Short Communication

The viability of the free living larvae of *Anguillicola crassus*

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Summary

The viability of *Anguillicola crassus* larvae was studied under various environmental conditions. High temperatures and high salt concentrations considerably shorten the lifetime of the larvae. This is possibly one of the reasons why infection does not occur as massively in marine biotopes as it usually does in fresh water.

Zusammenfassung

Die Lebensfähigkeit von freilebenden Anguillicola cram1s-Laruen

Es wurde die Lebensfähigkeit von *Anguillicola* crassus-Larven untcr dem EinfluB verschiedener NaCI· Konzentrationen und Temperaturen untersucht. Die Ergebnisse geben eine Erklärung dafür, daB im Meerwasser die lnfektion nicht so stark auftritt wie im SüBwasser.

Résumé

La longévité des larues d'Anguillico/, crassus

Une expérimentation a été menée sur la viabilüé des larves d'Anguillicola crassus, dans differentes conditions extemes. Il semble que des salinités hautes ainsi que tics tcmpératures élevées, réduissent la longévité des larves.

Les résultats de cette expérimentation pourraient expliquer pourquoi c.:tte infec!ion n'a pas atteint les biotopes marins aus.si massivement que ceux d'eaux douces.

In recent years, a parasitic nematode, *Anguillicoia crasms* (first noticed in Japanese eels by KuwAHARA, N11M1 & ITAGAKI, 1974), has been found in the swim bladder of the F.uropean cel, *Anguilla anguilla* L. (BELPAIRE et al. 1987; DEKKER and VAN W11LIGF.N 1989; DUPONT and PETIERS 1988; KOIE 1987; NEUMANN 1985; TATASCllEWSKI et al. 1988). VAN BANNING et al. (1986) indicated that eels Living in seawater do not appear to become infected by this parasite. Experiments were therefore carried out to investigate the viability of *A. crassus* larvae with varying salt concentrations and temperatures.

Anguillicola larvae were recovered from infected eels in Belgium during the summer of 1986. Before the start of the experiment, the larvae wcre kcpt at 21 °C for ten days in tap water. To test the influcnce of temperature and salt concentrations on their viability, the larvae were put in petri dishes and tested in four different salt concentrations and at four different temperatures. For each experimenta1 condition, 100 larvae were observed at different time intervals. The water temperature was reestablished at 21 °C before using a counting chamber to determine the percentage of mortality. Larvae were considered dead if thcy remained stretched and immobile when touched. Sca salt (Wimex hw sea salt + bio-clements) and tap water were used for preparation of the salt solutions.

The longevity of larvae in fresh water to which 0 to 5% seasalt was adde<l, was tested at

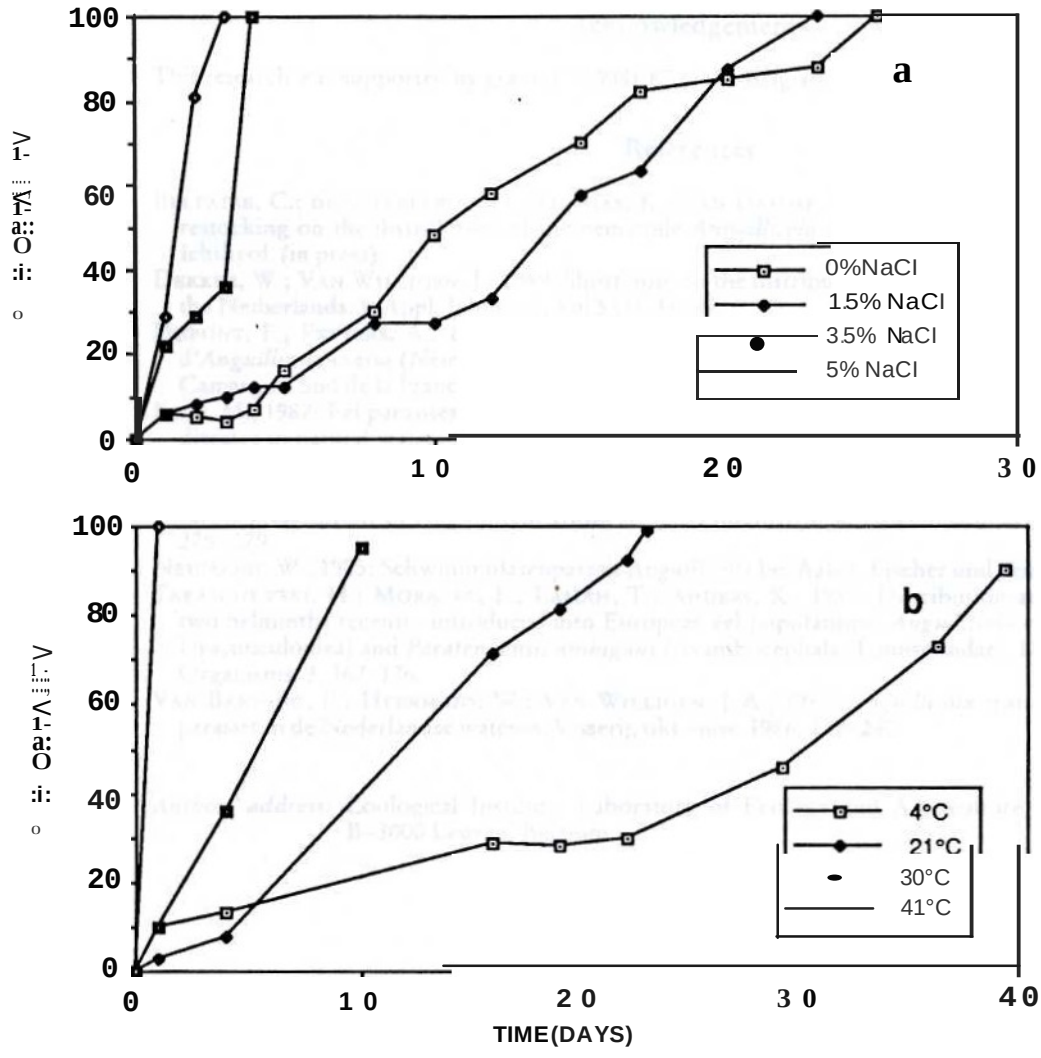

Fig. 1. Percentage of mortality in free-living *Ang11illicola crassus:* (a) = in four different salt concentrations; (b) = with four different temperatures.

21°C (Fig. 1). In fresh water and brackish water (l.5 %) *A. crassus* larvae lived more than three weeks. In seawater or hypersaline cond itions all died within 3 to 4 days.

The experiment on the influencc of the tempcraturc on larvae was done using fresh water. At 41 °C, the highest temperature tested, all larvae dicd within one day. At 4 °C, the larvae survived longer than one month .According to these results (Fig. 2), the temperature has an important influence on the survival time of the larvae.

It seems that the higher the tcmperature and salt concentration, the shorter the lifetime of the free-living larvae. Lower temperat ures result in red uced activity and decreased metabolic rates, wbich probably lead to a Jonger survival time.

The infection levels of eels caught in seawater remain very low, in contrast to eels caught in freshwater.One possible reason is the shorter survival time of the larvae in seawater which reduces the chances of each larva to be consumed by the intermed iate host (small crustacea). Additionally, no marine crustacea are known to function as first intermediate hosts for

A. crassus.

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