Newport Traps Operations Manual

Version 1: 15th July 2013

Version 2: 5th October 2015

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Contents

1 Site Overview

Background

The Marine Institute's research facility, formerly the Salmon Research Agency of Ireland, established in the Burrishoole catchment in 1955 has undertaken a wide range of fisheries and environmental programmes. The Burrishoole system has international importance as an index site for salmonid and eel monitoring. Data collected from the fish trapping facilities are used nationally and by the International Council for the Exploration of the Seas (ICES) to assess the overall status of the Irish stocks on an annual basis. The system is utilised as one of the key index systems for salmon, sea trout and eel in the north Atlantic.

Fish Traps

The fish traps, situated at installations lying between Loughs Furnace and Feeagh, possess the unique advantage of being able to monitor all movements of fish to and from freshwater. The trapping facilities at the Mill Race, constructed in 1959, and the Salmon Leap, completed in 1969, consist of full upstream and downstream traps. The Mill Race and the Salmon Leap Downstream Trap were refurbished in 2012 and the gates and screens in the Salmon Leap Upstream Trap were replaced in 2013.

2 Mill Race Upstream Trap

- **NOTE:** Electric cut-off switch for power to the Mill Race Traps is in the Archive Room in the car park
- Drop shutter on inscales (**1**)


(1) Inscales shutter

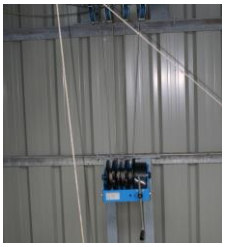
- Turn on power to front shutter (2) using switch at door (3)
- Close down front shutter to stop water flow; note emergency stop (4)


(2) Front Shutter


(3) Front Shutter Power

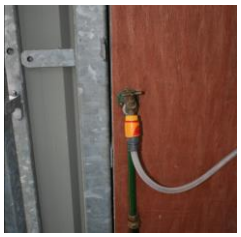

(4) Front Shutter Controls

- Raise floor with blue winch (5) (6)


(5) Floor Winch


(6) Floor up

- Turn on water (7) to wet fish release shute (8)
- Count and sample fish as appropriate
- See Chapter 11.
- Turn off water supply to shute


(7) Tap for fish shute


(8) Fish shute

- Drop the floor: Make sure floor is fully down by pushing the corners
- Raise the front shutter and turn off power
- Lift and clean front screen (Do **NOT** do this with fish in the trap). Replace screen.
- Brush clean the inscale bars: Lift inscales shutter
- Replace sampling equipment, nets in appropriate places. Disinfect gear.
- Check water is off, floor is down, inscales is up and screens are in place.

3 Mill Race Fish Fence

To clean the screens (1) & (2) on the fish fence:

(1) Fine smolt screens

(2) Heavy screens

- Turn on power using switch inside door (3) for outside hoist (4)

(3) Power switch

(4) Hoist

- Switch on power on hand control unit (5)
- Use hand control to guide hoist (A) and raise and lower chain hook (B)

  NOTE Power shut-off in emergency

(5) Hand Control Unit

- Place hook on fine screen (6), raise screen and clean (7)
- Rake and brush debris off heavy screen.

(6) Hook attachment

(7) Cleaning

- Do **NOT** lift both fine and heavy screens together
- Ensure no loose debris left under screens
- Make sure all screens drop fully back into place, (8) see marker (9)
- Return the winch to its housing
- Turn off power on hand control unit
- Turn off power switch inside door of shed

(8) Screens NOT in place

(9) Correct alignment

4 Mill Race Downstream Trap

- Clean over flow screens (1) and (2): Note lifting mechanism for cleaning the overflow screen. **Ensure screen is fully down after lifting**

(1) Overflow screen

(2) Overflow screen

- Close shutter at trap (3)

(3) Close Shutter

- Clean trap screens
- Enter trap to process fish
- Counting fish only – release them through the walkway hatches (4)

(4) Walkway hatches for releasing fish

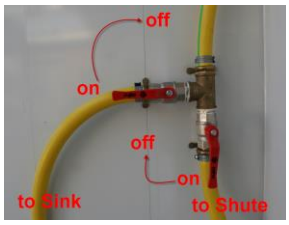
Or

for Sampling Fish:

- Turn on pump using switch at door (5) and ensure water flowing
- Control water flow to sink and ensure good flow down shute. Adjust using taps (6). Do **NOT** run pump with both taps off.

(5) Power for Pump

- Hold fish in sink (7)
- Release fish down shute making sure good flow of water in shute (7).



