

**RHYTHMS IN THE BEHAVIOUR OF JUVENILE ANTARCTIC PLUNDERFISH  
*HARPAGIFER ANTARCTICUS* IN SEASONALLY DIFFERENT PHOTOPERIODS.**

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Seasonality in the photoperiod influences the behaviour of polar fish. Activity rhythms in young *Harpagifer antarcticus* (StL 4cm), was studied in tanks. Fish were collected in spring, in Admiralty Bay, King George Island, and adapted to laboratory conditions, in photoperiods simulating summer (22light/2dark), spring or autumn (12L/12D), and winter (24D), and in controlled temperature 0.5°C ( $\pm$  0.5°C), pH 7.0, and salinity 32 ppt. They were fed amphipods *ad libitum*. Swimming was significantly higher, showing one activity peak, during the light hours than during the dark period of 12L/12D. When kept in constant darkness, three periods of activity were observed. In 22L/2D swimming during the light hours was slightly higher than during the dark period, the highest value being observed at the same time as in 12L/12D. The mean daily swimming values were the highest in 12L/12D, indicating that the cyclical switch from darkness to light and vice versa is an external biological clock activator of *H. antarcticus*. There was also an endogenous and not light-dependent rhythm, in fish maintained in constant darkness. When food was constantly present search for preys and feeding activity were coincident with activity peaks. However there was a hierarchy among fish in each group, the dominant ones feeding on 46% of the total of ingested amphipods, the second fish ingesting 27%, and the other fish feeding on the rest. The reaction times of *H. antarcticus* to the presence of prey also varied in the group, the dominant fish reacting after 2 min, the other fish feeding only after 40 min. In different days, different individuals were dominant. This rhythmical behaviour seems to be typical for Antarctic fish and a useful adaptation to the environmental conditions in different seasons of the year. Rhythms of activity also contribute to minimise competition for feeding when different species share the same food in the same habitat, as is the case of *H. antarcticus* and *Gobionotothen gibberifrons* juveniles and also facilitate the encounter of fish and prey in unfavourable light conditions, such as in the Antarctic winter.