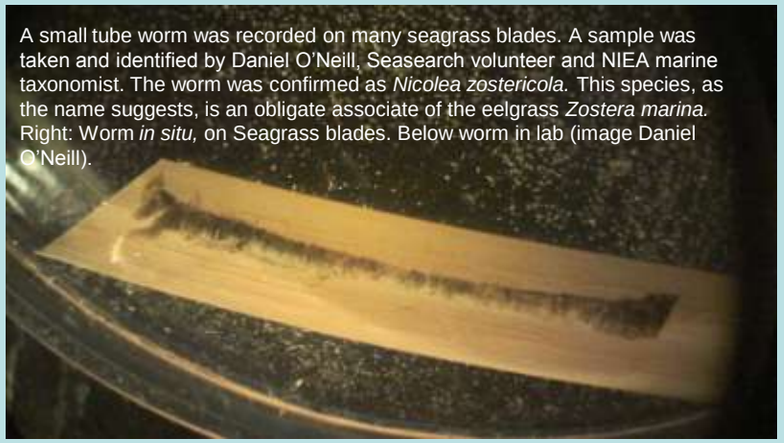
In total, 137 species were recorded. 502 species records were made. Species recorded are listed below:

Sponges Boring sponge *Cliona celata*; *Porifera indet*; sulphur sponge *Suberites ficus.* **Anemones, Corals, Hydroids and Jellyfish** beadlet anemone *Actinia equina*; moon jellyfish *Aurelia aurita*; burrowing anemone *Cerianthus lloydii*; lion's mane jellyfish *Cyanea capillata*; blue lion's mane *Cyanea lamarckii*; plumose anemone *Metridium senile*; antenna hydroid *Nemertesia antennina*; kelp fur *Obelia geniculata*; anemone *Sagartia sp.* **Sea gooseberries** comb jelly *Bolinopsis infundibulum*; sea gooseberry *Pleurobrachia pileus.* **Crustaceans** barnacles *Balanus sp.*; edible crab *Cancer pagurus*; shore crab *Carcinus maenas*; brown shrimp *Crangon crangon*; blue striped squat lobster *Galathea strigosa*; angular crab *Goneplax rhomboides*; spider crab *Inachus* sp.; harbour swimming crab *Liocarcinus depurator*; spider crab *Macropodia* sp.; velvet swimming crab *Necora puber*; langoustine *Nephrops norvegicus*; hermit crabs *Paguridae* indet., *Pagurus bernhardus;* common prawn *Palaemon serratus.* **Molluscs** grey top shell *Gibbula cineraria*; flat topshell *Gibbula umbilicalis*; painted top shell *Calliostoma zizyphinum*; *Rissoa membranacea*; netted dog whelk *Hinia reticulata*; periwinkle *Littorina littorea*; dog whelk *Nucella lapillus*; white hedgehog seaslug *Acanthodoris pilosa*; *seaslug Eubranchus farrani*; seaslug *Favorinus branchialis*; mussel *Mytilus edulis*; king scallop *Pecten maximus*; saddle oyster *Pododesmus patelliformis*; bivalve *Astarte sulcata;* razor shell *Ensis sp.*; cuttlefish *Sepiola atlantica*; curled octopus *Eledone cirrhosa*. **Worms** seagrass worm *Nicolea zostericola*, lug worm *Arenicola marina*; strawberry worm *Eupolymnia nebulosa*; sand mason worm *Lanice conchilega*; peacock worm *Sabella pavonina*; *Spirorbis spirorbis*; *Terebellidae indet.;* Bootlace worm *Lineus longissimus*; candy striped flatworm *Prostheceraeus vittatus.* **Echinoderms** burrowing brittlestar *Amphiura sp.*; common starfish *Asterias rubens*; common sunstar *Crossaster papposus*; edible urchin *Echinus esculentus*; bloody henry starfish *Henricia sp.*; spiny starfish *Marthasterias glacialis*; sand brittlestar *Ophiura ophiura.* **Fish** common dragonet *Callionymus lyra*; reticulated dragonet *Callionymus reticulatus*; rock cook *Centrolabrus exoletus*; goldsinny *Ctenolabrus rupestris*; snake pipefish *Entelurus aequoreus*; black goby *Gobius niger*; two-spot goby *Gobiusculus flavescens*; ballan wrasse *Labrus bergylta*; worm pipefish *Nerophis lumbriciformis*; butterfish *Pholis gunnellus*; flounder *Platichthys flesus*; plaice *Pleuronectes platessa*; juvenile flatfish *Pleuronectidae indet. juveniles*; sand/common goby *Pomatoschistus sp.;* small spotted catshark *Scyliorhinus canicula*; fifteen-spined stickleback *Spinachia spinachia*; greater pipefish *Syngnathus acus*; tub gurnard *Trigla lucerna;* Leopard spotted goby *Thorogobius ephippiatus* **Seasquirts** yellow rimmed seasquirt *Ciona intestinalis*; lightbulb seasquirt *Clavelina lepadiformis*; didemnid squirt *Didemnidae* indet.; **Green algae** *Cladophora sericea*; gut weed *Ulva intestinalis*; sea lettuce *Ulva lactuca.* **Brown algae** dabberlocks *Alaria esculenta*; egg wrack *Ascophyllum nodosum*; *Asperococcus fistulosus*; mermaid's tresses *Chorda filum*; *Cystoseira sp.*; rainbow wrack*Cystoseira tamariscifolia*; *Desmarestia sp.*; land lady's wig *Desmarestia aculeata*; *Dictyota dichotoma*; *Ectocarpus* sp.; *Elachista flaccida;* serrated wrack *Fucus serratus*; bladder wrack *Fucus vesiculosus*; sea oak *Halidrys siliquosa;* thong weed *Himanthalia elongata*; forest kelp *Laminaria hyperborea*; sugar kelp *Laminaria saccharina*; furbelows *Saccorhiza polyschides*; wireweed *Sargassum muticum*; *Scytosiphon lomentaria; Sphacelaria.* **Red Algae** red fringe weed *Calliblepharis ciliata*; *Ceramium* sp.; *Chondria dasyphylla*; carrageen *Chondrus crispus*; *Chylocladia verticillata*; coral weed *Corallina officinalis*; *Cryptopleura ramosa*; *Cystoclonium purpureum*; sea beech *Delesseria sanguinea*; red rags *Dilsea carnosa*; *Heterosiphonia plumosa; Hypoglossum hypoglossoides*; *Lithothamnion* sp.; dulse *Palmaria palmata*; sea oak *Phycodrys rubens*; red comb weed *Plocamium cartilagineum*; *Plumaria plumosa*; *Polysiphonia lanosa*; *Porphyra* sp.; *Rhodomela confervoides*; *Rhodymenia pseudopalmata.*



