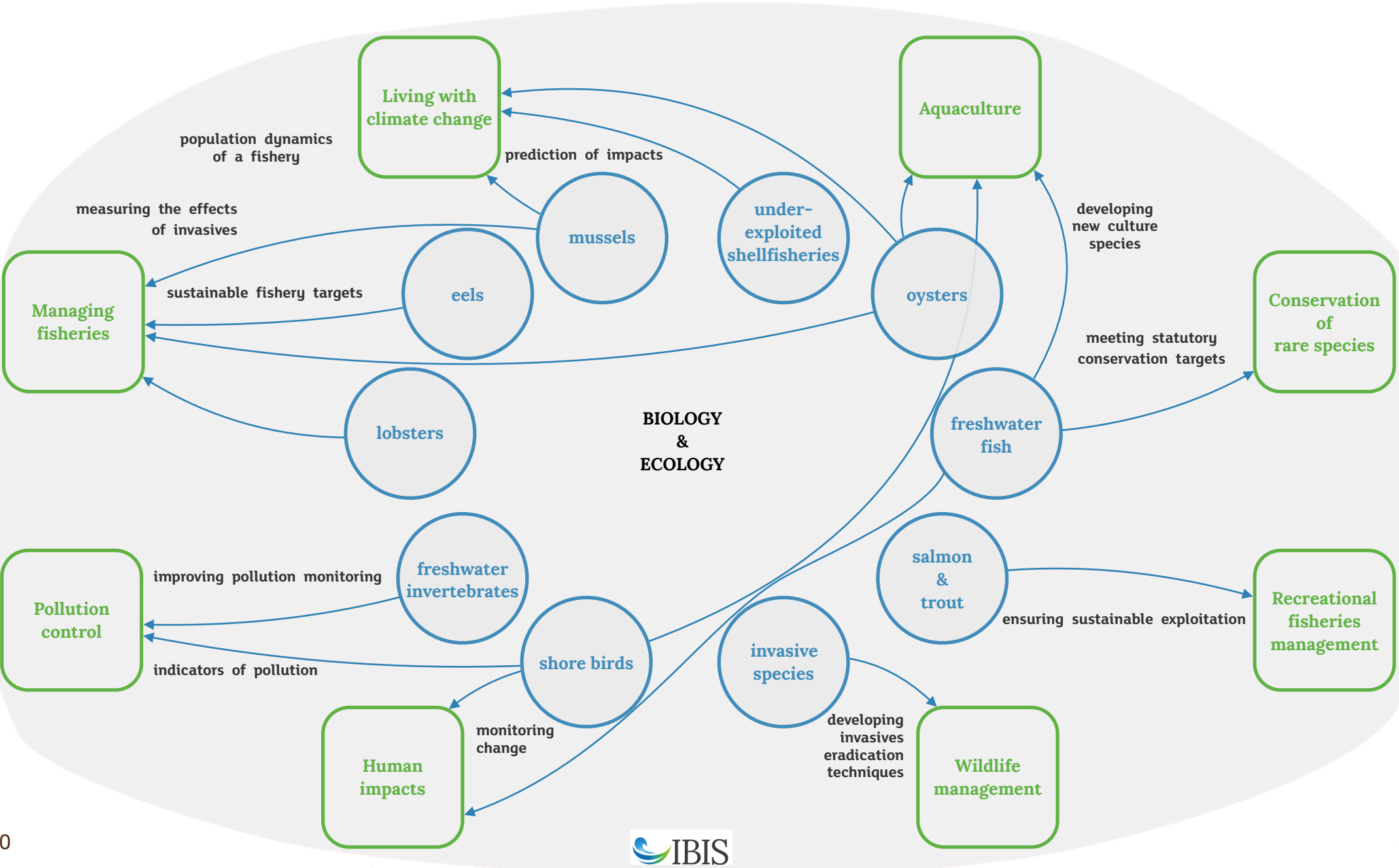
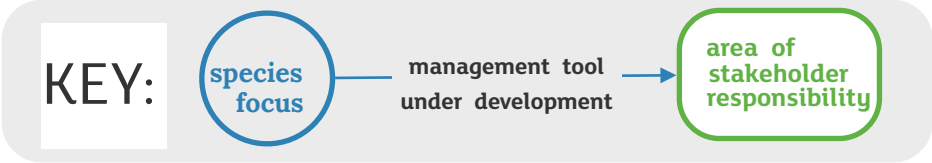


