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**Short Note on Fin Rot of Dab (*Limanda limanda*)
in the North Sea**

Volkert Dethlefsen
Bundesforschungsanstalt für Fischerei
Außenstelle Cuxhaven
Deichstr. 12
2190 Cuxhaven (Germany)

ABSTRACT

Elevated prevalences of fin rot of bottom dwelling fish are reported from polluted coastal waters. In preceeding studies in the North Sea the presence of fin rot was documented for various coastal zones and a number of fish species. Since the diagnosis of this phenomenon is often obscured by the fact that similar symptoms can be due to mechanical causes this disease is normally not quantified in German fish disease monitoring programmes. Furthermore the prevalences of the clear cases of fin rot in offshore bottom fish are very low. During a routine cruise in January 1991 a station in the outer reaches of the Humber estuary 53°30'N/01°30'E was studied. From 1,400 dab (*Limanda limanda*) investigated 23.3 % showed symptoms of eroded or bent fin rays. On other stations distributed over the whole North Sea prevalences of fin rot on dab were far below 1 %. Affliction rate increased with increasing length of fish. It is recommended to include this station into programmes to study prevalences of fish diseases in the North Sea in order to obtain more information.

INTRODUCTION

Fin rot of bottom dwelling fish from polluted waters display gradual erosions of fin rays and tissues preferably of the caudal fin. This disease occurs in elevated prevalences on fish from polluted marine areas and was thoroughly studied in the 70s in coastal waters of the United States (Sindermann, 1979). Mearns and Sherwood (1974) report on high prevalences of fin rot on bottom fish in coastal areas heavily polluted by waste discharges. Disease rates were higher than 30 %. Sherwood and McCain (1976) showed that PCB residues in flatfish afflicted with fin rot were higher than those in healthy specimens. Results of epidemiological studies indicated that the phenomenon of fin rot is always more prevalent in polluted areas. In experiments where fish were

exposed to different contaminants, for example with sediments, fish developed fin rot. This lead to the conclusion that the disease was directly related to the pollution of the environment of the fishes. Since always a number of bacterial species was to be found on fishes studied for this purpose it was concluded that bacteria are involved in the causation of fin rot (Murchelano, 1975; Murchelano and Ziskowski, 1977).

Up to now it is uncertain whether the disease is caused by

1. increased density of pathogenic bacteria due to pollution,
2. a suppression of the immun function of fishes by contaminants, or
3. a combination of these factors.

Fin rot of flatfishes has also been found during studies on European coasts, for example in the Irish Sea (Shelton and Wilson, 1973), in Danish coastal waters (Christensen, 1979), in the Elbe estuary (Möller, 1988) and in coastal regions of the North Sea (Dethlefsen, 1980; 1984). During the latter studies fin rot was identified on eight different fish species. The phenomenon was more frequent in onshore areas. Up to 13.9 % of dab caught in a sewage sludge dumping area between Helgoland and Cuxhaven were afflicted, fin rot was especially found on the caudal fin. The quantification of fin rot of fishes always causes difficulties because the distinction between mechanical caused injuries of the fin or the disease is difficult (Sindermann et al., 1978). Therefore fin rot or similar phenomena were not systematically quantified after 1984 in the German routine fish disease programmes. Furthermore these studies were carried out in offshore areas where this disease was relatively infrequent. During a cruise in January 1991 an area in front of the Humber estuary was studied and there striking abnormalities of fins of dab (*Limanda limanda*) were found in high prevalences.

RESULTS

A schematic description of the deviations of the dorsal fin of dab (*Limanda limanda*) is given in figure 1. 1c gives an example for a severe stage of fin rot. In extreme cases fin rays especially in the frontal areas of the dorsal and anal fin were strongly bent and shortened by two thirds of its original length. Fin rays of extremely impacted anal and dorsal fins were characterized by indications of ulosis. The highest prevalences of dab afflicted with different stages of fin rot were found on fish from the Humber estuary station (23.3 %). On other stations rates of affliction were between 0 and 1 %. In figure 2 a length distribution of 1,420 dab studied in the outer Humber estuary is given. Furthermore figure 2 contains the percentage of fish afflicted in the different length groups showing that the phenomenon of fin rot was especially found on longer, respectively older specimen.

