

Eel Assessment – Scandinavian Silver Eel AB

Assessment against:

Component 1: Core requirements
Component 5: Eel farming

Completed by
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29th April 2019

FINAL

Introduction

This document represents the report completed following the 2019 audit carried out under the Sustainable Eel Standard (Version 6.0, June 2018) against Scandinavian Silver Eel AB. This assessment has been completed against Components 1, and 5 of the Standard.

The assessment is of the Scandinavian Silver Eel AB (SSE) farm facility in Helsingborg, Sweden. SSE buy SES certified glass eels from the UK almost exclusively for restocking, on-growing, sale of live eels and sale of frozen or smoked eel and trout. Glass eels are transported by small aircraft directly from the UK to SSE while live eels are collected by buyers.

All eels go into a quarantine system maintained at the SSE facility in a separate building to the main growing systems. Glass eels remain in the quarantine for a period of up to 80 days until approved by the appointed veterinary professional for the facility following laboratory analysis for possible viruses and other associated parasites. This is to prevent the introduction of any such viruses to populations of Swedish eel, trout and salmon from eels released for restocking. Additional trout are kept in the tanks in case any sentinel fish are lost prior to fish being sent off for testing. It is also during this time that eels are marked with strontium.

Eels which are not sold on after quarantine for restocking are grown on to ~1g before being moved to the 2x2m diameter tanks in the main growing building. Grading is done every 6-8 weeks to limit competition and cannibalism in tanks. The smaller tanks have been split since the last audit with 8 now being part of the larger tank grouping as a transition option for the farm when required. Once eels reach ~25 grams, they are generally moved to D-ended tanks which are 3x11m for the rest of their growing. Eels at the facility may take up to 4 years to reach a size of up to 1.5kg before they are slaughtered and either sold fresh, frozen or sent to be smoked. A large volume of the production is sent live to Dil for processing at ~150 grams for the Dutch and European market. Collection of such fish by Dil was seen during the audit.

The quarantine, circular and D-ended units each use a separate circulation system, where after leaving the tanks water is first mechanically cleaned using a drum filters, then biologically cleaned and finally oxygenated before being pumped back to the fish. The sludge, faeces and any feed waste collected during mechanical

filtration is stored to be removed from the facility by contractors and now must be diluted due to zinc levels being above Swedish standards for direct use on land.

1. The assessment

The assessor was Alex Senechal of MacAlister Elliott and Partners Ltd, who visited Richard Fordham of Scandinavian Silver Eel on the 29th & 30th 2019. The audit included interviews with Mr Fordham, an assessment of paper-based records and a tour of the facility to view operations and procedures at the facility.

2. Client Contact Details

Client Contact Name	Richard Fordham
Client Address	Box 902, 25109, Helsingborg, Sweden
Client Email	richard@silvereel.se
Client Phone Number	+46-42 14 24 33

3. Results of the assessment

The outcome of this assessment is as follows;

A responsible score will result in 1, an aspiring score in 0. Score weighting will be taken into consideration for each element.

That SSE has scored the following for Component 1: General Requirements and therefore **should** be considered **RESPONSIBLE** under the SEG standard.

Component 1: General Requirements	Auditor's findings	Weighting	Score
1.1 Commitment to Legality	Responsible	1	1
1.2 Contribution to eel conservation projects	Responsible	1	1
1.3 The facility trades in certified responsibly sourced eels	Responsible	1	1
1.4 Traceability:			
1.4.1 Incoming products, separation and segregation	Responsible	1	1
1.4.2 Outgoing products	Responsible	1	1
1.4.3 Record keeping and documentation	Responsible	1	1
Biosecurity & welfare –			
1.5.3 Farming	Aspiring	1	0
1.5.4 Restocking	Responsible	1	1
1.5.5 Wholesale/Retail & Processing	Responsible	1	1
Total		9	8
Percentage Responsibility Score:		89%	

That SSE has scored the following for Component 5: Eel farming and therefore **should** be considered **RESPONSIBLE** under the SEG standard.

