

## 木質殘材對局部河床影響之調查及渠槽試驗研究

葉昭憲<sup>[1]</sup>

**摘 要** 在夏天颱風暴雨侵襲後，出現於台灣許多河川之木質殘材，因其分布範圍極廣且因法律限制或處理不易，進而成為局部河道變化影響因素之一。本研究首先針對相關研究進行文獻回顧，其次透過大甲溪上游七家灣溪支流高山溪之現場調查以瞭解出現於河川之木質殘材類型，最後以室內渠槽試驗模擬單一倒入型木質殘材在不同流況、與水流方向夾角及渠床坡度條件狀況下，河道表面流速因而產生變化之狀況。由多次現場調查發現，單一木質殘材之順流停滯類型比例最高（約 62%），其次為導流堆積（約 20%），最少的類型為殘材壩（約 1%）。試驗結果顯示，當流量變大後，木質殘材促使河道流速明顯增加的空間比例超過一半；在不同坡度下，木質殘材並沒有對河道表面流速變化之空間比例產生顯著影響；當木質殘材朝向上游 45 度會造成約七成空間的河道表面流速明顯增加。但殘材周圍局部流速變化之空間比例，則與全觀測區流速變化之空間比率大致相同。

**關鍵詞**：木質殘材、現場調查、渠槽試驗、流速變化。

## Field Investigation and Experimental Study of the Effects of Large Woody Debris on Local Channel Morphology

Chao-Hsien Yeh<sup>[1]</sup>

**ABSTRACT** After the typhoons and storms of summers, large amounts of woody debris caused by falling plants are found in the upstream channels of Taiwan's rivers. With regulation restriction and uneasy access to these upstream channels and these falling plants are potential causes for local scouring at channel beds. For a better understanding of these materials, this study reviewed three major types of research related to woody debris and defined the types of large woody debris through field investigation. Based on six surveys conducted from June of 2005 to December of 2006, about 62% of the woody debris was classified as single flow parallel woody debris, 20% of the woody debris was classified as flow parallel jam, while only 1% of the woody debris was identified as debris dam. Furthermore, flume experiments were applied to verify the influences of flow discharge, the angle of single woody debris at the flow, and flume slope on the spatial distribution and ratio of the changes in flow velocity. The experimental results revealed that single falling woody debris with one end in the channel bed caused more than 50% of the observed areas to have apparently increasing flow velocity along with increasing flow discharge. For different flume slopes, there is no significant difference among the spatial ratios of changes in flow velocity under the same flow discharge. For the single falling woody debris pointed upstream at 45 degree, about 70% of the observed areas have

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[1] 國立中興大學水土保持系副教授逢甲大學水利工程與資源保育學系副教授（通訊作者）  
Associate Professor, Department of Water Resources Engineering and Conservation, Feng Chia University, Taichung 407, Taiwan, R.O.C. (Corresponding Author)  
E-mail: chyeh@fcu.edu.tw

increasing flow velocity. For the local area around the woody debris, the spatial ratios of changes in flow velocity are very close to those from whole observed area.

**Key Words:** large woody debris, field survey, flume experiments, changes in flow velocity.