

# Muddy Waters



Elk River Forum  
November 16, 2013

Jessica Hall  
Humboldt Baykeeper



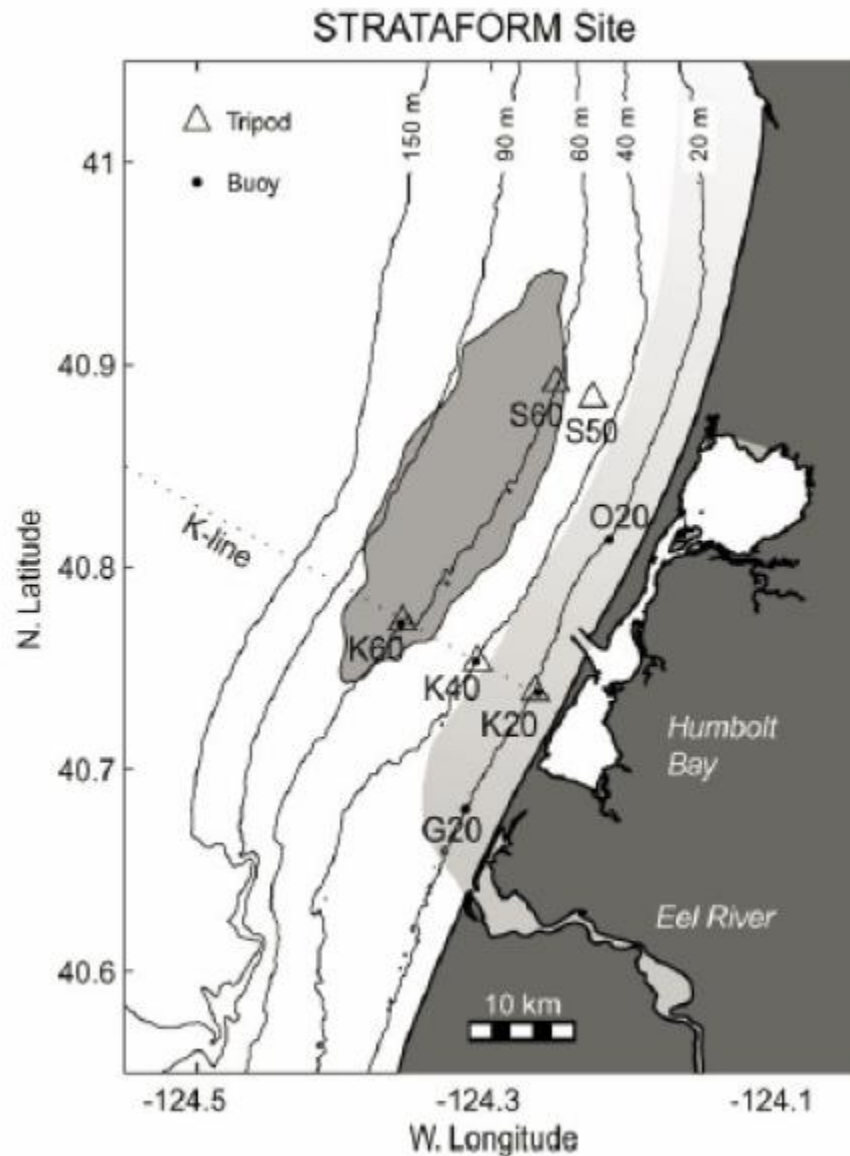
North Coast Streams  
listed for sediment

