Supplementary Information for "Six years of fluvial response to a large dam removal on the Carmel River, California, USA"

This supplement contains two figures (S1, S2) and one table S1) to accompany the manuscript.

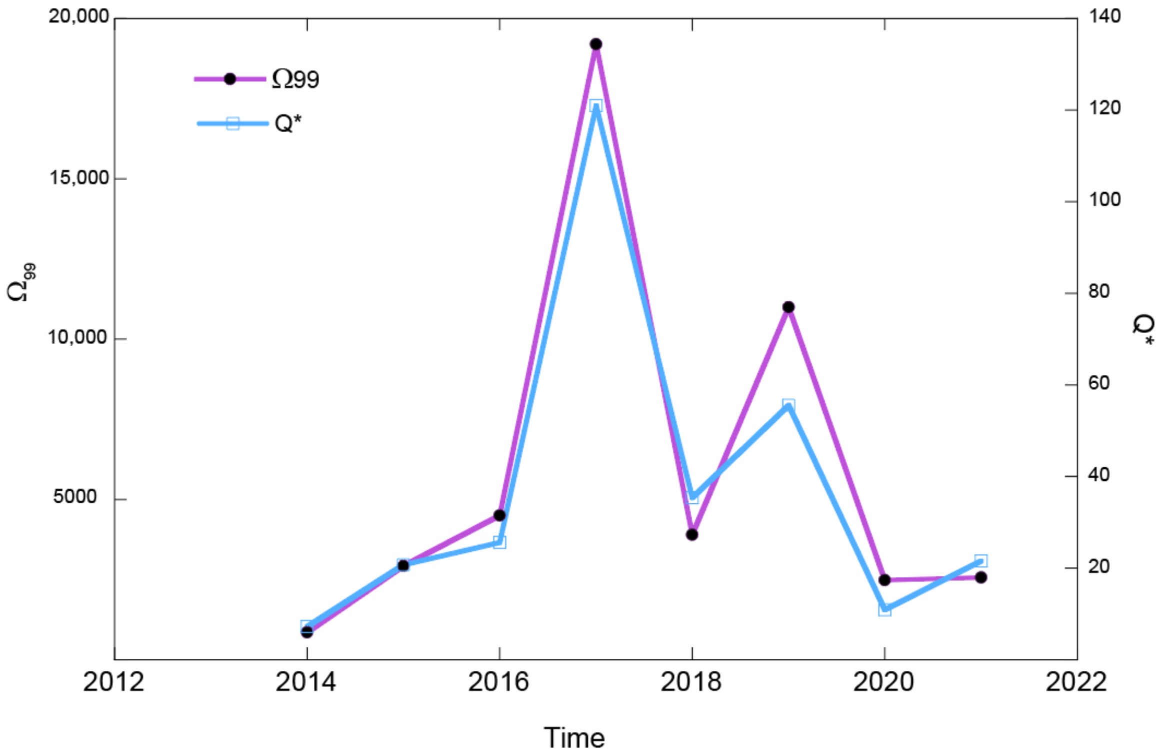

Figure S1. Time-series plot of the metrics *Q**, the ratio of maximum flow in each interval between topographic surveys to the mean annual Carmel River flow at USGS gaging station 11143200 (2.55 m^3/s), and Ω_{99}, the ratio of cumulative stream power for the 99^{th} percentile of discharge in each inter-survey interval to the stream power associated with mean annual flow (127 W/m). *Q** and Ω_{99} are both dimensionless. These metrics provide the values representing flow that were used to normalize bed-elevation change when deriving the plots in Figures 7B and C.

