T̓IX̱EṈ RESTORATION PROJECT
ANNUAL REPORT
April 2015

"The living things of this world are our ancient relatives,
and they must be treated with respect."
-Tsawout First Nation 2013

1.0 INTRODUCTION

The T̓IX̱EṈ Restoration Project was undertaken in order to apply the recommendations of cultural and scientific researchers who have studied this unique area, to build on past restoration efforts, and to conserve and protect the important ecological and cultural values of T̓IX̱EṈ for the members of Tsawout First Nation and the wider community. In March 2012 a proposal was submitted to Tsawout First Nation by a small team of local ethnobotany and restoration experts to develop a restoration plan for T̓IX̱EṈ. This proposal was accepted by the Tsawout Lands Committee and the project became active in September 2012. The project experienced a setback from April 2013 to August 2014 due to a lack of funding. Restoration work was limited to two field trips from ŁÁU,WELṈEW̱ Tribal School; however these field trips were beneficial for connecting students to T̓IX̱EṈ. In September 2014, the project was restarted with a series of volunteer days; restoration planning resumed with the objective of clearing T̓IX̱EṈ of all the sprouts of invasive lants that returned after the invasive removal efforts of 2012-2013.

Member	Title	Role
Gwen Underwood	*Tsawout First Nation Lands Manager*	• project supervision • volunteer day promotion
Marie Vander Hieden	*Tsawout First Nation Lands & Registration Officer*	• project supervision • volunteer day promotion
Earl Claxton Jr	*Tsawout First Nation Elder, Traditional Knowledge Keeper, Community Historian*	• restoration planning • on-site restoration work • salvage plant maintenance • historical and ethnobotanical education
Judith Lyn Arney	*Ethnoecologist, Ecological Restoration and Native Plant Propagation*	• project coordination • restoration planning • on-site restoration work • record restoration activities • prepare work plans and annual reports • volunteer coordination • volunteer day promotion • salvage plant maintenance

WORK SCHEDULE	
August-Sept 2014	salvage plant maintenance;ȾIXEN restoration planning
Oct – Nov 2014	ȾIXEN restoration (volunteer days); salvage plant maintenance
Dec 2014 – Jan 2015	salvage plant maintenance; ȾIXEN restoration planning
Feb – Mar 2015	ȾIXEN restoration (volunteer days), burn debris piles @ ȾIXEN; salvage plant maintenance

2.0 BACKGROUND

There has been a good deal of research done at ȾIXEN which has helped to inform our planning for the ȾIXEN Restoration Project. The *Cordova Shore Conservation Strategy* (Page 2010) and *Terrestrial Ecosystem Mapping of ȾIXEN/Cordova Spit* (Stacey and Filatow 2009) have been integral in determining the varied ecosystems types and their communities. Tsawout First Nation's Community Plan (2011), *Our Vision for Tomorrow*, also gives the framework for future policy and action on Tsawout reserve land. Additionally, Glenn Bartley's (2008) Master's thesis *ȻENIṈETEL A,ÍT E TŦE TEṈEW; 'Helping each other take care of the land': An Ethnoecological Approach to Restoring the Coastal Dune Ecosystem of ȾIXEN and Island View Beach* has provided important guidance and insight into the ecology of ȾIXEN, recommendations for its restoration, and the first ambitious restoration endeavours initiated at ȾIXEN. The book *Saanich Ethnobotany* (Turner and Hebda 2012) has also supplied many of the SENĆOŦEN names used here for plants at ȾIXEN and continues to be a valuable reference for the restoration team.

3.0 SITE HISTORY

ȾIXEN is located on the eastern coast of the Saanich Peninsula, in the Coastal Douglas-fir Moist Maritime (CDFmm) biogeoclimatic subzone and within the Nanaimo lowlands ecosection (BC Forest Information 2011). Stacey and Filatow (2009) identified 16 dominant ecosystems during their terrestrial ecosystem mapping of ȾIXEN/Cordova Spit, approximately ten of which lie within the scope of our restoration project, which focuses on the spit of land commonly referred to as ȾIXEN (Cordova Spit) surrounding Saanichton Bay, as well the sand and dune ecosystems immediately south of ȾIXEN up to the boundary of Island View Regional Park. The project area consists of a diverse range of ecosystems including sand spit, salt marsh, Garry oak, sand dune and brackish marsh communities (Page 2010:28).

