



Australian Government

Australian Fisheries Management Authority

# DNA Sampling during HSBI

Australian Fisheries Management Authority

## What is DNA?



Deoxyribonucleic acid is a molecule that contains the genetic code that is unique to every individual being.



Every species share genetic markers that we can use to identify them.



## Why do we use DNA sampling in fisheries?

An optional tool to confirm and identify an individual specimen to species or family level.



Ensure compliance with reporting

Ensure accurate catch reporting/catch log data

Validating protected and unlicensed species

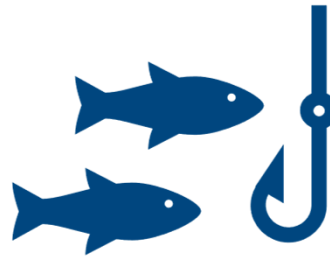
Ensuring compliance with RFMO CMMs



# DNA BIOPSY - Technique



**Direct sample of one fish or product.**



**Used to identify between species that look similar or are processed prohibiting visual identification**



**Frozen fish**

# DNA Biopsy Protocol



Officers are to take reasonable care to avoid any action that would adversely affect the quality of the catch.



Officers should allow and encourage the master of the vessel, or a senior crew member, to observe the taking of the sample.



If possible, Officers should also attempt to record the taking of the sample via video or photos, including images of the specific fish the sample is taken from.



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## FISH BIOPSY SAMPLING INSTRUCTIONS

Follow these instructions to take a biopsy sample from a fish for DNA verification purposes.

**Caution!** To avoid contamination of fish samples:

- ✓ keep fish samples separated in the work area
- ✓ Use new equipment for every fish: gloves, biopsy tool and preservation vial

Fish DNA biopsy kit contents:

- 5 x Biopsy tool
- 6 x Pair of gloves
- 5 x Sample jars
- 2 x Pen



GLOVES

### EQUIPMENT



BIOPSY TOOL



SAMPLE JAR

1



WEAR GLOVES.

**TIP** ✓: PLACE GLOVES ON PRIOR TO ENTERING FREEZER AREA, THEY ARE LESS LIKELY TO TEAR

2

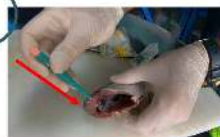


PLACE FISH ON FLAT SURFACE

CHOOSE PART OF THE FISH THAT HAS BEEN SEMI-PROCESSED (if possible):

- FLESH ALREADY EXPOSED;
- TAIL CUT OFF;
- PECTORAL FIN REMOVED

3



INSERT BIOPSY TOOL INTO THE FISH. USE A SLIGHT TWISTING MOTION TO BURY THE METAL TIP

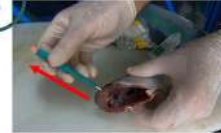
**TIP** ✓: HEAVY PRESSURE MAY BE REQUIRED FOR FROZEN SAMPLES

**CAUTION!** DO NOT PRESS THE EJECTOR TRIGGER



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4



REMOVE THE BIOPSY TOOL FROM THE FISH

USE A SLIGHT TILTING AND SCOOPING MOTION TO LEVER THE TISSUE AT THE END OF THE BIOPSY TOOL WHILE LEAVING THE SAMPLE INTACT

5



OPEN THE SAMPLE JAR AND POSITION THE BIOPSY TOOL OVER THE OPENING

SLOWLY PRESS THE EJECTOR TRIGGER TO RELEASE THE FISH SAMPLE FROM THE BIOPSY TOOL INTO THE SAMPLE JAR

6



SECURE LID ON THE SAMPLE JAR

**CAUTION!** DISPOSE OF GLOVES AND BIOPSY TOOL

7



WRITE DETAILS ON THE LABEL OF THE SAMPLE JAR.

**CAUTION!** USE PEN OR MARKER TO WRITE ON SAMPLE JAR. DO NOT USE PENCIL

EXAMPLE

5ml  
STERILE TUBE  
Name: SAMPLE 1 / VESSEL NAME  
Sender: AGENCY NAME  
Date: DAY / MONTH / YEAR  
Time: 1400 / 2pm

8



RETURN AND STORE THE SAMPLE JAR IN DNA BIOPSY KIT

**CAUTION!** AVOID LEAVING SAMPLE JARS IN DIRECT SUNLIGHT







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## Biopsy punch tool



- Strong enough on frozen fish
- Very small sample
- Cross contamination – has not occurred
- Light weight



# AFMA HSBI report form

DNA Samples		
Number	Location	Description/Comments
01		
02		
03		
04		
05		

- Used to record how many samples were taken
- The location (hold / freezer)
- Comments by inspectors

## DNA Sample – post HSBI



When patrol asset returns to port, samples are sent to a DNA laboratory for analysis.



Results can take up to a few weeks to months

# Benefits to HSBI DNA sampling



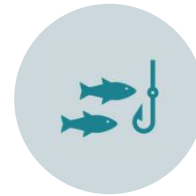
REGIONAL  
COLLABORATION



IMPROVE  
CONFIDENCE



PROVEN AND  
RELIABLE TECHNIQUE  
FOR SPECIES ID



DETERRENCE TO IUU  
FISHING ACTIVITY



ESTABLISHED  
PROCESS FOR HSBI  
INSPECTORS