Component 5: Eel farming	Auditor's findings	Weighting	Score
5.1 The total mortality rate during the culture is low	Aspiring	2	0
5.2 The fish meal/oil ingredients in the feed come from a responsible source	Aspiring	1	0
5.3 Feed is used as efficiently as possible	Aspiring	1	0
5.4 Water Quality	Responsible	1	1
5.5 There is minimal ecological impact from effluent discharge	Responsible	1	1
5.6 Grading, slaughter and transportation are carried out with respect to welfare	Responsible	1	1
5.7 The farm provides eel for restocking	Responsible	2	2
5.8 The farm provides eel for restocking	Responsible	2	2
Total		11	7/11
		64%	

Summary of assessment and scoring

Component	Aspiring	Responsible
1	1	8
5	4	7
Total	5	15
Total Responsibility Score		75%

4. Next Audit

At the completion of the audit the client was assessed against the risk assessment set out in the Methodology. This is set out in the table below.

Question		Yes	No
1	Has the client been part of any external investigation which may be of concern to SEG AND/OR been suspended from any other certification standard?	Enhanced Surveillance	Go to Q2
2	Has the client received a borderline ¹ pass for a Component in its previous audit?	Enhanced Surveillance	Go to Q3
3	Does the client only buy and sell product (does not physically handle it?)	Minimum Surveillance	Go to Q4
4	All other scenarios	Standard Surveillance	

	Certification Audit	Year 1	Year 2	Year 3	Year 4 Recertification Audit
Minimum Surveillance	On-Site Audit	Remote Audit	Remote Audit	Remote Audit	On-Site Audit
Standard Surveillance	On-Site Audit	No Audit	On-Site Audit	No Audit	On-Site Audit
Enhanced Surveillance	On-Site Audit	On-Site Audit	On-Site Audit	On-Site Audit	On-Site Audit

As the client has been seen to fall into the Responsible bracket, the next audit will be due in April 2021 (in 2 years' time) and shall be an on-site audit.

¹ A borderline pass, under versions 1.0 to 5.0 of the standard, was considered a pass when one less amber indicator is received then would be required to fail (i.e. 5 green indicators and 4 amber indicators) or when a client is certified with equal number of amber and green indicators.

The tables below give the standard and a rationale for the scores given above. The score is highlighted in the appropriate colour.

Component 1 – Generic requirements	
Criterion 1.1: Commitment to legality	
Responsible indicators	For at least the past two years: the organisation has not been found guilty for any offences relating to eel fishing or trading.
Aspiring indicators	For at least the past 12 months: the organisation has not been found guilty for any offences relating to eel fishing or trading.
Discussion	The Mr Fordham declared at the time of the assessment that there had not been any legal proceeding against the company under assessment in the past 2 years and that there were no ongoing investigations either.
Score	Pass: responsible indicator
Criterion 1.2: Contribution to Eel Conservation Projects. (Optional bonus score)	
Responsible indicators	The organisation donates at least 2% of its profits or at least 20% of its corporate responsibility programme to projects that make a positive contribution to eel conservation or population enhancement, such as Eel Stewardship Funds, River Restoration projects, conservation and education projects.
Aspiring indicators	The organisation donates 1 – 1.99% of its profits or 10 - 20% of its corporate responsibility programme to projects that make a positive contribution to eel conservation or population enhancement, such as Eel Stewardship Funds, River Restoration projects, conservation and education projects.
Discussion	In 2018, 90,000 glass eels were donated by the company to Swedish restocking projects. In addition to this the company makes a voluntary donation to SEG for the conservation of eels. This is made up of 1€/kg for filleted eels and 0.50€/kg for round smoked eel sold (mostly in Sweden). Based on the level of profit made by the company averaged over a 3 year period, the voluntary donations for conservation are equivalent to 25% in 2018.
Score	Pass: Responsible indicator.
Criterion 1.3: The facility trades in certified responsibly sourced eel	
Responsible indicators	The organisation trades in at least 50% (by number) of certified responsibly sourced eel and has the documentation to demonstrate that.
Aspiring indicators	The facility trades in 10 – 49.9% (by number) of certified responsibly sourced eel and has the documentation to demonstrate that.
Discussion	100% of eels entering and therefore exiting the business are from certified sources. This starts with incoming eels from UK Glass eels which provides certified eels from the Severn, Parrett and Taw in Southwest UK. This has been the case for more than the last 3 years and