(6) Water control taps

(7) Fish sink and release

- When finished put a full bucket of water down shute to ensure all fish gone.
- Clean down and disinfect gear and bench
- Store gear in appropriate places
- Turn off power to pump.
- Open shutter above trap to level of path (8)

(8) Shutter open

5 Salmon Leap Upstream Trap

- Drop shutter (1) on inscales using the manual winch (2)


(1) Inscales shutter


(2) Shutter Winch

- Raise trap floor using manual winch (3)
  (Do **NOT** do this without closing inscales)
- Count and sample fish as appropriate
- See Chapter 11.


(3) Floor winch

- If water levels are moderate to low, release fish through the right hand gate (4) by lifting gate with hoist – take care fish don't jump through gap
- If water level is high, use release shute on gate (5). Wet before use.

(4) Low water fish release

(5) High flow release shute

- Use hoist (6) to lift harvested ranched fish in boxes out of the trap (7) (8)


(6) Hoist Control Unit


(7) Harvest box holder


(8) Hoist for lifting fishbox

- Drop the floor
- Make sure floor is fully down to the marks (9)
- Lift Shutter on inscales
- Check all front gates are fully down and lined up with marker (see Section 7; photo 2.)


(9) Floor in place

6 Salmon Leap Downstream Trap

- Close the flap on the inflow channel (1)
- Lift up cover screen and hook to ceiling (2)
- Drop water level below outflow screen (3)
- Lift out and clean outflow screen (3)
- Clean gully grill in floor (4)


(1) Inflow Flap


(2) Cover Screen


(3) Outflow Screen


(4) Gully Grill

- Slowly lift floor of trap to suitable level for catching fish using blue winch (5) (6)

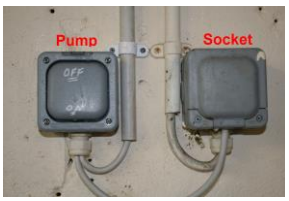

(5) Floor lift winch


(6) Floor raised for fish

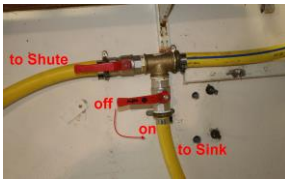
For counting **AND** sampling, turn on pump (7)

- Switch on power to pump (8) and ensure water flowing to release shute and fish sink. Adjust using taps (9). Do **NOT** run pump with both taps off.
- Sample fish as per schedule and release all fish down shute

(7) Water Flow Pump



(8) Pump Switch



(9) Water Flow Taps

- Lower floor of trap and ensure fully down by pushing each corner (10).
- Insert outflow screen.
- Open inflow flap and lower cover screen.
- Turn off power to pumps


(10) Lowering Floor

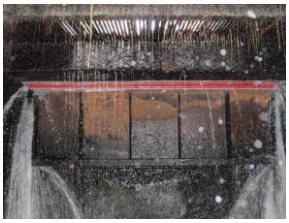
7 Operation of Salmon Leap Sluice Gates

The water level on the wooden grids at the Salmon Leap Downstream Trap is controlled by two sluice gates (2) situated under the river bed below the steel grids (1). These are adjusted using the motorised racks (3).

When water level is **low**, the gates are **raised** to close them and when the river rises and level is **high** the gates are **lowered** using the power driven racks.

The maximum and minimum heights of the gates are controlled automatically


(1) Steel Grids


(2) Sluice open

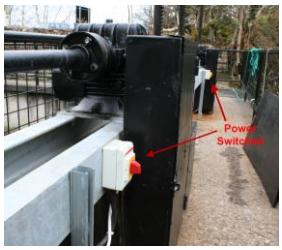

(3) Racks


(4) Height limiters

To raise and lower the sluice gates, the racks are driven by motorised geared winches.

To operate:

- Turn on power to motor using external switch to left of winch box (5)



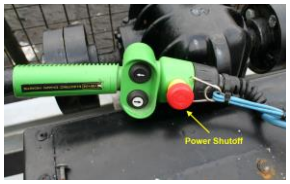
(5) Power Switch

- Open door to winch drive (6)
- Take out hand control unit (7)


(6) Winch Drive Door

(7) Hand Control

- Turn on power by pushing in, turn and release power button (8)
- Use up and down controls to raise and lower gates



(8) Hand control unit

- Turn off power by pushing in and turning power button (8)
- Close door to Unit
- Turn off mains power (5)

- Repeat procedure for second gate.

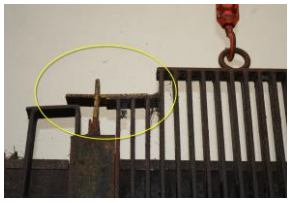
8 Cleaning Salmon Leap Trap Gates, Screens, Inscales

After a flood when water levels have returned to manageable levels, the upstream gates and inscales and the downstream grids, wooden screens and fish fence will need cleaning.

