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INSPECTION PROTOCOL FOR SHIPMENTS OF FINS FROM SHARKS AND RAYS





MOTE MARINE LABORATORY & AQUARIUM

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INSPECTION PROTOCOL FOR SHIPMENTS OF FINS FROM SHARKS AND RAYS


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AUTHORS

Demian Chapman (Mote Marine Laboratory & Aquarium)
Diego Cardeñosa (Florida International University)
Kwok Ho Shea (Bloom Association Hong Kong)
Rima W. Jabado (IUCN SSC Shark Specialist Group)

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PURPOSE AND SCOPE

This protocol provides practical guidance for customs and enforcement officers inspecting shark and ray fin consignments in importing, transit, and re-export jurisdictions. It is designed to (i) support consistent implementation of Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) listings of sharks and rays through visual screening and targeted genetic identification, and (ii) ensure that evidence collected during inspections is suitable for enforcement actions under domestic legislation.

This protocol applies to dried, frozen, and processed shark and ray fins, including mixed consignments and fin trimmings. It is intended to complement existing domestic customs procedures, CITES permitting requirements, and existing species identification guides[1].

The steps in the following pages outline a tiered inspection process for a shipment, beginning with documentation review, and possibly leading to visual and/or genetic species identification of products if required.



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STEP-BY-STEP INSPECTION PROCESS



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01
Review of the Documentation

02
Visual Inspection of Fins in the Shipment

03
Visual Identification of Fins in the Shipment

04
Assess Need for Genetic Testing

05
Sampling Unidentified Fins in the Shipment

06
Choice of DNA Test

07
Genetic Identification

GENERAL EVIDENCE HANDLING AND CHAIN OF CUSTODY GUIDELINES

To ensure that inspection findings can support enforcement and prosecution if required, inspectors should:



Assign a unique case identifier to the shipment and record container numbers, seal numbers, dates, locations, and officer names.



Label each sampled fin and genetic clip with a unique identifier linking it to the case and bag of origin.



Retain inspection notes, photographs, permits, and laboratory reports as part of the case file.



Photograph the sealed container, opened container, sampled bags, and each fin selected for visual or genetic identification.



Store genetic samples in tamper-evident containers and maintain a written or electronic chain-of-custody record documenting each transfer of samples.

This protocol is intended as technical guidance to support CITES implementation and enforcement. Domestic legislation, evidentiary standards, and operational procedures should be followed where they differ from or exceed the guidance provided here.

STEP 1

Review of the Documentation

Before opening or sampling a shark or ray fin shipment, inspectors should verify that all required documentation is present and internally consistent. This includes confirming that a valid CITES export or re-export permit accompanies the shipment (and/or an import permit where applicable) and that the information on the permit corresponds to the shipment being inspected.

If a shark or ray fin shipment lacks CITES documentation, it should automatically be inspected **(Step 2: Visual Inspection of Fins in the Shipment)** because this is implausible given known species composition of the major markets (Table 1).



Samples of CITES permits

Table 1

Contribution of CITES-listed species (current to December 2025, with Conference of the Parties [CoP] 20 listing decisions included) observed in recent samples of the world's largest shark fin markets.

