

# Freshwater Biodiversity and Habitats



## Lesson 3. The Unique Lives of Atlantic Salmon

Ireland, **used to have ideal conditions** for salmon in our rivers. Sadly, that is no longer the case; they have disappeared from many rivers in which they formerly lived.

You might be surprised to find that **salmon are endangered** because you can find salmon in the fish counter of your local supermarket!

However, this is not wild salmon, it's farmed salmon which is reared in enclosed pens in the ocean around our coast

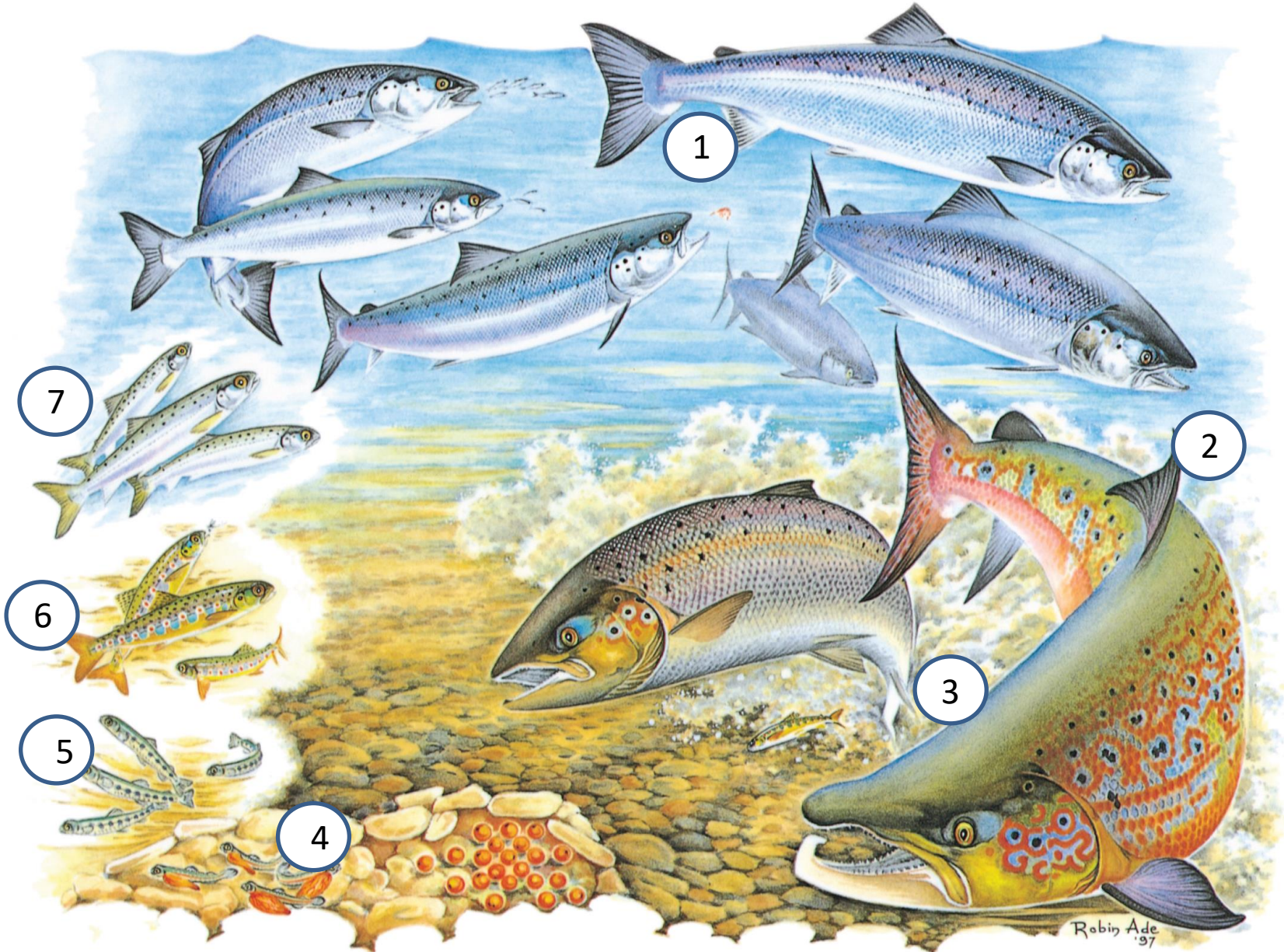
Only 3 or 4 million wild Atlantic salmon are left in the world– a **decline of 80% over the past 40 years**. Salmon are gone from many rivers in Europe and N. America.