Humboldt Bay *not*  
listed for sediment



**Need for study of  
Humboldt Bay  
sediment dynamics**



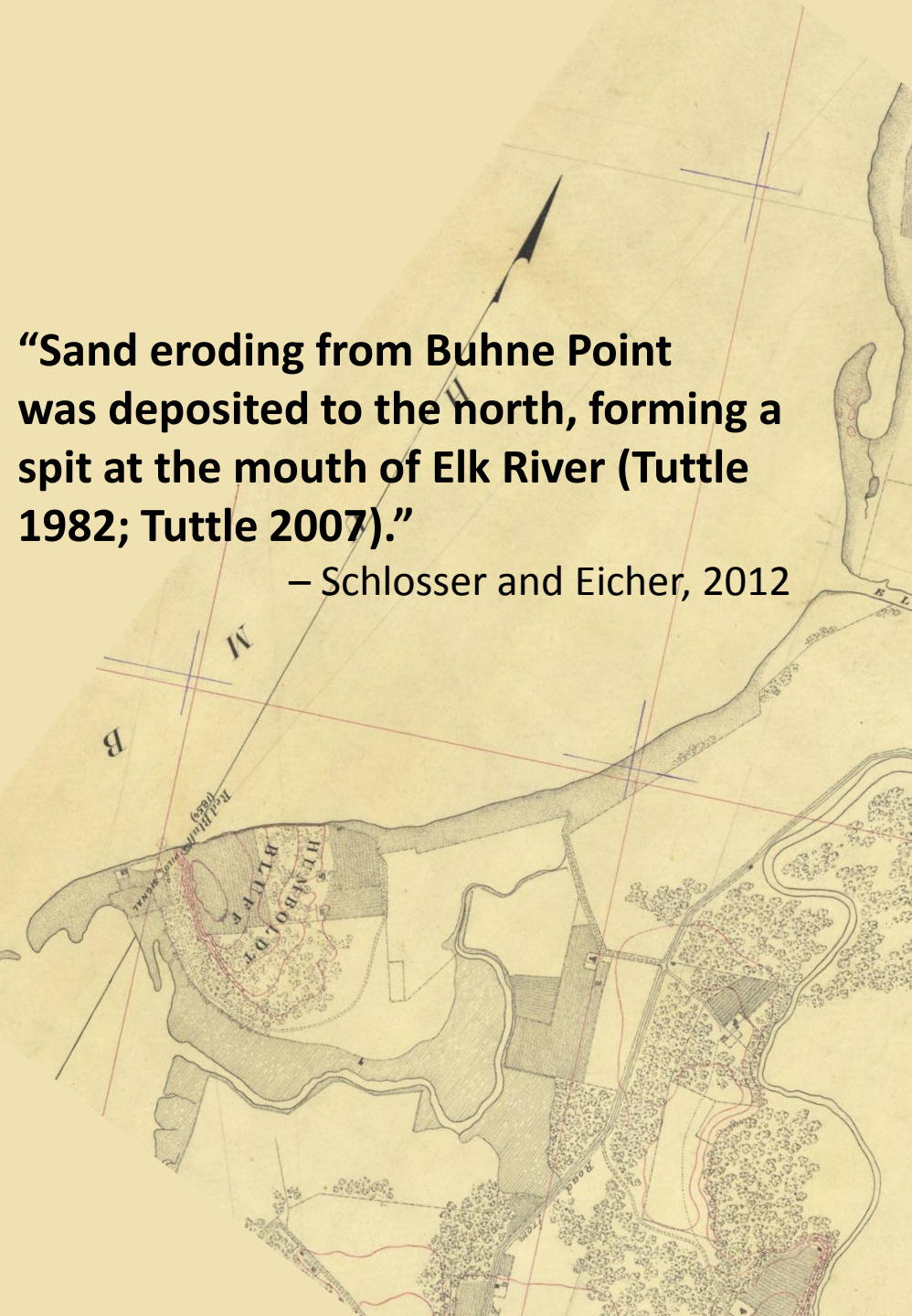


EIR Figure 5-1. Eel River Sediment Plume Mapped During Studies of the “STRATAFORM” Project. The typical location of the Eel River plume during downwelling-favorable wind (i.e. trapped against the coast within the 40 m isobath) is also shown in lighter shading. The general location of a flood deposit resulting from Eel River floods in 1995 and 1997 is shown as the dark shaded region. Other information shown in this figure is identified in Traykovski and others (2000), the source of this figure. Also see Curran and others (2002).

## Elk River Spit 1860 and 2009

**“Sand eroding from Buhne Point  
was deposited to the north,  
forming a spit at the mouth of Elk River (Tuttle  
1982; Tuttle 2007).”**

