

Eagle Nest Lake Fisheries History, Management & Research



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Overview

- Background
- Management History
- Research
- Looking ahead
- Questions



Who We Are & What We Do

- Fisheries Management Division
 - Care deeply about fisheries
- Fish production, stocking & evaluation
- Population monitoring, conservation, recovery
- Develop & evaluate fishing regulations
- Communicate with and survey anglers
- Purchase property for angler access
- Habitat Improvement



New Mexico Department of Game and Fish
Conserving New Mexico's Wildlife for Future Generations

What We Don't Do

- Open or close a state park
- Determine or advise when it is safe to ice fish
- Regulate environmental water quality or pollution



Photo by Jane Trujillo

New Mexico Hatcheries

- 6 state fish hatcheries
 - 4 rear Rainbow Trout
 - Triploid (sterile), 2010
- Statewide stocking obligations
 - 2,826,543 Rainbow Trout stocked, 2021
 - 305 tons



New Mexico Hatcheries

“Jane, why don’t you just stock more?”

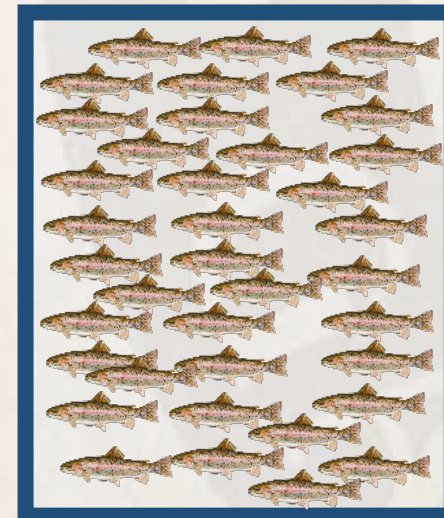
- Hatchery Limitations

- Capacity
- Larger fish
 - ↑ Space
 - ↑ Food
 - ↑ Cost

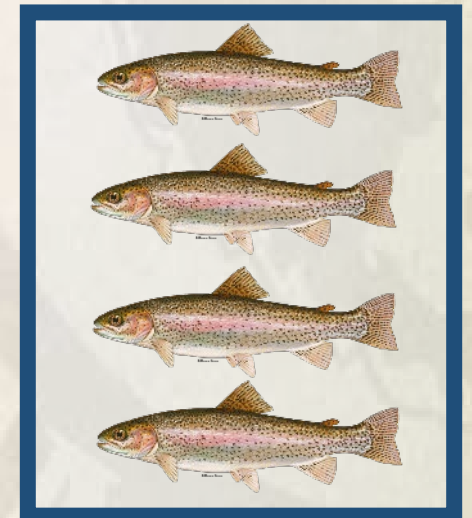


4” fish

8” fish



38.5 fish / lb



4.8 fish / lb



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Photo by Jane Trujillo

Importance

- Socially & economically important fishery
- NMDGF Commission purchased in 2002 (\$20 million)
- 4th most fished lake in NM, 2021
- 6th most stocked lake in NM, 2021

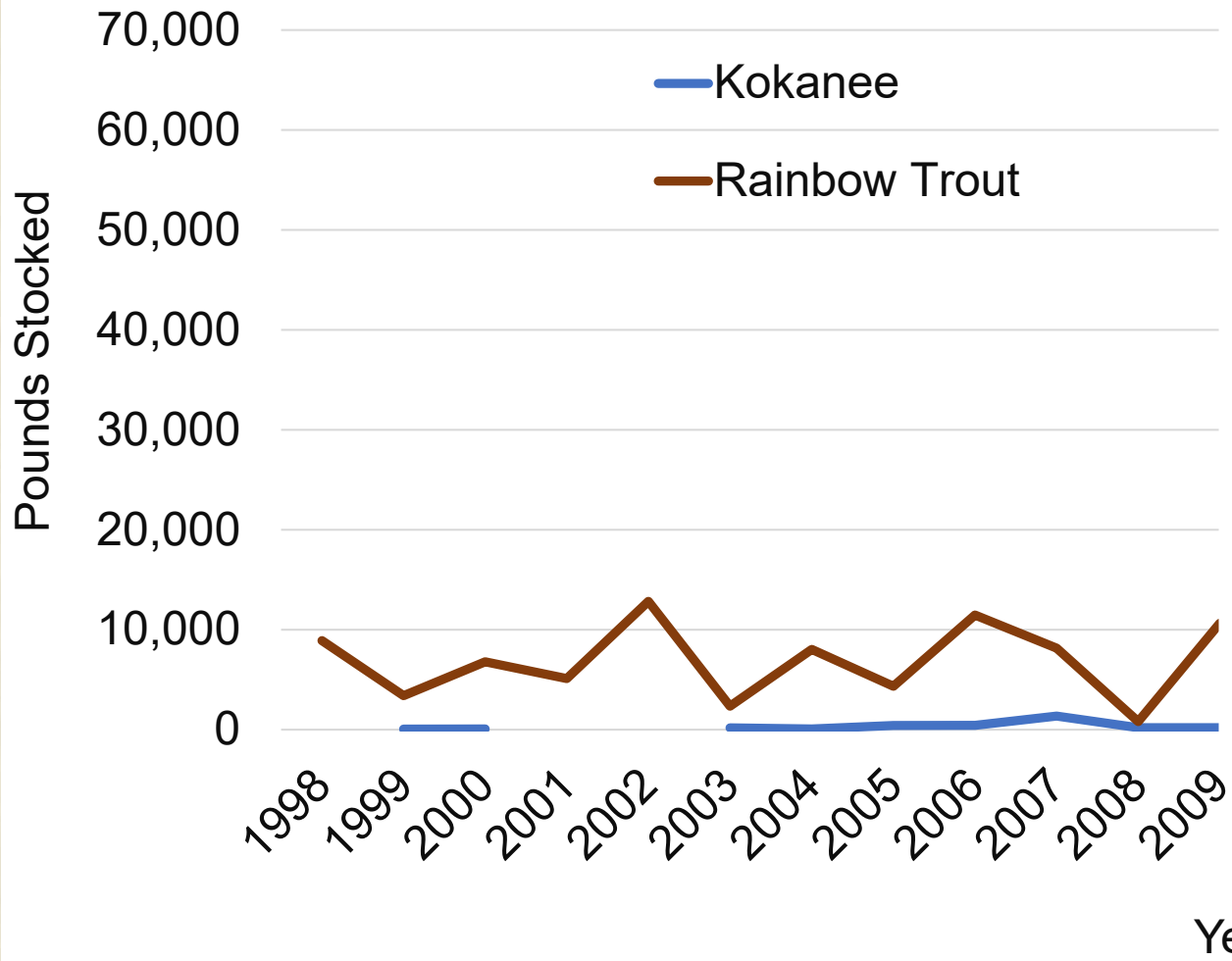
Water body	Total angler days
Elephant Butte Lake	179,109
Navajo Reservoir	143,748
Tingley Ponds	106,527
Eagle Nest Lake	105,387
Fenton Lake	73,590

Water Body	Rainbow Trout Stocked (lbs.)
Navajo Reservoir	38,111
San Juan River (blw Special Trout Water)	34,611
Grindstone Reservoir	22,603
Pecos River (Pecos Canyon)	20,339
Conservancy Park Lake (Tingley Beach)	19,612
Fenton Lake	19,446
Santa Cruz Reservoir	18,312
Eagle Nest Lake	17,336

