COASTWATCH
SINCE 1986

HELP SAVE OUR WILD

Native, European & Flat Oyster (*Ostrea edulis)*

By Karin Dubsky

Our native oyster is a familiar sight as one of the larger heavier shells swept onto many beaches. The outer shell is irregular rough white, grey, beige or brownish with lines, but the inside is smooth and shiny. Old shells can show many growth rings – see pics by Elena Higuera below.



When alive it forms a rough rounded, hinged box, up to hand size. One shell valve is curved, the other forms an almost flat lid, which is shut tightly when out of water. This keeps the soft body secure in shell water for days. Most oyster beds are now DEAD! **We can halt and reverse this.**

Life cycle: When spring comes and the oyster is about 4 years old, the flesh starts turning milky as it gets ready to spawn. Eggs and sperm are released into the sea water as temperature rises, and float in plankton. Larvae develop in the plankton and eventually come down to the sea bottom, cementing themselves onto hard material like dead shell 'cultch' as they turn into baby shelled oysters. In naturally self seeding beds the young oysters settle in the same area as the adults, thus naturally replenishing the beds. Beds may be intertidal or in shallow coastal waters, estuaries and bays. Here the baby oyster slowly grows filter-feeding food out of the sea water and adding extra layers to the shell like tree rings.

In Lough Swilly you can find them in the low intertidal zone on the sandy mud. When disturbed, many stand like fans then dig themselves into the sediment slow motion. But behaviour and favoured settlement vary – even in Lough Foyle next door, the shape and habits are different.

Aquaculture can take various forms from transfer of stock, to enhancing wild beds, to full hatchery stock farming. The oysters grown in bags on trestles in many of our bays today usually contain the **Gigas (= Pacific) oyster** (*Crassostrea gigas)* introduced from warm Pacific waters. In the 1970s this was hailed as ideal for aquaculture due to fast growth even if placed in the mid intertidal zone. It was thought to be of no threat to European wildlife as it would not spawn in our cold waters. However that proved wrong – see section on Threats and Gigas box.

This native oyster information is produced on the eve of **Biodiversity Day 2009**, after field surveys and much discussion among Coastwatchers, Save the Swilly and native oyster fishermen on the Foyle and Swilly as well as meetings with Loughs Agency, Ulster Wildlife Trust and WWF. It is to highlight urgent issues concerning the decline of this iconic native species and put forward positive action to halt the decline and reverse the trend. Comments, ideas, help and information all welcome. Please forgive any errors Next update planned for July 2009. The research and printing was co funded by a Biodiversity week Dept of the Environment Grant.

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'The World Is Your Oyster' coined in 1600

As we can see from remains in **shell middens** dotted around our coast the European oyster was in the diet of **Bronze Age** man. A century ago, it was still widely distributed from the Arctic waters through the North Sea and East Atlantic down into the Mediterranean and the Black Sea, prized as a delicacy, high protein seafood and ascribed aphrodisiac qualities. .
During the late 19th and 20th century oyster stocks dwindled. Rising demand and more oyster harvesters with better gear made overfishing a widespread pressure in open shore areas like the large Irish Sea beds, harvested and exported through ports like Arklow. For inshore and privately owned localities conservation measures (e.g. minimum size, or weight and closed season) were more successful.

Today European waters are estimated to contain only about 20 productive native wild oyster sites. It is now a red list species, protection under the OSPAR Convention, but like many other marine species in EU Nature law. Ireland has 6 of these sites **Tralee Bay, Galway Bay**, **Kilkieran Bay**, **Blacksod Bay, Lough Swilly** and the shared **Lough Foyle** which is considered the largest remaining wild bed area in Europe (hectares covered not density). These sites and small dispersed beds in **Clew Bay** going North to Achill Island and Belmullet, and **Mannin Bay,** are a credit to local communities – but they are not safe.

Action is urgent to protect the European oyster from becoming extinct in the wild. Halting the loss of biodiversity by 2010 is our European promise. It's late for the oyster, but not too late. We need to combine the knowhow of local traditional native oyster men, scientists and other stakeholders and focus on a comprehensive suite of actions to reach set goals.

This is a species man has collected and eaten for thousands of years, a species traded, embedded in our language, our maps, valued at dinners, acknowledged as 'typical species' where it occurs in Natura 2000 sites. This species is the livelihood for men who know more about it and the inshore waters than most others. We simply have to try and halt the loss of the native oyster. We promised to *Halt the Loss of Biodiversity by 2010*. Surely that meant we would at least try.

Coastwatch launched the Irish awareness and action campaign on 22nd May'09 – World Biodiversity Day. Within a year, both protection measures and wild native oyster status on our coasts can improve significantly. Join us, help us.

GOALS

(1) Maintain the existing native oyster beds within Irish and cross-border areas
(2) Restore the geographical range of the native oyster within Irish waters - towards 1900 levels
(3) Maintain the existing abundance and health of the native oyster on all Irish sites
(4) Increase the abundance and improve the health of the native oyster within Irish and cross-border inshore waters

Ten Threats to our Native Oyster

The rank order of the 10 threats and pressures below differs with location and some may not apply in a given site. Pressures often combine and also affect other organisms.

1. **Invasive Alien Species:** the habitat structure, competition for space and food can all change rapidly when an alien species takes over in an area. The **Gigas oyster** *Crassostrea gigas* used in aquaculture is a serious IAS threat for our coastal biota – see Gigas info box. Others like the slipper limpet *Crepidula fornicate* are not yet reported from Ireland, but our surveillance is poor and ship and seed stock movements are set to increase.

