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Invasive Species Removal and Ecosystem Health: Moving towards campus transformation

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HNR 102 Honors Colloquium, Red Rocks Community College, Lakewood, CO <http://www.rrcc.edu/honors>



ABSTRACT

► Our Stewardship action project will be an assessment and mapping of invasive species on the campus grounds as a first step. The students participated in an introductory project with our partners, the Sierra Club and Jefferson Conservation District, to learn about invasive species and proper removal techniques. We visited two sites that have projects in different stages of development. The students are now planning the campus survey and assessment. They will decide which species to focus on for potential removal. They will also learn about native plants and water-wise landscaping through the Denver Botanic Gardens and the Sierra Club Water Quality Committee and Organic gardening group. One class will be focusing on choosing a site for a teaching garden and planning the landscaping and native plants. The other class will be conducting the campus assessment and determining a plan for invasive species removal. The second stage of the project will include implementing the invasive species removal and the planting of the teaching garden. The third stage will be to expand the areas of invasive removal and restoration of the native pollinator species.

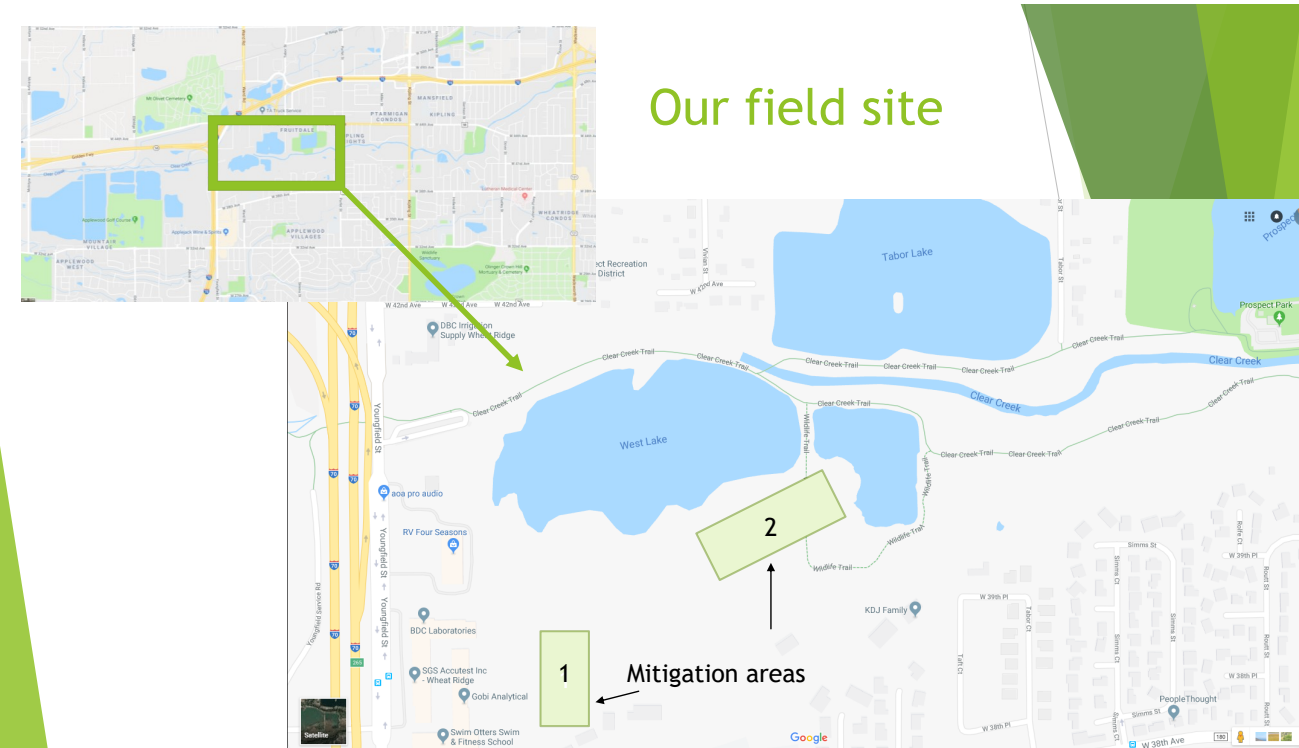
HNR 102 Honors Colloquium focused on the wicked problem of the Future of Water this semester. HNR 102 began field work at the West Lake site in partnership with the Sierra Club, Jefferson Conservation District and Wheatridge Parks. SCI 105 H learned about water sampling and started the construction of the first phase of the outdoor classroom on native plants.