Management History

- 2002 public meetings
 - Maintain salmonid fishery
 - Enhance Yellow Perch fishery
- Put, grow and take salmonid fishery
 - Rainbow Trout
 - Fingerlings
 - Opportunistic 'extras' (larger fish)
 - Fires, water quality, hatchery need
 - Kokanee
 - Fry
 - Wild spawn & other states
 - Heron Lake, drought, Covid-19
- Yellow Perch fishery
 - Relaxed bag limit to 30 fish





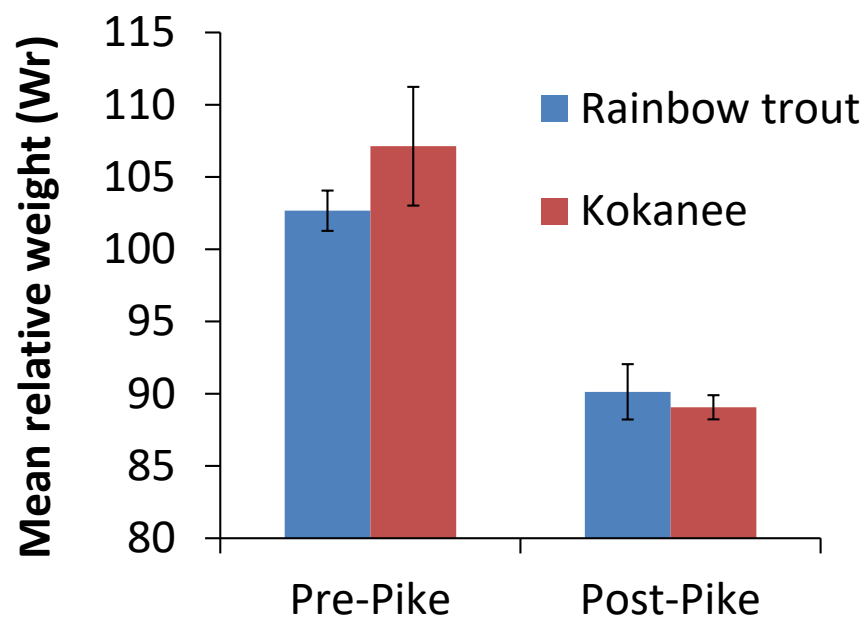
Unlawful Fish Introductions

- Eagle Nest Lake history of illegal introductions
- Hinder fishery management ^a
- Negative economic impact ^b
- Can irreversibly change fisheries ^c
- Yellow Perch (1990s)
- Common Carp (2000s)
- Northern Pike (2000s)
 - Detected 2011

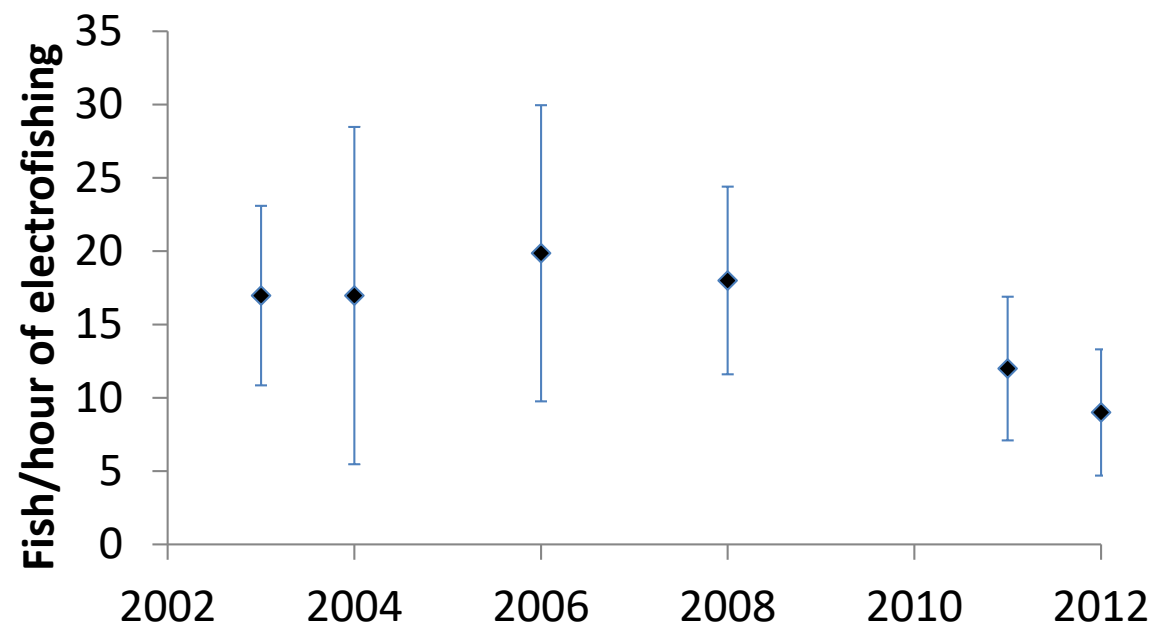


Initial Response to Pike

- Salmonid fishery decline
- Concern for future
- Northern Pike catch & kill mandate, 2012



