The 2017 Pacific pink salmon ‘invasion’ – a rapid response to an evolving situation

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District Salmon Fishery Board

Ness & Beauly Fisheries Trust

Pacific Pink Salmon

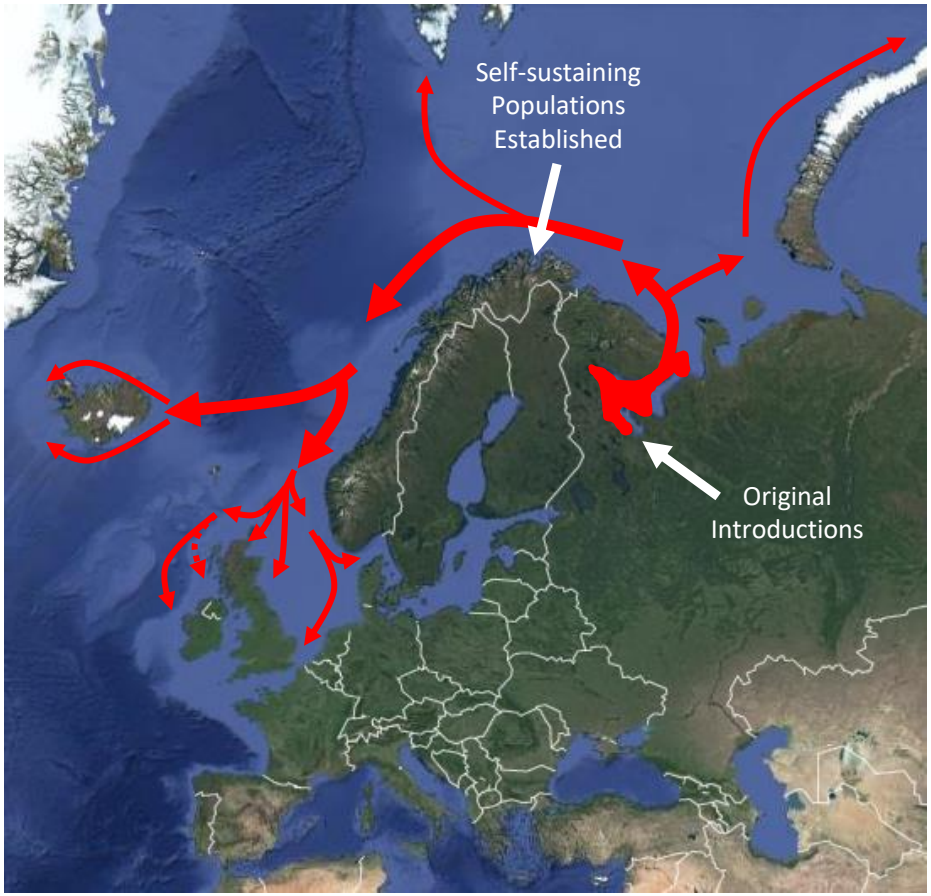
Background - Introductions

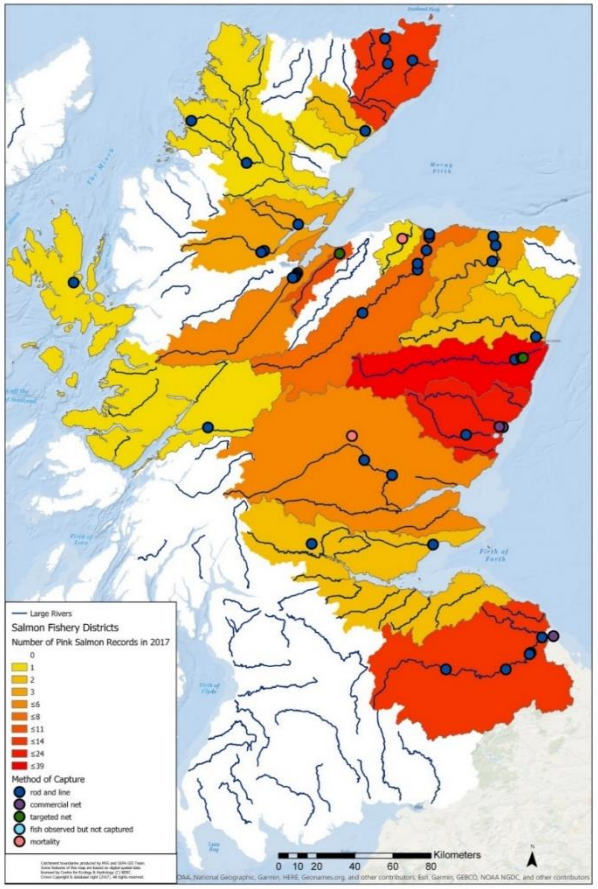
- Introduced into the White Sea basin 1950's with annual egg transfers of 'even-year' fish from Far East of Russia over a period of 20 years.
- 'Even year' Pink salmon spawn too late in the year, not adapted to the low temperatures of northern Russia. Introductions failed and stocking ceased in 1979.
- 'Odd year' Pink salmon which spawn earlier and are able to withstand cold temperatures were introduced into the White Sea basin in 1985.
- Self-sustaining populations were quickly established in rivers around Murmansk and Arkangelsk and stocking finished in 1998.

