Ms. Ref. No.:  GEOMOR-5290
Title: Local and watershed controls on large wood storage in a mountainous stream network
Geomorphology

Dear Matthew,

The paper you submitted to Geomorphology has now been refereed. On the basis of the referees' detailed reports, I am sorry to have to tell you that the paper is not acceptable for publication in Geomorphology. I append the referees' reports, with which I agree. I hope you find their comments useful in developing your work towards eventual publication.

Yours sincerely,
Richard

Richard A. Marston, PhD
Editor
Geomorphology

Referees' reports:

Reviewer #1: This is an interesting and useful paper that I think is certainly worth publishing, but citations of the relevant literature should be expanded and I suggest that the authors give more thought to analyses and interpretations, including caveats on their interpretations. I'm quite aware that many of the additional suggested citations below are my own work, but I have written a lot on closely related topics.
Specific comments:
1) lines 48-52: should cite Benda and Sias, 2003, Forest Ecology and Management
2) lines 59-61: should also cite Marcus et al., 2002, Geomorphology and Wohl and Cadol, 2011, Geomorphology
3) line 65: the reference to 22 studies is not clear, because Table 1 lists only 5 references
4) lines 74-78: This hypothetical scenario is overly simplistic and misleading because it assumes consistent recruitment mechanisms and ignores tributary inputs and floodplain exhumation, as well as inputs from bank erosion, which likely change downstream as bank material changes.
5) lines 12-125: should cite Wohl et al., 2011, Geomorphology and Wohl et al 2012, Nature Communications
6) lines 136-137: see also Cadol et al., 2009, Earth Surface Processes and Landforms
7) lines 226-229: Were these land cover variables characterized for the entire upstream watershed, for the valley bottom, or what?
8) lines 303-304: See Cadol et al., 2009, Earth Surface Processes and Landforms and Beckman and Wohl, 2014, Earth Surface Processes and Landforms
9) lines 526-528: Any observational evidence of wood transport onto floodplain? How does floodplain area per unit channel length vary downstream?
10) lines 532-534: but see Wohl, 2014, Progress in Physical Geography for evidence of extensive historical removal of wood in mnoderate to large rivers throughout the US
11) lines 574-576: see also Wohl and Cadol, 2011, Geomorphology
12) lines 582-588: What about differences in runoff and peak discharge per unit drainage area or fire history?
13) lines 598-602: see also Wohl, 2011, Geology
14) lines 629-632: see also global compilation in Cadol et al., 2009, Earth Surface Processes and Landforms
15) line 640: suggest wording change to "... possible that LW recruitment and storage"
16) line 646: sediment mobilized from gold mining would also certainly influence LW storage and result in modification of channel form (along with direct modification of channel form during mining)
17) In general, I think it would be very useful to evaluate hypothetical transport capacity in terms of spatial/downstream trends in ratios of piece length to channel width and piece diameter to flow depth

Reviewer #2: In general:  The authors aim to evaluate downstream trends in large wood (LW) abundance and to describe landscape controls on large wood abundance. Although analysis is limited to the Yuba watershed, a heavily impacted watershed in California, the authors strive to draw broad generalizations on large wood distribution trends. As is, this paper presents a site-specific statistical exercise that does not further the understanding of processes important to large woody debris distribution due to various flaws. Five examples of problems include: (1) lack of compelling reason to change a metric of wood measurement; (2) important background literature is missing - contrary to the authors assertion, LW has been discussed in the context of floodplains; (3) the Yuba watershed field work was rather limited (focusing on easily assessable stream reaches); (4) possible incorrect interpretation of landform type (bankfull and base flow are used interchangeably; floodplain is
not defined correctly); (5) lack of stream order definition.  These examples (and others) are described further below.  Considering the readership and the flaws described, it is suggested that the paper be declined for publication in the Journal of Geomorphology.

Terminology
1)      The authors focus on large wood per length of channel.  Large wood is generally described by volume or number by area for a good reason.  Wood per area has ecologic significance.  Number per length has less meaning - particularly when comparing incised headwater streams to larger streams with floodplains.
2)      The terms baseflow and bankfull are used interchangeably in this paper and this is incorrect.  Baseflow is likely much lower than bankfull,
3)      By floodplain, do you mean 5-yr, 10-yr, 100-yr?  A floodplain is a floodplain whether it is active or not.
4)      You need to define all the terms you are using!  Please define how you are using stream order.  I suggest you follow your map.

Introduction
1)      Wood budgeting models have been used to assess wood inputs (see multiple publications by Benda et al. Some of these papers focus on N. California watersheds).
2)      A definition of floodplain is needed (see point 3 above).
3)      Macka et al. 2011, is not listed in the references.  Please check every one of your citations.
4)      All citations mentioned in table one should be listed.
5)      First you state that studies seldom map LW in floodplains, then you go on to describe studies that do.

Study area:
1)      Too much information on mining history.  Not enough information on natural processes.  For example, I read one of your references and learned that for the Yuba watershed "Mass wasting dominates surface erosion on the hillslopes; however, erosion of stored channel sediment is the primary contributor to annual sediment yield (Curtis et al. 2004)
2)      Genus and species of each plant are needed the first time they are mentioned
3)      More background is needed on age of trees.
4)      More background is needed on mass wasting in headwater areas.  If no information is available, at least describe the slope of the headwater areas.
5)      More background is needed on stream order.  Define size of channels and associated flood plain area.

Methods
1)      It is really is not clear that there is an understanding of floodplains, bankfull, and baseflow in this paper. When you state you measured 850 LW pieces outside the baseflow-wetted area, you are NOT necessarily measuring wood in the floodplain (line 469)! These pieces are likely within the bankfull channel.
2)      Why use new methods for wood measurement rather than use established methods?
3)      Lines 203-20 should be in introduction, not methods.
4)      I do not understand why the choice was made to vary LW survey distances. It would be useful to cite references for your approach.
5)      Lines 278-280 should be in introduction, not methods.