

Fish assemblage composition in relation to environmental gradients in Portuguese reservoirs



Patterns in fish taxa composition were examined in Portuguese reservoirs to assess whether distinct types of assemblages exist. Furthermore, the environmental variables most tightly associated with assemblage-level patterns were identified. Classification of the fish taxa-by-reservoirs matrix revealed four major groups. Groups were separated by means of canonical correspondence analysis according to (by decreasing correlation with canonical axis): air temperature, annual rainfall, surface elevation, trophic state, mean depth and reservoir placement within the basin. In addition to these variables, stocking practices and predation likely contributed to assemblage composition. Assemblages in group A were distinguished by the permanent presence of largemouth bass (*Micropterus salmoides*) and the absence of trout (*Salmo trutta* and/or *Oncorhynchus mykiss*), nase (*Chondrostoma* sp.) and barbel (*Barbus* sp.). Group B assemblages invariably included bass, barbel and nase, while pumpkinseed (*Lepomis gibbosus*) was frequent and trout was extremely rare. Assemblages in group C were also characterised by nase and barbel, but in

contrast to group B, trout was frequent, whereas bass was rare and pumpkinseed was absent. Group D assemblages consisted exclusively of trout and chub (*Leuciscus* sp.). The relationships observed parallel patterns detected in natural lakes to a certain extent, despite the critical human influence and the probable instability of some of the patterns detected.

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