Historical use of this area goes back thousands of years. As stated in the landmark court case Claxton vs Saanichton Marina (1989), "[a]ccording to native account, forbears of the present Tsawout people have lived at Saanichton Bay for as long as anyone knows (3)". Many elder members of the Tsawout community can recall time spent at ȾIXEN harvesting

clams and eating seafoods cooked in traditional pits. T̓IX̱EṈ is the site of the Tsawout Seafood Festival, in which people from local native and non-native communities come to the spit to enjoy a celebration of local seafoods and traditional methods of preparation and cooking indigenous foods.

Many culturally important plants dwell in T̓IX̱EṈ. KEXMIN (Indian consumption plant, *Lomatium nudicaule*), present mainly in the large headed sedge ecosystem within the southern section of the project area, is an effective medicine for colds and congestion as well as a cleansing smudge and sacred plant. SLEQ̓AI (dune grass, *Leymus mollis*) is dominant in the dune wildrye- beach pea ecosystems of T̓IX̱EṈ occupying much of the inland area of T̓IX̱EṈ upshore from the sandy beach. SLEQ̓AI was used in the W̱SÁNEĆ reef net fishery and continues to be remembered as an important plant today (Claxton 2003:49). Other food and medicine plants at T̓IX̱EṈ include ȻEX̱IEĆ (Hooker's onion, *Allium acuminatum*), ṮELIḰ EŁP (yarrow, *Achillea millefolium*), ḴELḴEIŁĆ (Nootka rose, *Rosa nutkana*), ḴÁ,EW̱IŁĆ (Pacific crabapple, *Malus fusca*), and SĆI,SEṈIŁĆ (Saskatoon berry, *Amelanchier alnifolia*).

4.0 ECOLOGICAL RESTORATION

Ecological restoration at T̓IX̱EṈ is the cornerstone of this project. The highly visible quality of the restoration work at this location has the benefit of attracting attention from Tsawout community members and other visitors to T̓IX̱EṈ. Careful restoration planning as well as community engagement through a program of volunteer days has been very successful in accomplishing our short term objectives and building a foundation for our long term restoration goals.

4.1 Restoration Planning

Restoration planning currently builds on the recommendations of previous researchers at T̓IX̱EṈ to create an integrated and adaptive approach to the restoration work. Several key issues have been identified as important considerations during restoration planning.

4.1.1 *Ethnoecological Restoration*

Glenn Bartley (2008) describes ethnoecological restoration projects as "those that seek collaborative, symbiotic partnerships between ecological science and traditional ecological knowledge (TEK) in an effort to restore the ecological integrity of culturally significant landscapes" (58). Restoration planning for the T̓IX̱EṈ Restoration Project takes an ethnoecological approach by accounting for the diverse values in the special landscape of T̓IX̱EṈ; as a sensitive ecological area, an important migratory bird stopover point, a recreational site, a hunting area, and a sacred place to gather traditional foods and medicines. Additionally there are burial mounds at T̓IX̱EṈ which must be acknowledged

and given wide berth out of respect for the deceased community members and the potential health risk work around the graves might present.

Since 2012, efforts have made to engage community members, youth, elders, and knowledge keepers in the restoration work at T̓IX̱EṈ through community newsletters, social media, community events and word of mouth. Our hopes are that the visible impact of our restoration work to date will also create interest and foster community involvement in both the ecology and restoration of T̓IX̱EṈ. Future opportunities for educational events, materials, and even an interpretive centre would also contribute greatly to increasing awareness of traditional uses of plants at T̓IX̱EṈ as well as their SENĆOŦEN names.

Yellow sand verbena (Abronia latifolia) and Beach knotweed (Polygonum paronychia) at T̓IX̱EṈ

