

## **Tillamook Bay Watershed Sediment and Physical Habitat Assessment**

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The Tillamook Bay Watershed (TBW) Sediment and Physical Habitat Assessment (from herein referred to as the 2009 study) was initiated by the Tillamook Estuaries Partnership (herein referred to as the Partnership) in an attempt to characterize the physical habitat condition within the TBW and to collect baseline data for use in an on-going monitoring program. The 5 main river systems within the TBW are the Miami (HUC# - 1710020307; 23,390 acres), the Kilchis (HUC# - 1710020306; 41,620 acres), the Wilson (HUC# - 1710020305; 23,557 acres), the Trask (HUC# - 1710020304; 112,162 acres), and the Tillamook Rivers (HUC# - 1710020303; 36,395 acres). The results of the 2009 study indicate that 4 of the 5 watersheds are very similar (Miami, Kilchis, Wilson, Trask) while the Tillamook River is a distinctly unique population. Sands and fines in the TBW are within reference benchmark ranges, but the Tillamook River contains ~50% sands and fines which is nearly double the reference average for erodible lithologies. The results of the 2009 study indicate that there are some serious aquatic habitat concerns throughout the TBW such as stream bed armoring, low wood volumes, and stream widening. There are several interesting discussion points raised by these results.

- Reference wood volumes are so low that any comparisons may be meaningless given the impact of wood removal on aquatic habitat.
- It is possible that timber harvests of headwater streams (mostly nonfish-bearing and therefore non-buffered) is reducing not only the current inputs of very large, large wood (LWD) but future inputs as well. There is a significant lack of wood throughout all 2nd, 3rd, and 4th order channels, although 1st order channels contain high wood volumes but almost no key pieces.
- It is possible that sediments being supplied by unstable, steep sloped sites are being flushed into the bay as a result of floodplain disconnection (sands are being transported much greater distances rather than depositing on the floodplains) and LWD volumes in the mainstem (also a lack of key pieces).
- It is possible that the increase in high water events (as indexed by increased storm frequency) is increasing the overall rate of sediment transport and scouring the TBW. This hypothesis is strengthened by qualitative field observations of scour, flood gage data which suggests increased average high water events.
- The sophisticated statistical design was able successfully >20 individual subpopulations (e.g. erodible vs. resistant geology).

### **Lindsay Mico**

Lindsay specializes in the design and analysis of complex environmental assessment programs. His specific expertise includes fluvial geomorphology, sediment transport, environmental statistics, GIS analysis, aquatic monitoring protocols, and molecular biology. Lindsay served as the project lead in the development of the Tillamook River Restoration Plan, the Tillamook Bay Watershed Restoration Prioritization, Nestucca Sediment and Habitat Assessment, and the Siuslaw Sediment and Habitat Assessment. He holds a Master's Degree from UC San Diego in Cognitive Neurosciences and an honors undergraduate degree in Molecular and Cellular Biology from UC Berkeley. Lindsay is responsible for the design and analysis of assessment and monitoring program and manages field projects.