



Tāmaki
Paenga Hira
Auckland
War Memorial
Museum

Establishment Report – Collection and curation of tissue samples from protected fishes and turtles

Prepared for the Department of Conservation

Establishment Report – Collection and curation of tissue samples from protected fishes and turtles

Project Code: INT2021-04

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Collection and curation of tissue samples from protected fishes and turtles

1. Introduction: Tissue Archive purpose and objectives

The Protected Species Tissue Archive (Fishes and Turtles) is currently held at Tāmaki Paenga Hira Auckland War Memorial Museum. The archive is an extension of project INT2018-04 Improving the collection of data and samples from bycatch basking sharks (Francis 2019, Finucci et al. 2021). It will ensure appropriate curation of tissue samples obtained from protected fishes and turtles, improved visibility of and access to samples by researchers, and will track the fate or samples as well as the outputs of research that they are used for. The Marine Conservation Services Program has provided partial funds for the development, maintenance and use of the Tissue Archive until mid-2024 with Auckland Museum providing in-kind support through staff time for the development and reporting on the Tissue Archive as it aligns with the advancement of tissue collection development at the museum and the role of Auckland Museum.

Auckland Museum has an active role in the research community, receiving and maintaining specimen and tissue collections, making collections digitally available online, and dispensing loans.

The Museum is actively developing its tissue holdings alongside the Protected Species Tissue Archive to support the growing interest in biodiversity genomics and other forms of sub-organismal molecular investigation. In January 2022, we appointed a permanent Collection Manager whose responsibilities include the management of the Auckland Museum tissue collection, which includes the Protected Species Tissue Archive. Our procedures are continually improved to ensure they follow best practice, and our vision includes supporting the research community in transitioning toward ethical research practice that is respectful and inclusive of indigenous communities.

The core role of the Museum is to care for the taonga of Aotearoa New Zealand (NZ) in a culturally appropriate way, following best practice methods. The taonga in our care are managed for current and future generations.

Tissue collections, particularly those from endangered species, are an invaluable biological resource for current and future scientific research. Many tissues become irreplaceable as populations and distributions continue to decline or, in the worst case, species become extinct. The collection of tissues from all species but particularly endangered species across their distribution and over time allows researchers to carry out work such as tracking declines in genetic diversity, relationships among populations, inform translocation projects or examine changes in diet.

The objectives of the Protected Species Tissue Archive are to:

- 1) Establish a physical archive for tissue samples collected from protected species that meets accepted national and international standards, maximises their scientific value and allows tracking of the samples and the outputs any research using them.
- 2) Coordinate the collection, receipt and curation of tissue samples collected for research by fisheries observers, DOC staff, and collaborating organisations and individuals.
- 3) Increase the visibility of samples to researchers.
- 4) Report on the status and uses of tissues stored in the archive.
- 5) Establish appropriate cultural controls for the storage, use and disposal of tissue samples obtained from taonga species.

2. Progress towards objectives

2.1 Establish a physical archive that maximises scientific value

Archive standards have been developed and all samples deposited have been rehoused into cryo-vials (capable of being stored across different freezer temperatures) with new 100% ethanol to ensure the high concentration. Where large samples have been taken these were divided between several vials to retain the original amount of tissue available for sampling, have the correct tissue to ethanol ratio and to minimise the amount of tissue that goes through a thaw cycle when subsampled.

Database fields within the Vernon database have been assessed against data standards for tissue collections and tissue specific fields are being developed to enhance the depth of tissue records within the database.

2.2 Coordinate the collection, receipt and curation of tissue samples collected for research by fisheries observers, DOC staff, and collaborating organisations and individuals.

Tissue Sampling Kits

Consultation with the Fisheries Observer Supervisor, Ministry for Primary Industries (MPI) revealed the existing kits developed for sampling basking sharks were not being used by fisheries observers due to the large size (7L) of the containers, which made them impractical to pack into a gear bag to take onboard the fishing vessels. Items not used in the original kits included digital cameras, as observers are provided with photography equipment by MPI.

