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.

(1) E. BARAS and B. CHERRY (1990). *Aquat. Liv. Resour.* 3:283-294.

(2) J. HEGGENES, O.M.W. Krog, O.R. LINDAS, J.G. DOKH and T. BREMMER (1993). *J. Anim. Ecol.* 62:295-308.

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