

OVIDIO, M., BRUCY, C., PHILIPPART, J.C., BARAS, E. Relationship between habitat structure and the mobility of brown trout in a small stream. In Abstract book of the « 12th International Trout Stream Habitat Improvement Workshop », Waterville Valley, USA, September 2000.

Abstract

Habitat utilization studies have frequently overlooked the role of habitat structure on the mobility pattern of fish. From 1996 to 1998, 14 trout (266-428 mm FL) were radio-tracked during spring and summer in the Aisne stream (Belgian Ardennes). Their habitat was later quantified with respect to depth, substratum, water velocity at the surface of the water (V_s) and at 10 cm above the substratum (V_{10}), and their heterogeneity (i.e. coefficient of variation of each factor). Trout occupied seasonal home ranges from 9 to 327 m long, with depth, V_s and V_{10} ranging from 18 to 111 cm, from 7 to 80 cm s^{-1} and from 2 to 43 cm s^{-1} , respectively. They showed restricted mobility inside their home range since the mean net daily journeys never exceeded 60 m, and were less than 10 m for eight of 14 individuals. Differences between individual mobility patterns were partly accounted for by differences in the habitat structure of their home range, and essentially by the heterogeneity of surface water velocities (r^2 of 0.456 and 0.691 for home range and net daily journeys, respectively). Other habitat features, including mean depth, V_s or V_{10} were not correlated with trout's mobility, except for depth heterogeneity, which was negatively correlated to the probability of long range (> 15 or > 40 m) movements. These findings indicate that trout behavior is more influenced by the heterogeneity of habitat than by its average characteristics, and that habitat preferences of trout could hardly be characterized apart of their mobility, and vice versa.