NPWS (2011)

Lough Swilly SAC (site code: 2287)

Conservation objectives supporting document-marine habitats

Version 1

March 2011

Introduction

Lough Swilly SAC is designated for the Annex I qualifying interest of Estuaries (Figure 1).

Two intertidal surveys in 2009 and 2010, and a subtidal survey in 2009 were undertaken within the site and this data was used to determine the physical and biological nature of the bay. The principal biological targets that were derived from this survey work are described in Section 1. The corresponding site-specific conservation objectives will facilitate Ireland delivering on its surveillance and reporting obligations under the EU Habitats Directive (92/43/EC).

Ireland also has an obligation to ensure that consent decisions concerning operations/activities planned for Natura 2000 sites are informed by an appropriate assessment where the likelihood of such operations or activities having a significant effect on the site cannot be excluded. Further ancillary information concerning the practical application of the site-specific objectives and targets in the completion of such assessments is provided in Section 2.

Section 1: Principal Benthic Communities

FINE SAND COMMUNITY COMPLEX

The development of a community complex target arises when an area possesses similar abiotic features but records a number of biological communities that are not regarded as being sufficiently stable and/or distinct temporally or spatially to become the focus of conservation efforts. In this case, multivariate analysis of the data from Lough Swilly identified a series of biological communities whose species composition overlapped significantly. Such biological communities are grouped together into what experts consider are sufficiently stable units (i.e., a complex) for conservation targets.

This community complex is largely confined to the northern extent of the SAC with the southern limit recorded due west of Inch Island (Figure 2). Intertidally, it occurs from the upper to the lower shore, whilst subtidally it is present from 1.5m to 18m.

The substrate is predominantly fine sand (34-92%) with varying amounts of very fine sand (1-47%). Occasionally, coarser fractions may be present.

The distinguishing species within this group are the polychaete *Spiophanes bombyx*, the oligochaete *Tubificoides benedii*, the bivalve *Angulus tenuis* and the amphipod *Bathyporeia pilosa*. These, along with those species that occur in moderate numbers throughout some or all of the community types of this complex, are deemed to be distinguishing.

Distinguishing species of Fine sand community complex	
Spiophanes bombyx	*Lumbrineris latreilli*
Tubificoides benedii	*Donax vittatus*
Angulus tenuis	*Bathyporeia elegans*
Bathyporeia pilosa	*Pygospio elegans*
Nephtys hombergii	Nemertea spp.
Thracia papyracea	*Scoloplos armiger*
Phaxas pellucidus	

Table 1 Distinguishing species of the Fine sand community complex.

Three biological variants of this community complex occur at this site. An upper to mid shore intertidal element distinguished by the amphipod *Bathyporeia pilosa* and the oligochaete *Tubificoides benedii*, a mid to lower intertidal element distinguished by the bivalve *Angulus tenuis* and the oligochaete *Tubificoides benedii*. These variants, although present in the SAC, are recorded outside the boundary of the Annex I habitat.

The third variant occurs subtidally, it is present from the seaward boundary of the SAC down the lough to the west of Inch Island. It is dominated by the polychaete, *Spiophanes bombyx*. Other species frequently present include the bivalves *Thracia papyracea* and *Phaxas pellucidus* and the polychaetes *Nephtys hombergii* and *Lumbrineris latreilli*.

INTERTIDAL MIXED SEDIMENT WITH POLYCHAETES

With the exception of the inner region of Ramelton Channel, this community occurs along the western shore of the lough from Rathmullen to Ardrumman. On the eastern shore it is recorded as a narrow band from north of Ballybegly Point to Farland Creek and on the western and southern shores of Inch Island. A broad band of this community occurs at Inch Flats to the north of Inch Island.

This community occurs from the upper to the lower shore with a variable sediment composition, comprising largely of gravel (0-44%), fine sand (2-80%) and silt-clay (2-72%).

The community is distinguished by the polychaetes *Pygospio elegans* and *Eteone* sp., the former frequently present in moderate numbers. Other species regularly present include the polychaetes *Scoloplos armiger*, *Glycera tridactyla*, *Euclymene oerstedii*, the oligochaete *Tubificoides benedii* and the cockle *Cerastoderma edule*.

Distinguishing species of the Intertidal mixed sediment with polychaetes	
Pygospio elegans	*Euclymene oerstedii*
Eteone sp.	*Cerastoderma edule*
Scoloplos armiger	*Anaitides mucosa*
Tubificoides benedii	*Glycera tridactyla*

Table 2 Distinguishing species of the Intertidal mixed sediment with polychaetes.

SUBTIDAL MIXED SEDIMENT WITH POLYCHAETES AND BIVALVES

This subtidal community is recorded in the central and southern parts of the SAC. It occurs in the narrow channels of Fahan Creek and at the head of the lough, together with the steeper subtidal sediment slopes to the west of Inch Island.

Fine sand is the main sediment fraction ranging from 6-75%. However varying levels of coarser sediments occur, with gravel frequently present (6-23%).

