

# MSC Seafood Sampling Procedure

For use at Consumer-Facing Organisation (CFO) Chain of Custody Standard's audits



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The MSC prohibits any modification of part or all of the contents in any form.

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## About the Marine Stewardship Council

### Vision

Our vision is of the world's oceans teeming with life, and seafood supplies safeguarded for this and future generations.

### Mission

Our mission is to use our ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis.

## Responsibility for this procedure

The Marine Stewardship Council is responsible for this procedure.

Readers should verify that they are using the latest version. Updated documents, together with a master list of all available MSC documents, can be found on the MSC website ([msc.org](https://www.msc.org)).

### Versions published

Version no.	Date of publication	Description of amendment
1.0	20 February 2015	N/A – new document.
1.1	12 June 2015	List of priority species updated.
1.2	15 May 2023	Lists of priority and optional species for sampling updated. Language corresponding to the latest CoC Certification Requirements and General Certification Requirements. Clarifications for improved readability and understanding of the sampling process added.
1.3	7 September 2023	Annex i list of priority and optional species updated.

## Introduction to this document

As part of the requirements for auditing against the [Chain of Custody Consumer-Facing Organisations \(CFO\) Standard](#), auditors may be required to take small samples of seafood or seafood products during consumer-facing site audits. These samples need to be sent to the MSC, who will forward the samples to an authorised laboratory for DNA species testing.

This document is intended to be read together with the MSC CoC Certification Requirements [Section 8.3](#) (Evaluation of CFO audits). The intent of this procedure is to ensure that auditors are informed of which species or products to sample and the process for collecting and shipping the samples.

This document may be updated periodically due to the availability of new product testing techniques, or to reflect specific products or species considered to be high-risk for mislabelling.

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## 1. Planning

The MSC will provide CABs with the equipment needed for auditors to collect tissue samples. The CAB head office will then be responsible for making sure that all auditors receive the sampling equipment before carrying out a CFO CoC audit which requires sample collection.

The package sent by the MSC to the CAB head offices will contain test tubes, each pre-labelled with an ID code. The tubes contain RNAlater buffer solution, which is a special liquid used to preserve the sample until its arrival to the laboratory.

Auditors should use a clean sharp knife or blade at the site to collect samples. If using knives/scalpels supplied by CAB head office, please note that there will be difficulty in transporting equipment to the site if flights are required. In accordance to civil aviation rules, sharp objects need to be stored in hold luggage only and never in hand luggage.

Freezer space is required after completion of the audit to preserve the sample(s) until they can be sent to the MSC. A domestic freezer will be sufficient to allow adequate storage conditions. Sample(s) may be kept at room temperature for up to 24 hours. If the sample(s) cannot be frozen within 24 hours, the sample(s) must be chilled within a cool box with ice or in a refrigerator for up to 3 days before freezing. The logistics of transporting the sample(s) should be taken into consideration when planning the audit.

Auditors need to use the sample log in the CoC CFO audit report on the scheme database, to record details of all samples collected. The test tube code can be located on the side of the test tube and its cap (Figure 1).



Figure 1: Image of the test tube equipment needed and example of test tube code (MSC23-M0946).

## 2. Species selection

Auditors should refer to the list of **Priority Species** (Table 1, Annex i) identified by the MSC, and should prioritise these species wherever possible for sample collection. At the time of publication, the Priority Species (Table 1, Annex i) and Optional Species (Table 2, Annex i) have been identified by the MSC and ASC for product authentication testing:

If none of the species identified in Annex i are available for sampling during the visit, the auditor **does not need to collect any samples**, and should document the rationale in the audit report against the relevant CFO site(s) in the scheme database.

Note: Annex i will be periodically revised and updated based on MSC designated laboratory testing capabilities, availability of additional species tests, and new risk or priority areas. Please check you have the latest version of this document.