SL Upstream Trap Gates and Inscales

- Close Inscales
- Ensure no fish in trap (see trap instructions - ch.5)
- Open locking clasps marked yellow (2)
- Raise each gate using hoist and brush clean
- Ensure gates fully lowered and locked in place
- Brush clean Inscales (3)
- Ensure floor is in the down position & re-open inscales


(1) Upstream gates


(2) Gate in place & locked


(3) Inscales

Downstream Trap Screens and Wooden Grids

- First, check there are no fish in the downstream trap
- Lower the sluice gates to sluice off water and expose steel grids (4)
- Clean between bars of steel grids
- Brush clean and clean between slats of wooden screens (5)
- Clean upstanding fish fence
- Ensure downstream channel is clean and there are no gaps between the channel and the grids or the fence
- Lift gates when cleaning is complete
- In low water and especially during smolt run, place mats on screens to bring water fully to channel (6).


(4) Steel Grids


(5) Wooden Screens & fish fence


(6) Mats in place for low water

9 Water Level Control and Floods

The ‘normal’ situation for downstream traps and grids should be a steady flow of water over the grids landing into the trap (MRDT) or channel (SLDT) without too much force. This scenario changes with water level.

In low flow, this is helped by putting down additional boards to avoid fish falling on dry wooden grids and to keep water in the trap/channel.

In high flows, some turbulence and force is unavoidable so the aim is to minimise damage to fish and structures where possible.

In very high flows, force of water into traps and screens may be unavoidable and human health and safety takes precedence.

‘Normal’ Mill Race

‘Normal’ Salmon Leap

Heavy Rain – Rising River – Flood coming – High Water

In the case of prolonged heavy rain and/or rising river, anticipate a rise in water level in the traps by 'overdoing' the preparations knowing that water will rise in coming hours.

Mill Race Downstream Trap

- If in the autumn and/or a dirty flood, remove fine screens from fish fence
- Clean overflow channel & bypass screens in downstream channel


Fish fence fine screens out


Overflow Channel


Overflow bypass

- Insert weirboards in channel
- Remove black boards from wooden grids
- Clean screens in downstream trap


Mill Race Weir-boards

Black boards


MRDT Trap Screens

Falling River – Low Water

As water levels fall, carry out the flowing in a progressive manner:

Mill Race Downstream Trap

- Put in fine screens on fish fence
- Remove the Weir boards to keep sufficient water flowing to trap and allow fish access

Replace black boards on wooden grids, especially during smolt run.

Heavy Rain – Rising River – Flood coming – High Water

Salmon Leap Downstream Trap

- Remove all black boards and secure on walkway
- Insert two black boards to the right hand side of the 1st wooden grids (to stop fish getting trapped in back-eddy)
- Put both heavy planks in place @ 3rd eye. Push down with pole.


Perfect Flow!


Two boards in place


Heavy Planks in place

- Lower gates until flow is controlled.
- Lower middle gate ahead (more than) of lowering side gate
- If possible, avoid drying the concrete plinth


Gates lowered


Typical arrangement in low flow


Concrete plinth – gates too low

Falling River – Low Water

As water levels fall, carry out the flowing in a progressive manner:

Salmon Leap Downstream Trap

- Raise gates to match falling water levels
- When gates fully raised, replace black boards to keep water and fish moving across the grids into the channel
- Lift top plank in 3rd eye and secure to handrail.

10 Maintenance

Maintenance of the fish trapping facilities takes place at three levels:

1. Sampling equipment
2. Routine visual and operating maintenance
3. High level annual maintenance of winches and hoists.

10.1 Sampling Equipment

All traps should be checked daily during the routine servicing to ensure all equipment is in place and is in good condition.

A similar high level standard of equipment should also be maintained in the wet laboratories.

Fish handling equipment, such as landing nets, sampling nets, bins and buckets, should all be kept well maintained and in good condition.

Upstream Trap Equipment list	**Downstream Trap Equipment list**
Recording sheets, Totals & Details	Recording sheets, Totals & Details
Pencils	Pencils
Scale knife	Scale knife
Floy tags	Floy tags (wild kelts)
Floy guns	Floy guns
Carcass tags	Carcass tags
Scale envelopes	Scale envelopes
Swabs	Large measuring board
Large measuring board	Small measuring board
Small measuring board	Disinfectant
Disinfectant	

Wet Laboratory Equipment List (BC)

Recording sheets (BC)
Pencils
Scale knife
Scale envelopes
Large measuring board
Microtag bottles
Microtag slips
Microtag alcohol (stored in alcohol cabinet in biology room, key no. 44)
Weighing scales
Wet lab hygiene record sheet
Paper towel
Waste bin
Bench guard
Disinfectant

10.2 Routine visual and operating maintenance

All trap floors, meshes, rubber seal and screens should be visually inspected and any defects rectified immediately. Any observations of fish escaping or disappearing from traps should also be investigated immediately.

