

Expanding bear population in northwest Minnesota sustained by sunflower growers



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Why Am I Here?

- Unique population of bears
- Geographically rare interface: sunflowers & bears
 - 31 of 41 producing states have bear pops.

State	% of Total Acres - Sunflowers	~ B.Bear Pop.
Texas	6.7%	1,000
Colorado	4.5%	4 – 15,000
Minnesota	3.5%	15 – 30,000
California	2.1%	15 – 30,000
Cont. US Total (2009)	100%	300,000



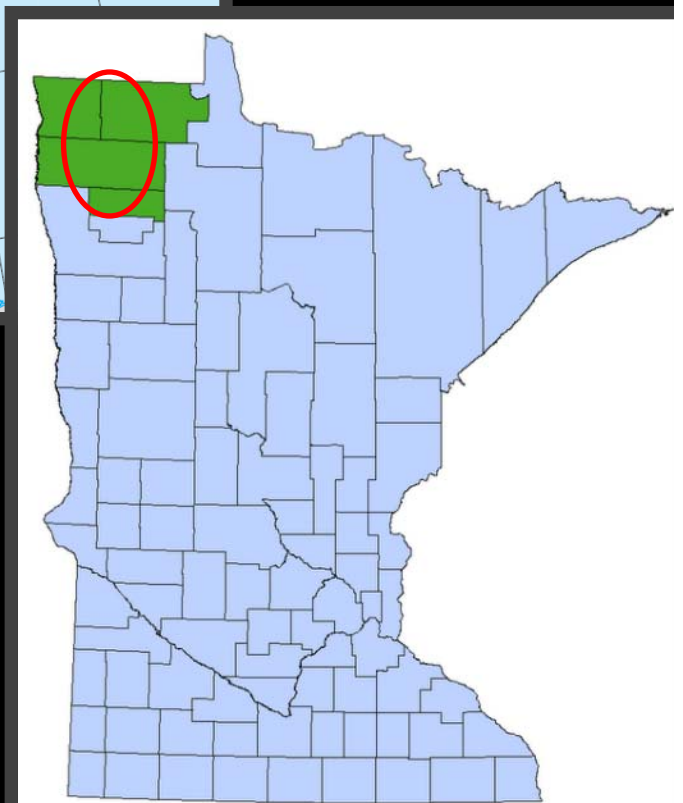
- **Assess Bear Relationship w/ Sunflowers**
 - 1) GPS locations of Collared Bears
 - 2) Interviews w/ Growers
 - 3) Captive Bears – Food Choice Trials



USDA Forest Service: www.fia.fs.fed.us

- Northwestern Minnesota ~ 10,300 km²

- Only region in state with increasing bear population





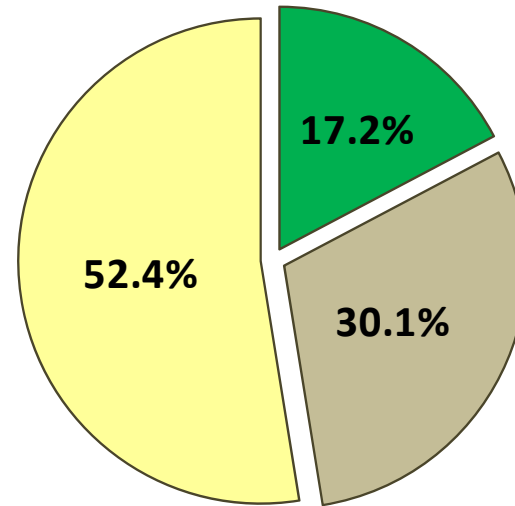
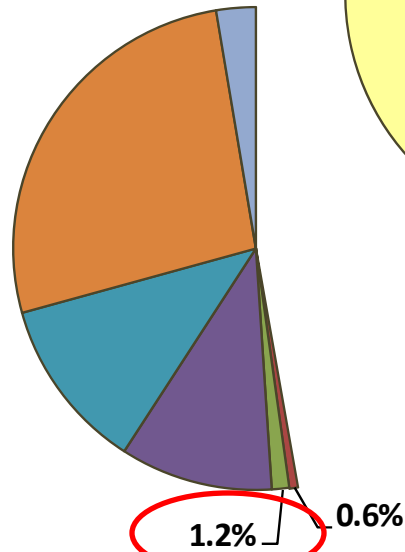
What do bears need in a landscape?