42. Identification of influences on bird species due to aquaculture activities
43. Identification of necessary control and management of cormorants
44. Identification of the critical habitat of sea trout
45. Impact of cormorant predation on fish stocks
46. Impact of riverine barriers on migration of salmon as required under WFD
47. Improving conservation policy and management for rare fish in the programme area.
48. Indication of pollution type degrading affected sites across Foyle / Carlingford systems
49. Intertidal location habitat differences where foraging/breeding seabirds present/absent
50. Introduction of bioenergetics modelling to the Loughs Agency
51. Introduction of River Invertebrate Classification Tool to Loughs Agency
52. Levels of genetic structuring / patterns of gene flow among *O. edulis* populations
53. Management of oyster predators and pests
54. Model changes to calculate barrier porosity to non Atlantic Salmon species
55. Model to assess porosity of a barrier to upstream spawning migration of Atlantic salmon
56. Modelling choice for Foyle and resulting conservation limits for Atlantic salmon
57. Models of the impact of near-future (next 50 to 100 years) climate change on shellfish
58. Models to improve current fishing practices in Lough Foyle Oyster Fishery
59. Non destructive method to monitor inshore fish over different habitats in MPAs
60. Non-Invasive sampling methods for the detection of the parasite *A. crassus*
61. Oyster habitat quality assessment
62. Oyster regeneration areas
63. Oyster survey protocols
64. Parasite burden on lipid content of female silver eels
65. Performance of translocated individuals/stocks in new environments and its impacts
66. Populations/stocks of *O. edulis* with unique genetics for long-term management
67. Potential bird deterrents on aquaculture trestles to prevent predation and fouling
68. Potential contribution to lobster stock recruitment by protection of female lobsters
69. Potential of research e.g. eel adaptive response to parasite infection; catch restrictions
70. Predation of cormorants on Atlantic salmon smolts on the Foyle catchment
71. Pressures impacting upon seabirds at each intertidal location
72. Relationship of fuel cost to pressure on *O. edulis* stocks in L. Foyle Oyster Fishery
73. Review of methodology for setting conservation limits for Atlantic salmon in Foyle area
74. Seabird Index as a proxy for intertidal habitat health
75. Sensitivity analysis of current model of Atlantic salmon conservation limits in Foyle area
76. Shellfish exploitation/production/utilisation in intertidal habitat in Carlingford Lough
77. Species composition/abundance in intertidal locations with/without aquaculture
78. Strategies to mitigate predicted major threats of climate change on shellfish stocks
79. Stream productivity's role in migratory/resident life history of *Salmo trutta*
80. Survey of bird roosting sites for antibacterial resistant strains of *E. coli*
81. Variation in fecundity impact of *A. crassus* parasite on eels in L. Neagh and L. Erne