	therefore all fish within the facility are from SEG sources. Concerns were raised regarding sourcing virus free glass eels if the UK are no longer permitted to sell to Sweden following Britain exiting from the European Union.
Score	Pass: Responsible indicator
Criterion 1.4: Traceability	
1.4.1: Traceability - Incoming product, separation and segregation	
Responsible indicators	<ul style="list-style-type: none"> • Certified and uncertified eel products can be clearly and easily traced back to their source. • Where a fishery or buyer, an electronic tele-declaration system is used • It operates a clear system which ensures that the product remains separated at all stages from arrival to dispatch from non-certified eel products. • The organisation ensures that any products wishing to make a claim as certified do not contain any non-certified eel-based ingredients. • If resolved through mass- or number- balance calculations, the margin of error does not exceed 2%
Aspiring indicators	<ul style="list-style-type: none"> • Certified and uncertified eel products can be traced back to their source. • It operates a system which ensures that the product remains separated at all stages from arrival to despatch from non-certified eel products. • The organisation ensures that any products wishing to make a claim as certified do not contain any non-certified eel-based ingredients. • If resolved through mass- or number- balance calculations, the margin of error does not exceed 5%.
Discussion	Year classes remain separated up to 10-15g. These are then mixed, however unlike most other farms, only certified sources of glass eels are purchased each year therefore it is not or concern at present. Batch numbering is present on fish invoices for eels arriving from UK Glass Eels. No uncertified eels are present on the site.
Score	Pass: Responsible indicator
1.4.2: Traceability - Outgoing product	
Responsible indicators	<ul style="list-style-type: none"> • Where a fishery or buyer, an electronic tele-declaration system is used • Documentation is well maintained with a maximum of 2% error in the following: <ul style="list-style-type: none"> • The organisation correctly uses batch-coding for labelling certified product, which can be on the packaging for the product, or included in the documentation (e.g. invoice) with the assignment • All product to be sold as certified by an organisation is accompanied by an invoice which meets the following criteria: <ul style="list-style-type: none"> - Includes an appropriate batch code - Includes a record of the quantity (no. & weight) of product and to whom it was sold

Aspiring indicators	<ul style="list-style-type: none"> • Documentation is well maintained with a maximum of 5% error in the following: • The organisation correctly uses batch-coding for labelling certified product, which can be on the packaging for the product, or included in the documentation (e.g. invoice) with the assignment • All products to be sold as certified by an organisation are accompanied by an invoice which meets the following criteria: - Includes an appropriate batch code <p>- Includes a record of the quantity (no. & weight) of product and to whom it was sold</p>
Discussion	Batch coding is used for sales of frozen eel to SSE's smokers, with SEG number and batch code. Smoked and frozen fish sold on are also batch coded on the invoices. Batch coding is also present on invoices of restocking fish to Swedish sources and live fish sold on.
Score	Pass: Responsible indicator
1.4.3: Traceability - Record keeping and documentation	
Responsible indicators	<ul style="list-style-type: none"> • The organisation operates a system that allows the tracking and tracing of all eel from purchase to sale and including any steps in between. In the case of live eels this should include the ability to track each batch delivered to a buyer to be connected back to a water, a time (maximum duration one month) and specific fisherman/vessel • If a fisherman or buyer, a tele-declaration system is used to report catches and trade • The organisation operates a system that also allows for the completion of a batch reconciliation of eel product by weight over a given period. • The organisation maintains records for a minimum of three (3) years.
Aspiring indicators	<p>The above requirements are met except that:</p> <ul style="list-style-type: none"> • Records have been maintained for less than three (3) years • If a fisherman or trader, a tele-declaration system is planned to be used to report catches and trade in the next season
Discussion	Records are maintained going back to 2012 from what was seen, plus additional records in paper form are kept on the premises. Batch reconciliation is possible from the records seen for restocking fish. As there is mixing of eels when they get over a certain size in the cultivation side of the business, batch separation becomes problematic, however, it is possible to know where fish have come from as they are all sourced from a single supplier.
Score	Pass: Responsible indicator
Criterion 1.5: Biosecurity & welfare – Eel and eel products are provided with minimal risk of diseases, parasites and alien species	
Eel farming: Biosecurity is present, and disease is treated rapidly and appropriately	