- Small population 10 years ago
- Secondary/poor habitat
- Fragmented landscape
- Majority of land privately owned
- Open agricultural fields



Composition of study area

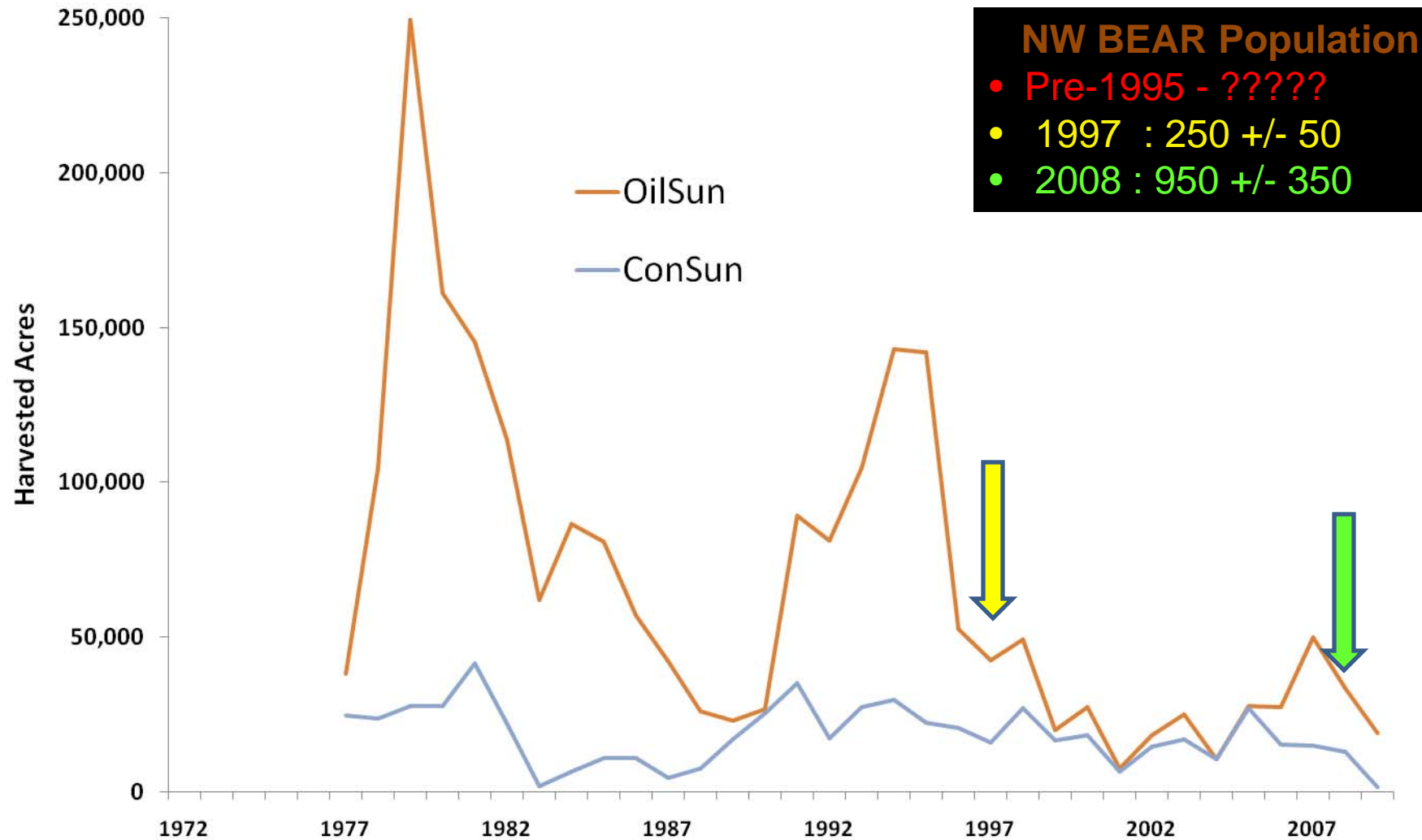
- Corn
- Sunflowers
- Soybeans
- Wheat
- Pasture
- other cropland