- Should we care that salmon may be heading for extinction?
- Salmon needs a healthy environment so their decline tells us something is seriously wrong with the environment.
- To understand the causes of their decline, let's look at their biology.



# Salmon Life Cycle





# Salmon Life Cycle

Juvenile salmon change to smolts and migrate to ocean

Salmon grow to adulthood in the ocean

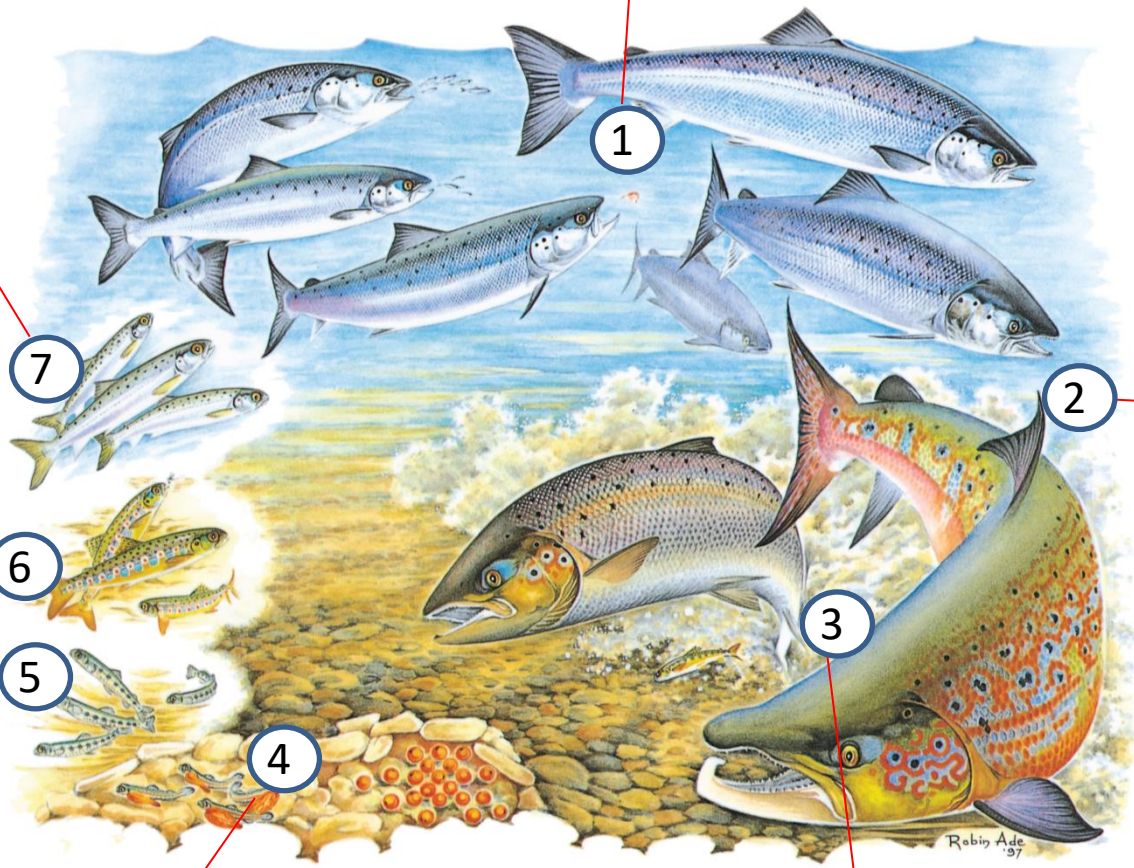
Juvenile salmon in rivers for 1-3 years

Adult salmon begin to return to their home rivers

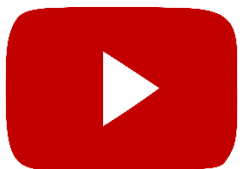
Fry disperse to establish territories (April)

Eggs hatch (February)

Salmon spawning (December)