All winches, hoists and lifts should be visually inspected each time before operation. Any defects or snags should be rectified before operation. All external moving parts will require lubrication / greasing on a monthly to quarterly basis.

Any faults or maintenance issues should be immediately reported to the Senior Field Assistant (currently David Sweeney), the Lab Analyst (currently Ger Rogan) responsible for fish census and the relevant Section Manager (currently Russell Poole), preferably by email.

NOTE: Electric cut-off switch for power to the Mill Race Traps is in the Archive Room in the car park.

The following should be checked routinely:

MRUT Shutter Actuator

MRUT Floor Winch

Fish Fence Hoist

MRDT Shutter Racks x 2

MRDT Overflow lifting mechanism

MRDT Manual Hoist (if in place)

MRDT Water Pump

SLUT Monorail and hoist

SLUT Floor Lift winch

SLDT power driven racks x 2

SLDT Floor Winch

SLDT Water Pump

10.3 High level annual maintenance of winches and hoists.

All the items listed below should be subject to an independent visual inspection every six months.

All items listed below should be subject to an independent annual maintenance service, in conjunction with the second visual check.

Annual certificates of compliance and a maintenance service record should be maintained on site.

The following should be checked inspected and serviced:

MRUT Shutter Actuator

MRUT Floor Winch

Fish Fence Hoist

MRDT Shutter Racks x 2

MRDT Manual Hoist (if in place)

SLUT Monorail and hoist

SLUT Floor Lift winch

SLDT power driven racks x 2

SLDT Floor Winch

11 Sampling Fish

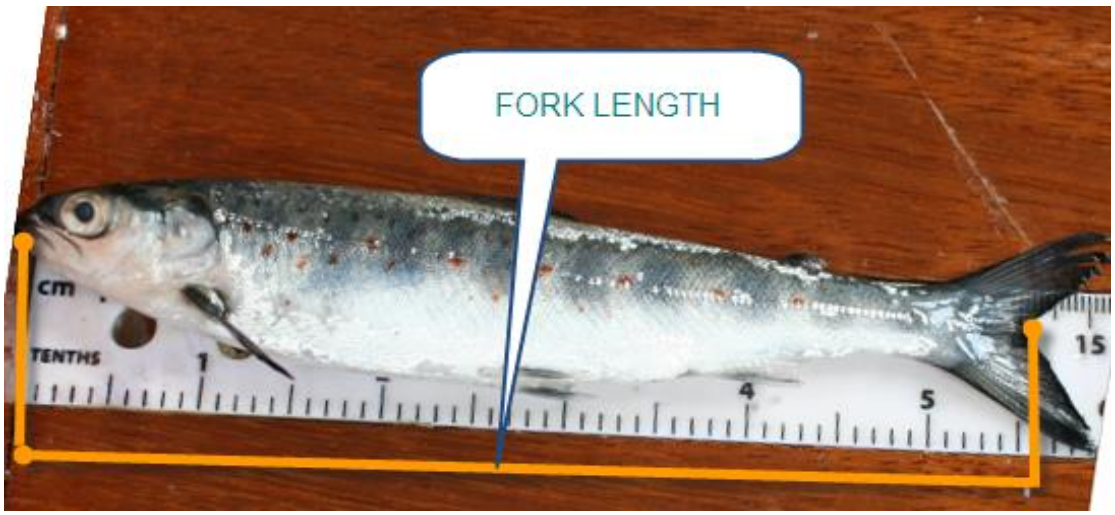
This chapter is intended as a guide to fish handling, tagging, sampling and record keeping in the traps and wet laboratory.

11.1 Sampling Methods

11.1.1 Biological Measurements – Salmon & Trout

Length

Fish length is measured as fork length (to the nearest mm) and refers to the length from the tip of the snout to the end of the middle caudal fin rays (i.e. centre of the tail fin): see diagram below



Weight

All weight measurements should be taken on certified weighing scales to the nearest gm (smolts) or 5gm (adults & eels).

Record the weight of adult fish in kilograms and the weight of juvenile fish in grams.

Fish Colour

Record the colour and the presence of sea lice (scale of 1-3) for all salmon in the Upstream Traps. This should be recorded on the Salmon Details Sheet.

1: silver and lice present – indicates fresh run fish

2: silverish but no lice present - indicates short period spent in Lough Furnace prior to upstream migration

3: dark colour - Long period in Lough Furnace prior to upstream migration

11.1.2 Fish Scale Sampling

Samples of fish scales should be taken from area below dorsal fin and above the lateral line (see images below). Remove a small number of scales ~5 from live fish and if possible redistribute mucus over the area of scale removal.

