



Moody Marine Ltd.

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Author(s): A Hough, T J Holt

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Certification Report For

BURRY INLET COCKLE FISHERY

Client: South Wales Sea Fisheries Committee

The Burry Inlet Cockle Fishery is based on hand-raking and sieving of cockles from within the Burry Inlet, South Wales, UK. The fishery is licensed and regulated by the South Wales Sea Fisheries Committee.

Licensed quotas are clearly determined to allow sustainable exploitation of the fishery. The fishery does not, therefore, lead to over-fishing or depletion of the exploited population.

The 'low-impact' nature of hand-gathering, and the control on the extent of gathering, means that the fishery allows for the maintenance of the structure, productivity, function and diversity of the ecosystem on which the fishery depends.

Regulation, combined with regular and effective inspections, has led to a management system, with operational criteria, that require exploitation of the cockle stock to be responsible and sustainable.

Certification Body: Moody Marine Ltd. Client Contact: Mr P Coates, Director

Centre for Marine and Coastal Studies
2 Vanguard Way
Birkenhead
Wirral
CH41 9HX
Tel: +44 (0) 151 650 2275
Fax: +44 (0) 151 650 2274

South Wales Sea Fisheries Committee
Queens Buildings
Cambrian Place
Swansea
SA1 1TW
Tel: +44 (0) 1792 654466
Fax: +44 (0) 1792 645987

CONTENTS

1	INTRODUCTION.....	3
2	ADMINISTRATIVE CONTEXT	3
2.1	BACKGROUND TO THE FISHERY	3
2.2	LEGISLATION AND ADMINISTRATION.....	4
2.3	LOCATION OF THE FISHERY	4
2.4	RESPONSIBLE AGENCIES.....	5
2.4.1	<i>The South Wales Sea Fisheries Committee (SWSFC).</i>	5
3	THE BURRY INLET COCKLE FISHERY.....	5
3.1	FISHING METHODS.....	5
3.2	THE MANAGEMENT AREA.....	5
3.3	THE FISHERY MANAGEMENT SYSTEM	6
3.3.1	<i>Management objectives;</i>	6
3.4	MANAGEMENT PRACTICES IMPLEMENTED	6
3.5	ESTIMATES OF FISHABLE BIOMASS.....	7
3.6	OTHER RELEVANT ACTIVITIES.....	7
4	BACKGROUND TO THE EVALUATION	8
4.1	EVALUATION TEAM;	8
4.2	PREVIOUS CERTIFICATION EVALUATIONS.....	8
5	STANDARD USED.....	8
5.1	MSC PRINCIPLES AND CRITERIA USED FOR THE EVALUATION;	8
	PRINCIPLE 1	8
	PRINCIPLE 2:.....	9
	PRINCIPLE 3:.....	10
6	THE EVALUATION PROCESS.....	12
6.1	INSPECTIONS OF THE FISHERY	12
7	STAKEHOLDER CONSULTATION.....	12
7.1	IDENTIFICATION OF STAKEHOLDERS:	12
7.2	SUMMARY OF RELATIVE USE-RIGHTS;	12
7.3	STAKEHOLDERS CONSULTED:	13
7.4	INFORMATION OBTAINED AND CONCLUSIONS DRAWN;.....	13
8	OBSERVATIONS AND SCORING.....	14
8.1	INTRODUCTION TO SCORING METHODOLOGY	14
8.2	EVALUATION RESULTS.....	15
9	TRACKING, TRACING AND IDENTIFICATION OF FISH AND FISH PRODUCTS	45
10	CERTIFICATION RECOMMENDATION.....	46
10.1	CERTIFICATION RECOMMENDATION	46
10.2	RECOMMENDATIONS, CONDITIONS OR PRE-CONDITIONS ASSOCIATED WITH CERTIFICATION.....	46
11	AGREEMENT	48
11.1	APPLICANT'S AGREEMENT TO MEET SPECIFIED CONDITIONS.	48
11.2	COPY OF CERTIFICATE	48

1 INTRODUCTION

This report sets out the results of an assessment of the Burry Inlet Cockle Fishery, South Wales, UK.

The Entity proposed for certification is:

Species: Cockle *Cerastoderma edule*

Geographical Area: Burry Inlet, Carmarthenshire and Swansea, South Wales, UK, as defined in the Burry Inlet Cockle Fishery order 1965.

Method of Capture: Hand-gathering (rake and sieve)

The aims of the assessment are to determine the degree of compliance of the fishery with the Marine Stewardship Council (MSC) Principles and Criteria, these are set out in Section 6.1.

2 ADMINISTRATIVE CONTEXT

2.1 Background to the Fishery

The Burry Inlet Cockle Fishery is a traditional source of food and employment for the local area, dating back to Roman and Mediaeval times. Traditional gathering was undertaken, usually by women, with cockles being returned to shore on donkeys. Each gatherer was then collecting around 2-3 cwt (0.1-0.15 tonne) per day, with an estimated 250 gatherers at work in the estuary. Cooking took place close to the gatherers home.

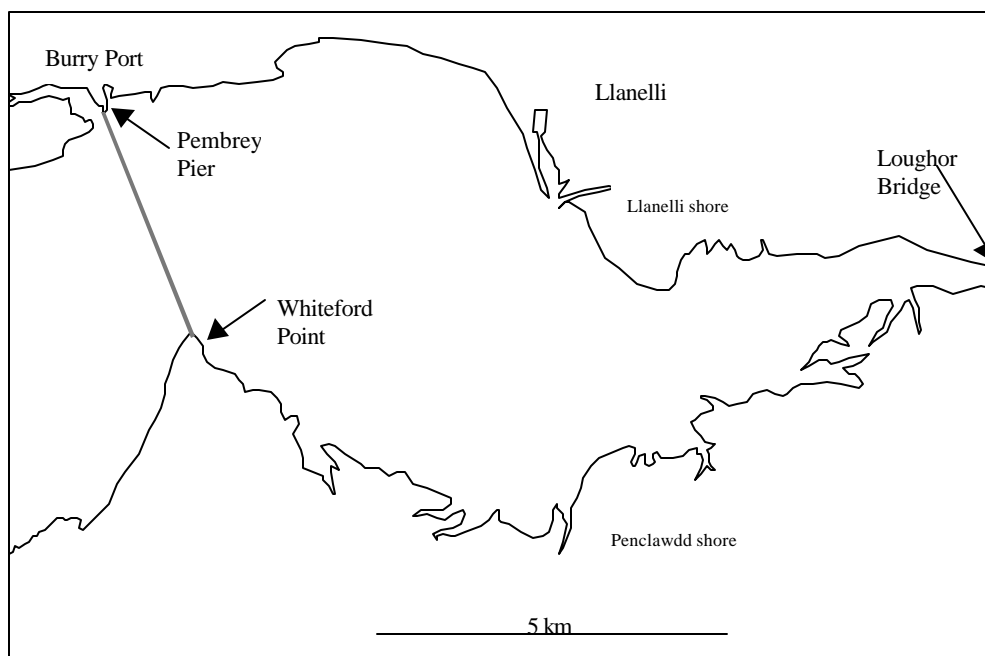


Figure 1. The area to which the Burry Inlet Cockle Fishery Order 1965 applies.

In the 1920's the horse-drawn cart was introduced, allowing gatherers to collect up to 10 cwt (0.5 tonne) of cockle each.

In 1921 a minimum landing size was introduced by the South Wales Sea Fisheries Committee (SWSFC) to protect the breeding stock and in 1952 so many cockles were collected that SWSFC considered a limit to control daily landings.

In 1965 the Burry Inlet Cockle Order was established to licence the fishery and so control the quantity of cockle taken. Since then the number of licences has varied between 43 and 67.

Poor recruitment of cockles in the early 1970's, coinciding with large numbers of oystercatcher (a species of wader, most abundant as overwintering flocks), led to culls of this species in 1973/74. Peak counts of oystercatcher were 20,000 with each bird consuming an estimated 250g per day, led to estimates of 30-50% of cockle being taken, 5-10 times that of the fishery. No culls have been permitted since this time.

2.2 Legislation and Administration

In 1965 the Burry Inlet Cockle Order was established to licence the fishery and so control the quantity of cockle taken. The South Wales Sea Fisheries Committee (SWSFC) is the body responsible for managing this order.

The number of commercial gatherers is determined by the number of licences issued by SWSFC, this has varied between 43 and 67 and was 50 in May 2000. There is also a registered waiting list of gatherers who have applied for a licence. The waiting list varies with the commercial opportunities associated with the licence and was 133 in May 2000.

The Loughor Estuary is a Site of Special Scientific Interest (SSSI) (Wildlife and Countryside Act 1981) and is contiguous with the Pembrey Coast SSSI, Llandimore Marsh SSSI and Whiteford Burrows National Nature Reserve (NNR). The estuary is also a Special Protection Area (SPA) under the EC Birds Directive, a candidate Special Area of Conservation (cSAC) under the EC Habitats Directive and a Ramsar Site under the International Convention on Wetlands, Ramsar, Iran. As a SPA and SAC, the site will be included in the European Natura 2000 network.

These designations all include the area of the cockle beds.

The North Eastern Shore of the estuary also contains the Penclawdd Wildfowl and Wetlands Centre, established by the Wildfowl and Wetlands Trust and Llanelli Borough Council.

2.3 Location of the Fishery

The Burry Inlet is formed by the estuary of the River Loughor, between the Gower Peninsular and Llanelli/Burry Port in South West Wales, UK. The Fishery is limited to the inter-tidal (littoral) zone and is entirely within British Territorial Waters.