Existing kits were refurbished to ensure they contained the correct equipment and repacked into smaller containers where necessary. Fourty new kits were also made up.

Kits consist of (Fig. 1):

- 16 small plastic vials
- 4 large plastic vials
- 10 small snap lock bags
- 1 alcohol proof pen for labelling vials only
- 1 soft lead pencil

- 1 pair of surgical scissors
- 1 pair of forceps
- 70% alcohol wipes for cleaning scissors and forceps between samples
- Betadine for cleaning scissors and forceps between samples
- Paper labels for writing unique identifier with lead pencil



Figure 1 Tissue sampling kit contents (labels also supplied)

Additional equipment supplied by MPI to observers utilised in tissue and data collection includes:

- Photographic equipment
- At sea observer program and data sheets
- Flexi fish mat

Replenishment of existing kits

MPI currently have an existing stock of 50 tissue sampling kits in circulation and storage. The cost saving arising from the creation of new kits was used to replenish all 50 existing kits. These kits were housed in 1L plastic containers with a slip on lid. These lids were regularly taped on to prevent them falling off. We have supplied new, slightly larger containers with clip on lids to allow for the addition of 4 larger vials and to prevent kits falling open.

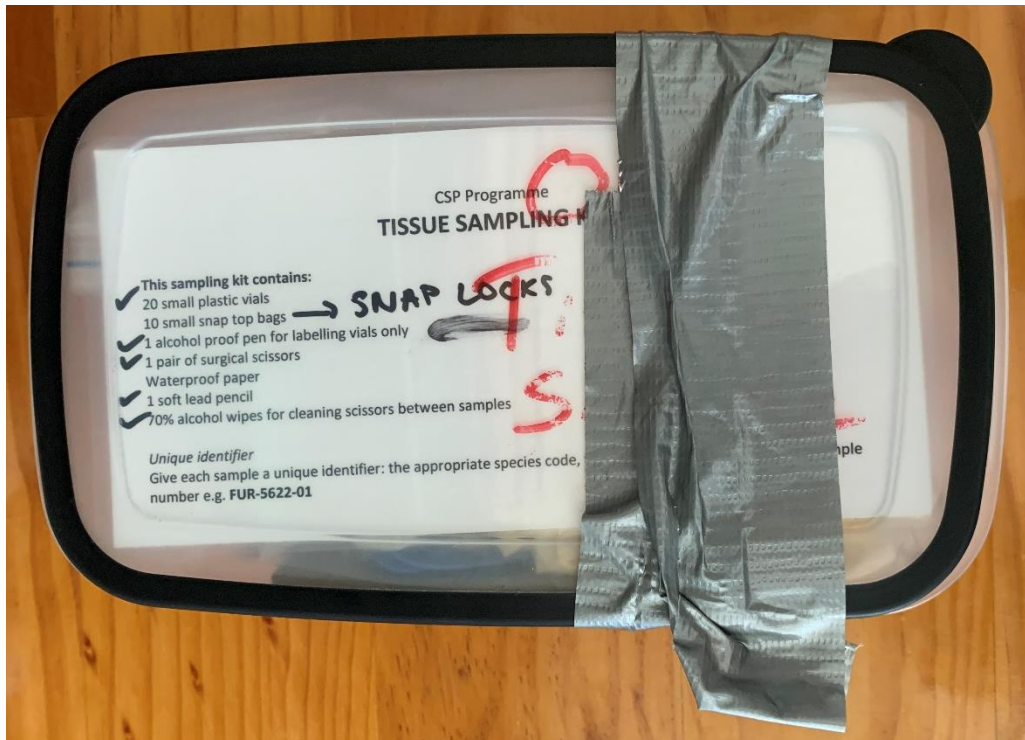


Figure 2 MPI observer program sampling kit

Protocols for sample collection, data checking and deposit with Auckland Museum have been established with the Fisheries Observer Supervisor (MPI).