A larger sample of scales can be removed from culled fish.

Scale Sampling

Scales should be taken from underneath the back of the dorsal fin and before the adipose fin above the lateral line.

- Wipe mucus from area where scales are to be removed.
- Scales should be spread across the inside of the envelope to prevent clumping.
- Keep scale envelopes in an open air environment. Don't store in airtight conditions.
- Ensure knife is cleaned and free of debris before the next fish is sampled.

NB - Excess mucus, clumping of scales and airtight storage conditions can lead to fungal growth and scale degradation.

Scales should be stored dry in paper scale envelopes and these should be kept in a dry environment.

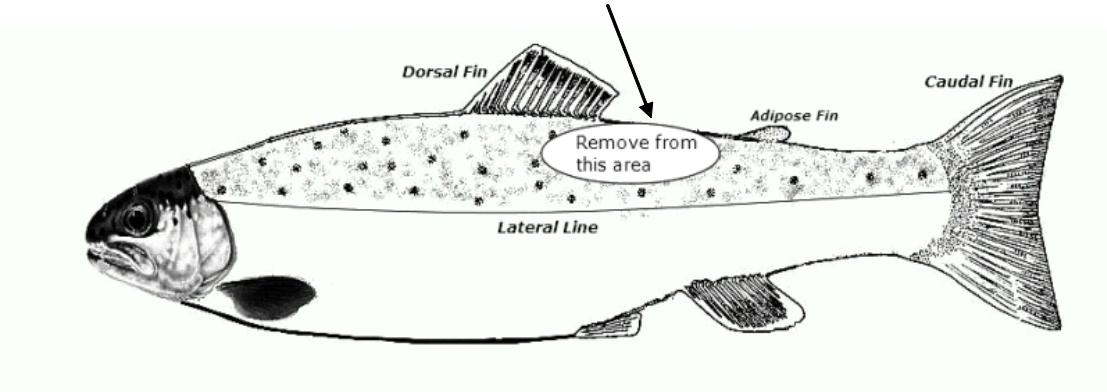
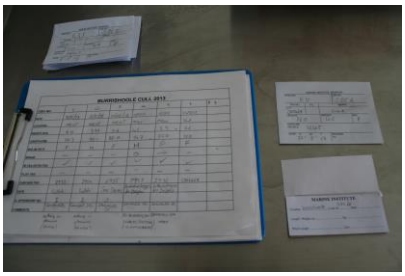


Diagram of sea trout indicating appropriate scale sampling location.

Details to be included **on each scale envelope** are as follows (The minimum details required are in bold):



Details: Name of fish (e.g. WST, WG, WSF, RG)

Fin Clip record if fin clipped

Length refers to fork length (in centimetres) from tip of snout to fork in tail. Please record to the nearest 0.1cm. State measurement unit used, if not centimetres.

Weight (if measured): whole fish, preferably weighed on electronic balance (to nearest gram, or state other units if applicable).

Sex

Location of capture: Trap (e.g. SLUT, MRUT, SLDT, MRDT), Lake or River

If rod caught, Captor name and contact No.

Date of capture- day/month/year

Tag Number Floy tag and / or carcass tag as applicable

Scale Storage

- Wipe mucus from area where scales are to be removed.
- Scales should be spread across the inside of the envelope to prevent clumping.
- Keep scale envelopes in an open air environment. Don't store in airtight conditions.
- Ensure knife is cleaned and free of debris before the next fish is sampled.

NB - Excess mucus, clumping of scales and airtight storage conditions can lead to fungal growth and scale degradation.

IMPORTANT: Scale samples or filled envelopes should not be stored in plastic bags as the scales will rot. Filled scale envelopes should be stored in dry conditions as soon as possible to ensure that the scales will remain viable for the different analyses. Once fully dry the scales will provide microchemistry material for many decades if stored under good conditions.

When sampling trout samples stored in a bag with other sea trout/fish run the back of the knife over the sampling area in the direction of the tail to remove loose scales from the other fish which may be sitting on the skin/mucus of the fish to be sampled. Then clean the knife thoroughly and take the sample as detailed above.

11.1.3 Genetic swabs

Swab *all* wild and ranched salmon and sea trout (as directed each year) released from the upstream traps with the labelled swabs provided. Swabs should be double labelled, on the tube and on the cap.

Record swab number on *Details Sheet* for each individual fish sampled. Swabs are taken by rubbing the rayon tip of the swab on the side of the fish and when sample is taken return swabs to their labelled container and transfer to freezer room. Store the swab samples in freezer 6 in the freezer room.

11.1.4 Predator Marks

Record predator marks, if present, on all returning fish.

