

Habitat Restoration and Reserve Stewardship

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5/30/2014

Abstract

Through the post-industrial revolution, humans have degraded the land to obtain resources, however as time is proving, these resources are not infinite (Bradshaw, 1980). California's unique habitats are already at risk due to farming, population growth, and need of resources (Bradshaw, 1980). The Younger Lagoon Reserve strives to prevent the further disturbance of habitats and restore the unique habitats on the reserve: the lagoon, coastal bluff, freshwater wetlands, and coastal prairie. The Younger Lagoon is in a 20-year restoration project where students provide the workforce and investigation through teaching and research of best restoration practices. The goal of my project is to aid in the main goal of restoring 2.5 acres in the Younger Lagoon Reserve for this year by doing on-hands site restoration work, outreach to different groups for internships and volunteer work parties, writing a chapter in the curriculum, creating an ID Weed catalog, a seedling catalog, and seed germination research. By achieving these yearly restoration goals at Younger Lagoon, we achieve successful invasive species removal, native species settlement, wetland conservation, ecosystem restoration, and clean lagoon pathways stated under the Coastal Long Range Development Plan [CLRDP]. My main goals are to accomplish site stewardship, research, and outreach in the Younger Lagoon Reserve under each mission statement of teaching, research, and public service. Measurable deliverables would be outreach contact sheets, complete seed inventory data, germination research studies, and the restoration of 2.5 acres in Younger Lagoon Reserve this year.

Problem Definition, Context & Background

Industrial pollution, mining, farming, and the human introduction of invasive species have put complex ecosystems at risk (Eco-systems, 2013). The increase in human population and demand for goods, have bared some resources instinct or degraded (Bradshaw, 1980). For example, the collection of coltan, the main component for electronic goods, in the Democratic Republic of the Congo is resulting in the destruction of the elaborate ecosystem of the rainforest as higher demand of coltan pushes the drive further into the forest (White, 2010). Humans are changing the environment by depleting the earth from resources, emitting greenhouse gases from non-sustainable goods, and using renewable resources; by doing so have ran a lot of wildlife into extinction, and destroyed ecosystems (Eco-systems, 2013). California, like no other state in the USA, has 10 diverse bio habitats, which contain unique vegetation only known to those habitats (CNPS, 2013). According to the California Native Plant Society, the location and climate of the Santa Cruz coast contains vegetation from both the southern and northern coastal areas, creating a crucial site for migrating wildlife (CNPS, 2013). To be able to restore these rich and elaborate ecosystems, the knowledge of soil science and biology need to be understood to bring the theory of restoration into practice (Bradshaw, 1980). Different from contractors performing the restoration work, the Younger Lagoon Reserve main approaches of this project is to have students perform the restoration work and aid through teaching and research in the best restoration practices. The Younger Lagoon Reserve focusses on conserving and restoring that section of the Santa Cruz coast and preserving the unique habitats on site, which include

wetlands, costal bluff, grasslands, and the lagoon. Younger Lagoon before it was donated to the University of Santa Cruz in 1972 was used to farm Brussels sprouts and tilled for agricultural use, then later as a slaughter house. The previous ownerships left Younger Lagoon's habitat damaged and native species overturned by invasive species and weeds. Due to pressure of citizens to conserve the habitat, the university began to create the Coastal Long Range Development Plan [CLRDP] for the Marine Sciences Campus and was approved in 2008 by the California Coastal Commission. The plan included restoration and conservation efforts in Younger Lagoon's 72 acres: 25 acres is Younger Lagoon and 47 aces is the Terrance Lands. UCSC [also advanced] sustainability on a broader scale [by incorporating] research, education, and public service programs (UCSC Campus Sustainability Plan, 2013). The CLRDP includes plans to develop 10 acres of the terrace lands with teaching, research, and public access facilities (CLRDP, 2008). In order to shield Environmental Sensitive Habitat Areas [ESHAs], including the sensitive wetlands habitats that exist on the property, the CLRDP requires the protection and restoration of the habitat outside of the 10 acres of developed lands on the Marine Sciences Campus (CLRDP, 2008).

