seawa
South East Alberta Watershed Alliance

YOUR CONNECTION TO THE WATERSHED

IT'S NOT "JUST PLANTING TREES"

SEAWA's Ecological Riparian Restoration Projects, Local Knowledge Development, and Community Engagement

By Marilou Montemayor

Globally, ecological restoration is considered key to recovery from climate and biodiversity crises. According to the Society of Ecological Restoration (SER), "ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed". When sensitive riparian ecosystems are disturbed, restoration is crucially important as these areas are unlikely to return to a healthy state on their own. The United Nations has declared 2021-2030 as the Decade on Ecosystem Restoration. The South East Watershed Alliance (SEAWA) is in step with this global mission to heal our planet, having initiated its riparian restoration projects in 2018.

To date, SEAWA has restored a total of 11.5 km of riparian landscape in southeastern Alberta. Healthy riparian areas are essential components of healthy aquatic ecosystems, and healthy aquatic ecosystems are an important goal of Alberta's Water for Life strategy. SEAWA's riparian restoration projects also help it to fulfill its mandate as a Watershed Planning and Advisory Council (WPAC). Through its riparian restoration activities, SEAWA has been able to form partnerships, develop specialized knowledge, educate the public, and facilitate environmental stewardship. The impact of SEAWA's riparian restoration program is far more significant than "just planting trees," although that is where it starts.

The South Saskatchewan River Basin, as part of the Grassland natural region of southeastern Alberta, has a semi-arid climate. This region contains streams, lakes, wetlands, riparian areas, shrub lands, and a vast community of grasses, sagebrush, and wildflowers. Planting native perennial woody vegetation – shrubs and trees that are appropriate to the location's ecoregion or natural region is a natural way to restore ecosystems and to fight climate change. Many restoration studies are "tree-centric" and often overlook other plants, particularly shrubs, but in the Grassland natural region shrubs and shrub lands are very important for carbon sequestration. SEAWA has had to develop its own riparian restoration methodology and techniques in order to have success in this unique environment.

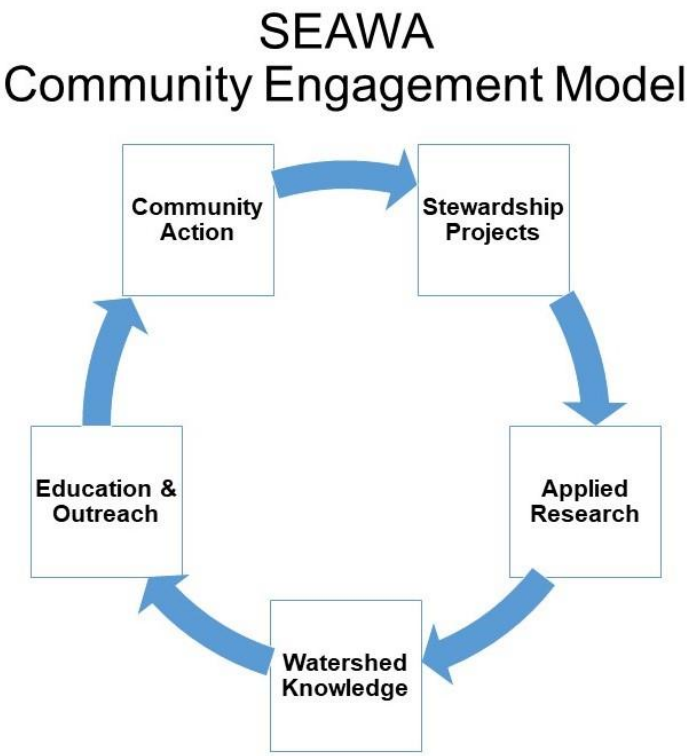
An early attempt at live-staking of sandbar willows failed. This technique, used for river bank erosion control in many parts of the world, was not applicable to our local conditions. Over the last four growing seasons, SEAWA planted different species of native shrubs (red osier dogwood, chokecherry, silver wolf willow, golden currant, Saskatoon berry, thorny buffaloberry, western snowberry, and silver sagebrush) and trees (plains cottonwood, Manitoba maple, and green ash) and over a thousand of them are currently thriving. Plants at the SEAWA restoration sites are considered established when

they are greater than a meter in height and have broad canopies to outcompete weeds, grow deep and extensive root system to access deeper soil moisture as well as survive rodent burrows underneath, and become self-propagating (reach the fruiting stage and/or grow suckers). All seven of the shrub species planted have started fruiting and suckering.

The knowledge that SEAWA has gained during the restoration process is very valuable and specific to our region. SEAWA has had to: develop propagation methods for commercially unavailable native plant species; cope with planting during high temperatures of July-August (when propagated plants are ready and summer help is available); determine planting location of each species on the specific riparian zone according to its soil moisture requirements; understand the effect of elevation, bank height, inner/outer curve of a stream; steep slopes, floodplain, and aspect (N, S, E, W); ensure diversity of native riparian plant species; and practice basin-making and terracing. At the SEAWA sites, we learned that post-planting care is critical. These important but laborious practices included weekly watering (7-10 liters per plant), weeding every two weeks, and the installation of enclosures and application of deterrents against deer and rodents. It was determined that a sprinkler system would be unsuitable because it would cause soil erosion and encourage more weed growth.