# Atlantic Salmon International Research Station on the River Bush, Northern Ireland

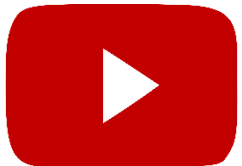


<https://www.youtube.com/watch?v=yjL4vnkU2wA>  
(15:49min)

# Salmon Numbers are Declining

- Juvenile salmon depend on rivers that have clean, cold, unpolluted water with plenty of oxygen. Water quality has declined markedly in most European and Irish salmon rivers over the past 50 years.
- Spawning salmon need gravel beds, but these have been removed or reduced in rivers that have been drained. These rivers are often much more shallow and lack the deep pools where adult salmon can hide during the summer.
- The scientific name for Atlantic salmon is *Salmo salar*. 'Salar' means 'leaper'. We have modified our rivers greatly and put in many obstacles and barriers to salmon migration. These barriers also block migration of eels and sea lampreys.

Click on the link below to see why salmon need to leap.

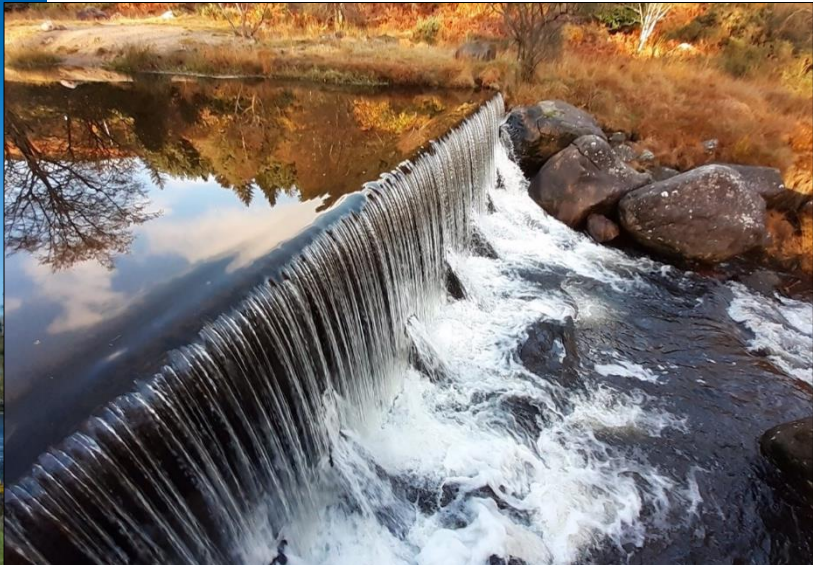
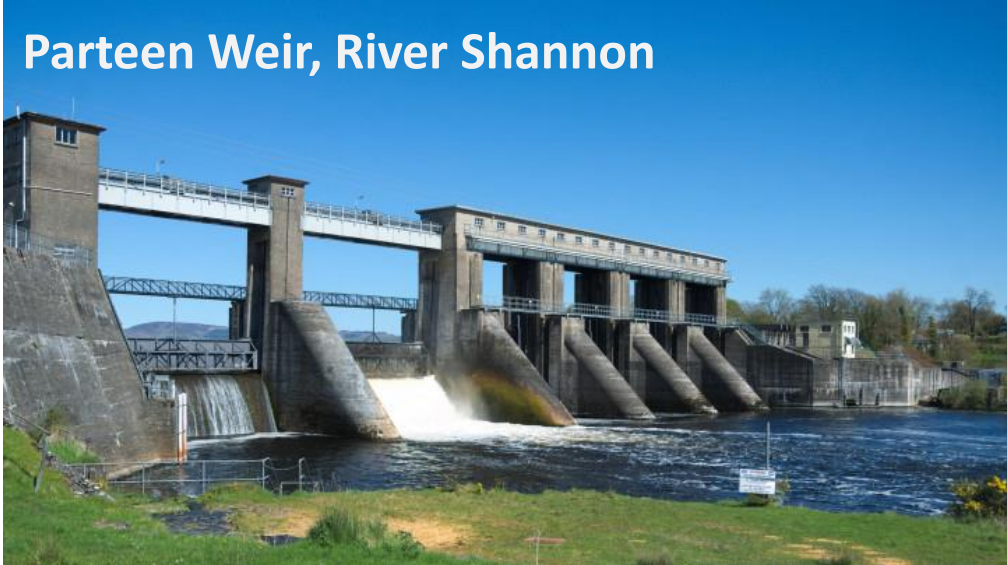


