

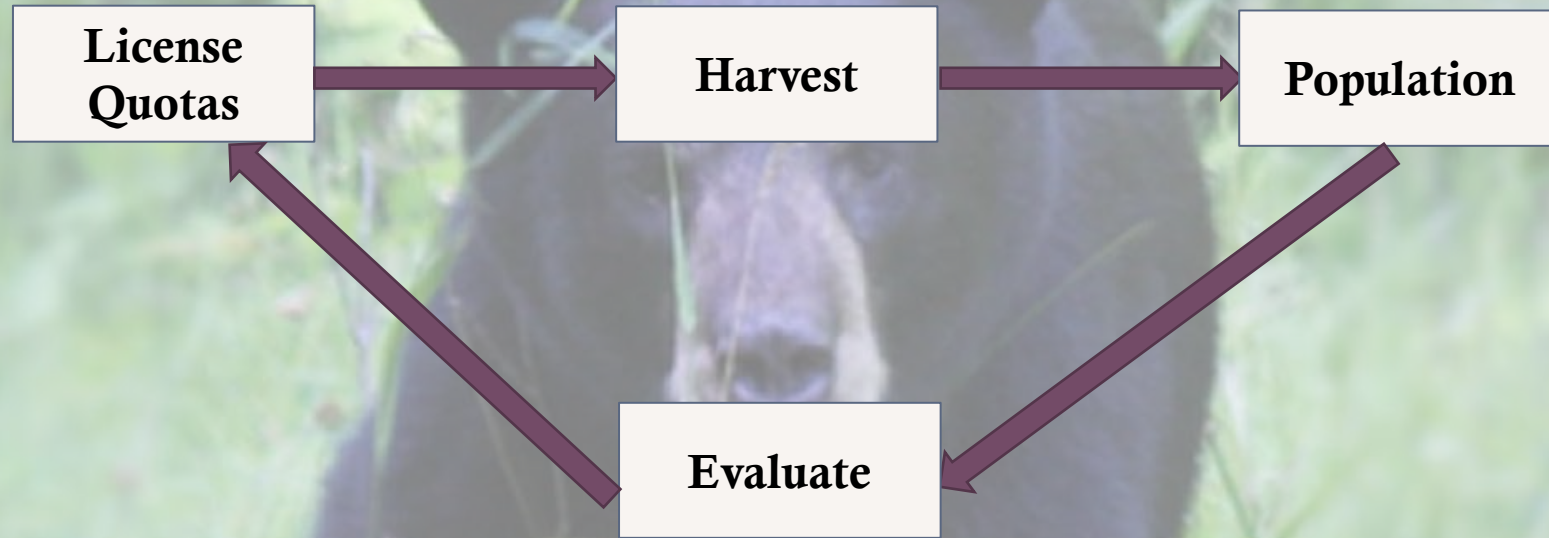
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# MONITORING MICHIGAN'S BLACK BEAR POPULATIONS

Sarah L Mayhew, PhD

Cody Norton





# Bear Management Cycle





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# POPULATION MONITORING

- **Statistical Catch-at-Age Analysis (SCAA)**
- Harvest statistics
- Nuisance complaints
- Habitat

# SCAA MODELS

## (1992 – 2021)

### **DATA**

What we know

*Ex: Number of bears  
harvested*

### **PARAMETERS**

What we don't know

*Ex: 1992 bear population*

### **CALCULATED VALUES**

Combinations of data  
and parameters

*Ex: Early 1993 bear  
population*





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# HARVEST REGISTRATION

Year	Field Sex	Corr.Species	Lab Age
2021		bear	
2021	F	Black Bear	2
2021	F	Black Bear	3
2021	M	Black Bear	2
2021	F	Black Bear	4

- Number of harvested bears
  - Sex and age of harvested bears
- 



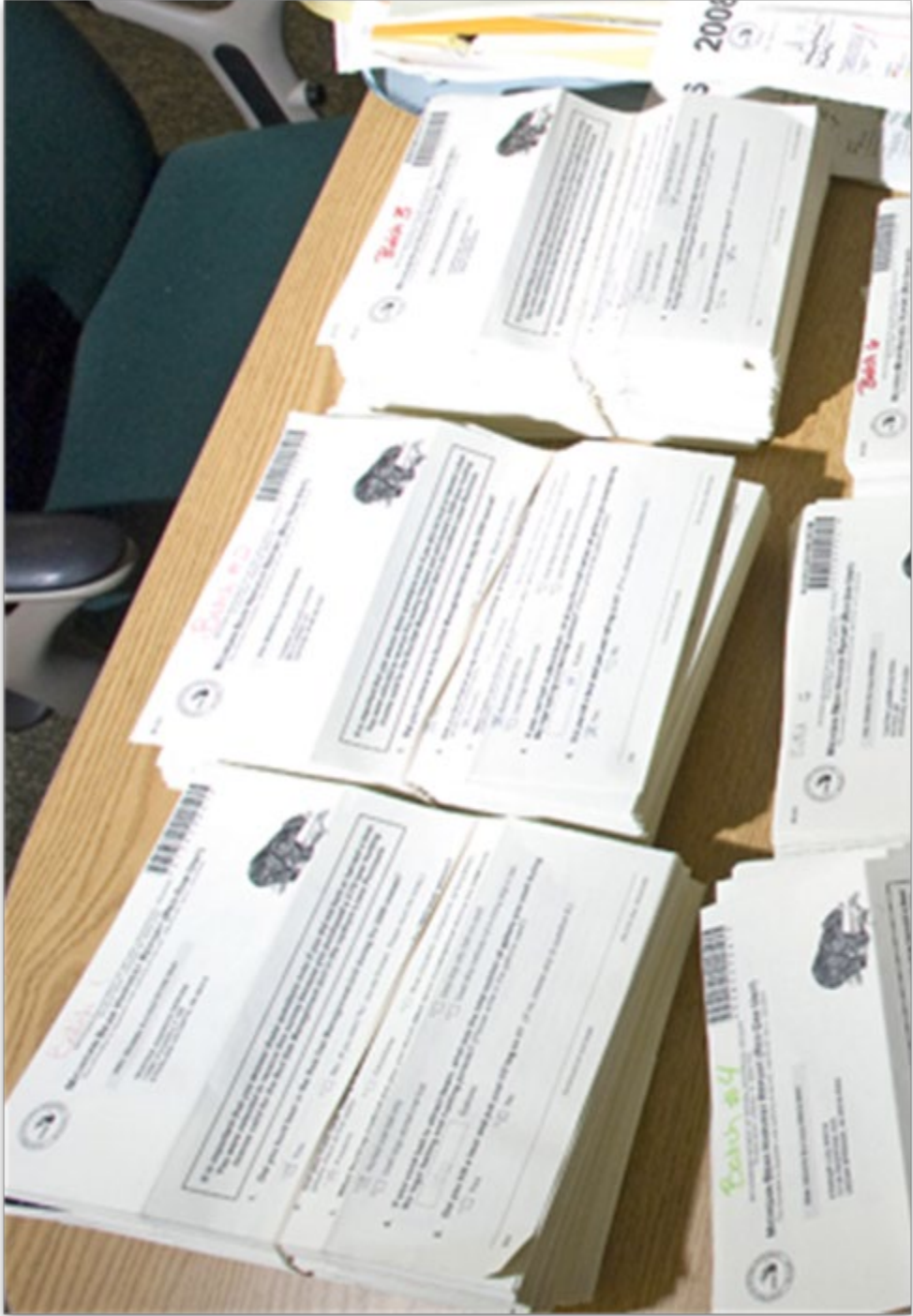


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# HARVEST EFFORT

Number of hunters estimated from mail survey

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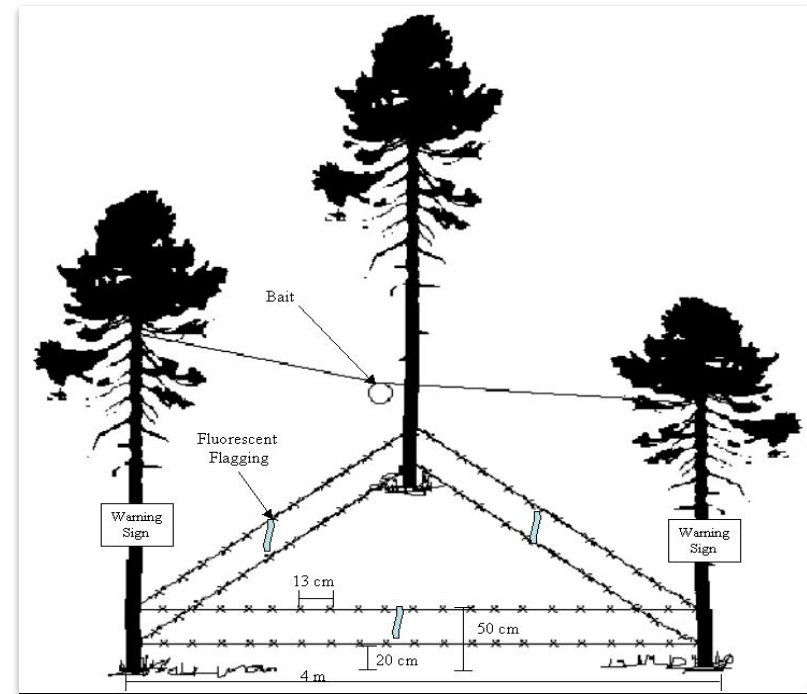


# INDEPENDENT POPULATION ESTIMATORS

UP: Tetracycline Survey, CKMR



NLP: Bear Hair Snare Survey



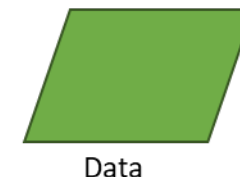


# POPULATION MODEL

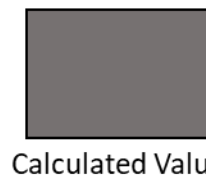
LEGEND:



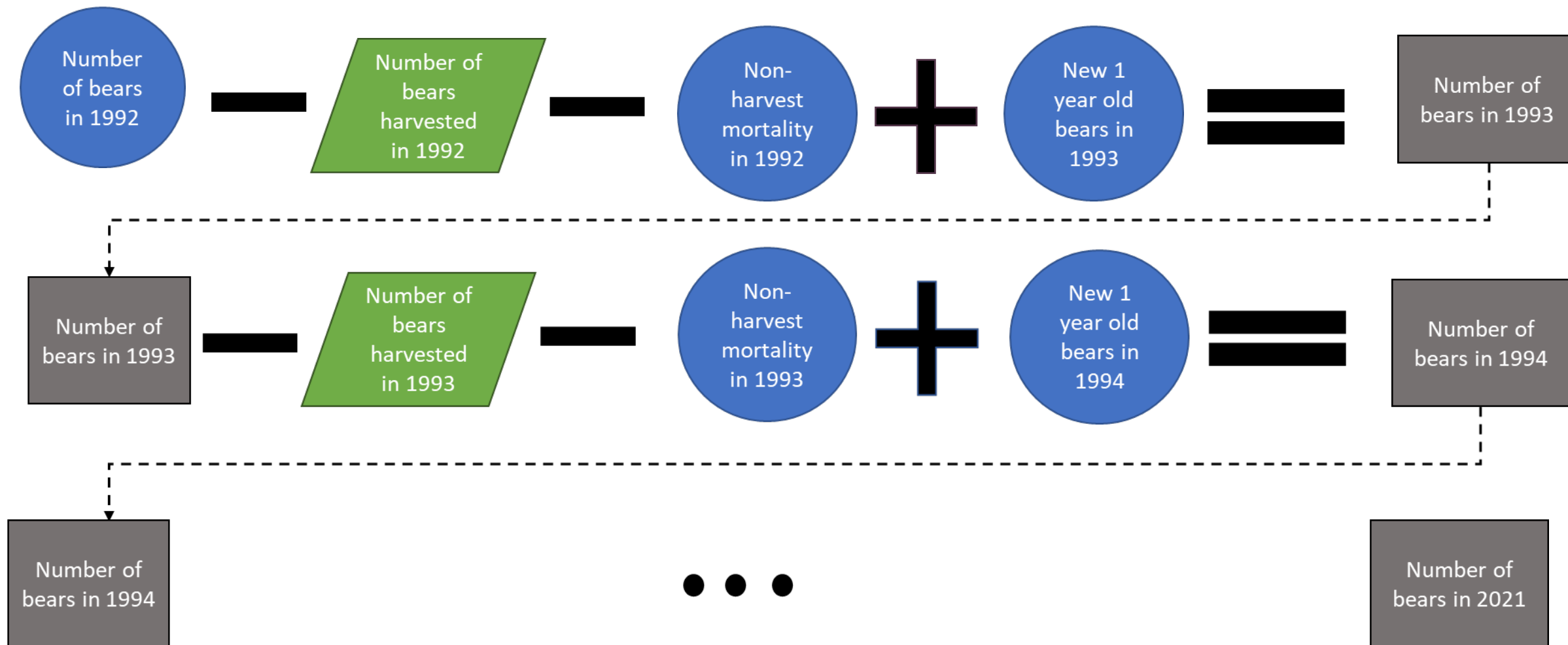
Parameter



Data



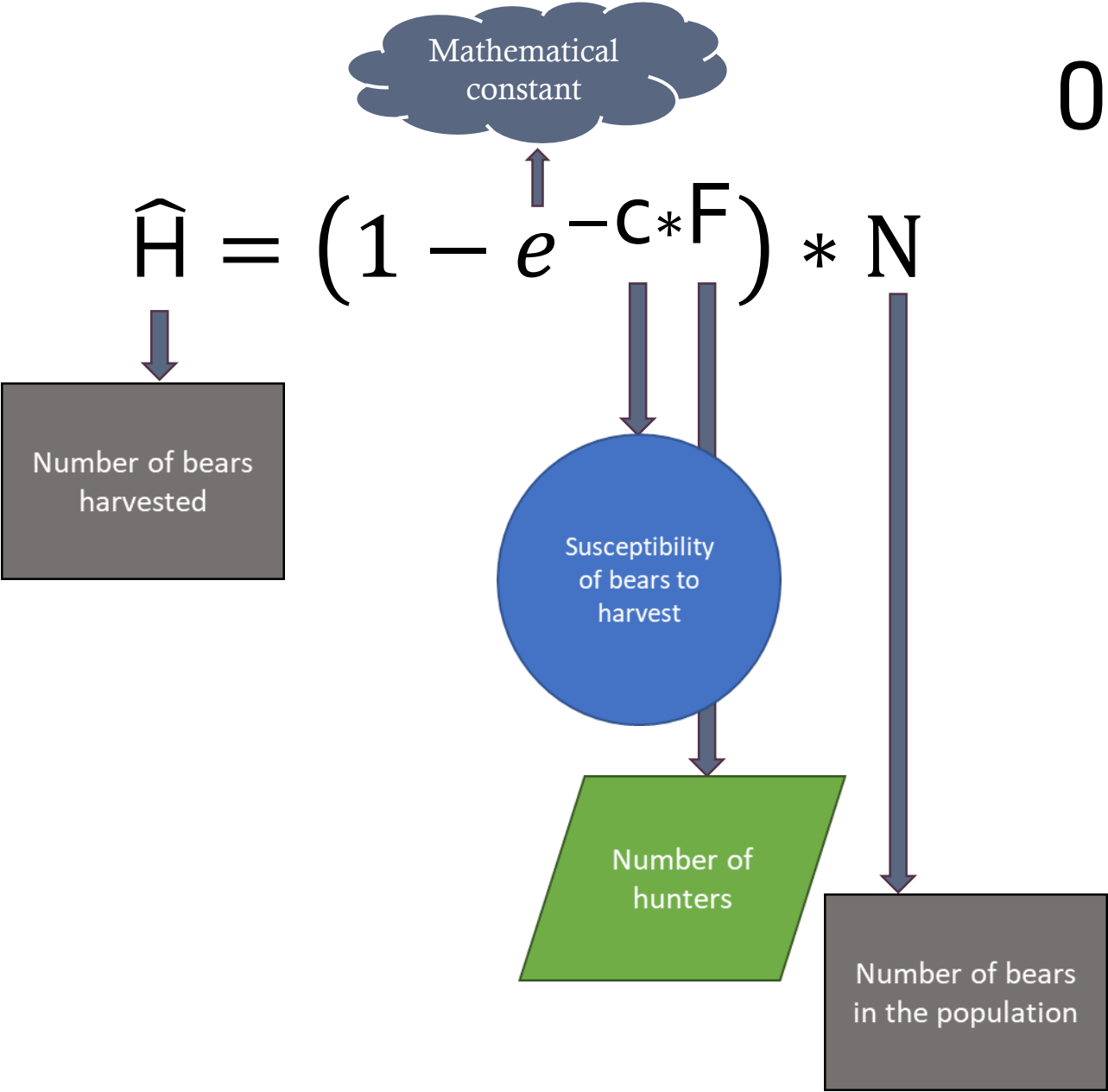
Calculated Value







# OBSERVATION MODEL



LEGEND:



Parameter



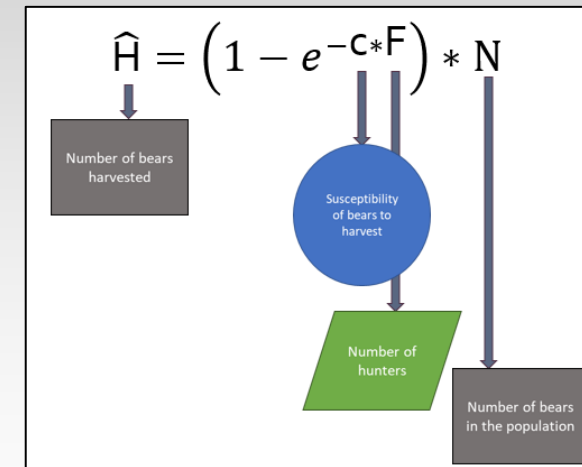
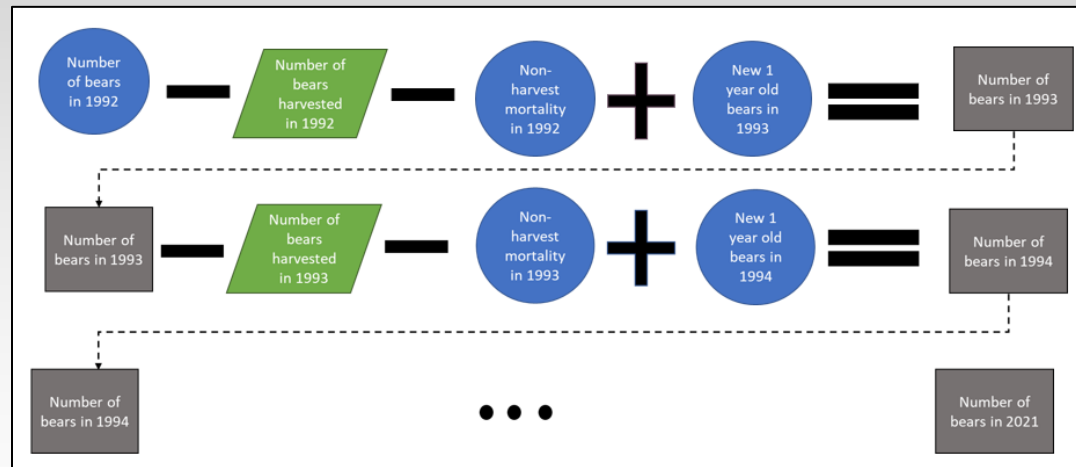
Data



Calculated Value

# OBJECTIVE FUNCTION

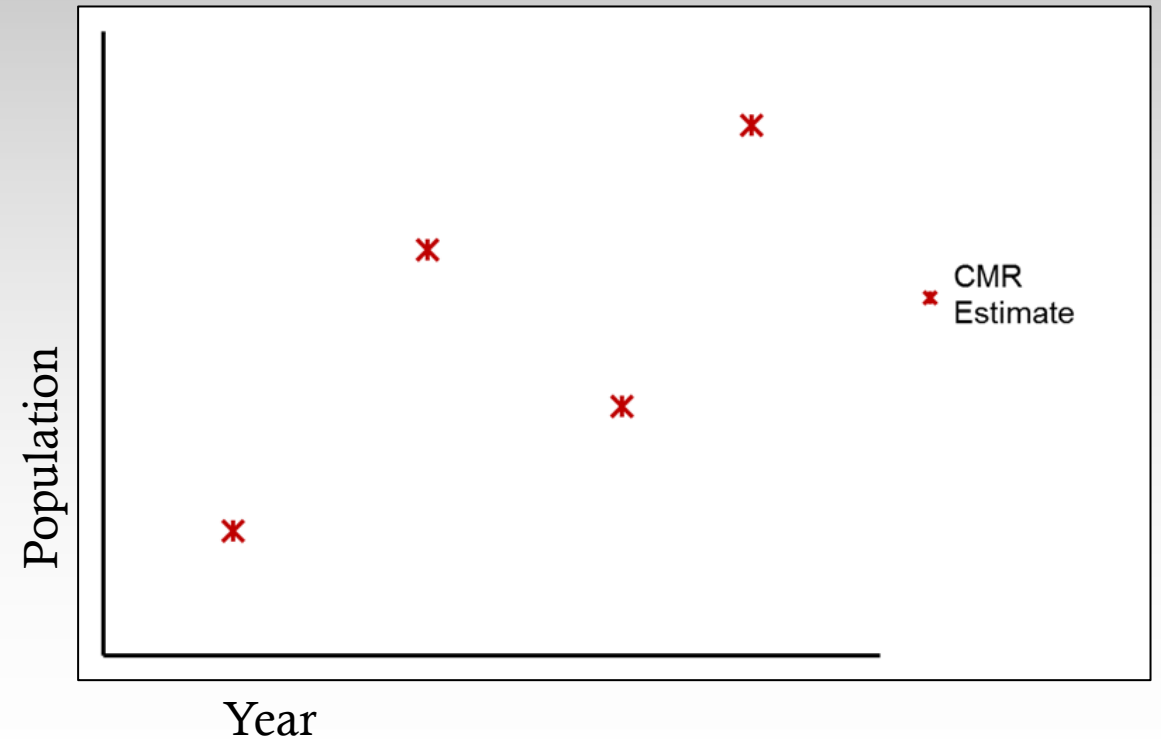
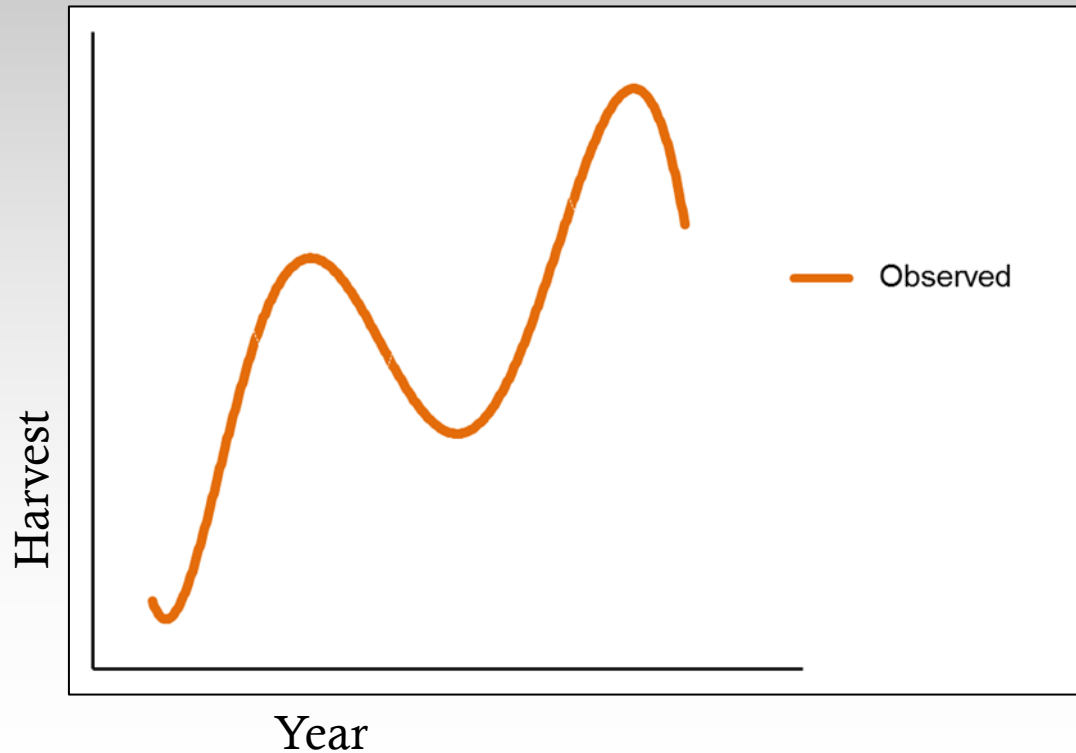
1. Run a set of parameters estimates (and data) through the Population Model and Observation Model.





# OBJECTIVE FUNCTION

2. Compare the model's estimated population and estimated harvest to the independent population estimates and the registered harvest.



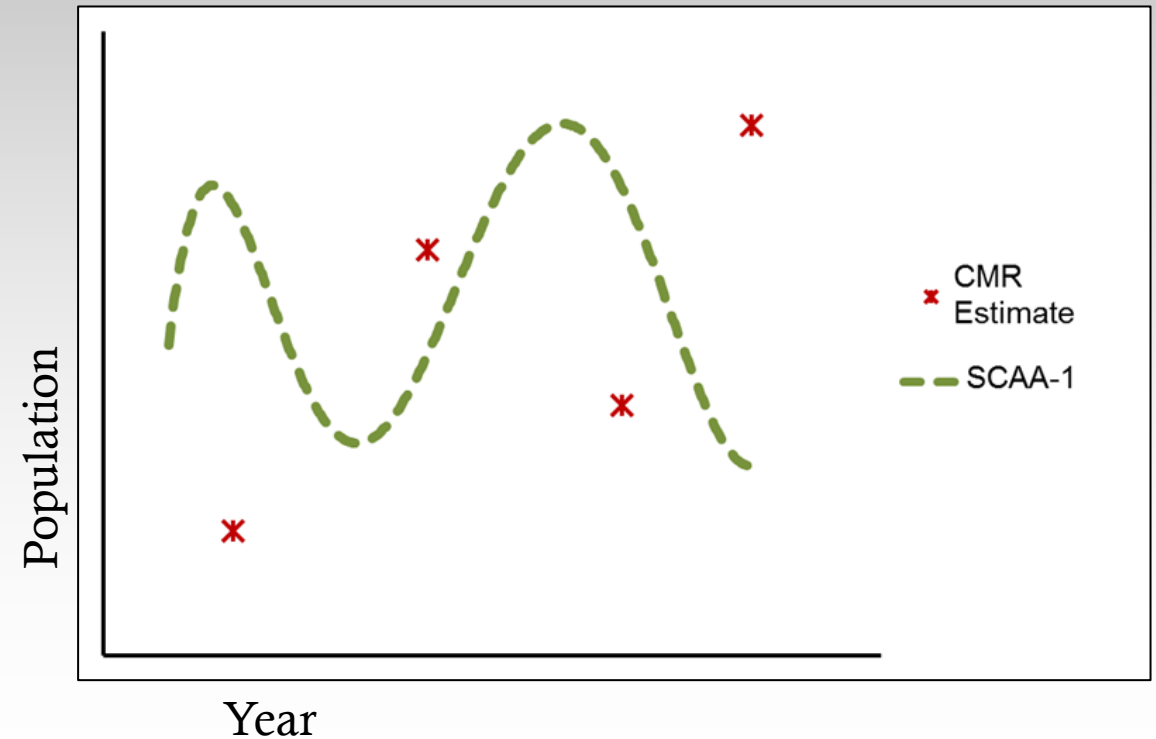
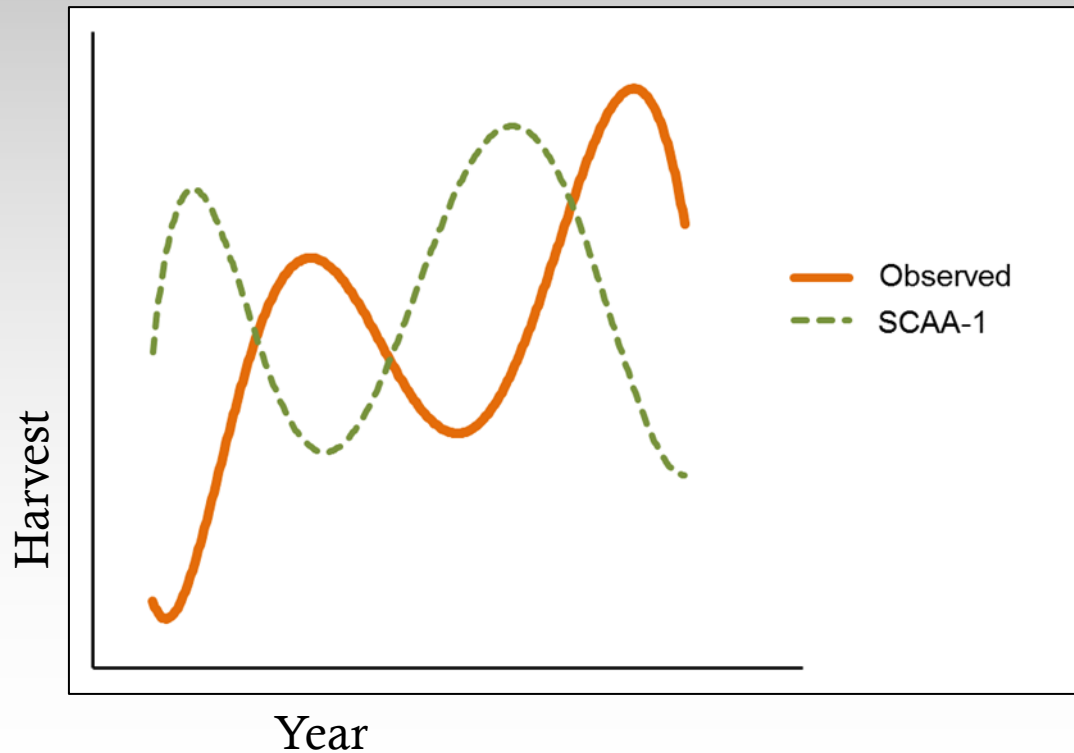




$$g = -\frac{1}{2} \sum \frac{\lambda}{\hat{H}} + \frac{1}{2} \lambda \sum \frac{(H - \hat{H})^2}{\hat{H}} + \sum \log \sigma + \frac{1}{2} \sum \frac{(N - \hat{N})^2}{\sigma^2}$$

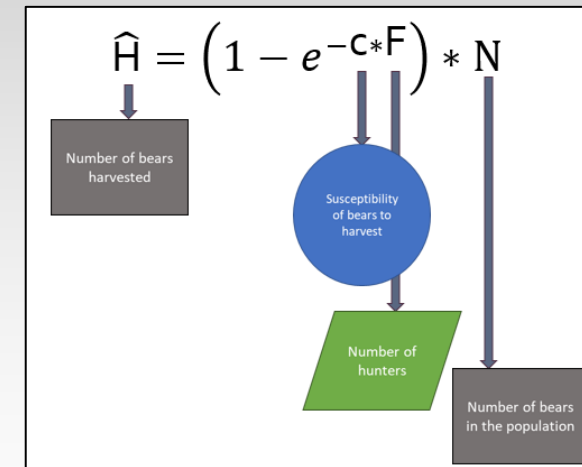
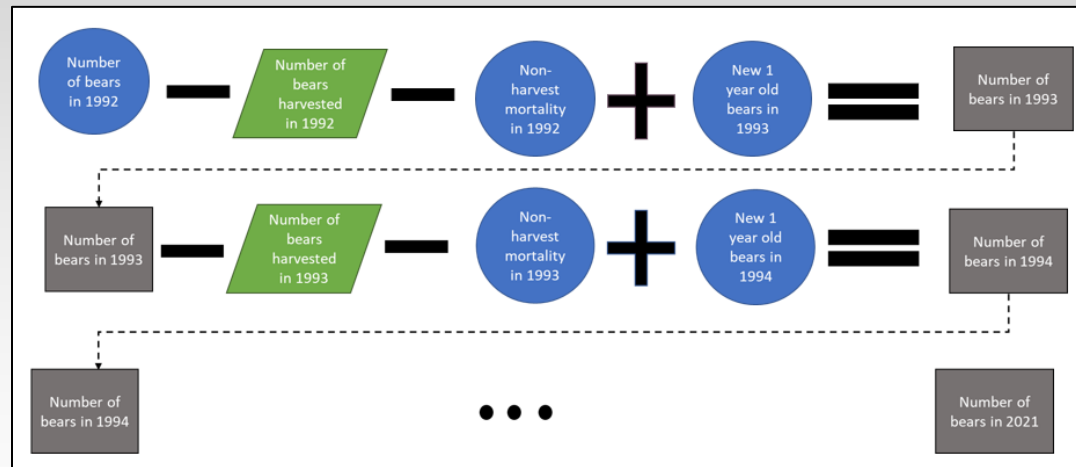
# OBJECTIVE FUNCTION

