



CASE STUDY 5

History

At harvest-time on four sites in Norway many Atlantic salmon (*Salmo salar*) are downgraded due to spinal deformities. These shorten the body in length and give an exaggerated condition factor (1.8 to 2.2).

Clinical signs

- ✚ No abnormal mortalities or other health problems during life cycle.
- ✚ Fish are shortened and deeper than normal with high condition factor, but otherwise appear healthy.

Differential diagnosis

Skeletal deformity caused by

- ✚ parasitism
- ✚ genetic aetiology
- ✚ trauma
- ✚ environmental factors
- ✚ some or all of the above

Methods for investigation

- ✚ post mortems*
- ✚ radiography
- ✚ histology*
- ✚ tissue analysis
- ✚ parasitology/fresh microscopy*
- ✚ epidemiology
- ✚ feed analysis

* see "Sampling for Disease Diagnosis"

Findings

Post mortem: proliferation of the connective tissue around the vertebral column at two specific areas (Figures 7 & 8).

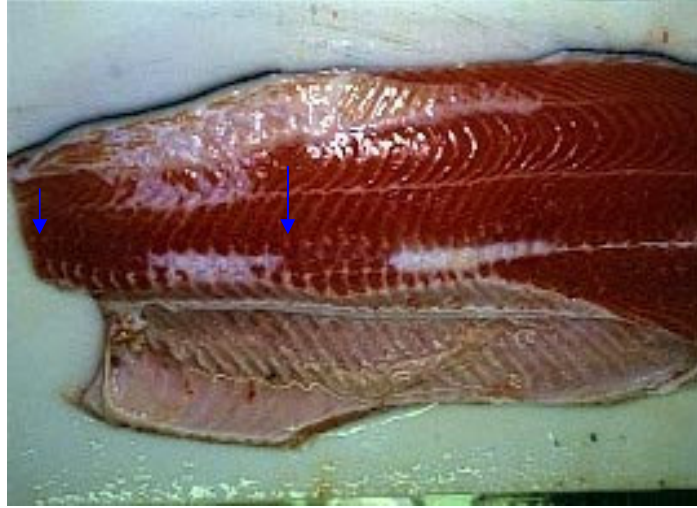


Figure 7. Fillet of deformed salmon showing proliferation of connective tissue around the vertebral column (arrowed) (Copyright H. Rodger).



Figure 8. Cross section through vertebral column of deformed salmon showing normal vertebral disc (right) and abnormal disc with marked connective tissue proliferation (left) (Copyright H. Rodger).

Parasitology/fresh microscopy: no significant findings.

Radiography: vertebral bodies abnormal in specific areas, appearing deeper, compressed with intervertebral space significantly reduced (Figure 9).

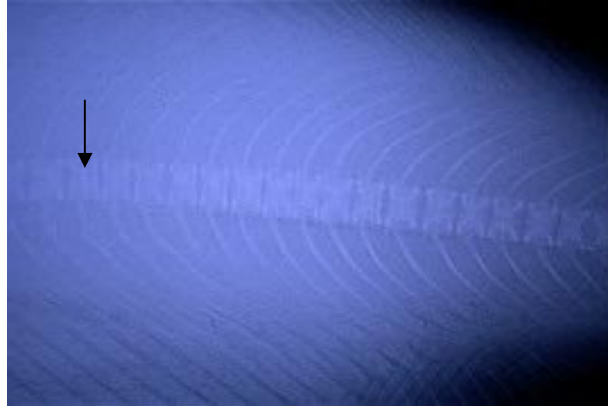


Figure 9. Radiograph of Atlantic salmon with skeletal deformity showing area of vertebral body compression and loss of intervertebral spaces (arrow) (Copyright H. Rodger).

Diagnosis

Skeletal deformity probably due to a combination of genetic, nutrition and environmental factors which requires further investigation and research.