

# POLLINATING GREAT BASIN FORBS



- Breeding biology of *Lomatium dissectum*
- Progress in developing bees to pollinate farmed *Hedysarum boreale*

# *Lomatium dissectum*

## Fruits per umbel

	<i>OpenVisit</i>	<i>NoVisit</i>
<b>Mean</b>	<b>32</b>	<b>0.5</b>
Variance	1065	1.5
Observations	35	20





# *Lomatium dissectum* is self-fertile

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	<u>Average</u>		
<u>Trtmt</u>	<u>Flowers</u>	<u>Seeds</u>	<u>n flowers</u>
<b>self-pollinated</b>	12	20	546
<b>outcrossed</b>	12	20	733

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# *Micrandrena*





# Bee fauna at *L. dissectum*



Genus	species	UT-04 GreenCyn	UT-04 Richmond	UT-07 Maughan Hollow	WY-04 Lander	WY-05 SnakeR	NV-06 EAngelLk	NV-06 E Kingston	ID-06 ene Boise	ID-06 N Shoshone	ID-06 ELavaLk
<i>Andrena</i>		6	10	14	16	7	3		12	12	
<i>Andrena</i>	<i>microchlora/?</i>						20	2		5	(1)
<i>Dialictus</i>				2							
<i>Evylaeus</i>							1				
<i>Osmia</i>	<i>kincaidii</i>	1									
<b>Sum Bees</b>		7	10	16	16	7	24	2	12	17	0
<b>Count Bees</b>		2	1	2	1	1	3	1	1	2	0

		Sum
<i>Andrena</i>		80
<i>Andrena</i>	<i>microchlora/?</i>	27
<i>Dialictus</i>		2
<i>Evylaeus</i>		1
<i>Osmia</i>	<i>kincaidii</i>	1
<b>Sum Bees</b>		111



*Halictus*



# *Lomatium* conclusions



- Honey bees unlikely (early, cold, yuck?)
- Tiny specialist *Andrena* ubiquitous where wild pops grow...absent ag areas
- Tiny *Halictus* likely in some ag areas
- Start small, transplant trial taproots, see what comes

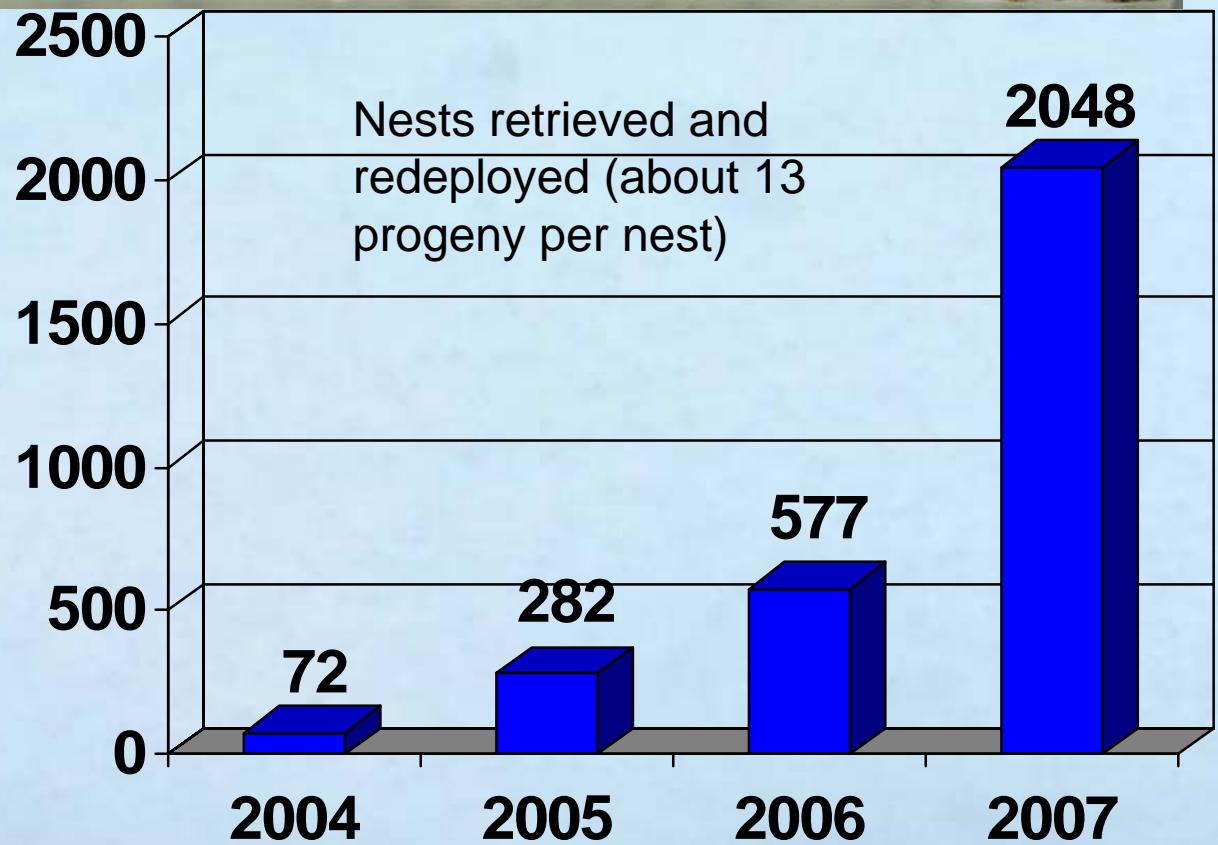
# Managing bees to pollinate farmed *Hedysarum boreale*