2. Compare the model's estimated population and estimated harvest to the independent population estimates and the registered harvest. **Use the Objective Function to quantify the difference.**



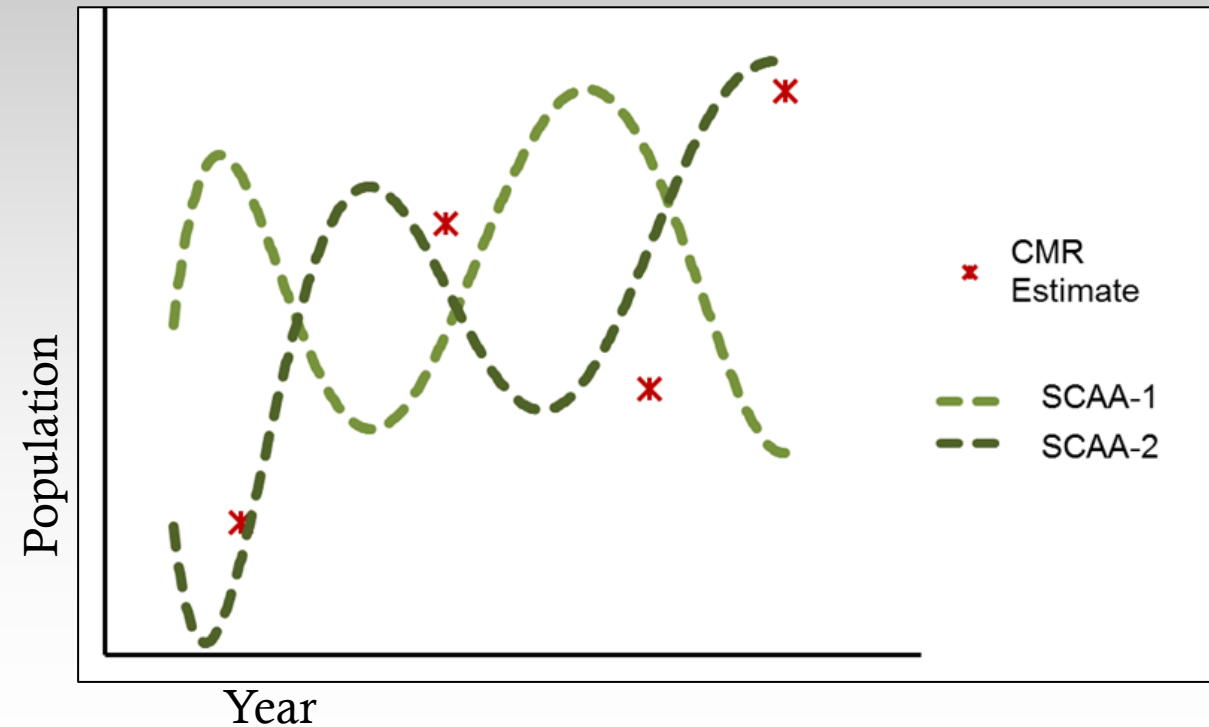
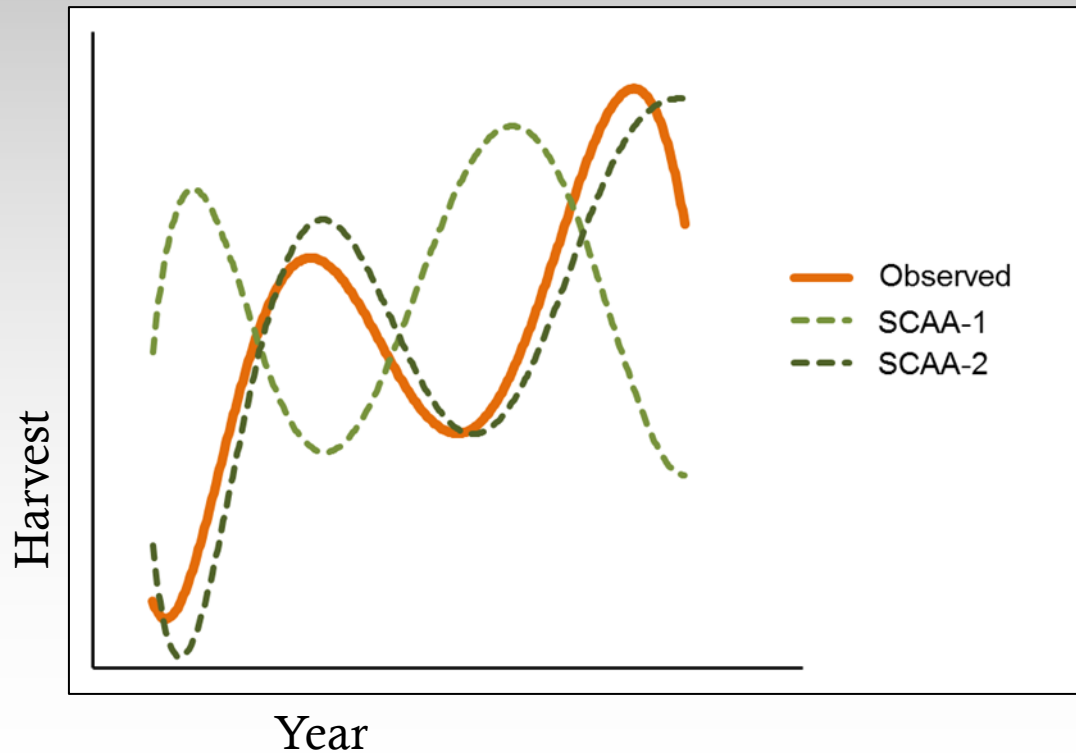
# OBJECTIVE FUNCTION

3. Run a second set of parameters through the Population Model and Observation Model.



# OBJECTIVE FUNCTION

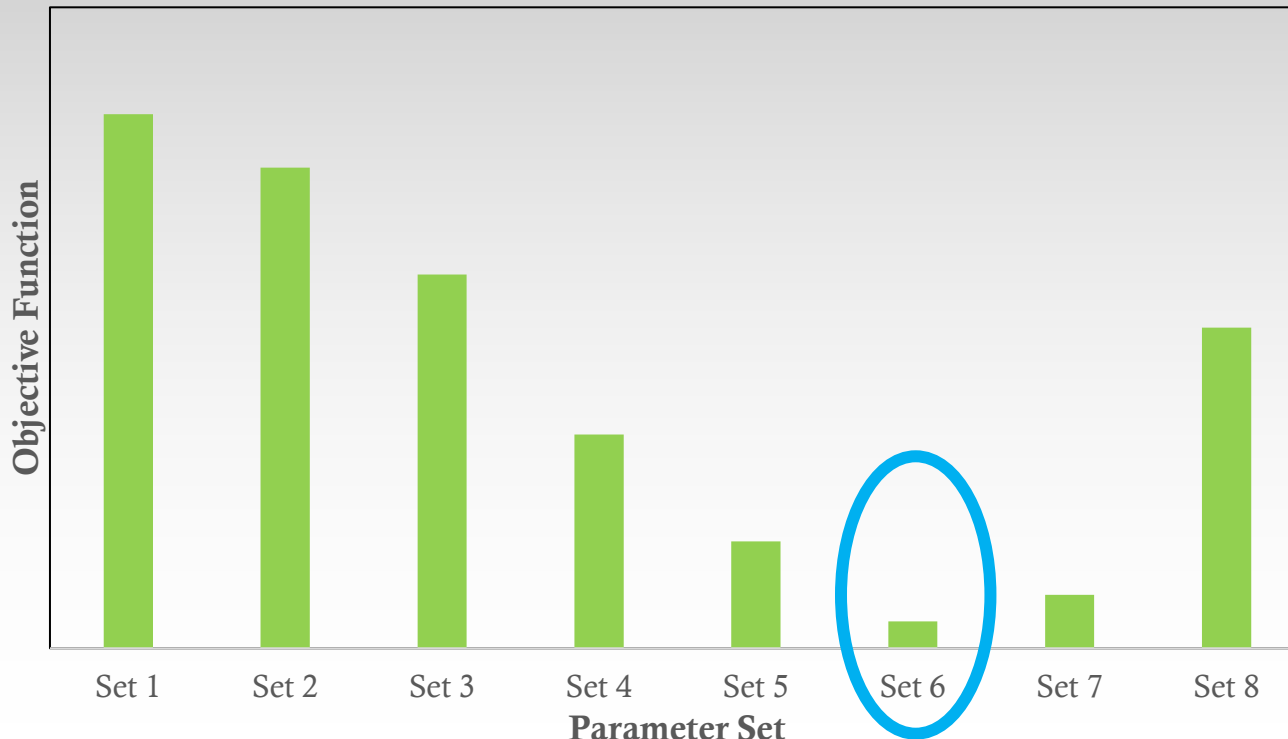
4. Compare the model's second estimated population and harvest to the independent population estimates and the registered harvest. **Use the Objective Function to quantify the difference.**





# OBJECTIVE FUNCTION

5. Repeat the process for other sets of parameters and calculate the objective function value
6. The best set of parameters is the set that has the **lowest Objective Function value** (smallest difference between the model estimates and the data).

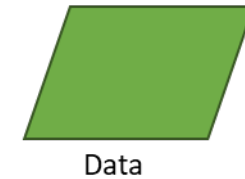




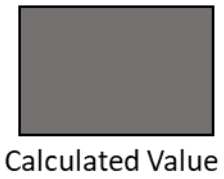
LEGEND:



Parameter

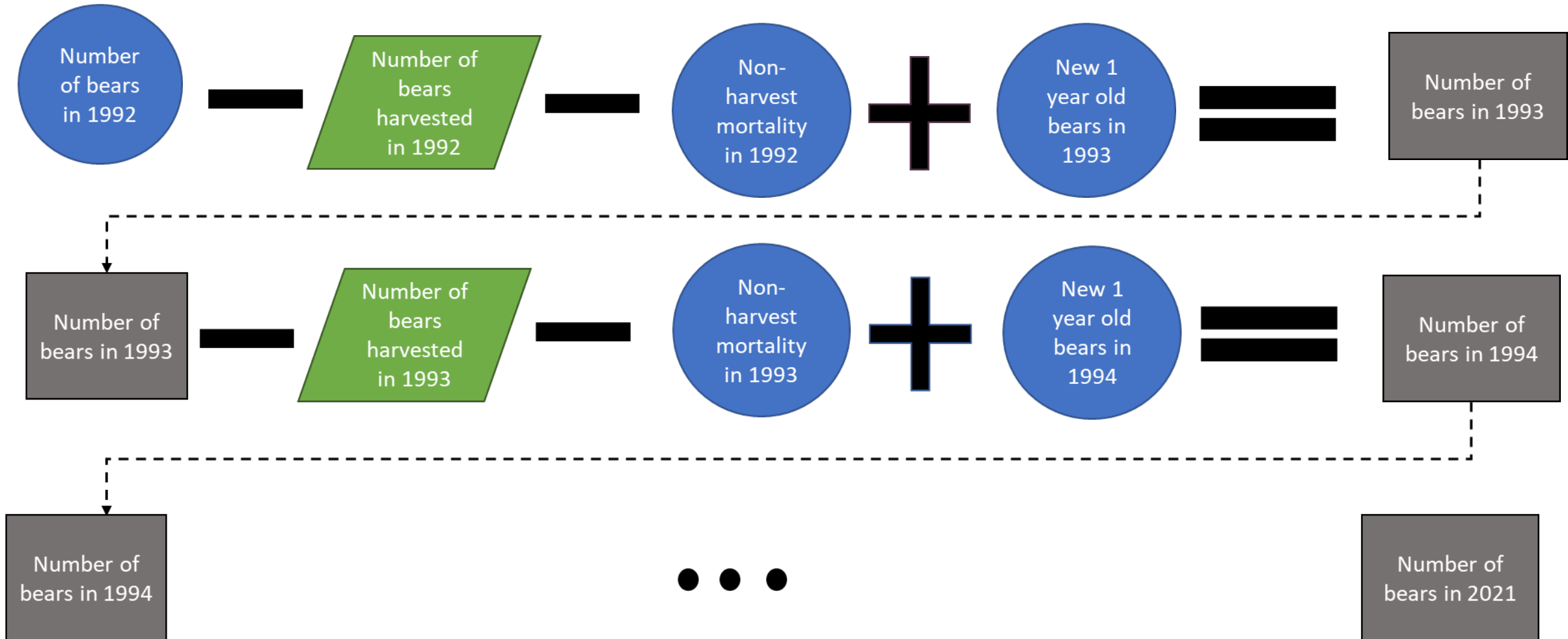


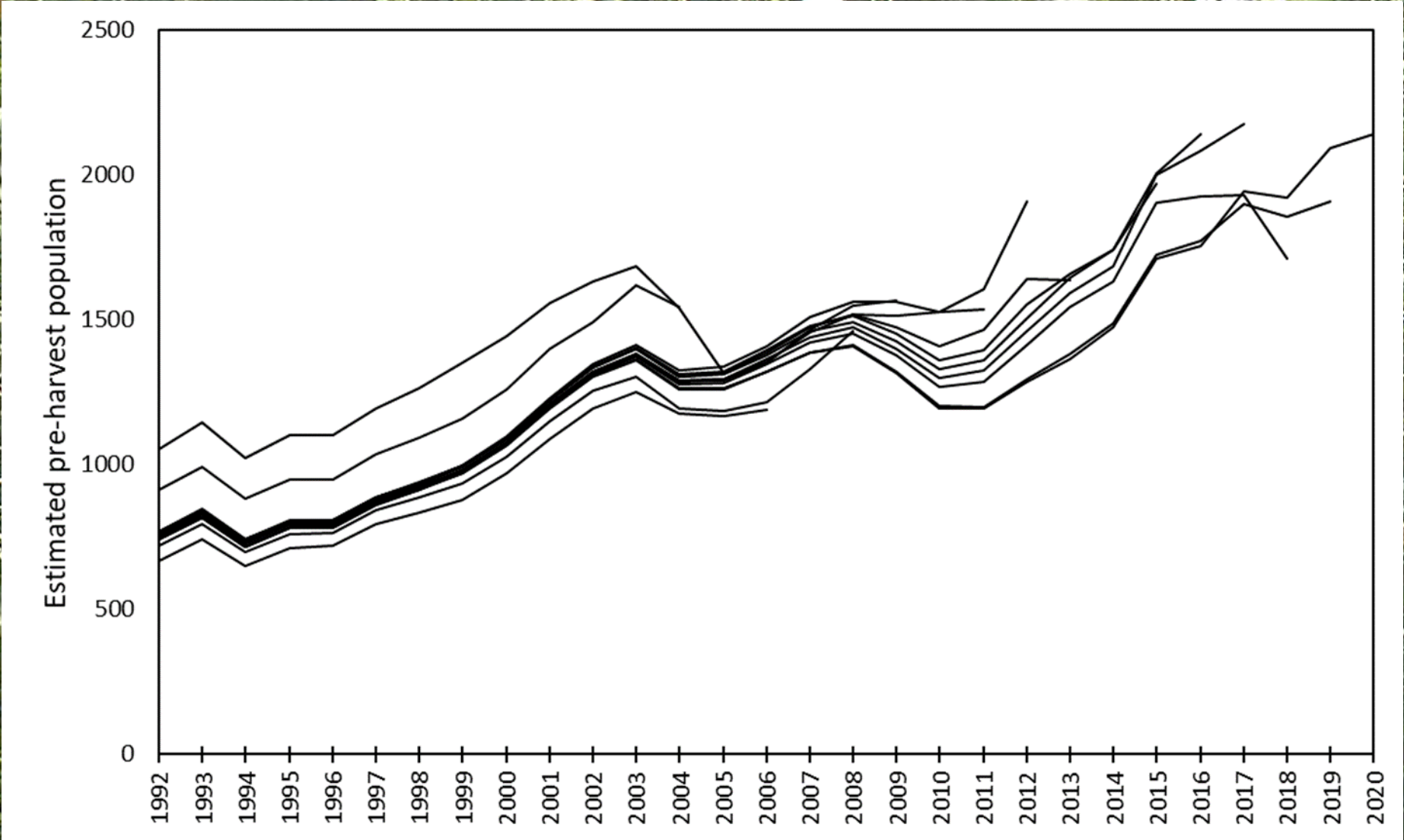
Data



Calculated Value

# POPULATION MODEL



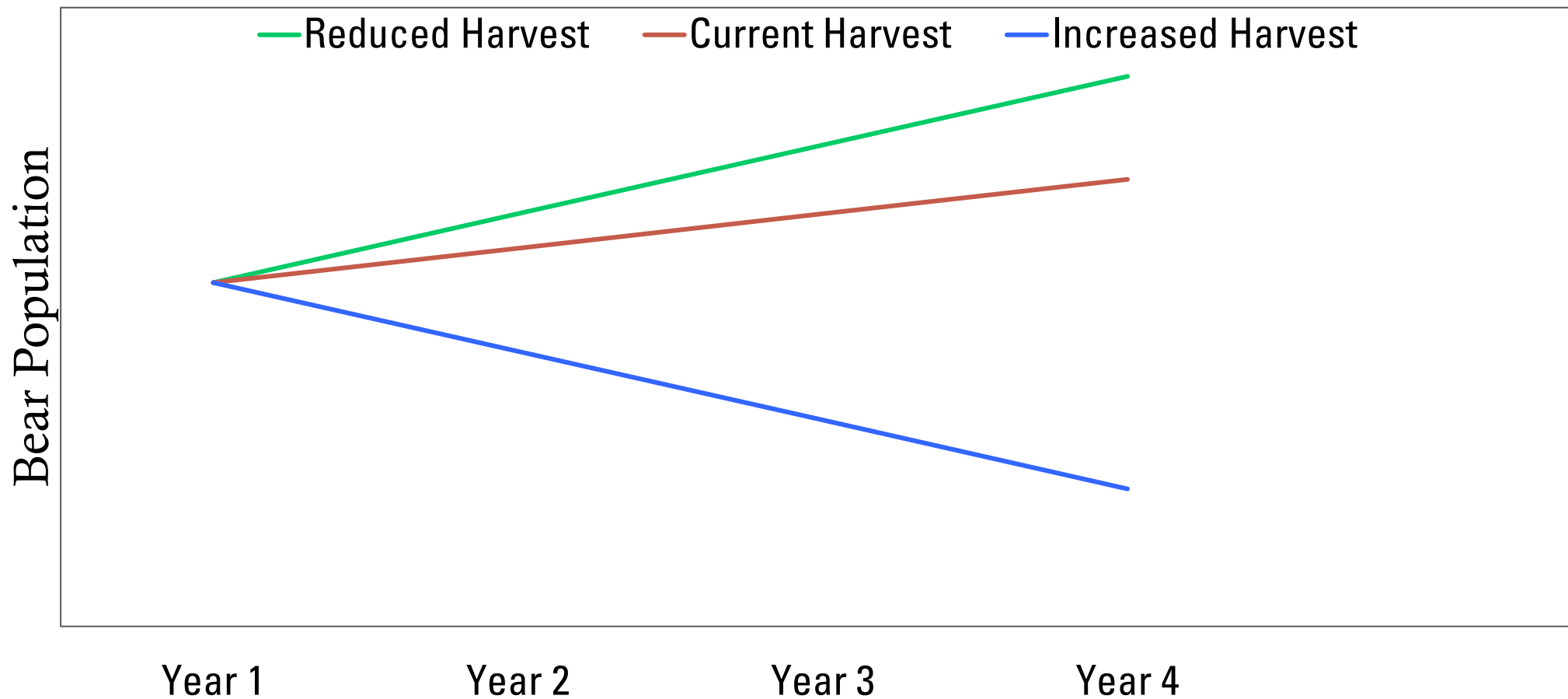






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# PROJECTIONS





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# THANK YOU

[mayhews@michigan.gov](mailto:mayhews@michigan.gov)



# 2023-2024 Bear Regulations Cycle



Cody Norton  
Wildlife Division  
February 9, 2023





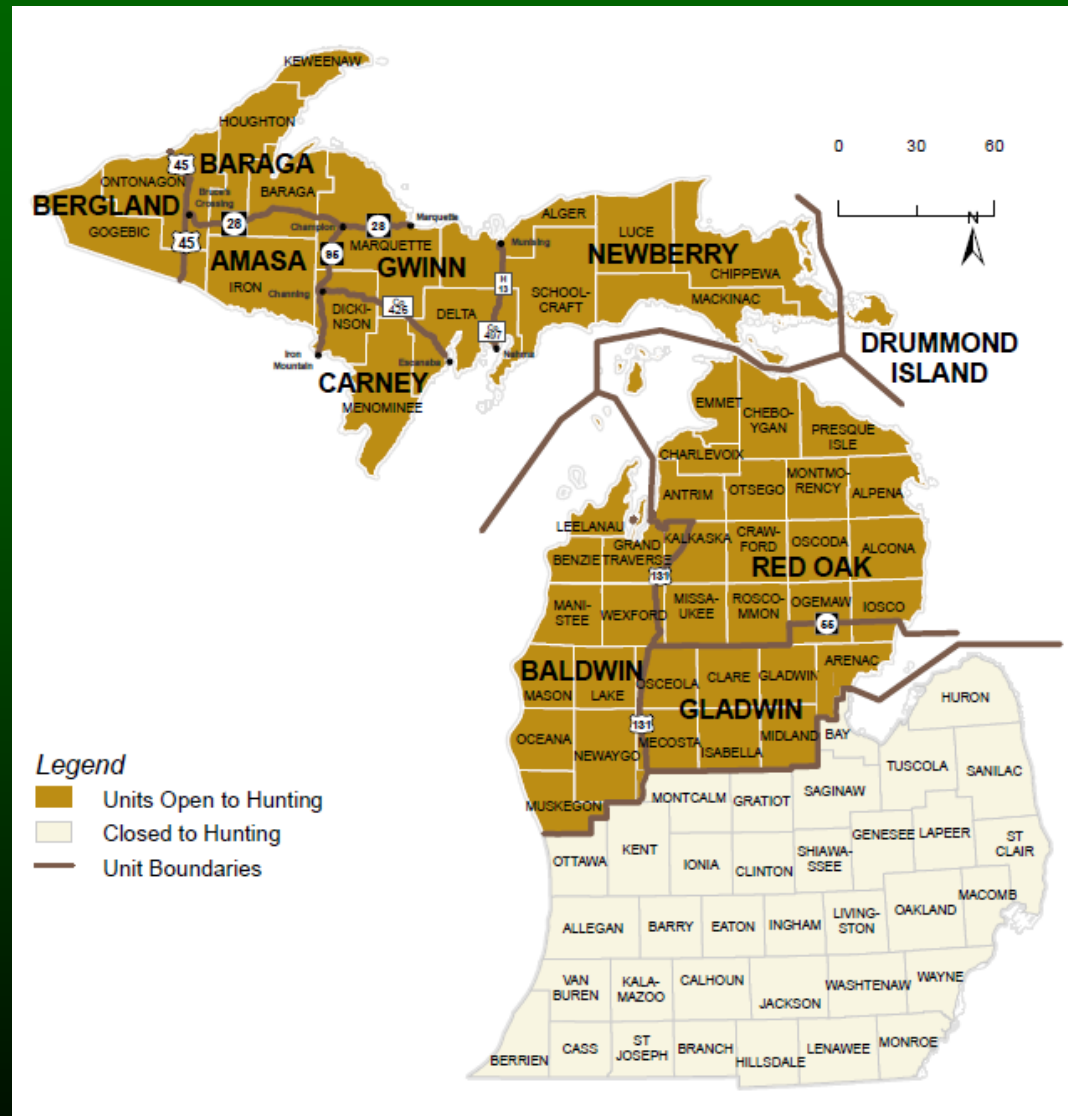


# Bear Management Goals

1. Maintain a sustainable population within biological carrying capacity
2. Facilitate bear-related benefits
3. Minimize bear-related conflicts
4. Conduct science-based and socially acceptable management



# Bear Management Units

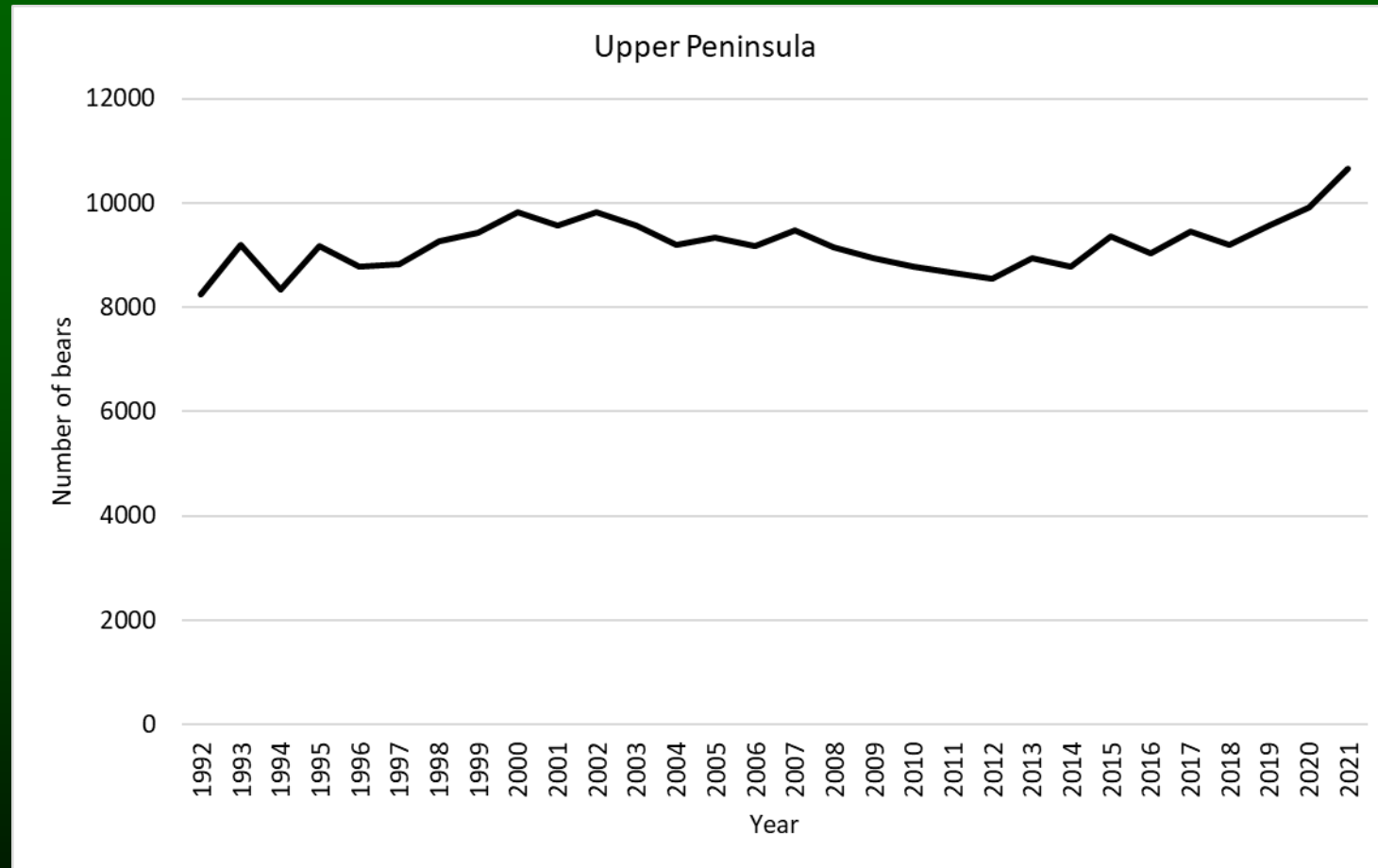


# License Quotas and Regulations (2023-24)

- The Process
  - WLD field staff
  - LED staff
  - Internal Bear Workgroup
  - Tribal governments
  - Bear Forum
  - Natural Resources Commission & Director