A small tube worm was recorded on many seagrass blades. A sample was taken and identified by Daniel O'Neill, Seasearch volunteer and NIEA marine taxonomist. The worm was confirmed as *Nicolea zostericola.* This species, as the name suggests, is an obligate associate of the eelgrass *Zostera marina.* Right: Worm *in situ,* on Seagrass blades. Below worm in lab (image Daniel O'Neill).

The invasive seaweed *Sargassum muticum* (wireweed or japweed) was found towards the edge of the Ballyhenry Bay Seagrass bed. It is though that this species might compete with *Zostera marina*. Flat fish species including many juveniles unidentifiable to species level, flounder and plaice were present around the base of the eelgrass. Two-spot goby *Gobiusculus flavescens* and fifteen spined stickleback *Spinachia spinachia* were frequently sighted around the upper part of the fronds.

Surveyors taking part were: Orea Anderson, Charmaine Blake, Andy Blight, Ruth Brennan, Graham Day, Colin Ferguson, Claire Goodwin, Dave Goodwin, Catherine Higgins, Sven Laming, Adrian Marshall, Daniel O'Neill, Julia Nunn, Henk van Rein, Ronnie Snyder. Thanks to DV Diving who were used for boat cover and supplied site info. The survey was designed and run in conjunction with Charmaine Blake and Daniel O'Neill of NIEA.

Seasearch is a volunteer underwater survey project for recreational divers to actively contribute to the conservation of the marine environment (see www.seasearch.org.uk for more information). Financial support for the project was given by Northern Ireland Environment Agency.
This report was written by Claire Goodwin (thanks to Julia Nunn and Chris Wood for editorial comments). Photos are by Claire Goodwin and Daniel O'Neill.

For more information on Seasearch Northern Ireland email: seasearchni@gmail.com.

Ballyhenry Seagrass Survey 2008/2009

www.seasearch.org.uk

Eelgrass or Seagrass is not seaweed but a true flowering plant like those found on land. It has roots and bears flowers, fruit and seeds. We have only five species of marine flowering plant in the UK - three of these are species of eelgrass. In Strangford Lough, we are studying the subtidal common eelgrass *Zostera marina.* Its scientific name derives from the Greek 'zoster' for belt, and refers to its strap like leaves. Eelgrass lives in sheltered mud or sand areas. The long leaves of this species (up to 1m) float upright in the water column, supported by airspaces called lacuna in the tissue.