Details at

<http://ibis-eu-know.weebly.com/management-tools/>

# Schematic of IBIS areas of focus







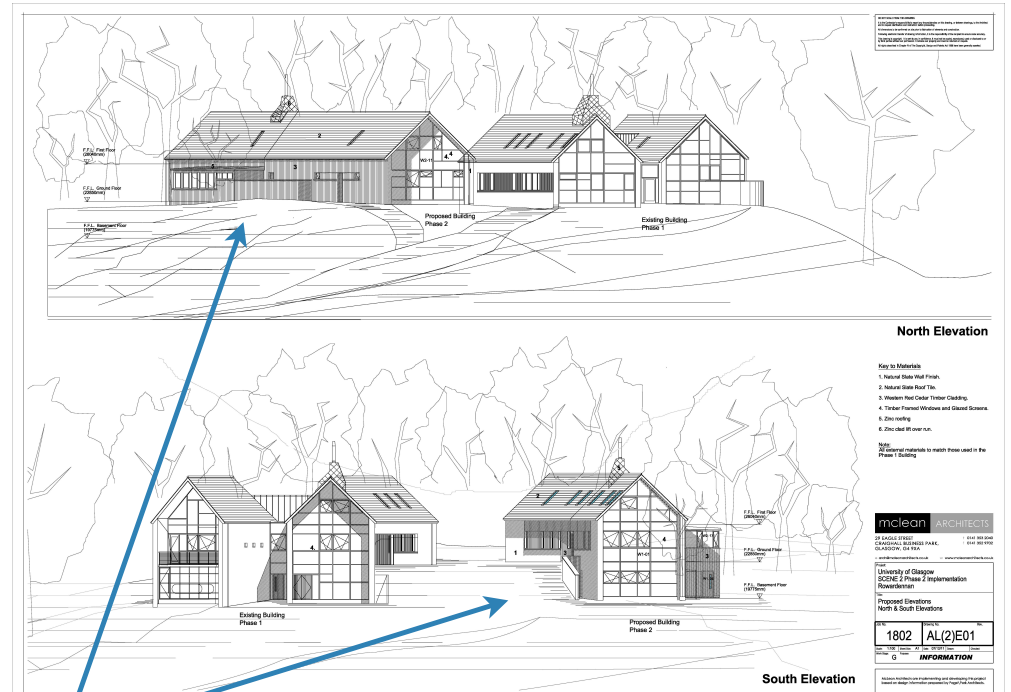
## SCENE's new teaching &

## training building



The new SCENE building will create:

- A state-of-the-art field laboratory including teaching and training facilities
- A lasting legacy for environmental education across the INTERREG IVA programme area.



The new SCENE teaching & training building





# Queen's University Marine Laboratory



Above and top right  
12-13 The Strand, Portaferry



# Loughs Agency



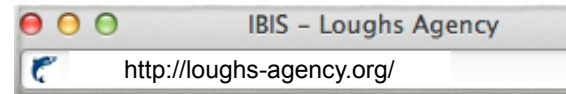
TOP:  
22 Victoria Road,  
Derry~Londonderry

RIGHT:  
Twin hulled boat  
Ostrea





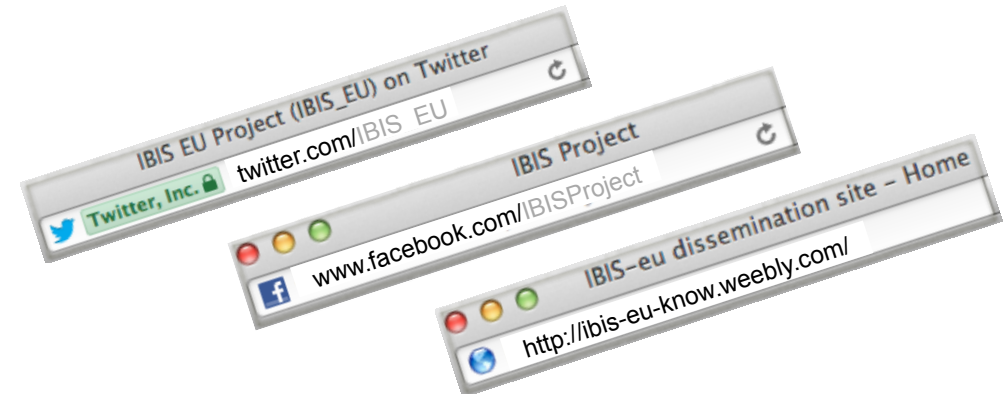
## Upcoming event



## IBIS online



**A Major Conference**  
with the Atlantic Salmon Trust  
**Boosting salmon numbers:**  
*is stocking the answer or the problem?*  
**27- 28 November 2013**  
**Marriott Hotel, Glasgow**  
**jointly organised with IBIS**  
**as part of the IBIS Knowledge Transfer programme**  
*Reserve the date in your diary*



### The debate on the pros and cons of stocking has continued for many decades, sometimes generating more heat than light.

The Atlantic Salmon Trust is joining IBIS to invite leading speakers to discuss all aspects of salmon stocking at a major conference.

Over two days, we will examine in depth the potential role of stocking in restoring, sustaining and enhancing salmon populations and fisheries. We are bringing together experts on salmon science and management - including those with direct experience of stocking - to join with anglers and fishery managers in exploring the potential for salmon stocking, including its effectiveness and risks.

We will look at such issues as:

- how does stocking affect numbers of returning adults?
- Is it cost effective?
- What is the role of genetics and climate change?