The area within which the fishery operates is shown in Figure 1, and is defined as follows:

-
- On the west: that part of a line drawn from the seaward end of Pembrey Pier to the most northerly point of Whiteford Point, which lies between High Water Mark of Ordinary Tides on the northern and southern shores of the estuary respectively
 - On the east: the seaward side of that part of the Loughor Railway Bridge which is situated between High Water Mark of Ordinary Tides on the north-western and south-eastern shores respectively of the River Loughor and a line drawn from the south-eastern end of the railway bridge, due south until it meets High Water Mark of Ordinary Tides
 - On the north and south: High Water Mark of Ordinary Tides on the northern and southern shores of the estuary respectively between the western and eastern boundaries above.

The Burry Inlet, although not the largest, is frequently the most consistent cockle fishery in Europe.

2.4 Responsible Agencies

The South Wales Sea Fisheries Committee (SWSFC) is the organisation responsible for administering the fishery. The committee contains, among others, representatives from local councils, and reports to the Welsh assembly. The committee has a molluscan working group which considers cockle related issues in liaison with other interested parties.

The Shellfish Resource Team of Centre for Environment, Fisheries and Aquaculture Science (CEFAS), Lowestoft, are involved in an advisory capacity in carrying out cockle stock surveys and assessing fishable biomass.

The Countryside Council for Wales (CCW) is the Government's statutory adviser on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters.

The Environment Agency Wales (EA) is the Government Agency responsible for (amongst other things) maintenance of aquatic environmental quality. However, the EA has no direct control over marine fisheries except in respect of migratory salmonids.

3 THE BURRY INLET COCKLE FISHERY

3.1 Fishing methods

Only hand gathering is allowed within the fishery. Fishermen access the sands over low water periods during the day. Access to the sands is currently by motorised vehicle but access points are limited and strictly controlled. Cockles are hand-raked and then riddled through a mesh of a size which returns those less than the minimum size. Cockles retained by a 19 or 17.5mm mesh are then collected in sacks. The sacks used are supplied by SWSFC, are labelled with the licence number of the gatherer, and have a clear "fill-line" which allows for easy calculation of landings.

3.2 The management area

The SWSFC is responsible for regulation of fisheries within the 6 mile territorial limit. In terms of cockle fisheries this includes the Burry Inlet fishery and the Three Rivers fishery (within Carmarthen Bay, approximately 5 miles west of the Burry Inlet). At present, only the Burry Inlet Fishery is licensed, although all fisheries are subject to relevant bye-laws.

The management area for the Burry Inlet fishery is described in section 2.3 and shown in Figure 1. Within the management area there are a number of beds which can be individually closed if stocks are considered sufficiently low in a particular area. The area can also be considered in terms of the northern (Llanelli) and southern (Penclawdd) shores of the River Loughor.

3.3 The Fishery Management System

3.3.1 Management objectives;

Clear management objectives have not been specified for the fishery. However, the inherent management objective is the sustained harvesting of 2000-3500 tonnes of cockle per year. In practice this is achieved by the implementation of a quota for each year which is set at 30% of the estimated fishable biomass for the year (described below).

3.4 Management practices implemented

Management is implemented by SWSFC through the regulating Burry Inlet Cockle Fishery Order 1965 and the issuing of bye-laws. The regulating order enables control of the commercial collection of cockles within the fishery area by licensed collectors only. Licences are renewed annually at the licensee's responsibility. Licences may not be renewed if the licensee commits two or more 'relevant offences' (as defined) within a five year period.

Bye-laws apply throughout the SWSFC district and control:

- minimum landing size (implemented through a specified mesh size of usually 19mm or 17.5mm) to protect cockle to the size of first spawning, the mesh size has been 19mm since July 2000.
- the method of collection (only "hand gathering" - ie use of rake and sieve - is allowed)
- no gathering on night-time tides or Sundays
- the re-deposition of illegally taken cockles
- temporary closure of cockle beds for fishery management purposes
- the use of purpose-designed sacks, with a clearly indicated 'fill-level', for the transport of cockle from the beds. Use of these sacks allows for easy calculation of landings from each gatherer. There is also a requirement for each bag to be labelled with the number of the licence holder.

The fishery has never been completely closed for stock management reasons, but the nearby Three-Rivers Cockle Fishery is closed when cockle densities fall below 20 cockle/m² or when adult cockle is in short supply. This fishery has been closed for these reasons and was closed in Summer 2000. The Burry Inlet Cockle fishery was closed, however, following the Sea Empress oil spill in 1996. Due to suspected contamination of the cockle beds gatherers were compensated for loss of income.

The SWSFC issues Burry Inlet Cockle Order 1965 Guidance Notes and Management Policy Statement to all licence holders. The 1999 updated states that licences are termed 'provisional' for the first 36 months of issue, thereafter licences are confirmed. Provisional licences may be withheld at the time of issue (April), or suspended, if cockle stocks reach critically low levels.

"Critically low' stock levels would be deemed to occur when individual daily quotas were set by the Committee in order to conserve stocks, at or below 200 kilograms for two or more consecutive months."

The SWSFC also has powers to close the fishery at any time, under bye laws, on grounds of depletion, protection of juveniles, or control of exploitation reasons.

Non-licensed collection of cockle for "personal", i.e. non-commercial, use is allowed to the east of a line drawn north of Llanrhidian Pill provided that cockles are not sold or processed for sale. A limit of 8 kgs/day is imposed for non-commercial gatherers.

The annual quota for cockles is normally around 2,000 - 3,500 tonnes/year. This is implemented by determining a daily quota for gatherers (subject to the minimum quota of 100 kilos/day) and allocating an appropriate number of licences.

Temporary licences may also be issued to members of the waiting list (and easily revoked) to allow additional landings as appropriate for purposes of fishery management. Such licences are usually issued in the summer.

3.5 Estimates of Fishable Biomass

The annual landing of cockle is determined on the basis of annual or bi-annual stock surveys carried out jointly by CEFAS and SWSFC personnel in both November and May (due to the close regulation and extent of historical data, these studies are also used by CEFAS to determine general cockle management principles, overwinter mortalities etc.). Surveys involve the counting and size classification of cockle on a stratified-random basis along transects (22 in 1998) divided between the northern and southern shores of the estuary.

On the basis of the stock assessment, an estimate of likely fishable biomass is made by CEFAS officers. This takes into account factors such as likely mortality and growth over the coming months, largely determined on the basis of experience from historical survey data. An annual landing figure (quota) is then calculated and apportioned via licences (standard and temporary). This has been taken to be 30% of the fishable biomass, although this figure may be reviewed as further understanding of the effects of management practice is developed. A documented procedure describing this process is not, however, currently available.

3.6 Other Relevant Activities

Recent years have seen the development of 'crumble' on the cockle beds. This is primarily young mussels less than one year old, which bind together stones and shell material and form a 'crust' on top of areas of cockle bed which prevent hand-raking. While adversely affecting the fishery, this crumble does provide a food source for waders and wildfowl using the estuary, particularly waders such as oystercatchers.

To maintain the fishery, this crumble is removed periodically under the authority of SWSFC. Most recently this has been achieved by using vessel dredgers (with the specific approval of the national nature conservation organisation, the Countryside Council for Wales, CCW). The removed crumble does have an intrinsic commercial value as juvenile mussels may be re-laid a form of mussel cultivation in which the re-laid 'seed' mussels are allowed to grow to a larger size before being harvested for sale. At least some fishermen consider that regular working of the beds is beneficial in preventing development of mussel crumble in the first place.

Removal of crumble has benefits to the fishery in terms of increased access to cockles. It may also allow cockle recruitment where it would otherwise not occur. Some areas of crumble are, however maintained as a bird feeding resource. While there may be negative impacts on the wider ecology of the area, the consent of CCW for removal to take place suggests that these are not considered sufficient to affect the nature conservation value of the Burry Inlet. A joint study is planned for 2000/01 into the relative extent and biological importance of crumble and cockle biomass, co-ordinated by CCW.

4 BACKGROUND TO THE EVALUATION

4.1 Evaluation Team;

Evaluation Leader: Dr Andrew Hough: Moody Marine Ltd

Evaluation Team Member: Dr Terry Holt: Centre for Marine and Coastal Studies
University of Liverpool.

CV's of both members of the project team are provided as Annex A.

4.2 Previous Certification Evaluations

No previous certification evaluations have been carried out for this fishery.

5 STANDARD USED

5.1 MSC Principles and Criteria used for the Evaluation;

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles, and their supporting Criteria are presented below.

PRINCIPLE 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are

depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.¹:

Intent:

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

Criteria :

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

PRINCIPLE 2:

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Intent:

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Criteria :

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

¹ The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

PRINCIPLE 3:

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Intent:

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

A. Management System Criteria :

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process;
3. be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings;
4. observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability;
5. incorporates an appropriate mechanism for the resolution of disputes arising within the system²;
6. provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing;
7. act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty;
8. incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides

² Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

for the dissemination of research results to all interested parties in a timely fashion;

9. require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted;
10. specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:
 - a) setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
 - b) identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
 - c) providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
 - d) mechanisms in place to limit or close fisheries when designated catch limits are reached;
 - e) establishing no-take zones where appropriate;
11. contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

B. Operational Criteria

Fishing operation shall:

12. make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive;
13. implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
14. not use destructive fishing practices such as fishing with poisons or explosives;
15. minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.;
16. be conducted in compliance with the fishery management system and all legal and administrative requirements; and
17. assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

6 THE EVALUATION PROCESS

6.1 Inspections of the Fishery

Prior to the beginning of the certification process, two meetings were held to determine whether the fishery wished to proceed with MSC certification. The first involved a meeting between Moody Marine, the MSC and the SWSFC and nearby processors. The second involved a presentation to the gatherers and processors by Moody Marine and the MSC. Following these meetings, the SWSFC, with the backing of the industry, decided to proceed with the certification process.