2. **Over-exploitation** - a key factor in the mid 1800s and can still be a problem locally.

3. **Disease and Parasites***:* the parasitic protozoan *Bonamia ostreae* causes the oyster to waste away and inflicted high mortalities in France. *Bonamia* has since been introduced into other countries including Ireland but has not caused mass death here. Other parasites eg - *Marteilia refringens*, have come into Europe, but not yet Ireland.

4. **Competition:** our native mussel *Mytilus edulis* is a powerful filter feeder which grows well in a similar habitat, forming high density beds, with byssus threads holding mussels together. The low density oyster beds and the thick mussel bed carpets can form a patchwork in different parts of an inlet. The odds are set against the oyster when mussels are moved into the vicinity of or on top of an oyster bed for aquaculture.

5. **Morphological area changes** may cause total loss due to land reclamation, for example, or more subtle impacts like changing hydrology on the building of a new pier, so larvae may not be swept back to parent beds. The threat is increasing as we look at plans for coastal development for transport, tourism and green energy.

6. **Habitat damage/changes** can be caused by other organisms – the accumulation of pseudo-faeces or `mussel mud` around mussel beds which degrades the grounds and hinders oyster spat from settling. More dramatic and fast is large scale dredging, which physically changes the whole sea bed, removes the oyster stock and other organisms as well as suitable culch for spat to settle on.

7. **Weather and climate change:** severe winters are reported as having caused high mortalities in the UK. It is not known how significant the last two year's high rainfall summers and consequent high freshwater levels have been for recruitment or survival. With climate change predictions this could affect the higher estuarine beds.

8. **Pollution:** High pollution – eg oil slick can kill, while lower levels may affect recruitment TBT (tri-butyl tin) anti-fouling boat paints caused stunted growth in oysters in the 1980s, well researched by Dr Dan Minchen in Ireland High silt loads, interrupt filter feeding capacity and may smother the oyster around dredging and spoil dump sites and downstream of some aquaculture sites. Sewage and farm effluent pollution reduce oyster crop value as health controls forbid direct sale.
9. **Predators:** Natural enemies include crabs, dogwhelk, some worms and starfish in full salinity areas. Its natural but when stocks get very low every predator counts. We must avoid adding extras as IAS.

10. **Last stand** - if spawning stock density drops too low, synchronous spawning or sufficient larval production for successful settlement may become too rare.

Gigas oyster as IAS in Ireland The fast growing tough Gigas or Pacific oyster is the preferred oyster used in aquaculture in Ireland for the past 25 years. Meanwhile water temperature has increased and the Gigas oyster acclimatised. It is now established as an invasive alien species in Lough Swilly, Lough Foyle and Strangford Lough All Natura 2000 sites. We do not know if others are infested.

Coastwatch scoping surveys undertaken with local native oyster fishermen in Lough Swilly and Lough Foyle show that not only the native oyster but many other native organisms are at risk as the Gigas oyster takes over bands on the foreshore occupied by limpets, winkles, seaweeds...

Urgent Action Required. We are calling for:

1. An all-Ireland approach to the protection, management and marketing of native oysters.

2. **All Gigas Oyster farmers** to undertake a site audit and remove any old Gigas oysters which may have spilled onto the ground so largest spat risks are removed as fast as possible as they are now getting ready to spawn. Any Gigas oyster found settling in their area reported as IAS. Starting now from Biodiversity Day. By mid June all sites should be clean and by late June an update on Gigas spread and a cleaner foreshore should be achievable.

3. Both governments to prohibit the movement of shellfish into or out of areas with native oysters now until there are sufficient safeguards in place and enforce transport law.

4. Both governments to declare the Gigas oyster an IAS (invasive alien species) under EU Council Regulations (EC) No 708/2007, (EC) No 535/2008 and (EC) No 506/2008 **now**.

5. The Irish government to declare the European Oyster a priority species for protection and joining with NI on one all Ireland species action plan. The plan to be prepared with cooperation of native oyster fishermen from different areas. Completing and adopting the plan in 10 months.

6. Both governments to use the window of opportunity and review inclusion of remaining native oyster beds and areas in which live oysters are still found, in the final SAC marine site list (Natura 2000 sites) with stakeholder consultation - especially wild oyster fishermen on site boundaries. The EU adoption of the final marine list is planned for early 2010.

7. Both governments and Loughs Agency to set out grant aid priorities which help oyster protection/restoration goals and help job creation and quality image of the areas. That may include stock enhancement, site restoration and research into native oyster stocks and potential for reintroducing the native oyster into areas where it was growing well in the past. Grants for hatcheries which substitute import and tourism products which highlight the wild native oyster as symbol of high quality and wise use of coastal waters.

8. Both governments to establish the extent of this IAS problem in Ireland by August 09 and facilitate elimination/removal in areas known to have the problem immediately. A draft protocol developed by Coastwatch and native oyster fishermen is available for cost effective and local benefit use. Action rolled out over the summer months should rid the three main known sites of the invasive Gigas oyster within 5 years.

9. Regional and national Government to revise the draft WFD plans so that all shellfish waters are brought to good or high quality status by 2015 with no derogations.

10. Governments and all agencies dealing with the coastal zone to support information, awareness raising and eco labelling initiatives for the native oyster and their habitats as icon for coastal environmental quality. If credible and handled transparently it will yield solid employment and economic return, as other regions in the EU has shown.