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Emerging patterns of riparian vegetation in ephemeral channels: implications for channel stabilisation

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Characteristic of ephemeral channels is often a degree of complexity and irregularity in morphology coupled with abrupt changes in patterns of riparian vegetation along their course. This is in contrast to perennial channels, which show strong downstream trends in morphology and a regularity in the distribution of vegetation across the valley floor. Research into the nature of ephemeral channels, their dynamics and in particular the interactions between fluvial processes and vegetation has to date been fairly limited. In areas of Mediterranean Europe suffering problems of land degradation and erosion, the stabilising effect that vegetation has on the channel, its ability to trap sediments are presently being studied as part of the European Commission project RECONDES. The ephemeral channels of SE Spain are characterised by marked variations in the distribution and patterning of riparian vegetation. These patterns are the result of a range of factors that influence the establishment, growth and survival of plants. Detailed field measurements and mapping of these channels has provided an insight into the conditions that are necessary for the different plants and plant assemblages. The patterning in vegetation distribution and the factors controlling these patterns are explained for Rambla Torrealvilla and Cárcavo. Vegetation through its resistance properties and influence on flow and sedimentation is recognised for its potential to decrease the connectivity of sediment transfers. Through an understanding of conditions associated with each of the different plants assemblages, and their effects on flow hydraulics and sedimentation, the utility of vegetation treatments along the channels as method for protection against further degradation and will be explored. The effect of various plant configurations will be investigated through scenario modelling. Those plant species/assemblages and configurations most efficient in trapping sediments and preventing erosion will be identified. The knowledge generated through this project will contribute to the production of guidelines on the use of vegetation for

preventing erosion and degradation.