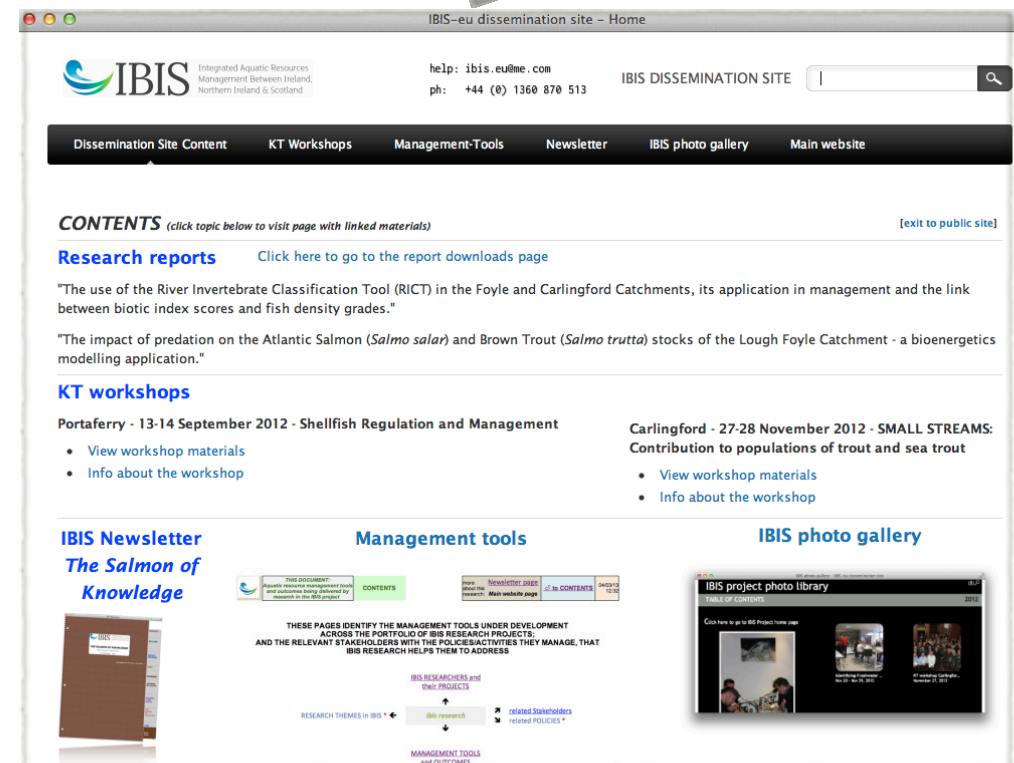
The presentations will range from the underlying science to case studies and examples of best practice.

This exciting conference is fully financially supported by IBIS; attendees will only be asked to pay for their own travel and hotel costs, and the conference dinner if attending.

<http://loughs-agency.org/ibis/ibis-events/salmon-stocking-conference/>

will soon have agenda, speakers, how to register.

To receive notification, email [ibis.events@icloud.com](mailto:ibis.events@icloud.com)





