

BIOL/ECON 140

Field trip: Salmon habitat – Human impacts and rehabilitation

Friday, Jan. 16, 2009

Meet at the loading dock of the Biology Building at 12:50 so we can leave promptly at 1 p.m. The loading dock is to the west of the sky bridge between Biology and Chemistry, next to the soccer field.

Students bring:

- Rugged footwear
- Raingear
- Warm clothes, including hats, gloves, wind protection
- Notebooks, pencils
- Copy of the field trip guide
- Water, snacks

Please read the Nooksack Basin section of Chapter 5 in the Salmon Recovery Plan before the field trip.

Hooper/Hodges bring

- Field trip guide
- Maps
- Van keys – pick up van at 12 at motor pool
- Boots, waders
- Bug nets, pans, buckets, gloves, Bug identification guide
- Rapid habitat assessment guide
- Alli's data
- WRIA 1 Maps.

STOP 1 - Chuckanut Creek, Arroyo Park

We'll start our field trip with a look at relatively natural salmon habitat in Chuckanut Creek. This creek drains into "Mud Bay", just south of Bellingham and has seen good runs of chum salmon in the past several years (e.g., ~5000 fish in 2002). Retrofitting in 1994 of a poorly designed culvert under Chuckanut Drive that was blocking returning salmon runs has once again allowed access to the habitat upstream of the road. Chum salmon migrate up and spawn in Chuckanut Creek in November, and Arroyo Park is a good place to see that spectacle. Once eggs hatch (mid-winter), the fry head for the ocean and therefore spend very little time rearing in the creek.

1. As we walk through the woods to our first stop by the creek, think about the components that make good fish habitat (food, cover, temperature, water quality, flow regime, and nesting sites). Think also about the habitat forming features/processes that we discussed in class (riparian vegetation, coarse woody debris, channel morphology, disturbance regime).

- a. Which of the habitat features do you see here?
- b. Of which processes do you see evidence?
- c. What human impacts might occur in this stream?

We'll stop at a gravel bed by Chuckanut Creek to observe some of these features. Time permitting, we will sample the stream for benthic invertebrates – bugs that are important in the diet of fish.

2. Backtrack 100 m or so, then go west up the trail toward Chuckanut Drive. Carefully cross Chuckanut Drive to observe the encroachment by recent development on riparian habitat of a small tributary to Chuckanut Creek.

- a. What changes might this type of activity in the riparian zone cause to various features of salmon habitat?
- b. How much buffer do you think is enough?
- c. What ecological and economic tradeoffs might exist?

Additional reading

See the story of chum salmon in Chuckanut Creek here:

http://www.n-sea.org/fishtale/winter2003/w_p4_Chuckanut_chum.shtml

STOP 2 - South Fork Deer Creek, Bosman property

Directions: Go north on I-5 to the Northwest Avenue exit, and follow Northwest Ave to the northwest to Smith Rd (by the soccer fields). Turn right (east) on Smith Rd. and go ~1-2 miles to Aldrich Rd. Turn left on Aldrich and go ~1 mile (over a hill, cross a creek, pass a farmhouse and barns on left) then turn into the gravel driveway on the left that leads to the middle of a field.

The South Fork of Deer Creek originates in a spring just south of the Smith Road and about 2 miles to the east of this site. From its humble beginnings in a golf course, it flows through farmland and pastures until it crosses Aldrich Rd. Further west, it flows into Ten-Mile Creek, which is itself a tributary to the Nooksack River. The Nooksack Salmon Enhancement Association (NSEA) did riparian restoration on the Bosman property in 1995, planting a limited riparian buffer and doing minor instream work (e.g., adding some spawning gravels, coarse woody debris, and a plunge pool). Limited coho spawning has been observed in this restored area.

1. We'll look across the road to where Deer Creek flows through pasture and potato fields. What changes to the stream can you note?
2. We'll walk past NSEA's restoration project. What do you see in terms of plant species composition, buffer width, and potential for the habitat forming processes mentioned at stop 1? How effective do you think this restoration effort might be at offsetting other watershed problems? What economic tradeoffs might landowners and restorationists need to consider when deciding on appropriate riparian buffer widths?
3. We'll walk through a protected woodlot just downstream of the restoration project. What changes do you see in terms of habitat features and processes compared to the agricultural and restored areas? How does this compare to what we saw at Arroyo Park? What human impacts may persist? How much riparian restoration might be sufficient to overcome off-site and/or watershed level impacts?
4. Puget Sound Chinook tend to not use small tributaries like this. Because of this, some people think that most of the restoration efforts should focus on the mainstem channels, which Chinook do use, rather than small tributaries. What do you think of

this? What effects might these tributaries have on the mainstem? How might people's perspectives change, now that Puget Sound steelhead, which do use small tributaries, are listed as threatened under the Endangered Species Act?

STOP 3 – Mainstem Nooksack River, Hovander Park, Ferndale

Directions: From Aldrich Rd., go south to Smith Rd., then turn right (west) and return to Northwest Ave. Turn left on Northwest, and go south to Slater Rd. Turn right (west) on Slater, get on the freeway going north to the first Ferndale exit. Follow the signs to Hovander Park.

Judging from what you see around you and the map of the Lower Nooksack River, what changes do you think have happened in the landscape that influence salmon habitat and the processes important for habitat generation and maintenance?

STOP 4 – Whatcom Creek Hatchery, Maritime Heritage Park (3:15 p.m.)

Go south on I-5 and get off at the Iowa St./Ohio St. exit in Bellingham. Take Ohio St. west to James, then take an immediate left on James.

- Pause to look at Whatcom Creek as it flows through the industrial section of Bellingham.
- Try to follow Whatcom Creek west through the center of town (James to Meador to State to York to Unity to Central to Dupont). Observe things like riparian vegetation, channel incision, floodplain buffers (or lack thereof), etc. wh
- Park above the hatchery on DuPont St. and walk down the trail to the hatchery, observing the urban restoration.

The Whatcom Creek hatchery raises chum and steelhead for release into Whatcom Creek. It is run by the Fisheries Technology Program at Bellingham Technical College. We will have a tour of the facilities by Earl Steele, director of that program.

Contact: Earl Steele, Maritime Heritage Center: 715-8352 (wk), 739-6667 (cell)

STOP 5 – Padden Creek Lagoon

If we have time, we'll stop here on the way back to Western.

From the hatchery, take State St. south to Fairhaven. Turn right on Harris and continue toward the Ferry Terminal until crossing Padden Creek. Park on the shoulder.

On the right (north) is Padden Creek Lagoon, a pocket estuary that is also surrounded by commercial activities. What role do such estuaries play in the life cycle and ecology of salmon? How might the commercial development around this estuary affect its habitat quality for salmon?

On the south side of Harris, a large apartment building is proposed. Given that required critical area ordinance setbacks are a minimum of 100 ft. from tidal area, what impacts on the stream and lagoon would you recommend that the developer consider in design of such a building and its grounds?

RETURN TO BIOLOGY – 4 p.m.