Prevalences of lymphocystis, epidermal papilloma and ulcerations of dab from this station were low as compared with fish from other regions.

CAUSES

It seems unlikely that the phenomena on the fins of dab in the Humber estuary are caused by net injuries since prevalences of dab with healed net injuries in these areas were not elevated. The bottom of the stations in the Humber estuary is characterized by coarse sediments. This was also found at other stations where the prevalences of fin rot on dab were much lower. It was striking that dab from the outer Humber estuary were also characterized by elevated levels of anomalies in the liver. Prevalences were comparable to those found in fish in the German Bight and on the Doggerbank (Lang, unpublished material). To collect further information on the prevalences of this disease phenomenon and its possible causes stations in the outer Humber estuary will in the future be regularly studied.

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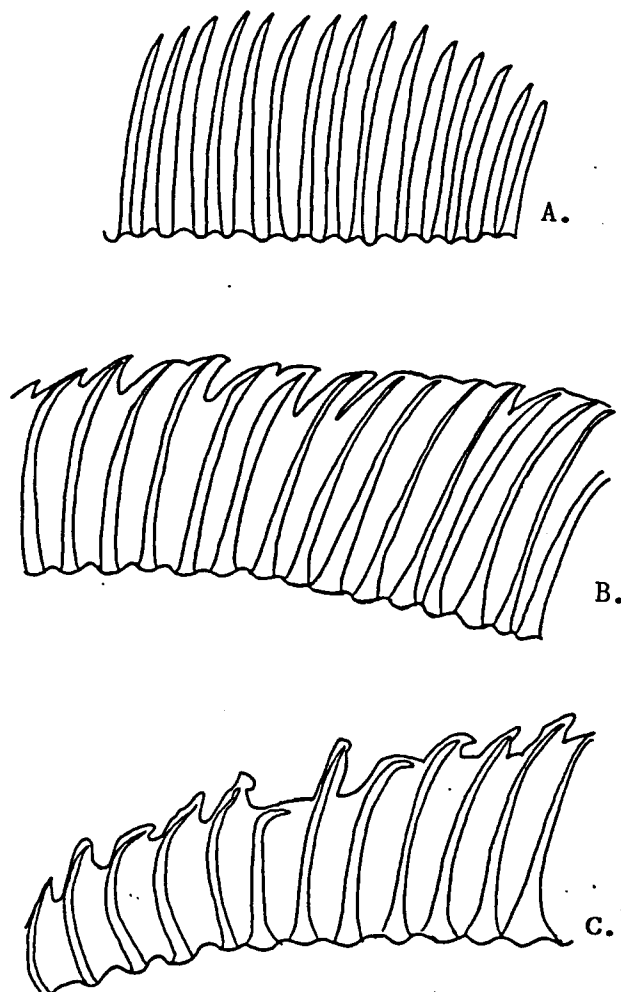


Figure 1. Dorsal fin of dab (*Limanda limanda*), schematic.
A. healthy; B. medium stage of fin rot; C. severe stage of fin rot.