11.1.5 Net Marks

Record the presence (**Y**) or absence (**N**) of net marks on returning adult fish

11.2 Fish Tagging in Traps

Floy tagging

All ranched salmon released upstream and wild salmon kelts released downstream are floy tagged.

The tag is inserted at the base of the dorsal fin using a floy tagging gun.

Insert the needle of the gun at a 45^{o} angle into the fishes back at a location just to the side and in the centre of the dorsal fin. Push the needle all the way in so that its tip has passed the pterygiophores of the dorsal fin rays. Squeeze the trigger of the gun, and while holding the trigger, rotate the gun 90 degrees in one direction or the other and pull the needle out keeping your finger on the tag to keep it in place. Test the tag with a gentle tug to ensure attachment is satisfactory.

<u>Both the *number* and the *colour* of the tag should be recorded</u>

Floy tag in fish

11.3 Culling Fish in Traps

Cull fish by a single blow to the head with a priest. Avoid bruising the back of the neck of the fish.

All reared salmon culled in the traps require a carcass tag.

All rod caught salmon also require a carcass tag.

Insert carcass tag through the operculum and fasten.

Record the carcass tag colour and number on the sample sheet and scale envelope

Transfer culled fish from upstream traps in a clean fish box

Fish may be transferred directly to the laboratory for processing or retained in the internal cooler (short term) or external freezer prior to processing.

In some cases, fish may be held alive in a pond or the broodstock pond prior to culling.

Internal cooler (beside wet lab)

External Cooler

Cover fish retained in the cooler with ice.

11.4 Laboratory Sampling Ranched Salmon

- Note: all surfaces must be clean prior to processing fish
- Use white apron gowns for biological sampling
- Use Lab coats for data recording
- All areas should be cleaned and disinfected after processing fish

Details of fish sampled should be recorded under the following headings:

BC Code No.	Each fish has an individual BC number and all samples relating to this fish will have the same BC number eg microtag core, scale envelope, genetic sample etc.
DATE	Date of sampling
LOCATION	e.g. Trap (SLUT, SLDT, MRUT, MRDT), Broodstock Pond (BSP), Rod Fishery Lake
WEIGHT (Kg)	normally whole fish weight $\pm$ 5g
LENGTH (cm)	Fork length $\pm$ 0.1cm
SEX (M or F)	Internal sexing
BRAND	Record freeze brand if present
M-TAG DETECTED	Y or N
FLOY TAG	Record floy tag number and colour
CARCASS TAG	Record carcass tag colour & number
FATE	e.g. Sale, freezer, dump
EPPENDORF No.	same as BC number
COMMENTS	Relevant comments (e.g. presence of parasites)

Sexing adult salmon

Determining the sex of adult salmon in the lab is generally carried out internally. Make a small incision in belly of fish and sex by presence of ovary or testes.

As salmon approach sexual maturity male salmon can be distinguished more easily from females by their kype. However specific projects may still require sexing to be carried out internally

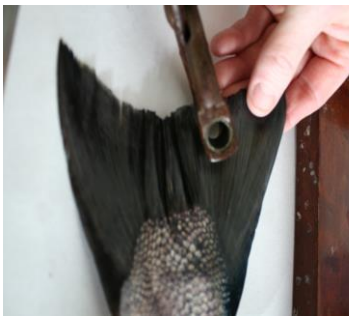
Internal sexing

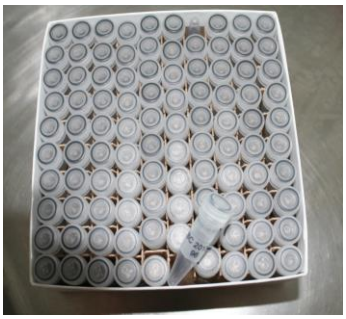
Make an incision and sex by presence of ovaries or testes. This one is a female. Male testes are a creamy white colour.

Genetic sample (Tail Punch)

Take a sample from the caudal fin and store in an individually labelled eppendorf with 100% **ethanol.**

Do **NOT** use Methanol for genetics.





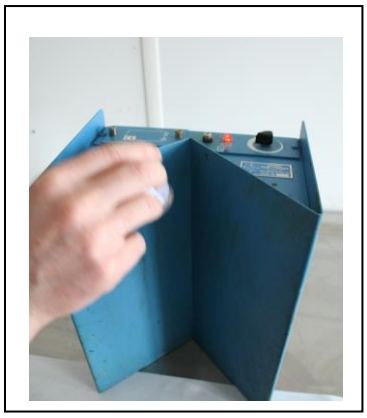
Microtag Recovery

Microtagged fish are identified from the missing adipose fin.

The microtag is removed by **coring** the nose of the fish.

