

Restoration Design
Lab/Studio Design Assignment 2
Assigned 25 & 26 April 2007
Due 2 & 3 May 2007

Overview

The Nature Conservancy and the Washington Department of Natural Resources both own land that is part of the Marcellus Shrub-Steppe Preserve (47° 14'N, 118° 24'W; T20N, R35E), about seven miles north of Ritzville, Washington. The DNR land is to the west of TNC land, separated by a gravel road. TNC land has been fenced since 1986 and is not noticeably degraded by past grazing. The DNR land is currently grazed in spring and summer months. There are sound biological reasons to restrict cattle from unique communities, wetlands, and sites that support endangered species of any kind. There are political reasons to allow the continued, if limited use of sites by cattle.

The dominant plant communities are *Artemisia tridentata*/*Festuca idahoensis* sagebrush and *Artemisia tripartita*/*Festuca idahoensis* sagebrush. At the north end of the DNR parcel are large areas without sagebrush but with *Bromus mollis* and *B. tectorum*. The *Artemisia tridentata* (big sagebrush)/fescue and *Artemisia tripartita* (three-tip sagebrush) /fescue communities are both considered to be high quality examples of their type, even though the preserve is surrounded by wheat fields.

There are 45 vernal pools scattered over the two (DNR and TNC) sites. The Washington Natural Heritage Program has designated them as Priority 2 Protection status, having rare or highly threatened species or having intermediate rarity and threat but little representation in the DNR Natural Area Preserve system. Vernal pools have water in them only part of the year and so are characterized by perennials in the deeper parts and annuals in the shallow areas. There are aquatics and plants that flourish as the pools dry. Vernal pools have their share of rare species of vascular plants, but also have cyanobacteria, bryophytes, and lichens forming crusts. Vegetation zonation is common and often striking. The lower zones may have conditions that are more saline and alkaline. The vernal pool communities, though they contain some weedy species, have an excellent representation of vernal pool species.

The Nature Conservancy has developed guidelines for the management of vernal ponds and the DNR and TNC have reached an agreement on the management of the Marcellus site; TNC will manage it. The DNR portion now has more weedy species and fewer native species in both the sagebrush and vernal pool communities. Studies have found that grazed ponds at the Marcellus preserve have more weeds, and may have fewer rare species than ungrazed ponds. Removal of grazing is an obvious (but perhaps politically infeasible?) first step in the management of such sites.

Background (to help you get started)

The Nature Conservancy:

<http://www.nature.org/wherework/northamerica/states/washington/>

Washington Department of Natural Resources

<http://www.dnr.wa.gov>)

DNR Natural Area Preserves:

www.dnr.wa.gov/nap/napdesc.html

Crab Creek Sub-basin (Crab creek runs just north of the preserve):

www.cbfwa.org/FWProgram/ReviewCycle/fy2002cp/workplan/010803CrabCreekDraft.pdf

Your Assignment (pay very careful attention to details in the overview we provided):

Develop a restoration goal for the entire combined site.

Devise a way to evaluate the level of potential threat from grazing at this site.

Delineate the site in terms of sensitivity and resilience to grazing pressure. Create and propose a set of rules to govern grazing practice there.

Separate the sagebrush communities from the vernal pool communities. Develop separate vegetation restoration and management plans for (1) the sagebrush and (2) the pool communities. These plans should include (a) your plans for managing the invasive species and (b) your plans for augmenting or increasing the presence of native plants. Remember, the vernal pools have both annual species and perennial species, and these should be handled differently. Be sure to address restoration questions including (but not necessarily limited to) "how would you obtain plant material?, increase it?, plant it?, manage its growth?"

Create a pool-by-pool schedule for the restoration of the pools. Which pools would you start with? When would you start? What would you have to accomplish first? What would be your first on-the-ground restoration steps? What would be your restoration activities in the first year that you actually do site modification, conditioning or installation? How much could you get done in a year? What resources would you require? How many people would you require, for how many days, and when? (This is asking for a pretty thorough plan for what you will do the first year.)