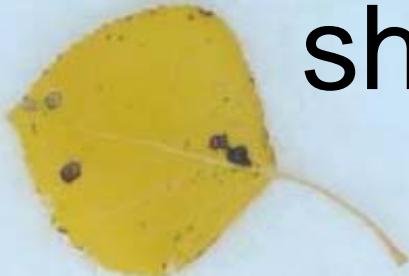




# *Osmia sanrafaelae*



# Bumblebee sharing



<i>Bombus</i>	<i>appositus</i>	<i>bifarius</i>	<i>californicus</i>	<i>centralis</i>	<i>fervidus</i>	<i>flavifrons</i>	<i>griseocollis</i>	<i>huntii</i>	<i>morrisoni</i>	<i>nevadensis</i>	<i>occidentalis</i>	<i>rufocinctus</i>	<i>sylvicola</i>
Flower													
<i>Astragalus filipes</i>	X	X	X	X				X		X			
<i>Balsamorhiza sagittata</i>													
<i>Crepis occidentalis</i>	X							?					
<i>Dalea ornata, searsiae</i>					X			X	X	X	X		
<i>Hedysarum boreale</i>	X	X			X	X	X	X		X	X	X	
<i>Lomatium dissectum</i>													
<i>Lupinus argenteus</i>	X		X					X					X
<i>Penstemon speciosus</i>					X								
<i>Sphaeralcea</i>								X					

# Indispensable Worker Bees



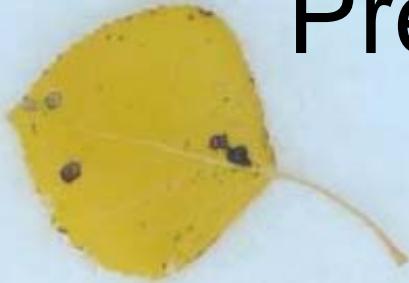
- Stephanie Miller
- Melissa Weber
- Glen Trostle
- Katie Swoboda (*Hedysarum*)
- Summer students



A photograph of a hillside that has been severely burned by fire. The ground is covered in dark, ash-laden soil and charred remains of vegetation. In the background, there are some sparse, living trees and shrubs, but the majority of the slope is a desolate, blackened landscape.

*Fire and Bees*

# The Bees Giveth and the Seed Predators Taketh Away



- [www.wci.colostate.edu](http://www.wci.colostate.edu)