Eelgrass used to be widespread in Northern Ireland; it was especially common in Strangford, Larne and Belfast Loughs. However, in the 1930s there was a significant decline and this continued throughout the century. In the 1990s, only 30% of the eelgrass that was present in the 1970s remained. One of the major factors was seagrass wasting disease, a fungal infection which attacks the leaves, leaving blackened dead areas. However, other factors played a part too. Coastal developments can result in removal of eelgrass and the sediment released into the seawater can block light, stopping the plants photosynthesising, and smothering them. Chemical and organic pollution such as sewage, agricultural fertilisers and oil pollution can kill plants. Pleasure craft can damage beds when anchoring, with propellers, or setting up moorings. Alien species such as *Sargassum muticum*, Jap or wireweed can compete with eelgrass for space. Stormy weather can dislodge plants; this is becoming an increasing risk with more frequent storms due to global warming. Recently in Strangford Lough, intertidal eelgrass species have even been damaged by ploughing.

The dense forest formed by eelgrass blades form the perfect hiding place for small marine organisms to duck out of the way of predators - eelgrass beds are an important nursery habitat for many fish species. The beds are one of the most productive soft sediment habitats and marine invertebrates feed not only on the eelgrass leaves (which are quite hard to digest because of the high cellulose content) but on the detritus formed as dead leaves break down. In Washington State in America. 1/3 of marine invertebrate species disappeared after seagrass wasting disease struck. Animals also live on the eelgrass leaves and some algae species are obligate associates of *Zostera marina*, not found on any other substrate. Eelgrass beds are a feeding ground for commercially important species such as bass. Some of the most charismatic species found in eelgrass beds are seahorses, the short snouted *Hippocampus hippocampus* and long snouted or spiny seahorse *Hippocampus guttulus* and several species of their snake-like relative the pipefish are all associated with eelgrass habitats.

This Seasearch project will give us a much better idea of the current state of our eelgrass beds, and will provide baseline data so that we, or other researchers, will be able to return in the future to see how they are faring. Eelgrass beds are recognised as important habitats for biodiversity under European legislation including the Habitats Directive and Water Framework Directive. All the data collected by the Seasearch volunteers will be used by Northern Ireland Environment Agency for assessment of eelgrass bed condition and future monitoring.

Transect line with station marker

Diver tows a SMB with GPS in dry-bag to map eelgrass bed outline

Green track is edge of bed, from diver towed GPS.

Above: Map of Ballyhenry Seagrass Bed.
Left: Shoot density per m^2 (blue) and maximum blade length, averages for 3 quadrats taken at sampling station.

Survey Methodology

We knew that Seagrass was present in Ballyhenry Bay from casual dive records, but there was no information on the size or condition of the beds. The survey programme had five main phases:

1) Dives to locate the position of the bed/check existing positions were accurate.

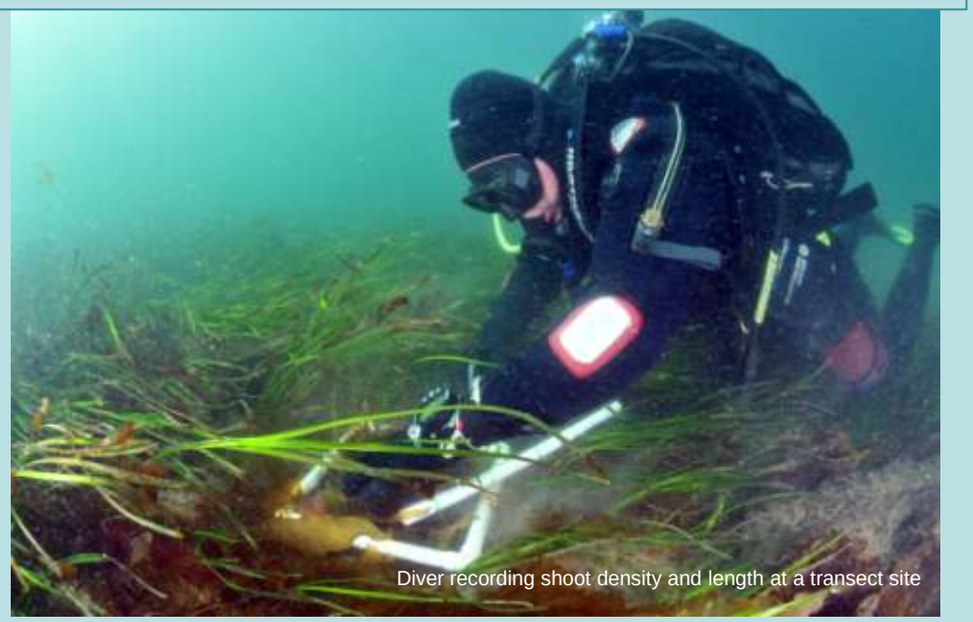
2) Assessment of bed size. In Ballyhenry Bay, seven pairs of divers swam out at right angles from the shore to try and find where the deepest and shallowest edges of the bed were.

