

10 ECOLOGICAL STUDY ON THE GILL PARASITES OF *SIGANUS SUTOR* FROM THE INDIAN OCEAN. H. Coene, A. Geets and F. Ollevier - University of Leuven (KUL).

A preliminary qualitative study on the gill parasite fauna has been carried out. It showed that six species of gill parasites occur on *Siganus sutor* of the Kenyan coastal area : the monogeneans *Pseudohaliotrema* sp., *Tetrancistrum sigani* and *Microcotyle mouwoi*, Copepoda *Hatschekia* sp. and Caligidae and the Isopod *Gnathia* sp.

The microhabitat selection of the parasites within the host individuals has been investigated through their distribution on the gill arches, sectors and filaments. This study shows that the choice of microhabitat is species specific. Each species has its own specific distribution pattern on the gill arches of the host. Furthermore, it seems that the distribution on a gill arch is not at random. The monogeneans show a clear aggregation per filament. The results have been compared with the different hypotheses put forward in literature on microhabitat selection and niche restriction. The nature of the distribution of parasites within the host population has been questioned. Prevalence, mean intensity and abundance of the metapopulation of gill parasites have been compared between two adult populations of siganids and between an adult and juvenile subpopulation. Similarity in prevalence and mean intensity of infection with gill parasites was shown for the two adult siganid-populations. The comparison between the adult and juvenile siganids concerning their parasite fauna has drawn the attention on the dynamical characteristics of the parasite-host system. Here, distinct differences in prevalence and mean intensity were observed.

The frequency distribution of the parasite populations was compared with mathematical distribution models. Most parasites showed an aggregated distribution which was best described by the negative binomial model.

11 EFFECT OF VARIOUS ENVIRONMENTAL CALCIUM LEVELS ON THE UPTAKE OF COBALT BY THE COMMON CARP, *CYPRINUS CARPIO*. S. Comhaire, R. Blust, L. Van Ginneken, F. D'Haeseleer and O.L.J. Vanderborgh - University of Antwerp (RUCA).

The acclimation and exposure effect of various external calcium levels on cobalt uptake by the common carp, *Cyprinus carpio*, was studied in chemically defined freshwater. For this purpose fish (2-6 g) were acclimated during a 16 day period to different external calcium concentrations ranging from 0.1 to 10 mM. Cobalt uptake experiments were performed with fish exposed in water with the same range of

environmental calcium levels. The acclimation and the uptake experiments were conducted at a temperature of 25°C and a pH of 8.00. Tracers of cobalt (^{57}Co) and calcium (^{45}Ca) were used to study the uptake of both metals from the testwater during a 3 hour exposure of the fish. Cobalt uptake by whole fish, gills and blood decreases with increasing environmental calcium concentrations in both the acclimation and the exposure water. A positive correlation between the uptake of cobalt and calcium tracers was found. However, if we compare the total uptake of cobalt with the total uptake of calcium, no relation was found between the uptake of both elements. Although there is a clear effect of environmental calcium on the cobalt uptake, the nature of this interaction remains to be elucidated.

12 ULTRASTRUCTURAL AND CYTOCHEMICAL STUDY OF THE TERGITE EPICUTICLE OF *GLOMERIS MARGINATA* (VILLERS) (MYRIAPODA, DIPLOPODA). *Ph. Compère, A. Ansenne, S. Defize and G. Goffinet* - University of Liège (ULg).

From an adaptive standpoint, the differentiation of cuticular surface lipid layers reducing water loss is regarded as one of the most important new features in the epicuticle of arthropods that colonised terrestrial habitats. In this respect, diplopods appear as a very original and interesting group to study, since they live in the same wet microhabitats as terrestrial isopod crustaceans and possess a mineralised cuticle as is the rule in crustaceans but are phylogenetically close to insects. The purpose of this study was to determine the fine structure and the chemical nature of the epicuticle layers in the tergites of the diplopod *Glomeris marginata* with the use of cytochemical methods for demonstration of chitin, proteins and lipids. The results combined with the previous ultrastructural observations (1) lead to the conclusion that the cuticle includes two functionally different parts: the upper part is involved in the permeability of the cuticle whilst the lower plays an essentially mechanical role. The upper part includes three surface epicuticular layers probably homologous to those described in insects: the proteinaceous cement layer, the wax layer, and the cuticulin layer. The latter seems to consist of a median leaflet of stabilised lipid polymers sandwiched between two protein leaflets. It is assumed to be a primitive, general feature of the arthropod cuticle, having been identified as the main waterproofing barrier in the cuticle of marine decapod crustaceans (2). The layers playing a mechanical role are the inner epicuticle and the mineralised procuticle. The inner epicuticle consists of a lipoprotein matrix surrounding embedded rod-shaped protein elements and chitin-protein fibres probably of procuticular origin. Structurally and functionally, it can be regarded as a structure