## 2021 estimated pre-harvest abundance of bears 1 year old and older in the UP Region. SCAA analysis.

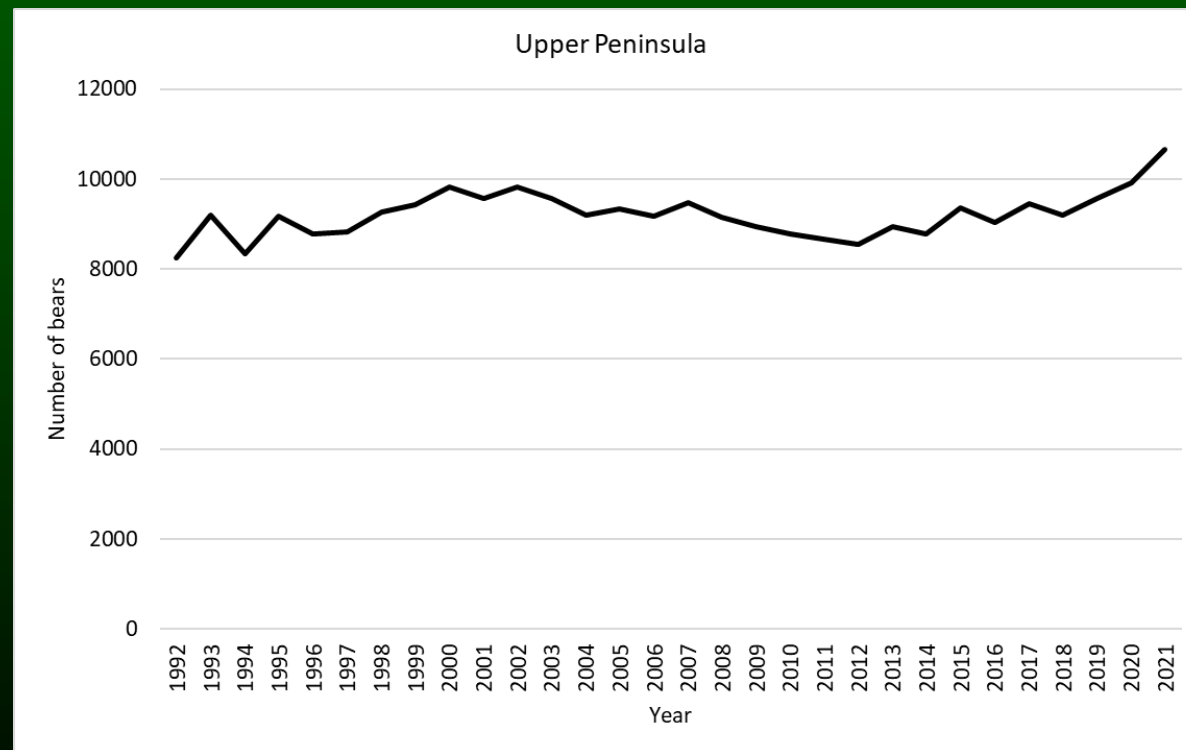


10,649 bears  
in 2021. Up  
25% since  
2012



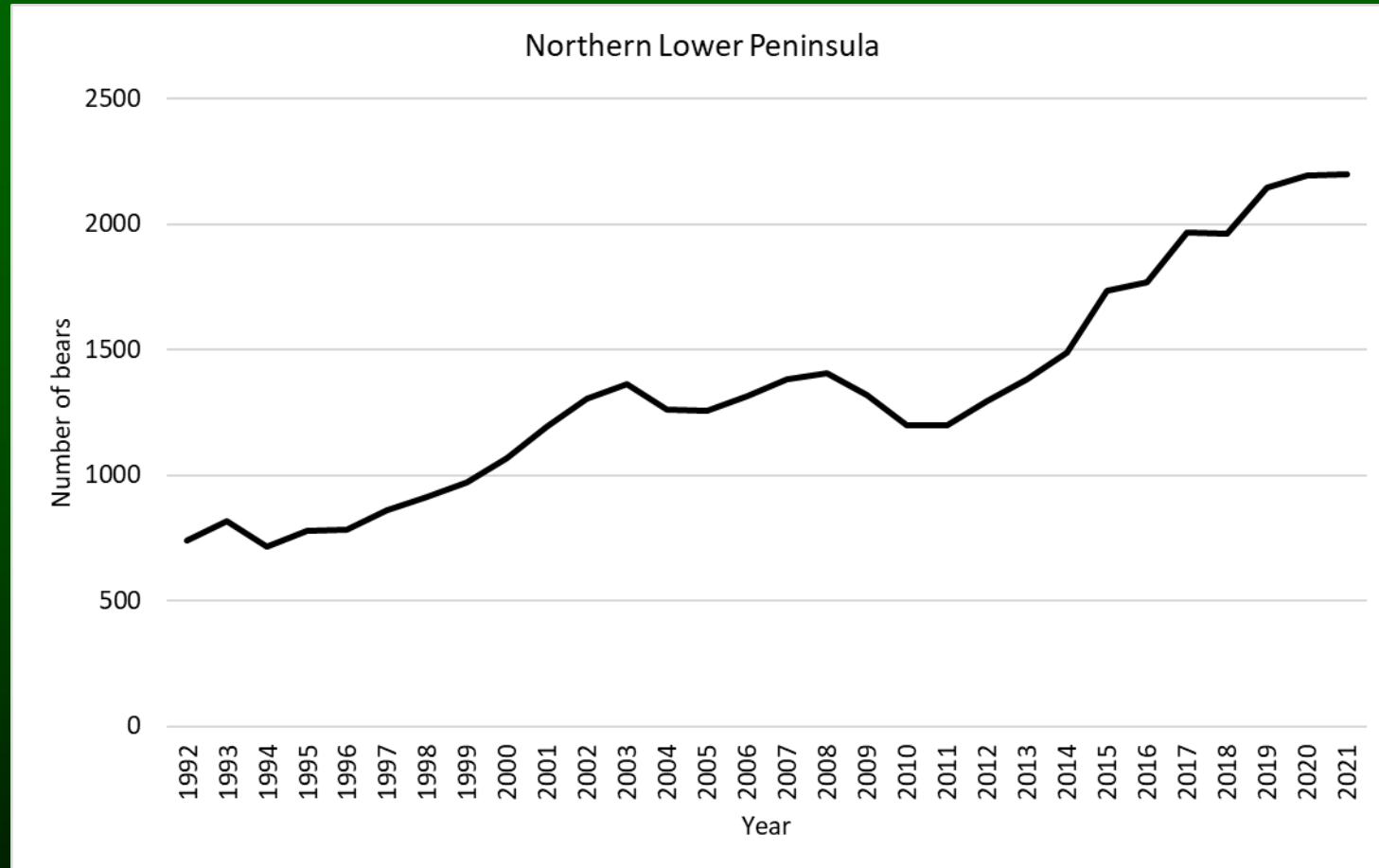
# Upper Peninsula Population Trajectory Goal

- To continue to increase the bear population, but at a slower rate, by increasing harvest slightly





## 2021 estimated pre-harvest abundance of bears 1 year old and older in the NLP Region. SCAA analysis.

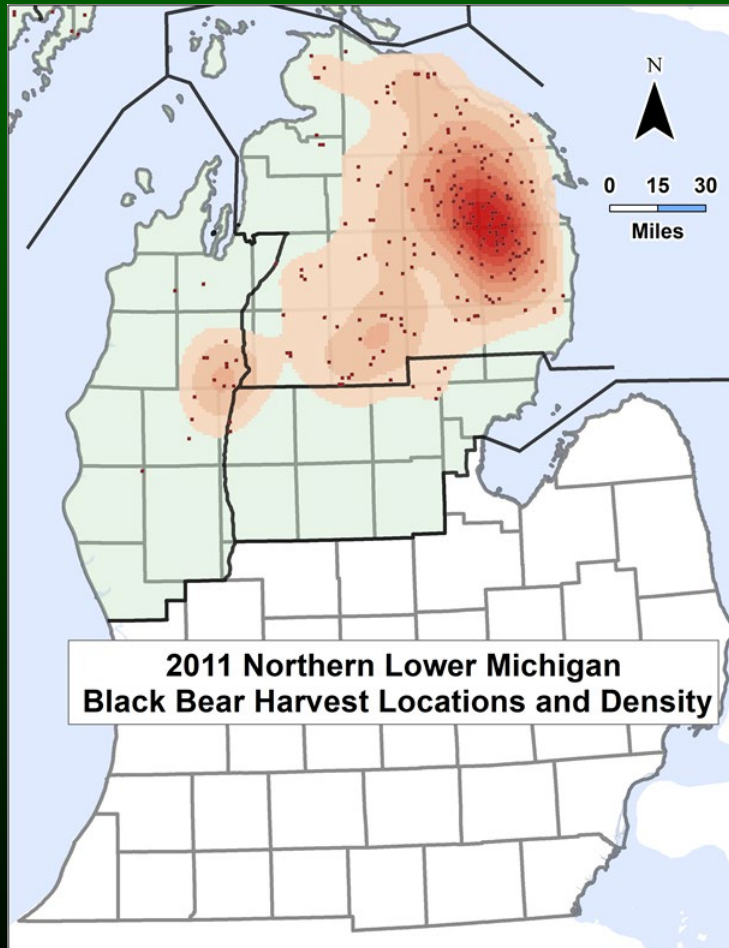


2,197 bears in  
2020. Up 69%  
since 2012



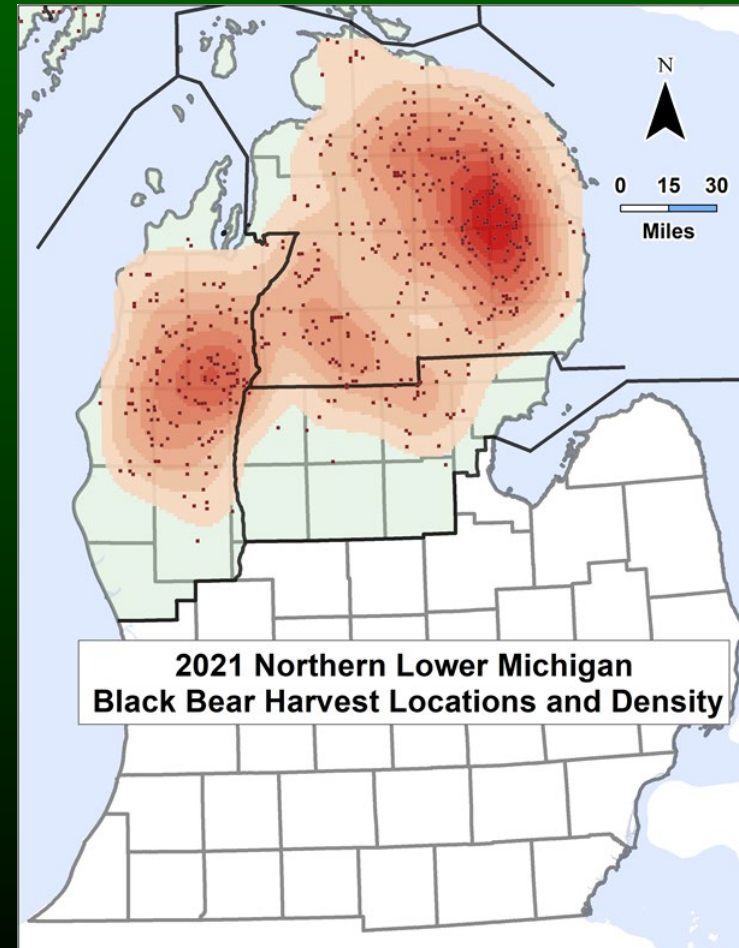
# Expanding Distribution

7,800 mi<sup>2</sup>



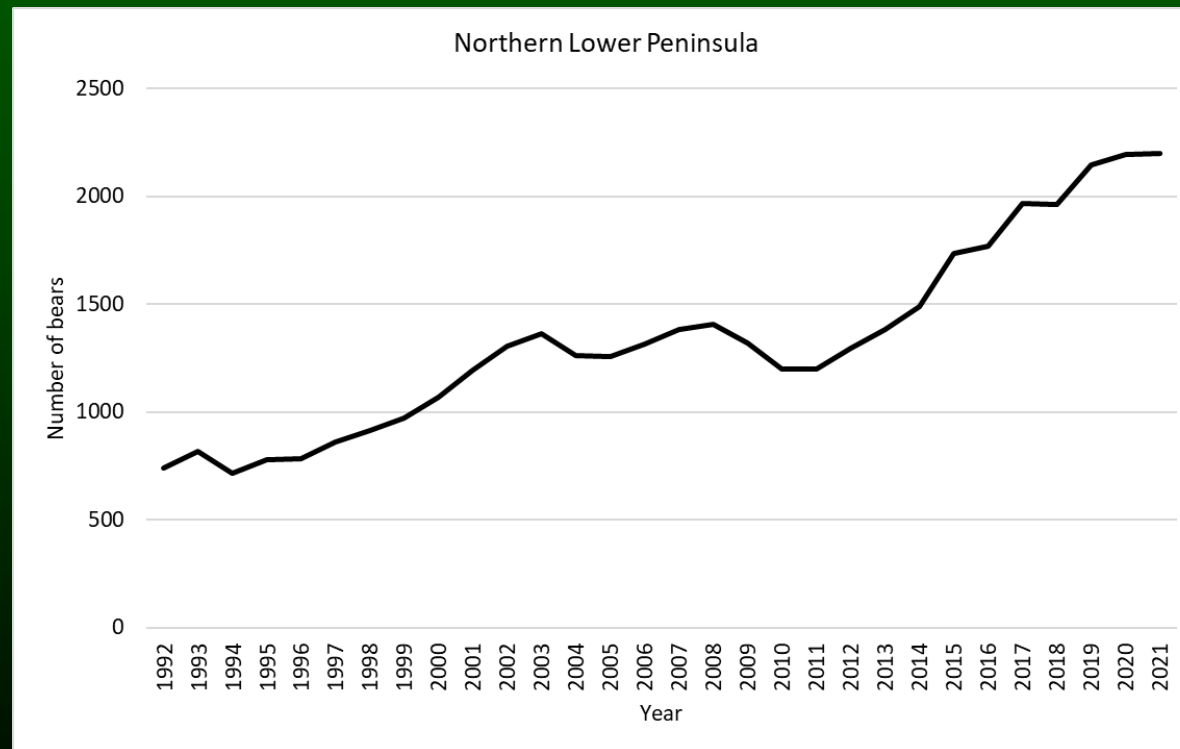
74%

13,600 mi<sup>2</sup>



# Northern Lower Peninsula Population Trajectory Goal

- To slow the population growth to eventually achieve a stable population



## Other Indices and Information Considered

- Hunter effort
- Hunter success rates
- Harvest density
- Nuisance bear activity
- Habitat and mast
- Stakeholder opinion



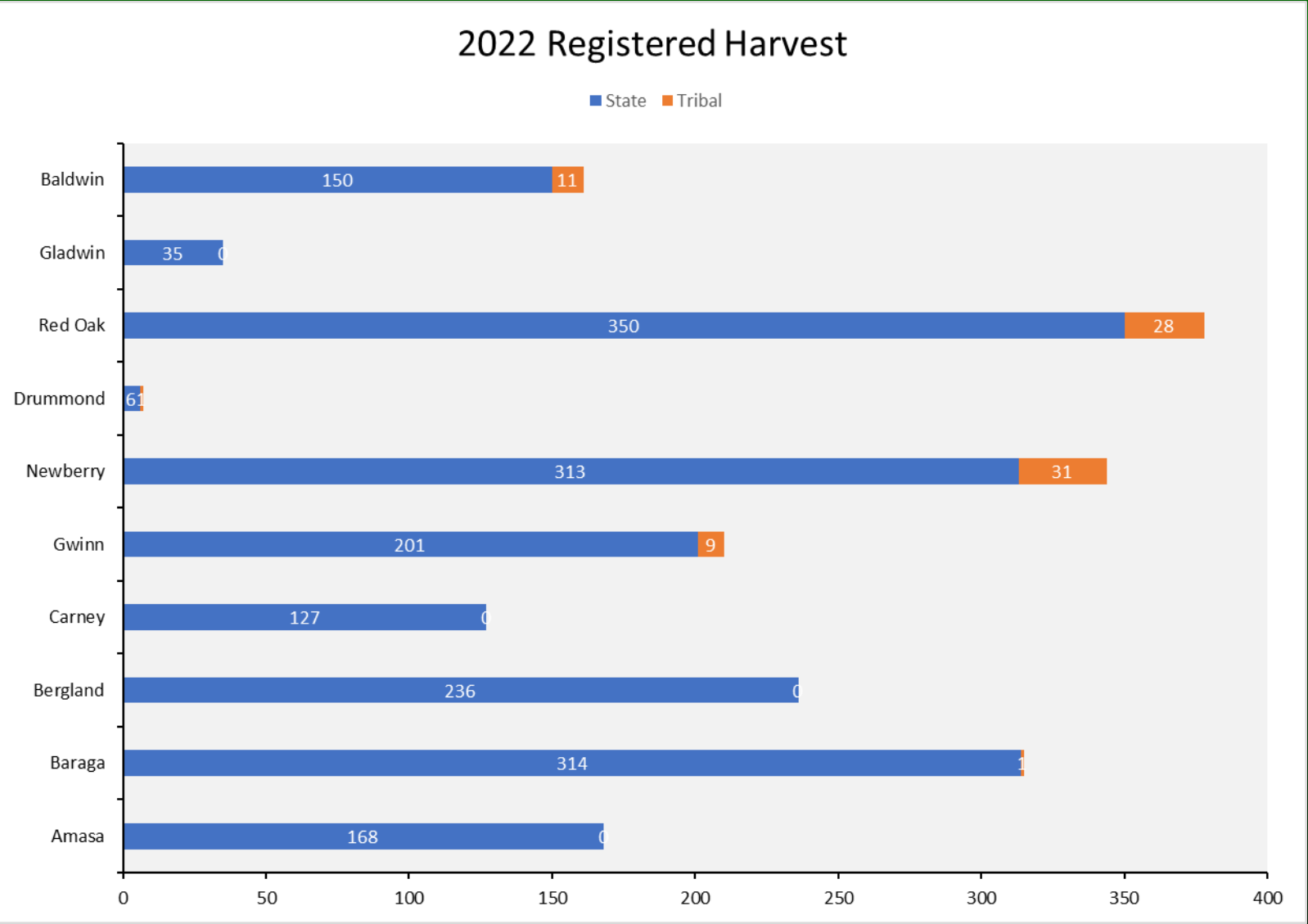


# 2022 Statewide Harvest (State Licensed Hunters)

- 1,903 bears harvested statewide
- Up 2% from 2021 (1,863)
- Approximately 12% above the 10-year average
- Very good success rates in many BMU's