A pre-assessment visit to the Offices of the SWSFC was made on 22nd March, 2000, including inspection of gathering on the cockle beds and delivery of cockle to processing facilities on the northern and southern shores of the Burry Inlet. As part of the main assessment, the South Wales Sea Fisheries Committee offices in Swansea and processing facilities on the south shore of the Burry Inlet were re-visited on 6 July 2000.

These visits, together, were considered to allow full access to records of the fishery, and to allow the means of cockle collection and transport to be verified.

The evaluation of the fishery against these Principles and Criteria is made on the basis of one or more inspections of the fishery and fishery records and documents, together with the soliciting of views on the fishery of relevant stakeholders.

7 STAKEHOLDER CONSULTATION

7.1 Identification of Stakeholders:

Consultation with all stakeholders involved in the Burry Inlet Cockle Fishery is considered an integral component of the certification process. Consultation was carried out to ensure that all issues pertinent to the sustainable management of the fishery are taken into consideration. Consultation involved:

- Direct contact by letter
- Notification of the Certification Assessment in Fishing News on 7 July 2000
- Notification on the MSC web site, with notice to contact the Evaluation Leader, Dr Andrew Hough

7.2 Summary of Relative Use-Rights;

As outlined in Section 2.1, cockle gathering has been a customary activity within the Burry Inlet. The current licensing arrangements are designed to ensure that customary livelihoods and fishing methods are maintained within the fishery.

Currently licensed gatherers are represented by Penclawdd Shell Fishermen's Association and the Burry Inlet Hand Gatherers Association. There is also an association of licence waiting list members, the Burry Inlet Waiting List Association. All these groups have the ability to meet and make representations to the management authority, the SWSFC.

The ability of residents and visitors to collect cockle for non-commercial purposes is also maintained in the fishery management system.

7.3 Stakeholders Consulted:

Stakeholders selected by Moody Marine, in consultation with the SWSFC were:

Fishers Organisations and Management Authority

Liz Williams, Penclawdd Shellfish Association
Mr R Griffiths, Burry Inlet Hand Gatherers Association
Mr G Hyndman, Burry Inlet Hand Gatherers Association
Mr H Hughes, Burry Inlet Hand Gatherers Association
Mr M Evans, Burry Inlet Waiting List Association
Mr P Nicholas, Burry Inlet Waiting List Association
Cllr D James, SWSFC
Cllr G Phillips, SWSFC
Cllr K Maynard, SWSFC
Cllr C Roberts, SWSFC

Local and National Government

Mr G Perryman, National Assembly for Wales

Government Agency – Fisheries

Mr D Palmer, CEFAS
Dr C Bannister, CEFAS
Mr P Walker, CEFAS

Government Agency - Environmental Protection

Liz Roblin, Environment Agency

Government Agency – Nature Conservation

Mr T Jenkins, Countryside Council for Wales

Landowners

Crown Estates Commission
Duke of Beaufort/Somerset trust c/o Knight Frank Land Agents

Non Governmental Organisations

Mr M Winder, National Trust
Sian Musgrave, National Trust
Mr G Profit, Wildfowl and Wetlands Trust
Dr T Prater, RSPB

Research Organisation

Dr S Shackley, University of Wales, Swansea
Dr J Goss-Custard, Centre for Ecology and Hydrology

7.4 Information Obtained And Conclusions Drawn;

There was a reply from Knight Frank land agents querying land ownership on behalf of their (unspecified) clients. The SWSFC are not aware of any land ownership conflicts regarding the fishery (Phil Coates, pers. comm.). Indeed, it would not have been possible to establish the regulating order in the first place if there were any identified access problems. In trying to establish the precise position regarding

SWSFC' s wish to allow dumping of cockle shell on inter-tidal tracks, to consolidate the tracks, some years ago, they were unable after several attempts to obtain a response from Knight Frank land agents. This was taken to mean there was no significant problem.

All other replies were supportive of the fishery, although CEFAS were concerned that certification could increase demand for cockles and thereby result in pressure to increase quotas. Although this clearly could be the case, it seems unlikely that it would cause any problem given the management regime within which the fishery operates. Future changes in management would be monitored during surveillance visits.

8 OBSERVATIONS AND SCORING

8.1 Introduction to Scoring Methodology

The MSC Principles and Criteria, and in particular Principles 1 and 2, provide guidance on the level of performance necessary for a sustainably managed fishery. The certification methodology adopted by the MSC involves the interpretation of these Principles and Criteria into specific Scoring Criteria against which the performance of the fishery can be measured. Performance is determined on the basis of a percentage compliance with each Scoring Criterion.

The generic Scoring Criteria developed by Moody Marine are identified in the MSC website (Certification Performance Criteria and Scoring Guidelines). In order to make the assessment process as clear and transparent as possible, these identify the level of performance necessary to achieve 100%, 80% (a pass score) and 60% scores for each Indicator.

These generic Scoring Criteria are modified as appropriate in line with the nature of the fishery undergoing certification. In practice, this usually takes the form of a 'weighting' assigned to criteria or the removal of criteria which do not apply to the fishery in question (and which would therefore bias the overall scoring).

At the top level, no weightings are assigned in terms of each Principle; a fishery must 'pass' each of Principles 1, 2 and 3 in order to achieve certification.

Within each Principle, scoring criteria are grouped in a hierarchy. The first level Scoring Criteria represent separate areas of important information (e.g. Criterion 1.A requires a sufficient level of information on the target species and stock, 1.B requires information on the effects of the fishery on the stock and so on). There is a presumption against allocating weightings to these 'top-level' categories.

Finally, sub-criteria (1.A.1, 1.A.2 etc) are determined and at this level weights may be assigned and the performance of the fishery is assessed as a 'score'. In order for the fishery to achieve certification, an overall score of 80% is considered necessary for each of the three Principles, 100% represents exceedance of the performance necessary and 60% a measurable shortfall. Of course, it is not possible to allocate precise scores, a level of 5% scoring intervals are therefore used in the evaluation.

Weights and scores for the Burry Inlet Cockle Fishery are presented in Table 1 below. Weights for sub-criteria add to a total of 100 for each Scoring Criterion, Scores are allocated relative to the Scoring Guidelines.

Where low scores are recorded, Moody Marine will specify recommendations or conditions to certification.

8.2 Evaluation Results

Observations are presented in Table 1 below, together with any weightings applied to the fishery and the scores allocated.

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE	
Principle 1: A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.				
1.A. There should be sufficient information on the target species and stock to allow the effects of the fishery on the stock to be evaluated.			Weight	Score
1A.1 Can the species be readily identified?	Several standard references exist for identification of cockle <i>Cerastoderma edule</i> . The species is easily identified by fishers, regulators and the general public.	E.g. Poppe & Got., 1993 European Seashells Vol 2; Hayward & Ryland, 1990 (Marine Fauna of Britain and Europe, Vol 2.).	8	100
50% There is confusion between the target species and other species by the fishermen though not necessarily by regulators.				
80% The target species is unlikely to be confused with any other species.				
100% The species is readily identifiable by fishers and regulators.				
1A.2 Is the life history of the species understood?	The life history of the cockle is well understood and documented. Information on adult populations is plentiful, less information is available on larval stages.	Numerous studies, including Hancock & Urquhart (1965) in Burry Inlet	8	90
50% There are serious gaps in information but the basis of the life history is understood.				
80% Quantifiable information is available on age and size structure, reproductive strategy and growth rates.				
100% The life history of the species is clearly documented and understood including the behaviour and life history of key life stages.				
1A.3 Is the geographical range of the target stock known?	The boundaries of the fishery are clearly determined and documented, no other stocks are involved within the fishery.	The Burry Inlet Cockle Fishery Order 1965	8	100
50% An estimate of the geographical range of the target species is available.				
80% A reliable estimate of the geographic range of the target species is available including seasonal patterns of movement/availability.				
100% The complete geographic range of the stock, including seasonal patterns of movement/availability, is estimated and documented each year. Research data are adequate to assess whether multiple stocks are being fished.				
1A.4 Is there information on fecundity/ recruitment and factors causing natural mortality?	Nearby cockle fisheries are also well studied (Three Rivers). Wider geographic range, though understood, is not particularly relevant to this certification.	Phil Coates, pers. Comm. SWSFC records	23	90
50% There is information available on the fecundity, growth and natural mortality.				
80% Estimates are available of fecundity at size, growth rates and natural mortality.				
100% There is comprehensive and reliable information on the fecundity/recruitment, growth rates and factors causing natural mortality.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
1A.5 Is the age and structure of the stock known?	Abundance by year class is measured directly during bi-annual surveys (see 1A.4). Sex is not readily determinable but is not considered relevant to the management of the fishery.	CEFAS Contract MB101. Survey of Cockle Stocks in the Burry Inlet	23	100
60% There is some information available on the age and structure of the stock.				
80% There is sufficient information to allow estimates to be made of the age and structure of the stock.				
100% Annual estimates of the age and structure of the stock are made and information documented.				
1A.6 Is information collected on the abundance/density of the stock?	Abundance by year class is measured during the bi-annual surveys (see 1A.4).	CEFAS Contract MB101. Survey of Cockle Stocks in the Burry Inlet	23	100
60% There is information available on the abundance and density of the stock.				
80% There is some sufficient information available to estimate the annual abundance and density of the stock.				
100% Information is collected and documented annually on the abundance and density of the stock.				
1A.7 Are other fisheries in the area, not subject to certification, identified?	Yes, all cockle and other relevant fisheries are identified by SWSFC.	SWSFC records.	8	100
60% There is some information relating to other fisheries in the area that are not subject to certification, although these are not fully identified.				
80% The main relevant fisheries not subject to certification are identified.				
100% All fisheries in the area, not subject to certification, are identified.				

