

## Eel Assessment – Jupiter Eels, Stege, Vordingborg, Denmark

Completed by  
Mr Max Goulden

04<sup>th</sup> April 2013

FINAL

### 1. Introduction

This document presents the report completed following the audit carried out under the Sustainable Eel Standard (Version 3, 13<sup>th</sup> May 2011), Section 5, ‘Cultured Eel’. The assessment is of an eel farming business (Jupiter Eels, hereafter JE) based in the South of Denmark, in the town of Stege. JE buys in and grows on glass eels for restocking and live sale to the processing industry (for consumption). Eels are bought from the SEG certified supplier UK Glass Eels. JE currently produces in the region of 150 Tonnes/year of silver eel. The farm is located in a multi levelled factory building and consists of 4 separate modular systems (5T glass eel system, 10T system, 40T system and 150T system), all of which operate full recirculation based technology.

The farm is able to buy a maximum of two batches of glass eels a year. These are placed on arrival in the ‘glass eel units’ that are separated from the rest of the system for biosecurity reasons. Eels are then graded and moved through the system as required. Eels are generally sold when they reach a marketable size of 130 – 200g. All product is currently sold live to a range of Dutch based companies.

Tanks vary in size and design but are supplied by an automatic feeding system (not feed on demand but controlled by staff). Eels are fed cod roe for the first 15 days of development during which time they are slowly weaned on to a crumbled pelleted feed (supplied by Biomar).

The farm does not operate any post-harvest facilities and no slaughtering occurs on site at JE.

### 2. The assessment

The assessor was Mr Max Goulden of MacAlister Elliott and Partners Ltd, who visited JE on the 04<sup>th</sup> April 2013. The visit included a tour of the facility, discussions with the owner Morten Lauritzen and a review of the paperwork.

### 3. Client Contact Details

<b>Client Contact Name</b>	Morten Lauritzen
<b>Client Address</b>	Jupiter Eel A/S, Kostervej 2, 4780 Stege, Denmark
<b>Client Email</b>	Jupiter eel <jupiter.eel@mail.dk>
<b>Client Phone Number</b>	00 45 22340675

#### 4. Results of the assessment

The outcome of this assessment is that JE scored **six green scores** and **two amber scores**, and therefore **should be considered sustainable under the SEG standard**.

Some recommendations were raised by the auditor;

**RECCOMENDATION 1:** Invoices for product being sold for restocking should state ‘For Restocking’ on the product description to ensure clarity.

**RECCOMENDATION 2:** Although the auditor did assess the proposed traceability system at the farm, JE should be aware that they will be required to contact the SEG Committee to obtain a logo licence before the use of the logo may be permitted.

The table below gives the standard with for each element a discussion of the system at JE in relation to the given element of the standard and a rationale for the 4<sup>th</sup> April 2013 score given, with the source of information. The score is highlighted in the appropriate colour.

#### 5. Cultured eel

<b>1. The total mortality rate during the culture process is low</b> (see notes 11 and 17)							
green score indicator	Total mortality rate of eels in culture, from one week after receipt of glass eels to killing is less than 10% in the current and previous season, or on average over the last five seasons.						
amber score indicator	Total mortality rate of eels in culture, from one week after receipt of glass eels to killing is less than 15% in the current and previous season, or on average over the last five seasons.						
Discussion	Mortality rates have been calculated for 2011 and 2012 and are shown in the table below;						
	<b>Year</b>	<b>Stock Held (number)</b>	<b>Purchased (number)</b>	<b>Sold (number)</b>	<b>Mortality (number)</b>	<b>Closing Stock (number)</b>	<b>Percentage Mortality</b>
	<b>2011</b>	1,488,337	2,168,114	1,136,934	320,363	2,199,154	<b>8.76%</b>
	<b>2012</b>	2,199,154	1,975,065	1,419,435	259,653	2,495,131	<b>6.22%</b>
Score	It appears clear that the average mortalities per year seen at the farm is well below the 10% figure required for a green score.						
<b>2. The fish meal/oil ingredients in the feed come from a sustainable source</b> (see notes 18 and 19)							
green score indicator	Fish meal/oil in the feed comes from a fishery where the stock is at or above a target or precautionary reference point, or a stock which is certified by MSC or another eco-label, or comes from fish waste from processing that would otherwise be discarded. The fishing method used does not directly or indirectly threaten any other species, habitats or ecosystems.						
amber score indicator	Fish meal/oil in the feed comes from a fishery where there is evidence that the stock is healthy and a low risk that it is depleted, or comes from fish waste from processing that would otherwise be discarded. The fishing method used does not directly or indirectly						