### 3. Sampling method

It is very important that auditors avoid cross-contamination of the samples. Materials (product, knife, hands, or work surface) that may have been in contact with another fish product or species can **contaminate** the sample.

It is essential to use clean materials for each individual sample to avoid cross-contamination. Auditors should make sure to always wash their hands and the knife with soap and water before and in between sample collections.

Auditors should avoid excessive damage to the product when sampling. This is especially important where the product is in the final format in which it will be consumed. If the product is damaged and is considered unfit for sale, the MSC can refund the client for the value of the product if a receipt is collected (see [Section 4](#)).

#### 3.1 Sampling equipment

The auditor should use the following equipment to collect samples:

- a. Test tube with RNAlater buffer solution (provided by the MSC)
- b. Maximum sample-size cube (provided by the MSC)
- c. Sharp knife (provided by the certificate holder)

#### 3.2 Selecting the seafood samples:

- a. Choose the product based on the Priority Species or Optional Species lists, outlined in [Annex i](#).
- b. Select only samples that are labelled or identified as 'certified', or with the certified trademarks.
- c. Prioritise products for sampling that are ready to be sold or served if possible.
- d. Is the product canned? If so, label the can and keep it to send unopened. Do not take samples from canned products.
- e. If the product is not canned, select a pre-numbered test tube and record it in the log in the CoC CFO audit report.

#### 3.3 Steps to follow when obtaining the seafood samples:

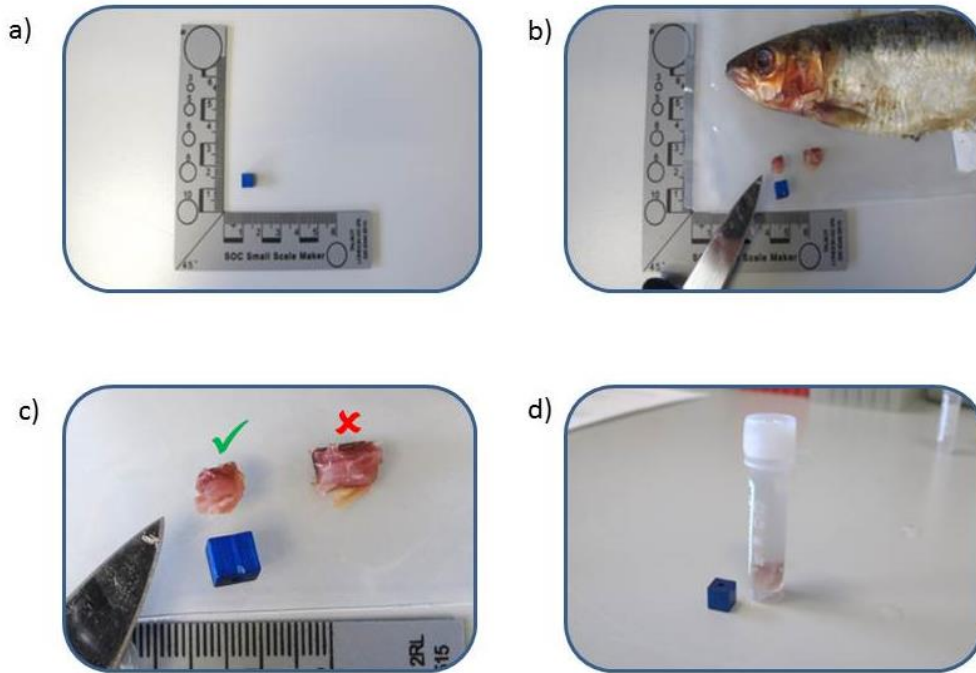
- a. Wash your hands with soap and water thoroughly and dry.
- b. Wash the knife with soap and water and dry.
- c. Wash the surface on which the sample will be taken with soap and water or disinfectant spray. Dry thoroughly.
- d. Unscrew the test tube lid and place the open tube on the clean surface.
- e. Place the portion of seafood to be sampled on the surface.
- f. Use the clean knife to cut a small portion of seafood tissue (approx. 3-5 mm thick, and smaller than the diameter of the sampling tube) from the product. Use the maximum sample size cube for reference, if available.
- g. Place the sampled portion into the opened test tube.
- h. Screw the lid back on to the test tube and wipe away excess liquid. Ensure that it is tightly closed and sealed.
- i. Repeat steps 3.3.a – h for each sample being collected.