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE		
1B There should be sufficient information on the fishery to allow its effects on the target stock to be evaluated				Weight	Score
1B.1 Is fishery related mortality recorded/ estimated (including landings, discards and incidental mortality)?	Landings are reported regularly by gatherers and checked by SWSFC officers. Fisheries officers are on the shore at landing points almost every day. Incidental mortality (riddled discards) is not known in detail but due to the nature of the fishery management (based on detailed ongoing estimates of recruitment) is not considered to be critical.	The Burry Inlet Cockle Fishery Order 1965 SWSFC records P Coates pers comm.	25	95	
50% Information is available on landings, discards, and incidental mortality for the main fishing areas.					
30% Sufficient information is available to allow estimates to be made of landings, discards and incidental mortality in the main areas of the main fisheries.					
100% Fishery related mortality is recorded at sub-annual intervals over a fine spatial scale including landings, discards and incidental mortality. There is direct observation of discards.					
1B.2 Is fishing effort recorded/ estimated?	No. of licensees and daily quotas are known. Actual activity is recorded on a regular random basis by SWSFC officers.	SWSFC records	25	95	
50% Data is available which can be used to estimate the fishing effort.					
30% Sufficient information is available to allow accurate estimates of fishing effort.					
100% Comprehensive records are kept of fishing effort, recorded at sub-annual intervals at an appropriate degree of spatial resolution.					
1B.3 Are fishing methods known throughout the fishery?	Only hand raking and riddling is allowed. Methods are regulated by licence and confirmed by SWSFC officer inspections	The Burry Inlet Cockle Fishery Order 1965 P Coates pers comm.	25	100	
50% Main fishing methods are known for the fishery.					
30% Main fishing methods are known and information is available on the geographical areas of use.					
100% All fishing methods employed in the fishery are known. In-situ observations are made of fishing practices.					
1B.4 Are gear types and selectivity known for the fishery?	Gear types (rake and riddle) and minimum landing sizes are determined by SWSFC bye-laws and confirmed by SWSFC officer inspections. Minimum landing size is applied through a specified riddle size normally 19 mm, currently 17.5 mm for management reasons, with 50% retention size of 23 mm cockle.	Bye-Law 13. SWSFC Records	25	100	
50% Main gear types are known and some information is available on selectivity.					
30% Main gear types and selectivity are known.					
100% All gear types are known for the fishery and the selectivity of each of the gear types has been researched and recorded.					
1B.5 Is information available on the variations in gear selectivity and success over time?	Not appropriate to hand gathering fishery	N/A	N/A	N/A	
50% Some information exists on variations of gear selectivity over time.					
30% Sufficient data is available to allow variations in gear selectivity over time to be estimated.					
100% Variations in gear selectivity and the success of different gear types over time have been researched and recorded.					

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE	Weight	Score
<i>1C Have appropriate reference levels been developed for the stock?</i>				
1C.1 Are there appropriate target reference points?	Fishery is managed on the basis of systematic survey since 1950's. Licenses and quota's are currently based on landing 30% of estimated 'fishable' biomass, based on biomass survey figures plus consideration of likely mortality, survival and growth. This percentage may be subject to review but quotas allow for possible poor future recruitment. "Reference Points" are, therefore, not appropriate, but quotas allow for sustainable yields and have an inherent precautionary approach.	SWSFC records P. Coates interview. Burry Inlet Cockle Fishery Order 1965. Guidance Notes and Management Policy Statement March 1999 update (SWSFC)	50	100
50% Target reference points are set based upon estimated stock levels and recruitment				
30% Appropriate target reference points have been made for the stock				
100% Target reference points are set which provide sustainable yields over time, which adopt a precautionary principle where uncertainty exists in stock levels and which are reviewed annually.				
1C.2 Are there appropriate limit reference points?	See 1C.1 above		N/A	N/A
50% Limit reference points have been chosen that are estimated to be above levels of observed decline. The chances of the exploitation rates being above the limit reference level are uncertain.				
30% Limit reference points have been chosen that are appropriate for the species and are above levels for which major declines in recruitment have been observed or are expected. There is a 70% chance that exploitation rates are below the limit reference level.				
100% Limit reference points used meet acceptable national and international standards. They are at least as precautionary as B_{MSY} . There is a 90% chance that exploitation rates are below the limit reference point.				
1C.3 Do reference points meet acceptable international standards?	See 1C.1. Management system in use in the Burry Inlet is regarded by CEFAS (formerly MAFF) as a model for other UK cockle fisheries. No appropriate international standards currently available.		50	100
50% Reference points recognise appropriate international standards and are being developed to meet these.				
30% Reference points recognise, and are in line with, acceptable international standards.				
100% Reference points meet or exceed international standards.				

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE		
ID Is there a well-defined and effective harvest strategy to manage the target?				Weight	Score
ID.1 Is there a mechanism in place to contain fishing effort as required?	Quotas are set on the basis of survey information and include for temporary closure of beds if required.	The Burry Inlet Cockle Fishery Order 1965	33	95	
50% Mechanisms to reduce fishing effort exist but do not fully contain fishing effort, or have not been tested.	However, the limit for closure is not documented but is determined by SWSFC judgement				
30% Mechanisms are in place to reduce fishing effort as and when required to maintain, or allow the target stock to return to, productive levels.	"Critically Low" stock levels are deemed to occur when individual daily quotas are set by the committee, in order to conserve stocks are set at or below 200 kg for two or more consecutive months. Under these				
100% Mechanisms are in place to reduce fishing effort as and when required to maintain (or allow the target stock to return to) productive levels. These are subject to regular review	conditions the committee reserves the right to suspend a provisional license (one which has not been in service for 36 or more months) after one months notice. Further reductions in quota are also possible to a minimum of 100 kgs/day	Burry Inlet Cockle Fishery Order 1965. Guidance Notes and Management Policy Statement March 1999 update (SWSFC)			
ID.2 Are clear, tested decision rules set out?	Issue, reissue and revoking of license subject to very clear rules in guidance notes and management policy statement.	Guidance Notes March 1999 Update.	33	90	
50% It can be demonstrated that decision making, though not documented, is logical and appropriate. Rules have not been tested.	Setting of quota based on survey results and experience of management of the fishery. The fishery has not been closed for stock management reasons. Clear decision rules exist for 'critically low stock levels' when provisional licenses can be suspended. Although these are not 'tested', there is a long history of use of these management rules.	The Burry Inlet Cockle Fishery Order 1965			
30% Clear decision making rules exist and have been tested, but are not fully documented.					
100% Clear, documented and tested decision rules are in place.					
ID.3 Are appropriate management tools specified to implement decisions in terms of input and/or output controls?	Management of input is implemented via annual licences and bye-laws. (Presently under review in order to consider making licenses more flexible.) These are specific to the species or fishery.	The Burry Inlet Cockle Fishery Order 1965	33	95	
50% It can be demonstrated that decision making, though not documented, is logical and appropriate. Rules have not been tested.		Bye-Laws			
30% Management tools have been specified to implement decisions of input and/or output controls. These are generic although some attempt has been made to relate them to the specific fishery OR tools are lacking in some details but are specifically related to the fishery.					
100% Management tools, appropriate to the species and fishery, have been specified to implement decisions of input and/or output controls.					

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
			Weight	Score
1E Is there a robust assessment of stocks?				
1E.1 Are assessment models used?	Accessibility of cockle beds allows direct survey of stock levels. Formal models are therefore not required. However, based on stock estimates and historical records of mortality and growth, an estimate of available fishable biomass for the coming season is made. Precise methods on the basis for this are not recorded, however.	CEFAS Contract MB101.	20	80
50% Assessment models are used. These are generic and do not account for either the biology of the species or the nature of the fishery.				
80% Assessment models are used. Major criteria are related to the species and/or the fishery, but there are some areas of the assessment that are generic.				
100% Assessment models are used and are appropriate to the biology of the species and the nature of the fishery.				
1E.2 Does the assessment take into account major uncertainties in data and have assumptions been evaluated?	No formal assessment model is used - see 1E.1 However, estimates of fishable biomass are based on long experience and appear to be robust.	P Coates, pers comm.	20	90
50% Major uncertainties are identified. Some attempt has been made to account for these in the assessment.				
80% The assessment takes into account major uncertainties in the data. The most important assumptions have been evaluated.				
100% The assessment takes into account all uncertainties in the data and evaluates the assumptions.				
1E.3 Are uncertainties and assumptions reflected in management advice?	Uncertainties are minimal, based upon regular surveys and regular field visits by fisheries officers.	P Coates, pers comm.	20	95
50% Major uncertainties are recognised and are being incorporated into management advice.				
80% Major uncertainties and assumptions are taken into account in management advice.				
100% All uncertainties and assumptions are reflected in the management advice.				
1E.4 Does the assessment evaluate current stock status relative to reference points?	No formal reference points are calculated BUT daily quotas frequently (every month or two) reviewed in relation to twice yearly stock estimates, and to management issues such as weather, likely meat yields, harvest rates etc.	Guidance Notes March 1999 Update.	20	90
50% The information available is used to estimate the stock status relative to reference points.				
80% The assessment makes an approximated evaluation of the stock status relative to the reference points.		P Coates pers comm		
100% The assessment makes a robust evaluation of the stock status relative to the reference points.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
IE.5 Does the assessment include the consequences of current harvest strategies?	Daily quotas are frequently reviewed and current harvest rates as estimated by both gatherers statistics and fishery officers reports are taken into account.	Guidance Notes March 1999 Update.	20	100
60% The assessment makes a crude approximation of the consequences of current harvest strategies.		P Coates pers comm		
80% The assessment makes a crude approximation of the consequences of current harvest strategies.				
100% The assessment includes the consequences of current harvest strategies and assesses future consequences of these				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
<i>IF Is the stock(s) at appropriate reference level(s)?</i>			Weight	Score
IF.1 Is the stock(s) at or above reference levels?	Cockle plentiful over many years and quotas currently relatively high	CEFAS Contract MB101.	100	100
60% The stock is below reference levels.				
80% The stock is above reference levels				
100% The stock is significantly and consistently above appropriate reference levels.				