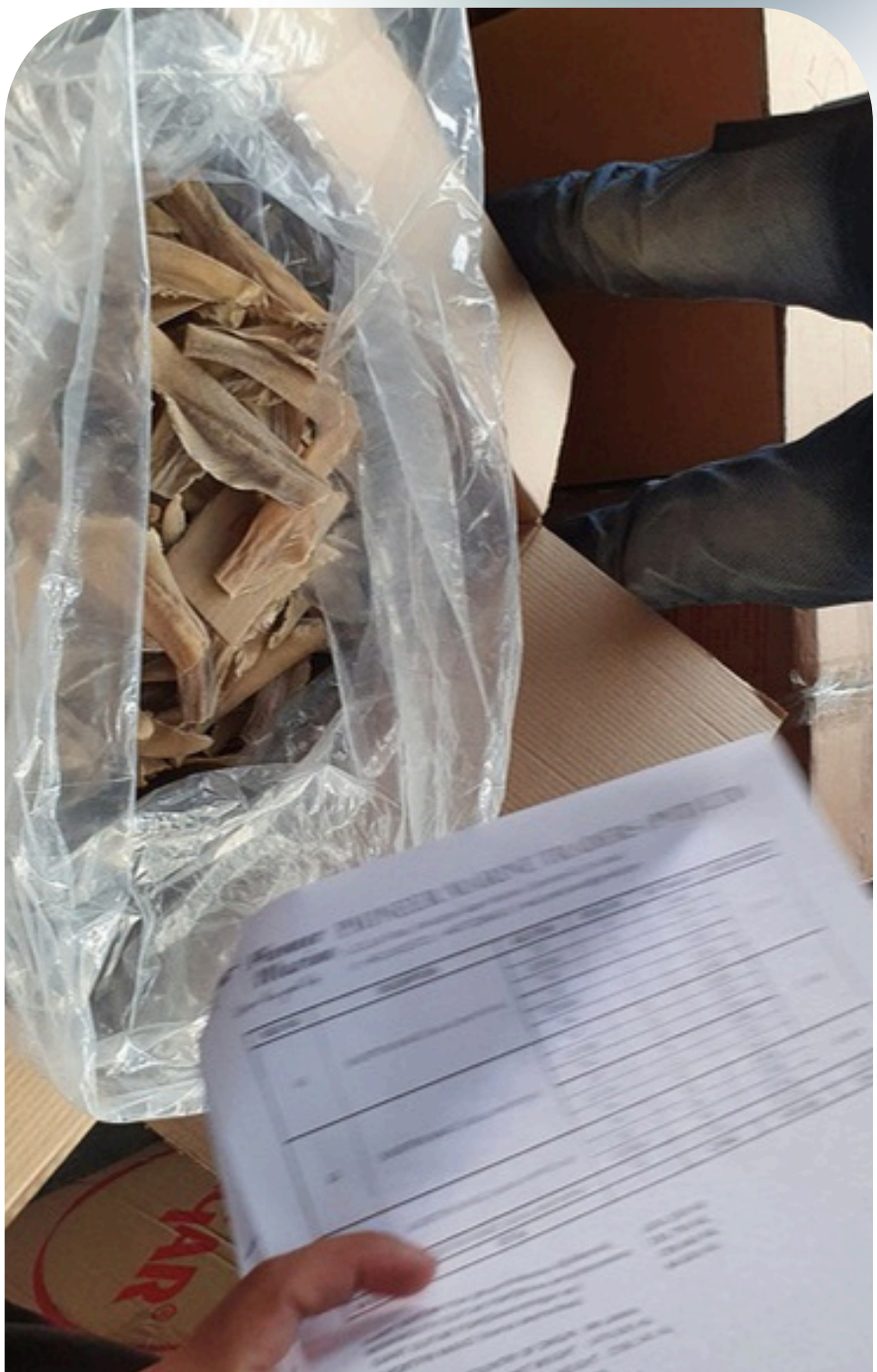
The percentage of each CITES-listed species in the market sample used in the reference study was summed to obtain the overall percentage of the market made up by CITES-listed species.

Location	CITES species market %	Reference
Hong Kong SAR of China	96.5	Cardenosa et al. 2024; 2025
China	97.5	Cardenosa et al. 2020
Singapore	95	Saigal et al. 2024

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If CITES documents are present, inspectors should next check that:

- The permit number, issuing authority, and date are valid;
- The species listed on the permit are clearly identified and correspond to CITES-listed taxa (verify both common and scientific names listed);
- The quantities declared (number of fins and/or weight) are consistent with the size and packaging of the shipment;
- The country of export, country of origin, and any re-export documentation are consistent with each other;
- For wild-sourced specimens, whether the country of origin is within the range states of the species;
- The exporter and importer details match accompanying transport documents (e.g., airway bill or bill of lading).
- Whether the permit has been properly endorsed before departure from the port of loading (e.g., check the department date on waybill and the date of endorsement); and
- Whether the species are subject to any export quota or the country of export is under any trade suspension.



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Shipments without CITES permits, permits listing a very limited number of species relative to shipment size, or inconsistencies between documentation and observed shipment contents should be flagged for inspection **(Step 2: Visual Inspection of Fins in the Shipment)** and may be detained pending verification in accordance with domestic procedures.