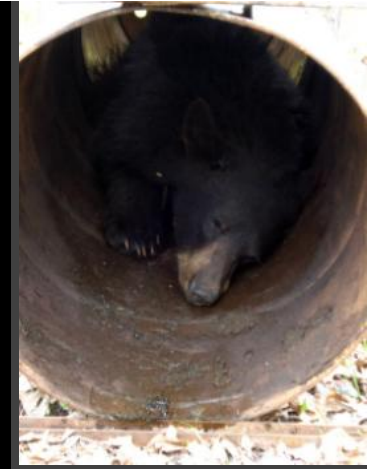
- Forested
- Non-forested natural vegetation
- Agricultural

31,000
acres

Sunflower Production in NW Minnesota & Bear Population



Methods – Capture & Data Collection

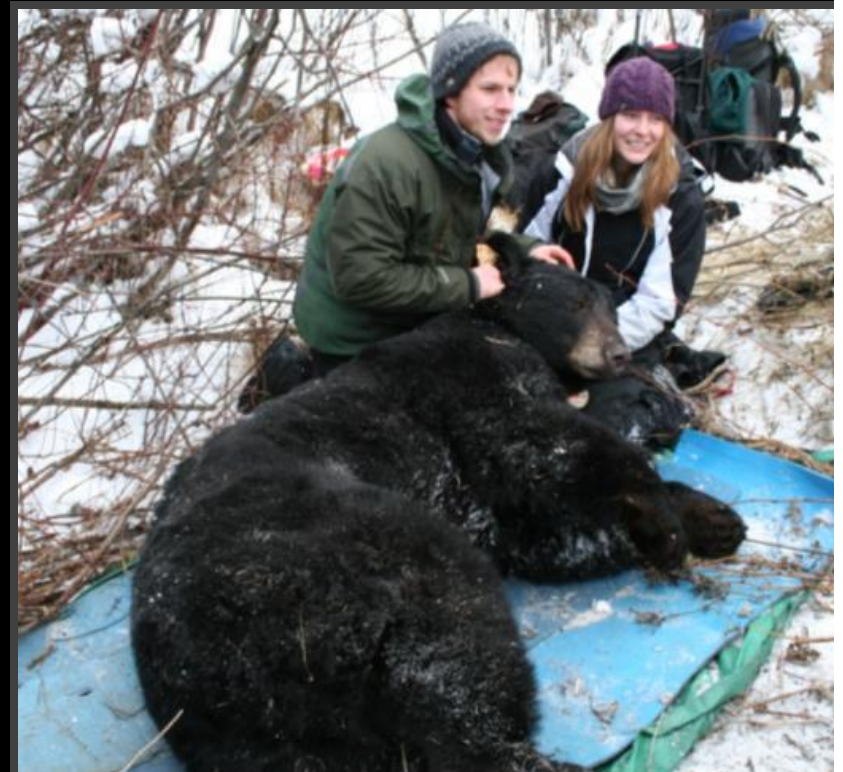


Summer & Fall:

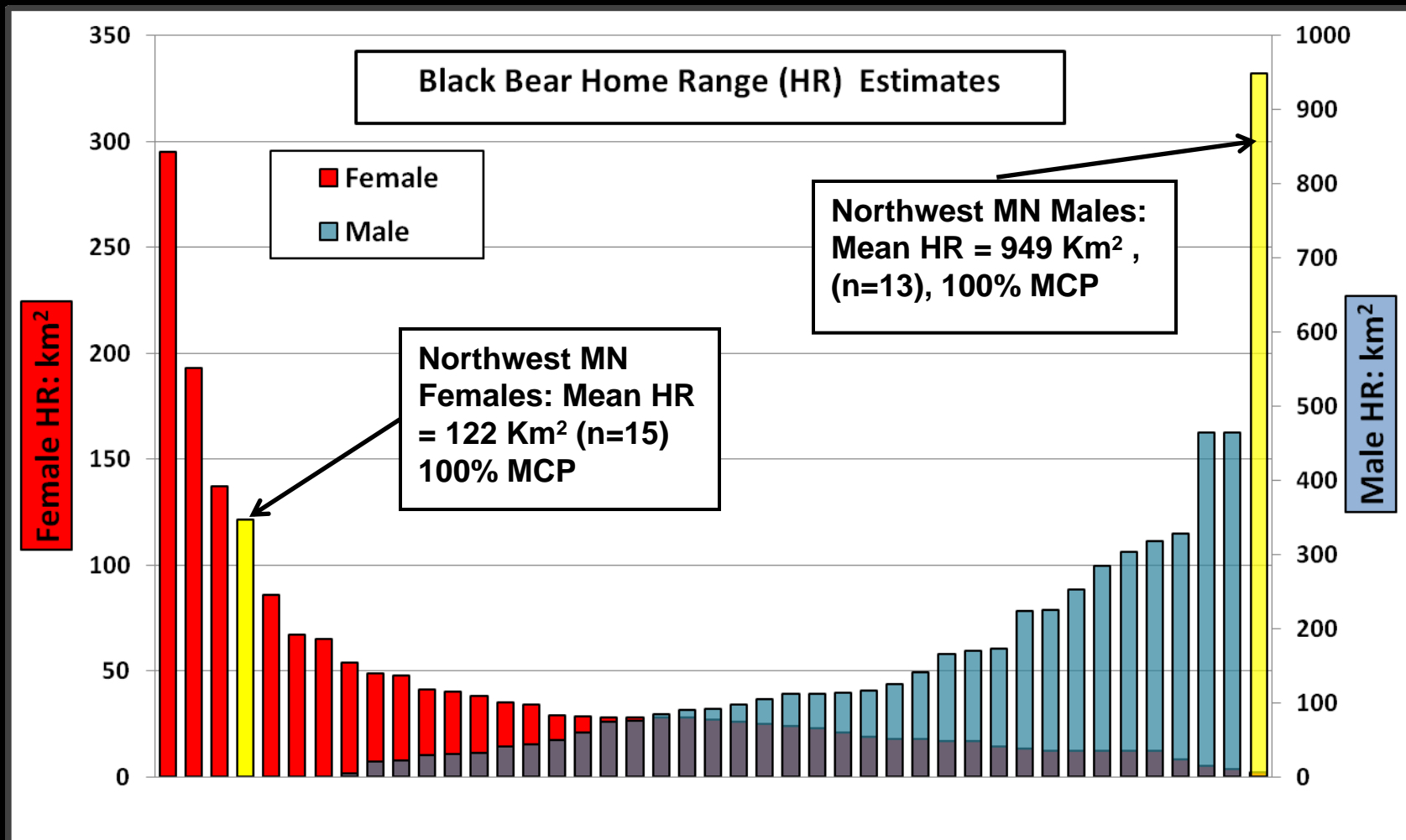
- Barrel traps
- GPS-VHF store-on-board collars
- Food Abundance
- Habitat use/Home range estimates

Winter:

- Den visits
- Refit collars
- Download data

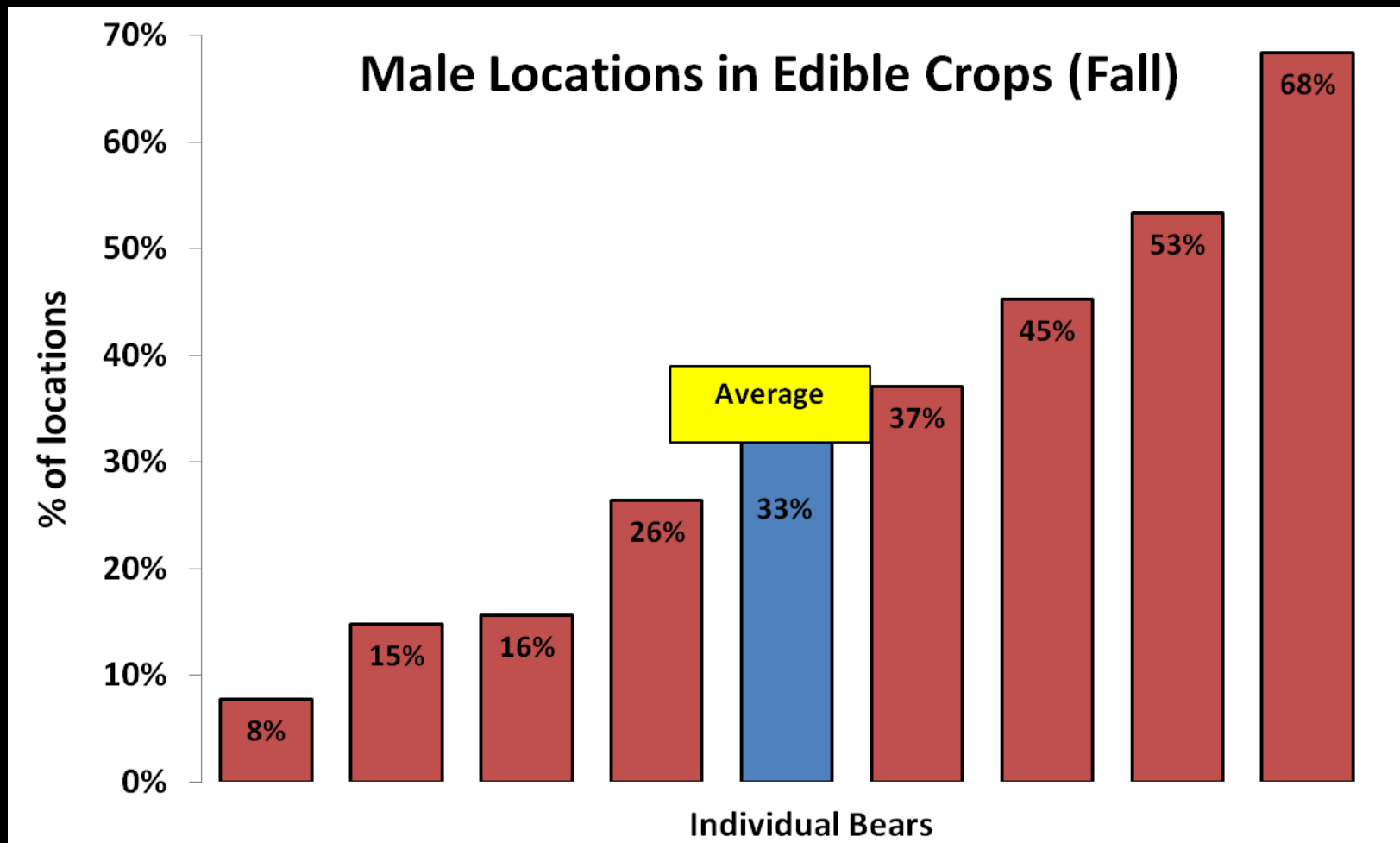


How much land do they use?



Crop Depredation by Bears

- **High Variation**
- **Males overall average: 33%, n=8**
(1080 of 3752 locations)
- **Females overall average: 1%, n=9**
(38 out of 3598 locations)



