

Chuckanut Community Forest Trail Network Design

Reports by students in ESCI 439/539 Conservation of Biological Diversity

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In October 2018, Western Washington University students designed trail networks for Chuckanut Community Forest (CCF) as an assignment for a conservation course. Reports and designs by five students are available on this web site. The document you are reading summarizes the assignment and design process. A different process, perhaps emphasizing other CCF values or uses, could produce somewhat different design solutions. We hope designs provided here will stimulate community discussion about current and future CCF stewardship and inform CCF park master plan development.

The students followed a structured design and selection process, in which they evaluated three trail design alternatives relative to a set of criteria and selected the alternative that scored best. Their reports contain three trail network designs, accompanied by numerical evaluations of each design. Some students refined their selected design further into a final design; for other students, their selected design was the final. To help you find the final trail design in each report, below is a table listing student authors and the final trail design location within their reports.

<u>Student Author</u>	<u>Page with final design map</u>
Janae Gallant	10 (Figure 4)
Travis Kurtz	4 (Figure 1)
Maddie Mittie	9 (Figure 9)
Forrest O'Reilly	11 (Figure 4)
Julia Tatum	8 (Design 1; Map B)

CCF Conservation and Recreation Background

Chuckanut Community Forest was acquired as public open space due to its outstanding environmental values, desirable natural aesthetic character, and strong potential for outdoor recreational uses. Without thoughtful management, some of these values may conflict. In particular, intensive recreational uses can degrade wetlands, impair sensitive ecological processes, and disturb diverse plants, animals, and habitats.

In the several years since CCF was opened to public access, ecological conditions and aesthetic qualities have been degraded by construction of new trails, widening of pre-existing trails, and associated disturbances to soil, vegetation, woody debris, wildlife, and wetlands. Trail proliferation has degraded CCF ecological conditions and experiences of some human visitors, who become lost amidst an expanding web of trails.

Potential conflicts between recreational uses and conservation values of CCF could be reduced or resolved by implementing an appropriate trail network design. The Bellingham Parks Department will develop a park master plan for CCF, which will include a trail plan. Work on the master plan is not scheduled to begin until 2022. Meanwhile, trail impacts continue to expand. Thoughtful design work conducted in advance could inform the official plan, and expedite resolution of conflicts between conservation and recreation.

Trail Network Design Process

Project goal: to develop a trail network design for Chuckanut Community Forest, suitable for inclusion in the CCF park master plan. Design objectives included: (1) trail links to important CCF access points, (2) a trail network providing on-trail travel through diverse CCF regions, (3) minimize total trail footprint, and (4) minimize impacts to wetlands and wetland buffers. Design alternatives were evaluated relative to these objectives using the following criteria.

- (1) Percent (%) of the six major access points not included in trail design (smaller is better).
- (2) Total trail footprint (sum of trail length x width; less is better); expressed as % of current (8853 m²).
- (3) Trail length crossing wetlands without mitigation (e.g., boardwalks; less is better); expressed as % of current value (188 m).
- (4) Trail length within wetland buffers (less is better); expressed as % of current value (3384 m).
- (5) Total boardwalk length (proxy for cost; less is better); expressed as % of current trail length crossing wetlands (188 m).

An evaluation score for each trail network design alternative was calculated by summing percentages for criteria (1)-(5), above. The design alternative with the lowest score was considered best.

Maps of CCF and the surrounding area are in the CCF baseline report, available at the following URL:

<https://www.chuckanutcommunityforest.com//files/CCF-Baseline-Documentation-Report-Final-5-8-17.pdf>