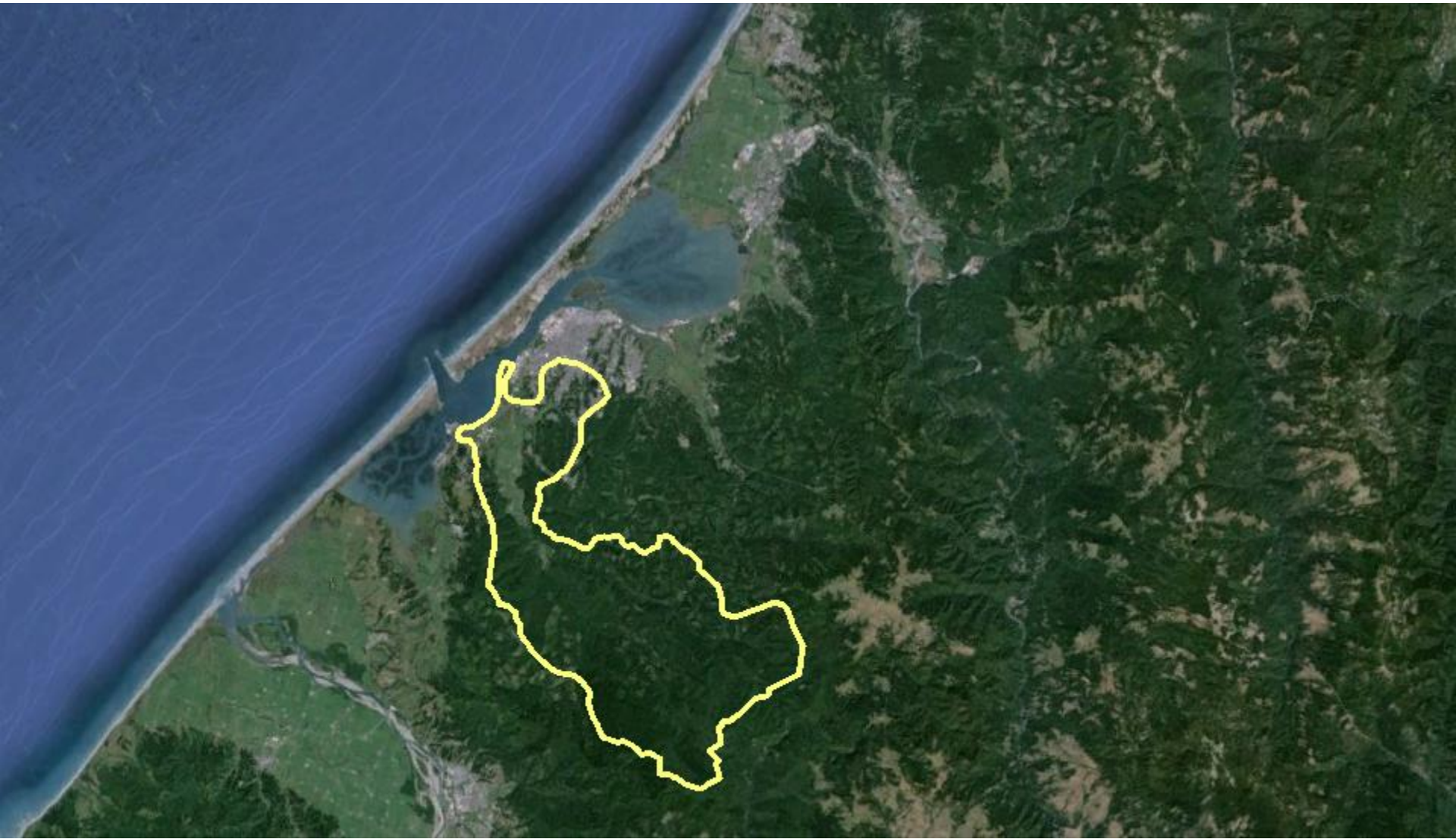
– Schlosser and Eicher, 2012

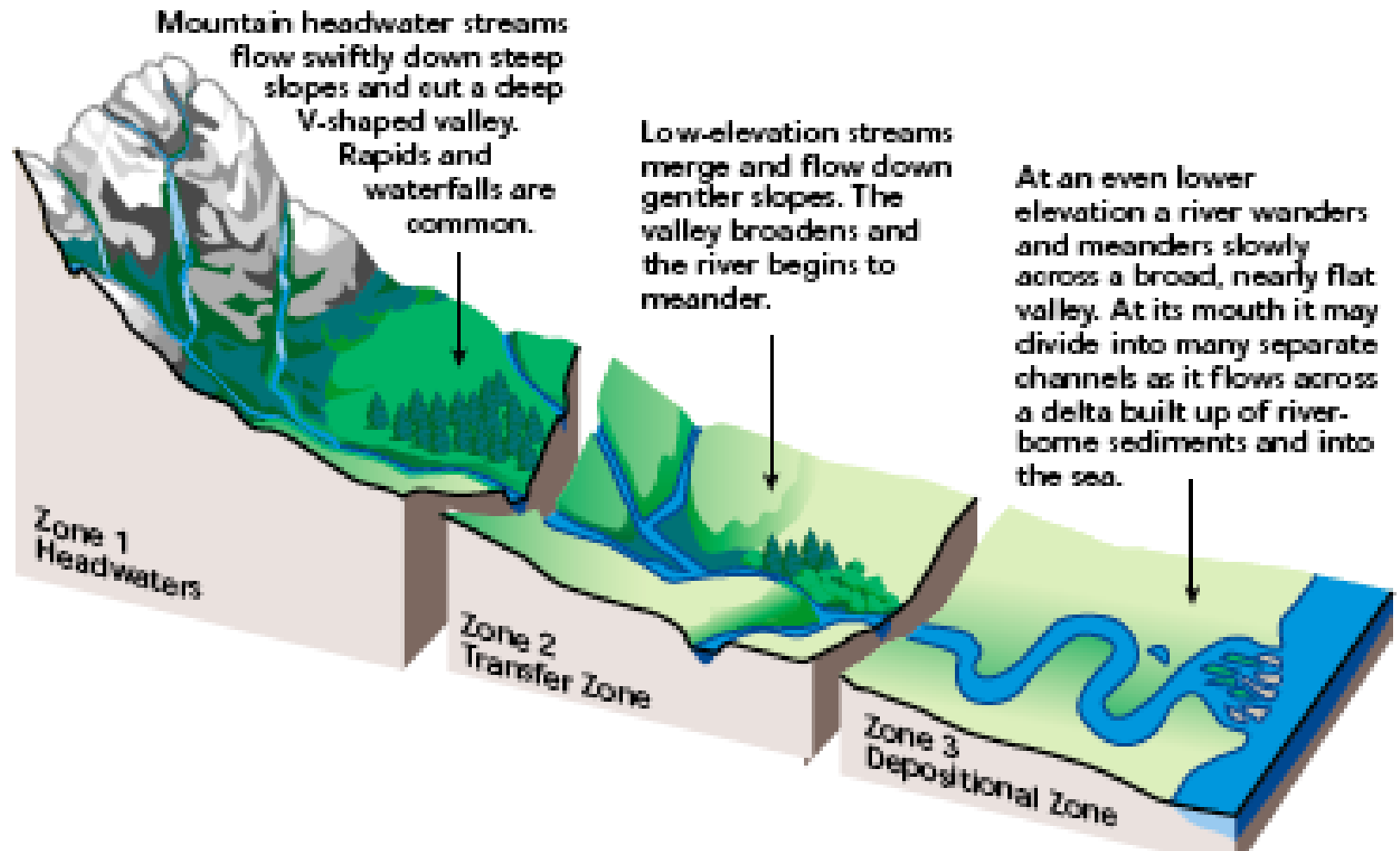


360 180 0 360 Meters

Overlay: C. Benson, Natural Resources  
Division, Redwood Coast Action Agency

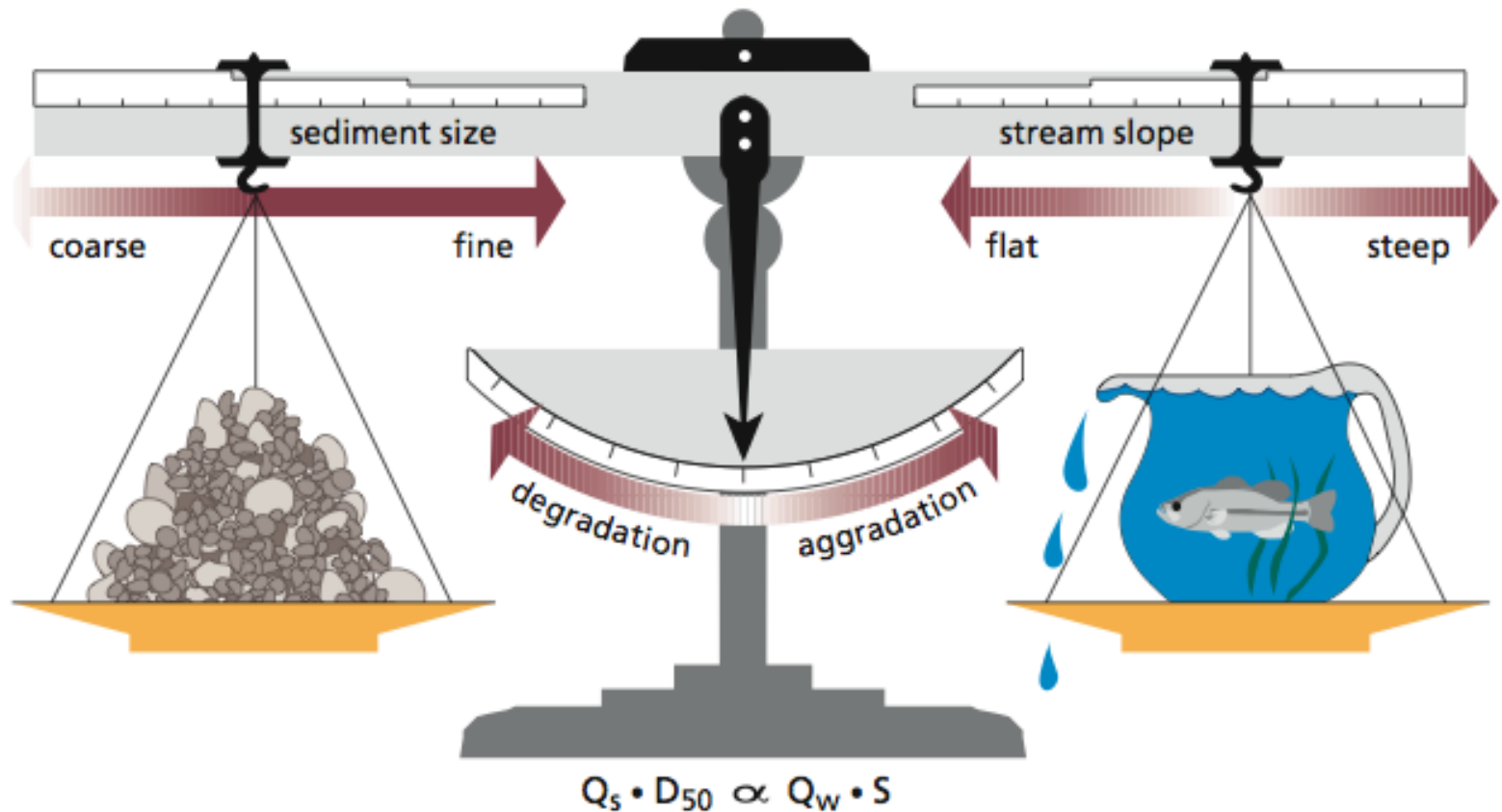






*Figure 1.27: Three longitudinal profile zones. Channel and floodplain characteristics change as rivers travel from headwaters to mouth.*

Source: Miller (1990). © 1990 Wadsworth Publishing Co.