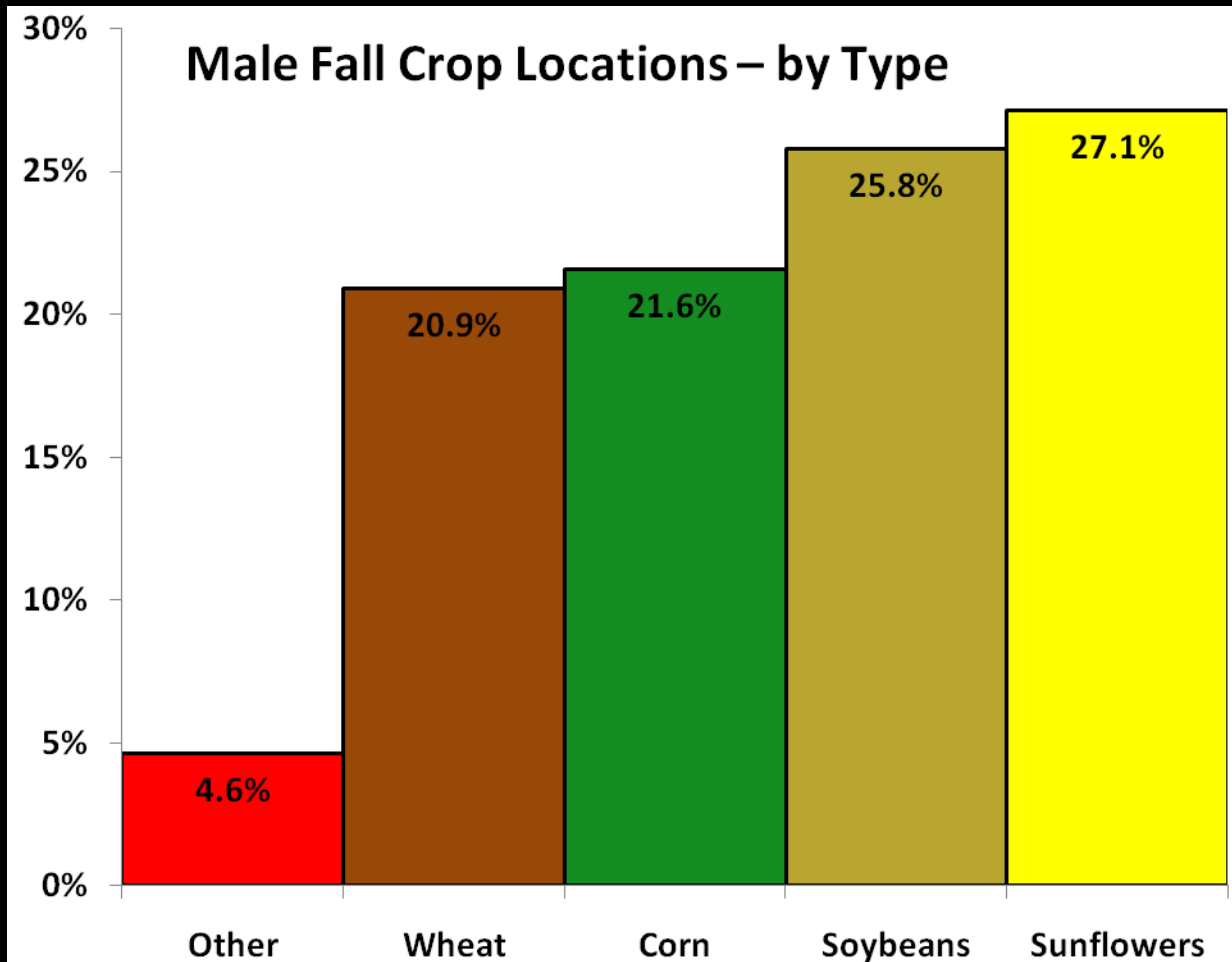
Crop Selection by Bears

Timing of Location in Sunflowers -

Average Date:
September 9th – Runs from Mid August to start of October



- **Wheat & Soybeans cover ~ 83% of cropland** (excludes pasture)
- **Sunflowers & Corn cover ~ 4% & 2%** (non-pasture cropland)