<https://www.youtube.com/watch?v=JjXVCZFTe70> (2:38min)

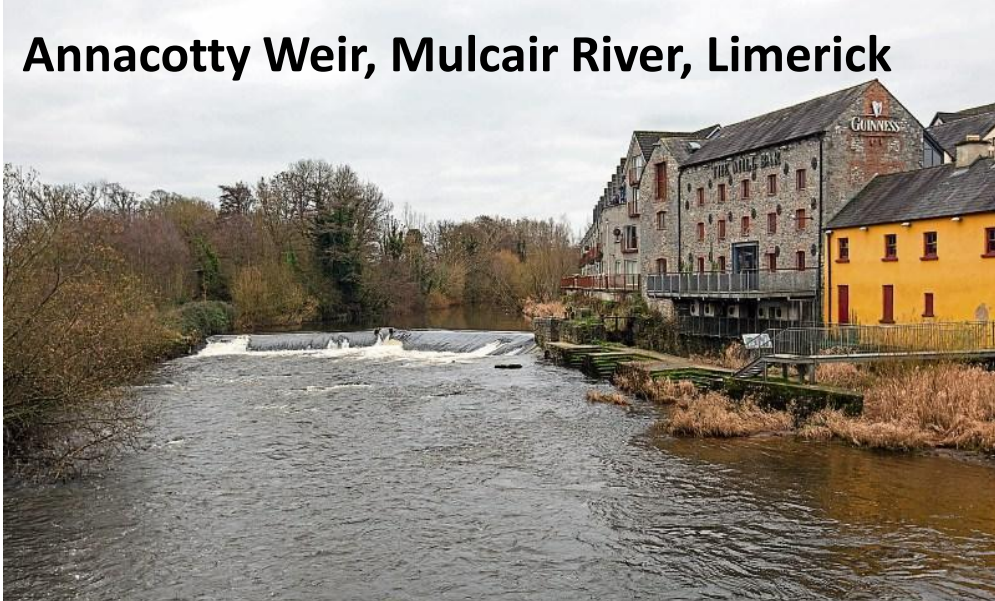


# River barriers come in all shapes and sizes

Parteen Weir, River Shannon



Annacotty Weir, Mulcair River, Limerick



# Salmon Decline

- Salmon farms are claimed to have caused the decline of salmon in some rivers. Infection of salmon smolts with sea lice from salmon farms and breeding of wild salmon with escaped farm salmon are thought to be involved. This is controversial!
- Climate change is harming young salmon in rivers and adult salmon in the ocean:
  - Warming oceans cause the salmon's feeding grounds to shift further north and is reducing the availability of food. This may be the reason fewer salmon are returning to our rivers.
  - Higher temperatures in summer make life tougher for young salmon in rivers - they don't thrive when temperatures exceed 16°C.
  - More rainfall and bigger floods in winter will destroy salmon spawning sites - redds.



*Compared to 30 years ago, it now takes about double the amount of eggs to produce one adult compared that will return to the same river to spawn. Our rivers have to be clean and healthy to support young salmon.*



# What we need to do

*For salmon it will be difficult to improve things in the oceans. Improvement efforts should focus on our freshwater rivers, streams and lakes.*

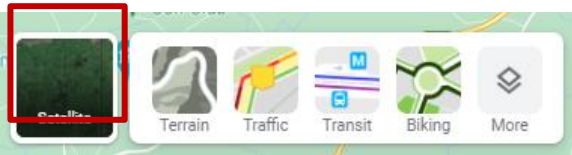
- **Clean up the water quality in our rivers – remove the sources of pollution.**
- **Create more spawning habitat for salmon.**
- **Remove barriers to fish migration.**
- **Restore natural habitats along riverbanks especially woodland that will provide shade in summer and reduce temperatures.**
- **Control illegal fishing.**
- **Change salmon farming practice.**