West Lake Teasel Removal Project

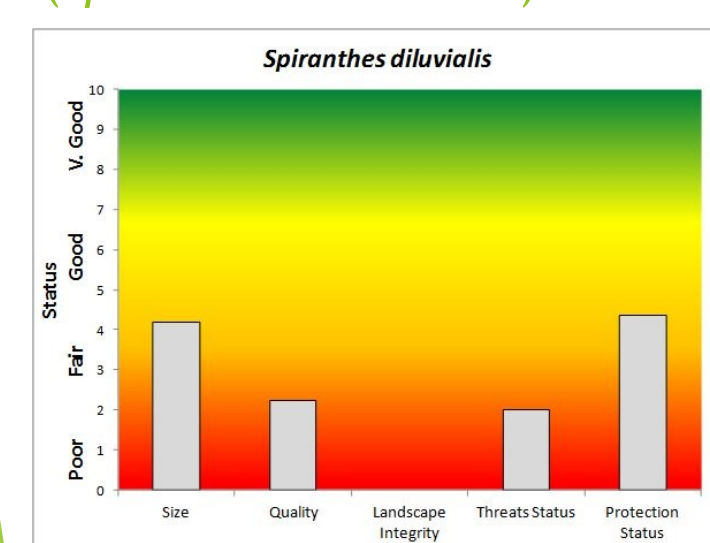
Threatened Species: Ute Ladies Tresses

Spiranthes diluvialis

This is a globally rare plant found in several locations in Colorado. Locally, there is a known site along Clear Creek, particularly the southern margin of West Lake near Prospect Park.