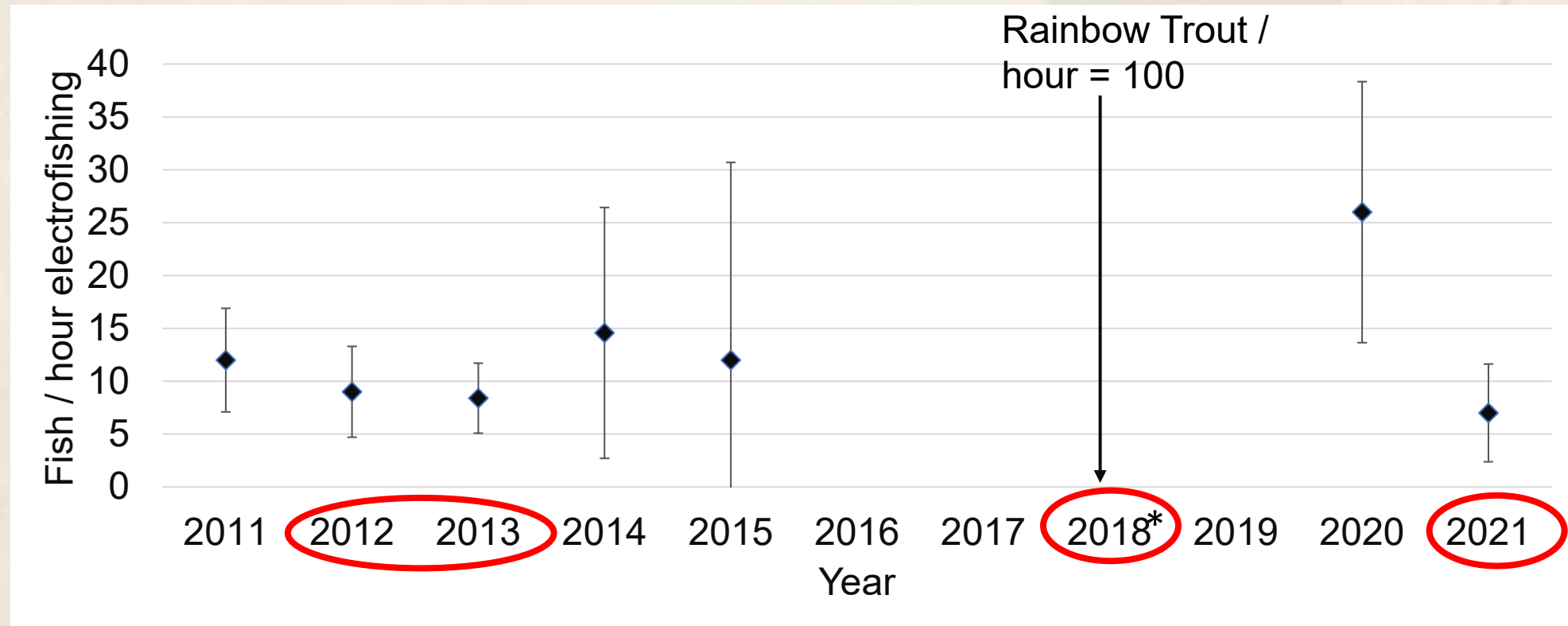
NMDGF 2014



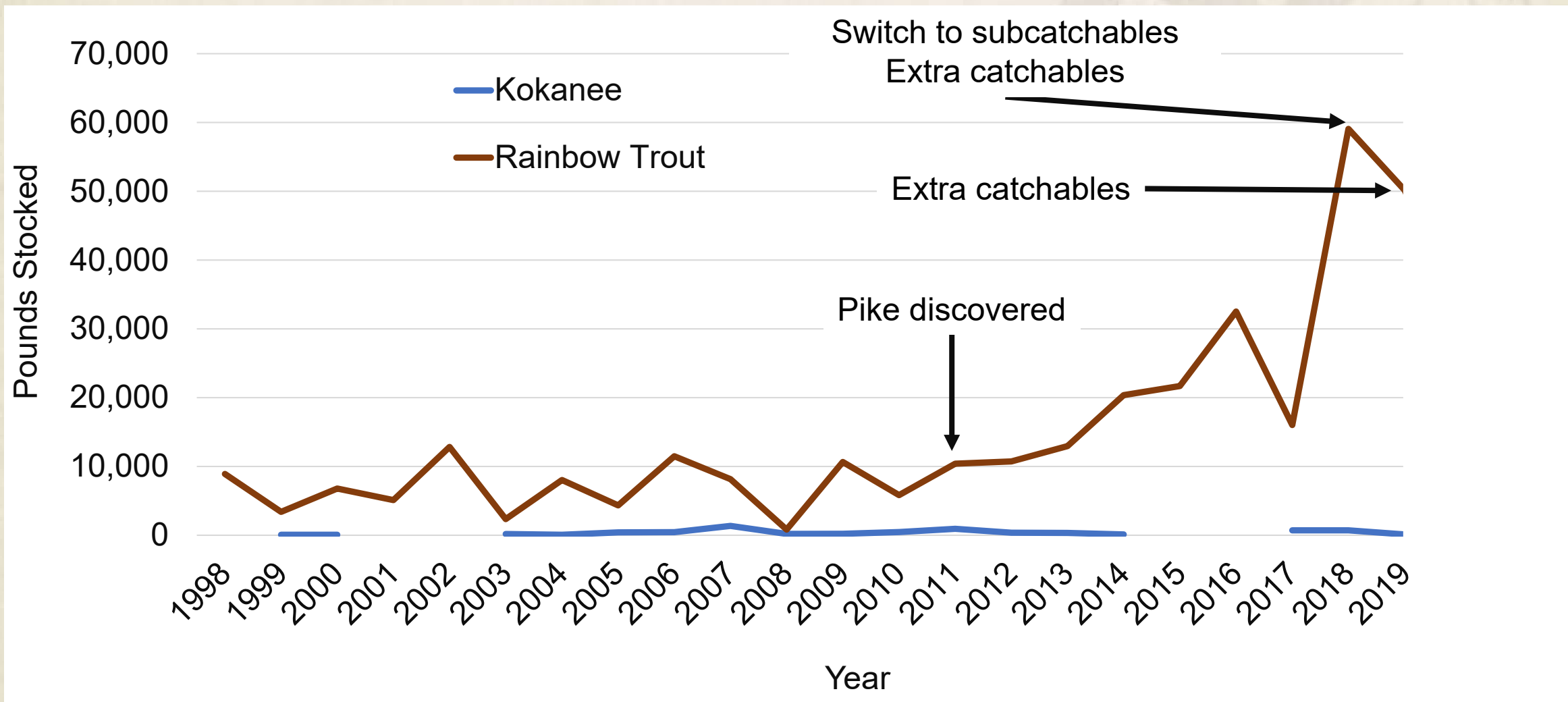
NMDGF 2013

Management Objectives

- 1) 10 Rainbow Trout / hour electrofishing
- 2) 50% of Rainbow Trout > 10"



Need for More Information





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Research Project

‘Differential Survival of Two Sizes of Rainbow Trout and the Predatory Impact of Northern Pike’