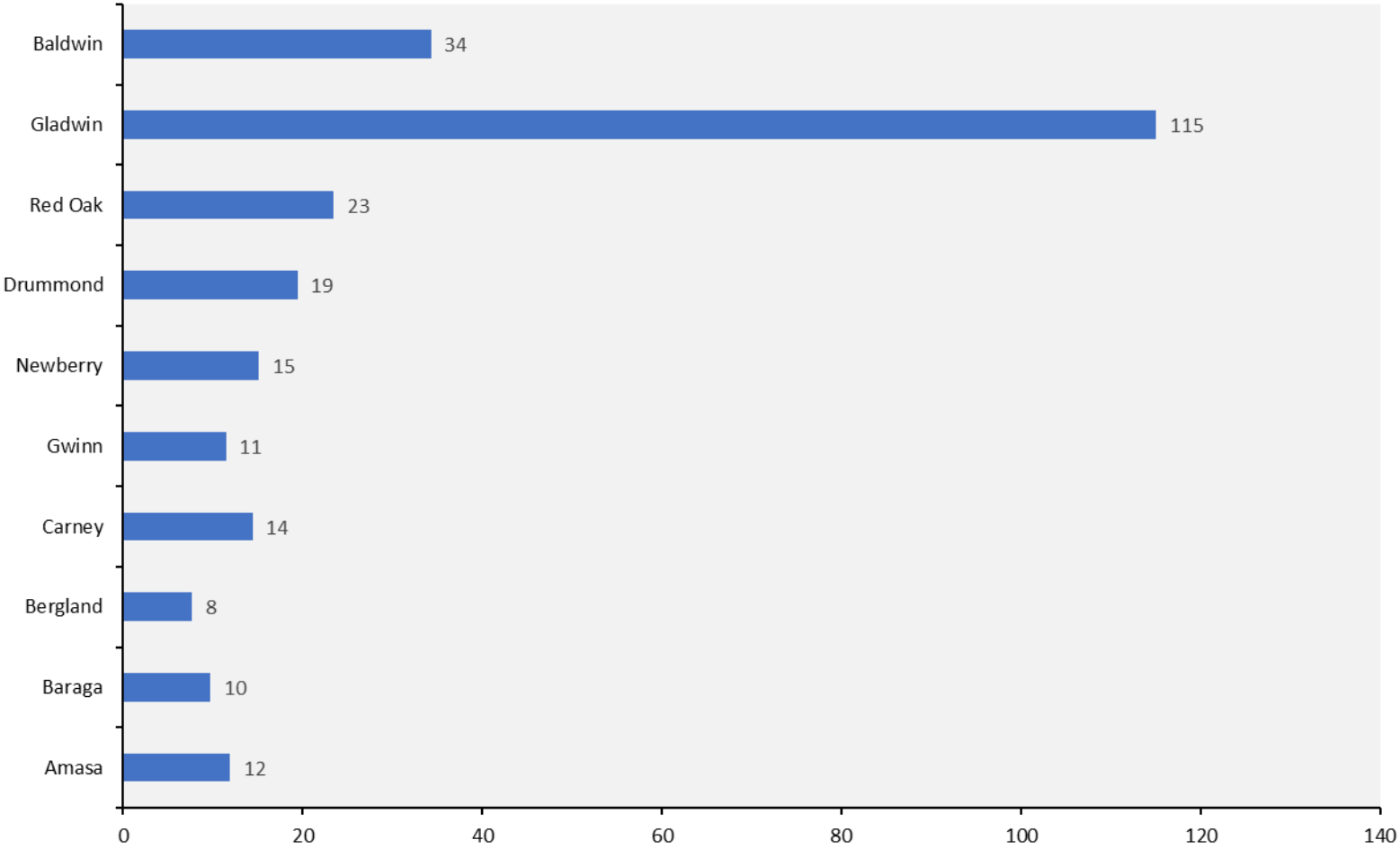








# 2022 Square miles / harvested bear State and Tribal



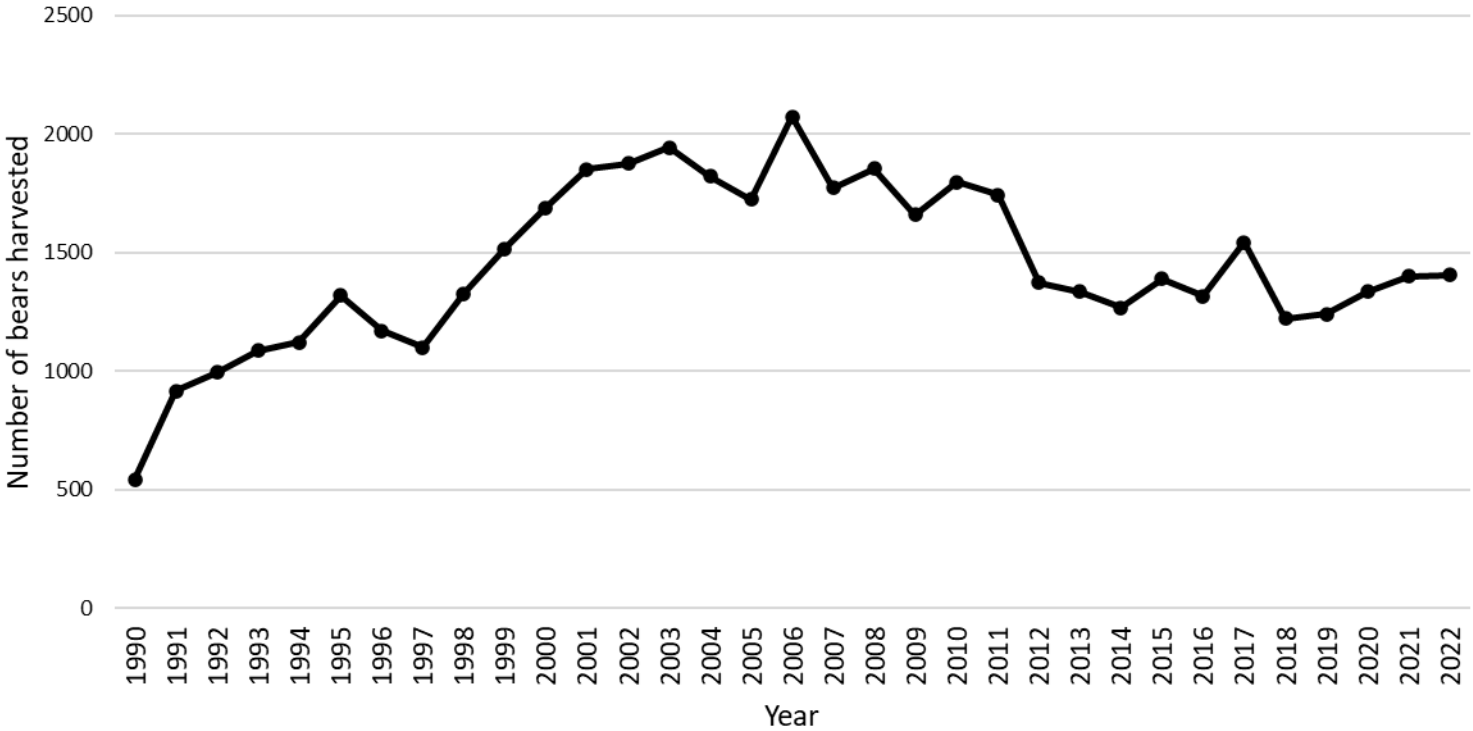
# Statistics from 2021 Bear Hunter Survey (Frawley)

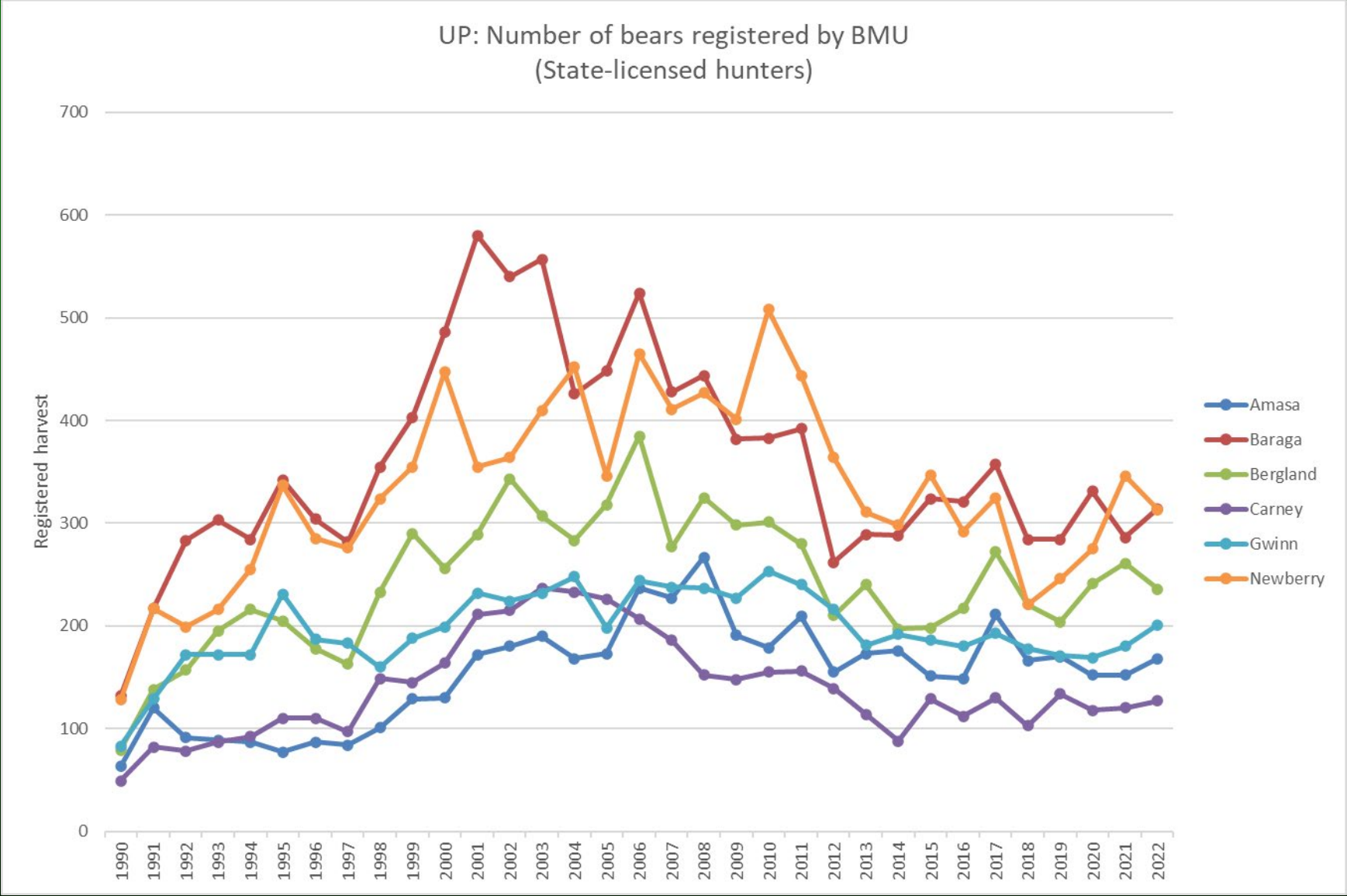
- Most hunters (87%) relied primarily on bait only
- About 18% relied primarily on dogs alone or a combination of baiting (strike) and dogs
- 81% of harvested bear were taken over bait
- Bait only hunters had a 34% success rate, dog hunters had a 59% success rate
- The success rate of hunters that used a guide was 48%
  - Approximately 693 hunters (13%) hired a guide
- 5,814 people bought a bear license, which is a decrease of 36% since 2011
  - 60,720 people applied for a bear license, which is an increase of 18% since 2011





