

Environmental What?

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To the majority of staff and students within the Institute of Aquaculture the precise role of the Environmental Services team remains a mystery.

However, this is at odds with our high profile at both national and international levels, and also belies the fact that we have a turnover of more than £1/4 million each year and contribute a significant research resource to the Institute.

To add to our air of mystery we have recently moved from a sprawl of separate offices into the old BAFRU building, which has been refurbished into a nice open-plan area, complete with plants, coffee-making facilities and excellent views. The purpose of this move was to amalgamate the different sections of the Environment Group with the intention of making our working practices more efficient and allowing easier information transfer between staff.

Environmental Services is a commercial consultancy that fits within the academic and research aims of the Institute, specialising in assessment of the environmental effects and environmental management of fish farms and aquaculture systems. The group has extensive experience in environmental surveying of both marine and freshwater environments looking at water and sediment quality, water dynamics, modelling of environmental impacts, coastal zone planning and aquatic resource assessment. We also provide professional advice on environmental management practice to clients within Europe and throughout the world.

One of the governmental requirements asked of fish farmers in the UK is a commitment to a strict programme of environmental monitoring to ensure that their activities are not having unacceptable and irreparable impacts upon the environment. And this is where Environmental Services come in. Using a combination of field surveying techniques, computer modelling and statistical analyses, combined with a thorough understanding of environmental legislation we can determine the impact



Garnet taking a grab sample

of aquaculture on the local environment, and can provide advice on how best to minimise these impacts through improved technology use and management practice.

Using these skills, and the resources available to us within the Institute, we are actively involved in the processes of environmental planning and policy formulation through our role as providers of environmental impact assessments and expert reports on the impacts of fish farming activities.

In association with the Aquaculture Technology Centre (Institute of Aquaculture) and Glasgow University, we have recently started running a series of training courses for industry. This was done in response to the Scottish Environment Protection Agency's suggestion that industry-wide standards of field surveying and report-writing should be implemented to ease the burden on the regulators. We have been happy to fill this role and we currently run two environmental management courses each year aimed at training fish farmers on how to conduct surveys, present data and develop environmental

impact assessments to required standards.

We currently employ seven members of staff, with some additional summer staff helping to provide technical cover during our busy field season. After a period of change, during which we lost the much-valued services of Dr. Karen Robinson, Environmental Services has reformed as a more commercially active group. Environmental Services is managed by Dr. Trevor Telfer, a task which he successfully juggles between being Course Director of the MSc Aquaculture course, lecturer and a supervisor of four PhD students. Replacing Karen Robinson and filling Mary Hennessey's post are Dr. Garnet Hooper and myself. Dr. Hooper joins us from Millport where he researched faunal communities on sublittoral algae and I moved horizontally within the Institute following a PhD in parasite biology with Prof. Chris Sommerville and a period working for Prof. Hugh Ferguson. Both Garnet and I are also involved in project supervision of BSc and MSc students. Within the department we rely heavily on technical support provided by Billy Struthers, Anne Nimmo, Nora Pollock and Kirsty Pollock. We also employ the services of Dr. Jocelyn Richard at Machrihanish, who acts as our taxonomy specialist, as well as other members of the department who are involved in our ongoing commercial projects that touch on their research area.

Additionally, there is a long list of people prepared to help us in any way they can, as it is widely known that any assistance provided over the course of a year is rewarded with a free food and drink session during the festive season.

Thanks to our recent makeover and the consolidation of our staff in the last year we have now embarked on a period of growth. Our client portfolio has continued to increase meaning that we are now one of the main suppliers of environmental surveying services to the Scottish aquaculture industry. We have contracts with every one of the leading salmon producing companies, as well as numerous smaller, independent companies. In the last year we have also been involved in projects in Sierra Leone,



Billy in the lab

Brunei, Vietnam, Bangladesh, Thailand and the Republic of Ireland. Our expertise covers both marine and freshwater environments and has seen us develop close links with the regulatory bodies in Scotland, facilitating our ability to provide expert advice to our clients. Additionally, our expertise in environmental monitoring means we have several clients outside the aquaculture industry.

In recent years the Scottish aquaculture industry has been expanding faster than the capacity of environmental consultancies and environmental regulators could keep up with, but this has now been brought into check as stricter environmental legislation has come into effect. There have been several recent policy changes such as the initiation of the EU's Water Framework Directive and the International Standards Organisation's implementation of ISO14001, which have provided specified frameworks for the monitoring and environmental management requirements for the fish farming industry.

Both the Scottish Executive and the European Parliament have recently published their own Strategic Frameworks for Aquaculture. These documents set out the vision for the development of aquaculture over the next 10 years. Both papers make it clear that there is to be a significant increase in the production of farmed fish and shellfish in Europe, including 'new' species such as cod and halibut. Importantly the Scottish strategy

provides guidance pertaining to the management of the marine environment, and pays particular emphasis to the development of environmental assessment techniques such as carrying capacity models. This is a core research area within the Environment Group of the Institute.

Environmental Services are also actively involved in research projects from subjects as varied as competition between rainbow and brown trout, metal uptake in marine molluscs and contract research such as the development of state-of-the-art modelling techniques, efficacy trials of non-toxic anti-foulants, and effectiveness of barriers against jellyfish damage to caged fish.

As part of our on-going research and in conjunction with Prof Lindsay Ross' GISAP group, we are in the process of further improving a GIS-based modelling programme, developed at the Institute, which accurately depicts the fate of waste food and faeces from fish farm sites. The potential for this model to surpass, both in detail and in ease of use, the industry standard models for nutrient and chemical wastes, is significant as it will incorporate estimation of local impact along with the wider environmental

inputs from other land and sea sources. This can then be used with other modelling techniques for site selection developed at the Institute. In short, it will form the basis of a coastal management model for aquaculture developments, vital to the regulation and decision making process. Trevor is currently seeking financial backers to assist in the further improvement of this model. Developments such as these are the key to the future of environmental surveying in the marine environment world wide, as they provide a method of optimising site selection on the basis of environmental quality, technology use and cultured organism and allow prediction of future impacts of these sites on the surrounding seabed.

One advantage we have over our competitors in the environmental consultancy field is the back up of an internationally regarded Institute. A large proportion of our clients are attracted by the track record the Institute has set over the last few decades in the field of aquaculture research.

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