

Ulcerative Dermal Necrosis

And other skin conditions of wild salmonids

What is Ulcerative Dermal Necrosis (UDN)?

Ulcerative dermal necrosis (UDN) is a skin condition of wild Atlantic salmon and sea trout. It is a natural condition that usually affects low numbers of fish as they return to freshwater. UDN has been recorded in rivers throughout the British Isles and northern Europe. It is a complex condition that remains poorly understood.

What are the main symptoms of UDN?

Fish with UDN have skin lesions that often begin as round sores on the head. These lesions can occur at any time of the year and can heal without further complication. However, open sores can quickly develop secondary bacterial and fungal infections, increasing in both size and severity. These organisms are present in all water bodies and can proliferate on areas of skin damage, or when fish are already stressed or debilitated. UDN is often confused or masked by these infections, making an accurate diagnosis difficult. Badly affected fish may die as a result of ulceration, fungal infection and loss of normal osmoregulation.

What is the cause of UDN?

Despite considerable efforts, the exact cause of UDN remains unclear. Studies conducted in the 1970s indicated that UDN may be caused by an infectious agent such as a virus. This has since been questioned, as no single pathogen has ever been identified.

UDN is a complex disease, which may occur for a number of reasons. Environmental conditions are known to be an important influence on the activity of bacteria and fungi and therefore lesion development. Recently, UDN-like lesions have been linked to high UV light levels and low water depth, although these require confirmation.



A skin lesion on the head of a wild salmon, prior to laboratory examinations.

How is UDN diagnosed from other skin conditions?

UDN-type lesions can vary a lot in appearance and can be difficult to distinguish from other common skin diseases. Bacterial and fungal infections are often reported in wild salmonids during periods of stress (such as migration, spawning) or adverse conditions. For example, fungal infections are more likely to develop during prolonged periods of low flows. These secondary infections reduce the likelihood of making an accurate diagnosis.

UDN can only be confirmed by the examination of live fish with early stages of disease. Confirming UDN relies on taking skin samples for histopathology, a process where thin sections of tissue are fixed, stained and examined for microscopic changes. Only then can the characteristic changes to the dermal layers of the skin be confirmed. Sacrificing live fish is seldom feasible and may not be necessary unless serious disease problems are observed.

What is the impact of UDN on our salmon stocks?

Large-scale losses of salmon were reported in Britain around the end of the 19th century. These were attributed to 'salmon disease', a condition similar to what is now known as UDN. Mortalities of salmon with UDN-like lesions were widely reported in the UK in the 1960s and 1970s, with outbreaks confirmed in Ireland and Sweden. Since then, cases of UDN in Britain have remained at a low level with only occasional, isolated losses. It appears that cases of UDN can persist in rivers for a few years, but then disappear. Recent media attention was drawn to an 'outbreak' of UDN in the River Spey, Scotland, in spring 2012, although the disease was confirmed in only a single fish and this was considered a natural case. There is currently no evidence to suggest that UDN is the cause of serious problems in wild salmon populations.



Fungal infections involving the head or body of salmon are most often caused by common Saprolegnia infections, not UDN.



Mortalities of wild salmon can result from many different diseases and any serious problems will be investigated immediately.

Good practice for anglers

Although UDN has not been linked to an infectious disease, we always advise anglers to be vigilant and act responsibly. Always disinfect your waders, nets and wet fishing equipment before moving to different water. This can either be done by thorough drying in sunlight or with the use of specific disinfectants.

What should I do if I suspect fish disease?

If you suspect or see any disease problems in wild fish, please contact your local Environment Agency office immediately. Good quality photographs of any lesions prior to returning salmon to the river can provide a useful record of abnormalities. If large numbers of fish are affected, these will be investigated as soon as possible by local staff and supported by our fish health laboratory.

For further information on UDN, disinfection procedures or any fish health issue please contact:

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