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Some shipments with documents that appear to be in order should be randomly spot-checked for violations such as only having CITES permits for a subset of species in a shipment to conceal others that are being illegally traded **(Step 2: Visual Inspection of Fins in the Shipment)**.

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STEP 2

Visual Inspection of Fins in the Shipment

Visually inspect the shipment by any means practical. Be sure to pull bags/fins from the front, middle, and the back of the container in a random manner. Pull fins from each bag for visual inspection.

If operational or safety constraints prevent sampling exactly as described, inspectors should use an alternative random or systematic approach (e.g., every nth bag) and document the method used.

Consignments dominated by very small fins (Figure 1A), fin trimmings (Figure 1B), or processed fins lacking skin (which present as a being a uniformly pale yellowish or white color with long obvious pieces of cartilage or fibers being obvious across the fin; Figure 1C) are not amenable to visual identification.

Verification of species contained in these products requires genetic testing. In any of these cases, proceed to **Step 5: Sampling Unidentified Fins in the Shipment**. If the fins are large and have their skin (Figure 1D), proceed to **Step 3: Visual Identification of Fins in the Shipment.**



A: © Diego Cardeñosa; B-C: © Stan Shea; D: Rima W. Jabado

Figure 1

A. Small processed fins, typically < 10 cm along the base

B. Fin trimmings, which are fragments of fins that are trimmed from the main fins and sold.

C. Processed fins (left), note uniform yellow/white color, lack of skin, presence of fibers along some of the edges, and a lack of cartilage along the base compared to unprocessed fin (right)

D. Unprocessed fins come in a variety of colors (blue-black, grey, brown), clearly still have skin and cartilage along the base.

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GUIDE
Identifying sharks from their fins

STEP 3

Visual Identification of Fins in the Shipment

Use this **guide**[1] to sort fins into groups (e.g., dorsal fins, pectoral fins, or lower caudal fins) and identify as many groups as possible to species level. After visual identification attempts, follow on below:

Option 1

All or most of the fin groups can identified to species level using the fin identication guide, and the species list matches the CITES documentation. This shipment is verified and can be released.

Option 2

Some or all fin groups are identified as being from CITES-listed species, but these species are not included in the CITES permits or there are no CITES permits to begin with. Proceed to **Step 4: Assess Need for Genetic Testing**.

Option 3

None or very few of the fin groups can be identified to species and thus the species list of the permit cannot be verified. Proceed to **Step 5: Sampling Unidentified Fins in the Shipment**.



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STEP 4

Assess Need for Genetic Testing

There are two key questions to determine if genetic testing is now required.

Question 1

Does your agency require secondary genetic confirmation of any of the visually identified fins?

Yes Proceed to **Step 6: Choice of DNA Test**, proceed to Question 2 if there are any fins that could not be identified.

No Visual identification of undocumented CITES-listed species if insufficient to seize these fins and prosecute the trader: proceed to Question 2 to decide what to do with any fins that could not be identified.

Question 2

CITES violations have been detected visually for at least part of the shipment. Are you able to seize the entire shipment based on these violations alone?

Yes Seize shipment. Seizure and enforcement actions should be based on the presence of CITES-listed species in the absence of valid permits, inconsistencies between permits and shipment contents, or other violations under domestic legislation.

No To seize the entire shipment I need more evidence that the unidentified fins include CITES-listed species: Proceed to **Step 5: Sampling Unidentified Fins in the Shipment**.

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STEP 5

Sampling Unidentified Fins in the Shipment

Table 2

Recommended number of fins to genetically test in an incoming shipment for three of the world's largest shark fin markets. Testing this number of fins enables accurate estimation of the proportion of fins from CITES-listed species in the shipment based on the approach outlined in Appendix 1 and the known proportion of CITES-listed species in their respective fin market (derived from Table 1 and references therein).