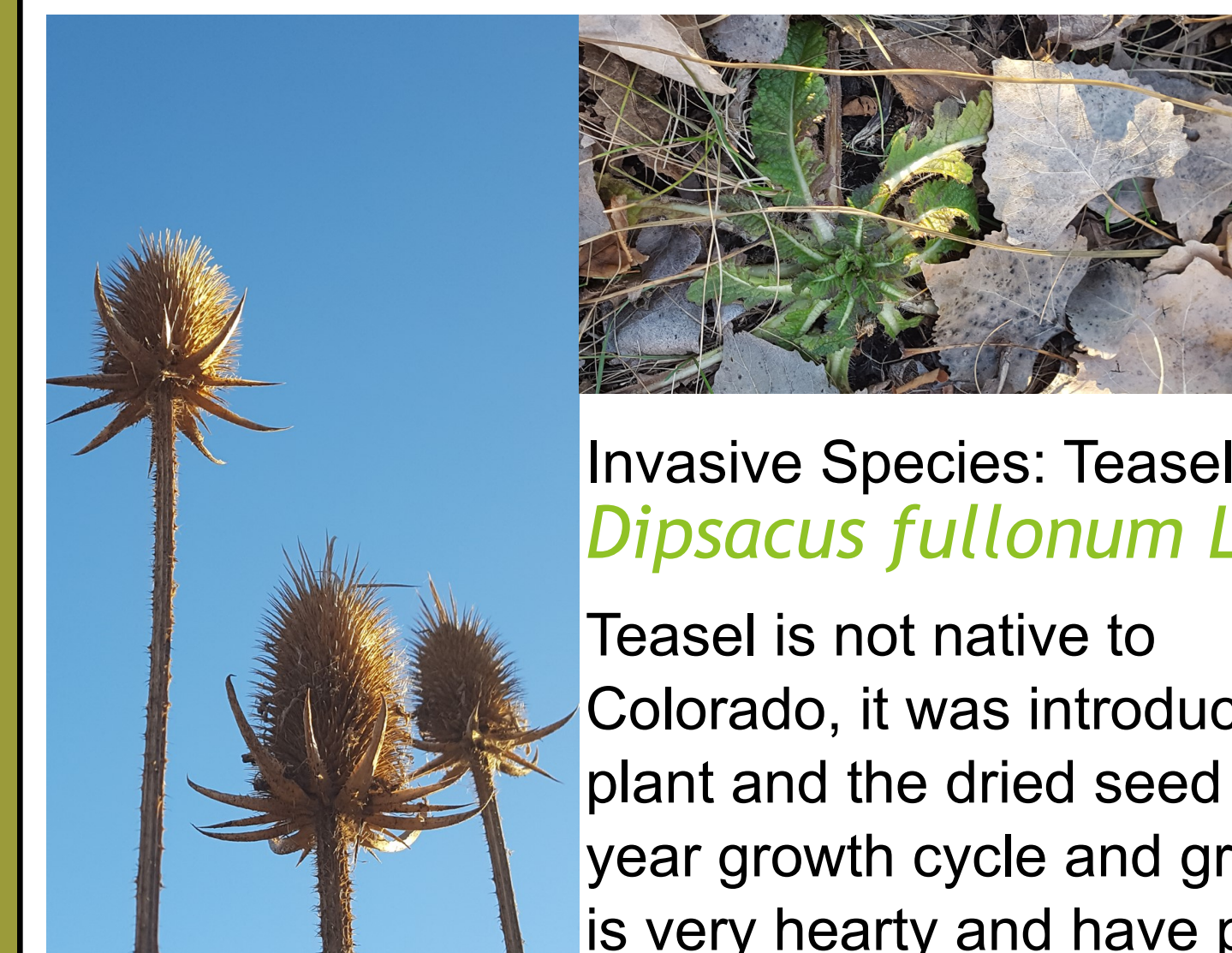


Threatened Species: Ute ladies'-tresses (*Spiranthes diluvialis*)



At the West Lake site, invasive species are encroaching on the territory of the Ute Ladies Tresses. In order to mitigate that threat, the Park service has used chemical methods to remove the invasive plants. This is not ideal for either the threatened species or the water quality on the site.

General distribution



Invasive Species: Teasel *Dipsacus fullonum L*

Teasel is not native to Colorado, it was introduced to the United States as an ornamental plant and the dried seed head was used to comb wool. It has a two year growth cycle and grows along the margins of wetland areas. It is very hearty and have prolific seed dispersal.

Our Task is Removal of teasel :

- helps the propagation of the Ute ladies tresses orchid
- allows space for native pollinator plants and restoration
- reduces need to apply herbicides
- hand removal by digging up rosettes and removal of seed heads and flowers.



Project Plan: West Lake

- Initial site visit - become familiar with landscape and species
- Secondary site visit - plan for mitigation, water testing
- Work day - plant removal

Project Plan: RRCC Campus

- Campus initial survey for teasel and other invasives
- Decide on a mitigation area
- Meet with grounds personnel
- Removal plan
- Native pollinator species research
- Drone surveying?



Above and left: Field work at the West Lake site. Teasel removal through seed head removal and pulling the dead stalks.



Below: Students in SCI 105 doing macroinvertebrate study of the Platte River to estimate stream health.



Above: HNR 102 students being interviewed by HDR about their project work and involvement in Trefny Honors. HDR is a large engineering company and the Water Resources division featured our program in their "Water Matters" conference this spring.



Right: Visiting the field site with Sierra Club member BettyJo Page



Trefny Honors: STEM Honors program at RRCC

The Dr. John U Trefny Honors Program Mission Statement:

The Honors Program at RRCC provides exceptional learning opportunities through interdisciplinary education and problem-solving experiences for a community of scholars in order to prepare them to be leaders in a global community.

Honors 2017-2019 Wicked Problem: "The Future of Water"

Program components are designed around a STEM focused theme. The theme is a "Wicked Problem" requiring interdisciplinary understanding. Water is an issue that affects all people on a local, regional and global level. We will be exploring many aspects of how the future of water on this planet is being shaped.

1 in 10 people lack access to safe water

Women and children spend 125 million hours each day collecting water

Lack of access to clean, safe drinking water and sanitation is a significant barrier for billions of people on this planet.

\$260 billion is lost globally each year due to lack of access to safe water and sanitation.

Clean water is essential for economic progress and preventing death and disease.