**Figure 1.13: Factors affecting channel degradation and aggradation.** The "size" of the channel is determined by the stream's energy, the slope, and the flow of water in balance with the size and quantity of the sediment particles the stream moves.

Source: Rosgen (1996), from Lane, *Proceedings*, 1955. Published with the permission of American Society of Civil Engineers.



# 1989



# 2012



7/2013

2425 ft

Image NASA  
Image © 2013 DigitalGlobe

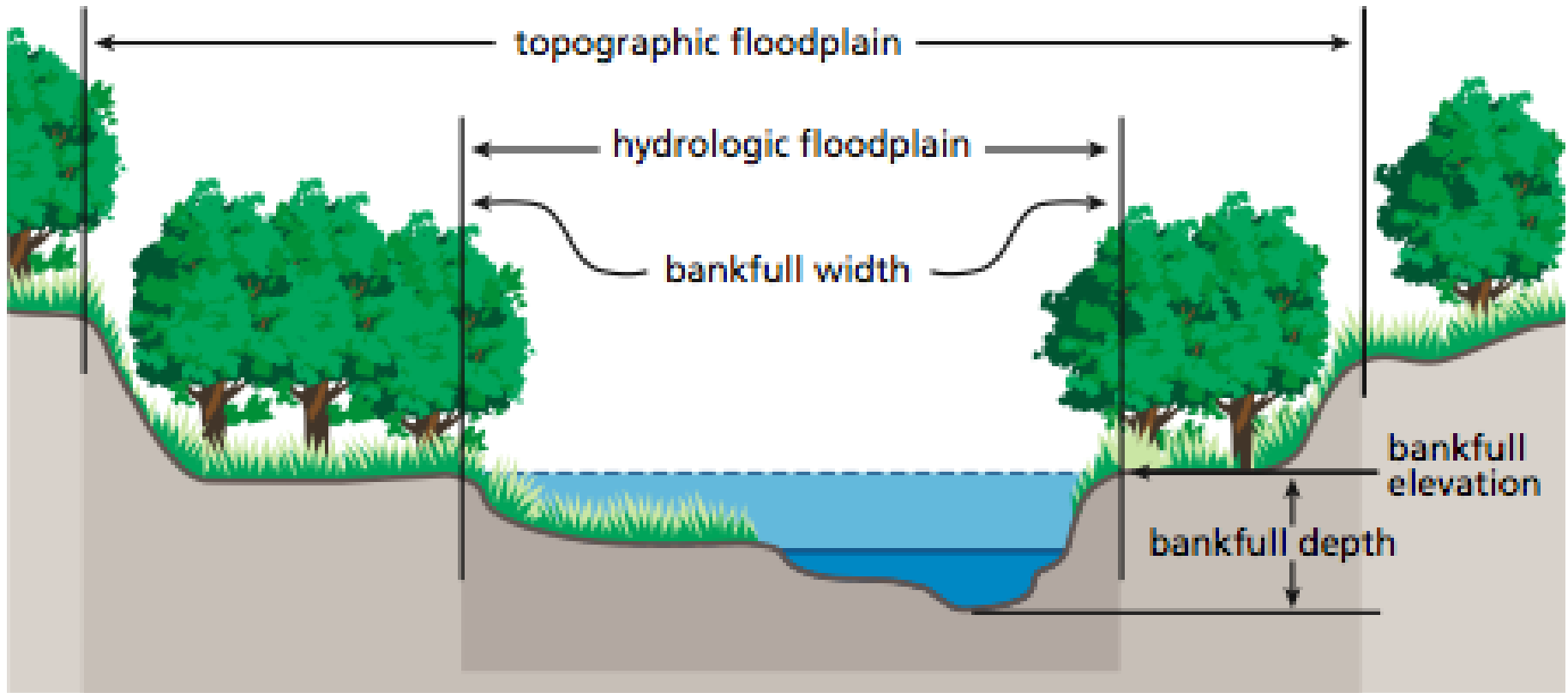
Google earth

Imagery Date: 8/23/2012 lat 40.698501° lon -124.160759° elev 232 ft eye alt 6452 ft