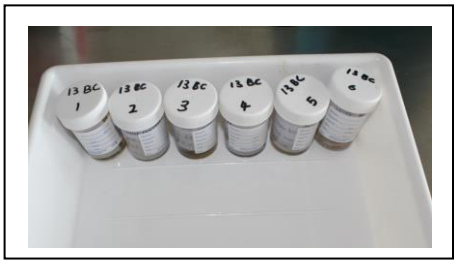

The presence of the tag in the core is verified using magnetic tag detector. Make sure there is no metal in the vicinity of the detector when in use – **do not use** your hand that has jewellery or a watch on to hold the core in the detector.

A positive tag is signalled by a high piercing beep.



The core is placed in an individual core bottle with alcohol together with a label giving details of the core and a scale sample.

Labelled core bottles are retained in the lab and are only transferred to microtag lab after the microtag log has been filled in and signed



11.5 Data Recording

All abbreviations used in the traps are listed in Annex 1 of this document.

11.5.1 Upstream Traps Totals

UPSTREAM TOTALS SHEET						TRAP 20											
						Released Upstream								Salmon Retained -inc. on Detail Sheet			
DATE	TIME	WSF	WG	WPSG	RSF	RG	R PSG	R 2nd Ret	W ST	RST	W Fin	RFin	W BT	RBT	Dead	Alive	COMMENT	Initials

Data should be recorded on each trap visit, on the totals sheet and, if fish present, on the appropriate fish details sheet.

DATE Date of sampling (dd/mm/yy)

Time Time of sampling (24hr)

WSF: Wild spring fish - multi sea winter fish (generally > 70cm)

WG: Wild grilse - one sea winter

WPSG: Wild previously spawned grilse (generally identified by presence of floy tag)

RSF: Ranched spring fish (generally > 70cm) – released upstream only

RG: Ranched grilse (released upsteam only do not include culled or alive fish retained for sampling/sale)

RPSG: Ranched previously spawned grilse (generally identified by presence of floy tag) – released upstream only

RSR: Ranched second return ie fish returning to upstream trap for a second time in the same season having been tagged earlier in the upstream trap

WST: Wild sea trout silvered trout generally >32 cm

WFINN: Wild finnock silvered trout generally <32 cm

WBT: Wild brown trout - non silvered trout

CULLED: Fish which are killed in the trap, generally refers to ranch salmon which are killed and transferred to the laboratory

CTs: Carcass tags all culled ranched fish are carcass tagged in the trap prior to transfer to the laboratory.

ALIVE: Fish which are removed alive from the trap to another location, generally refers to ranch salmon which are transferred to holding ponds in the smolt unit or to the broodstock ponds.

COMMENTS: additional information relevant to the trapping facility e.g. water height in the trap, floods etc.

INITIALS: Staff initials are recorded to provide a contact person(s) for follow-up.

11.5.2 Upstream Salmon Details

UPSTREAM SALMON DETAILS (including fish removed from trap)

TRAP ..... 20 .....

DATE	SALMON TYPE	LENGTH	SEX	Net Mk.	TAG No.	BRAND	FATE	COMMENTS

DATE: Date of sampling

TYPE: Salmon type, such as WG, RG, etc

LENGTH Length in cm

Wt Weight in grams

SEX Male or female (M) or (F)

Net Mk Net marks record presence (Y) or absence (N) of net marks

CT No. Carcass tag number. Record carcass for culled fish

FLOY No. Floy tag. Record floy tag number and tag colour of fish with floy tags

BRAND Freeze brand on side of fish. Record freeze brand e.g. ‘T’

FATE what happens to the fish after sampling e.g. released upstream, culled etc.

11.5.3 Upstream Trout Details

UPSTREAM TROUT DETAILS			TRAP ..... 20 ...				
DATE	TROUT TYPE	LENGTH	TAG/MARK	Fish Colour	SEX	LICE	COMMENTS

DATE: Date of sampling

TROUT TYPE: Wild Seat Trout, Brown Trout, see abbreviations

LENGTH: Length in cm

TAG/MARK: Tags and/or other methods of marking fish may be used for specific experiments. If such experiments are in progress additional information on what data to record will be provided in the traps.

Fish Colour: Silver or Brown, indicates whether trout has arrived in the trap following a short (silver) or longer (brown) period in Lough Furnace.

SEX: Male (M) or female (F)

LICE: Presence (Y) or absence (N) of sea lice

Comments: Additional information relevant to the trapping facility e.g. water height in the trap, floods etc.