**Guidance:**

Try to sample from an area of the product that looks fresh and clean. If the surface of the product is heavily discoloured and/or degraded, you should remove an outer layer of tissue and sample closer to the centre of the product. Blot the sample with a clean tissue if there is a lot of liquid present.

Compare the sample you have taken to the example maximum sample size cube.

Avoid sampling other ingredients that may be part of the product (i.e. heavy seasoning). Flesh of the product species should only be taken.



**Figure 2:** a) Example of maximum sample size cube; b) Samples taken from seafood product with a clean knife; c) samples examined for size – left-hand sample is suitable but right-hand sample is too large; d) Chosen sample has been transferred to the correct tube and submerged in the buffer.

When you are satisfied that the sample size is no larger than the example cube in size (see Figure 2.c), place the seafood tissue into the test tube with the correct label, ensuring that:

- i. The sample is fully submerged in the buffer (see Figure 2.d).

*Note: some sample types may float, but try to submerge the sample first so that it is covered in buffer.*

- ii. The tube is **not filled completely to the top** – leave at least 5 mm of air above the buffer to allow for expansion on freezing.

### 3.4 Logging the sample details.

Add the full details of the product sampled to the log in the CoC CFO audit report in the scheme database.

Ensure you obtain a copy of the material where the 'certified' claim is made or the MSC and/or ASC label is used to identify the product as certified (e.g. the tag on the fish counter or on the menu). Where this is not possible, you can take a photograph of the menu or the label.

Complete the CFO Seafood Sample log sheet ([Annex ii](#)) ensuring the following information is captured:

- MSC/ ASC certified species that has been identified (common and scientific names).
- Test tube code printed on the side of the test tube.
- Certificate holder name.
- Certificate holder CoC Code.
- Date of the audit.
- Acknowledgement of sampling by the client and auditor.

### 3.5 Storing the seafood samples.

Immediately following sampling, store the tube(s) upright, at room temperature for 4 to 24 hours to allow the buffer to permeate the tissue.

After the tube has been at room temperature for 4-24 hours, freeze the test tube upright in the storage box until all samples are ready for submission for testing. When all samples have been taken, the storage box with test tube(s) can be dispatched to the MSC London office at room temperature.

If freezing is not possible at this stage, the sample can be kept refrigerated for up to 3 days before freezing.

*Note: Do not repeatedly freeze and thaw tubes, as this will degrade the DNA present in the seafood sample.*



## 4. Sending the samples to the MSC

Please send the following to the MSC head office (address below) in 1 package within 1 month of the sample(s) being taken:

- a. The filled test tubes in the box provided by the MSC.
- b. Physical copy or printed photograph of the menu, label or tag where the product is identified as 'certified'.
- c. The completed CFO Seafood Sample log sheet(s) for each sample being sent.

Please provide digital copies of the following to the MSC via the [supplychain@msc.org](mailto:supplychain@msc.org) email address:

- a. If relevant, a receipt for any damaged products which need to be refunded to the client.
- b. Receipt for cost of courier/postage of sample(s) back to the MSC.

### **Guidance:**

Please use a service requiring signature upon receipt to ensure products are received by the MSC correctly.

Do not thaw the test tubes prior to shipment. Samples can be removed from the freezer and immediately shipped to the MSC.

Put everything inside a padded outer bag for postage. Do not include any ice packs – the samples can be sent without need for temperature control during transport.