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE	
Principle 2: Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.				
2A Is there adequate determination of ecosystem factors relevant to the geographical scale and life-history strategy of the target species?			Weight	Score
2A.1 Are the nature and distribution of habitats relevant to the fishing operations known?	Intertidal mapping of SAC currently undertaken formally by CCW. SWSFC also hold data on habitats as a result of previous studies	CCW Database SWSFC records	29	100
60% Some information exists but may not be comprehensive or up to date.				
80% Nature and distribution of all main habitats are known in moderate detail. Information is recent.				
100% The nature and the distribution of all habitats relevant to the fishing operations are known in detail. Information is recent.				
2A.2 Is information available on non-target species affected by the fishery?	Indirect evidence exists from studies that have been carried out on the effects of tractor gathering (mainly cockles) and suction dredging. No direct evidence exists on the effects of hand-gathering on non-target species.	Rostron, 1993 Rostron in J. Atkins 1995	29	75
60% The main non-target species have been identified.	Mussel 'crumble' (young seed mussels and associated debris including shells) are removed from some areas using dredgers to allow access to cockle beds. Permission normally given each year to 1 or 2 dredgers, for certain areas and estimated tonnages, and usually seed used for relaying elsewhere for mussel cultivation purposes. Tonnages removed are recorded. Liaison with CCW undertaken so that areas important for conservation purposes are not affected. Access onto sands by wheeled vehicles is limited, only three main access points used and a fourth on occasion.	SWSFC records; P Coates pers comm. P Coates, Pers Comm., SWSFC documents		
80% Information is available on the main non-target species affected by the fishery including their distribution and/or ecology.				
100% Information is available on all non-target species affected by the fishery including the distribution and ecology.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
2A.3 Is information available on the position and importance of the target species within the food web?	Predators: Most significant predator is oystercatcher. Relationship to cockle densities studied. Food source: adults rely on suspended particulate organic matter, juveniles on smaller particles especially phytoplankton and zooplankton.	RSPB/CEFAS studies in J.Appl. Ecol. Also BTO/ITE Studies on disturbance effects on shorebirds. CEFAS Fax of 16/3/00 to P Coates.	29	95
60% Key food/prey items are known.				
80% Information is available on the position and importance of target species in the environment at key life stages.				
100% Information is available on the position and importance of the target species within the food web in all life stages.				
2A.4 Is there information on the potential for the ecosystem to recover from fishery related impacts?	The effects of hand gathering on non-target species and ecosystem structure not studied specifically. Recovery of areas of mussel crumble not studied in detail. Nature of these areas is such, however, that mussels tend to reappear regularly given suitable stable conditions.	P Coates, pers comm.	14	70
60% Key elements of the functioning of the ecosystem, relevant to the fishery, are identified.				
80% The main elements of the functioning of the ecosystem, relevant to the fishery, have been documented and are understood.				
100% Detailed information is available on the potential for affected elements of the ecosystem to recover from fishery related impacts.				

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE		
2B Are general risk factors adequately determined?				Weight	Score
2B.1 Is information available on the nature and extent of by-catch (capture of non-target species)?		No by-catch is taken due to selectivity of hand-gathering.	P. Coates interview and field visit	80	100
60% Information is available on the identity of the main by-catch species.					
80% Information is available to allow estimates of the main by-catch to be calculated including information on species composition.					
100% Accurate records are kept on the nature and extent of all by-catch species including species size and sex composition.					
2B.2 Is information available on the extent of discard (the proportion of the catch not landed)?		Incidental mortality (riddled discards) has not been measured. A low weighting has been allocated, however, as, due to the nature of the fishery management (based on detailed ongoing estimates of recruitment), this is not considered critical. Due to the robustness of cockles, high survival can be assumed.	N/A	20	60
60% Information is available of the extent of main discards.					
80% Information is available to allow estimates of discard to be calculated for the main species captured.					
100% Accurate information is available on the extent of discard including species, sex and size.					
2B.3 Is there information on any unobserved fishing mortality?		See 2B.2	N/A	N/A	N/A
60% Areas of potential unobserved fishing mortality are identified but no further information is available.					
80% Information from existing work has allowed estimates of unobserved fishing mortality to be made.					
100% Research has been carried out on unobserved fishing mortality allowing accurate estimates to be made (or it is known that significant unobserved mortality does not occur).					
2B.4 Are the effects of supply and use of bait known?		N/A	N/A	N/A	N/A-
60% Types of bait, extent of use and sources of supply are known.					
80% There is adequate knowledge of the use of bait including sources and amounts.					
100% All significant impacts of the supply and use of bait are known.					
2B.5 Are the potential and significance of introduced/relocated species known?		N/A	N/A	N/A	N/A
60% There is recognition of potential sources of introduced/relocated species.					
80% Potential routes and significance of introduced/relocated species directly related to the fishery are known					
100% Potential routes and significance of introduced/relocated species directly related to the fishery are known and monitored. Records are kept.					

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE		
2C Is the fishery conducted in a manner which does not have unacceptable impacts on recognised protected, endangered or threatened species?				Weight	Score
2C.1 Is there information on the presence and populations of protected species?	60% There is a program in place to identify key protected, threatened and endangered species directly related to the fishery. 80% Key protected, threatened and endangered species directly related to the fishery have been identified. 100% There is knowledge of all populations of protected species directly or indirectly related to the fishery including an assessment of temporal variability. The type and distribution of critical habitats have been identified.	Information on waders and wildfowl collected on a monthly basis as part of the Wetland Bird Survey (WeBS) counts. Critical habitats are mapped by CCW.	WeBS annual records. CCW Database	33	100
2C.2 Are interactions of the fishery with such species adequately determined?	60% A program is being developed to identify the main impacts of the fishery on threatened and endangered species. 80% The main interactions directly related to the fishery are known. 100% The interactions of all populations directly or indirectly related to the fishery are known.	Further research into relationship between cockles and oystercatchers underway by CCW and MAFF. Interaction of cockle and oystercatcher (the main predator species) studied extensively.	Bannister and Bell, CEFAS. Shellfish Resource Team publication. Horwood & Goss Custard, 1977. Howells, 1995 in Atkins 1995.	33	95
2C.3 Is information available on the extent and significance of such interactions?	60% The programmes under development include investigations on the extent and significance of such interactions. 80% There is knowledge of the main interactions of the fishery with key protected, threatened and endangered species. Known effects are within acceptable limits of national and international legislative requirements. 100% The interactions have been identified and studied. It is known that the direct and indirect effects of fishing on threatened and endangered species are within acceptable limits of national and international legislative requirements.	There is no evidence of unacceptable impacts on oystercatchers (Fluctuations in oystercatcher numbers thought to be controlled by breeding success elsewhere.) Present extent of fishing thought to have negligible effects on oystercatchers (and vice versa!).	Bannister and Bell, CEFAS. Shellfish Resource Team publication. Horwood & Goss Custard, 1977. Howells, 1995 in Atkins 1995.	33	95

