

Large Woody Debris Assessment Carmel River

“LARGE WOOD” IS

- ▶ more than four inches in diameter
- ▶ more than three feet long
- ▶ present throughout the watershed

LARGE WOOD FUNCTIONS

- ▶ create stream complexity
 - shade, pools, cover, resting areas
- ▶ retain sediment, especially spawning gravel
- ▶ increase nutrients

Summary

The lower 16 miles of the Carmel River must convey large wood and debris from a 255 square mile drainage area. But more importantly, there are numerous large trees that live adjacent to the streambanks and are prone to falling into the river at odd times of the year. Some of these trees reach heights of 150 feet and are more than five feet in diameter (e.g., older eucalyptus trees, especially in Garland Park). While this large wood can provide significant habitat value to many aquatic species, it can also pose a problem when it collects on bridges or causes bank erosion.

Traditional river management over the past 80 years has been to remove or alter virtually all large wood that entered the river. This was done on the premise that large wood in the channel contributes to infrastructure damage, flooding, and bank erosion. Certainly, large accumulations of debris are associated with significant damage during high flows along the Carmel River. Most of the 19 bridges that cross the river have been damaged by high flows and debris was nearly always present when the damage occurred. However, what is not known is whether the accumulated debris came from large wood stored in the channel before a high flow event or if the debris entered the river during high flow events (e.g., from the upper watershed or from collapsed streambanks). Also, it was unknown whether large wood along the streambanks contributed to bank erosion.

To help answer these unknowns and to help develop a responsible management plan for large wood, MPWMD, in cooperation with the Watershed Institute at California State University Monterey Bay, conducted a partial inventory of large wood in 2002. A complete inventory is scheduled for the summer and fall of 2003. From this information, MPWMD hopes to gain more knowledge about the functions and benefits of large wood and to assess potential problems that large wood could cause.

**Monterey
Peninsula
Water
Management
District**



**Large wood installation at
deDampierre Restoration Project
October 31, 2002**

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**Debris Accumulation at
San Clemente Dam and Reservoir
February 9, 1998**

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**Cottonwood near Quail Lodge
June 2001**

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**Bridge Failure, Stonepine Bridge
April 1995**

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Rosie's Bridge - March 11, 1995

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**Cottonwood at Boronda Bridge
May 2002**

STUDY AREA

- Concentrate on the lower 18 miles of the river (Highway 1 to San Clemente Dam)
- Collect data along channel bottom
 - location, length, diameter, orientation
 - type of wood, condition
 - characterize influence on stream (Is there a potential for scour or streambank erosion?)

CONTRACTOR

- Watershed Institute of California State University at Monterey Bay
 - Prof. Doug Smith, Ph. D to supervise CSUMB students
- Contract not-to-exceed amount of \$ 6,000
- Deliverables include regular progress reports and final report, including data summary, photographic inventory, and maps (Geographical Information System format)

MILESTONES

- **September 30, 2003: Written progress report from Watershed Institute.**
- **December 15, 2003: All field data collected.**
- **March 31, 2004: Final written report and GIS product(s) delivered to MPWMD.**

DISTRICT BENEFITS

- Better define benefits to habitat
- Data can be used for design of instream habitat
- Quantify and characterize potential erosion threats to bridges and streambanks
- Provide basis for proposing modifications such as cutting and/or removal
- Provide information to satisfy Federal and State permit requirements