Project Description

The Younger Lagoon is in its 7th year in a 20 year restoration program dictated by the CLRDP. My project focuses on performing on site stewardship work, outreaching to different groups for internships and volunteer work parities, writing a chapter in the curriculum, creating an ID Weed catalog, a seedling catalog, and seed germination research under the focuses of the UCSC's Natural Reserve's mission statements of research, teaching, and public service. My project's goal is through the year to progressively take a stronger leadership role on Younger Lagoon's restoration efforts. I will accomplish my projected objectives because my objectives will develop in stages throughout the year to accomplish my main goals in the spring. For example, my objective of hosting new volunteer work parties in Younger Lagoon will be achieved by during Fall quarter participating in work days and Winter quarter Co-hosting work days with my mentor. My goal is to also take a role in achieving objectives presented on the Campus sustainability Plan [CSP] on behaves of the Younger Lagoon Reserve. Like stated in the Campus Sustainability Plan, our campus goals for the 2013-2016 years is to increase student, faculty, and staff engagement on the Reserves through research, stewardship, and teaching, to maintain and perform practices of land management and stewardship, and increase appreciation and understanding of Reserves through research, teaching, and public service. My project will benefit positively the student body, faculty, and staff because they will have at their resource Younger Lagoon Reserve for teaching and research.

Project Timeline

The goal of my project is to meet the Younger Lagoon Reserve 2014 2.5-acre restoration goal through a mix of education engagement, research to improve efficiency of restoration techniques and best practices, and engage in hands on restoration on site. Outcome objectives are broken down into 3 categories: outreach/public service, teaching/research, and hands on restoration.

The outcome objectives for the outreach/public service is to educationally engage public, new volunteers, and interns on the Younger Lagoon Reserve and restoration techniques and best practices through the year. Process outcome include:

- Host a Volunteer Workday with new Volunteer group by the end of Spring Quarter (end date: 6/01/2014). The steps needed to complete this objective are by completing minor objectives before it that have me participate and co-host a Volunteer workday. Milestones that will be used to monitor plan unfolding are meeting deadlines on deliverables: contact list and volunteer day roster.
- Table for Younger Lagoon at any possible tabling opportunities until end of spring quarter (end date: 6/01/2014). The steps needed to complete this objective are by obtaining a list of tabling opportunities each quarter, getting ready a week ahead, tabling, and by Week 8 contacting students on list serve for internship opportunities. Milestones that will be used to monitor plan unfolding are meeting deadlines on deliverables: listserve, tabling kit checklist, and email correspondence.

The outcome objective for teaching/research is to research baseline data for species composition planning and ID proofing by the end of the year. Process outcome include:

- Create Weeds ID cards by the end of the spring quarter (end date: 5/30/2014). The steps needed to complete this objective are by completing prep-work during winter and taking pictures of plants as they present themselves. Milestones that will be used to monitor the plan unfolding are meeting deadlines on deliverables: ID cards prep-work, pictures, and the finished ID cards.
- Work with YLR and Greenhouse staff to: catalog seed inventory, grow out seedling, establish and quantify seedling germination rates, and document findings to YLR staff (end date: 5/30/2014). The steps needed to complete this objective are by completing varies steps before it on a quarterly bases. Milestones that will be used to monitor are the meeting of the deadlines of deliverables: catalog seed inventory and documented germination rates.

Project Stakeholders, Student & Mentor Roles

Stakeholders are students, faculty, staff, and the public; relevant actors involved in my project are Timothy Brown, Beth Howard, Laura Reyes, and interns. One third of my project involves outreaching to the public and students since interns are a key effort in Younger Lagoon

reaching its restoration goal each year. We plan to outreach to them via listserv, tabling, online media networking, and work days. Tim Brown's role is to coordinate me on my projects and provide first hand support. Beth Howard's role is to provide secondary support and coordinate with me on my outreaching objectives.

Evaluation

My project results will be accomplish when I have provided more resources on best practices on restoration work through weed catalogs and germination research. All deliverables lead effort to the goal of the Younger Lagoon Reserve meeting its 2.5 acres of restoration for the year. My project's metrics will be the introduction of new volunteer group parties, seed germination data, and intern resources including Weed ID cards and a seedling catalog.

Results

I developed and monitored findings of the Coastal Prairie vegetation seed germination research, co-host on June 6/1 a workday for 25 new volunteers, created a seedling catalog, and restored 2.5 acres of terrace lands.

References

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