

Environmental determinants of residence area selection by



A biotelemetry experiment was designed to determine whether the selection of a residence area by adult barbel *Barbus barbus* (Cyprinidae) was dependent on the availability of physical habitat features, on the presence of fish shoals and/or on the presence of specific partners. The experiment took place in 3.0 km stretch of the River Ourthe (Belgium), where the latter features had been characterised by habitat and electric fishing surveys (1 190 fish ≥ 15 cm, at 265 locations). Six barbel (34.8–49.5 cm) belonging to a single shoal of 34 fish were tagged with 40 MHz radio transmitters, transplanted in pairs at different distances (–1 km, –30 m, +1 km) from the capture site and tracked from 3 September to 7 October 1990. Fish showed variable mobility patterns and home range sizes (200–2 400 m). They selected 17 residence areas of which the cumulative frequency of occupation ranged from 0.1 to 79.5 day $\times$ fish. The comparison between the residence areas selected, habitat suitability and the location of fish shoals in the study area indicate that the presence of a shoal of at least 10 resident fish within a suitable habitat (normalised suitability index ≥ 1.0) is

necessary but not sufficient to guarantee its long term selection and occupation. Homing movements of transplanted fish were directed towards the activity area rather than to the residence area itself. The fish that did not home, selected residence areas in a part of the river with a higher availability of potential feeding areas. These elements are discussed within the context of habitat utilisation and foraging strategies by a gregarious species. It is suggested that resident fish of the same species may ease the exploitation of a non familiar environment by a naive fish, and that this may positively trade off the benefit provided by home site fidelity, depending on the availability of food resources.

Auteurs du document : Etienne Baras

Obtenir le document : EDP Sciences

Mots clés : telemetry, habitat selection, homing behaviour, shoaling, fish, télémétrie, habitat, comportement, espèce grégaire, poisson

Thème (issu du Text Mining) : FAUNE, MILIEU NATUREL

Date : 1997-07-15

Format : text/xml

Source : <https://doi.org/10.1051/alr:1997021>

Langue : Anglais

Télécharger les documents : <https://www.alr-journal.org/10.1051/alr:1997021/pdf>

Permalien : <https://www.documentation.eauetbiodiversite.fr/notice/environmental-determinants-of-residence-area-selection-by0>

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