To facilitate sample submission from DOC staff and researchers a data submission spreadsheet has been created to ensure the recording of all applicable information from each sample.

2.3 Tissue Sample Handling Process

For tissue samples collected by fisheries observers the process is:

Fisheries Observer

- 1) Tissue samples are collected following the Tissue Sampling Procedure (attached)
- 2) These are frozen and sent to MPI, Wellington
- 3) Fisheries Observer Supervisor checks each tissue sample is correctly labelled and associated data matches observer records
- 4) Sample vials are filled with ethanol
- 5) Samples couriered to Auckland Museum in batches with corresponding observer sample logs
- 6) Auckland Museum confirms receipt of samples to Fisheries Observer Supervisor

- 7) Samples are registered into the Vernon database and flagged as part of the Threatened Species Tissue Archive, with specimen location and collection data restricted from public view
- 8) Samples reboxed into cryo-tubes and placed into storage within the Auckland Museum tissue collection
- 9) Tissue location (to position in box) recorded in Vernon.

For tissue samples held by DOC staff the following procedure will be trialed:

- 1) DOC staff will fill out data sheet provided by Auckland Museum containing standard fields and terms (see attached Draft data sheet for feedback)
- 2) The completed data sheet will be supplied to Auckland Museum (tissuearchive@aucklandmuseum.com) and the Technical Advisor – Marine (Protected Fishes & Marine Reptiles), Marine Species Team, DOC
- 3) Sample delivery confirmed with Auckland Museum (tissuearchive@aucklandmuseum.com) for shipment or drop off to Auckland Museum
- 4) Follow step 6-9 above

2.4 Increasing the visibility of samples to researchers

Following Vernon database enhancements tissue archive data will be regularly shared on Auckland Museum Collections Online and data aggregators such as Genomic Observatories MetaDatabase (GEOME) that combine data from many different sources making it searchable in a single place.

Images associated with the samples in lieu of voucher specimens are attached to the Vernon database records and maintained within the Auckland Museum servers. These images allow for expert confirmation of species identification and accurate recording of bycatch species.

Information and images will be provided to researchers through direct request, and also to the Marine Species Manager, Department of Conservation.

2.5 Report on the status and uses of tissues stored in the archive.

All tissues have been reboxed into cryo-vials and are stored in absolute ethanol in a -20 Celsius freezer.

No research use of samples has occurred since the establishment of the archive.

2.6 Establish appropriate cultural controls for the storage, use and disposal of tissue samples obtained from taonga species.

The data use and loans process for this project will involve an ongoing working relationship between the Marine Species Manager, DOC, the Senior Collection Manager, Natural Sciences and Curators at Auckland Museum, and the relevant iwi/whanau/hapu as communicated through the cultural permissions process and via Traditional Knowledge (TK) and Biocultural (BC) Labels associated with samples. The latter will be automated through the [Local Contexts Hub](#).

Access to archived samples will be moderated the Marine Species Manager, DOC, and any identifying iwi/whanau/hapu. Auckland Museum will therefore:

- i) Liaise with the Marine Species Manager, DOC and relevant iwi/whanau/hapu identified within the Local Contexts Hub regarding requests to loan research material.
- ii) Define conditions of loan (if not stipulated by TK or BC Labels), and researcher reporting requirements (i.e. provision and sharing of data, retention and reporting of Notices/Labels alongside data, metadata, and publications).

Application and Use of Biocultural Labels and Notices

Dr Libby Liggins has engaged with members of the Local Context Hub (Prof. Maui Hudson and Prof. Jane Hudson) and the scientific community both in Aotearoa New Zealand and internationally to set up a Technical Working Group with the purpose of defining standard fields, and rules for field use, in support of Traditional Knowledge and Biocultural Notices and Labels across data repositories.