Each of SEAWA's four restoration sites (Connaught Pond, Seven Persons Creek by Saratoga Park, Sauder reservoir, and Yeast site) have different issues and required site-specific restoration solutions. The Yeast site by Seven Persons Creek, south of the hamlet of Seven Persons, and the Connaught Pond site in the City of Medicine Hat have been the location of multi-year experiments on non-chemical methods to suppress noxious weeds and invasive plants in riparian areas – leafy spurge, Russian olive trees, downy brome, and reed canary grass. These sites have become important outdoor education and field demonstration sites for students, service groups, and the public to learn about ecological riparian restoration and to promote and practice riparian stewardship locally.

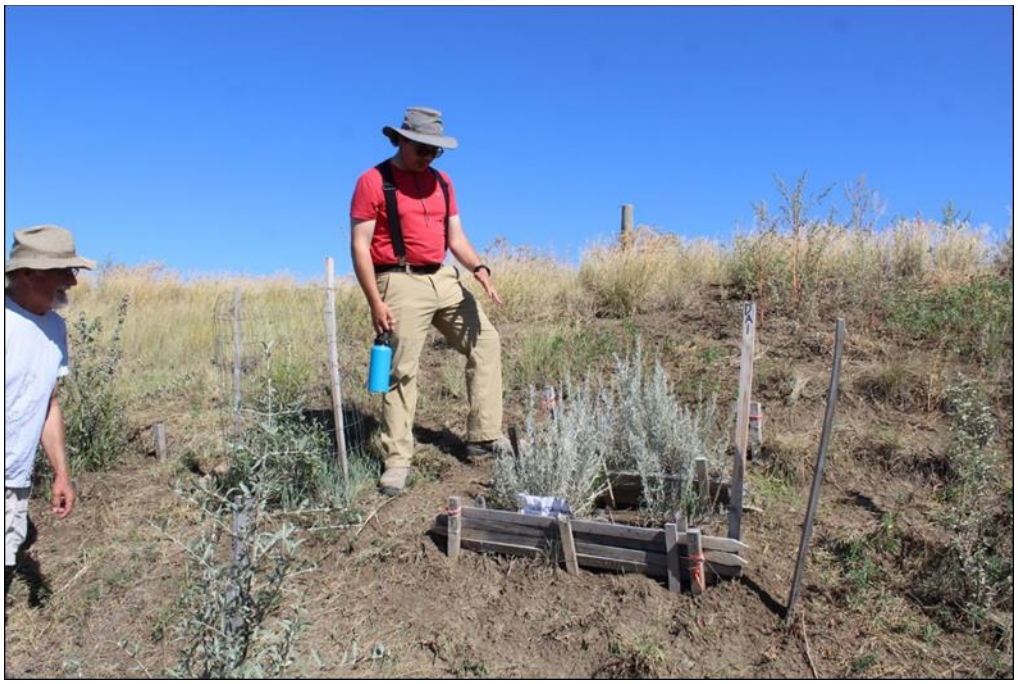
As well as developing a body of knowledge, SEAWA's restoration projects have been instrumental in gaining stakeholder support and recognition of SEAWA as a relevant organization in the watershed. Partnerships with landowners and municipalities have had to be forged in order for the work to take place. These projects have provided work experience to summer students and interns (15 so far), academic coop and practicum credits (3 students), and casual employment to others. The opportunity for volunteers to participate in and experience riparian restoration fieldwork also has built community engagement. As further community outreach, learnings from these projects have been shared with thousands of followers via social media outreach and with more than 700 recipients through quarterly newsletters. Significantly, it is through its riparian restoration projects that SEAWA's Community Engagement Model naturally evolved.



Riparian restoration, like any ecological process, must be viewed over the long-term. The ultimate goal is for the landscape to regain function and provide ecological services – regulating the effects of floods, improving water quality, providing food and habitat for fish and wildlife, facilitating nutrient cycling, and enhancing biodiversity. During the restoration process, natural setbacks – drought years, heat waves, low water levels, storms that strip leaves and bark off plants, rodent damage, browsing pressure, invasive and noxious weeds, pests, and diseases – can take their toll. Unfortunately, there are also human factors that impede the restoration process, including staff turnover and vandalism. In order to be successful, the process requires follow-up for years, even decades, after planting. Disturbances from human activities should be managed. It is hoped that SEAWA's restoration sites can be maintained so that their benefits can be studied further and the lessons they provide can continue to be shared.