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
2D Is there adequate knowledge of the effects of gear-use on the receiving ecosystem and extent and type of gear losses?			Weight	Score
2D.1 Is there adequate knowledge of the physical impacts on the habitat due to use of gear?	There is indirect evidence that the effects of hand-gathering are transient and of low impact on habitat.	Walker et al in J. Atkins 1995	88	70
60% There is a program in place to identify the main impacts of gear use on the habitat.	No direct evidence exists.	Rostron in J. Atkins 1995		
80% Main impacts of gear use on the habitat are identified including extent and location of use.	There may be some possibility that regular working of the beds may prevent the build up of mussel crumble.			
100% The physical impacts on the habitat due to use of gear have been studies and quantified, including details of any irreversible changes.	(See comments on mussel crumble in 2A).			
2D.2 Is any gear lost during fishing operations?	Some low level loss of sacks has been reported although no evidence was visible during site visits.	P Coates pers comm	12	100
60% Some recording of gear losses takes place and a program is being developed to minimise loss of gear.	Tagging of sacks allows these to be traced to licence holders.			
80% There is knowledge of the type, quantity and location of gear lost during fishing operations. Estimates made show that losses do not cause unacceptable effects on the receiving ecosystem.				
100% There is detailed knowledge of the type, quantity and location of gear types lost during fishing operations. The impact of gear loss on target and non-target species has been measured and shown to have negligible effects on habitats, ecosystems or species of concern.	No ecological effects are expected to result.			
2D.3 Is there any information on extent and significance of ghost fishing?	N/A	N/A	N/A	N/A
60% Programmes are being developed to estimate any effects of ghost fishing.				
80% Records of ghost fishing exists and estimates are made of the extent and significance of the impacts to target and non-target species.				
100% Records are kept of the extent and significance of ghost fishing on target and non-target species.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE	Weight	Score
<i>2E Do assessments of impacts associated with the fishery including the significance and risk of each impact, show no unacceptable impacts on the ecosystem structure and/or function, on habitats or on the populations of associated species?</i>				
2E.1 Have all the significant effects of the fishery on the ecosystem been identified?	Significant effects identified in 2B to 2D above. Main effects have been identified and studied, some more minor effects remain to be resolved. An additional impact associated with the fishery is the removal of 'crumble' (mussels and associated debris) from the surface of the cockle beds to allow gathering to take place. This takes place using dredgers in specified areas with the consent of CCW. See 2A2.	SWSFC consultation records with CCW and other concerned stakeholders.	20	85
60% Main impacts of the fishery on the ecosystem are known from existing information or programmes are being implemented to obtain this information.				
80% There is a comprehensive evaluation of the effects of the fishery on the ecosystem based on existing information.				
100% The effects of the fishery on the ecosystem have been identified by comparative studies between comparable fished and non-fished sites.				
2E.2 Does the removal of target stocks have unacceptable impacts on ecosystem structure and function?	No evidence of unacceptable impacts on oystercatchers, the main source of impact. Further research into relationship between cockles and oystercatchers underway by CCW and MAFF. Present extent of fishing thought to have negligible effects on oystercatchers (and vice versa!). Some more minor areas of potential impact remain to be resolved.	Bannister and Bell, CEFAS Shellfish Resource Team publication Horwood & Goss Custard, 1977. Howells, 1995 in Atkins 1995.	20	90
60% The removal of target stocks may have unacceptable impacts on ecological systems (applying the precautionary principle where necessary). A program is in development to reduce these to acceptable, defined limits.				
80% No unacceptable impacts of the fishery on ecological systems within major fishing areas have been demonstrated.				
100% The removal of target stocks has effects which are documented and are within acceptable, pre-determined, limits.				
2E.3 Does the removal of non-target stocks have unacceptable impacts on ecosystem structure and function?	Mussel 'crumble' is removed - see 2E1. No suggestion has been raised from any party that impacts of this are unacceptable. Further research is underway into the relative ecological importance of crumble/mussel and cockle biomass.	P Coates pers comm and field visit	20	90
60% The removal of non-target stocks has impacts on the ecosystem structure and function that are occasionally unacceptable. A program is in place to reduce these to acceptable limits, which have been defined.				
80% No unacceptable impacts of the fishery on ecological systems within major fishing areas have been demonstrated.				
100% The removal of non-target stocks has effects which are documented and are within acceptable, pre-determined, limits.				
2E.4 Does the fishery have unacceptable impacts on habitat structure?	See 2D.1 Effects of hand gathering on habitat structure not studied in detail, but no reports exist of real or potential unacceptable impacts. Access to foreshore reported to cause some disruption to saltmarsh etc on upper shore. However, landowners opposed to more formal access arrangements to foreshore.	N/A Correspondence with National Trust.	20	80
60% The fishery may exert unacceptable impacts on habitat structure. A program is in place to fully define or reduce these to acceptable, pre-determined limits.				
80% No unacceptable impacts of the fishery on habitat structure within major fishing areas have been demonstrated.				
100% Effects on habitat structure are documented and are within acceptable, pre-determined, limits				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
2E.5 Is associated species diversity and productivity affected to unacceptable levels?	Effects of hand-raking on associated species not studied specifically, but no reports exist of effects on diversity or productivity. Removal of mussel crumble is thought to be within acceptable limits. CCW and SWSFC liaise in order to agree areas which can be removed for mussel cultivation but not clear about relation to mussel removal for purpose of keeping cockle areas clear. Note that regulations designed to protect the cockles fishery include the prevention of professional bait digging, which is known to be potentially damaging to infauna.	CCW Correspondence	20	80
60% The fishery may exert unacceptable impacts on species diversity and productivity. A program is in place to fully define or reduce these to acceptable, pre-determined limits.				
80% No unacceptable impacts of the fishery on species diversity and productivity within major fishing areas have been demonstrated.				
100% The fishery has effects on species diversity and productivity which are documented and are within acceptable, pre-determined, limits.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
2F Are strategies developed within the fisheries management system to address and restrain any significant impacts of the fishery on the ecosystem?			Weight	Score
<p>2F.1 Are levels of acceptable impact determined and reviewed?</p> <p>50% There is insufficient information to determine and review acceptable impacts. However, programs are in place to allow these to be identified.</p> <p>80% Levels of acceptable impacts for key aspects of the ecosystem within main fishing areas have been determined and are reviewed.</p> <p>100% Levels of acceptable impact for populations and habitats of target and non-target species have been determined and are subject to review.</p>	<p>Studies have been carried out on the effects of the fishery on significant predator species (oystercatcher). These have been reviewed.</p> <p>Indirect studies on the effects of harvesting on habitat structure and associated species have been carried out and reviewed.</p> <p>No direct studies on the effects of hand-gathering on habitat structure and associated species, nor on mussel crumble removal, have been carried out. Effects are, however, considered acceptable by relevant organisations.</p>	<p>BTO annual records RSPB/CEFAS studies in J.Appl. Ecol. Also BTO/ITE Studies on disturbance effects. Walker et al in J. Atkins 1995 Rostron in J. Atkins 1995</p>	33	85
<p>2F.2 Are management objectives set in terms of impact identification and avoidance/reduction?</p> <p>50% Management systems are being developed in terms of impact identification and avoidance/reduction.</p> <p>80% Management systems are set in terms of impacts identification and minimisation. These are designed to adequately protect key aspects of the ecosystem within main fishing areas.</p> <p>100% Tested management objectives are set in terms of impact identification and avoidance/reduction. These are designed to adequately protect ecosystems, habitats and populations of target and non-target species from degradation.</p>	<p>The SWSFC have a duty to have regard to nature conservation in the execution of their duties.</p> <p>The SWSFC is both a relevant and a competent body under the UK Habitats regulations and so must have regard for maintaining the integrity of the SAC.</p> <p>CCW are responsible for setting nature conservation objectives for the SAC within which the fishery operates. However, as yet, no formalised fishery management objectives/procedures are in place to meet these nature conservation objectives.</p>	<p>Sea Fisheries (Wildlife Conservation) Act 1992</p> <p>Habitats Regulations 1994 (implementing EC Habitats Directive)</p>	33	70
<p>2F.3 Are management measures in place to modify fishery practices in light of the identification of unacceptable impacts?</p> <p>50% A mechanism exists for the modification of fishing practices. Measures are being developed to use this mechanism in light of unacceptable ecological impacts.</p> <p>80% Management measures are in place to modify fishery practices in light of the identification of unacceptable impacts.</p> <p>100% Monitoring programs are in place within the management system to allow modification of fishery practices in light of the identification of unacceptable impacts. Objectives and limits for environmental change are used to guide operational practices.</p>	<p>Management measures exist in terms of setting of annual and daily quotas, revocation of temporary licenses and closure of cockle beds.</p> <p>Licenses for crumble removal are set annually.</p>	<p>The Burry Inlet Cockle Fishery Order 1965 Bye-Laws</p>	33	95

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
Principle 3: The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.				
3A Does a management system with clear lines of responsibility exist?			Weight	Score
3A.1 Are organisations with management responsibility clearly defined including areas of responsibility and interactions? 50% Organisations with management responsibility are known. Responsibilities and interactions are to be determined. 80% Organisations with management responsibility have been defined including key areas of responsibility and interaction. 100% Organisations with management responsibility are clearly defined including all areas of responsibility and interaction.	The fishery is regulated by SWSFC and reports to Welsh Assembly Fisheries Dept. CEFAS act as advisors to the fishery. Maintenance of the integrity of the SAC is responsibility of: <ul style="list-style-type: none"> • Local Authorities • CCW (responsible for setting nature conservation objectives) • SWSFC • Environment Agency 	Sea Fisheries (Shellfish) Act 1967. CEFAS Contract MB101. Habitats Regulations 1994 (implementing EC Habitats Directive)	17	95
3A.2 Does the management system contain clear short and long-term objectives? 50% Short and long-term resource and environment objectives are implicit within the management system.. 80% The management system contains short and long-term resource and environment objectives. 100% The management system contains clear short and long-term resource and environment objectives.	Sustainable management of the fishery is an implicit objective of the regulating order and fishery bye-laws. A more specific aim of the SWSFC is to harvest around 30% of estimated fishable biomass each year, this being regarded as a historically proven sustainable harvest rate. CCW are responsible for setting nature conservation objectives for the SAC within which the fishery operates. However, as yet, no formalised fishery management objectives are in place to meet these objectives.	Burry Inlet Cocker Fishery Order 1965. Bye laws. Guidance notes and management policy statement 1999.	17	65
3A.3 Do operational procedures exist for meeting objectives? 50% Operational procedures exist which can be used to meet objectives. 80% Operational procedures exist which are applied to the meeting of objectives. 100% Proven operational procedures exist for meeting objectives.	Management measures exist in terms of setting of annual and daily quotas, revocation of temporary licenses and closure of cockle beds.	Burry Inlet Cocker Fishery Order 1965 Bye-Laws Guidance notes and management policy statement 1999.	17	90