3) Divers towed a GPS (Global Positioning System), tied to a surface marker buoy, around the edge of the bed. This device gets a very accurate location from satellites. It gave a new position every 30 seconds, with the resultant line giving the divers track through the water and therefore the edge of the bed.

4) Using plumbing pipe, we manufactured 0.25m^2 squares or 'quadrats', divers used these to measure the number of eelgrass shoots per square metre in various bed areas.

5) Three 100m transects were laid across the bed. Every 10 metres 3 0.25m^2 quadrats were randomly placed and counts of shoots, maximum shoot length and epiphyte (algae growing on the seagrass blade) cover (scored 1-5) were taken.

6) Finally, as on all Seasearch dives, a list of the different plant and animal species present was compiled. Samples of leaf blades were taken for a project on the genetics of *Zostera marina*.



Diver recording shoot density and length at a transect site

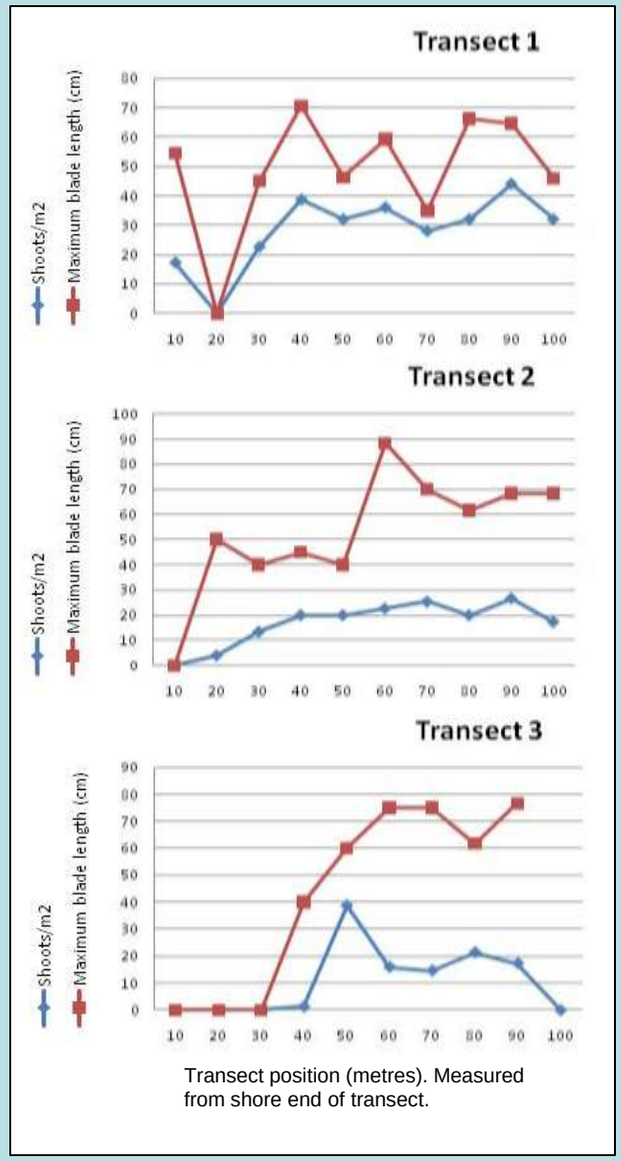
Results

In total twenty one dives were undertaken on the Ballyhenry Bay bed.

The Ballyhenry Bay bed was much larger than previously supposed: 378m long parallel to the shore and a maximum of 175m across. The total area is estimated to be 38,550m^2.

Shoot density in the Ballyhenry Bay bed was between 8 and 32 shoots/m^2, average shoot density 16.80/m^2 (from 2008 quadrat measurements). Eelgrass blade length varied between 12 and 100cm, average 59.32cm. Much of the bed had a dense covering of *Ectocarpus* sp., a fuzzy brown algae.

We had planned to grid the bed but this proved impractical . Instead three lead line transects were laid between shotted points with the start and finish positions determined using GPS. The graphs to the right show that shoot density and length varied considerably over the bed.



Transect position (metres). Measured from shore end of transect.