Interview Methods

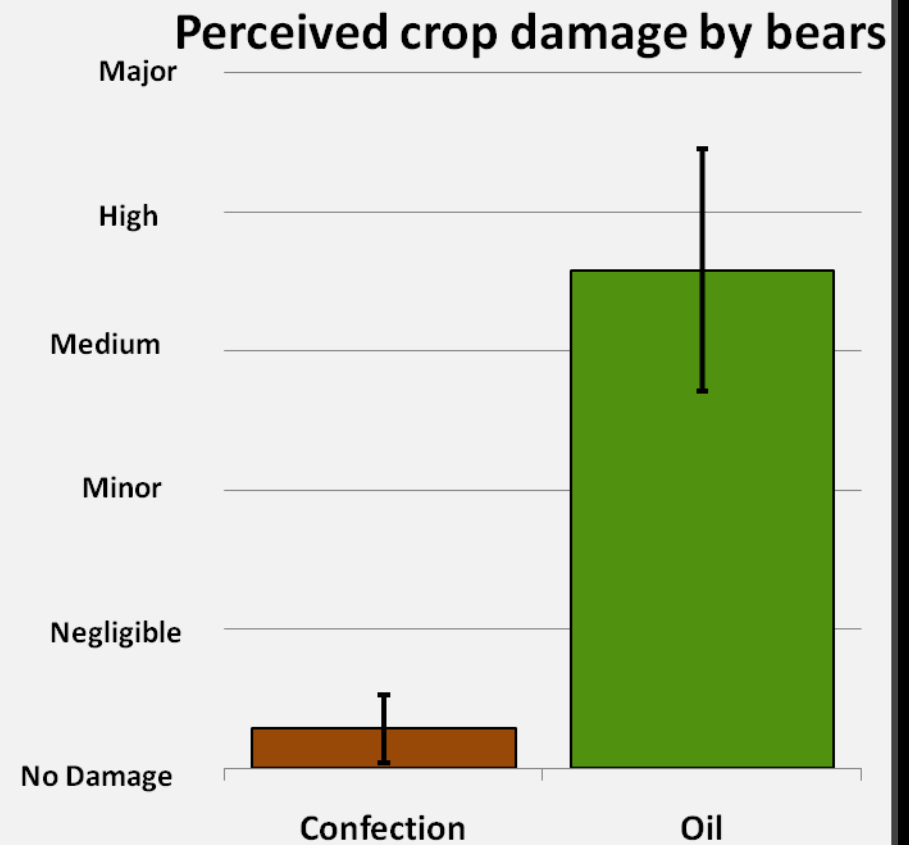
- In-person & phone interviews
- GPS Locations, reference, type of crop
- Across entire study area
- Corroborate GPS data
- Understand type, timing, amount & feelings about damage and bears
- 33 interviews



Interviews with Local Farmers



- 22 Interviews with local sunflower growers
- 2 Varieties of Sunflowers :
 - Confectionery (n = 7)
 - Oil (n = 15)



Type:

“...field of confectionary sunflowers and the bears walked right through it to get to the corn. The flowers planted for oil they definitely went after.”

Amount of Damage:

“One or two bears out there.. ..they’d pick a spot and create an area of 40-50ft circles. Not a real big deal. About 4 of these circles.”

“When a bear moves into a sunflower field you’ve got some serious trouble if they are real hungry. Because they will go in there and they won’t go. They won’t leave. Unless you go in there with a bunch of guys and walk down the rows and that’s not much fun to come across a bear feeding.”

Estimates 10-20% of each crop (oil sunflowers, oats, corn) damaged by bears

About 11 bears coming in – overall about an acre was damaged

Location:

“They don’t need to be near woodlot. They will go into any open field. They will find those sunflower fields no matter where they are. It’s just easier access for them if they can walk right out of the woods.”

Captive Bear Feeding Trials

- Assessing Fall food preference
- Corroborate GPS & interview data
- Timing corresponds w/ hyperphagia & damage
- 9 captive bears
- 4 food choices
- 20 trials to date



