

Austevoll Research Station — where marine species are born



The research station has modern seawater facilities.

Austevoll Research station plays a central role in our activities on marine species in all their life stages. Halibut, cod, Ballan wrasse, Calanus finmarchicus, great scallop and blue mussel are our main species for the time being. More than 4500 square metres of indoor area and its extensive outdoor areas, makes Austevoll one of Europe's largest and most advanced research facilities in this field. Facilities ashore and in the sea for keeping fish and shellfish throughout their life cycle provide a unique basis for experimental studies of all life stages, sizes and qualities.

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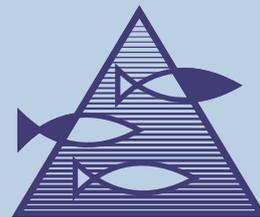
The research station was established in 1978, and has been a central resource in industry development as well as an advisor in management of resources and the environment. A number of ground-breaking research publications have earned the station a widespread international recognition for the work done on marine species. Initially a driving force in the development of extensive and semi-intensive methods for marine juvenile production, scientists at the station shifted their focus to optimisation of intensive fry production during the 1990's and onwards. At present, central aspects of the work carried out at the station include basic studies of fish welfare, ecological impact of marine aquaculture, as well as experimental studies of effects of petroleum-related activities and other antropogenic environmental influences.

TODAY'S FACILITIES

In addition to a wide range of laboratories, the station has around 300 tanks and sea-cages. Broodfish sections with controlled lighting and access to seawater at various temperatures enable the station to carry out studies of sexual maturation and spawning throughout the year. Live feed departments for production of artemia and rotifers and a separate algae laboratory have been built to satisfy the food requirements of marine species – both fish and shellfish – in the earliest stages of their life cycle. Experimental laboratories containing smaller tanks have also been built for a wide range of purposes.

The number and size variation of the different tanks enable the station to follow any species throughout the life cycle, including studies of maternal effects onto subsequent generations. Specifically the





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Photo: Per A. Jensen



Above: Ballan wrasse, the newest on a long list of marine species successfully produced and studied at the station.
Left: Halibut larvae at the start-feeding stage.

following have been given special attention in the last years.

GROWTH AND REPRODUCTIVE PHYSIOLOGY

Studies of the sexual maturation process at molecular, cellular and individual level, and of sexual differentiation, puberty and sexual maturation/spawning biology. The new endocrinology laboratory employs molecular biology methods to clone relevant genes, RNA and mRNA isolation and cDNA synthesis for further studies of expression. The laboratory also purifies and characterises proteins, peptides and steroids, and analyses hormone levels using a wide range of techniques. Experiments on egg production at individual level are carried out in connection with recruitment studies.

PHYSICAL AND BIOLOGICAL REQUIREMENTS OF EARLY LIFE STAGES

The station has also laboratories for studies of the environmental requirements of different species at early stages of their life cycle. These include studies of the mechanisms that

underlie faulty development and deformities in early stages. Larvae and fry can be exposed to various physical and biological conditions such as gas saturation, salinity and temperature. Various water qualities are available, including recycled water, deepwater and surface water. These systems are also used to test exposures to various levels of environmental contaminants and metabolites (i.e. ammonia).

Sensory biology, behaviour and fish welfare

Growth and digestion in early life stages
Laboratories have been established for the preparation and testing of feed components and formulated feeds – primarily for studies related to formulated feeds and fish larvae adaptation to dry feeds. In addition to machinery capable of preparing small quantities of feeds, the laboratory is equipped with micro-injection instruments with microscope monitoring and digital image storage, and micro-injection equipment for injecting liquid feed components directly into the stomach and gut of fish larvae.