Responsible indicators	<ul style="list-style-type: none"> • The facility has the appropriate permissions to operate from the relevant authority. • The use of chemicals follows legal requirements of the EU and of the country concerned • An effective and documented biosecurity plan is in place and there is evidence that it is being followed. • Daily records are available showing monitoring of fish health and signs of stress and daily mortality is recorded • Records are maintained according to the Medicines Regulations for use of any medicines and/or chemicals used in the facility • UV is used at an appropriate level and separation between tanks
Aspiring indicators	<ul style="list-style-type: none"> • The facility has the appropriate permissions to operate from the relevant licensing authority • The use of chemicals follows legal requirements of the EU and of the country concerned. • An effective and documented biosecurity plan is in place and there is evidence that it is being followed. • Eels are regularly inspected for disease (although this may not be documented) and daily mortality is recorded. • Records are maintained according to the Medicines Regulations for use of any medicines and/or chemicals used in the facility.
Discussion	<p>Aquaculture Licence in place for the facility and provides eels for the authorities. Formalin, salt, sodium hydroxide and Sodium Chloride are used at the facility. This is handled by all members of staff with the relative experience and knowledge to use them.</p> <p>There is an effective and used biosecurity plan and hygiene plan in use at the facility which specifies all individuals and their credentials. Mortality is recorded daily and fish are visually inspected for signs of stress by staff while undertaking other daily tasks. No medicines have been used at the site as of 1992. UV is no longer used at the site as staff at the site did not believe it to make any additional contribution to the healthiness of the fish being stocked.</p>
Score	Pass: Aspiring indicator
Restocking: The risk of restocked eels introducing disease into wild populations has been assessed and is minimal	
Responsible indicators	Eels are tested before restocking and found to be free of disease AND/OR eels are from a known source which is tested on at least an annual basis and known to be free of disease.
Aspiring indicators	Eels are tested before restocking when first sourced from a new area, and periodically (at least annually) thereafter to ensure they are free from disease.
Discussion	The farm has a quarantine in place for all fish coming into the facility. This includes cultures of sample fish (rainbow trout) and therefore it is up to 3 months before fish are released for any restocking. The authorities require that >99% of risk of introducing a virus into the water ways is removed.

Score	Pass: Responsible indicator
Wholesale / Retail / Processing: Hygiene Plans are followed and there are rare examples of infection	
Responsible indicators	Food processing hygiene plans are followed
Discussion	A food hygiene plan is in place for the facility as required by the Swedish authorities.
Score	Pass: Responsible indicator

Component 5 – Eel farming	
Criterion 5.1: The total mortality rate during the culture process is low	
Weighting: 2	
Responsible indicators	<ul style="list-style-type: none"> The Percentage Mortality Rate of eels in culture is less than or equal to 10% on average in the current and previous year OR as an average of the previous five years An accurate daily log is maintained of the number and causes of mortality
Aspiring indicators	<ul style="list-style-type: none"> The Percentage Mortality Rate of eels in culture is between 10 and 15% on average in the current and previous years OR as an average of the previous five years. An accurate daily log is maintained of the number of mortalities
Discussion	Figures were calculated for the last 5 years and found to be at an average of 13.56% for 2-year period +100 days of quarantine.
Score	Pass: Aspiring indicator
Criterion 5.2: The fish meal/oil ingredients in the feed come from a responsible source	
Weighting: 1	
Responsible indicators	Fish meal/oil in the feed (including juvenile feeds) is certified by IFFO or MSC or shown in some other way to be from responsible or sustainable sources
Aspiring indicators	Fish meal/oil in the feed (including juvenile feeds) is not certified by IFFO or MSC or shown to be from responsible sources, but there are credible plans to move to such a supplier within 2 years
Discussion	A small quantity of feed is supplied by Skretting. Communications with Skretting were opened following a recent farm audit to acquire additional information on the sustainability of the feeds supplied. Some information was provided by the company however, no clear information was provided to indicate that the feed was IFFO or MSC certified. Company policy was provided which identified the responsibility criteria for ingredient supply to make the feed, and the company have confirmed that