**Oil Sunflower
Seeds**

**Acorns
(natural fall food)**

Grain Corn

**Confection
Sunflower Seeds**

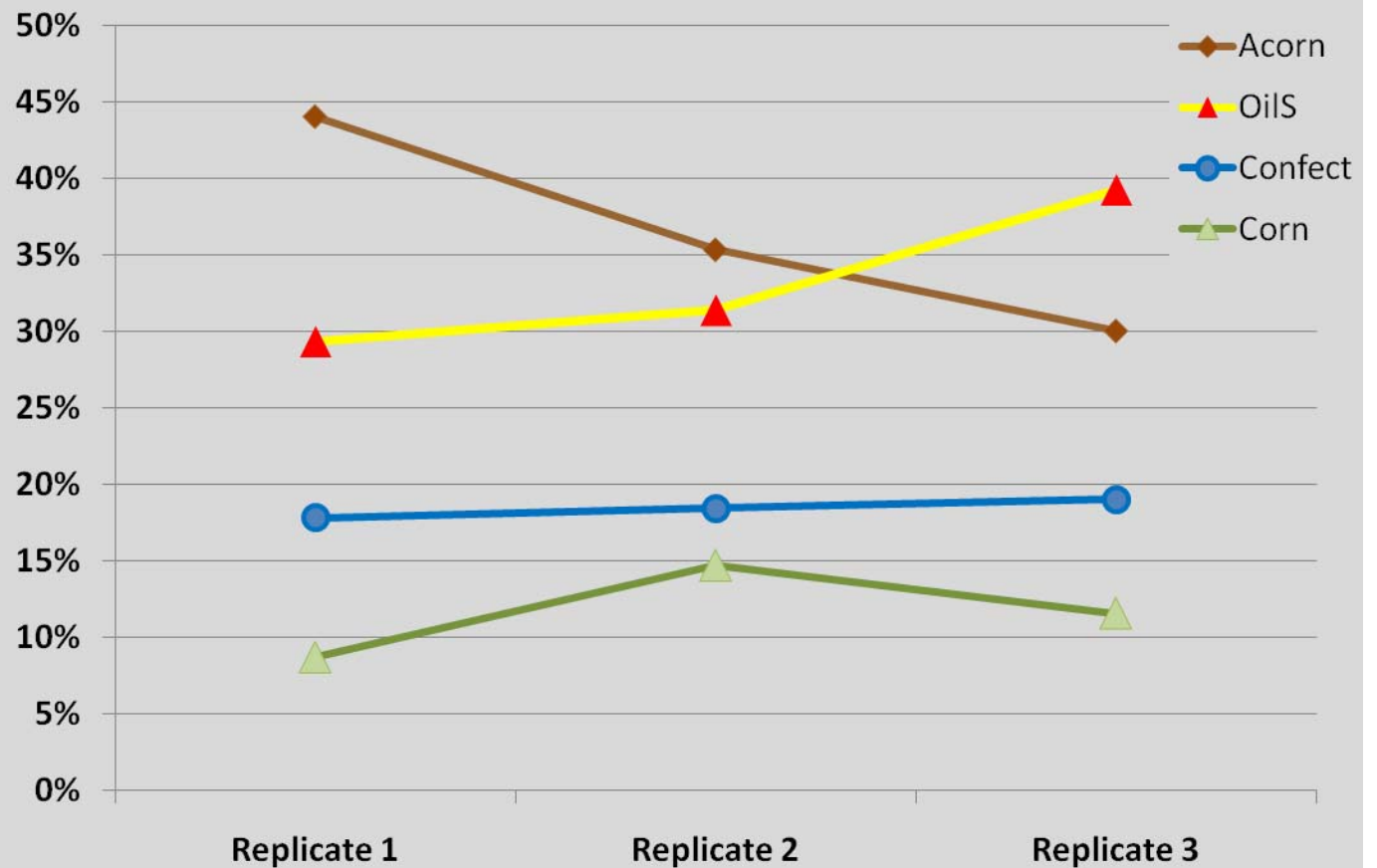
Preliminary Results



# of First Selections	Acorn	Oil	Confect	Corn
Females (n=11)	7	3	0	1
Males (n=9)	4	3	2	0
Total (n=20)	11	6	2	1



Choice Changing Through Time?



Conclusions

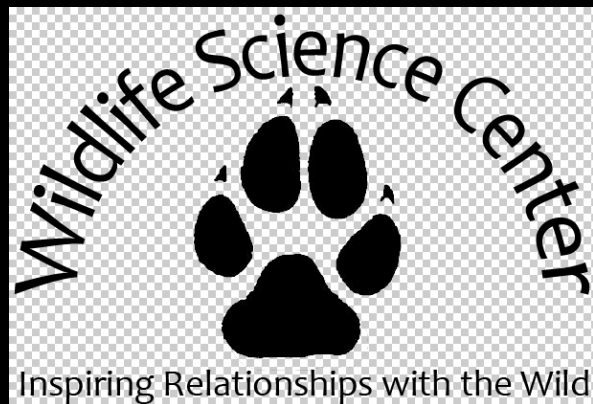
NW MN Bears:

- Unique Landscape
- Large Range
- Use of Crops
- Selection of Corn & Sunflowers
- Strong preference for oil over confectionary



Captive Bears:

- If equal access & availability:
choose natural food
- Oil sunflowers close 2nd
- Learned behavior ?



unding sources: Minnesota Dept. of Natural Resources, Conservation Biology Graduate Program, University of Minnesota, Bell Museum of Natural History, American Society of Mammalogists, Rice Area Sportsmen

eld assistants: Andrew Tri, Morgan Elfelt, Marta Lyons

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