Inform [supplychain@msc.org](mailto:supplychain@msc.org) when you are ready to post the package or after it has been sent. If samples are collected from different clients within 1 month of each other, please store the samples in a freezer and ship the samples together in one package, clearly identifying which ones relate to each client.

If you are intending to bring samples to the MSC office directly, place them in your hold luggage and never in your hand luggage.

### **MSC Postal address:**

Supply Chain Standards Team  
Marine Stewardship Council  
Marine House  
1 Snow Hill  
London  
EC1A 2DH  
United Kingdom

## 5. What happens next?

The MSC will collect all samples received and will send periodic batches to be tested at its designated laboratory. An annual allocation of samples for testing will be established, and the MSC may not always test all samples collected. The MSC will however keep the untested tubes frozen for future sampling if required. Note that test results may not be returned until 6 months after the audit.

The MSC head office will provide acknowledgement of the sample's safe arrival and will notify the CAB when the sample is sent to the laboratory for testing. If CABs/certificate holders wish to discuss the status of a specific sample, they may contact the Supply Chain Standards team via the [supplychain@msc.org](mailto:supplychain@msc.org) email address.

The MSC will inform the CAB of all testing results relating to their clients on a quarterly basis, and within 5 working days of the results being available. It is the CAB's responsibility to inform the client of results within 10 working days for results inconsistent with product labelling (indication of incorrect labelling), and when the CAB deems it appropriate for results that are consistent with product labelling.

In the event of an inconsistent result (where the labelled species did not match the product testing result), the client needs to follow the relevant procedure in the [CoC CFO Standard 5.6.3](#) to investigate the problem and report back to the CAB. In addition, the MSC may use the information provided in the CoC CFO audit report to conduct a full supply chain trace-back to identify the cause of the substitution/mislabelling. In this case, the MSC may contact the certificate holder and their suppliers directly during this process, and will keep the CAB informed of the process and outcome.

## 6. Frequently Asked Questions

### Q: What can I do if I run out of test tubes?

A: If you are an auditor please check with your CAB head office. If you still need more test tubes, please email [supplychain@msc.org](mailto:supplychain@msc.org) to request additional materials.

### Q: What if certified seafood is only available in cold storage, but not being sold or displayed as certified on the day of the audit?

A: Auditors need to prioritise sampling from products that are ready to serve/sell. Where there is no seafood available, auditors may sample from products that have been manipulated or handled by staff, and according to the determined species ([Annex i](#)). However, in no instance should the auditor sample from product that is still in sealed supplier packaging.

### Q: What if the client does not want the auditor to take a sample, but has offered for a chef to do so?

A: If the client is persistent, you can allow the client to take the sample, but under close supervision and instruction from the auditor.

### Q: What shall I say if the client asks me about DNA test results?

A: Explain that samples are collected by the MSC and from there sent to an accredited laboratory for testing. The MSC informs CABs of test results on a quarterly basis, when CABs can inform their clients. If there is an inconsistent result, the MSC will follow up directly with the CAB and client to investigate the issue.

### Q: What shall I do if none of the Priority or Optional species are available onsite?

A: If no Priority or Optional species are available on-site, **do not collect a sample**. Please make a note in the CoC CFO audit report explaining the circumstances.

**Q: What happens if the sample is not taken correctly, for example, the sample was too large or small, or not immersed in the buffer?**

A: It is quite likely that for such samples, the product authentication tests may not work successfully as it will not be possible to extract the relevant DNA sequences. In these cases, the test result will come back as a 'Fail' (species cannot be identified) and the test results will be excluded from any overall findings. This is why following the procedure above as carefully as possible will help the MSC to ensure accurate results.