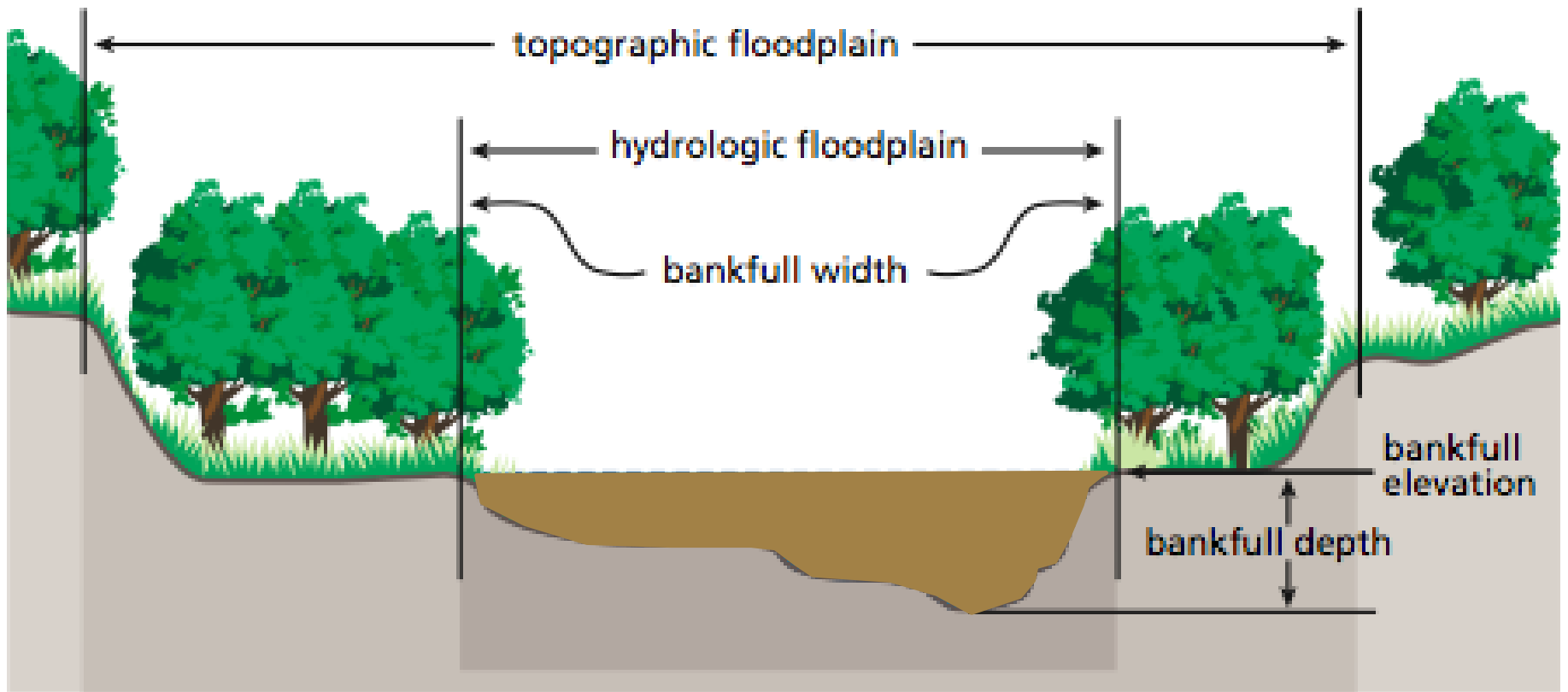
Tour Guide

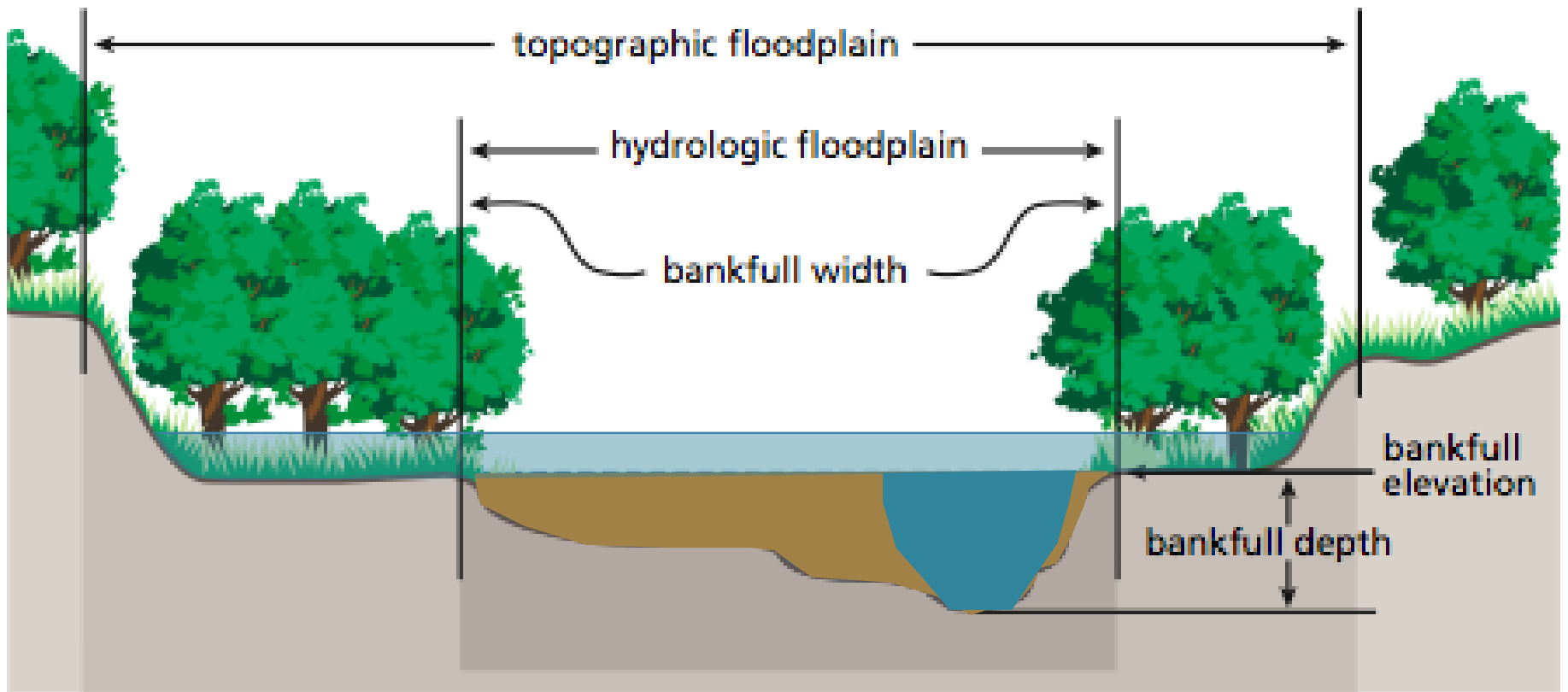
2004

# Stream Cross Section









# Critical habitat





# ***Turbidity &*** **Critical habitat**

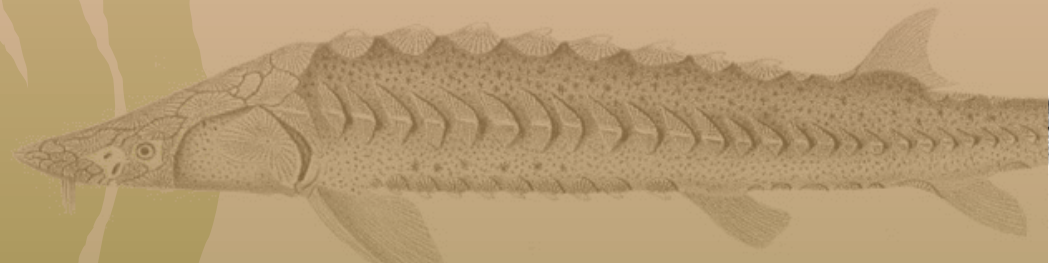
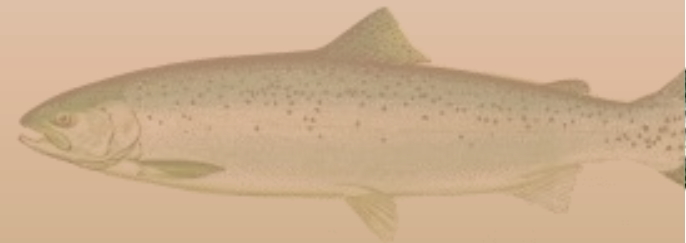
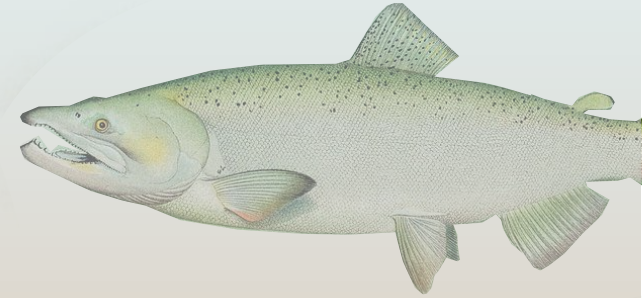
