

## University Invests in New Centre for Aquatic Food Security

The question of global food security is not a new one and indeed it is one that the Institute of Aquaculture [IoA] and the wider University have been contributing to for some considerable time. In 2012, the University sought to better coordinate these activities through the development of a new Centre for Aquatic Food Security, which is based within IoA and has members and collaborations from across both the School of Natural Sciences and the University as a whole. The Centre will allow better promotion of our expertise in food security, provide a supporting structure for future grant applications in this area, train researchers in taking interdisciplinary approaches to solving problems in food security and help develop a broad scope and ambitious research portfolio. To support the development of the centre the University has invested in 5 new academic posts led by Rachel Norman who was appointed as Professor of Aquatic Food Security and Sustainability.

We asked Rachel what she understood by food security, and answered that "according to the 1996 World Food Summit food security exists when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". She went on to explain that "the current world population is 6.5 billion and is expected to grow to 9 billion by 2050; food demand is projected to increase by 50% by 2030 and to double by 2050. Today 1 billion people are chronically undernourished, and 1 billion are overweight. We cannot use more land to farm, and the seas cannot be fished any more intensively. However aquaculture is a possible route for growth. In addition we need more efficient farming - we need to increase the output per unit input. A quarter of the world's crops are currently lost to pests and diseases, and a third of global food production is lost or wasted. All of these facts, individually and collectively, provide scope for our future work".

"According to the WWF ecological footprint index from Living Planet Report 2012," if all of humanity lived like an average resident of

Indonesia, only two-thirds of the planet's biocapacity would be used; if everyone lived like an average Argentinean, humanity would demand more than half an additional planet; and if everyone lived like an average resident of the USA, a total of four Earths would be required to regenerate humanity's annual demand on nature". She concluded by saying that "aquaculture already supplies approximately 50% of aquatic products consumed worldwide and, with annual sector growth standing at a massive 10%, is likely to become the primary source of such products



by mid-century. The new Centre will put the University of Stirling in the perfect position to make a significant contribution to the global food security agenda by focussing on our expertise in aquaculture."

Over the last year Rachel has been joined by Drs Mags Crumlish, Anthony O'Hare, Amaya Albalat and Oscar Monroig whose expertise are in aquatic microbiology, mathematical epidemiology, fish physiology and fish nutrition respectively. Together they will deliver undergraduate and postgraduate teaching as well as research activity. They have planned and are currently developing an MSc in Aquatic Food Security with a first intake scheduled for September 2014. They will also contribute to the Sustainable Aquaculture, Aquatic Veterinary Studies/ Pathobiology and Marine Biotechnology MScs.

The aim of the group is also to perform high quality research which will contribute towards the efficiency and sustainability of aquatic food production. Particular emphasis will focus on the role of seafood to supply the ever increasing demand from consumers. They will

use an ecosystems approach to food production from aquaculture systems and fisheries globally considering all aspects of the food chain from farm to fork focussing on three key areas:-

### Aquatic Nutrition & Health

Sustainable production is reliant on optimal nutrition and ensuring farmed animals remain healthy and grow efficiently. Research will focus on improved methods to identify emerging diseases and cost-effective treatments, production of novel/functional aquatic feeds to promote animal health and growth and understanding consumer perception and nutritional benefits from eating aquatic food.

### Seafood Safety & Quality

Seafood is very susceptible to quality deterioration and spoilage. Areas of interest are a better understanding on post-mortem metabolism and quality traits, improved post-harvest practices/

technologies to ensure the safety and quality of seafood products and better utilisation of natural resources and optimisation and traceability of food chains.

### Mathematical Modelling

Mathematical modelling can be made to make a number of predictions about aquatic food systems. Of particular interest are models of parasite and pathogen dynamics and optimal control methods, game theoretical approaches to determining optimal management decisions for food producers and models of the prevention and control of invasive aquatic species and their impact on native species.

More information is available at <http://www.stir.ac.uk/natural-sciences/research/research-centres/aquaticfoodsecurity/> or by emailing Rachel directly at [r.a.norman@stir.ac.uk](mailto:r.a.norman@stir.ac.uk).