11.5.4 Juvenile Downstream Traps Totals

JUVENILE DOWNSTREAM TOTALS											
							TRAP 20				
				< 10 cm	> 10 cm						
DATE	Sal Parr	Salmon Smolt		0+ J Trt	1+ J. Trout		Sea Trout Smolt		Eels	Comments	Initials
	Wild	Wild	Reared	Wild	Wild	Reared	Wild	Reared			

DATE: Date of sampling

Sal Parr: Salmon Parr – not smoltified

Salmon Smolt: Silver smolts

0+ J. Trt: Unsilvered trout parr <10cm in length

1+ J. Trout: Unsilvered trout parr >10cm in length, but usually less than 20 cm (immature fish)

Sea Trout Smolt: Silvered smolts, but not immature finnock

Eels: Yellow and silver eel. Not elvers.

Comments: Anything relevant

Initials: For follow-up.

11.5.5 Adult Downstream Traps Totals

ADULT DOWNSTREAM TOTALS			TRAP 20							
			> 32 cm		< 32 cm					
	Salmon Kelt		Lge ST Kelt		Small ST Kelt		Brown/Slob Trout		Comments	**Initials**
DATE	Wild	Reared	Wild	Reared	Wild	Reared	Wild	Reared		

SALMON KELT: Wild

SALMON KELT: Reared

Lge ST Kelt: Wild sea trout kelt >32cm

SMALL ST Kelt: Wild sea trout kelt <32cm and immature finnock ‘kelts’

BROWN/SLOB TROUT: Mature unsilvered kelts or immature trout >20cm

Comments: Anything relevant

Initials: For follow-up.

11.5.6 Downstream Salmon Details

DOWNSTREAM SALMON DETAILS							
					TRAP 20		
DATE	SALMON TYPE	LENGTH	SEX	TAG No.	BRAND	FATE	COMMENTS

DATE: Date of sampling

TYPE: Salmon category, see appendix abbreviations

LENGTH Length in cm

SEX Male or female (M) or (F)

TAG No. Floy tag. Record floy tag number and tag colour of fish with floy tags

BRAND Freeze brand on side of fish. Record freeze brand e.g. ‘T’

FATE What happens to the fish after sampling e.g. released upstream, culled etc.

11.5.7 Downstream Trout Details

DOWNSTREAM TROUT DETAILS TRAP ..... 20 ...							
DATE	TROUT TYPE	LENGTH	TAG/MARK	Fish Colour	SEX	LICE	COMMENTS

DATE: Date of sampling

TROUT TYPE: Wild Seat Trout, Brown Trout, see abbreviations

LENGTH: Length in cm

TAG/MARK: Tags and/or other methods of marking fish may be used for specific experiments. If such experiments are in progress additional information on what data to record will be provided in the traps.

Fish Colour: Silver or Brown, indicates whether trout has arrived in the trap following a short (silver) or longer (brown) period in Lough Furnace.

SEX: Male (M) or female (F)

LICE: Presence (Y) or absence (N) of sea lice (Note: Not relevant in Downstream Trap)

Comments: Additional information relevant to the trapping facility e.g. water height in the trap, floods etc.

Annex 1: Abbreviations for Fish Recording

UPSTREAM TRAPS

ABBREVIATIONS FOR USE ON DETAIL SHEETS AND SCALE ENVELOPES

MALE	**M**
FEMALE	**F**

SALMON

WILD SPRINGFISH	**WSF**
WILD GRILSE	**WG**
WILD PREVIOUSLY SPAWNED GRILSE	**WPSG**
REARED SPRINGFISH	**RSF**
REARED GRILSE	**RG**
REARED PREVIOUSLY SPAWNED GRILSE	**RPSG**
REARED SECOND RETURN	**RSR**

TROUT

WILD SEA TROUT (≥32cm)	**WST**
WILD FINNOCK (<32cm)	**WFINN**
WILD BROWN TROUT	**WBT**
RAINBOW TROUT	**RBT**

FATE

RELEASED UPSTREAM	**REL UP**
RELEASED DOWNSTREAM	**REL DWN**
CULLED	**CULLED**
BROODSTOCK POND (SU)	**BSP**
REARING TANKS	**RT**
NET MARKED (WILD & REARED SALMON)	**Y/N**

DOWNSTREAM TRAPS

ABBREVIATIONS FOR USE ON DETAIL SHEETS AND SCALE ENVELOPES

MALE	**M**
FEMALE	**F**
WILD SALMON KELT	**WSK**
WILD SALMON SMOLT	**WSS**
REARED SALMON KELT	**RSK**

TROUT

WILD SEA TROUT KELT	**WSTK**
WILD FINNOCK KELT	**WFINNK**
WILD SEA TROUT SMOLT	**WSTS**
WILD BROWN TROUT KELT	**WBTK**

FATE

RELEASED UPSTREAM	**REL UP**
RELEASED DOWNSTREAM	**REL DWN**
CULLED	**CULLED**
BROODSTOCK POND (SU)	**BSP**
REARING TANKS	**RT**