*If we don't do these things salmon will become extinct.*

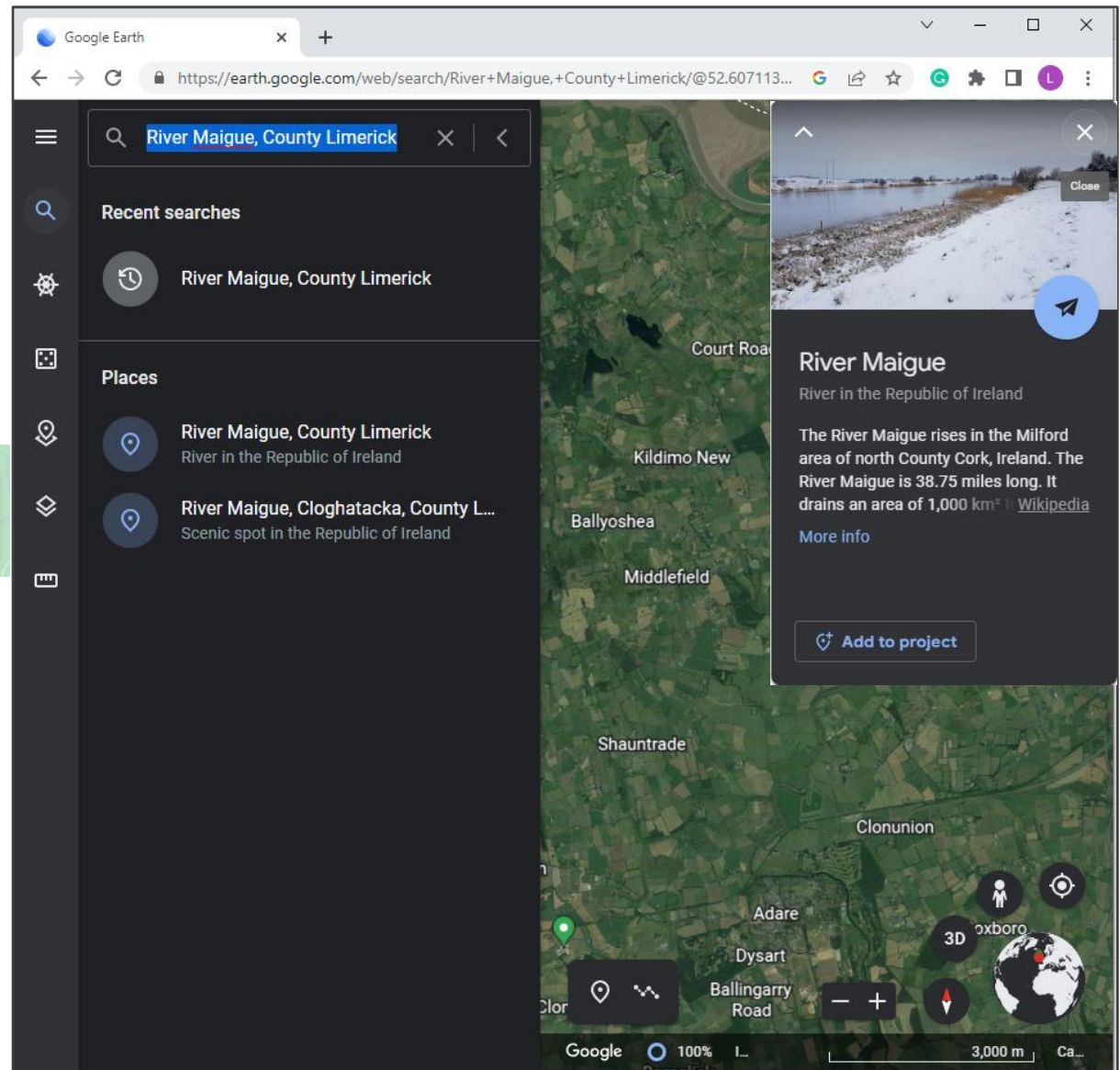
# Task 3.1 Locating river barriers using Google Earth/Maps

1. Go to Google Earth, and type in 'River Maigue, Co. Limerick' in the search box. Click 'Search'.

You can also use Google Maps – Satellite view.



2. Zoom in and follow the river upstream through Adare, Croom, up as far as Bruree, a distance of about 25 km, and see how many artificial barriers you can find. You will see structures like the following .





## Task 3.1 How many river barriers can you find?

3. You will see structures like the following.
4. You can mark them with a label in Google Earth and produce a map.



A 'V-shaped' weir with the point facing upstream

A road bridge – may or may not be a barrier



Could be an old weir or just a natural rocky party of the river