Plant growth can be limited by high turbidity

Can result in collapse of fish habitats

Clogging of salmonid gills

Limited visibility of predators and prey

– Schlosser and Eicher, 2012

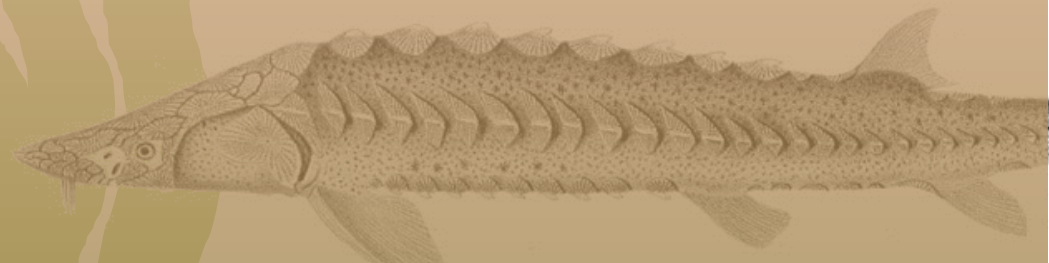
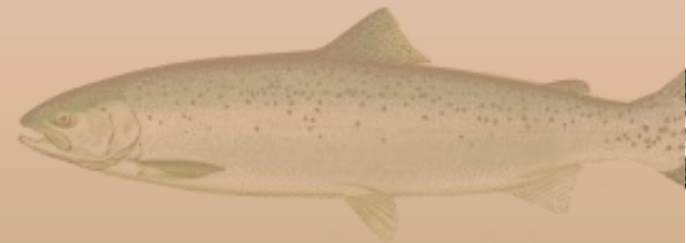
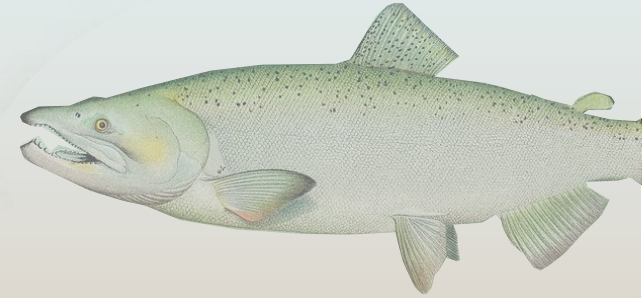


