William L. Graf

Fluvial Processes in Dryland Rivers

With 143 Figures

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Professor Dr. WILLIAM L. GRAF
Department of Geography
Arizona State University
Tempe, AZ 85287, USA

Cartography by
SCOTT A. LECCE

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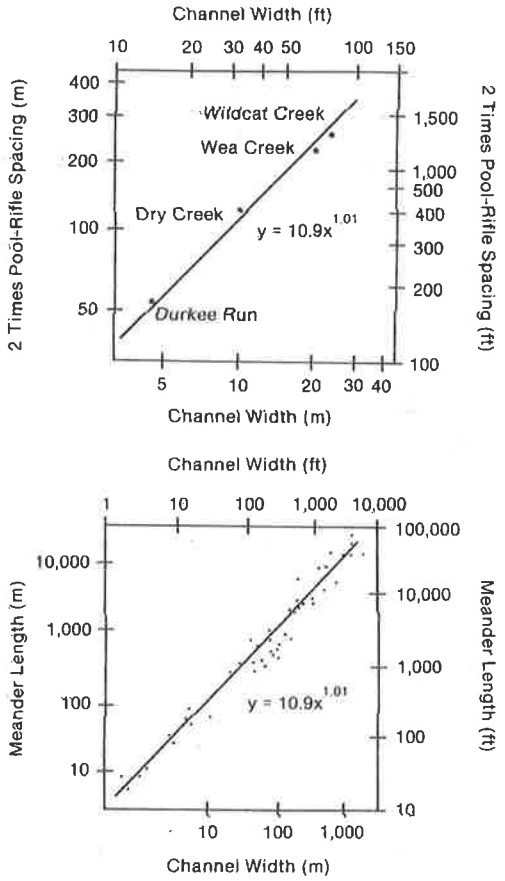

Fig. 5.14. Data showing the similarity between spacing of pool-riffle sequences and meanders showing close agreement. (After Keller and Melhorn 1973)

channels flow is inconsistent, with zones of higher and lower velocity. Yalin (1971) proposed that roller eddies partially explain this zonation, with the eddies spaced from each other at a distance of about 2 π times the mean channel width.

Straight channels often develop pool and riffle sequences, where reaches with relatively shallow gradients and finer particles separate reaches with relatively steep gradients and coarser particles. In the East Fork River, Wyoming, for example, Andrews (1979) found pool and riffle sequences to be relatively stationary features of the stream. During low flows, velocity and shear stress are greater over the riffles, but during high discharges that form the channel, this arrangement is reversed and the pools become locations of scour and subsequent refilling (Keller 1971). In many rivers the spacing of pools and riffles is about five to seven times the mean channel width though in Dry Creek, an intermittent California stream, Keller and Melhorn (1973) found that pools varied greatly in size (Fig. 5.14). This particular spacing agrees well with Yalin's (1971) expectations that