

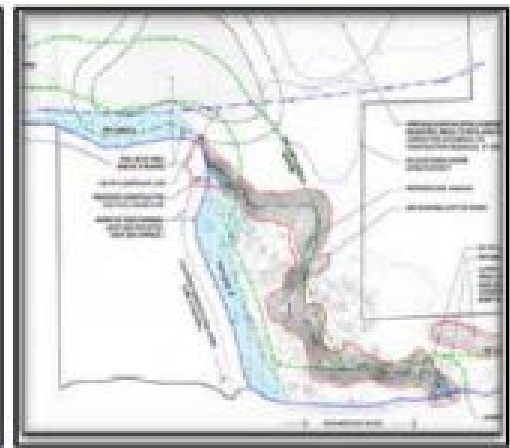


National Large Wood Manual

Chapter 3: Ecological Consideration of

Large Wood Restoration

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Restoration of Large Woody Debris (LWD)

- Large woody debris (LWD) commonly employed stream restoration technique
 - Visible
 - Tangible
 - Quick response
 - Scientifically supported
 - Relatively painless

How successful is LWD Restoration?

- The key role of LWD in streams is well established
- Yet there is a limited record of success
- Cause:
 - Incomplete understanding of the physical role of large wood
 - Dealing with symptoms rather than causes
 - Ecological role of wood in and its effect on species performance
 - What is actually limiting fish production?
 - Not necessarily addressing the problem
- Hence the need for National Large Wood Manual
 - Chapter 3: Ecological functions of large wood
 - Chapter 4: Physical function of large wood

Function of LWD in Streams

- Wood provides structure and complexity
 - Fish survive just fine without wood
 - Affects species by providing essential physical elements
- Habitats
 - Pools
 - Riffles
 - Tailouts
- Hydrologic refugia
 - Bioenergetics
 - Predation
- Channel form and connection to floodplain
 - Lateral movement
- Control of materials and bed load
 - Sediment
 - Organic matter, carcasses
- Substrate of bio-films and insects

Ecological Context -- Controls on LWD

- Sources
 - Upstream riparian forest
 - Local riparian forest
 - Upslope forest
- Wood budget
 - Upstream supply
 - Downstream movement
 - Decomposition
 - Removal
 - Additions—engineered wood structures

Causes of Wood Loss

- Wood restoration undertaken to address the visible lack of wood
 - Why is it gone?
- Upstream watershed processes
 - Inadequate riparian
 - Logging
 - Land use conversion
 - Immature forests
- Simplified channel, floodplain disconnection
- Rapid downstream movement
 - Lack of anchor pieces
- Overt removal
 - Land owners and developers

Ecological considerations to enhance success of LWD restoration



- Restoration of large wood is a proximal solution to systemic problems
 - Interim solution
 - Enhance natural processes
- Understand function and purpose of LWD
 - What does wood provide?
 - What is the purpose of restoration?
 - Restoration of physical functions
 - Achieve biological goals
- Address causes of LWD loss
 - Why is there a lack of LWD in the system?
 - How will restoration address the causes?
- Understand context of LWD in stream function
 - LWD is one only one issue affecting stream function
 - Context affects the success of restoration
 - Pre-engineering modeling and analysis can address the context