	<p>ingredients are sustainably sourced. All other feed is from BioMar who were contacted as part of the assessment and declared that:</p> <p>“The marine raw materials in the eel feed are variable in origin. The overall scores for fish meal and fish oil used by BioMar Brande during 2018 was:</p> <ul style="list-style-type: none"> - 88% of sourced fish meal was IFFO RS compliant - 96% of sourced fish oil was IFFO RS compliant.”
Score	Pass: Aspiring indicator
Criterion 5.3: Feed is used as efficiently as possible	
Weighting: 1	
Responsible indicators	The average feed conversion ratios in the farm are as follows: glass eel to fingerlings: 1.1 or less fingerlings to 200g: 1.6 or less large eels: 2.0 or less
Aspiring indicators	The average feed conversion ratios in the farm are as follows: glass eel to fingerlings: 1.3 or less fingerlings to 200g: 1.8 or less large eels: 2.2 or less
Discussion	FCR was calculated for all the fish in the facility across age classes. This was found to be between 1.56-2.3 and averaged 1.92. The computer system monitors the tanks individually, this was observed and found that small fish up to fingerling averaged out at 1.06 and for “large” fish of about 600g were averaged out at 2.2. Therefore, it is thought that from this assessment, FCR is at a responsible level for this farm where feed is highly monitored and cross checked on a monthly basis across the entire farm as well as individually by tank on an almost daily routine.
Score	Pass: Aspiring indicator
Criterion 5.4: Water quality	
Weighting: 1	
Responsible indicators	<ul style="list-style-type: none"> • A system is in place that is expected to keep key water quality parameters within suitable tolerances for healthy eel survival (e.g. Ammonia, Suspended Solids, pH, Oxygen) • Water quality management procedures are in place including regular monitoring of relevant parameters which shows that water quality is always high and stable • Water quality monitoring is linked to an alarm-based system in the event of a sudden drop in water quality • The facility operates a back-up system to ensure that water quality will not adversely affect survival rates in the case of a power supply failure.

Aspiring indicators	<ul style="list-style-type: none"> A system is in place that is expected to keep key water quality parameters within suitable tolerances (e.g. Ammonia, Suspended Solids, pH, Oxygen) Water quality management procedures are in place and there is regular monitoring of relevant parameters which shows that water quality is always high and stable.
Discussion	<p>Automated systems are in place for the facility which monitors temperature, pressure, new water in, pH, O2 saturation and water levels. pH is adjusted automatically by the monitoring system. Ammonia is tested periodically by the staff and suspended solids are checked visually regularly.</p> <p>O2 back up is at the site which kicks in automatically when there is a power outage. Power backup is present as 1 generator to cover all water pumping system for the farm, this has a regular maintenance schedule and is run for a minimum of 30 minutes each time to insure proper functioning. The quarantine has two separate sources of power to it from the site's power suppliers and therefore does not require a separate generator system as backup. The alarm system calls a central system whose staff then call each of the SSE staff in tern until someone is reached. The alarm system is activated each day.</p>
Score	Pass: Responsible indicator
Criterion 5.5: There are minimal ecological impacts from effluent discharge	
Weighting: 1	
Responsible indicators	<ul style="list-style-type: none"> The system is closed-circuit and has no discharge OR Effluent discharge is regularly tested by the farm AND Effluent discharge complies with all local and national requirements AND Has not been found to be non-compliant in the past 5 years.
Aspiring indicators	<ul style="list-style-type: none"> Effluent discharge is regularly tested by the farm AND/OR Has been found to be non-compliant on no more than 1 occasion in the past 5 years.
Discussion	<p>There is an environmental evaluation of the premises done yearly and sampling for a 24-hour period is completed every quarter. Testing is done for heavy metals and biowaste is sent away and diluted by the individual to deal with any high content of zinc due to feed content. No non-compliance has been observed by the authorities in the last 5 years. The farm has requested from feed suppliers that the quantity of zinc be reduced in eel feeds however, to date this has not been successful, and change has not been seen due to a lack of addition industry pressure from farms in other countries.</p>
Score	Pass: responsible indicator
Criterion 5.6: Grading, slaughter and transportation are carried out with respect to welfare	
Weighting: 1	