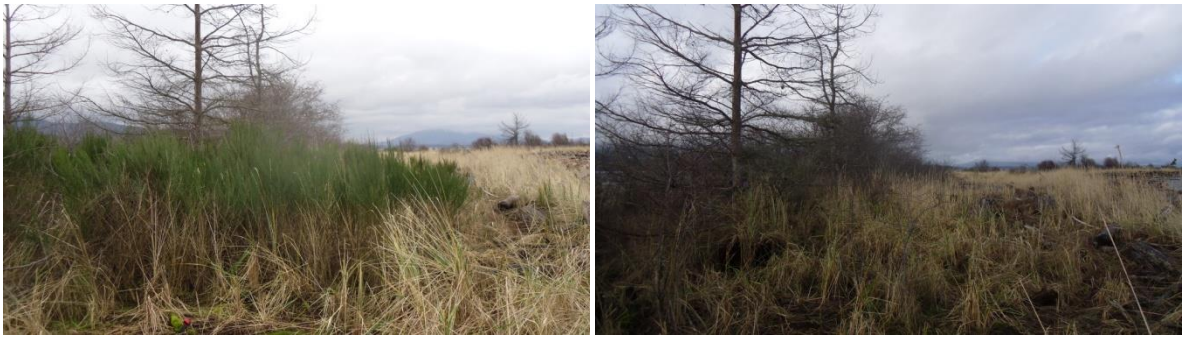
4.1.2 *Endangered Species and Species at Risk*

Given the rarity of sand and dune ecosystems in the CDFmm subzone, T̓IX̱EṈ is home to a variety of endangered species. The yellow sand-verbena and its relationship to the sand-verbena moth has been documented by Environment Canada (2011). Other endangered species include contorted-pod evening primrose (*Camissonia contorta*), Howell's triteleia (*Triteleia howellii*), streaked horned lark (*Eremophila alpestris strigata*), and Edward's beach moth (*Anarta edwardsii*) (Page 2010:16-17). Endangered species and their habitats are being identified and given proper protection during restoration work to avoid negatively impacting their presence at T̓IX̱EṈ.

4.1.3 *Invasive Plant Removal*

The primary objective for invasive plant removal has been the reduction of seed-producing Scotch broom (*Cytisus scoparius*) plants with the long term goal of complete eradication of this invasive species from T̓IX̱EṈ. The long term goal of eradication will require collaboration with the Capital Regional District and Island View Regional Park, Tsawout Community members who have invasive species on their properties, the members of the Nature Conservancy of Canada doing restoration work on nearby James Island, local experts and educators as well as dedicated staff and volunteers.

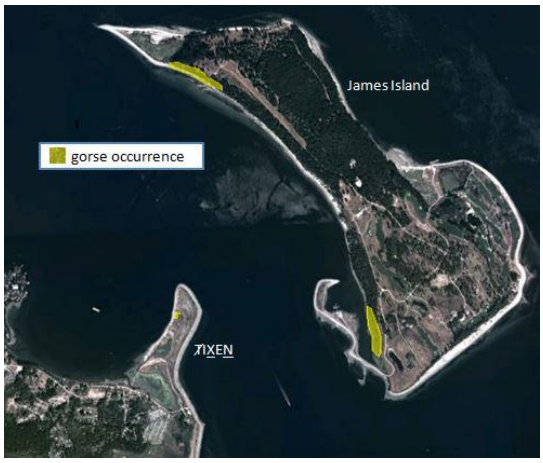
In the meantime, we are accomplishing our first objective of significantly reducing the population of seed-producing Scotch broom plants. By cutting plant stems as close to the



before and after broom removal at T̓IX̱EṈ

ground as possible the potential for individual plant to resprout and bring nutrients to their roots through photosynthetic activity is compromised drastically. This relative simple method also allows the capacity for volunteers to cover a broad area over a short period of time and halt the process of seed generation and dispersal. Scotch broom seeds are widely known to lay dormant in the soil for seven to ten years. With consistent monitoring and a continuous program of restoration volunteer days, our methods should be successful in eradicating Scotch broom from T̓IX̱EṈ.

Another invasive species of interest at T̓IX̱EṈ is gorse (*Ulex europaeus*). We are fortunate that the gorse invasion has so far been limited to a small patch along the northwestern shoreline of T̓IX̱EṈ. This patch was removed once by volunteers though some of the oldest, thickest plant stems remain and have resprouted. Scotch broom and gorse are genetically related species; their removal methods are much the same in that individual stems are cut at the base to prevent resprouting and photosynthesis. The area of occurrence for this gorse outbreak will require vigilant monitoring into the future.



It is reasonable to assume that this population of gorse began from seeds traveling from James Island, where gorse is extremely pervasive on the west facing cliffs looking out towards T̓IX̱EṈ. The Nature Conservancy of Canada is actively targeting gorse and broom for removal on James Island.