**Q: How does the MSC determine which laboratories to use, and how can we have confidence in the test results?**

A: The MSC uses independent accredited laboratories which have established protocols and use genetic techniques such as sequencing or SNPs (Single Nucleotide Polymorphisms) of mitochondrial or nuclear DNA. Laboratories used by the MSC for product testing reference published recognised databases of genetic sequences for species identification. These include:

- NCBI: [www.ncbi.nlm.nih.gov/guide/dna-rna/#databases](http://www.ncbi.nlm.nih.gov/guide/dna-rna/#databases)
- BOLD databases: [www.boldsystems.org/index.php/Login/page](http://www.boldsystems.org/index.php/Login/page)

In most cases, the result of a DNA test therefore confirms the species based on the unique sequences and a % confidence level is not relevant (above 99%). In some cases (e.g. where product processing has caused damage to the DNA) it may not be possible to extract DNA of sufficient sequence length and in these cases the species cannot be identified.

The laboratories are required to provide a detailed report of any result inconsistent with the product species labelled found including the protocol used, which MSC will share with the CAB and client.

The MSC may also utilise other test methods than genetic identification. For example, trace element, stable isotope, and antibiotic testing. In these cases, the MSC will share details of the test being used.

**Q: Why aren't all samples tested?**

A: Due to forward planning and budget considerations, as well as changing priority and risk areas, the MSC may not always be able to test all product samples collected. The additional tests will be stored for 1 year in the event that future sampling is required; for example, in the event of a result inconsistent with the product species labelled or if complaints are raised about a specific company.

**Q: What happens if we receive complaints pertaining to inconsistent species results?**

A: If a species is identified to be inconsistent with the label applied to the product tested, the certificate holder should be instructed to investigate the potential source of the issue (as per [CFO Standard 5.6.3](#)). The result of this investigation may validate the identification, segregation, and traceability systems are in place and adequate to conform with the MSC Standard. However, this may indicate that somewhere in the supply chain, product mixing may be occurring. If this is suspected to be the case, please inform the MSC Supply Chain Standards Team at [supplychain@msc.org](mailto:supplychain@msc.org) for a member of the team to investigate further.

In line with [GCR 4.8.7.g.i.](#), all individual product authentication test results relating to samples taken at a client site are confidential between the client, the CAB, the MSC and its designated agents, and if communicated to other parties this shall be in an anonymised and aggregated form.

Please note that the sample collection effort is primarily to test the systems in place by the certificate holder. Any detection of incorrect species from a single sample may or may not trigger resampling. In cases such as this, it is more likely that a traceback/record review is triggered to verify the systems in place are fit for purpose.

## Annex i – Species Sampling Lists

Table 1: List of Priority Species for Sampling

Scheme	Common name	Scientific name
MSC	Atlantic cod	<i>Gadus morhua</i>
MSC	Deep water Cape hake	<i>Merluccius paradoxus</i>
MSC	European plaice	<i>Pleuronectes platessa</i>
MSC	Haddock	<i>Melanogrammus aeglefinus</i>
MSC	Herring	<i>Clupea harengus</i>
MSC	Pacific cod	<i>Gadus macrocephalus</i>
MSC	Pacific salmon - chum salmon	<i>Oncorhynchus keta</i>
MSC	Pacific salmon - pink salmon	<i>Oncorhynchus gorbuscha</i>
MSC	Pacific salmon - sockeye salmon	<i>Oncorhynchus nerka</i>
MSC	Saithe	<i>Pollachius virens</i>
MSC	Walleye pollock	<i>Gadus chalcogrammus/ Theragra chalcogramma</i>
MSC	Yellowfin sole	<i>Limanda aspera</i>
MSC & ASC	Pacific salmon - Coho salmon	<i>Oncorhynchus kisutch</i>
MSC & ASC	Turbot	<i>Scophthalmus maximus</i>
ASC	Atlantic salmon	<i>Salmo salar</i>
ASC	Brook trout	<i>Salvelinus fontinalis</i>
ASC	Cobia	<i>Rachycentron canadum</i>
ASC	European seabass	<i>Dicentrarchus labrax</i>
ASC	Giant tiger prawn	<i>Penaeus monodon</i>
ASC	Gilthead seabream	<i>Sparus aurata</i>
ASC	Greater amberjack	<i>Seriola dumerili</i>
ASC	Japanese amberjack	<i>Seriola quinqueradiata</i>