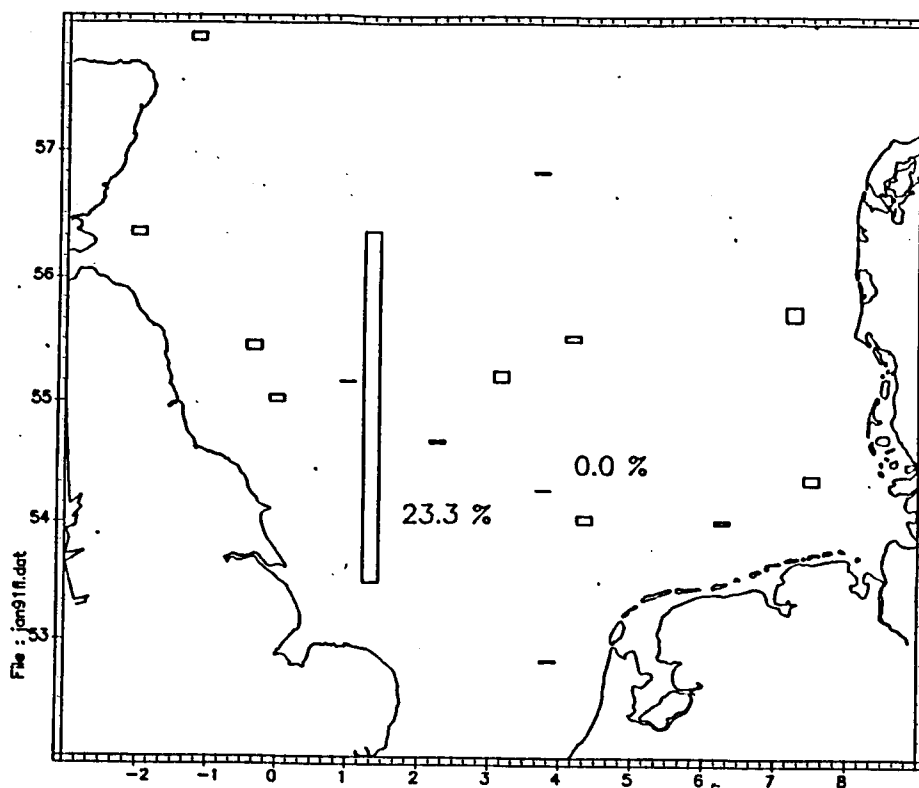


Figure 2. Dab (*Limanda limanda*), percentage of fish afflicted with fin rot, January 1991.

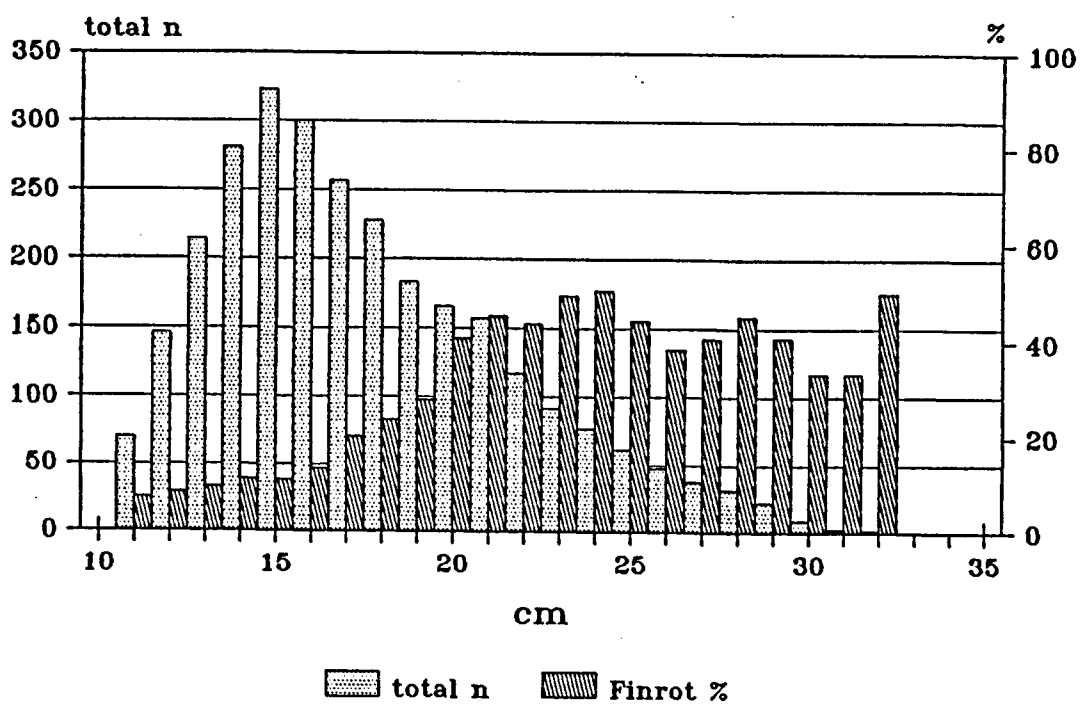


Figure 3. Length distribution of dab (*Limanda limanda*) in front of the Humber estuary, $n = 1,420$, and percentage of affliction with fin rot per length group.