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## The First Record of *Epistylis niagarae* on *Astacus leptodactylus* in a Crayfish Rearing Unit, Cip

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**Abstract:** In this study, the presence of the ectocommensal *Epistylis niagarae* on the carapace, abdomen, walking legs, uropod, telson, antennae and antennulae of crayfish was observed.

**Key Words:** *Astacus leptodactylus*, *Epistylis niagarae*, ectocommensal.

### Cip Kerevit Yetiştirme Ünitesinde Bulunan *Astacus leptodactylus*'un Üzerinde *Epistylis niagarae*'nin İlk Olarak Bulunuşu

**Özet:** Bu çalışmada, kerevitin karapaks, abdomen, yürüme bacakları, uropod, telson ve antenleri üzerinde ektokommensal *Epistylis niagarae*'nin bulunuşu gözlemlendi.

**Anahtar Sözcükler:** *Astacus leptodactylus*, *Epistylis niagarae*, ortak yaşam.

#### Introduction

A number of ectocommensal protozoans including *Epistylis*, *Cothurnia*, *Acineta*, *Zoothamnium* and *Lagenophrys* have been observed on crayfish (1). For example, the presence of *Epistylis* was observed on *Procambarus simulans* by Lahser (2), on *Cherax tenuimanus* by Herbert (3) and Villarreal and Hutchings (4), on *Cherax quadricarinatus* by Herbert (3), on *Orconectes rusticus* by Brown *et al.* (5), on *Astacus astacus* by Schmahl *et al.* (6), on *Procambarus clarkii* by Vogelbein and Thune (7), and on *Astacus fluvialitis* by Sprague and Couch (8).

However, apart from this study, no report has been published on the occurrence of *Epistylis* on *Astacus leptodactylus*. Therefore, this study focused on the presence of *Epistylis* on the native crayfish species of Turkey, *A. leptodactylus*.

#### Observations

For the identification of *Epistylis niagarae*, *Parasites of North American Freshwater Fishes* by Hoffman (9), *Protozoology* by Kudo (10) and *Freshwater Biology* by Edmondson (11) were used.

*Epistylis niagarae* was observed on 176 crayfish (out of 218) in two crayfish rearing tanks in August and September 1997 when water temperature was varied

from 19–23 °C. *Epistylis niagarae* was observed on the carapace, abdomen, walking legs, uropod, telson, antennae and antennulae of the crayfish. The abundance of *E. Niagarae* varied with the moult stage of crayfish. *Epistylis* were less abundant on newly moulted crayfish. In addition, *Epistylis* was attached to the less mobile parts of the crayfish and was frequently attached to the uropod and telson.

Figure 1 shows *E. niagarae* on the carapace and abdomen of *A. leptodactylus* and Figure 2 shows the microscopic view of *E. Niagarae* extracted from the carapace of *A. leptodactylus*.

#### Discussion

*Epistylis* are considered peritrichous ciliated protozoans. They attach to the exoskeleton and gills of crustaceans, and feed primarily on bacterial cells associated with eutrophic ponds (5).

In a study on the ultrastructural features of *Epistylis* attached to the gills of the red swamp crayfish, *Procambarus clarkii*, it was observed that *Epistylis* forms did not damage the gill epicuticle of crayfish (7). This study also supports Vogelbein and Thune's study, because no dead crayfish were observed in the tanks due to the presence of *Epistylis* on the crayfish.

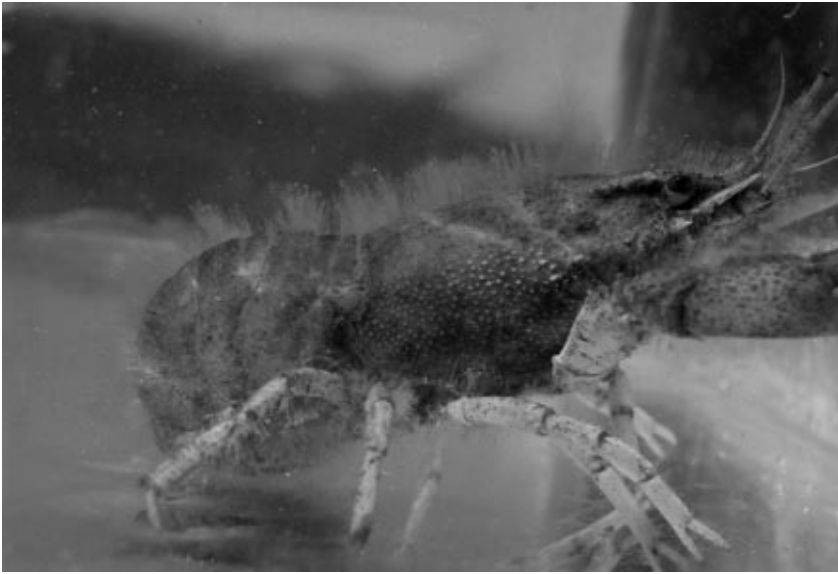


Figure 1. Shows *E. niagarae* on the carapace and abdomen of *A. leptodactylus*.

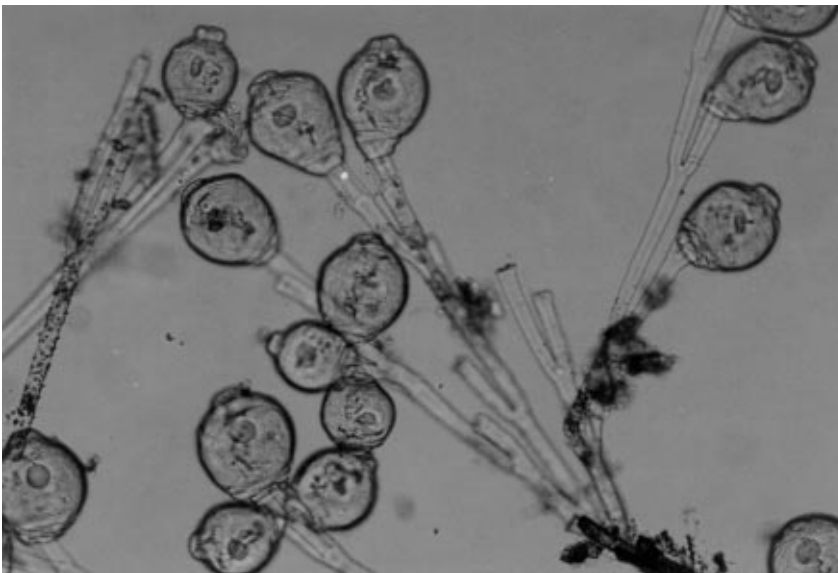


Figure 2. Shows the microscobic view of *E. niagarae* extracted from the carapace of *A. leptodactylus*.

Therefore, it can be concluded that although *Epistylis* do not have harmful effects on the respiration of crayfish,

they can have an adverse effect on their marketability.

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