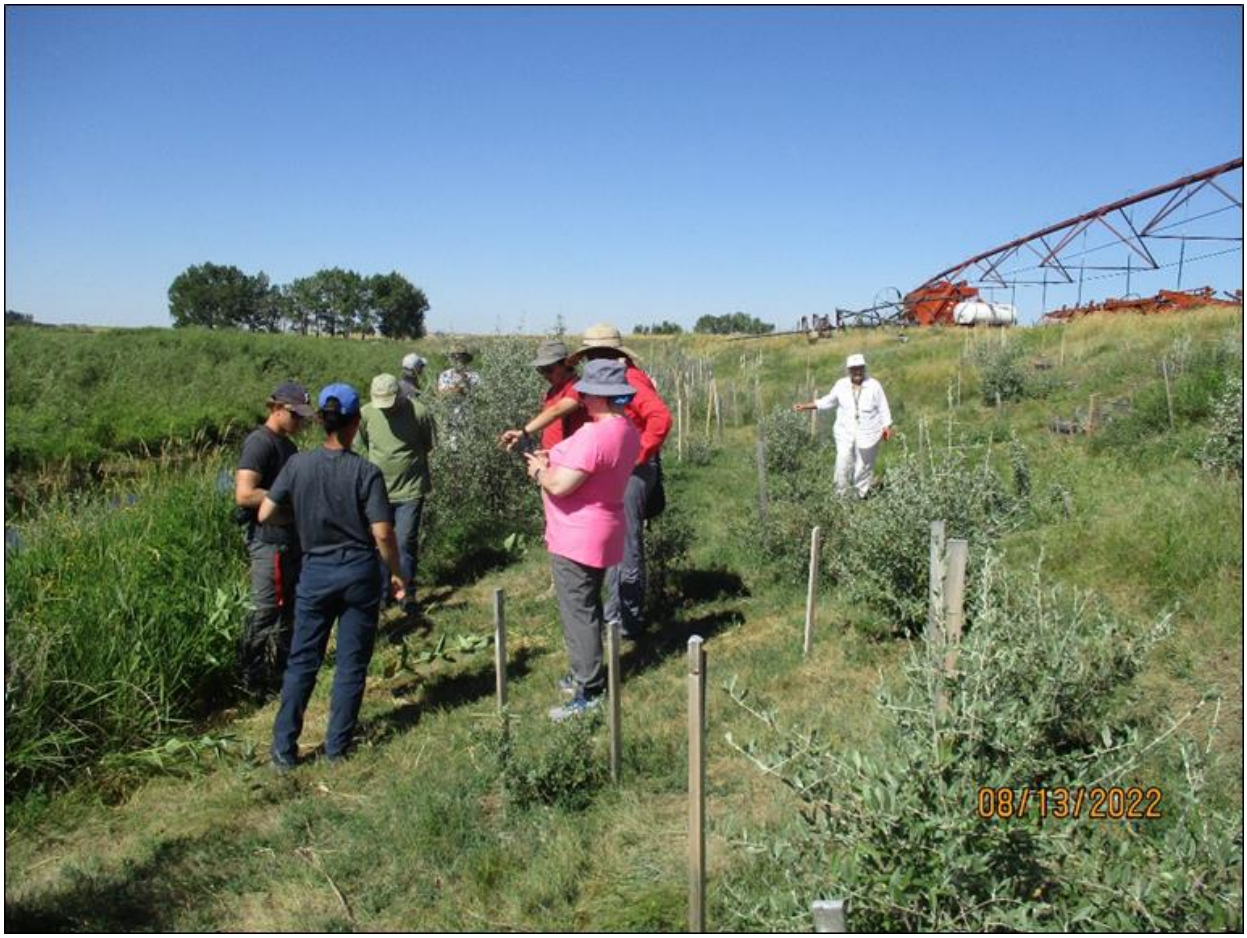
SEAWA is proud to have established its own unique riparian restoration knowledge through practical on-the-ground work. Field staff have grown their expertise by learning while doing, observing local natural phenomena, and conducting practical experiments. This work has required the competent application of scientific and technical knowledge and the development of a multidisciplinary skill set. Most important of all is that this body of knowledge was cultivated locally and is appropriate to local conditions. The successes and failures SEAWA has experienced during this process will be used to produce a Best Management Practices manual for future ecological riparian restoration in Southeastern Alberta. It is through the sharing of knowledge, especially practical knowledge, that awareness grows. It is SEAWA's hope that this awareness will promote active conservation of water and ecosystems in Southeastern Alberta, which will in turn, lead to improved watershed and human health.

First fruits of thorny buffaloberry, planted as a 15cm plug in 2018, at the Seven Person Creek (in the background) Yeast riparian restoration site. Among the seven species of shrubs planted, it was the last to bear fruits. Photo credit: Marilou Montemayor.



Ben White, summer student, explaining one of the experiments on the suppression of leafy spurge to visitors during the August 2022 field tour. This is one of the plots of the experiment, planting silver sagebrush combined with weeding of leafy spurge, at the Yeast riparian restoration site. Photo credit: Andrea Perez.

"Think globally, act locally"



Riparian restoration field tour August 2022. There are seven shrub species and two tree species planted at the Yeast site. This section of the riparian area was planted with thorny buffaloberry in 2018 and some are already as tall as the visitors in 2022. Photo credit: Ben White.

Acknowledgment

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