The working group currently consists of representatives from:

- The Traditional Knowledge and Bicultural Notice/Label initiative
- European Reference Genome Atlas Project
- Genomic Observatories MetaDatabase (GEOME)
- Local Contexts Hub
- Aotearoa Genomics Data Repository
- Massey University, Ira Moana Project, World Data System
- Aotearoa Bicultural Labelling Working Group
- Auckland Museum

The Technical Working Group met on 22 April 2022, 4 May 2022 and 25 May 2022 and further meetings are scheduled to continue the work. Following the definition of standard fields, the Museum Vernon Database will be modified to incorporate the TK and BC Notices and Labels.

Intended future use of the notices and labels

i) Upon receipt, tissue samples within a geographic sampling point (scale yet to be determined) will be provided a unique TK Notice and BC Notice generated by the Local Contexts Hub. These Notices signal the indigenous provenance of samples, and the rights of indigenous communities to define the future use of samples and derived benefits. Through the Hub, Notices invite Māori communities to use BC Labels to define community expectations about appropriate use of biocultural collections and data (see [Local Contexts](#)).

ii) Applied Notices and Labels will be linked to physical samples using the Museum's Vernon database and form part of the metadata shared on GEOME.

iii) Annual reports will be provided to the DOC on the application TK and BC Notices and Labels, and the Māori communities that have rights and interests in the samples housed in the collection.

3. Summary of samples

A total of 95 samples from 55 individuals of protected fishes and reptiles were deposited in the tissue archive in the first year of the project (Table 1). Samples collected as part of the POP2021-05 projects were provided by NIWA and have been integrated into the archive. Only one sample was collected by fisheries observers.

Table 1. Number of individuals for each species deposited in the Protected Species Tissue Archive during 2022. Source of the samples: MPI = Ministry of Primary Industries Observer Program, DOC = Department of Conservation Marine Species Manager, NIWA = National Institute of Water & Atmospheric Research.

Species	Common Name	Total	MPI	DOC	NIWA
<i>Carcharodon carcharias</i>	White pointer shark	49	0	13	36
<i>Dermochelys coriacea</i>	Leatherback turtle	1	0	1	0
<i>Eretmochelys imbricata</i>	Hawksbill turtle	1	0	1	0
<i>Lepidochelys olivacea</i>	Olive ridley turtle	4	1	3	0

Auckland Museum is currently working with DOC, researchers from Massey University and Auckland Zoo to integrate existing sea turtle samples into the Archive. The museum will continue to work with the DOC to archive samples from previous projects.

A summary of samples in the Tissue Archive is provided in Appendix A. Locality information has not been included due to the protected status of the species concerned but can be provided on request.

4. Recommendations for Tissue Archive development and expansion

The receipt of only one tissue sample from the fishery observer program represents a missed opportunity. Tissue samples from bycaught species allow for ongoing genetic monitoring of populations, including estimation of population size, stock structure, inter- and intra-group relatedness, movements and connectivity of populations and identification of source populations (e.g. Pardini et al. 2001; Hoelzel et al. 2006; Gubili et al. 2012; Francis & Ritchie 2016; Corrigan et al. 2018; Hillary et al. 2018; Lieber et al. 2020; Jensen et al. 2022).

Our recommendations are:

- 1) For Auckland Museum to act as a hub for tissue collections from a wider array of taxa, starting with other marine groups.
- 2) Expansion of the storage of tissue collections from -20°C ethanol preserved to include -80°C storage of tissues (both fresh and ethanol preserved). Project to include the purchase of a -80°C freezer to allow for a greater range of tissue types to be stored for future use including fresh frozen tissue. This would allow a wider array of analyses from the archive including (genome sequencing and RNA analysis).
- 3) In lieu of a voucher specimen, best practice data management of tissue only samples includes associated images of the specimen. Where possible, all samples should be deposited with accompanying images to allow for expert confirmation of species identification.
- 4) Auckland Museum to work with DOC to develop a list of species where there are minimal museum voucher specimens held in collection around Aotearoa New Zealand. Vouchers of these species should be deposited in museum collections (subject to cultural permission, space constraints and agreement of the Auckland Museum Collection Development Committee).
- 5) Impediments to the collection of tissue samples from bycaught animals need to be identified and mitigated, this may include collection of samples by fishers as well as fishery observers.
- 6) Options for long-term resourcing of the Tissue Archive need to be investigated. This would include staff time to facilitate the incorporation of tissues and or specimens into the Vernon database, specimen preparation and physical storage as well as the facilitation of loan requests and ensuring appropriate cultural controls.

