Habitat Enhancement Activities

Another goal of the project was to conduct enhancement activities on 35 acres in Sonoma County and test a few land management methods to assess their effectiveness in controlling non-native plants. Velvet grass was chosen as the target species as it is the most aggressive, threatening invasive species that can dominate coastal prairie habitat. The enhancement team explored different methods of controlling velvet grass: grazing (both by cattle and sheep), mechanical methods (mowing and raking) and application of two different herbicides. Different techniques were applied at five different project sites over three years: the Bodega Head portion of Sonoma Coast State Beach, Bodega Marine Reserve (University of California), Bodega Pastures, Estero Americano (managed by the Sonoma Land Trust), Occidental Arts and Ecology Center, and Ocean Song Farm and Wilderness Center. A field crew from Bodega Marine Reserve conducted spring monitoring each year from 2010-2013 and used the data to determine if the management techniques had any effect on controlling velvet grass.

The results of the study showed that velvet grass can be reduced using herbicide: a monocot specific herbicide (Poast®) showed greater results than a broad-spectrum herbicide (Aquamaster®). Herbicide treatment requires more than one application due to new plants recruiting from the seed bank. With this technique, land managers should expect the need for long-term removal of velvet grass re-sprouts, which can be done either by spot-spraying herbicide or by manual removal (with a tool like a "yard butler"), depending on the area and level of infestation. The type of herbicide preferred depends on how much of a native plant community is present: a monocot, or grass-specific herbicide, is recommended for areas where native forbs and grasses are present.

Mowing also appears to be an effective way to hold the line against velvet grass further, but it may take more than one mowing in a season to be effective. The important thing is to prevent velvet grass from going to seed, so timing is important and may differ from year to year depending on conditions. Raking with a tractor did not decrease velvet grass more than mowing did. Looking at grazing, which can be applied at a larger, landscape level than herbicide application and mowing, sheep grazing appears to be holding the line against velvet grass. Although the project team doesn't currently have a prescription for reversing a velvet grass infestation at this scale, there are promising approaches for intensive sheep and cattle grazing. A variety of grazing models have been shown to improve grasslands in other areas of the world and a few ranchers are applying these techniques with good results in Sonoma County.

The Coastal Prairie Enhancement and Feasibility Study has brought major advancements to management of this valuable natural resource. It has furthered our knowledge of where it occurs and of the numerous different types of prairie that currently exist; it has increased the general awareness and understanding of the importance and ecology of coastal prairie; and it has enlightened our management approaches to prioritizing, conserving, enhancing, and restoring coastal prairie habitat. Although there is still more work to do, we now have more tools that have been tested in our toolbox.

A Model Watershed:

The new 3-D Model of the Salmon Creek Watershed *by Diane Masura*

Passion for the Salmon Creek Watershed led two members of the Salmon Creek Watershed Council and long-time supporters of the Bodega Land Trust, Noel Bouck and Diane Masura, to frequently be involved in outreach efforts for the Council and BLT. Besides assisting with BLT's "Walks and Talks", creating lessons with teachers for Salmon Creek School students, and building a resource library at the Kurt Erikson Room, they assist with staffing a table at the Farmers' Market in Occidental.

At the tabling they noted how popular maps are. The public is drawn to see how their location on the map fits in with other land uses, protected lands, sub-watersheds, and history. It occurred to them that if two dimensional learning aids were good, three dimensional ones might also have a place.

After noting a three dimensional copy of Yosemite Valley at the Sebastopol Radio Shack, Diane contacted owner Andy Cohen about making a copy of the Salmon Creek Watershed. He put her in touch with Whitney Potter and learned from him that the model was developed from special laser scanned data called

LIDAR. An aircraft flies over an area, records reference points, and feeds the data to computers. He found that NOAA Coastal Services Center's Digital Coast website had good data for our area.

Noel and Diane hard at work **Photo: Ben Bouck**

Supplied with longitude and latitude points for the watershed's 35 square miles and a map, Whitney sent a review map for the Council's approval. Features were accurate to about 3 meters. It was perfect. It was to be printed in three sections totaling a model 8" by 16". The 3D print would be at one mile = 1 3/4" lateral scale. In order to retain details of the sub-watersheds, we decided to print elevations at 3X scale.

Tap Plastics built a case for it. Diane and Noel painted it to help users orient themselves while looking at it. It will reside in the Kurt Erikson Room Library to be used as an effective aid to those who study it. One can lose oneself in perusing its contours and locating oneself in the watershed.

Photo: Noel Bouck