- Sustainable stocking approach
- Evaluate predatory role of Pike



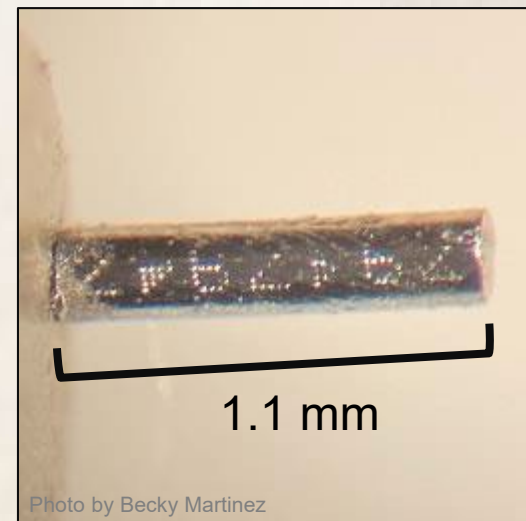
Methods

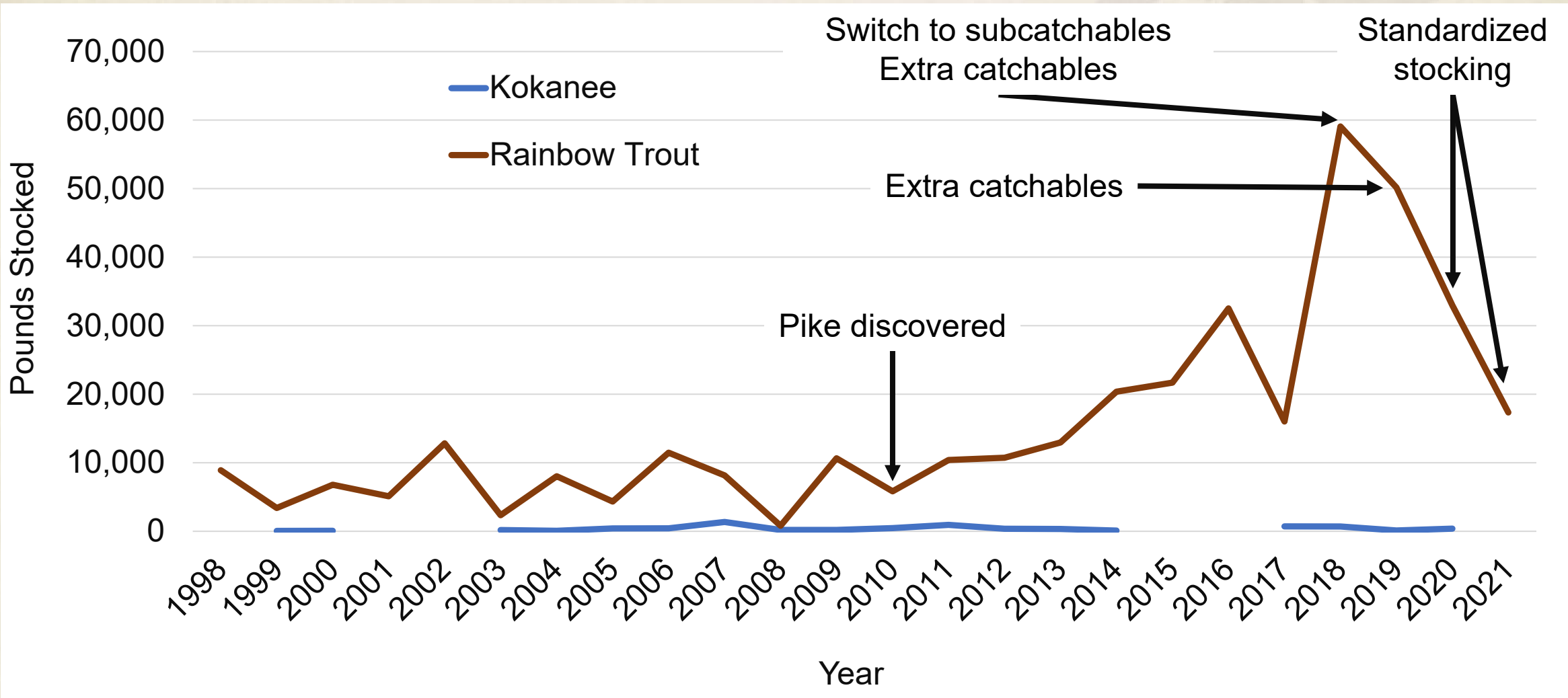
Northern Pike Predation

- Fish collection
 - Ice-free season (Apr 2020 – Oct 2021)
- Northern Pike Diet
 - Stomach contents

Survival of Rainbow Trout

- Monthly (2021)
- Marked with coded wire tags
 - Light gauge wire, numbers etched
 - Season stocked, size class
- Standardized stocking





Results

Survival of Rainbow Trout

- 97,157 marked
- 28 recaptured
 - 79% Spring 2020 subcatchable (6-9")
 - 1 fingerling (3-6"; stocked Spring 2020)



Season Stocked	Size	Jul 2020	Aug 2020	Oct 2020	Jan 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sept 2021	Oct 2021	Jan 2022	Totals
Spring 2020	Fingerling	1	0	0	0	0	0	0	0	0	0	0	0	1
	Subcatchable	2	0	13	1	0	0	0	0	0	0	4	1	22
Summer 2020	Fingerling	-	0	0	0	0	0	0	0	0	0	0	0	0
	Subcatchable	-	2	1	0	0	0	0	0	1	0	0	0	4
Fall 2020	Fingerling	-	-	-	0	0	0	0	0	0	0	0	0	0
	Subcatchable	-	-	-	0	0	0	0	0	0	0	0	0	0
Spring 2021	Fingerling	-	-	-	0	0	0	0	0	0	0	0	0	0
	Subcatchable	-	-	-	0	0	1	0	0	0	0	0	0	1
Totals	Both	3	3	14	1	0	1	0	0	1	0	4	1	28

Results

Northern Pike Diet

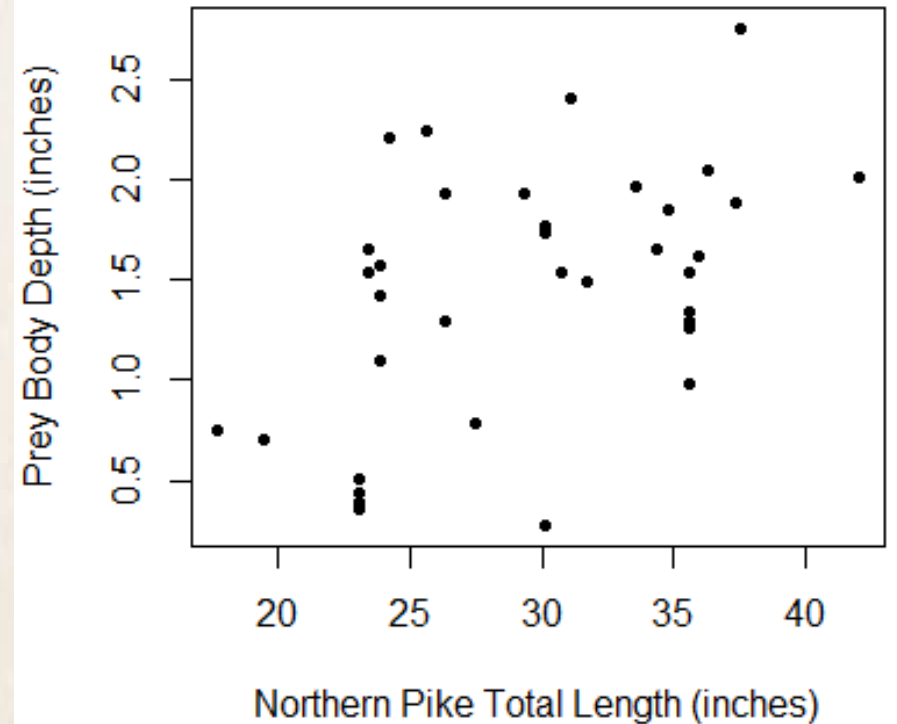
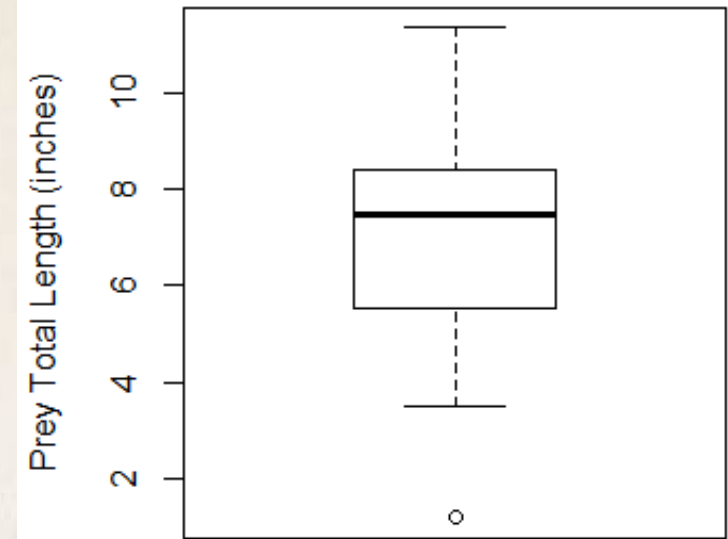
- Northern Pike highly piscivorous
 - 376 stomachs analyzed
 - 156 with prey
 - Rainbow Trout, Yellow Perch



Results

Northern Pike Size Selection

- Majority of prey fish 5.5 – 8.4” long
- Prey fish > 10” uncommon
- Larger Pike eat larger fish

