

# 辮狀河川魚類分布之探討

## Investigation of Fish Distribution in the Braided River

國立成功大學水利及海洋工程學系

碩士	教授	碩士生
陳依婕	孫建平	林品言
I-Chieh Chen	Jian-Ping Suen	Pin-Yan Lin

### 摘要

辮狀河川具有高度空間異質性的水文與棲地條件，可為魚類提供移動通道與庇護空間。主流區段常扮演移動廊道與季節性避難所的角色，而湧泉流路則因其穩定水源與特殊的環境，提供重要的庇護與過渡棲地。本研究以烏溪流域為研究區域，整合 2001 年至 2005 年、2013 年及 2017 年至 2024 年間之魚類監測資料，探討主流、湧泉流路與農水圳路等不同棲地類型中的魚類群落結構與變異，了解水文條件變動與環境因子如何影響魚類分布與移動行為，並分析特定魚種對環境擾動的反應特性。研究結果指出，巴氏銀魴與埔里中華爬岩鰍對水位與連通性變化具敏感性，顯示其具有隨環境條件調整棲地選擇的特性；陳氏鰍鮓之分布擴張可能與棲地條件變動或競爭壓力減緩有關；何氏棘鮰與吳郭魚在洪水與乾旱交替的情境下，其族群分布及數量亦出現明顯變動，顯示擾動事件對族群動態具有影響。綜合結果顯示，烏溪流域中不同水道類型提供多樣化微棲地環境，湧泉與主流流路於不同時期扮演庇護、移動與繁殖的重要角色。建議未來河川治理與棲地管理應考量水文連通性、棲地結構異質性與長期監測資料，以支持魚類多樣性與維持生態系統韌性。

關鍵詞：辮狀河川、主流、湧泉、魚類群落組成、魚類移動

### Abstract

Braided rivers exhibit highly heterogeneous hydrological and habitat conditions across space, providing fish with movement corridors and refuges. The mainstream section often functions as a movement corridor and seasonal refuge, while spring-fed channels offer critical shelter and transitional habitats due to their stable water sources and unique environmental features. This study focused on the Wu River Basin, integrating fish monitoring data collected from 2001 to 2005, 2013, and 2017 to 2024. It examined the structure and variation of fish communities across different habitat types, including the mainstream, spring-fed channels, and agricultural canals—to understand how changes in hydrological conditions and environmental factors influence fish distribution and migration behaviors. Additionally, the study analyzed

how specific fish species respond to environmental disturbances. The results revealed that the *Squalidus banarescui* and *Sinogastromyzon puliensis* were sensitive to fluctuations in water level and hydrological connectivity, indicating their capacity to adjust habitat selection in response to environmental changes. The expanded distribution of *Gobiobotia cheni* may be associated with altered habitat conditions or reduced competition. Meanwhile, the population distribution and abundance of *Spinibarbus hollandi* and *Oreochromis* spp. changed significantly under alternating flood and drought scenarios, suggesting that disturbance events substantially affect population dynamics. Overall, the Wuxi watershed provides diverse microhabitat environments. Spring-fed and mainstream channels play essential roles in fish sheltering, migration, and reproduction at different times. It is recommended that future river and habitat management efforts consider hydrological connectivity, habitat structural heterogeneity, and long-term monitoring data to promote fish biodiversity and maintain ecosystem resilience.

Keywords : Braided River, Mainstream, Spring, Fish Community Composition, Fish Movement