UP - State and Tribal Harvest  
Long-term average: 1,447



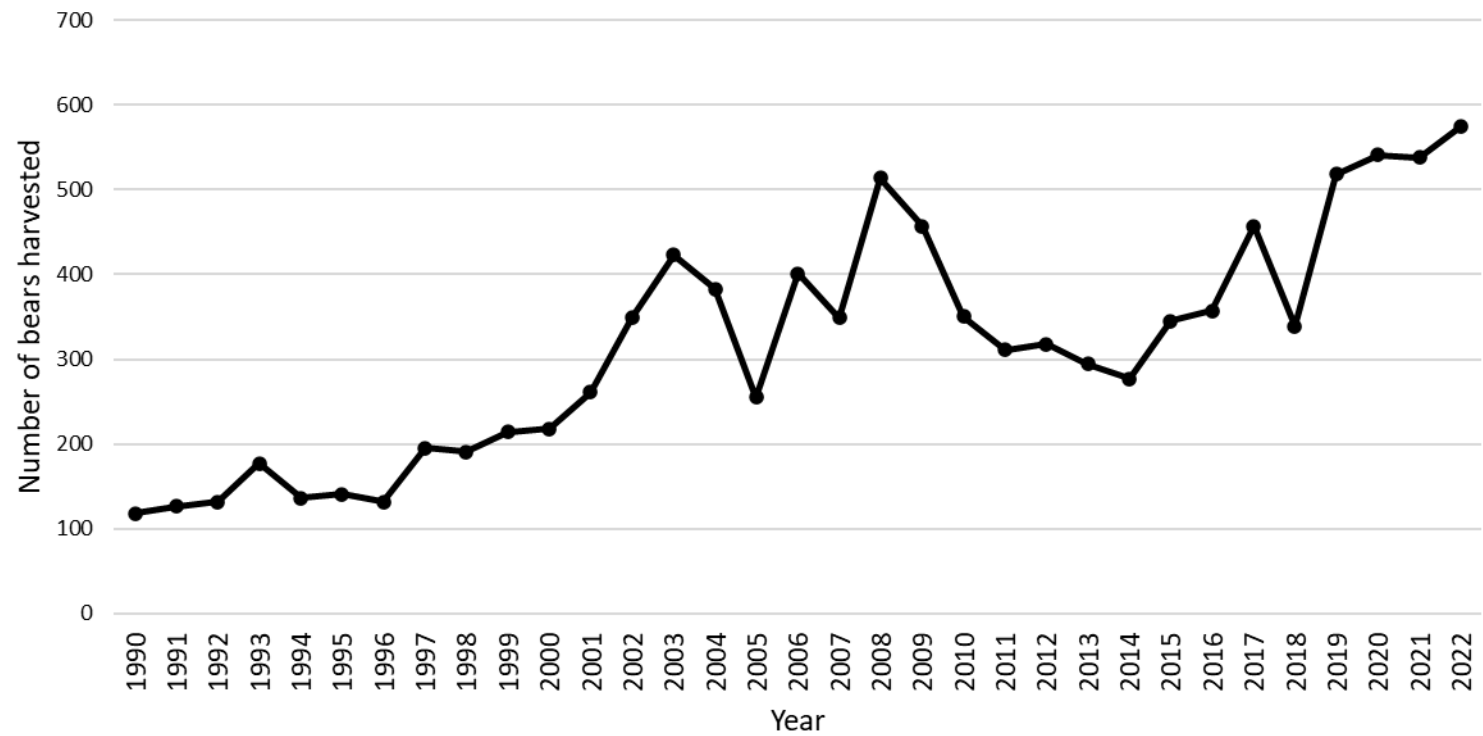


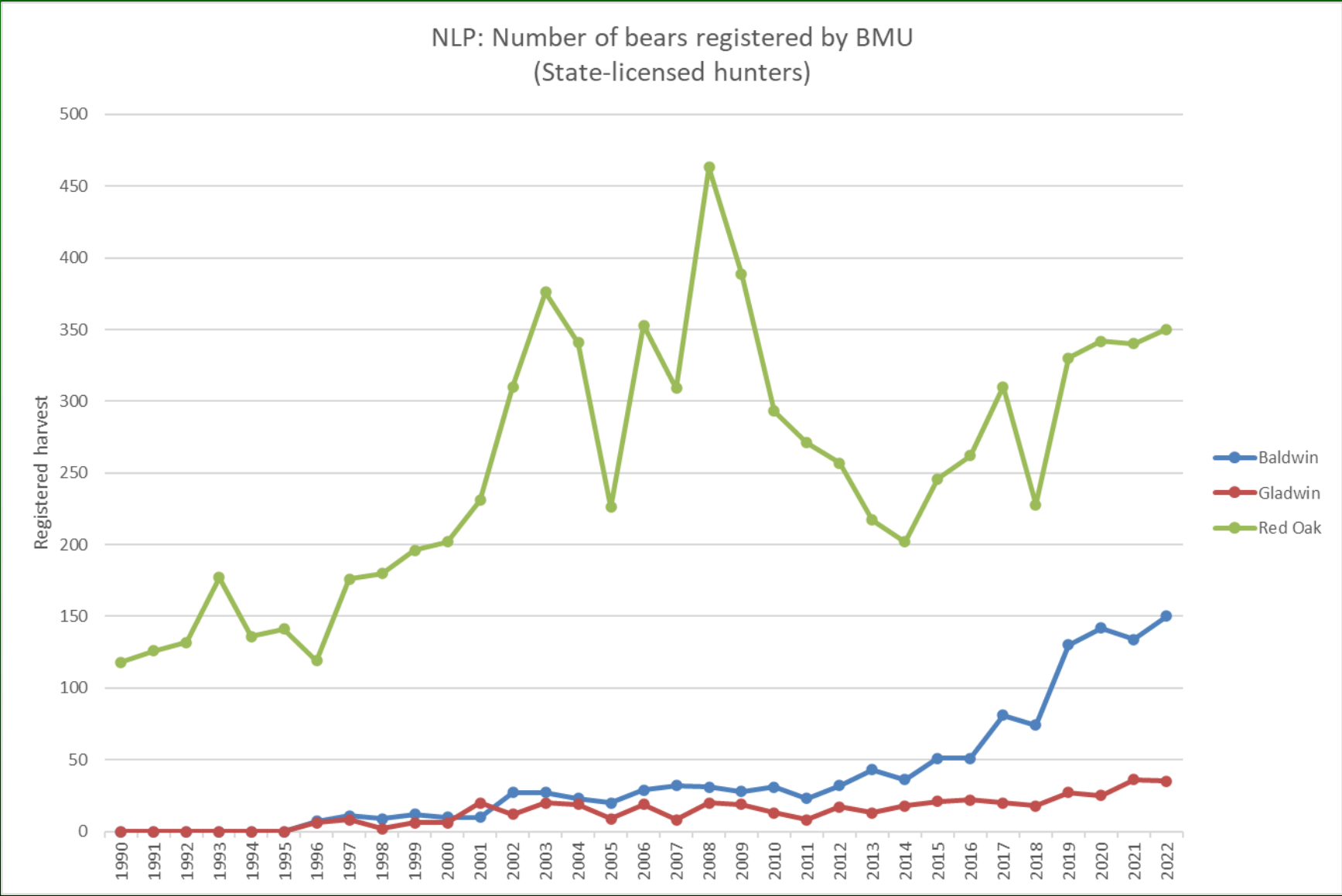




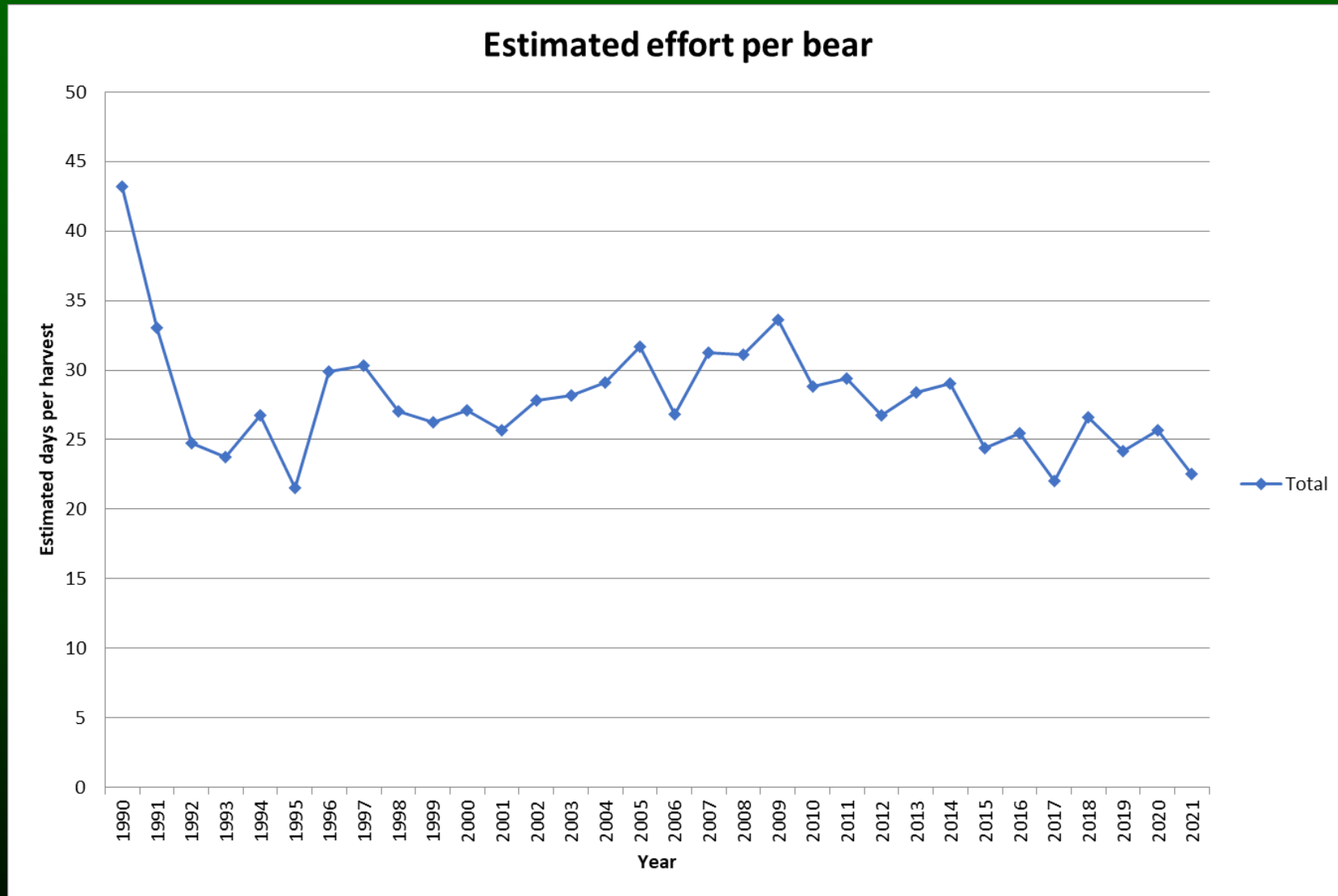
## NLP - State and Tribal Harvest

Long-term average: 315

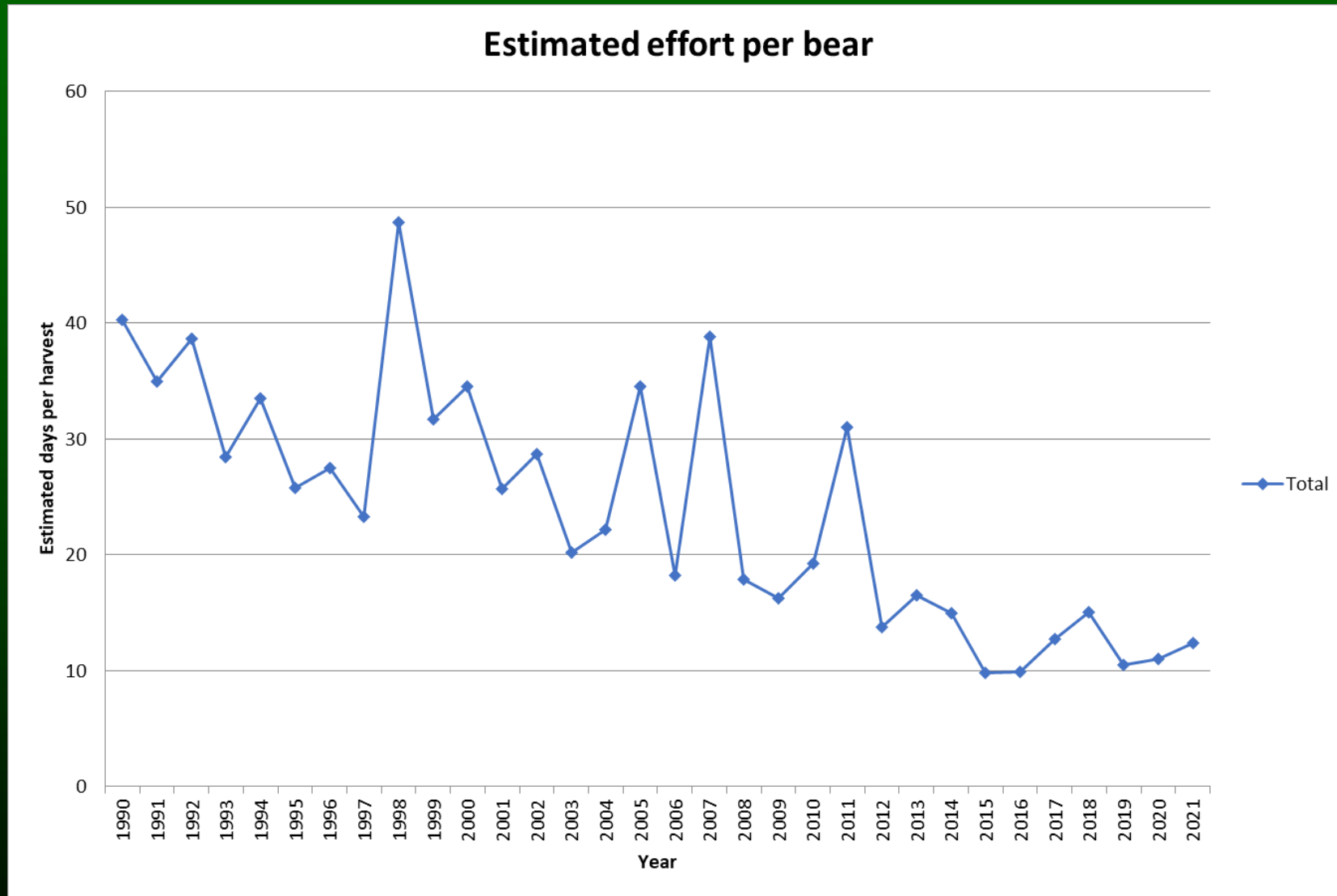




# UP Region

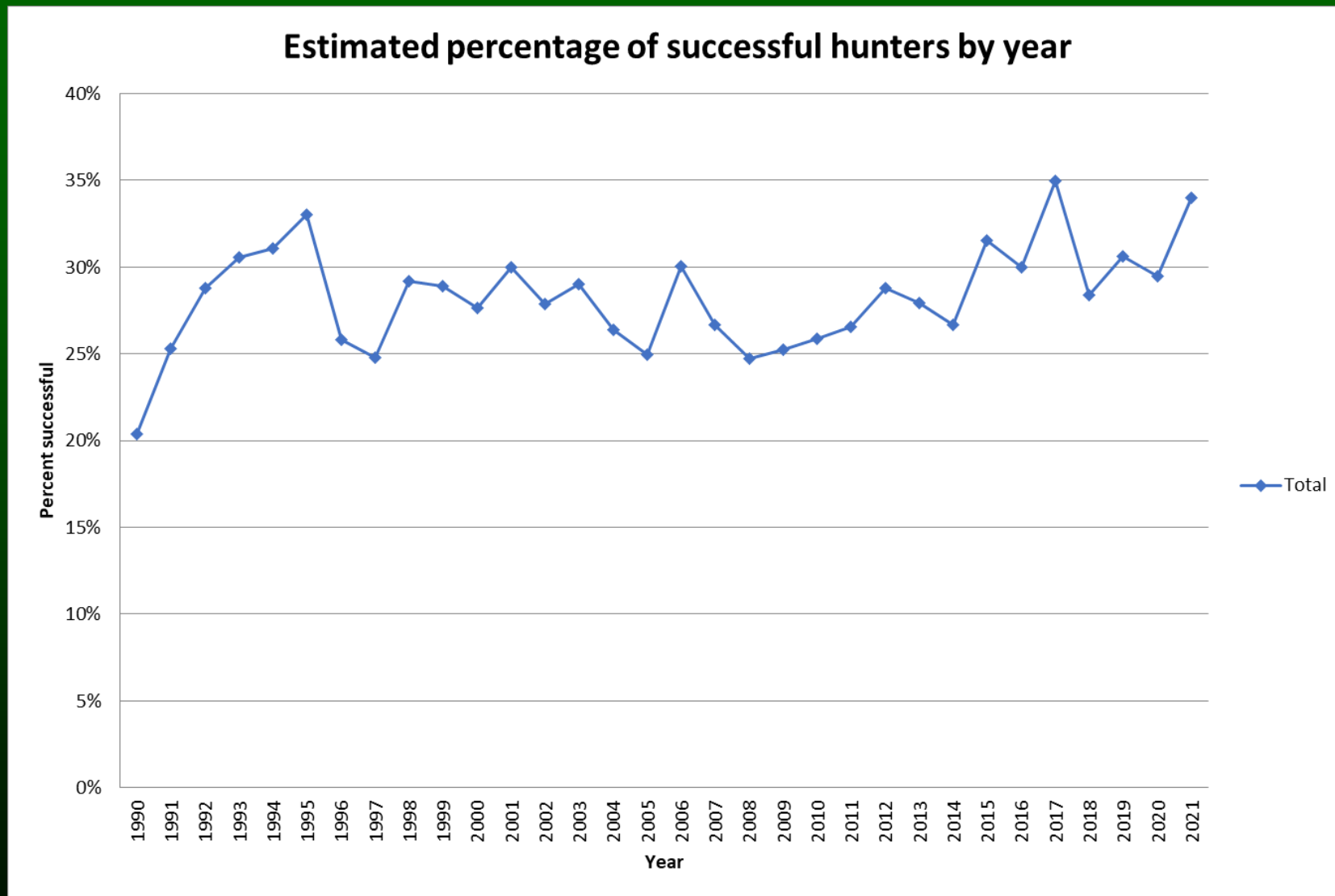


# NLP Region

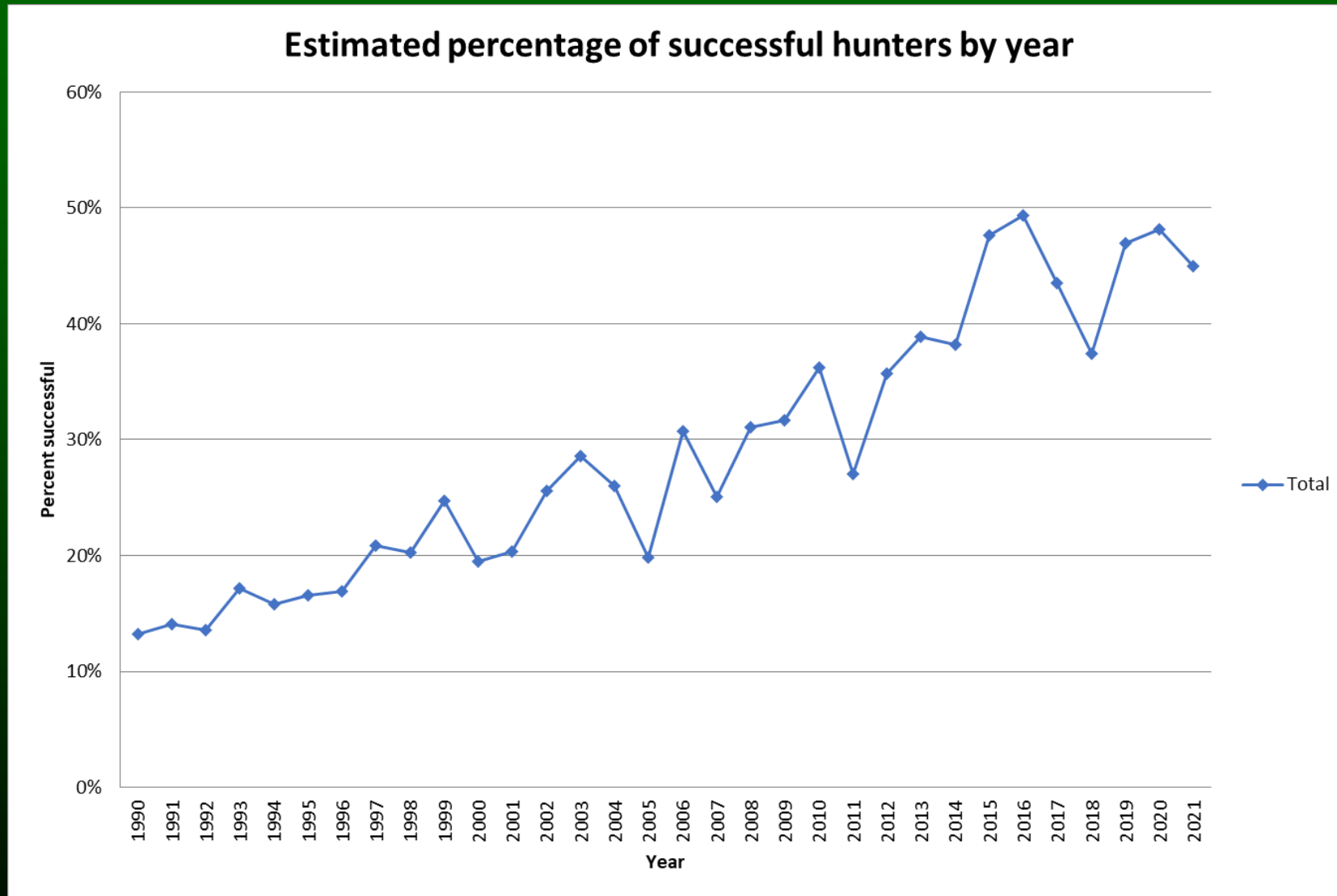




# UP Region



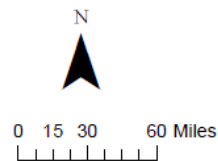
# NLP Region



## 2021 Bear Activity Reports

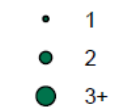
Note: 10 activity reports had missing or incomplete location information and are not mapped. Current as of 12/09/21.