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3A.4 Are there procedures for measuring performance relative to the objectives?	Procedures exist for measuring performance of fishery in terms of stock levels and environmental impact. Bi-annual monitoring of cockle stocks plus spot checks by fisheries inspectors	CEFAS Contract MB101; P Coates pers comm. BTO WeBS bird counts CCW database	17	90
60% Operational procedures exist which can be used to measure performance relative to the objectives.				
80% There are procedures used for measuring performance relative to the objectives.				
100% Tested procedures exist for regular measuring of performance relative to the objectives.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE	Weight	Score
3A Does a management system with clear lines of responsibility exist? Continued				
3A.5 Do measures exist for implementing a precautionary approach in the absence of sufficient information?	Sufficient information is collected.	CEFAS Contract MB101	N/A	N/A
60% Operational procedures exist which can be used to implement a precautionary approach in the absence of sufficient information.				
80% Measures exist that allow the implementation of a precautionary approach in the absence of sufficient information.				
100% Measures exist that allow the implementation of a precautionary approach in the absence of sufficient information. These are subject to frequent review and results are recorded.				
3A.6 Does the system include a consultative process including affected parties?	Management of the SAC involves consultation with organisation identified in 3A.1 Annual meetings of the Associations of License Holders and the Association of Waiting List Members take place, attended by SWSFC officers. Extraordinary meetings of both associations with SWSFC Molluscan Working Group if required. MWG has representatives of Burry Inlet Waiting List Association, Penclawdd Shellfish Association and Penclawdd Shell Fishermen's Association. Licensees informed of management practices. External consultants presently reporting on the fishery.	Habitats Regulations 1994 (implementing EC Habitats Directive). Minutes of meetings filed at SWSFC Notices to license holders.	17	100
60% The system includes a consultative process including main stakeholders within the fishery and/or some stakeholders outside of the fishery.				
80% The system includes a consultative process including all key stakeholders.				
100% The system includes a consultative process including all affected stakeholders.				
3A.7 Is there an appropriate mechanism for the resolution of disputes within the system?	See 3A.6. Some disputes persist however, principally related to the issuing of licences.	See above P. Coates, pers. comm.	17	95
60% A program is being developed to allow for resolution of disputes within the system, but has not been tested.				
80% There is an appropriate mechanism for the resolution of disputes within the system.				
100% There is an appropriate and tested mechanism for the resolution of disputes within the system.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3B Does the management system have a clear legal basis?			Weight	Score
3B.1 Is the fishery consistent with International Conventions and Agreements? 60% An evaluation is being undertaken to show compliance with relevant international agreements. Initial work suggests the fishery will be consistent with agreements. 80% An evaluation has been undertaken and fishing appears to comply with international agreements. 100% An evaluation has been undertaken which clearly shows that the management system is compliant with all relevant international agreements.	The fishery is operated within an area designated under International Conventions. The Habitats Directive places management obligations upon the SWSFC. No significant conflicts have been reported by any parties in the last decade.	EC Birds Directive EC Habitats Directive Ramsar Convention	25	100
3B.2 Is the fishery consistent with national legislation? 60% An evaluation is being undertaken to show compliance with relevant national agreements. Initial work suggests the fishery will be consistent with agreements. 80% An evaluation has been undertaken and fishing appears to comply with national agreements 100% An evaluation has been undertaken which clearly shows that the management system is compliant with all relevant national agreements.	The fishery is operated according to a Statutory Instrument and bye-laws. The SWSFC powers are set in statute.	The Burry Inlet Cockle Fishery Order 1965 Sea Fisheries Regulation Act 1966	25	100
3B.3 Does the system observe the legal and customary rights of people dependent upon fishing? 60% The customary and legal rights of the people dependent upon fishing are known and no major conflicts have been recorded. 80% The system observes the legal and customary rights of people dependent upon fishing but does not necessarily have a formal codified system. 100% The system observes all legal and customary rights of people dependent upon fishing under a formal codified system.	Issuing and re-issuing of licences respects rights of collectors. Public collection of cockle is permitted under the regulating order.	The Burry Inlet Cockle Fishery Order 1965	25	100
3B.4 Are fishers aware of legal requirements? 60% A program is being developed for the dissemination of information to fishers about legal requirements. 80% Fishers are made aware of legal requirements upon them and are kept up to date with new developments. 100% All fishers are required to be aware of legal requirements. There is an effective code of conduct, incorporating legal requirements, that is fully supported by the fishers.	Annual licenses and license conditions are circulated to gatherers. Copies of bye-laws supplied to new license holders. Changes to daily quotas are circulated to all license holders by letter. Code of Conduct not in place.	License to Fish for Cockles issued by SWSFC. Bye-Laws SWSFC records	25	90

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE	Weight	Score
3C Does the management system operate in a manner appropriate to the objectives of the fishery?				
3C.1 Does the system include subsidies that contribute to unsustainable fishing?	Gatherers pay for license and sell on open market. Management of fishery is subsidised by Local Authorities via SWSFC.	P. Coates, pers.comm.	33	100
60% A number of subsidies exist that contribute to unsustainable fishing. These could be removed from the fishery management system without major repercussions.				
80% The system includes no subsidies that contribute to unsustainable fishing.				
100% The system is not subsidised to any extent.				
3C.2 Does the system include economic/social incentives that contribute to sustainable fishing?	Breach of license conditions or bye-laws can result in non-renewal of licenses.	SWSFC Policy on non-renewal of licenses issued under the Burry Inlet Cockerle Fishery Order 1965.	33	90
60% A program is being developed to promote sustainable fishing practices.				
80% The system has some economic and social incentives that contribute to sustainable fishing.				
100% The system has established economic and social incentives that contribute to sustainable fishing. No subsidies are offered for purchase of vessels or vessels targeting fully exploited or depleted resources (by FAO definitions)				
3C.3 Is the system consistent with the cultural context, scale and intensity of the fishery?	Considered yes.	N/A	33	100
60% Inconsistencies arise in some key areas but a programme is in place to address these.				
80% The system is consistent with key elements of the cultural context, scale and intensity of the fishery.				
100% The system is entirely consistent with the cultural context, scale and intensity of the fishery.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3D Does the management system include measures to achieve objectives for the target stock?			Weight	Score
3D.1 Are the resource and effects of the fishery monitored? 60% A monitoring programme is in place which addresses some aspects of resource and effects and which can be extended. 80% A monitoring programme is in place which addresses all key aspects of resource and effects at appropriate intervals and results are recorded. 100% The resource and effects of the fishery are closely monitored over appropriate geographical areas and time periods. Full records are kept of monitoring results.	Bi-annual monitoring of whole fishery area. Also ongoing assessment of status of fishery by SWSFC Officers.	CEFAS Contract MB101 SWSFC Records	33	100
3D.2 Are results evaluated against target and limit reference points?				
60% Target and limit reference points exist and some level of evaluation is possible.				
80% Results of monitoring are evaluated against target and limit reference points. These are reviewed periodically.				
100% Results of monitoring are evaluated against target and limit reference points. These are reviewed frequently.				
3D.3 Do procedures exist for reductions in harvest in light of monitoring results. 60% Procedures exist to allow for reduction of harvest. Programmes to link these with monitoring results are underway. 80% Procedures exist to allow for reduction of harvest in light of monitoring results and provide for stock recovery to specified levels. 100% Procedures exist for reductions in harvest in light of monitoring results and provide for stock recovery to specified levels within specified time frames.	Annual and daily quotas. Revocation of temporary licenses. Temporary closure of fishery.	The Burry Inlet Cockle Fishery Order 1965 Guidance notes and management policy statement 1999. Bye-Laws	33	100

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3E Does the management system include measures to achieve objectives for the affected ecosystem?			Weight	Score
3E.1 Are measures in place to address (avoid or minimise) significant environmental impacts? 60% Significant environmental impacts are known and measures exist which can be used to minimise key impacts. 80% Significant environmental impacts are known and measures are in place to minimise these. 100% Measures are in place to avoid all significant environmental impacts and are subject to monitoring and periodic review.	No significant environmental impacts identified. Relationship of cockle stocks to oystercatcher populations monitored and reviewed. Areas of mussel crumble removal agreed with CCW. No take zone adjacent to WWT reserve at times of peak bird numbers	See 2A.3 and 3E.3	22	95
3E.2 Do fishing operations implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning or nursery areas? 60% Fishing operations use measures that are appropriate to the minimisation of main impacts on habitat, especially in critical or sensitive zones such as spawning or nursery areas. 80% Fishing operations are implemented that minimise adverse effects on the environment, especially in critical or sensitive zones such as spawning or nursery areas.. 100% Fishing operations implement appropriate methods to avoid significant adverse impacts on all habitats,	Impacts minimised by hand-gathering only. Critical/nursery areas not applicable.	The Burry Inlet Cockle Fishery Order 1965	22	100
3E.3 Are no take zones appropriate and, if so, are these established? 60% Suitability of no take zones has been reviewed but these are not fully established. 80% Suitability of no take zones has been reviewed and these have been or are currently being implemented. 100% No take zones are established where appropriate.	No-take zone established on western shore adjacent to WWT reserve over winter during time of peak wildfowl and wader numbers to prevent disturbance of feeding flocks and to maintain food resources.	Annual Notice to Gatherers	22	100
3E.4 Do measures include avoidance of impacts on non-target species and inadvertent impacts upon target species? 60% Mechanisms exist appropriate to avoiding/minimising the major impacts on target and the main non-target species. 80% Measures are in place to address major impacts on non-target species and inadvertent impacts on target species. 100% Measures include all significant impacts on non-target species and inadvertent impacts on target species.	See 3E.1 and 3E.2	N/A	22	95

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3E.5 Do measures include operational; waste (gear, fuel, and waste?)	Accidental loss of sacks potential issue, but not raised as a significant problem. No refuelling etc takes place in Estuary.	Site Visit	9	100
60% Measures are in place to minimise major sources of operational waste in some circumstances which may be extended.				
80% Measures include significant operational waste.				
100% Measures include all operational waste and there is support from the fishers to reduce wastes.				
3E.6 Does the fishery employ destructive fishing practices?	Only hand-gathering allowed. Mussel crumble removed by dredging.	The Burry Inlet Cockle Fishery Order 1965	3	100
60% The fishery does not allow any destructive fishing practices but there is no code of conduct for responsible fishing.				
80% The fishery does not employ any destructive fishing practices and there is a code of conduct for responsible fishing although support by the fishers may not be full.				
100% The fishery does not employ any destructive fishing practices. There is a code of conduct for responsible fishing that is fully supported by fishers.				