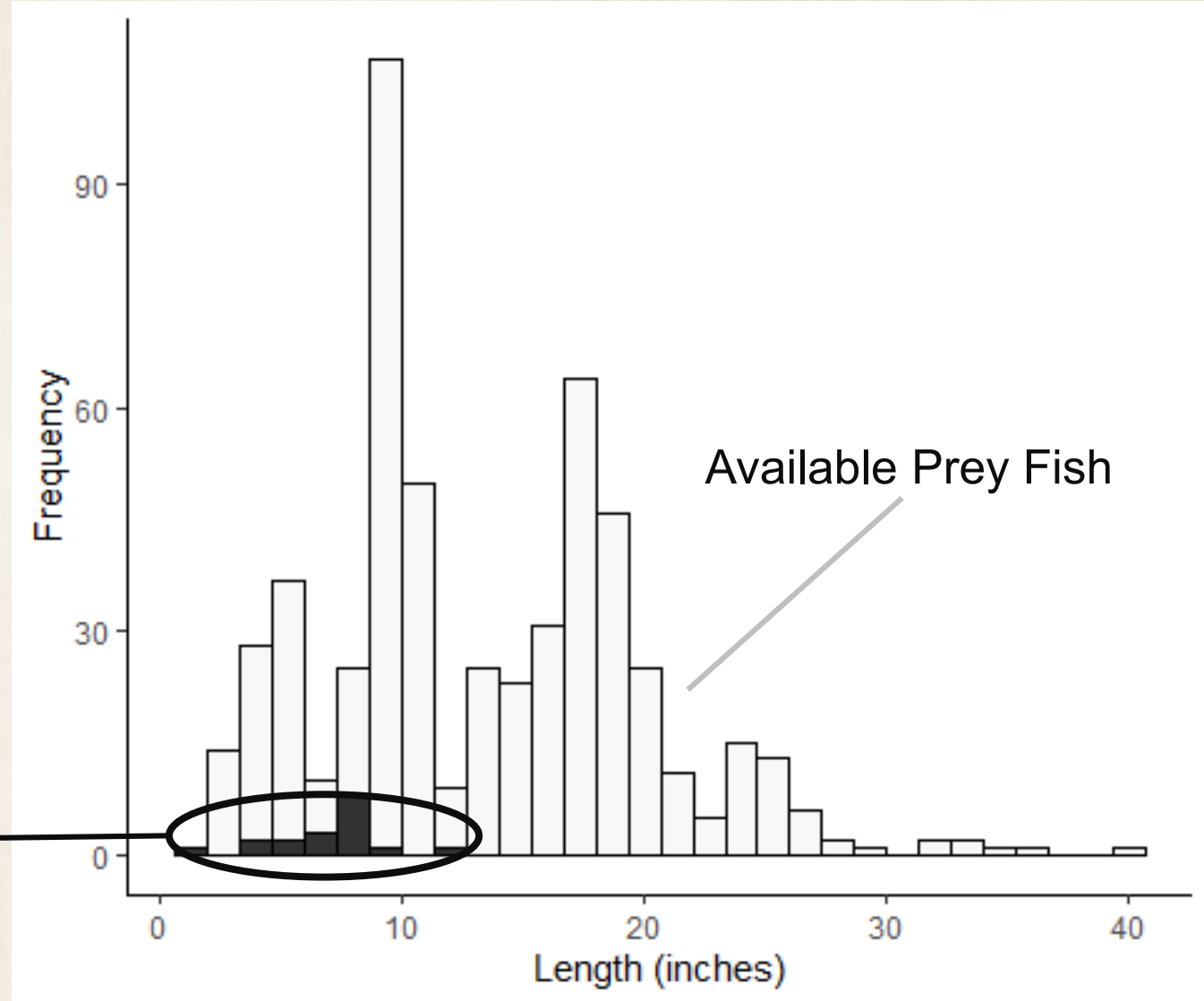


Results

Northern Pike Size Selection

- Pike eat smaller fish compared to what is available
- Other lakes, Pike eat larger fish ^a

Consumed Prey Fish



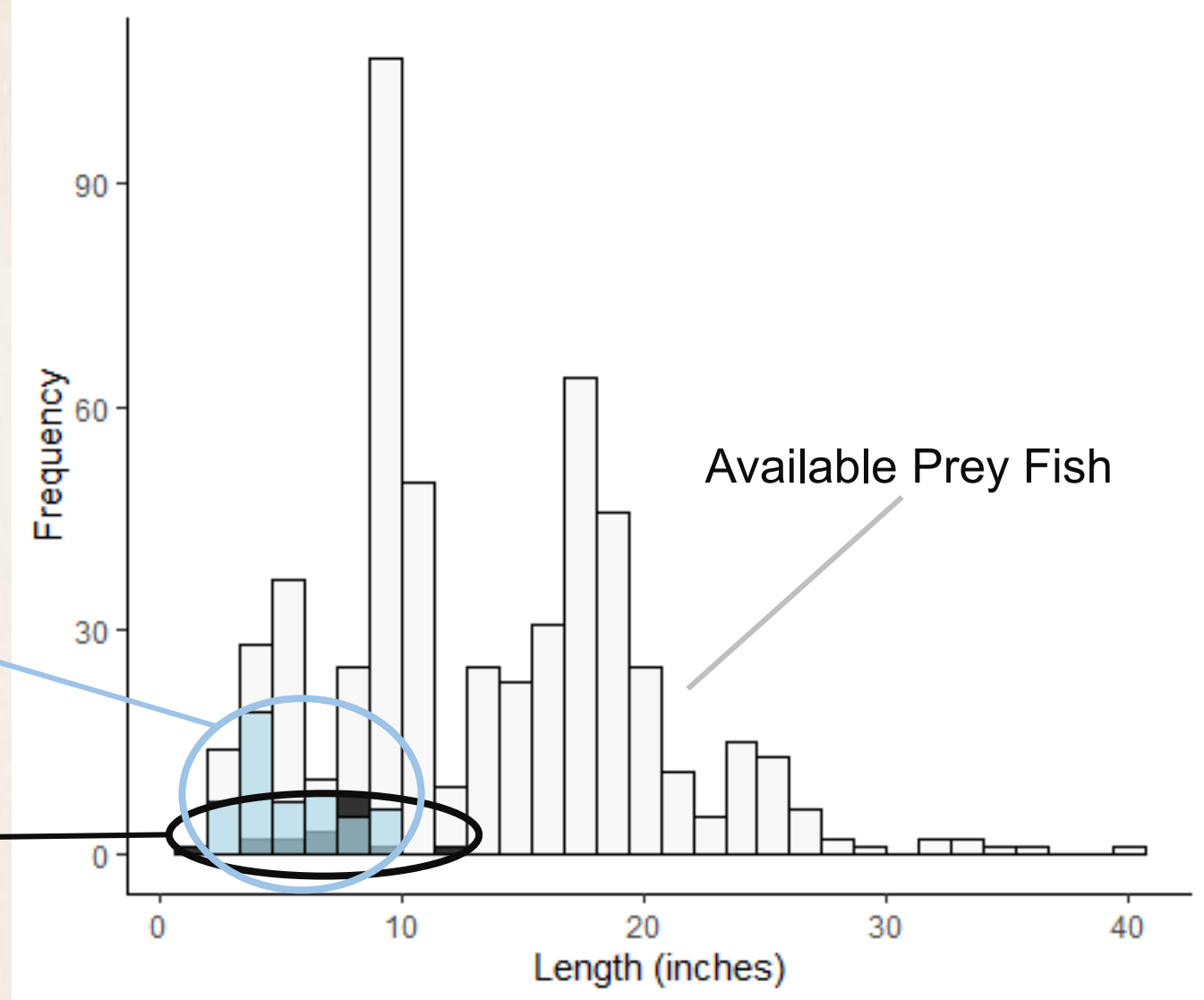
Results

Northern Pike Size Selection

- Pike eat smaller fish compared to what is available
- Other lakes, Pike eat larger fish ^a
- 4" fish exposed to predation longer