	threaten any rare or protected species or habitats.
Discussion	<p>JE use feed from three different sources;</p> <p>For the first 15 days (on average) the glass eels are fed a cod roe diet. The cod roe is supplied to the farm by A/S OV Jorgensen ( a supplier in Denmark). Little information is available on the methods used for the capture of the cod used although it is likely to be obtained through trawling. Trawling impacts benthic habitats, although this area has been trawled for centuries so present benthic habitats are adapted.</p> <p>The cod is a waste product from the sale of cod fillets by the company but appears to be caught in the subdivision areas 22 and 24 ( Belt sea and Baltic West of Bornholm) both of which are considered to be ‘Overexploited’ by ICES and has no agreed reference points’</p> <p>Pelleted feed is purchased from Biomar directly. The source of the feed is reported by feed companies to be from sustainable stocks, but they request confidentiality.</p> <p>BioMar claim that all feed is made from sustainable sources and use fish waste and offcuts wherever possible. The information is confidential and evidence was produced to the Assessor, Richard Wailes on a visit to the Biomar factory in Denmark that the feed (<a href="http://www.fishsource.com">www.fishsource.com</a>) was from sustainable sources</p>
Score	<p>The cod roe is caught from an over exploited stock but is a waste product. The supplier though needs to give more consideration to ensuring the sustainable sourcing of cod roe.</p> <p>The source of Biomar feed has been assessed by a site visit to the Biomar site by the assessor Richard Wailes. Records are held confidentially by MEP but show that the stocks used are sustainable. Not enough evidence has been provided though to confirm a green indicator can be scored.</p> <p>An orange score is provided as further efforts are required to meet the green indicator.</p>
<b>3. Feed is used as efficiently as possible</b> (see note 20)	
green score indicator	The average feed conversion ratios in the farm are as follows: glass eel to fingerlings: <1.1 fingerlings to 200g: <1.6 large eels: <2.0
amber score indicator	The average feed conversion ratios in the farm are as follows: glass eel to fingerlings: <1.3 fingerlings to 200g: <1.8 large eels: <2.2
Discussion	<p>The FCR calculations for JE were completed by calculating the amount of feed that would be required in order for the green score indicator to be met. This was split between the different size classes and then added together to form a grand total of 475,203 kg of feed.</p> <p>The amount bought was then calculated to be 472,869 kg meaning that the farm has bought less than would have been required to meet the green indicator.</p> <p>These records were reviewed and verified by the auditor</p>

Score	The records show JE are meeting the green indicator for the efficient use of feed
<b>4. There are no ecological impacts from effluent discharge</b>	
green score indicator	Effluent discharge complies with all local and national requirements. Effluent is regularly tested for solids, nutrients and other relevant residue e.g. any drug treatment residues, if necessary, and has not been found to be non-compliant in the past 5 years. The residue produced will meet national guidelines.
amber score indicator	Effluent discharge complies with all local and national requirements. Effluent is periodically tested for solids, nutrients and other relevant residue, and has not been found to be non-compliant in the last 2 years.
Discussion	<p>Effluent discharge on the farm takes two separate forms, waste water and sludge.</p> <p>Sludge is stored and provided to a local farmer for use as fertiliser. This is approved by the local authorities but requires certain requirements to be met;</p> <ol style="list-style-type: none"> <li>1. The farmer must describe the exact locations the sludge will be applied to his land</li> <li>2. JE must provide water analysis for the sludge</li> </ol> <p>Records showing that both had been done and approved by the authorities were reviewed by the auditor. The contract between the farmer and JE was also reviewed.</p> <p>No waste water is discharged into the public water system. Instead the farm operates a series of large lakes, through which waste water passes. This has a retention time of around 2 years allowing natural removal of nutrients. Water is then taken back from the final lake in the sequence to the farm. This has been approved by the authorities.</p> <p>This water is tested by the farm for pH, ammonia, nitrate, nitrite and temperature regularly to ensure that it is good quality for the eels. Water quality readings are also provided to the authorities on a yearly basis.</p> <p>The farm has also commenced a de-nitrification process to reduce further the amount of water that is required to be exchanged on a daily basis.</p>
Score	The farm has excellent processes for the treatment of waste and meets the green score indicator
<b>5. Disease is treated rapidly and appropriately (see note 21)</b>	
green score indicator	Eels are handled and held in a way that minimises the spread of disease. Eels are inspected for disease daily, and disease is treated rapidly following well-defined procedures. There is a periodic veterinary inspection following national/EU requirements. Records are kept of disease outbreaks and medications. No chemical is used that risks ecological impacts or food residues at low concentrations, unless there are effective procedures for removal of residue before discharge.
amber score indicator	Eels are handled and held in a way that minimises the spread of disease. Eels are regularly inspected for disease. Records are kept of disease outbreaks and medications. No chemical is used that risks ecological impacts or food residues at low concentrations, unless there are effective procedures for removal of residue before discharge.
Discussion	JE operate a system of disease monitoring through the regular visual checking of eels by the owner. Feeding is also monitored and should it be seen to be depressed sampling will be completed. This will involve the checking for parasites under the microscope