Substrate variability results in a high number of distinguishing species being recorded for this community. Many of these species, including the polychaetes *Pomatoceros triqueter*,

Lumbrineris latreilli, *Capitomastus minima* and *Scoloplos armiger* and the bivalves *Abra alba* and *Timoclea ovata*, are present in medium to high levels of abundance.

Distinguishing species of the Subtidal mixed sediment with polychaetes and bivalves	
Pomatoceros triqueter	*Venerupis senegalensis*
Lumbrineris latreilli	*Mysella bidentata*
Capitomastus minima	*Aonides oxycephala*
Abra alba	*Diplocirrus glaucus*
Timoclea ovata	*Ampharete lindstroemi*
Scoloplos armiger	*Spiophanes bombyx*
Scalibregma inflatum	*Leptochiton cancellatus*
Nemertea spp.	*Harmothoe* sp.
Thracia papyracea	*Eteone longa/flava*
Euclymene oerstedii	*Caulleriella alata*
Caulleriella zetlandica	*Prionospio fallax*
Protodorvillea kefersteini	*Ostracoda sp.*
Pholoe inornata	*Parvicardium exiguum*
Nephtys hombergii	*Glycera alba*
Ophiodromus flexuosus	*Exogone hebes*
Thyasira flexuosa	

Table 3 Distinguishing species of the Subtidal mixed sediment with polychaetes and bivalves.

MUDDY FINE SAND WITH *THYASIRA FLEXUOSA*

This subtidal community type extends from Ramelton to the south-western margin of Inch Island (Figure 2).

The substrate varies in the proportion of fines, with fine sand ranging from 9-64%, very fine sand ranging from 15-43% and silt-clay from 12-33%. Occasionally, a significant gravel fraction is present.

The bivalve *Thyasira flexuosa* is the distinguishing species for this community type. The polychaetes *Scoloplos armiger*, *Nephtys hombergii* and *Euclymene oerstedii*, the amphipod *Ampelisca brevicornis* and the bivalve *Phaxas pellucidus* are also commonly present.

Distinguishing species of the Muddy fine sand with *Thyasira flexuosa*	
Thyasira flexuosa	*Abra nitida*
Scoloplos armiger	*Notomastus latericeus*
Nephtys hombergii	*Nucula nitidosa*
Euclymene oerstedii	*Ophiodromus flexuosus*
Ampelisca brevicornis	*Pseudopolydora pulchra*
Phaxas pellucidus	*Prionospio fallax*
Abra alba	*Scalibregma inflatum*
Thracia papyracea	

Table 4 Distinguishing species of the Muddy fine sand with *Thyasira flexuosa*.

MUD COMMUNITY COMPLEX

This intertidal community complex is recorded in the inner estuarine shores of Fahan Creek, Ramelton Channel and the head of the lough (Figure 2).

The silt-clay fraction (39-96%) comprises the major sediment component here, the fine sand and very fine sand fractions range from 0.1-30% and 3-33%, respectively.

In general, the biological communities are distinguished by the presence of the oligochaete *Tubificoides benedii*, often in high abundance, together with the bivalves *Macoma balthica* and *Scrobicularia plana*, the amphipod *Corophium volutator* and the polychaetes *Pygospio elegans*, *Eteone* sp., *Nephtys hombergii* and *Hediste diversicolor*. These, along with those species that occur in moderate numbers throughout some or all of the community types of this complex, are deemed to be distinguishing.

Distinguishing species of the Mud community complex	
Tubificoides benedii	*Tubificoides pseudogaster*
Macoma balthica	Nematoda sp.
Corophium volutator	*Nephtys hombergii*
Hediste diversicolor	*Eteone* sp.
Pygospio elegans	

Table 5 Distinguishing species of the Mud community complex.

The presence and/or abundance of the distinguishing species vary considerably within this sediment type at this site. This gives rise to three variants, dominated by *Corophium volutator*, *Pygospio elegans* and *Macoma balthica* respectively, and appears to reflect varying degrees of estuarine influence.

***OSTREA EDULIS* DOMINATED COMMUNITY**

Ostrea edulis dominated communities occur intertidally and subtidally within the lough. With the exception of a small area at Ballykenny Point, they were largely recorded in the southern portion of the lough from Ballygreen Point and Ballymoney Point south to Ardrumman and Ballylawn Point (Figure 2).

These communities occur in those areas described as an Intertidal mixed sediment with polychaetes and a Subtidal mixed sediment with polychaetes and bivalves and the distinguishing fauna is presented in tables 2 and 3, respectively.

Section 2: Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e., sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. The Department of the Environment, Heritage and Local Government has prepared general guidance on the completion of such assessments (www.npws.ie).

It is worth considering at the outset that in relation to Annex I habitat structure and function, the extent and quality of all habitats varies considerably in space and time and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e., biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e., habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) should be afforded the highest degree of protection and any significant anthropogenic disturbance should be avoided.
2. In relation to the remaining constituent communities that are structurally important (e.g., broad sedimentary communities) within an Annex I marine habitat, there are two considerations.
    2.1. Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g., effluent discharge within a given area). Drawing from the principle outlined in the European Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any further licensing of this category of activities, an inter-

Departmental management review (considering *inter alia* robustness of available scientific knowledge, future site requirements, etc) of the site is recommended.