Stocked Rainbow Trout

Consumed Prey Fish



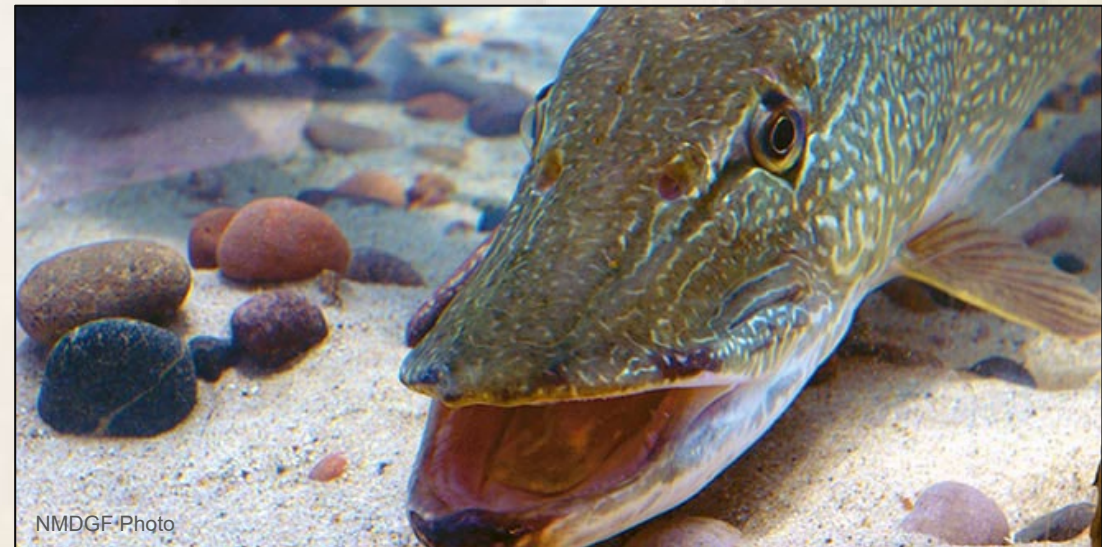
Conclusions

Rainbow Trout Differential Survival

- Fingerling's don't work
- Larger fish stocked in spring best

Northern Pike Diet

- Highly piscivorous (Rainbow Trout, Yellow Perch)
- Select small fish
- Larger Pike eat larger prey





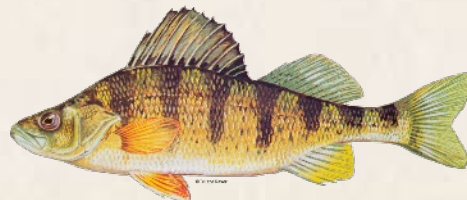
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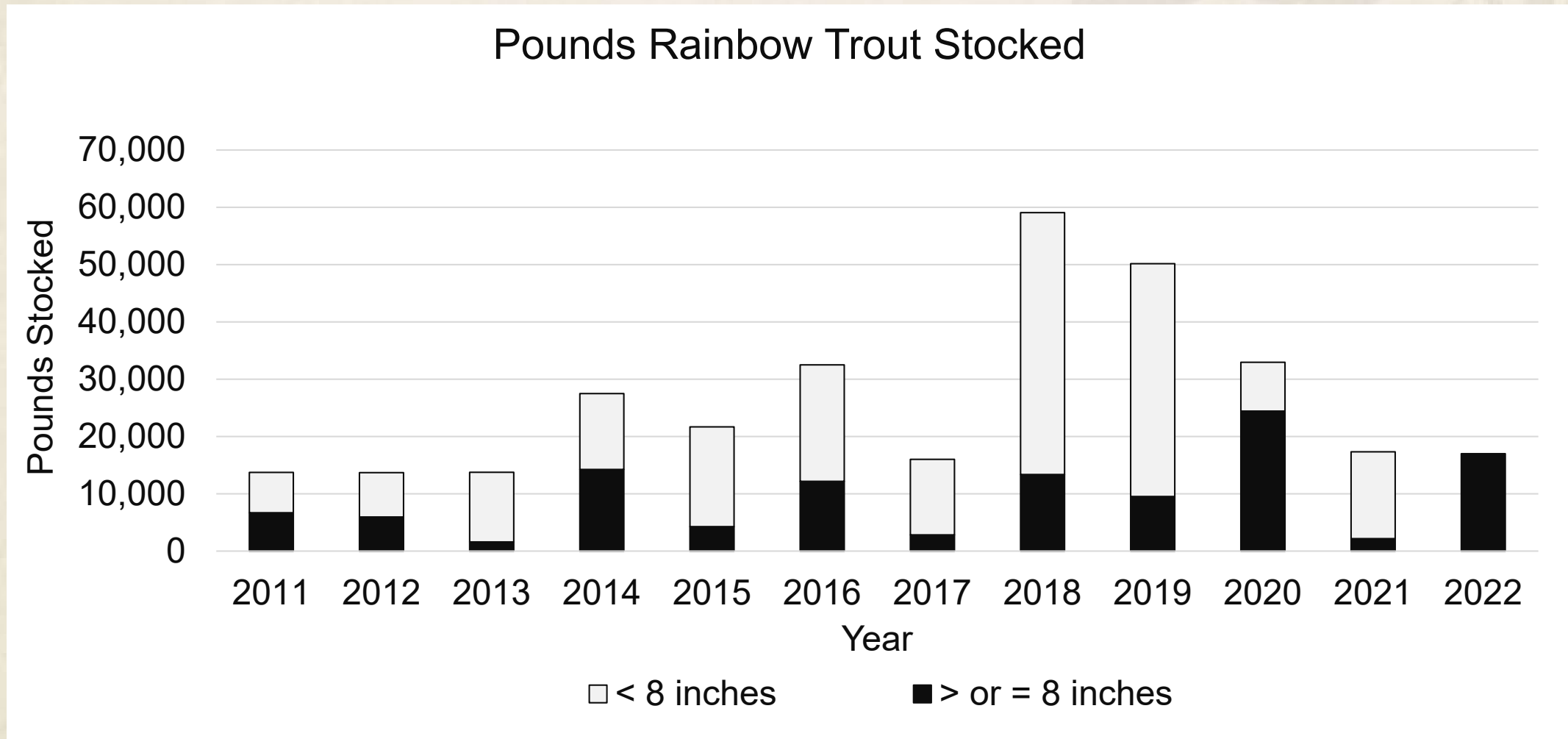


Informed Management

- Maintain Northern Pike mandatory harvest regulation
- Maintain Yellow Perch fishery
- Rainbow Trout stocking
 - Spring
 - Larger fish (>8")
 - Target 70,000 per year
 - ~17,000 lbs