# IBIS stakeholder advisory group



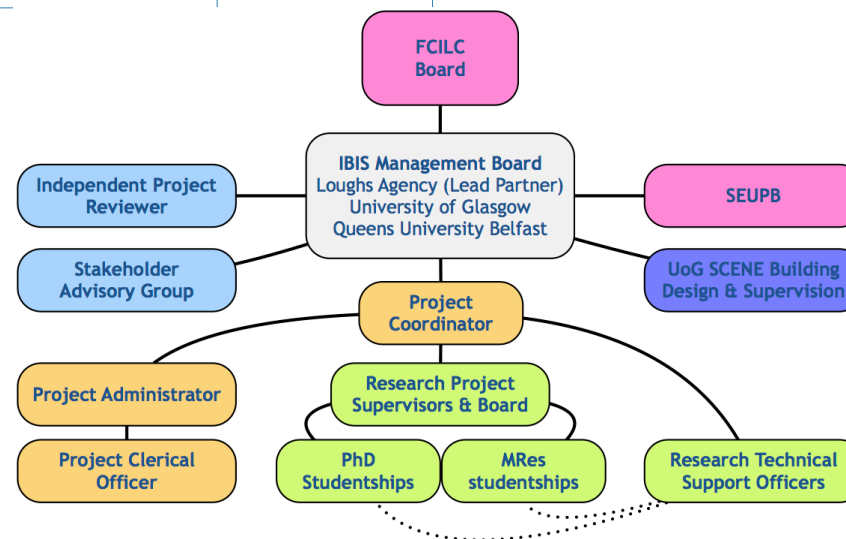
## ORGANISATIONS INVITED TO PARTICIPATE

Agri-Food & Biosciences Institute  
 EU Aquaculture Initiative  
 Atlantic Salmon Trust  
 Council for Nature Conservation and the Countryside  
 Department of Agriculture and Rural Development  
 Department of Agriculture, Food & the Marine  
 Department of Arts, Heritage and the Gaeltacht  
 Department of Communications, Energy and Natural Resources  
 Department of Culture, Arts and Leisure  
 Department of the Environment  
 Environmental Protection Agency Ireland  
 Freshwater Biological Association  
 Inland Fisheries Ireland  
 Invasive Species Ireland  
 Irish Sea Fishery Board (BIM)  
 Marine Institute  
 Marine Scotland  
 National Museums Northern Ireland  
 National Parks and Wildlife Services  
 Northern Ireland Environment Agency  
 Office of Public Works  
 Rivers Agency  
 Rivers and Fisheries Trusts of Scotland  
 Royal Society for the Protection of Birds  
 Scottish Environmental Protection Agency  
 Scottish National Heritage  
 SeaFish  
 Shellfish Association of Great Britain  
 Ulster Wildlife Trust  
 Whale and Dolphin Group



# IBIS Board & Structure




|                      |                            |                                                                                                            |
|----------------------|----------------------------|------------------------------------------------------------------------------------------------------------|
| John Pollock (Chair) | Loughs Agency              | Acting Chief Executive                                                                                     |
| Colin Adams          | University of Glasgow      | Professor of Freshwater Ecology; Director, SCENE (Scottish Centre for Ecology and the Natural Environment) |
| David Bailey         | University of Glasgow      | Senior Lecturer                                                                                            |
| Paddy Boylan         | Loughs Agency              | Biologist                                                                                                  |
| Barry Fox            | Loughs Agency              | Director of Aquaculture                                                                                    |
| John McCartney       | Loughs Agency              | Director of Conservation & Protection                                                                      |
| David Roberts        | Queen's University Belfast | Reader in Marine Biology                                                                                   |
| Julia Sigwart        | Queen's University Belfast | Lecturer in Marine Biology; Director, Marine Laboratory (Portaferry)                                       |
| Kevin Wilson         | Loughs Agency              | Director of Development                                                                                    |



# IBIS Contacts



| The IBIS partners     |                   |                                                                                          |
|-----------------------|-------------------|------------------------------------------------------------------------------------------|
| Loughs Agency         | Headquarters      | 22 Victoria Road, Londonderry<br>BT47 2AB, Northern Ireland<br>Tel: +44 (0) 28 71 342100 |
| Queen's University    | Marine Laboratory | 12-13 The Strand, Portaferry<br>Co. Down, BT22 1PF.<br>Tel: +44 (0)28 4272 7804          |
| University of Glasgow | SCENE             | Rowardennan, Glasgow G63 0AW<br>Tel: +44 (0)1360 870 513                                 |

| The IBIS project support team |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |                                                                                |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------|
| Andrew Smith                  | University of Glasgow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Project Coordinator           | <a href="mailto:andrew.smith.3@glasgow.ac.uk">andrew.smith.3@glasgow.ac.uk</a> |
| Lindsay Wilson                | University of Glasgow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Project Finance Administrator | <a href="mailto:lindsay.wilson@glasgow.ac.uk">lindsay.wilson@glasgow.ac.uk</a> |
| Hannah Taylor                 | University of Glasgow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Project Clerical Officer      | <a href="mailto:hannah.taylor@glasgow.ac.uk">hannah.taylor@glasgow.ac.uk</a>   |
| Liz Ashton, PhD               | Queen's University Belfast                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | IBIS Research Fellow          | <a href="mailto:e.ashton@qub.ac.uk">e.ashton@qub.ac.uk</a>                     |
| Jennifer Dodd, PhD            | University of Glasgow / Loughs Agency                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | IBIS Research Assistant       | <a href="mailto:jennifer.dodd@glasgow.ac.uk">jennifer.dodd@glasgow.ac.uk</a>   |
| IBIS Project Office           |  (post)<br>Scottish Centre for Ecology & the Natural Environment:<br>University of Glasgow, Rowardennan, Glasgow G63 0AW<br> (landline)<br>Coordinator: +44 (0) 136 0870 511<br>Finance & Admin: +44 (0) 136 0870 513<br> (fax)<br>+44 (0)871 263 6949 |                               |                                                                                |