Month	# of Reports
January	0
February	0
March	10
April	39
May	70
June	77
July	51
August	45
September	48
October	15
November	2
December	1

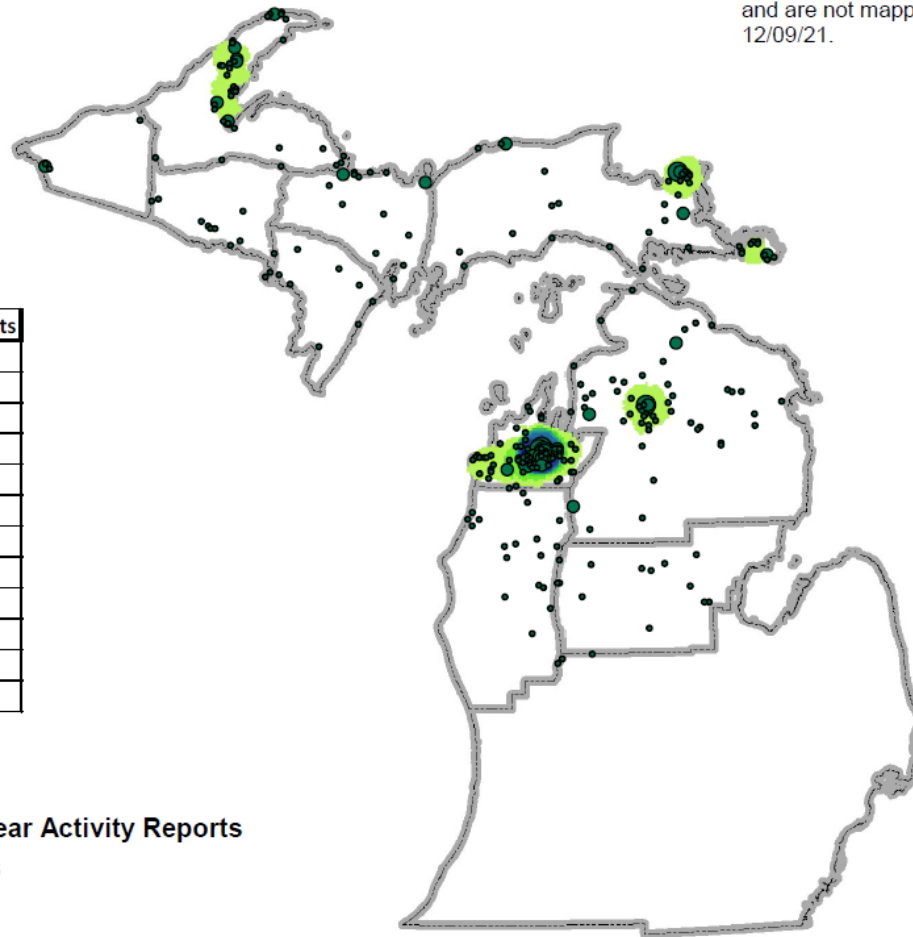


### 2021 Bear Activity Reports

#### Reports



— Bear Management Unit Boundaries

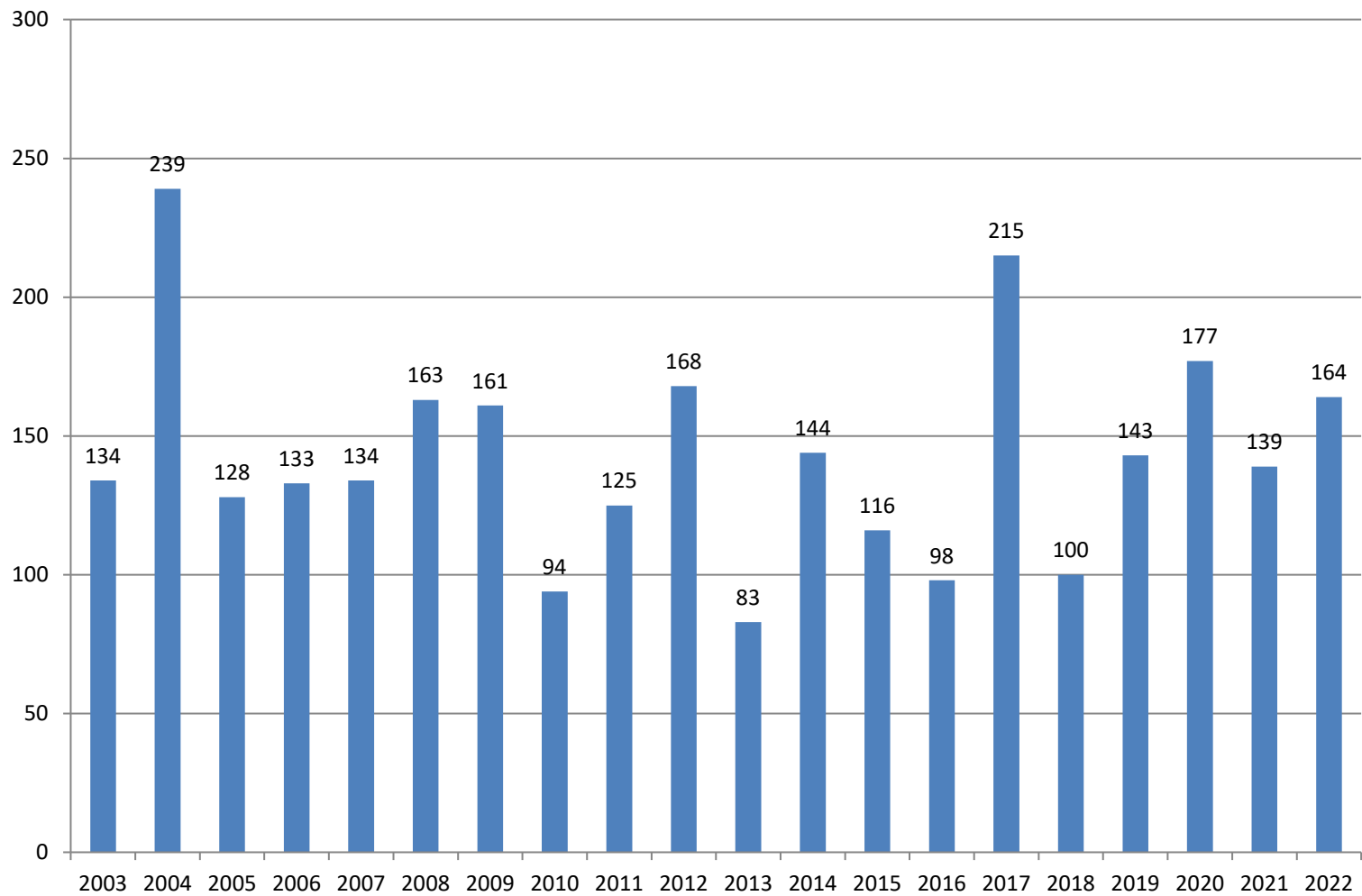


SLM 12/09/2021



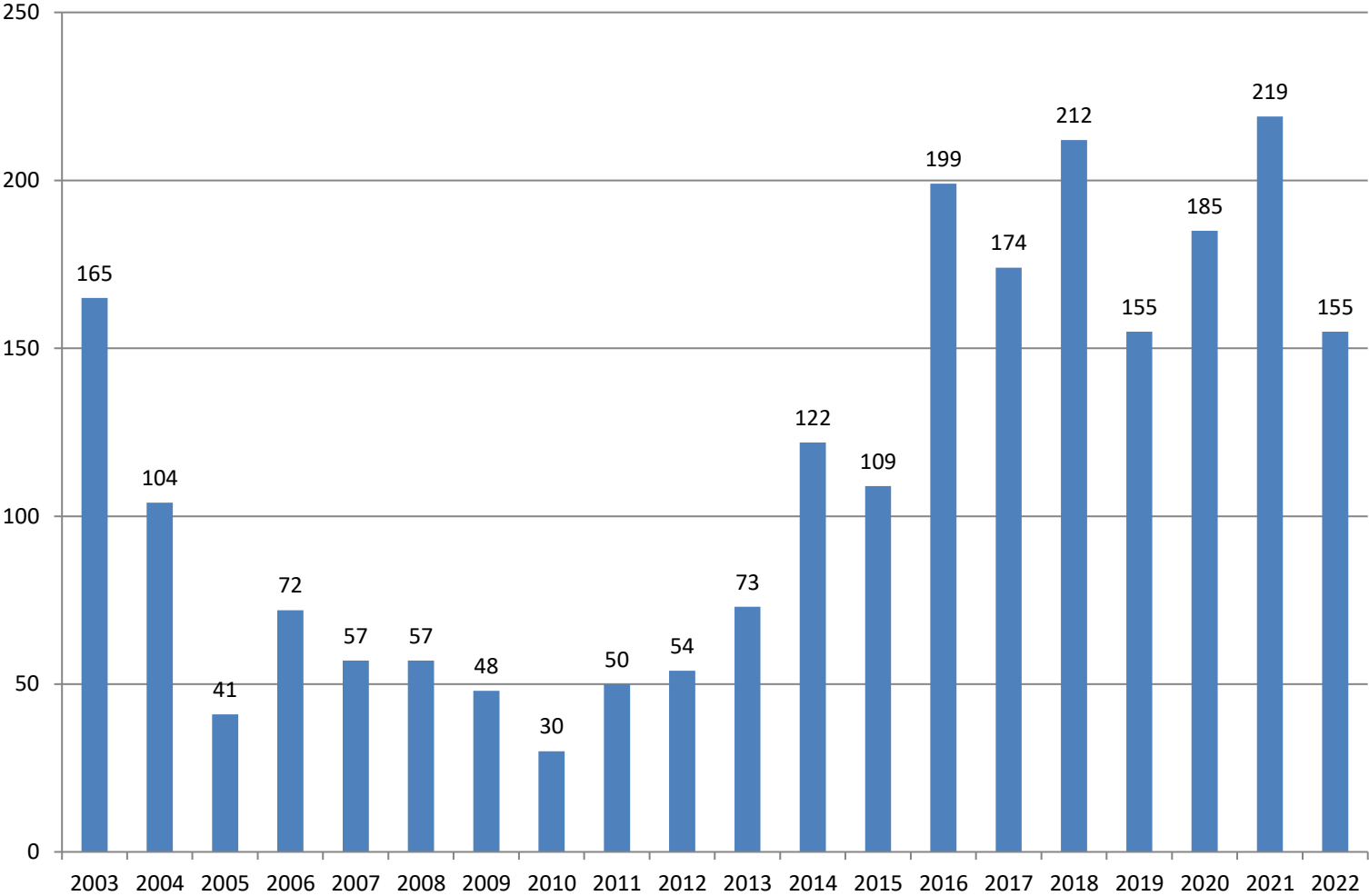


# UP Region Nuisance Complaints





# NLP Region Nuisance Complaints





# Proposed License Quotas



# 2023-24 Proposed UP Desired Harvest and License Quota

- State allocation: 1,196 (+11 from 2021-22)
  - Tribal allocation: 55 (same as 2021-22)
- State license Quota: 5,406 (-365 from 2021-22)

Bear Management Unit	2023-24 License Quota	Change from 2021-22
Amasa	500	0%
Baraga	1540	-0.3%
Bergland	920	-12%
Carney	550	0%
Drummond	6	0%
Gwinn	885	-7%
Newberry	1005	-14%



# 2021-22 Proposed NLP Desired Harvest and License Quota

- State allocation: 528 (+19 from 2021-22)
  - Tribal allocation: 75 (+3 from 2021-22)
- State license quota: 1,180 (-50 from 2021-22)

Bear Management Unit	2021-22 License Quota	Change from 2021-22
Baldwin	395	+16%
Gladwin	100	-17%
Red Oak	685	-11%



# Proposed Regulatory Changes

2022

**MICHIGAN  
BLACK BEAR DIGEST**



**Reminders**

- Season date changes for hunt periods 1 and 2.
- Bait barrels are not allowed on DNR-managed lands.
- Archery-only season added in Baldwin and Gladwin bear management units.

**Drawing results online July 5.**

**Application Period: May 1 - June 1, 2022**  
RAP (Report All Poaching): Call or text 800-292-7800



# Prohibit Field Points from Being used in a Bow and Arrow

- Currently restrictions for crossbow. Proposal: bow and arrow must use broadhead at least 7/8 inch wide and arrows at least 14 inches in length.
  - Consistency across equipment
  - Reduce odds of wounding
  - Increase odds of recovery
- Department supports this proposal





# Restricting Firearm Caliber Use

- Currently firearm restrictions for deer and elk, but not bear.
- Proposal: prohibit use of .22 caliber and smaller rimfires
  - Consistency across species
  - Reduce odds of wounding
  - Increase odds of recovery
- Department supports this proposal



# Clarifying Wood Products at Bait Sites

- Currently wood products are prohibited on public land, but unclear.
- Proposal: prohibit manufactured wood products on public lands.
  - Ensure plywood, lumber, etc. prohibited
  - Ensure hollow stumps, cut logs, etc. allowed
- Department supports this proposal.



# Prohibit the Use of Stupefying Substances

- Currently drugs, poisons, and anti-coagulants are prohibited.
- Proposal: prohibit use of stupefying substances.
  - Ensure no substances that make unable to think clearly, groggy, or insensible
  - Example: melatonin
- Department supports this proposal.



# Implement a Wanton Waste Law

- Currently no requirement to use meat from harvested bear.
- Proposal: required to salvage edible meat, with exceptions.
  - Allow enforcement if hunter fails to salvage
  - Help ensure hunting remains tool in future
- Department supports this proposal.















# Changes to Season Structure to Address Conflict Between Hunters

- Currently in NLP, use of bait and dogs overlap 6 days, more interference.
- Proposal: shift bait hunting forward 1 day, add day for dogs-only.
  - 1 less day of overlap for bait and dogs
  - Full weekend opener for bait hunters
  - 4 days of dog-only hunting
- Department supports this proposal.



# Example

2023 SEPTEMBER						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9 
10 	11 	12 	13 	14 	15 	16  
17 	18 	19 	20	21	22	23
24	25	26	27	28	29	30

© BlankCalendarPages.com





# Changing the Definition of a Cub Bear

- Currently cub defined as a bear less than 1 year of age.
- Proposal: define cub as a bear less than 42 inches from tip of nose to base of tail.
  - Increase hunter ability to ensure compliance
  - Increase enforceability for law enforcement
- Department supports this proposal.



# Allow the Use of Dogs under Bear Damage Shooting Permit

- Currently can't use dogs to kill bears under Bear Damage Shooting Permit.
- Proposal: allow dogs on a case-by-case basis for Bear Damage Shooting Permits.
  - Increase effectiveness of permits
  - Reduce bear-related issues
  - Target individual bears that cause damage
- Department supports this proposal.



# Allow Nighttime Shooting under a Bear Damage Shooting Permit

- Currently legal hunting hours apply to Bear Damage Shooting Permits.
- Proposal: allow nighttime shooting on a case-by-case basis for Bear Damage Shooting Permits.
  - Increase effectiveness of permits
  - Reduce bear-related issues
- Department supports this proposal.



# Manufactured Openings in Private Land Bear Bait Containers

- Currently holes 1 inch or less are allowed in bait containers.
- Proposal: prohibit holes greater than 1 inch and less than 22 inches.
  - Use of small baits in 1 inch or less holes.
  - Use of large baits in 22 inch or greater holes.
  - Holes too small or large to catch wildlife.
- Department supports this proposal.



# Bear Baiting in Areas with Deer Baiting Bans

- Currently if deer baiting prohibited, no deer attractants allowed. If deer baiting allowed, 2 gallons of deer attractants allowed, but only inaccessible grains prior to Sept 15.
- Proposal: allow 2 gallons of any deer attractants statewide, during entire bear baiting period, if inaccessible to deer.
  - Simplify regulations.
  - More options for hunters.
  - No expected biological impact on deer or elk.
- Department supports this proposal.



# Thank You





# Electronic Trap Monitors



**Law Enforcement Division**

Sgt. Todd Thorn



# Electronic Trap Monitors

Current regulation expires on February 28, 2023

- No changes other than removing the sunset clause



# Electronic Trap Monitors

- Visited every 72 hours
- Reports status every 24 hours
- Reports closures and issues within one hour
- Has control unit testing capabilities
- Visit within 24 hours of the time it was reported closed
- Check within 24 hours of the last time an open trap or notification alarm was received
- Device is marked with
  - Permit number
  - Business name
  - Business phone number
- Permittees shall maintain records and shall be available for inspection
- Exempt of liability for damage

