

Table 1.1: Rare Plant Species Associated with TIXEN and Island View Beach

| Scientific Name                                 | Common Name                    | National Status | Provincial Status |
|---|--------------------------------|-----------------|-------------------|
| <i>Abronia latifolia</i>                        | yellow sand-verbena            |                 | S3 – Blue         |
| <i>Agrostis pallens</i>                         | dune bentgrass                 |                 | S3-Blue           |
| <i>Allium amplexans</i>                         | slimleaf onion                 |                 | S3-Blue           |
| <i>Alopecurus carolinianus</i>                  | Carolina meadow-foxtail        |                 | S2-Red            |
| <i>Balsamorhiza deltoidea</i>                   | deltoid balsamroot             | Endangered      | S1-Red            |
| <i>Camissonia contorta</i>                      | Contorted-pod evening-primrose | Endangered      | S1-Red            |
| <i>Carex tumulicola</i>                         | foothill sedge                 | (in progress)   | S1-Red            |
| <i>Convolvulus soldanella</i>                   | beach bindweed                 |                 | S3 – Blue         |
| <i>Glehnia littoralis ssp. leiocarpa</i>        | American glehnia               |                 | S3 – Blue         |
| <i>Jaumea carnosa</i>                           | fleshy jaumea                  |                 | S2S3-Blue         |
| <i>Lathyrus littoralis</i>                      | grey beach peavine             |                 | S2-Red            |
| <i>Lomatium dissectum var. dissectum</i>        | fern-leaved desert-parsley     | (in progress)   | S1-Red            |
| <i>Lotus formosissimus</i>                      | seaside birds-foot lotus       | Endangered      | S1-Red            |
| <i>Lotus unifoliolatus var. unifoliolatus</i>   | Spanish-clover                 |                 | S2S3-Blue         |
| <i>Lupinus densiflorus var. densiflorus</i>     | dense-flowered lupine          | Endangered      | S1-Red            |
| <i>Lupinus lepidus var. lepidus</i>             | prairie lupine                 | Endangered      | S1-Red            |
| <i>Lupinus oregonus var. kincaidii</i>          | sulphur lupine                 | (in progress)   | SX-Red            |
| <i>Clarkia amoena var. caurina</i>              | farewell-to-spring             |                 | S3-Blue           |
| <i>Clarkia amoena var. lindleyi</i>             | farewell-to-spring             |                 | S3-Blue           |
| <i>Piperia candida</i>                          | white-lip rein orchid          | (potential)     | S2-Red            |
| <i>Piperia elegans</i>                          | elegant rein orchid            |                 | S3-Blue           |
| <i>Polygonum paronychia</i>                     | black knotweed                 |                 | S3 - Blue         |
| <i>Ranunculus californicus</i>                  | California buttercup           | (in progress)   | S2-Red            |
| <i>Rupertia physodes</i>                        | California-tea                 |                 | S3-Blue           |
| <i>Sanicula arctopoides</i>                     | bear's-foot sanicle            | Endangered      | S1-Red            |
| <i>Sanicula bipinnatifida</i>                   | purple sanicle                 | Threatened      | S2-Red            |
| <i>Toxicodendron diversilobum</i>               | poison oak                     |                 | S2S3-Blue         |
| <i>Trifolium depauperatum var. depauperatum</i> | poverty clover                 |                 | S3-Blue           |
| <i>Trifolium dichotomum</i>                     | Macrae's clover                |                 | S2S3-Blue         |
| <i>Triteleia howellii</i>                       | Howell's triteleia             | Endangered      | S1-Red            |
| <i>Viola howellii</i>                           | Howell's violet                |                 | S2S3-Blue         |
| <i>Viola praemorsa ssp. praemorsa</i>           | yellow montane violet          | Threatened      | S2-Red            |
| <i>Yabea microcarpa</i>                         | California hedge-parsley       | (in progress)   | S1-Red            |

Source: (Fairbarns, 2007)

**Note:** The B.C. Red list includes any indigenous species that is extirpated, endangered, or threatened while the Blue list includes any indigenous species considered to be of special concern. The provincial status of a species is designated by a letter reflecting the scale of the assessment (G = Global, N = National, and S = Sub-national) followed by a number (1 = critically imperiled, 2 = imperiled, 3 = vulnerable to extirpation or extinction, 4 = apparently secure, 5 = demonstrably widespread, abundant, and secure) (Natureserve, 2008).

Table 2.1: Comparing Western Science and Traditional Ecological Knowledge

| <b>Similarities</b>   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Both are based on an accumulation of observations.</li> <li>• Both are cumulative and dynamic processes and bodies of knowledge that build upon collective wisdom, practical experience and adaptation to change over time.</li> <li>• Both have been transmitted generation to generation within their respective cultures.</li> <li>• Both yield detailed empirical information of natural phenomena and relationships.</li> <li>• Both recognize the accelerating loss of animal and plant species and of habitats as a major ecological problem and seek to sustain or increase biodiversity and productivity.</li> <li>• Both knowledge systems embrace beliefs in a self-regulating biosphere (e.g. Gaia hypothesis).</li> </ul> |   |
| <b>Differences</b>  |   |
| <b>Western Science</b>  | <b>Traditional Ecological Knowledge</b>   |
| <ul style="list-style-type: none"> <li>• Uses the written word and formal peer dissemination.</li> </ul>  | <ul style="list-style-type: none"> <li>• Has traditionally been recorded and transmitted orally.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Is learned in a situation often abstracted from the applied context.</li> </ul>  | <ul style="list-style-type: none"> <li>• Is learned through observation and hands-on experience.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Enables humans with the right to control nature for their own interests at the expense of other life-forms.</li> </ul>   | <ul style="list-style-type: none"> <li>• Does not view human life as superior to other animate and inanimate elements: all life-forms are interdependent.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Is reductionist and breaks down data into smaller elements to understand whole and complex phenomena.</li> </ul>   | <ul style="list-style-type: none"> <li>• Is holistic - all elements are viewed as interconnected and not understandable in isolation.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Strives to expand its ability to measure and quantify observations in an attempt to verify its hypothesis on a global basis.</li> </ul>  | <ul style="list-style-type: none"> <li>• Is place based and largely dependent on local social mechanisms.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Is analytical emphasizing abstract reasoning and the need to separate oneself from that being observed and to learn about it through replicable measurements.</li> </ul>   | <ul style="list-style-type: none"> <li>• Emphasizes emotional involvement and subjective certainty of understanding.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Is mainly quantitative, generalized and synchronic (i.e. short term observations from a range of sites).</li> </ul>  | <ul style="list-style-type: none"> <li>• Is qualitative, specific and diachronic (i.e. observations from a single locale over a long period of time). The knowledge base is highly localized. This makes traditional knowledge particularly applicable to restoration design, which is also site specific.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Employs methods of generating, testing, and verifying hypotheses and establishes theories and general laws as its explanatory basis.</li> </ul>  | <ul style="list-style-type: none"> <li>• TEK explanations of environmental phenomena are often spiritual and based on cumulative, collective experience.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Researchers are often not community members and not intimately connected to place.</li> </ul>  | <ul style="list-style-type: none"> <li>• Observers tend to be the resource users themselves – the hunters and gatherers whose harvesting success is inextricably linked to their ecological observations.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Is hierarchically organized and vertically compartmentalized. Managers are distinct from harvesters; authority becomes centralized and flows from the top down.</li> </ul>   | <ul style="list-style-type: none"> <li>• Is rooted in a social context where the world is seen in terms of social and spiritual relations between all life-forms. Relations are based on reciprocity and obligations toward community members and other life-forms.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Prides itself on data that is “value free” and completely objective.</li> </ul>  | <ul style="list-style-type: none"> <li>• Is woven into and inseparable from the social and spiritual context of the culture.</li> <li>• May also extend its explanatory power beyond the strictly empirical.</li> <li>• Includes an ethic of reciprocal respect between humans and the nonhuman world.</li> </ul>     |

Adapted from: (IPRN, 2007; CSSP, 2005; Kimmerer, 2000 & 2002;; Berkes et al., 2000; Johnson, 1992; Grenier, 1996)

Table 2.3: Turner's 8 Elements of Eco-cultural Restoration

|                                       |  |
|---------------------------------------|--|
| <b>Humans with Nature</b>             | Humans are an integral part of their habitat, their home place, rather than being apart from Nature, or superior to and in control of Nature.  |
| <b>Rooted Cultures</b>                | When a person's cultural identity is closely linked to their ancestral lands they have a high incentive to care for them.  |
| <b>Elders Wisdom &amp; Experience</b> | Recognizing the wisdom and experience of community elders. Knowing the past is crucial in any restoration effort. In eco-cultural restoration projects, which incorporate culture and human history as an integral component of ecosystem restoration, the elders – the people who have lived the longest in a place – are the best sources of such traditional knowledge, oral history, language and cultural protocol. The elders' guidance is therefore vital in developing a sustainable future.   |
| <b>Youth &amp; Education</b>          | It is the youth who will carry forward the knowledge and values of the project for future generations. Eco-cultural restoration may require continued – even indefinite – monitoring and investment of time, attention and skill. This can only take place if today's youth recognize the value of ongoing involvement and learn how to contribute and to commit themselves to the projects' continuing development and success.   |
| <b>Local languages</b>                | Using local language is an integral component of each initiative. Languages mould themselves to a particular place; their vocabulary and cadences harmonize with the surrounding landscapes, often embodying unique nuances and reflecting meanings incapable of translation.  |
| <b>Ceremonial Recognition</b>         | Recognizing in ceremony – songs, rituals, dances, feasts – people's relationships with each other, across families, clans, communities and generations, as well as with their other relatives – the animals, fish, trees and all the other elements of creation.   |
| <b>Diversity</b>                      | The best possible success will be achieved when the contributions and skills of many people, both within the culture and outside it, are incorporated.   |
| <b>Patience &amp; Persistence</b>     | "Go slow; make no mistakes" – It doesn't mean that one should not take action, but rather should carefully consider all of the aspects and potential pitfalls, and then make the best possible choices. Initiatives that are aimed at enhancing eco-cultural systems must anticipate a long time frame, extending far beyond a single lifetime. Benefits of the steps we take today to restore and enhance our ecosystems may not be fully realized for many years, and we have to instill patience and persistence in our outlooks. Only patience and education will win others over to a gentler treatment of the earth. |

Adapted from: (Turner, 2005)