Ken Whelan

EWRT

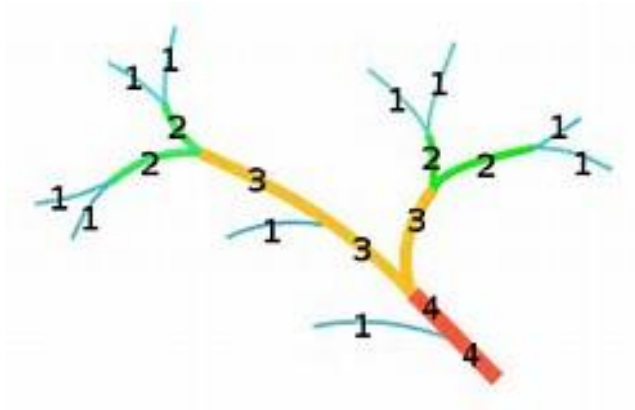
East Wicklow Rivers Trust

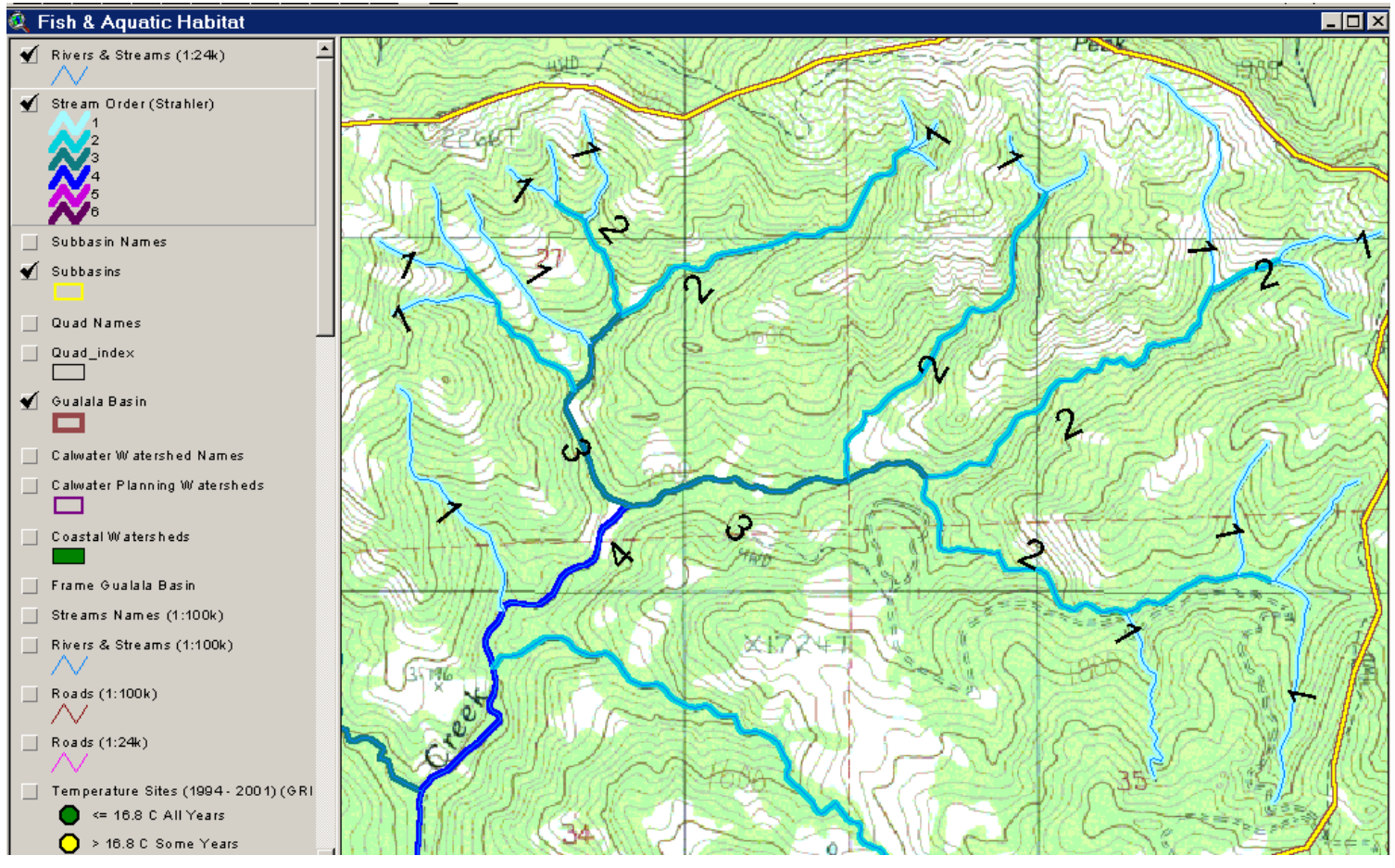
River Barriers and Fragmentation – A Cause for Concern !