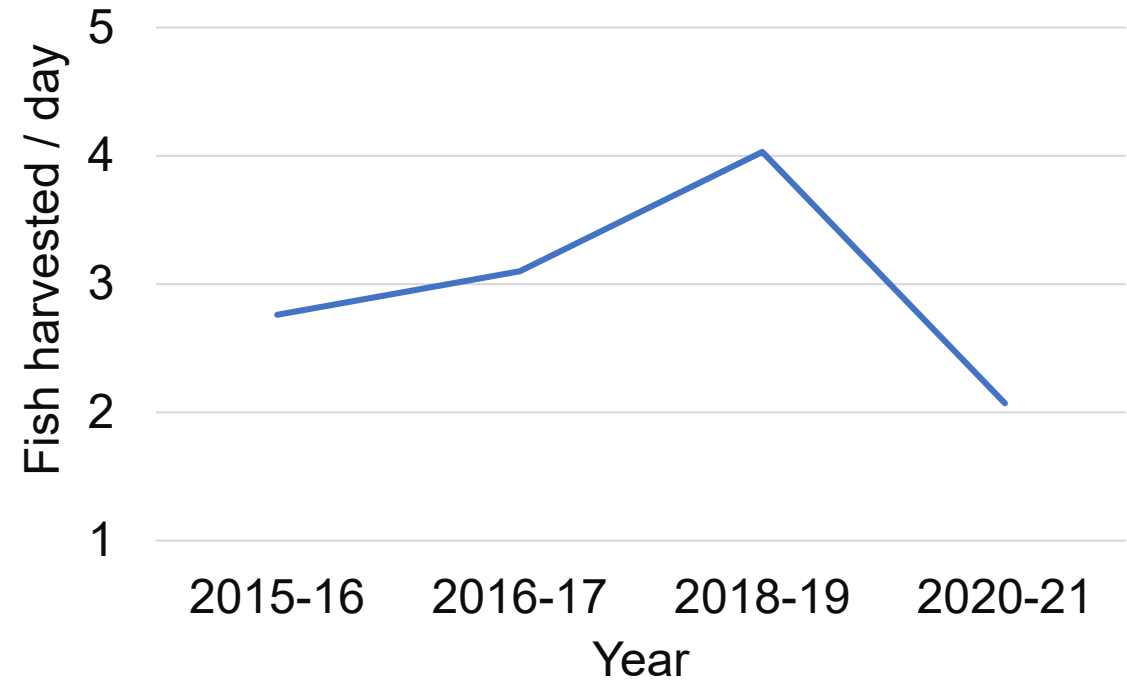
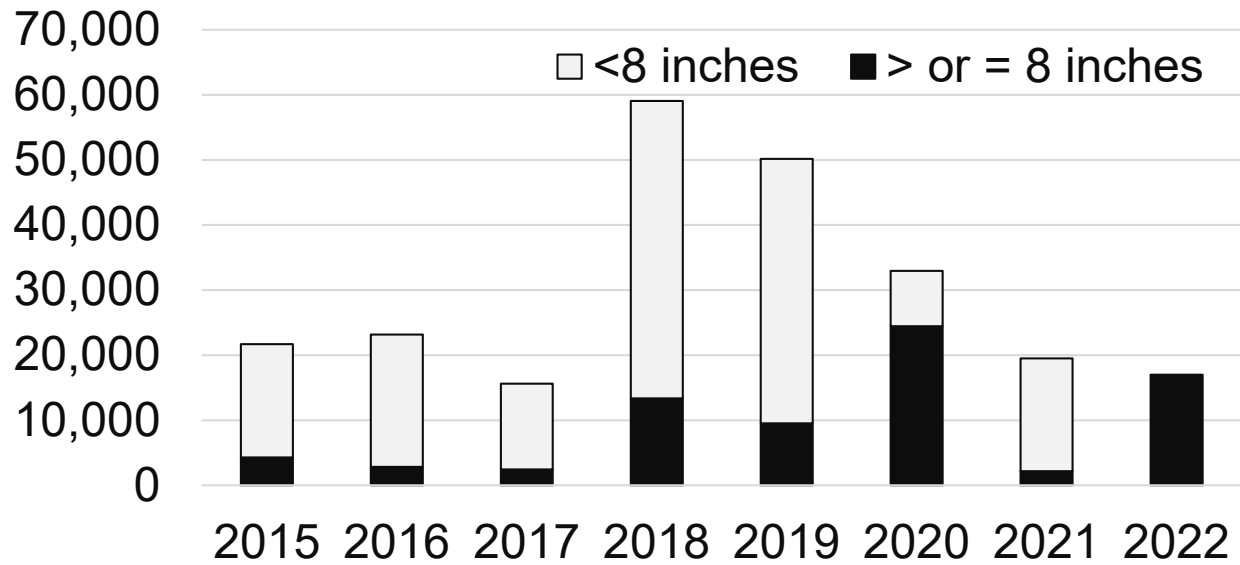


What will this stocking strategy look like?



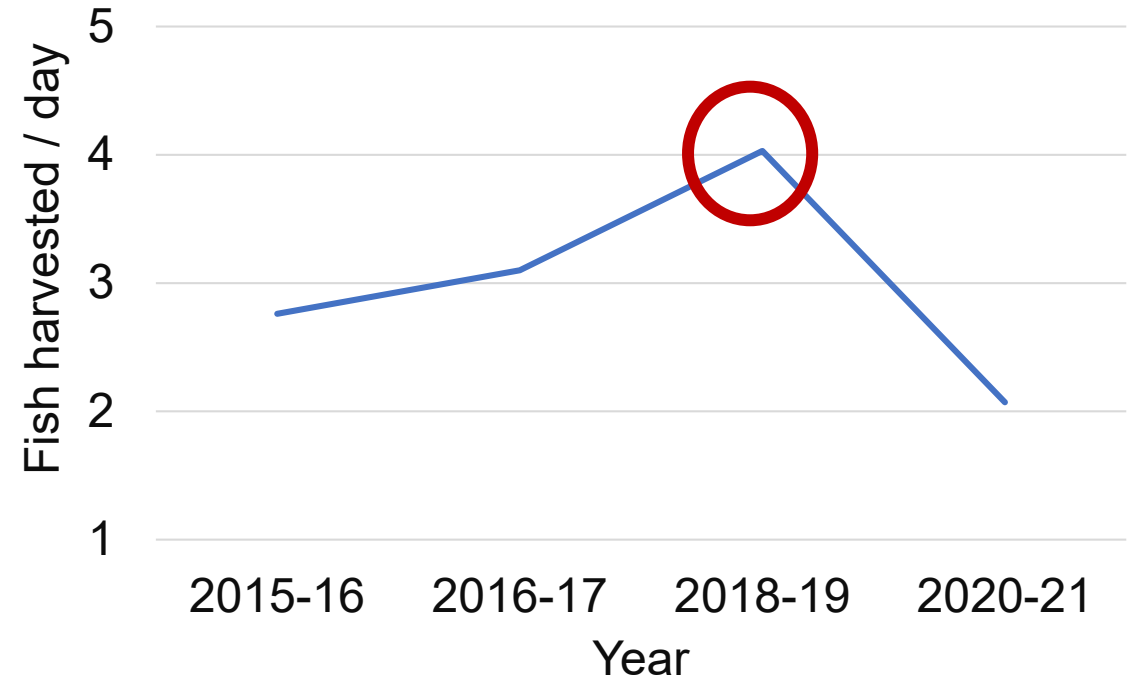
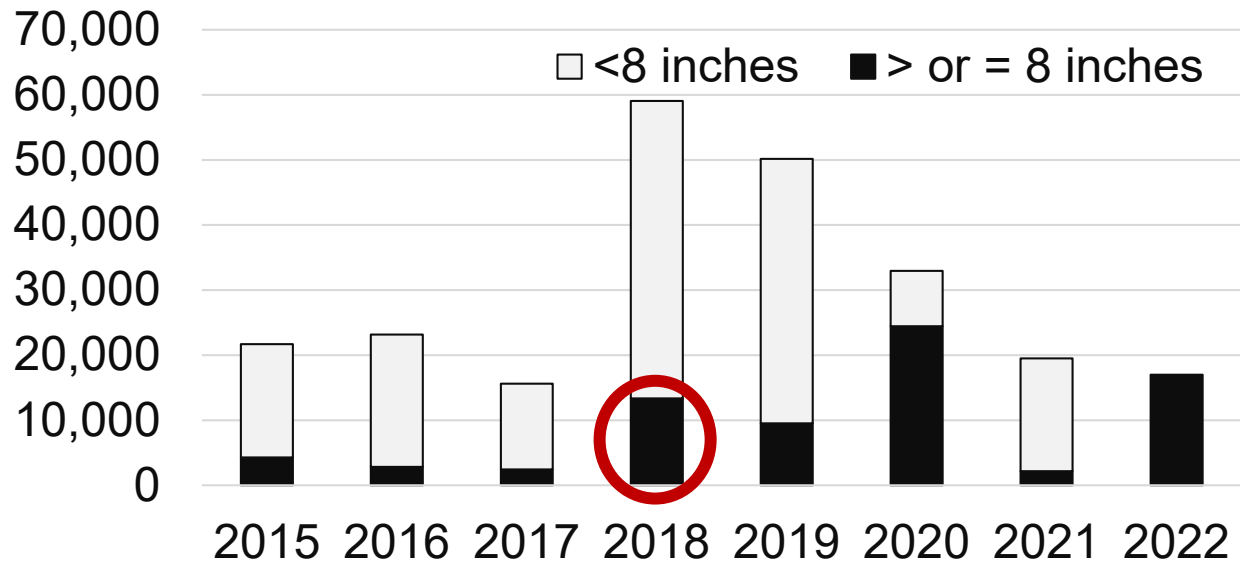
Rainbow Trout Stocked & Harvest