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3F Does a research plan exist in line with the management system to address information needs?			Weight	Score
3F.1 Have key research areas requiring further information been identified?	Burry Inlet studied by CEFAS as a model for cockle fishery management. Research involving CCW underway to investigate effects of crumble removal. Effects of hand gathering on habitat and on non-target population not investigated.	CEFAS Contract MB101 SWSFC records	33	85
60% Some major areas requiring further research have been identified.				
80% Key areas requiring further research have been identified.				
100% A comprehensive review of information requirements has been undertaken.				
3F.2 Is research planned/undertaken to meet the specific requirements of the management plan?	See 3F.1	CEFAS Contract MB101	33	90
60% Research is planned for highest priority information needs but significant gaps remain.				
80% Research is planned and undertaken to meet the management plan criteria. The emphasis of the plan lies on resource sustainability although high priority environmental concerns are addressed.				
100% There is a comprehensive and balanced strategy to link research to the management plan.				
3F.3 Is relevant research carried out by other organisations and is this taken into consideration?	Bird counts and studies of mechanised harvesting reviewed as part of fishery management.	RSPB/CEFAS studies in J. Appl. Ecol. 1998 J. Atkins (Ed) 1995	33	95
60% The management system is aware of research carried out by other organisations. These are not necessarily taken into consideration for management plans.				
80% Appropriate research carried out by other organisations is taken into consideration, although there is not necessarily any proactive co-ordination between organisations.				
100% Relevant research carried out by other organisations is taken into account for management considerations. This research is often co-ordinated with existing research plans of the management system.				

SCORING CRITERIA		COMMENTS	AUDIT TRACE REFERENCE		
3G Are control measures are in place to ensure the management system is effectively implemented?				Weight	Score
3G.1 Are information, instruction and/or training provided to fishery operatives in the aims and methods of the management system?		Annual licenses and license conditions are circulated to gatherers. Copies of bye-laws supplied to new license holders. There is regular contact including meetings (see 3A.6)	License to Fish for Cockles issued by SWSFC. Bye-Laws	17	90
60% Mechanisms exist for the dissemination of information, instruction and training of fishery operatives. These are not necessarily implemented in terms of the aims and methods of the management system.					
80% Information, instruction and training are provided to fishery operatives in the aims and methods of the management system allowing effective management of the system.					
100% Information, instruction and training are provided to fishery operatives in the aims and methods of the management system allowing effective management of the system that is fully supported by the fishers.					
3G.2 Is surveillance and monitoring in place to ensure that requirements of the management system are complied with?		Landings and fishing practices inspected on a regular and random basis by SWSFC Officers. Monthly reports are made to SWSFC. Potential problem of extent of illegal fishing has been raised.	P. Coates pers. comm. SWSFC records.	17	90
60% An enforcement system has been implemented, although there are reservations regarding its effectiveness and/or compliance.					
80% An effective enforcement system has been implemented and there is an appropriate degree of control and compliance.					
100% An effective enforcement system has been implemented and there is a high degree of control and compliance.					
3G.3 Can corrective actions be applied in the event of non-compliance?		Revocation of licenses in event of continuing breach of license conditions/bye-laws - committee has the right, now being strongly emphasised, to revoke licenses when two offences have been carried out in a five year period. SWSFC cannot prosecute processors for taking undersized cockles or 'poached' cockle but these must be returned to beds.	SWSFC Policy on non-renewal of licenses issued under the Burry Inlet Cockle Fishery Order 1965. P Coates pers comm	17	90
60% Mechanisms exist or are being developed which can be implemented or applied to deal with non-compliance.					
80% There are set measures that can be applied in the event of non-compliance although there may not be included in a formal or codified system.					
100% Agreed management arrangements and measures can be applied in the event of non-compliance.					

SCORING CRITERIA	COMMENTS	AUDIT TRACE REFERENCE		
3G.4 Do fishery operatives assist in the collection of catch, discard and other relevant data?	Landings are reported by gatherers as a license requirement. However, fishery officers reports are regarded as more accurate (see 1B1). Other issues reported at Annual or extraordinary meetings of gatherers and/or waiting list members.	Records of monthly landings.	17	90
60% Fishery operatives are occasionally involved in the collection of catch, discard and other information.		License to Fish for Cockles issued by SWSFC.		
80% Fishery operatives are regularly involved in the collection and recording of catch, discard and other information.		Minutes of Annual Meetings.		
100% Fishery operatives assist significantly in the collection and recording of catch, discard and other information.		P Coates pers comm.		
3G.5 Is the management system subject to internal review?	Yes, reviewed by Committee working group There are also annual meetings of Fishery Officers and License Holders/Waiting List Members. CEFAS monitoring of cockle beds.	Burry inlet cockle fishery management review draft	17	100
60% There are mechanisms in place to allow for internal review.		Aug		
80% The management system is subject to regular internal review.		Minutes of Annual Meetings.		
100% The management system is subject to regular and frequent internal review.		CEFAS Contract MB101		
3G.6 Is the management system subject to external review?	Annual report from SWSFC to Welsh Assembly Fishery Department. Study by external consultants currently underway.	Annual Reports.	17	80
60% There are mechanisms in place to allow for external review.		Nautilus study		
80% The management system is subject to regular external review.				
100% The management system is subject to regular and frequent external review. Strategies are judged to be effective by external reviewers.				

9 TRACKING, TRACING AND IDENTIFICATION OF FISH AND FISH PRODUCTS

The Licence to Fish for Cockles, as issued by SWSFC, specifies:

- dimensions and material of collecting sacks, these also have a fill-line sewn into the sacks to facilitate calculation of landings and fishing 'over quota'
- labelling of each sack with the licensees' name and/or licence number
- landing of cockles at only one of three exit points; Machynys foreshore slipway, south side of the track from Wernfrwdd Church or the track at Salthouse Point
- In times of extreme events, access is also permitted at Weobley for health and safety reasons.

At the exit points, landings may be checked by Officers of SWSFC on a regular and random basis.

As access to, and exit from, the fishery is via these specified points. There is also no realistic likelihood of cockle from another fishery being mixed with those from the Burry Inlet.

Cockle delivered for processing at these exit points from the Burry Inlet Fishery are therefore reliably identified as such at these points and may directly enter into further Chain of Custody.

10 CERTIFICATION RECOMMENDATION

10.1 Certification Recommendation

The Performance of the fishery in relation to MSC Principles 1, 2 and 3 is summarised below:

MSC Principle	Fishery Performance
Principle 1: Sustainability of exploited Stock	Overall 95 %: Pass
Principle 2: Maintenance of Ecosystem	Overall 85%: Pass
Principle 3: Effective Management System	Overall 95%: Pass

It is therefore recommended that the Burry Inlet Cockle Fishery be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

10.2 Recommendations, Conditions or Pre-Conditions Associated with Certification

Surveillance and Re-Assessment

MSC standards require annual surveillance visits to determine ongoing conformity with the MSC Principles and Criteria. Surveillance will concentrate on those items identified below.

MSC standards also require re-assessment on a five-yearly basis to ensure complete conformity with the MSC Principles and Criteria.

Conditions

The fishery consistently met the requirements of the MSC Principles and Criteria for Sustainable Fisheries. No major non-conformances were therefore identified.

However, although the fishery achieved the necessary level of performance for each Principle, audit of certain Scoring Criteria identified areas where the fishery management, although meeting overall objectives, should be brought closer in line with the MSC Principles and Criteria.

Areas requiring management review are as follows.

1. Long and short-term objectives for the management of the fishery are implicit in the regulating order and bye-laws governing the fishery. However, no clearly stated objectives exist (as required Principle 3, Criterion A.2).

This must be addressed within THREE MONTHS of certification.

2. Similarly, clear long and short-term objectives have not been set in terms of ecosystem impacts and impact minimisation/avoidance. However, these are expected to be in place shortly for SAC management purposes and should be adopted for fishery management purposes.

The SOUTH WALES SEA FISHERIES COMMITTEE MUST COOPERATE FULLY WITH COUNTRYSIDE COUNCIL FOR WALES AND OTHER RELEVANT AUTHORITIES IN SETTING OBJECTIVES FOR THE SAC/SPA.

3. Details of the method by which growth, natural mortality and other factors are integrated into the estimate of fishable biomass, although discussed and understood, are not clearly documented. This may have implications for future management in the event of personnel changes etc where this knowledge may be lost. To prevent this, the principles through which these factors are taken into account should be documented.

This must be addressed within TWO YEARS of certification

Recommendations

Studies have been undertaken on the effects on habitat and non-target species of tractor and suction dredging for cockles. However, no specific studies have been undertaken on the effects of hand-gathering on non-target species and habitat structure.

While the effects of hand-gathering are reasonably expected to be minimal, it is recommended that, for completion, this be confirmed by targeted studies.

11 AGREEMENT

11.1 Applicant's Agreement to meet Specified Conditions.

11.2 Copy of Certificate