2.2. Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

The following technical clarification is provided in relation to specific conservation objectives and targets to facilitate the appropriate assessment process:

Objective	**To maintain the favourable conservation condition of Estuaries at Lough Swilly, which is defined by the following list of attributes and targets.**
Target 1	The permanent habitat area is stable or increasing, subject to natural processes.

- This habitat also encompasses the Annex I habitats Coastal Lagoons (Blanket Nook Lough and Inch Lough) and Atlantic salt meadows. Targets for these habitat types should be addressed in their own right.
- This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.
- Estuarine habitat area was estimated at 6118 hectares using OSI data and the previously defined Transitional Water Body area for Lough Swilly under the Water Framework Directive.

Target 2	The following communities should be conserved in a natural condition: Fine sand community complex; Intertidal mixed sediment with polychaetes; Subtidal mixed sediment with polychaetes and bivalves; Muddy fine sand with *Thyasira flexuosa*; Mud community complex and *Ostrea edulis* dominated community.

- A semi-quantitative description of the communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in the figures below.
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area for each community type at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

Figure 1 Extent of Annex I habitat Estuary in Lough Swilly SAC.

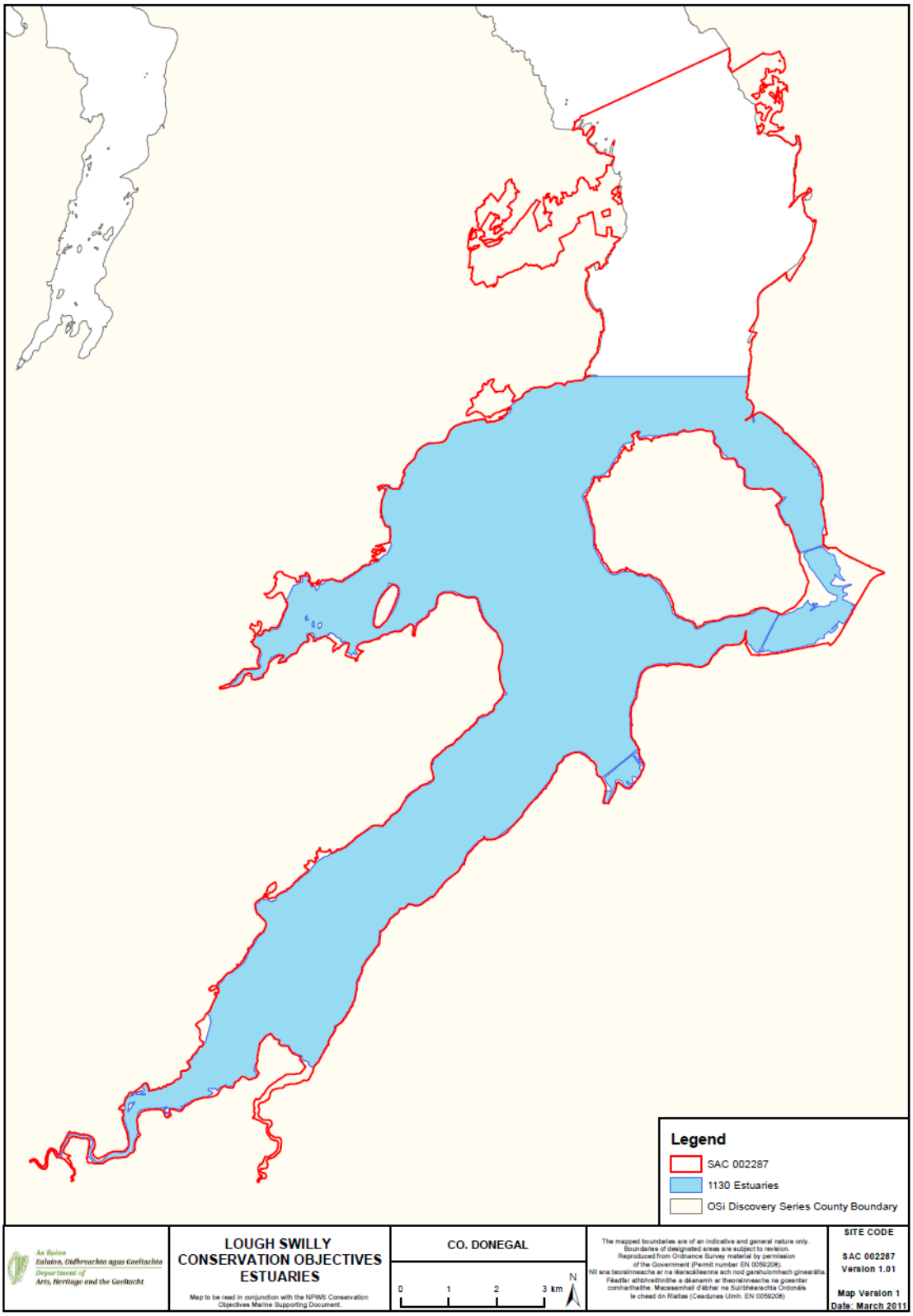

Figure 2 Broadscale distribution of communities in Lough Swilly SAC and adjacent areas.