Tuesday 18th May 2021

Ken Whelan

University College Dublin , The Atlantic Salmon Trust & EWRT




Fish & Aquatic Habitat
Rivers & Streams (1:24k)
Stream Order (Strahler)
1
2
3
4
5
6
Subbasin Names
Subbasins
Quad Names
Quad_index
Gualala Basin
Calwater Watershed Names
Calwater Planning Watersheds
Coastal Watersheds
Frame Gualala Basin
Streams Names (1:100k)
Rivers & Streams (1:100k)
Roads (1:100k)
Roads (1:24k)
Temperature Sites (1994 - 2001) (GRI
<= 16.8 C All Years
> 16.8 C Some Years
Creek

Manmade Barriers

- Mills
- Hydro
- Water supply
- NZ and farming – irrigation – animals and tillage
- Potable water supplies
- Trout Farming
- House building – culverts


800 × 533


@ Miroslav Ocadlik
200 × 900

Types of blockages

Potential fish barriers can be described as either natural (such as water falls) or man-made (such as culverts, raised bridge sills or high weirs). If they are natural then they should be left alone but man-made fish barriers should be considered for removal or modification to allow fish access past them. Modifying man-made barriers can be extremely expensive.

Culverts:

Weirs or Sluices?

Maximum Depth	*Minimum* Velocity		
	> 3 m/s	2-3 m/s	<2 m/s
<5 cm	⊘	⊘	⊘
<10 cm	⊘	?	?
>10 cm	⊘	✓	✓

The slowest velocity
and
the deepest water
determines Fish Passage
at a cross-section:
Ring the one that applies.

⊘	= Impassable
✓	= Passable
?	= Potential Barrier

At Culverts - Are there Drops or Debris Dams?

A Debris Dam at a Culvert

Culverts - Debris Dams or Excessive Drop (>40 cm) to Water Surface?