Responsible indicators	<ul style="list-style-type: none"> Grading is completed in an efficient manner Slaughter is completed by a method that provides an instant death or renders them insensible to pain, i.e. electric stunning or percussive stunning. Procedures are in place to ensure transportation provides suitable conditions for fish welfare.
Aspiring indicators	<ul style="list-style-type: none"> Other, previously acceptable methods of stunning before slaughter are used, e.g. chilling, but there are credible plans in place to invest in the latest methods within the next 2 years
Discussion	<p>Grading bar machine used with a vacuum fish pump to move fish from the tanks to the grader. Once graded, the fish are weighed and returned to tanks by fork lift for large tanks or by hand for the smaller tanks due to access at the site. Those graded for sale are gradually cool and purged before either slaughter or transportation. Pithing is used to slaughter the fish and removal of oxygen through nitrogen used to finish the process.</p> <p>Transportation plans are prepared when eels are sent for restocking. This is done in refrigerated trucks organised by SSE. Sending to Finland through Finnair is done with the same boxes the eels are delivered in from UK Glass eels, as they are for Swedish restocking also.</p> <p>As Swedish regulations denote that, killing from chilling is not permitted because fish in aquaculture are considered “domestic”, SSE is looking at using electric stunning and the use of high temperature slaughter in future, to replace pithing and asphyxiation.</p>
Score	Pass: Responsible indicator
Criterion 5.7: The farm provides eel for restocking	
Weighting: 2	
Responsible indicators	The farm can provide documented evidence that 10% or more of the farm’s annual eel production (by piece) <u>has been provided</u> for restocking for the purpose of conservation / escapement.
Aspiring indicators	The farm can provide documented evidence that it makes 10 % of their annual eel production (by piece) <u>available</u> for restocking for the primary purpose of conservation / escapement AND/OR for new clients, the farm can demonstrate that they have bookings for re-stocking in the following year at more than 10% of the predicted annual eel production (by piece) for the purpose of conservation / escapement.
Discussion	3.1M glass eels were provided to Sweden (90,000 donated by SSE) and 81.5K sold to Finland of the 4.1M glass eels purchased in 2018. This has meant that there was around 78% of the fish handled by SSE which went to restocking in 2018. Since 2001, there has been an average of 70% of stock each year going to restocking. This is far more than most other farms in Europe.
Score	Pass: Responsible indicator

Criterion 5.8: Eels for restocking are not graded out slow-growers	
Weighting: 2	
Responsible indicators	The size range and quantities in the eels for restocking reflect 100% that for the age group in the whole farm
Aspiring indicators	The size range and quantities indicate no more than a 25% supplement of those for restocking are from slower growing fish of the same age group.
Discussion	All restocking for Sweden is direct from the quarantine and therefore there is no separation. Any larger fish to be purchased for restocking in Sweden has to have a special dispensation from Swedish authorities and larger fish sold to Germany tend to only be up to 5g which are still not separated out from year class but will have been graded for fish welfare reasons.
Score	Pass: Responsible indicator