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Appendix A: Tissue Archive summary of samples

Accession No	Accession Date	Taxonomic Classification	Common Name	Specimen	Storage Method	Other Id	Acquisition Source	Related Objects	Count
TA000003	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 34	Department of Conservation	TA000004; TA000005	1
TA000004	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 36	Department of Conservation	TA000003; TA000005	1
TA000005	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 35	Department of Conservation	TA000003; TA000004	1
TA000006	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 33	Department of Conservation	TA000011; TA000012	1
TA000010	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 4	Department of Conservation	TA000010; TA000012	1
TA000011	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 5	Department of Conservation	TA000010; TA000011	1
TA000012	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 6	Department of Conservation	TA000010; TA000011	1
TA000018	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 48	Department of Conservation	TA000019; TA000020	1
TA000019	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 49	Department of Conservation	TA000018; TA000020	1
TA000020	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 50	Department of Conservation	TA000018; TA000019	1
TA000021	20-Jul-22	<i>Lepidochelys olivacea</i>	Olive ridley turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 37	Department of Conservation	TA000022; TA000023	1
TA000022	20-Jul-22	<i>Lepidochelys olivacea</i>	Olive ridley turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 38	Department of Conservation	TA000021; TA000023	1
TA000023	20-Jul-22	<i>Lepidochelys olivacea</i>	Olive ridley turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 39	Department of Conservation	TA000021; TA000022	1
TA000024	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 29	Department of Conservation	TA000025; TA000026;	1
TA000025	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 30	Department of Conservation	TA000024; TA000027;	1
TA000026	20-Jul-22	<i>Lepidochelys olivacea</i>	Olive ridley turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 31	Department of Conservation	TA000027; TA000028;	1
TA000027	20-Jul-22	<i>Lepidochelys olivacea</i>	Olive ridley turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 32	Department of Conservation	TA000026; TA000028;	1
TA000028	20-Jul-22	<i>Dermochelys coriacea</i>	Leatherback turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 28	Department of Conservation	TA000029	1
TA000029	20-Jul-22	<i>Eretmochelys imbricata</i>	Hawksbill turtle	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 7	Department of Conservation	TA000031; TA000032	1
TA000030	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 40	Department of Conservation	TA000030; TA000032	1
TA000031	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 41	Department of Conservation	TA000030; TA000031	1
TA000032	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 42	Department of Conservation	TA000031; TA000033	1
TA000033	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 17	Department of Conservation	TA000034; TA000035	1
TA000034	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 18	Department of Conservation	TA000033; TA000035	1
TA000035	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 19	Department of Conservation	TA000033; TA000034	1
TA000036	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 20	Department of Conservation	TA000033; TA000034	1
TA000037	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 21	Department of Conservation	TA000038; TA000039	1
TA000038	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 22	Department of Conservation	TA000037; TA000039	1
TA000039	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 23	Department of Conservation	TA000037; TA000038	1
TA000040	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 10	Department of Conservation	TA000041; TA000042;	1
TA000041	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 11	Department of Conservation	TA000040; TA000043;	1
TA000042	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 9	Department of Conservation	TA000043; TA000047;	1
TA000043	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 8	Department of Conservation	TA000042; TA000047;	1
TA000044	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 13	Department of Conservation	TA000046; TA000047	1
TA000045	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 14	Department of Conservation	TA000045; TA000047	1
TA000046	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 15	Department of Conservation	TA000045; TA000046	1
TA000047	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 16	Department of Conservation	TA000045; TA000046	1
TA000048	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 24	Department of Conservation	TA000050; TA000051	1
TA000049	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 25	Department of Conservation	TA000049; TA000051	1
TA000050	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 26	Department of Conservation	TA000049; TA000050	1
TA000051	20-Jul-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celcius/frozen	Tissue 26	Department of Conservation	TA000049; TA000050	1