# ***Threats to Water Column Habitat***

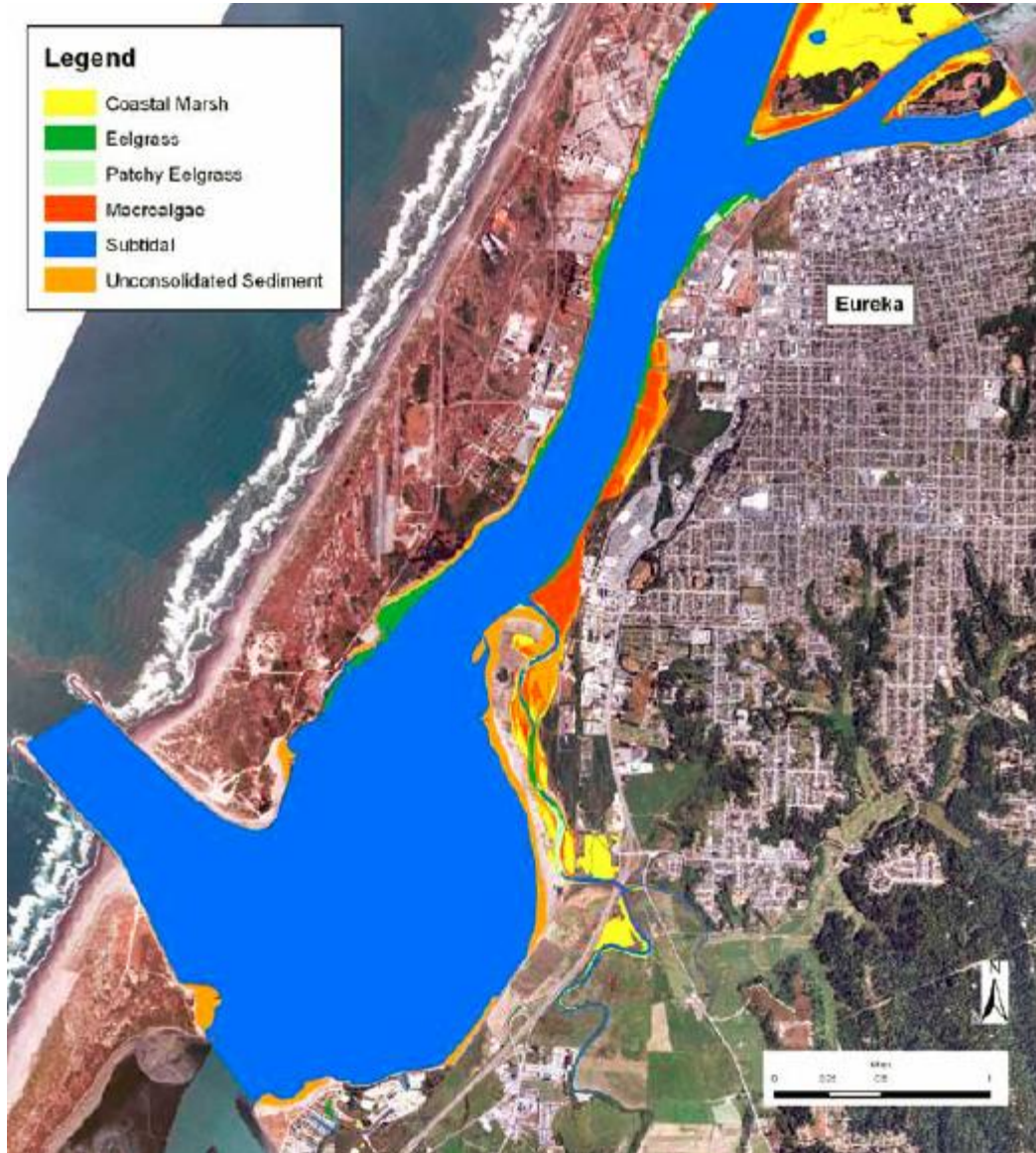
Identified by Habitat Project Advisory Committee

- Anthropogenic greenhouse gas (GHG)
- Urban runoff
- Hydrologic barriers
- Dredging
- Timber harvest