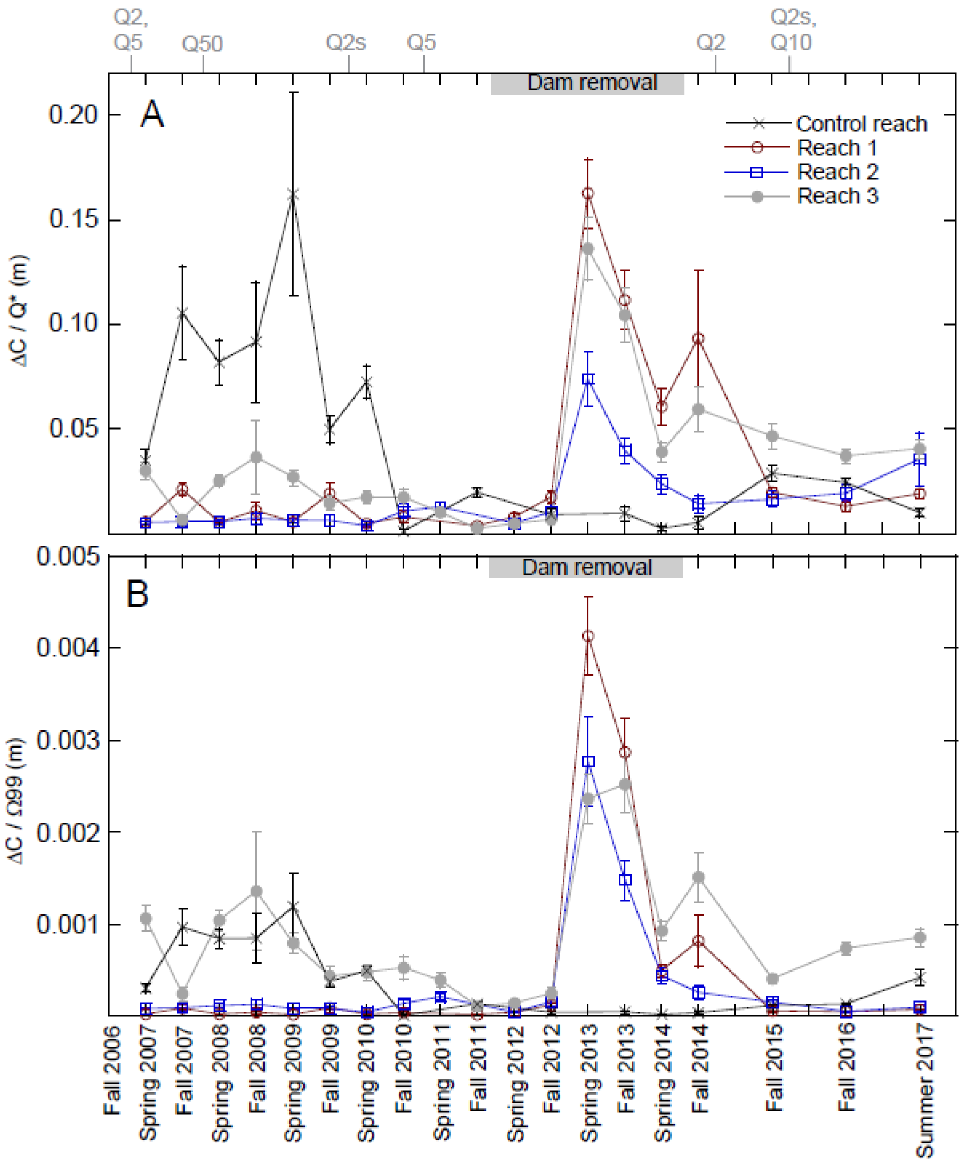

Figure S2. Reach-averaged bed-elevation changes in the Elwha River, Washington, normalized against flow metrics using the same procedures as in Figure 7. (A) Bed-elevation change between topographic surveys (*ΔC* values) normalized by *Q**, the ratio of maximum flow in each inter-survey interval to the mean annual Elwha River flow. (B) *ΔC* normalized by Ω_{99}, the ratio of cumulative stream power for the 99th percentile of discharge in each inter-survey interval to the stream power associated with the mean annual flow. The Elwha River experienced major geomorphic changes between 2012 and 2013 as a 20 Mt sediment pulse moved downstream after two dams were removed (2011 to 2014), leading to sediment-supply-driven (flow-independent) changes. Figure reproduced from East et al., 2018 (public domain).

Table S1.						
Reach	River kilometer (rkm)	Average gradient (m/m)	Average bankfull width (m)	Average valley width (m)	Confinement (m/m)	Initial D_{50} (mm)
Control (CR)	32.7	0.0033	20.8	68	3.3	39.0
Reservoir (RS)	31.7	0.0024	20.9	111	5.3	13.9
Dam (DM)	30.4	0.0138	22.4	39	1.8	149.7
Sleepy Hollow (SH)	28.4	0.0085	14.7	76	5.2	94.9
Upper DeDampierre (DDU)	22.7	0.0035	17.9	261	14.6	59.0
Lower DeDampierre (DDL)	22.1	0.0021	20.4	197	9.7	45.3
Berwick (BW)	13.1	0.0021	8.7	82	9.4	38.8
Schulte Road (SR)	11.1	0.0020	15.9	135	8.5	23.4
San Carlos (SC)	6.2	0.0019	16.0	320	20.0	15.3
Crossroads (CRO)	2.4	0.0018	14.0	845	60.2	16.9

Table S1. Physical setting of study reaches monitored on the Carmel River, California (after Harrison et al., 2018). Units for reach confinement are the valley width (m) divided by channel bankfull width (m), from Harrison et al. (2018). Gradient and bankfull width did not change as a result of dam removal. Grain size (D_{50}) is given as the initial, pre-dam-removal value (see Fig. 9).