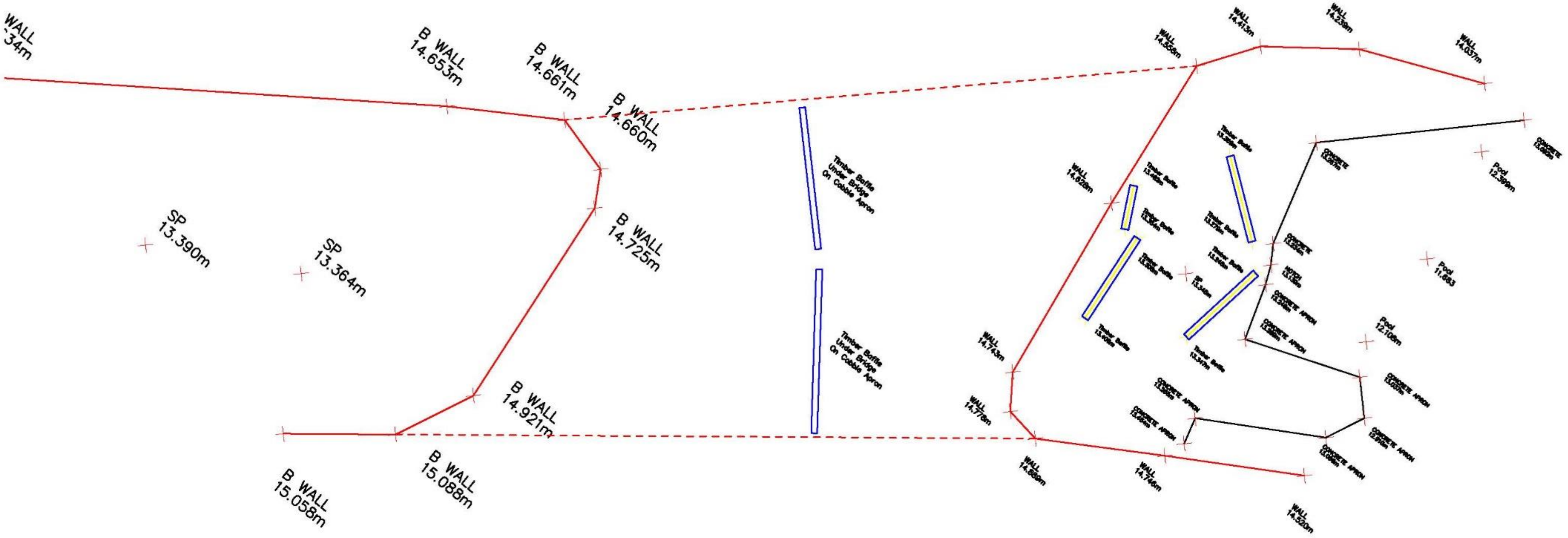
Describe any potential barriers
(Include photos)

Site Name:

Barriers & Connectivity

- Biotopes /Zones
- Biodiversity
- Replenishing biodiversity loss – fishless streams – 70%
- Migratory corridors – not just full blockage – delays / predation / timing spawning
- Make full use of the catchment
- Optimising productivity
- Geological impacts – isolated populations – char / shad
- Natural barriers – Erriff – Cross River
- Unique genetic resources – unique genes
- Unique trout strains – resident and migratory