– Schlosser and Eicher, 2012



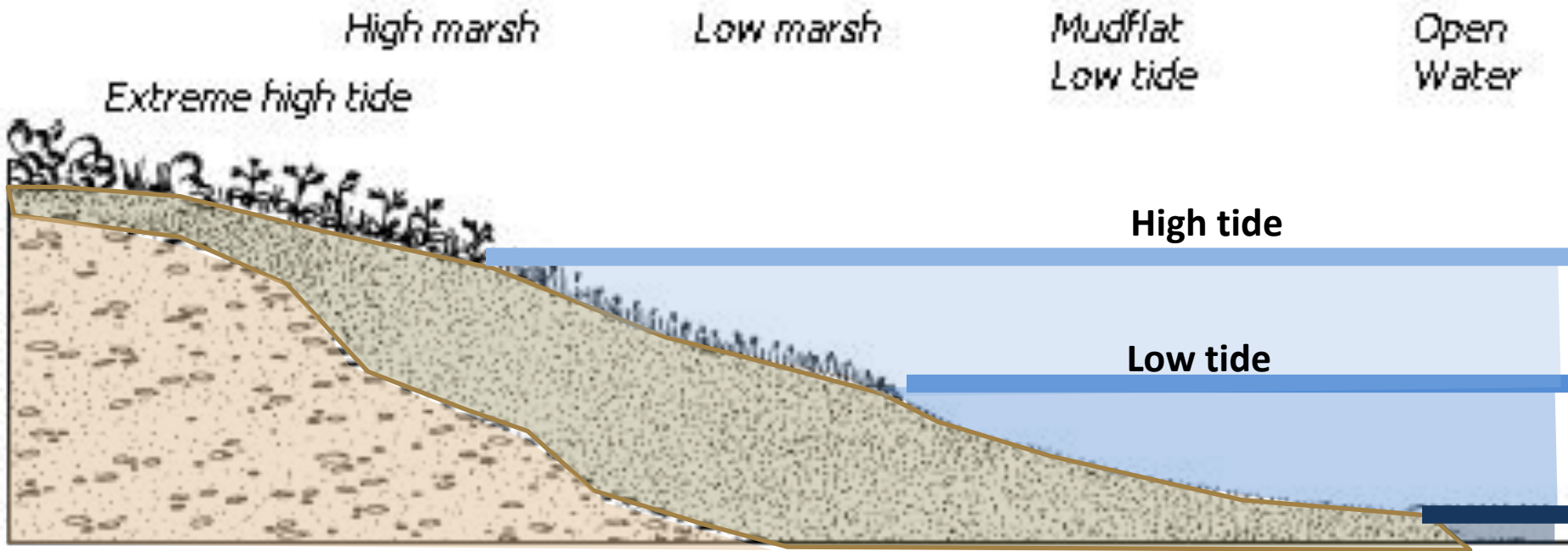
# Wetland habitats



– Schlosser and Eicher, 2012

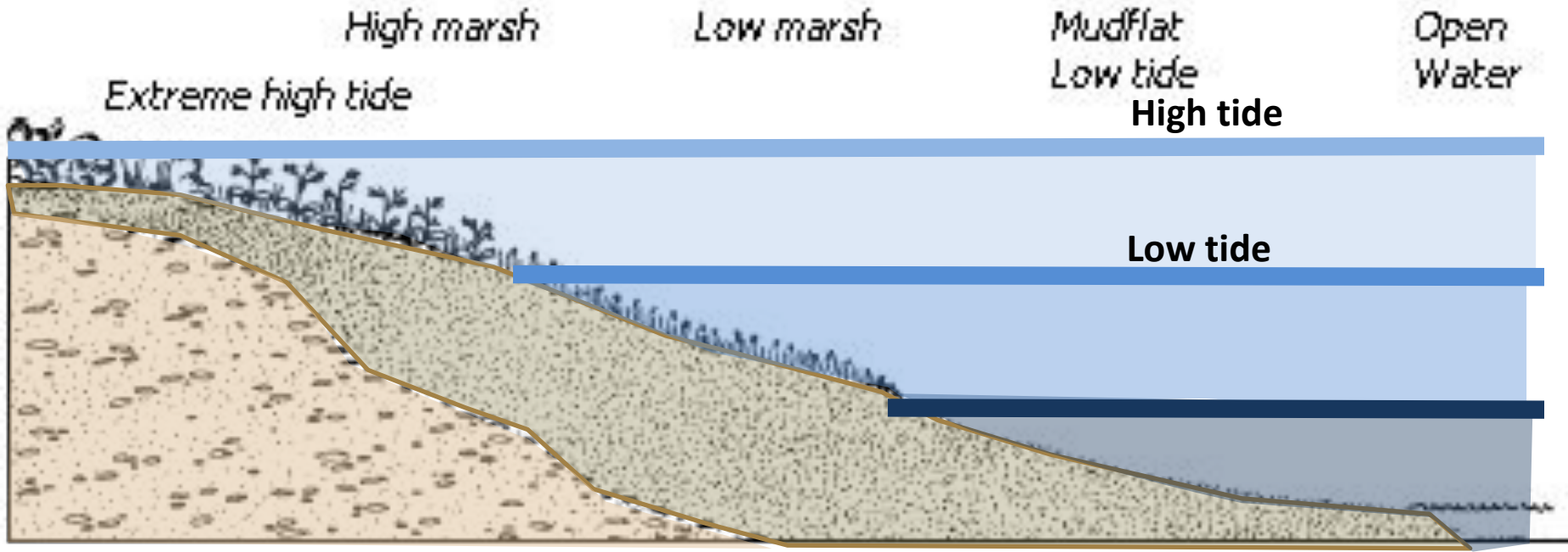


# The Tidal Prism

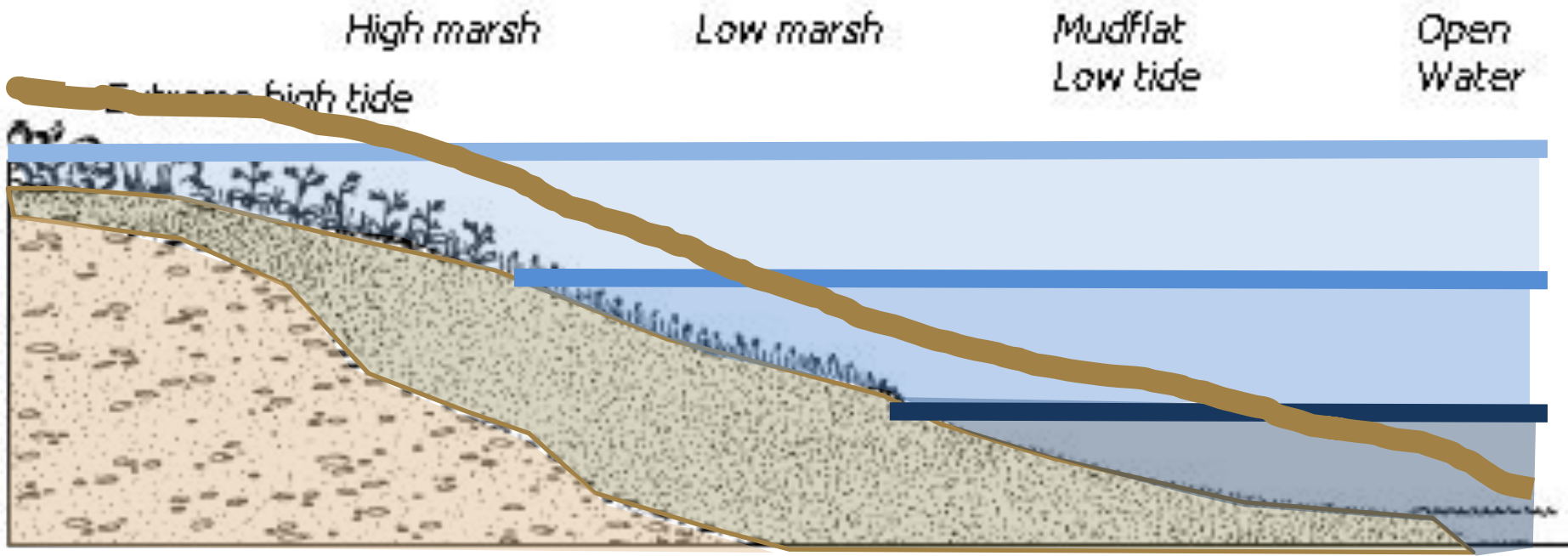


Base Image: [eng-dlf.dfo-mpo.gc.ca](http://eng-dlf.dfo-mpo.gc.ca)

# Sea Level Rise & the Tidal Prism



Base Image: [eng-dlf.dfo-mpo.gc.ca](http://eng-dlf.dfo-mpo.gc.ca)



Base Image: [eng-dlf.dfo-mpo.gc.ca](http://eng-dlf.dfo-mpo.gc.ca)



# References

A photograph of a bird, possibly a grebe, in flight over a body of water. The bird is captured in a dynamic pose with its wings spread wide, showing intricate feather patterns. The water below is slightly rippled, and the overall scene is bathed in a soft, natural light.

Humboldt Bay Management Plan, Humboldt Bay Harbor, Recreation, and Conservation District, April 2006

Schlosser, Susan and Eicher, Annie. Humboldt Bay and Eel River Estuary Benthic Habitat Project, California Sea Grant College Program, August 2012.

Laird, Aldaron. Humboldt Bay Shoreline Inventory, Mapping and Sea Level Rise Vulnerability Assessment. January 2013