Pacific Pink Salmon

Background - Colonisation

- They have slowly spread westwards and have now colonised some northern Norwegian rivers where self-sustaining populations have established.





- Small numbers of pink salmon have turned up in UK and European rivers for several decades, but 2017 saw by far the largest number of fish captured in any year – 139 across Scotland

Pacific Pink Salmon

River Ness Rod Catches

- On the 6th July 2017 first report of a pink salmon being caught by rod and line on the River Ness at Ness Side Estate.
- Quickly resulted in second report caught the previous day by an angler in the Blackstream at Ness Castle Lodges, approximately one kilometre further upstream.
- A total of six rod caught fish were reported by recreational anglers on the River Ness during the 2017 rod fishing season (with a further two by targeted capture).
- **Initial advice was that they would not spawn.**

Pacific Pink Salmon

Identification - Fresh run pink salmon

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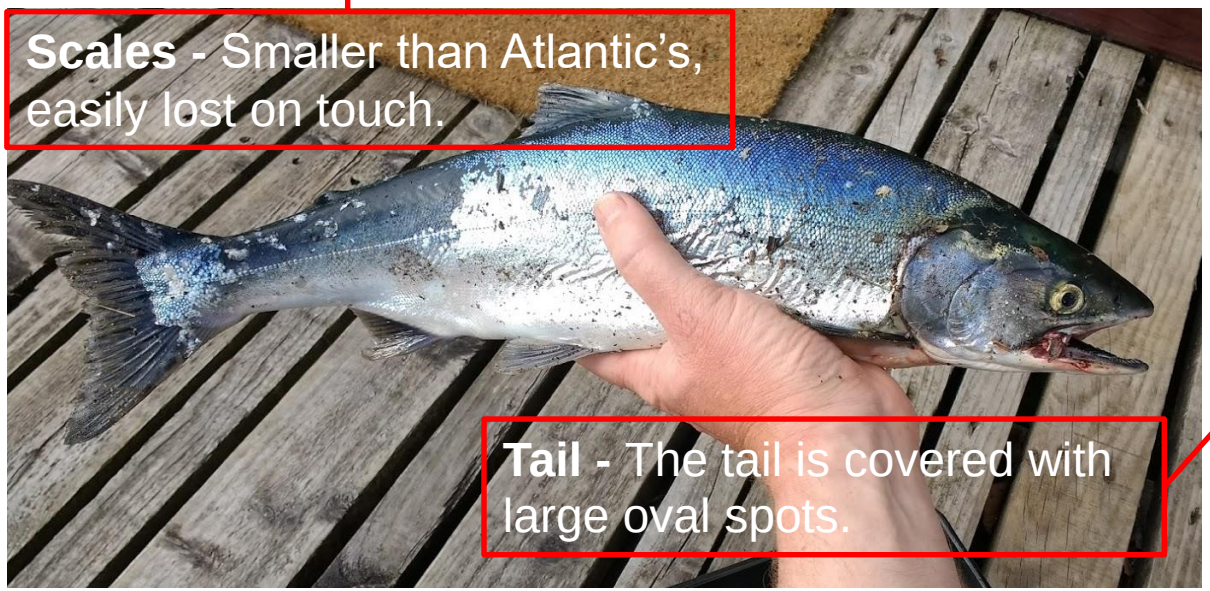
Jaw -The mouth is white, but the gums and tongue are black.

