

從沖積河川學談生態工法在河道棲地復育之應用

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摘 要 河川復育已然是一股世界性的澎湃潮流，台灣仿效歐美日各國大力推廣生態工法之際，必須體認生態工法只是河川復育的一個環節，須有體制及技術的支援，及流域水質、水文、砂石機制等前提條件的配合。各生態先進國推動河川復育的過程中都曾經歷一試誤學習的階段，而其中最重要的一項教訓為：任何工法都無法直接建造河道內棲地，祇能期待在自然機制尚存的情況下，誘發潭瀨等棲地的形成。運用生態工法實行河道內棲地復育的關鍵不在表面的自然擬態，也不需與水泥誓不兩立地全面使用自然材料，而在於對水流，砂石，動植物行為等自然機制的掌握。本文旨在闡示生態工法之施行須從沖積河川學出發的重要性，首先回顧沖積河川學中關於河道造形的重要法則，並順應這些法則提出三項河道復育的規劃設計原則：「設定河道骨架與彈性空間」，「依洪水規模分層規劃」，及「創造潭瀨及多孔隙水岸空間」。其次依循這些原則，以烏溪下游 14-23 斷面區間為例，探討運用生態工法行河道棲地復育的規劃設計手法及台灣河川環境中現存的限制。

關鍵詞：河川復育、沖積河川學、棲地、生態工法。

Start from Fluvial Geomorphology: Applying Bio-Engineering Structures to In-Stream Habitat Restoration

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ABSTRACT Stream restoration has evolved into a surging wave worldwide. While we strive to emulate the environmentally advanced countries in promoting bio-engineering structures in Taiwan, we need to recognize that such structures are merely one aspect of stream restoration. It requires institutional and technical support as well as the prerequisites of watershed processes to achieve any real effects. After tracing a path of trial-and-error, many pioneer nations have learned that in-stream habitats can never be built directly; instead, they can only be formed by the stream itself where the fluvial processes remain. The essence of in-stream habitat restoration lies on neither the camouflage of natural appearance nor the total abnegation of concrete for natural materials, but the skilful command to the behaviors of water, sediment, vegetation and wildlife. This paper reveals the necessity to take fluvial geomorphology as the start-point for in-stream habitat restoration using bio-engineering techniques. Using

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Wu River sections 14-23 as an example, the paper also explores strategies to restore in-stream habitat with structural means and discusses its current limitations.

Key Words: stream restoration, fluvial geomorphology, habitat, bio-engineering structures.