Other invasive species at T̓IX̱EṈ include European beachgrass (*Ammophila arenaria*) and Himalayan blackberry (*Rubus discolor*). Currently we are developing a removal strategy for the European beachgrass; however it is quite pervasive and easily confused with other grass species for volunteers. Himalayan blackberry is removed by digging root crowns or cutting stems at the base where they are found. Fortunately Himalayan blackberry occurs

only sporadically at T̓IX̱EṈ and does not constitute a significant threat at this time.

4.1.5 *Disposal*

During this season, Marie Vander Hieden was able to organize a 30 yard roll off BFI bin dropped near the service gate to the spit. This bin was filled during our autumn restoration work, emptied, and replaced for the start of our winter/spring volunteer days.

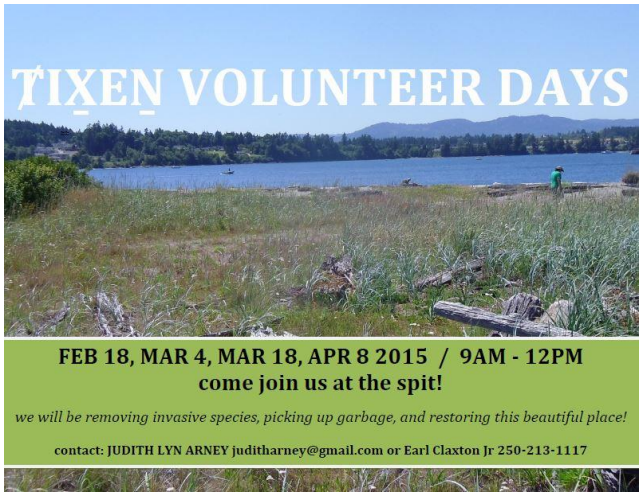
While this BFI bin was helpful for the containment of our invasive debris during winds and stormy weather, the practical challenges of volunteers loading broom into the bin once it became full increased considerably. In previous years, we received support from the CRD to remove broom piles we created (two piles: one near the service gate and one in the parking lot at the end of the spit); this disposal method significantly improved the efficiency of our invasive removal efforts.

The CRD has offered to assist in the removal of the cut broom near the border of Island View Regional Park. This large area of broom was removed by volunteer Dr. Bryce Kendrick outside of our regular volunteer day hours. Dr. Kendrick has generously contributed a significant amount of his personal time and effort to accomplish this removal and continues to be a major supporter of the project.

Additionally, to prevent seed dispersal from the site of occurrence, broom and gorse removed from the end of the spit at T̓IX̱EṈ was burned. Due to the highly combustive nature of gorse, a small fire was built below the tide line near the gorse patch on April 8 2015; all cut broom and gorse from this area was burned at this time.

4.2 Volunteer Days

In addition to accomplishing restoration goals, volunteer days are opportunities for local knowledge keepers and elders to share their traditional knowledge about local plants and history with participants. This offers volunteers an incredible chance to learn about the cultural importance of T̓IX̱EṈ and the many precious species that dwell there as well as contribute to the stewardship of this special place.



Our volunteer days took place on select Wednesday mornings, attracting numerous members from the wider community, as well as an indigenous student group studying native plants, led by Tim Brigham (Royal Roads University). Through the PEPÁḴEṈ HÁUTW̱ Native Plants &

Garden Program at the Tribal School, high school students returned to do invasive removal and learn about the history of T̓IX̱EṈ and the sacred medicines which dwell there.

Our final volunteer day on April 8 2015 was attended by local community members, Pacific Rim college students, Camosun college students, and high school students from ŁÁU,WELṈEW̱ Tribal School.

Bartley (2008) states, "the participatory nature of invasive species removal can bring people from all ages and backgrounds together around a common goal and help to restore a connection to the land" (81). These volunteer days have been extremely successful in accomplishing the restoration objectives of invasive plant removal and community engagement, bringing many diverse peoples together to celebrate and conserve T̓IX̱EṈ.

5.0 RESTORATION RESULTS

This season (September 2014 – March 2015), the total area of invasive species removed by T̓IX̱EṈ Restoration Project participants stretches from the border at Island View Beach Regional Park to the tip of the spit, excluding a few small patches near the gorse area, the trailhead out to the far end of the spit, and the old gravesite area at T̓IX̱EṈ.

