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Associations of fish with various types of littoral habitats in
reservoirs

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Annotation

The study investigated fish habitat association within littoral habitat of four Czech reservoirs. Three most common habitats within reservoir: beaches (former meadows), stump fields (former forest) and rubble slopes were chosen for the study. The patterns of fish biomass, abundance and species structure were analysed based on robust data obtained from gillnet sampling. Adult bream *Abramis brama*, white bream *Blicca bjoerkna* and roach *Rutilus rutilus* were associated with beaches and stump fields with gentle slope of the bank, whereas perch *Perca fluviatilis*, ruffe *Gymnocephalus cernuus*, asp *Leuciscus aspius* and pike *Esox lucius* were associated with rubble slopes. We demonstrated fish species are not distributed homogeneously in the littoral and that that most common species are associated with distinct habitats.

Declaration [in Czech]

Prohlašuji, že svoji rigorózní práci jsem vypracoval samostatně pouze s použitím pramenů a literatury uvedených v seznamu citované literatury.

Prohlašuji, že v souladu s § 47b zákona č. 111/1998 Sb. v platném znění souhlasím se zveřejněním své rigorózní práce, a to v úpravě vzniklé vypuštěním vyznačených částí archivovaných Přírodovědeckou fakultou elektronickou cestou ve veřejně přístupné části databáze STAG provozované Jihočeskou univerzitou v Českých Budějovicích na jejích internetových stránkách, a to se zachováním mého autorského práva k odevzdanému textu této kvalifikační práce. Souhlasím s tím, aby toutéž elektronickou cestou byly v souladu s uvedeným ustanovením zákona č. 111/1998 Sb. zveřejněny posudky školitele a oponentů práce i záznam o průběhu a výsledku obhajoby kvalifikační práce. Rovněž souhlasím s porovnáním textu mé kvalifikační práce s databází kvalifikačních prací Theses.cz provozovanou Národním registrem vysokoškolských kvalifikačních prací a systémem na odhalování plagiátů.

V Českých Budějovicích 21. srpna 2017

Mgr. Marek Šmejkal

Author agreement

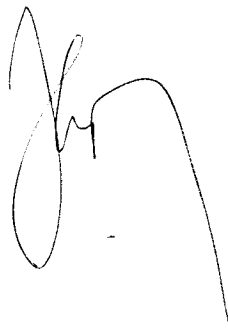
The thesis is based on the paper:

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I, the undersigned, declare that Marek Šmejkal had a major contribution to the article.

He participated at collection of samples in field, conducted the statistical analyses, contributed significantly to the interpretation of the results and wrote the first draft of the manuscript.

Prof. Jan Kubečka, Ph.D.

A handwritten signature in black ink, consisting of a large, stylized initial 'J' followed by a long, sweeping horizontal stroke that ends in a small upward hook.

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ABSTRACT

Fish associations with different types of littoral habitats were studied in four canyon-shaped reservoirs in the Czech Republic in years 2010 and 2011 by gillnets. Two to three habitats per reservoir—beaches (former meadows), stump fields (former forest) and rubble slopes—were defined and sampled along the longitudinal axis of reservoirs. Effects of reservoir, habitat and locality (position along longitudinal axis) on fish biomass, abundance and species structure were tested for juvenile and adult fish separately. Hierarchical analysis of variance revealed that habitats differed significantly in fish biomass and abundance. Redundancy analysis showed that analysed environmental variables had significant influence on fish community structure. Most variability in community structure was explained by reservoir and then by combination of habitat and slope steepness. Locality position had the smallest influence on community structure. For both adult and juvenile fish total abundance and biomass, the most inhabited habitat was beaches; rubble slopes were the least inhabited. Habitat associations differed among species. Among adults, bream *Abramis brama*, white bream *Blicca bjoerkna* and roach *Rutilus rutilus* were associated with beaches and stump fields, whereas perch *Perca fluviatilis*, ruffe *Gymnocephalus cernuus*, asp *Aspius aspius* and pike *Esox lucius* were associated with rubble slopes. Bream, white bream, bleak *Alburnus alburnus*, roach, ruffe and pikeperch *Sander lucioperca* were associated with beaches among juveniles, whereas the only juvenile associated with rubble slopes was perch. We showed that most common species are associated with distinct habitats and also that utilisation of various littoral habitats differs in general.

The thesis cannot be presented here in its full version due to copyright issues. The article has been published in journal Ecology of Freshwater Fish. The full thesis is also available at University of South Bohemia in České Budějovice, Faculty of Science.