	<p>and an autopsy to assess if any viral or bacterial diseases are obvious in the eel.</p> <p>Eels are treated for a number of things on arrival including;</p> <ol style="list-style-type: none"> <li>1. Salt treatment for white spot</li> <li>2. Flubenol for swim bladder worm (twice within one week)</li> </ol> <p>Glass eels are also inspected for signs of <i>Vibrio</i> spp. and treated with antibiotics if required.</p> <p>More developed eels may be treated with formaldehyde if required for gill worms.</p> <p>All treatments are done with the recirculating system shut down.</p> <p>The farm receives yearly veterinary inspections and all treatment is approved and prescribed by a registered vet. Records of all treatments are recorded although none exist showing health inspection procedures or in-house tests findings.</p>
Score	Although it is clear that JE do complete a visual health check this is not a documented and set daily procedure. Hence an orange indicator is given. Once a detailed health procedure is in place it is likely that a green indicator can be provided.
<b>6. Handling, transport and killing are carried out with respect for welfare</b>	
green score indicator	A carefully thought-out culture process ensures that handling is minimised, as far as is compatible with the above requirements. There are well-defined procedures for handling and transport. Killing is by the most humane method. These procedures are always followed carefully.
amber score indicator	Handling is avoided where possible during culture. Procedures for handling and transport show respect for welfare. Killing is by the most humane method.
Discussion	<p>The main period of handling occurs during the grading of eels (to avoid larger eels outcompeting the smaller eels). This is completed using an automated grader (using rollers with varied spacing) which are fed by the use of air lift pipes. This technology ensures that eels receive the minimum period of handling and follows current best practices for handling.</p> <p>All eels are sold live from the farm so slaughter methods are not relevant.</p>
Score	The farm does operate current best practices for handling and does not slaughter eels on site. The farm therefore scores a green score indicator.
<b>7. The farm provides eel for restocking</b>	
green score indicator	The farm makes more than 10% of their annual production (by number) available for restocking in their country or elsewhere. This restocking should be for the primary purpose of conservation / escapement.
amber score indicator	The farm makes 5 – 10 % of their annual production (by number) available for restocking in their country or elsewhere. This restocking should be for the primary purpose of conservation / escapement.
Discussion	The farm currently provides a percentage of eels for restocking. Figures provided by the farm show that a total of 251,400 pieces were sent for re-stocking in 2011 and 439,465 in 2012. These were sold to 'Deutscher Fischerei Verband' and 'Danmarks

	<p>Tekniske Universitet’.</p> <p>This works out as a total annual percentage of 11.6% and 21% respectively (an average of 16.3%). This is well above the 10% annual requirement for a green score</p>
Score	JE sends 16.3% of its eel production (on average) for restocking purposes. Evidence was provided for this in the form of invoices.
<b>8. Research / education – bonus</b> (see note 22)	
green score indicator	The enterprise actively participates in or contributes to research and monitoring to support implementation of the management plan for the water where the source eels were captured or for the plan local to the culture facility, or to education projects to promote eel awareness and conservation (this excludes legal requirements).
Discussion	<p>JE have been involved in a number of research and education programmes.</p> <p>Students have visited the farm from the University of Copenhagen as part of there studies for aquaculture and fish diseases over the last 13 years. This has included water and ell sampling and subsequent analysis.</p> <p>The farm is also taking part in a research project with the Ministry of Fisheries in Denmark looking at the certification options for the eel industry.</p>
Score	Bonus is awarded due to the research and education efforts of the farm