Scales - Smaller than Atlantic's, easily lost on touch.



Tail - The tail is covered with large oval spots.

Pacific Pink Salmon

Post Mortem Examination - Internal examination

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Mature female – 26th July 2017

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- 5lb female in breeding colours
- Gonads were well developed
- estimated 1,700 eggs.
- No signs of internal damage, parasites or disease.

Mature male 29th July 2017

♂

- 3lb male in breeding colours
- Partially developed ‘humpback’.
- Gonads were well developed.
- No signs of internal damage, parasites or disease.

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Spawning Surveillance – Underwater Cameras

The first sighting of mature female on the 8th August 2017

The first signs of spawning activity recorded on the 11th August 2017 ('cutting')

The first sighting of mature male on the 10th August 2017

Fertilisation recorded on the 14th August 2017

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Attempt to capture spawning fish for egg viability trials

Female fish caught were found to be 'spent' with no eggs – successfully spawned

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Pink Salmon ‘redd’ (or nest) identification

Drone used to help locate pink salmon redds

Walkover to ensure that pink salmon redds

Location of redds marked

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Assessment of egg viability – incubation box trials

Recovered 200 ‘eyed ova’ from seven redds on the 4th September 2017

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Monitoring egg development

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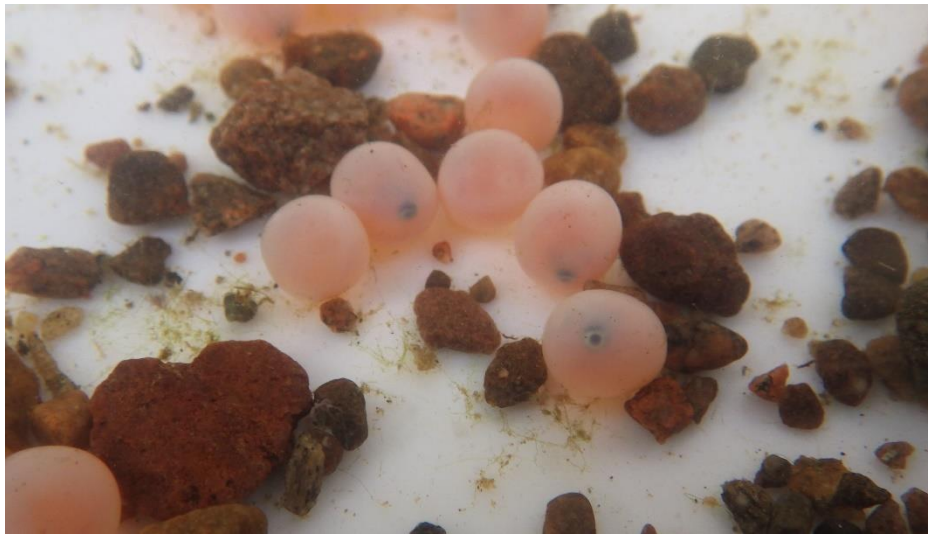

'Eyed' ova on the 18th September 2017

Hatching on 23rd September 2017

Newly hatched 'alevin' on 23rd September 2017

'Alevins' turning silver 25th October 2017

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Conclusions

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- Likely that at least a small proportion of pink salmon eggs in the Ness and other rivers went on to successfully emerge.
- Emergence earlier than in natural range (November/December rather than April/May) – this may reduce their chances of survival.
- Don't know why arrived in such numbers in 2017, may be a 'one off' as a result of a strong year class/environmental factors, or may become a more regularly feature.
- Progeny will be derived from distinct 'odd' or 'even' years, with the Russian fish being odd-year stock – possible that they will arrive again in 2019.
- Impact of our native salmon not known. Limited interactions in freshwater, but where do they feed at sea – need to refine risk assessment?