Pounds Rainbow Trout Stocked



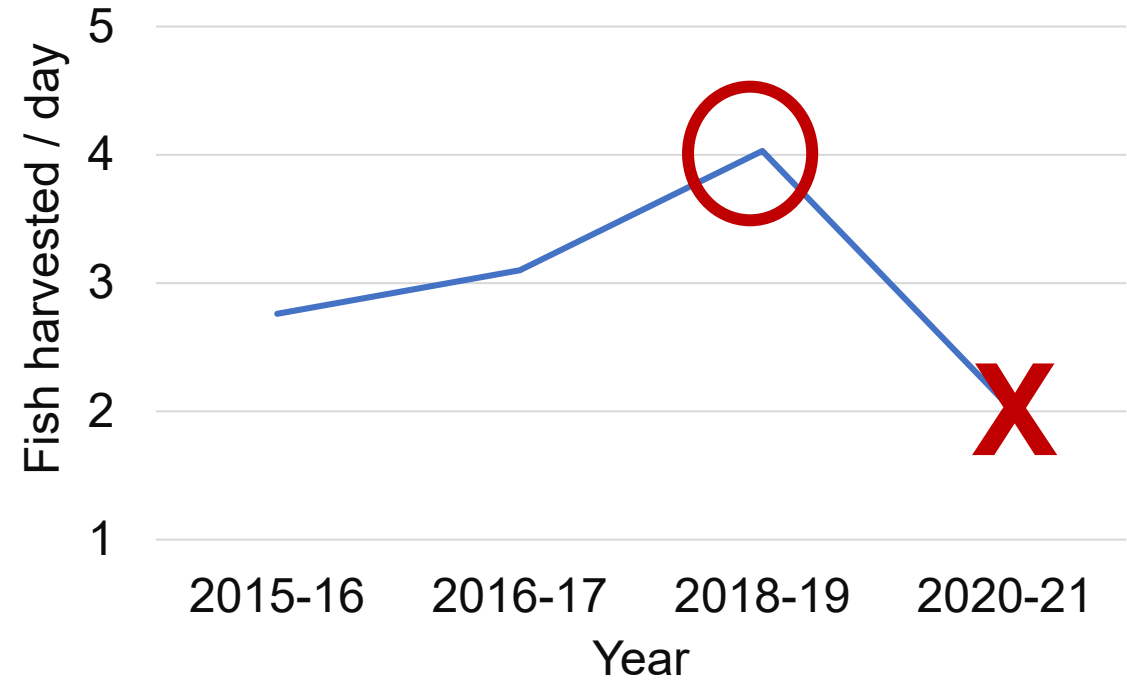
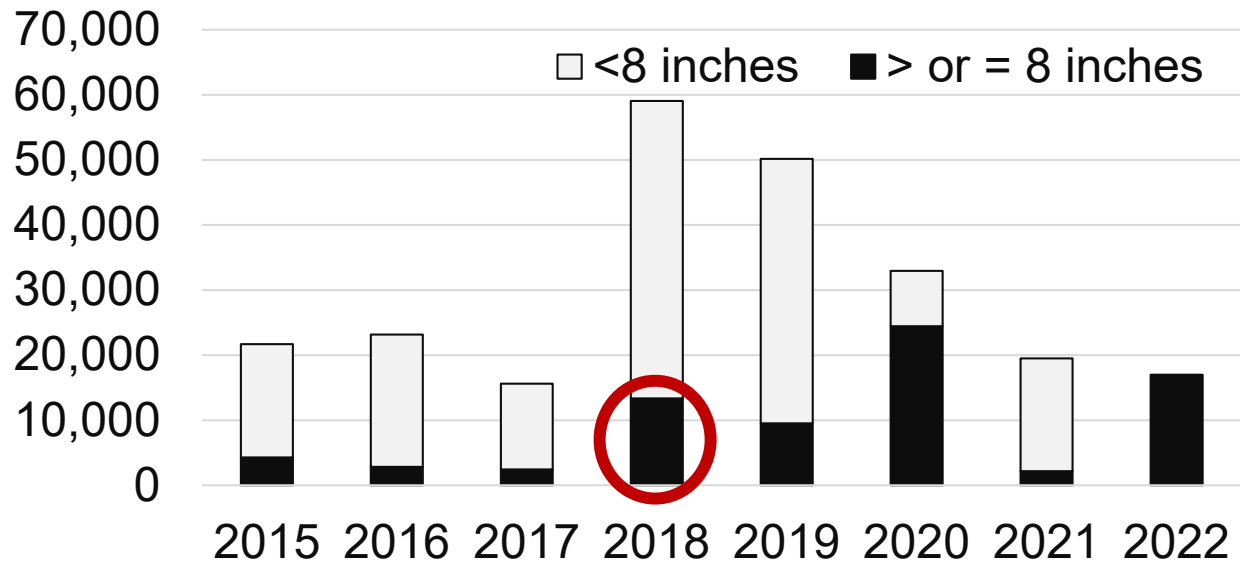
Rainbow Trout Stocked & Harvest

Pounds Rainbow Trout Stocked



Rainbow Trout Stocked & Harvest

Pounds Rainbow Trout Stocked





Future Research & Management

- Continue to follow marked Rainbow Trout
 - In lake through 2025 / 2026
 - Once per year, fall
- Monitoring
 - 3 year basis
 - Next survey fall 2022



Questions?



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