Accession No	Accession Date	Taxonomic Classification	Common Name	Specimen	Storage Method	Other Id	Acquisition Source	Related Objects	Count
TA000277	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_30 NIWA			1
TA000278	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_31 NIWA			1
TA000279	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_32 NIWA			1
TA000280	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_33 NIWA		TA000287	1
TA000281	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_34 NIWA		TA000286	1
TA000282	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_35 NIWA			1
TA000283	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_36 NIWA			1
TA000284	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_37 NIWA		TA000285	1
TA000285	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_37 NIWA		TA000284	1
TA000286	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_34 NIWA		TA000281	1
TA000287	18-Nov-22	<i>Carcharodon carcharias</i>	White pointer shark	tissue	cryovial 1.5ml/-20° celsius/frozen	ururoa_33 NIWA		TA000280	1

Appendix B: Auckland Museum Tissue Archive - Sampling Kit Protocols

This sampling kit contains:

- 16 small plastic vials
- 4 large plastic vials
- 10 small snap lock bags
- 1 alcohol proof pen for labelling vials only
- 1 lead pencil
- 1 pair of surgical scissors
- 1 pair of forceps
- 70% alcohol wipes for cleaning scissors and forceps between samples
- Betadine for cleaning scissors and forceps between samples
- Paper labels for writing unique identifier with lead pencil

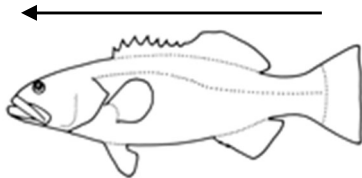
Unique identifier

Give each sample a unique identifier: the species code-the trip number-a sequential sample number
e.g. **FUR-5622-01**

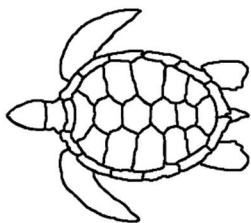
Procedure – deceased animals

All procedures below should be carried out only if conditions are safe to do so. If time is limited start the procedure at Step 4.

1. Sex the animal if possible.
2. Measure the animal.
3. Photograph the animal.
 - a. Fish - photographed on or alongside flexi fish mat with their left side facing up (head to the left of frame).



- b. Turtles – dorsal surface photographed with the flexi fish mat alongside



- c. Large fish species imaged and an indication of size provided in documentation
4. Determine a unique sample identifier for each tissue sample: the species code-the trip number-a sequential sample number e.g. **FUR-5622-01**.
 5. Write the sample identifier on a label in pencil (pen ink will dissolve).
 6. Write the sample identifier on the side of the vial and on the cap with permanent marker.
 7. Place the label in the vial so that the identifier is readable.
 - a. If vials are used up, place samples in small snap lock bags.
 8. Cut tissue from the appropriate site for the species and place in vial.
 - a. Fish: muscle from right side
 - b. Fish (sharks and rays): piece 1-2 cm long from caudal(tail) fin

- c. Pinnipeds: two thin pieces 1-2 cm long from the flipper digit tip
 - d. Turtles: two thin pieces 1-2 cm long from flipper tip
9. Clean scissors and forceps with alcohol wipes
 10. Place vial in freezer.
 11. Discard or package the animal as per Carcass Recovery in the Protected Species Bycatch Manual.
 12. Record the sample identifier and associated data on the Atseaobserver program using tablet.
 - a. Fill out PSI physical form in case of tablet failure.
 - b. Fill out Observer Specimen and Sample Log.
 13. Deliver samples and paperwork to the Fisheries Observer Supervisor at de-briefing.
 14. Thoroughly clean scissors and forceps between trips with soapy water.