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Scheme	Common name	Scientific name
ASC	Longfin yellowtail	<i>Seriola rivoliana</i>
ASC	Meagre	<i>Argyrosomus regius</i>
ASC	Pangasius	<i>Pangasianodon hypophthalmus</i>
ASC	Perlemoen abalone	<i>Haliotis midae</i>
ASC	Whiteleg shrimp	<i>Litopenaeus vannamei</i>
ASC	Yellowtail amberjack	<i>Seriola lalandi</i>

Table 2: List of Optional Species for Sampling

Scheme	Common name	Scientific name
MSC	Antarctic toothfish	<i>Dissostichus mawsoni</i>
MSC	Arrow-tooth flounder	<i>Atheresthes stomias</i>
MSC	Atlantic surf clam	<i>Spisula sp.</i>
MSC	European pilchard	<i>Sardina pilchardus</i>
MSC	Greenland halibut	<i>Reinhardtius hippoglossoides</i>
MSC	Hoki	<i>Macruronus sp.</i>
MSC	Northern prawn	<i>Pandalus borealis</i>
MSC	Northern rock sole	<i>Lepidopsetta polyxystra</i>
MSC	Ocean quahog	<i>Arctica islandica</i>
MSC	Pacific halibut	<i>Hippoglossus stenolepis</i>
MSC	Patagonia toothfish	<i>Dissostichus eleginoides</i>
MSC	Queen scallop	<i>Aequipecten sp.</i>
MSC	Rex sole	<i>Glyptocephalus zachirus</i>
MSC	Sablefish	<i>Anoplopoma fimbria</i>
MSC	Sardine	<i>Sardinops sagax</i>
MSC	Shallow water Cape hake	<i>Merluccius capensis</i>
MSC	Sole	<i>Solea solea</i>
MSC	Southern hake	<i>Merluccius australis</i>

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Scheme	Common name	Scientific name
MSC	Southern rock sole	<i>Lepidopsetta bilineata</i>
MSC	Yesso scallop	<i>Mizuhopecten sp.</i>
MSC & ASC	Banana prawn	<i>Penaeus merguensis</i>
MSC & ASC	Indian white prawn	<i>Fenneropenaeus indicus</i>
MSC & ASC	Japanese carpet shell	<i>Ruditapes philippinarum</i>
MSC & ASC	Pacific oyster	<i>Crassostrea gigas</i>
MSC & ASC	Pacific salmon - Chinook salmon	<i>Oncorhynchus tshawytscha</i>
ASC	Blue shrimp	<i>Penaeus stylirostris</i>
ASC	Brown-marbled grouper	<i>Epinephelus fuscoguttatus</i>
ASC	Giant grouper	<i>Epinephelus lanceolatus</i>
ASC	Giant river prawn	<i>Macrobrachium rosenbergii</i>
ASC	Kumamoto oyster	<i>Crassostrea sikamea</i>
ASC	Peruvian scallop	<i>Argopecten purpuratus</i>

## Annex ii - CFO Seafood Sampling Log Sheet

Common Name of Species Identified on Label: \_\_\_\_\_

Scientific Name of Species Identified on Label: \_\_\_\_\_

SASA Test Tube Code: \_\_\_\_\_

MSC CoC Audit Platform Sample Code (if applicable): \_\_\_\_\_

Certificate Holder Company Name: \_\_\_\_\_

Certificate Holder CoC Code: \_\_\_\_\_

Date of Audit: \_\_\_\_\_

Certificate Holder (Staff Representative) Signature of Acknowledgment:	Sampling Auditor Signature of Acknowledgement:
Certificate Holder (Staff Representative) Name:	Sampling Auditor Name:

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