This removal equated to approximately two full 30yd BFI bins worth of invasive plants taken from T̓IX̱EṈ.

We consider this season to be successful in accomplishing the majority of our restoration goals, though ideally we would have been able to totally clear all areas of invasive material before the end of the contract timeframe.

6.0 SALVAGE PLANT MAINTENANCE

The native plant salvage operation from the Jesken Town Centre development site took place at lots 6-4 and 5-3-2 on January 8-9 2014. In collaboration with SERC Consulting, LGL field technicians, Tsawout First Nation and T̓IX̱EṈ Restoration Project staff, 24 Tsawout community members retrieved 94 plants from the areas that were cleared for the Jesken development in January 2014 (see inventory below). The intended purpose for many of these salvage plants was to establish a native plant garden at the Tsawout Community Garden. Tsawout First Nation staff agreed that extra plants could be used for propagation purposes by T̓IX̱EṈ Restoration Project staff or donated to restoration based projects at the ŁÁU,WELṈEW̱ Tribal School. T̓IX̱EṈ Restoration Project staff maintained these plants outside contract obligations from February to August 2014; unless otherwise requested by Tsawout First Nation, after April 2015 T̓IX̱EṈ Restoration Project staff may repurpose these remaining plants for projects serving the larger W̱SÁNEĆ community at ŁÁU,WELṈEW̱ Tribal School.

SALVAGE PLANT INVENTORY		
Plant	**Quantity**	
	small ≤1 gal	**large ≤10gal**
Common rush *Juncus effusus*		2
Slough sedge *Carex obnupta*	1	1
Grand fir *Abies grandis*		4
Salmonberry *Rubus spectabilis*	10	2
Red osier dogwood *Cornus sericea*	2	1
Swordfern *Polystichum munitum*	6	
Red elderberry *Sambucus racemosa*	1	
Snowberry *Symphoricarpus albus*		3
Indian plum *Oemleria cerasiformis*		2
Nootka rose *Rosa nutkana*		1
Stinging nettle *Urtica dioica*	8	
Salal *Gaultheria shallon*	2	
Red huckleberry *Vaccinium ovatum*	2	1
Trailing blackberry *Rubus ursinus*	2	

7.0 RECOMMENDATIONS

Since the official start of this ƛIXEN Restoration Project in September 2012, amazing progress has been made in advancing the ecological restoration goals of Tsawout First Nation for this special place in their traditional territory. However, the long term success of the ƛIXEN Restoration Project is dependent upon returning year after year to continue the work of invasive removal, monitoring, and planting native plants. Community engagement, education and involvement in this process will be key to ensuring stewardship of ƛIXEN in future generations. Seed banks of invasive species from nearby areas (such as James Island and Island View Beach) could be examined in the hopes of opening discussion with adjacent property owners, local governments, and other restoration projects to develop a long term strategy for the eradication of invasive species from this site.

We recommend at least 4-8 restoration days each year at ƛIX̱EṈ, taking place between late September to November and February to March. This schedule keeps workers off site when many delicate shoreline plants are beginning to bloom or going to seed. Additionally, these are relatively safe times to burn any debris piles that may be collected. These work days could be volunteer days run by ƛIX̱EṈ Restoration Project staff or involve trained Tsawout staff, depending on capacity for restoration activities at Tsawout First Nation. Over time (within three to five years), the need to do intensive restoration work will decrease and simply monitoring invasive cover and doing one or two restoration work days each year will likely suffice to manage the invasive species at ƛIX̱EṈ.

We also recommend that there be a special restoration day for removing the broom from the old gravesites at ƛIX̱EṈ. Elders chosen by the community could offer prayers and watch over the work during this day.

Over the past three years we have seen an encouraging increase in the abundance of traditional medicine plant populations at ƛIXEN as a result of our invasive removal efforts; it our hope that elders and knowledge keepers will now have more opportunities to teach community members about proper harvesting practices and the traditional use of these precious plants.

We offer our sincere thanks to Tsawout First Nation and the Tsawout Lands Committee for offering us the opportunity to do this important work. We are also grateful to Environment Canada for their funding of environmental initiatives at ƛIXEN.

HÍ,SW̱ḴE SÍAM!

created by Judith Lyn Arney
April 15, 2015

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