4 SEARCH FOR HOMEOSTASIS THROUGH TIME BUDGETING IN *BARBUS BARBUS* (L.).

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Although fishes may buffer the natural fluctuations of water temperature through various mechanisms, behavioural thermoregulation may undoubtly be regarded as the basic adaptive response to short term environmental changes. Radio telemetry (40 MHz activity circuit transmitters) was used to define how *Barbus barbus* (Pisces, Cyprinidae) apportions its time under various thermal conditions throughout the annual cycle. The activities of 21 telemetered fishes (23-53 cm FL) were studied over 24 h cycles (N = 37) and partial cycles (diurnal or nocturnal, N = 80) in the River Ourthe (Southern Belgium, thermal range : 0-25 °C). The daily activity budgets range between 0 and 720 min over the annual cycle and are significantly dependent on water temperature (polynomial regression, R = 0.83, 36 DF). During the autumnal thermal transition (9-10 °C), the typical bimodal crepuscular rhythm pattern observed in summer (1) turns to a trimodal pattern with the emergence of a diurnal phase. The auroral then crepuscular and finally diurnal activity periods progressively vanish as water temperature decreases till the thermal limit for activity (4.0-4.5 °C), when barbels enter a dormancy period. An opposite progressive shift is observed during the spring thermal transition. Although the crepuscular rhythm pattern is consistent throughout summer, water temperature modulates significantly ($p < 0.05$) the precise timing and respective duration of crepuscular and auroral activities. These results clearly show that the activity budgets, rhythms and timings of *B. barbus* are modulated by water temperature and suggest a form of homeostasis through time budgeting. The progressive activity shifts demonstrated in *B. barbus* contrast with the sharp transitions emphasized in Arctic environments (2) and are discussed within the context of homeostasis and adaptation, in parallel with the feeding and diet plasticity in the species.

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5 HORMONAL INDUCTION OF THE PHOSPHORYLATION OF THE GLYCOGEN SYNTHASE ISOLATED FROM *XENOPUS LAEVIS* (*DAUDIN*) OOCYTES.

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The oocyte of *Xenopus laevis* is a unicellular structure whose fecondation and segmentation take place in the outer medium. Therefore it accumulates reserves during its intraovarian development, among these

glycogen. We were interested in the molecular mechanisms leading to the regulation of its synthesis and degradation. In this framework, we focused our attention on the regulation of glycogen synthase, the main enzyme implicated in glycogen biosynthesis. To begin with, we purified this enzyme 1,500 fold, using high speed centrifugation and two types of chromatography (1): an ion-exchange (DEAE-Cellulose) chromatography and an affinity chromatography for glucose-6-phosphate, a potent stimulator of glycogen synthase. After electrophoresis and silver staining, the estimated molecular weight of the subunit of the purified enzyme is 85 kD.

Our second step was to investigate how the process of phosphorylation-dephosphorylation controls glycogen synthase activity. First we showed that the enzyme is inhibited by cAMP-dependent phosphorylation and can be found as a phosphoenzyme in an autoradiographic pattern. In addition, experiments making use of thin layer chromatography are currently in progress to demonstrate that the phosphorylation sites are located on serine residues. Finally, we studied the hormonal induction of glycogenosynthesis during the oogenesis of *Xenopus laevis*. First we demonstrated that insulin stimulates both glucose transport across the oocyte membrane and its incorporation into glycogen (as already observed by Hainaut *et al.*(2). Moreover, following insulin treatment, glycogen synthase is fully converted into its active form, while the phosphorylation rates are largely reduced, particularly among the proteins associated with a glycogen-rich preparation. These results confirm the previous data showing that the effect of insulin leads to a drastic decrease in cAMP levels via the inhibition of adenylate cyclase and the activation of membrane-bound phosphodiesterases.

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6 *SACCOSTREA CUCULLATA*(VON BORN, 1778) : FOOD AVAILABILITY IN A MANGROVE CREEK (GAZI, KENYA).

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In this study is checked whether morphological differences of the mangrove oyster *Saccostrea cucullata* (von Born, 1778) can be explained by its food supply. In the first part the theoretical amount of food available for *Saccostrea cucullata* in Gazi (Kenya) is determined, in the form of zooplankton, phytoplankton, particulate organic matter (POC and chlorophyll a) and dissolved organic carbon (DOC). By means of ANOVA we showed that there are few significant differences in the