For more information about these statistics, see water.org/water-crisis

About the Honors Program

In order to graduate as an Honors Scholar, must maintain a 3.5 GPA, participate in Honors events, participate in one Honors Poster Session/panel discussion/professional conference, complete service learning hours, and complete a minimum of 18 honors credits.

A student accepted into the Honors program will receive a scholarship each semester as long they remain in good standing and are making progress toward their degree. A student who completes the Honors Program will be recognized at graduation as a Trefny Honors Scholar.

If a student participates in honors classes and/or acquires honors option credits but is unable to complete the total requirements to graduate as an Honors Scholar, those credits will still appear on their transcript as Honors work.

Campus Pollinator Pathways

The North side of campus next to the ETC building will be our starting point. The area west of the building will be transformed into an outdoor classroom. Elements of this project include:

- Radio telescope and astronomy observation area
- Native plants garden
- Art student sculpture space
- Pollinator plants garden
- Improved trails
- Urban agriculture demonstration area
- Drip irrigation information
- Pollinator habitats
- Wildlife cams



Phase 1:
Radio Telescope student project and invasive species mapping

Phase 2:
Native plants garden installation by SCI 105 class

Phase 3:
Invasive species removal and pollinator habitat restoration

Phase 4:
Trail improvement, platform building and urban agriculture installment

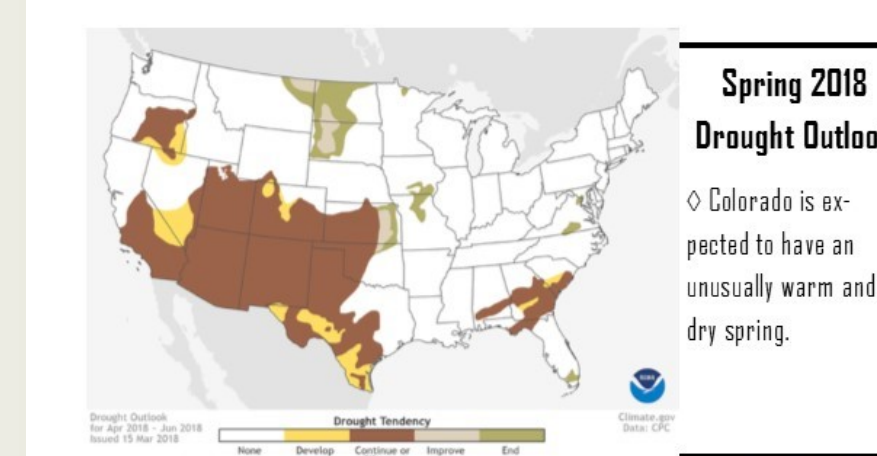
Improving Campus Ecosystem Health

Planned Data Surveys and Assessment:

- Wildlife cam and bird feeder cam data analysis and species reporting
- Quadrat and line transect surveys for biodiversity tracking
- Plant growth surveys in the garden beds
- Visitor logs

Data will be collected by students throughout the project to assess improvements of ecosystem health.

Campus Water Education



Spring 2018 Drought Outlook
Colorado is expected to have an unusually warm and dry spring.

- 5 Ways you can conserve water and help the environment:
1. Take short showers
 2. Turn off the water while you brush your teeth
 3. Know where your water comes from
 4. Use a refillable water bottle
 5. Plant water-wise landscaping

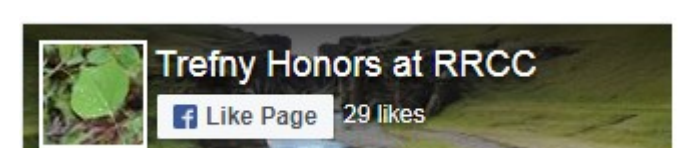
To learn more about how to connect your studies with global issues: <https://www.rrcc.edu/honors>