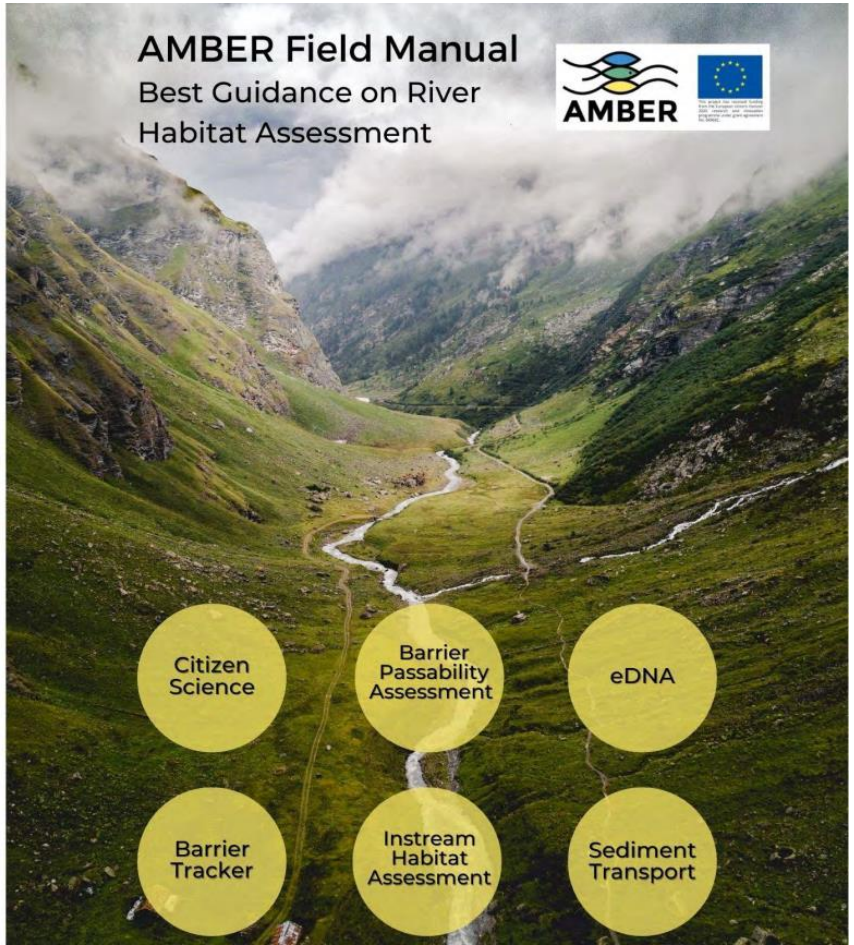

9 INNISHANNON
km Cill Briotáin
10 KILBRITTAIN
R603


WALL
B WALL
14.653m
B WALL
14.661m
B WALL
14.660m
B WALL
14.725m
SP
13.390m
SP
13.364m
B WALL
14.921m
B WALL
15.088m
B WALL
15.058m
Timber Baffle
Under Bridge
On Cobble Apron
Timber Baffle
Under Bridge
On Cobble Apron


TUBESCA
PLATINIUM

Amber project

- [AMBER, Adaptive Management of Barriers in European River]



Bar code of life

https://www.irishtimes.com/news/science/searching-for-salmon-using-the-bar-code-of-life-1.3668018

Searching for salmon using the bar code of life

Reconnect programme asks citizen scientists for help finding barriers to fish spawning

about 13 hours ago

Margaret Ward

River mapping: an Atlantic salmon parr

Tracked Barrier Map

Click on pins to see details of the barriers gathered with the AMBER Barrier Tracker app and filter by top contributors per country.

Ken Whelan

Limnos Consultancy

ATLANTIC SALMON TRUST

SMALL STREAMS CHARACTERISATION SYSTEM – Survey Manual

Prepared for The Atlantic Salmon Trust, The River Annan Trust & District Salmon Fishery Board and the Strangford Lough & Lecale Partnership

by

Martin McGarrigle, Limnos Consultancy

Ballynew, Castlebar, Co. Mayo, Ireland.

Version: AST-SSCS-1.5

Date: April 2021

site location / characteristics sheet - discuss

Grid Reference / Location of Barrier (must be filled in)		
Man-made or Natural Barrier?		
Barrier Type:		Measurement
Weir/Dam or Sluice across full width of stream from bank to bank? Is there a fish pass present? Have fish free access to it? Is the fish pass free of debris / other blockages? Is there a natural barrier in place? Does this adversely affect the upstream migration of adults?	Height of weir from upper water surface to lower stream surface or downstream pool:	
Sloping or stepped weir or other structure	Length of Slope:	
Stream velocity	Water velocity at slowest flow point on stream cross-section. Too fast for fish passage?	_____ (m/s) Yes / No
Maximum stream depth		<5 cm – 5-10 cm – >10 cm
Culvert with significant drop below it? Does the culvert create a dark passageway, without light?	Height of culvert 'lip' above water:	Yes / No If Yes:_____(m) Yes / No
Accumulated debris dams, e.g. at culverts	Likely to Block Fish passage?	Yes / No
Fords or groynes narrowing stream?	Width of Widest Gap:	_____ (m)
Shape of Culvert	Round Pipe / Rectangular opening	
Fallen Trees/ Landslides?		
Photo(s) Taken		Yes / No
Other Potential Barriers: