

Agenda

Agave "Baccarat", Delta, BC

Introduction: The Geography of My Gardens

- Success 101: Know Your Geography
- Success 102: Species Selection (or "Know the Plant's Geography")
- Success 103: Cheat Your Geography (Microclimates)
 - Seven Case Studies

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Introduction: The Geography of My Gardens

Delta, BC, since 08/2018 Sun Peaks, BC, 07/2021 - ? Erris, BC, 2004 - 06/2021 (]:₩ USDA Z3 but <-40F every few years USDA Z8 USDA Z3 Elevation 100m / 328ft Elevation 1250m / 4100ft Elevation 915m / 3000ft Annual Precip: 1409mm / 55in Annual Precip: 755mm / 30in (220in snow) Annual Precip: 493mm / 19in **Frost-Free Period: 180 days Frost-Free Period: None Frost-Free Period: None Reliable Snow Cover: October – May Reliable Snow Cover: November – April** Calgary Campbell River Vand Salish Sea Bellinghan







Thompson Plateau, BC



Sun Peaks: 7th largest ski resort in North America (2nd in Canada)



Keys to Success: Succulents on the Rocks, in Maritime or Mountain Environments

- What are the opportunities your site offers? Limitations?
- Choosing appropriate species.
- Are there microclimates; ones you can build or existing ones in your garden that you can enhance?

Success 101: Know Your Geography





- Consider your geography from outside your geography (be honest)
- Precip? When?
- Snow? When? Amount?
- How long does snow last?
- Prevailing Winds?
- Summer Heat?
- Soils?

My feeling about USDA Zones: Vancouver does not equal Dallas does not equal Pensacola! And shouldn't Summer be dry?





Success 102: Species Selection

- What is the plant's natural range?
- What conditions can one expect in that range?
 - Temperatures?
 - Precipitation?
 - o Snow? When? Amount?
 - Soils? (Or no soil?)
- Study literature. Plant and seed catalogues are great!
- Has anyone else had success with this plant in similar environs?
- Introspection:
 - A: "Is this realistic for my garden?"
 - B: "How can I help it live in my garden?"
- If you can, go look at the plant and its habitat!
- Tip: Take note of its companion plants in habitat.

Eritrichiam to		
Hymenoxys	Ilianna to Melampodium	Mertensia to Pelargonium
etrophyton to Primula	Pulsatilla to Sophora	Sphaeralcea to Zinna
New Items N-Z	Archives A-M	Archives N-Z
(HK coll.), MX TC05 kish-white flowers actaceae) (36x36,Z7b,	3 Tight-spined, cylindrical- P(L,2)	temmed form with a f
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	erophyton to Prinnia New Items N-Z (HK coll.), MX TC05 kish-white flowers actacess) (35336,27b, MX TC097 Cylindr wers with darker throo case) (1557,27.P.GL.3- er Co., TX TC055 (=)	terophyton to Prumula Pulsattilla to Sophora New Items N-Z Archives A-M (18x7,Z6,P,GL,3:4w) (HK coll.), MX TC053 Tight-spaned, cylindrical-tkinh-white flowers actracese) (36x36,Z76,P,L,2) (MX TC097 Cylindrical stems covered with fam wers with darker throats. Can create massive clam can (16x7,27,P,GL,3:4w) rec Co., TX TC055 (=E virid)flowar sign canac.) A



\$3.00 12368.19 Ex Thompson. TC027 Dark reddish spine colors with long centrals. Brown flowers. Echinocereus chloranthus ssp. weedenii (13x5,Z5,P,GL,3:4w) 40 seeds \$3.00 12372.02 Cult ex Davis Mts., TX. TC055 Thick golden spines with occasional white spines. Greenish yellow flowers turning caramel-brown as they age

This is (or should be) the main takeaway of this presentation.



Dixie Dringman & 'Baby' Pediocactus sp. Phemeranthus spinescens Sedum leibergii May, 2011





Cascades, British Columbia Jiri Papousek Lewisia columbiana Lewisia tweedyi

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Southern Rockies, CO Jeff Thompson Echinocerus viridifloris Opuntia polyacantha Echinocerus coccineus Echinocereus triglochidiatus Pediocactus simpsonii June 2013 / subsequent visits

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Canadian Prairies Opuntia fragilis x polyacantha? Escobaria vivipara Opuntia polyacantha

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Grand Canyon, AZ Agave utahensis Yucca baccata







Species Selection: Simple Conclusions

- Great succulents for the rock garden are often from arid environments.
- Those that are not from arid environments inhabit sites with stellar drainage.
- For me, the key to success has been choosing species that are arguably cold hardy, and then mitigating the risk of humidity, rain and snow killing them. <u>But they've got</u> to be cold hardy!

Success 103: Cheat Your Geography (Microclimates)

Seven case studies, from least innovative to (in my opinion) to most. But all work!

Case Study #1: Portable Pots / Troughs and Winter Structures

- You can pot hardy succulents or plant them in a portable trough, and move them into dry spots over the winter
- You can build a temporary winter structure over garden beds to keep your hardy succulents dry over the winter. I don't do this.



Echinocereus reichenbachii Delosperma 'Jewel of Desert' CV Agave cf gracilipes Aloinopsis x Nananthus





Echinocereus viridifloris Pediocactus simpsonii Opuntia fragilis Escobaria vivipara Delta & Sun Peaks, BC

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Success 103: Cheat Your Geography (Microclimates)

Case Study #2: Erris BC "High and Dry Garden"

- Entire garden devoted to dryland / native plants succulents as part of a larger plant community
- The most basic treatments for growing succulents among non-succulent companion plants:
 - $\circ~$ Raised Beds / Swales
 - $\circ~$ Orientation use of southerly aspects
 - Abundant Rock
 - \circ Amended Soil (50/50 gravel and native soil)
- Very much "common rock garden culture", successful for many succulents, in many climates!

Graphic

Orostachys spinosa Phemeranthus spinescens Opuntia macrocentra (potted) Sempervivum cv Sedum spurium cv Sedum album (careful) Eriogonum ovalifolium v. nivale Penstemon procerus









Lewisia rediviva Lewisia tweedyi (volunteer!) Sedum ewersii Penstemon fruticosus Erris, BC





Opuntia "Fussen" Talinum brevicaule Lewisia tweedyi





Opuntia aurea hybrids Opuntia polyacantha Hylotelephium populifolium Lewisia nevadensis Erris, BC Opuntia aurea hybrids Opuntia polyacantha Phemeranthus spinescens Agave americana Yucca glauca Castilleja miniata Sedum kamtschaticum **Erris, BC**



Opuntia polyacantha Lewisia pygmaea Sempervivum cv Phlox diffusa Aquilegia flabellata Erris, BC

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Success 103: Cheat Your Geography (Microclimates)

Case Study #3: Erris BC "Hillside Demonstration Garden"

- Garden is largely devoted to hardy cacti, Yucca and Agave, volunteer native plants allowed on case-by-case basis
- Innovations:
 - \circ Use of a natural rocky hillside with southerly aspect nothing else would grow there!
 - Snow more shallow, melts faster in Spring
 - Maximum Summer heat in a place where hard frost occurs in any month
 - Use of native in-situ creek cobble and sand no amendment
 - Incredible drainage, dries quickly in combination with Southern aspect
 - Augmented with native boulders for aesthetics, but they also held daytime heat
- Drawback: Situation at valley bottom brutally cold mornings

Graphic













Opuntia sp. Yucca angustissima Erris, BC



Pediocactus simpsonii v. minor Opuntia polyacantha Opuntia aurea hybrids

Erris, BC





Success 103: Cheat Your Geography (Microclimates)

Case Study #4: Erris BC "Under-Eaves Trough"

- Permanent trough is entirely devoted to hardy cacti and Yucca
- Innovations:
 - $\circ~$ Permanently placed against the sunny, south-facing wall of a shed
 - Shed's roof overhang enabled me to almost completely control how much moisture the trough got – very little wind in winter, always from the North!
 - Snow or no snow almost entirely my call
 - Hardy Opuntia, Escobaria vivipara and Pediocactus fine to -40C and were best with <u>no</u> snow

Graphic

 Use of topsoil augmented about 50/50 with coarse, fine gravel

A Microclimate! Escobaria vivipara Pediocactus sp. Opuntia sp. Yucca harrimanniae Erris, BC

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Escobaria vivipara Pediocactus sp. Opuntia sp. Yucca harrimanniae Erris, BC

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Escobaria vivipara Pediocactus sp. Opuntia sp. Yucca harrimanniae Erris, BC

















Pediocactus simpsonii Erris, BC





Pediocactus simpsonii x knowltonii? Pediocactus knowltonii Erris, BC

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Success 103: Cheat Your Geography (Microclimates)

Case Study #5: Delta, BC "Under-Eaves Beds"

- Two beds entirely devoted to hardy cacti, Agave, rare Euphorbia and Mesembs
- Innovations:
 - $\,\circ\,$ 100% pure coarse sand medium, but only maximum 7 inches deep.
 - Abut to the sunny, South-facing wall of my home and pool house microclimates so dry and hot that literally nothing else would grow there.
 - Roof overhangs greatly reduce the amount of precipitation the bed receives. BUT, ...
- Drawback: Almost all winter weather approaches from the South ⁽³⁾

Graphic



About coarse sand: You don't have to take my word for it....

Peter Korn



"Now that I have been growing plants in sand for quite a few years, I do not see any reason whatsoever anymore for making a new flowerbed with soil." – Peter Korn





David Sellars

To See a World in a Grain of Sand

David Sellars

To no a world in a Grain of Sand, And a Heaven in a Wild Heaver, Held Definity in the palm of same hand, And Averagy in an Joan — William Walks

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The Nature of Wanted as a Cleaner of Land. 2014

"Most alpines, particularly Saxifrages, cushion Androsaces, Daphnes and Dianthus, seem to like growing in Sechelt Sand without additional organic material, as the rock dust component seems to provide sufficient nutrients." – David Sellars









Echinocereus coccineus E. mojavensis E. reichenbachii E. triglochidiatus Agave "Leopoldii" Delta, BC







Echinocereus x roetteri Gymnocalycium baldianum Gymnocalycium schickendantzii Delta, BC

Titanopsis calcarea Aristaloe aristata Euphorbia clavarioides Delta, BC

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"The Pool House Under-Eaves Garden" Agave montana or A. gentryi Delta, BC

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Sechelt Sand Roadside Boulders Cacti, Mesembs, Agave Delta, BC

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Mesembs from Mesa Gardens Agave montana from Mark Williams Seeds Alleged Yucca nana (which it is not) seed from eBay Echinocereus viridifloris x triglochidiatus Delta, BC

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Rabiaea albipuncta Nananthus transvaalensis Delta, BC

Delosperma cv Bergeranthus jamesii Phemeranthus sediforme Dudleya farinosa Delta, BC







Success 103: Cheat Your Geography (Microclimates)

Case Study #6: Delta, BC "Lazy Man's Sand Bed"

- Previous homeowner had planted Yucca filamentosa in a gravel bed
- My original plan was to excavate and replace with pure sand
- Would have required a jackhammer!
- Innovations:
 - $\circ~$ Bare-rooted and planted succulents in oversized pots of pure sand
 - $\circ~$ Sank the entire pots in the ground
 - $\circ~$ Hid the rims of the pots from view with broken terra cotta top dressing





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Agave parryi "JC Raulston" Agave montana Hesperaloe parviflora Delta, BC





Agave parryi "JC Raulston" Yucca rostrata "Sapphire Skies" Hesperaloe parviflora Chamaerops humilis v. cerifera Delta, BC







Success 103: Cheat Your Geography (Microclimates)

Case Study #7: Delta, BC "Hell Corner" becomes "Street-Side Bed"

- Bed devoted to hardy cacti and myriad dryland perennials
- Innovations:
 - $\circ~$ Sloped street-side corner so dry even weeds couldn't grow there.
 - $\,\circ\,\,$ Excavated turf and top layers of "soil". Laid down landscaping fabric.
 - 100% pure coarse mineral medium, up to 0.75m (~2ft) deep.
 - $\circ~$ ½ to ¾ inch pea gravel 3:1 with Sechelt Sand, with fine scoria added.
 - $\circ~$ Takes advantage of curb to avoid street runoff
 - Large boulders to discourage traffic, but not so many to prevent access to utilities
 - $\circ~$ South to southwest orientation.

"Hell Corner" – An Existing Microclimate Delta, BC

A CONTRACTOR

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Agave (various) Oleander "Dwarf Pink Ice" Rhodiola rosea Yucca nana Opuntia phaeacantha Halimium lasianthum Salvia sp. Zauschneria garrettii cv Delta, BC



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