HONORS PROGRAM
Red Rocks Community College



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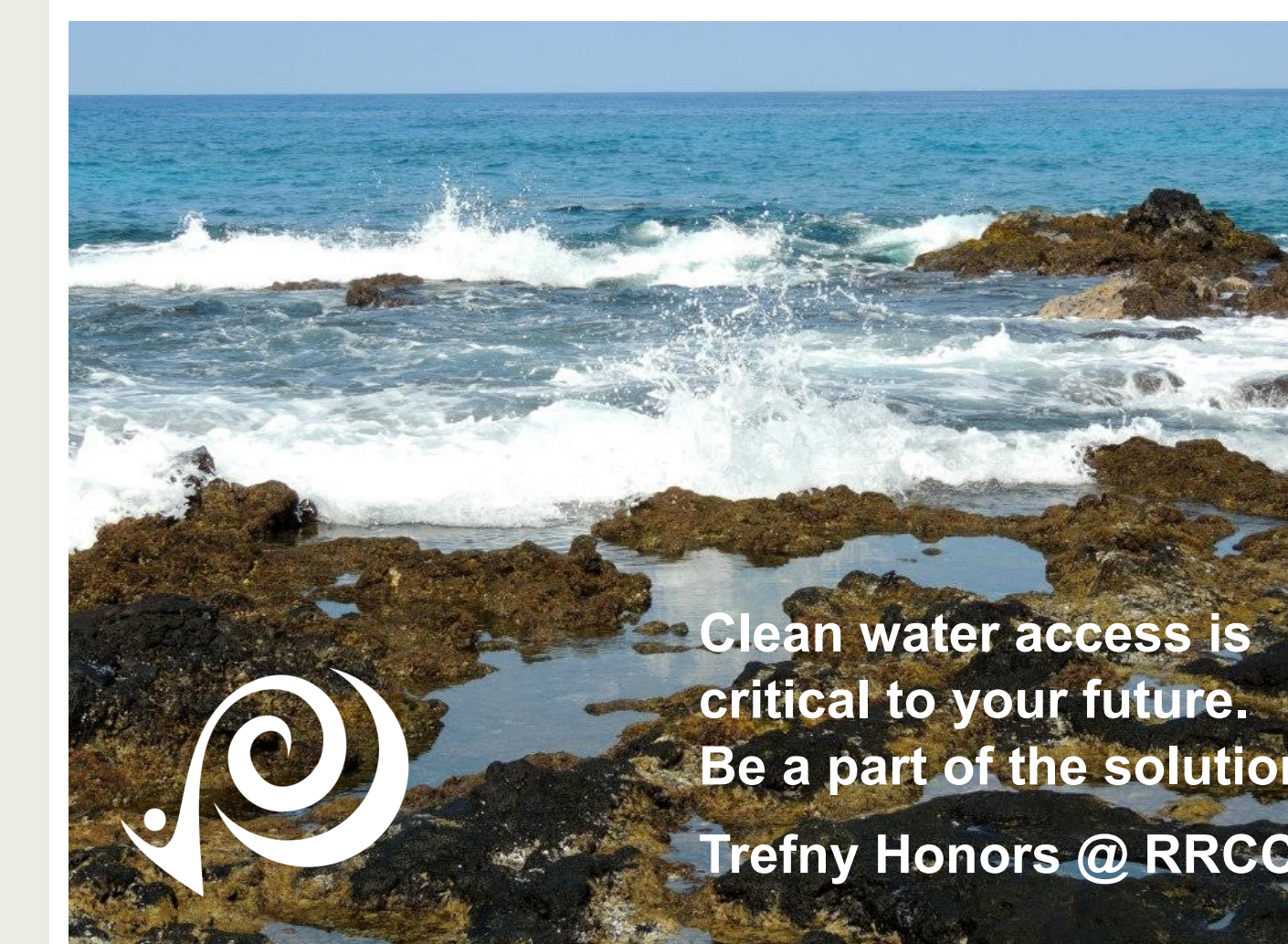
<http://www.facebook.com/trefnyhonors>



Honors students have participated and facilitated several campus events to raise awareness about water issues. These included participation in World Water Day, handing out information about water conservation, having students do a water use survey and starting conversations about water. We also hosted a Panel Discussion on Water as an Environmental Justice Issue. During the HUB sponsored



DID YOU KNOW THAT...
AROUND 1.9 BILLION PEOPLE
LIVE IN AREAS WHERE WATER IS ALREADY SCARCE?



Clean water access is critical to your future. Be a part of the solution Trefny Honors @ RRCC

References

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