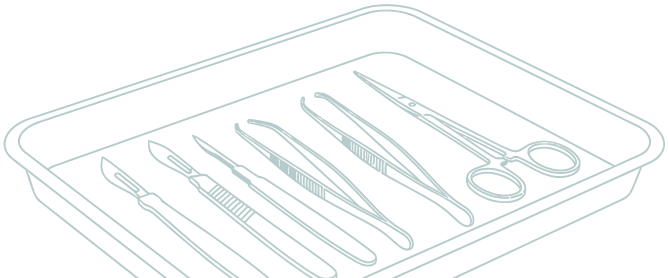
Location	Required sample size of fins
Hong Kong SAR of China	52
China	38
Singapore	73

The goal is to genetically test a representative sample of the shipment to detect the presence of CITES-listed species, estimate the proportion of the shipment made up by CITES-listed species, and, where required, assess whether the composition of the shipment is consistent with accompanying permits.

Table 2 provides the number of fins required for DNA testing in Hong Kong SAR of China, Singapore or China following a protocol for sample size selection outlined in Appendix 1.

If you are operating outside of these locations, the Hong Kong SAR of China sampling number (i.e., 52 fins) should be used because it is considered the most representative sampling location for the global shark fin trade.

Depending on how the fins are packaged, you should aim to take clips from fins distributed throughout the shipment that is being inspected. Once fin clipping is completed, proceed to **Step 6: Choice of DNA Test**.



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STEP 6

Choice of DNA Test

If you haven't already, take clips (tissue samples) from fins that have been selected for DNA testing.

Regardless of which DNA testing option is used, when results are obtained proceed to **Step 7: Genetic Identification**.



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What is your DNA testing capacity?

Option 1

You have a MIC Thermal cycler and DNAID reagents onsite: use the DNAID approach

Option 2

You can do PCR and have species-specific PCR reagents onsite: use the species-specific PCR approach

Option 3

You need to send out samples for DNA sequencing in a laboratory: use the DNA barcoding approach

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STEP 7

Genetic Identification



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All genetic species identification results should be accompanied by documentation describing the method used, appropriate controls, analyst or laboratory details, and species identification confidence. Reports should clearly link the species identified to fin sample identifiers provided by inspectors and indicate whether each fin sampled originates from a CITES-listed species.

The species list of all tested fins should first be compared to the CITES permits accompanying the shipment, if there were any. If there are discrepancies (i.e., a listed species is present in the tested fins but not the CITES permits or CITES-listed species are detected in a shipment without permits), you can proceed to seize the shipment and prosecute the trader. Seizure and enforcement actions should be based on the presence of CITES-listed species in the absence of valid permits, inconsistencies between permits and shipment contents, or other violations under domestic legislation.

The total proportion of the shipment made up by CITES-listed species can be obtained by summing all listed species detected in the genetically tested sample (see Box 1 for the confidence in this estimate).

For example, if you tested 52 fins and 50 are CITES-listed species then the estimated proportion of the entire shipment made up of CITES-listed species is 50/52 = 0.9615 or 96.15%. If the estimated proportion of CITES-listed species is high this can be used as legal justification for seizing the shipment in its entirety (i.e., including fins that have not been identified, genetically or visually) if this is necessary.

Box 1

Simple method to estimate the number of fins that need to be DNA tested to accurately estimate the proportion of CITES listed species in the whole shipment.

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{E^2}$$

Where:

n = required sample size

Z = Z-score corresponding to the desired confidence level

p = estimated proportion of the population that exhibits the property

1-p = complement of *p*, or the proportion that does not exhibit the property

E = margin or error (the maximum allowable difference between the sample proportion and true population proportion)

Thus, if for example the inspection is taking place in Hong Kong SAR of China, p =0.965 (based on Cardenosa et al. 2024 in Table 1), which means 1-p= 0.035 and we can set Z= 1.96 to have a 95% confidence level and set E=0.05 to allow a 5% margin of error.

This results in a **recommended sample size of 52**. In other words, 52 fins need to be randomly sampled and genetically identified from a shipment in Hong Kong SAR of China to accurately estimate the proportion of the shipment made up of CITES-listed species. Sample size requirements for three major fin markets can be found in Table 2.

Note, if the shipment contains fewer than 52 fins test all of them to obtain the actual proportion of CITES-listed species.

APPENDIX 1

Market studies consistently show that the proportion of fins derived from CITES-listed species in major fin markets is very high (>95%) (Table 1). For example, in Hong Kong SAR of China, a recent study estimated that 96.5% of the market was CITES-listed species[3,4]. To calculate the required sample size to accurately estimate the proportion of CITES listed fins in a shipment, we can use the equation in Box 1.

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