Upper Missouri River Reservoirs

Fisheries Management Update

2007

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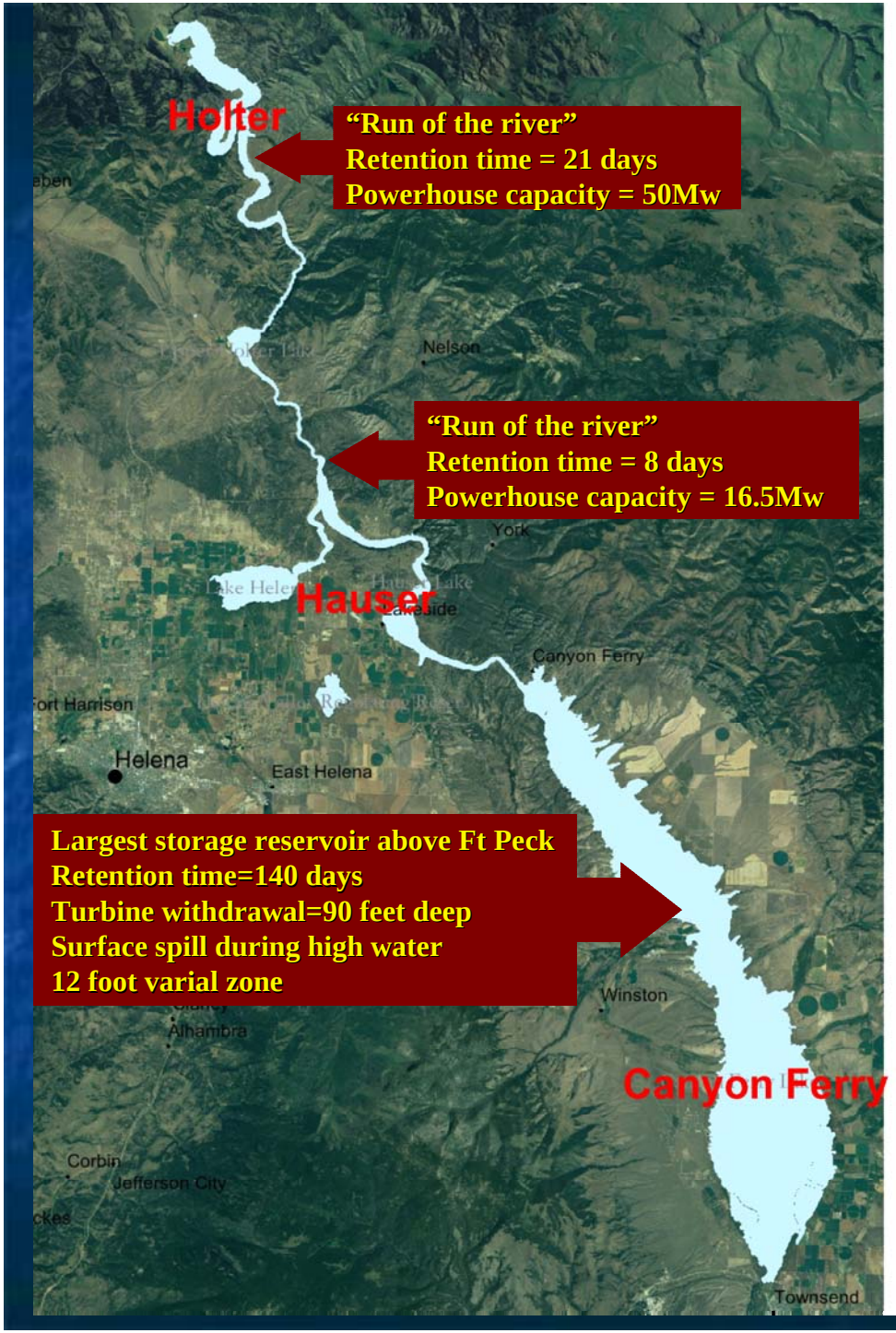

•Three reservoir (CFR, Hauser and Holter) system plus tailwater fisheries account for approximately 15% of Montana's angling pressure.

•The three reservoirs must be viewed as a system. Changes made to an upstream reservoir will be observed in lower reservoirs and the Missouri River.

•Sportfish include Walleye, Rainbow Trout, Yellow Perch, Ling, Kokanee Salmon and Brown Trout

• Hauser and Holter are classified as "run of the river" reservoirs meaning that water levels remain relatively constant. Canyon Ferry is a storage reservoir; water levels vary about 12 feet/year.

•Retention time is the time it takes water to totally exchange or be replaced. This important to fisheries for a number of reasons:

- •Longer retention times generally equate to more stable fish abundance over time,
- •Short retention means that fish are vulnerable to flushing over the dam or through the turbines, especially during spring runoff or high water years.

Canyon Ferry (CFR), Hauser and Holter Reservoirs are being managed under the

Upper Missouri River Reservoir Fisheries Management Plan. (2000-2009)

- This plan was developed by Walleyes Unlimited, Business Owners, Trout Unlimited, PPL Montana, Bureau of Reclamation, and Fish Wildlife and Parks

- The principal management goals for the three-reservoir system; "*manage as a high quality, cost-effective, multi-species fishery with high levels of angler satisfaction" and* the "*process for monitoring and evaluating the implementation of the new 10-year plan should be open to the public and other affected parties*".

- A management goal or target was developed for each species in each reservoir. Targets were generally based on long-term averages of relative abundance for each species. Each species relative abundance is based on what is collected during annual standardized sampling by FWP.

- Each goal is based on a three-year running average.

Walleye Targets

(based on three year running averages in standardized fall gillnets)

Reservoir (Target)	2000	2001	2002	2003	2004	2005	2006	2007
CFR (5-10/net)	6.8	5.8	5.6	6.6	4.8	4.3	4.3	6.0
Hauser (2-3/net)	3.6	2.7	2.1	2.1	2.3	2.6	3.7	4.8
Holter (3/net)	6.1	6.2	4.1	3.3	2.9	2.8	3.0	3.7

Target Not Met

Target Met

Yellow Perch Targets

(based on three year running averages in standardized fall gillnets)

Reservoir (Target)	2000	2001	2002	2003	2004	2005	2006	2007
CFR (20/net)	**28.0**	**23.3**	**16.4**	**14.8**	**13.7**	**4.9**	**2.5**	**4.7**
Hauser (7/net)	**2.9**	**1.6**	**1.8**	**4.3**	**4.3**	**4.3**	**2.4**	**2.2**
Holter (10/net)	**1.8**	**2.3**	**2.8**	**3.3**	**2.9**	**3.2**	**2.7**	**2.7**

Target Not Met

Target Met

Rainbow Trout Targets

(based on three year running averages in standardized fall gillnets)

Reservoir (Target)	2000	2001	2002	2003	2004	2005	2006	2007
CFR (10/net)	10.4	8.8	6.1	3.2	2.9	3.0	2.8	3.4
Hauser (5/net)	2.8	2.1	1.9	2.3	2.6	2.5	1.5	1.5
Holter (8/net)	5.9	5.1	5.5	4.5	5.0	4.0	4.7	4.2

Target Not Met

Target Met

Jump to Holter trends

Jump to Hauser trends

Jump to Canyon Ferry trends

Canyon Ferry Reservoir Fish Trends and Monitoring

2007 Summary

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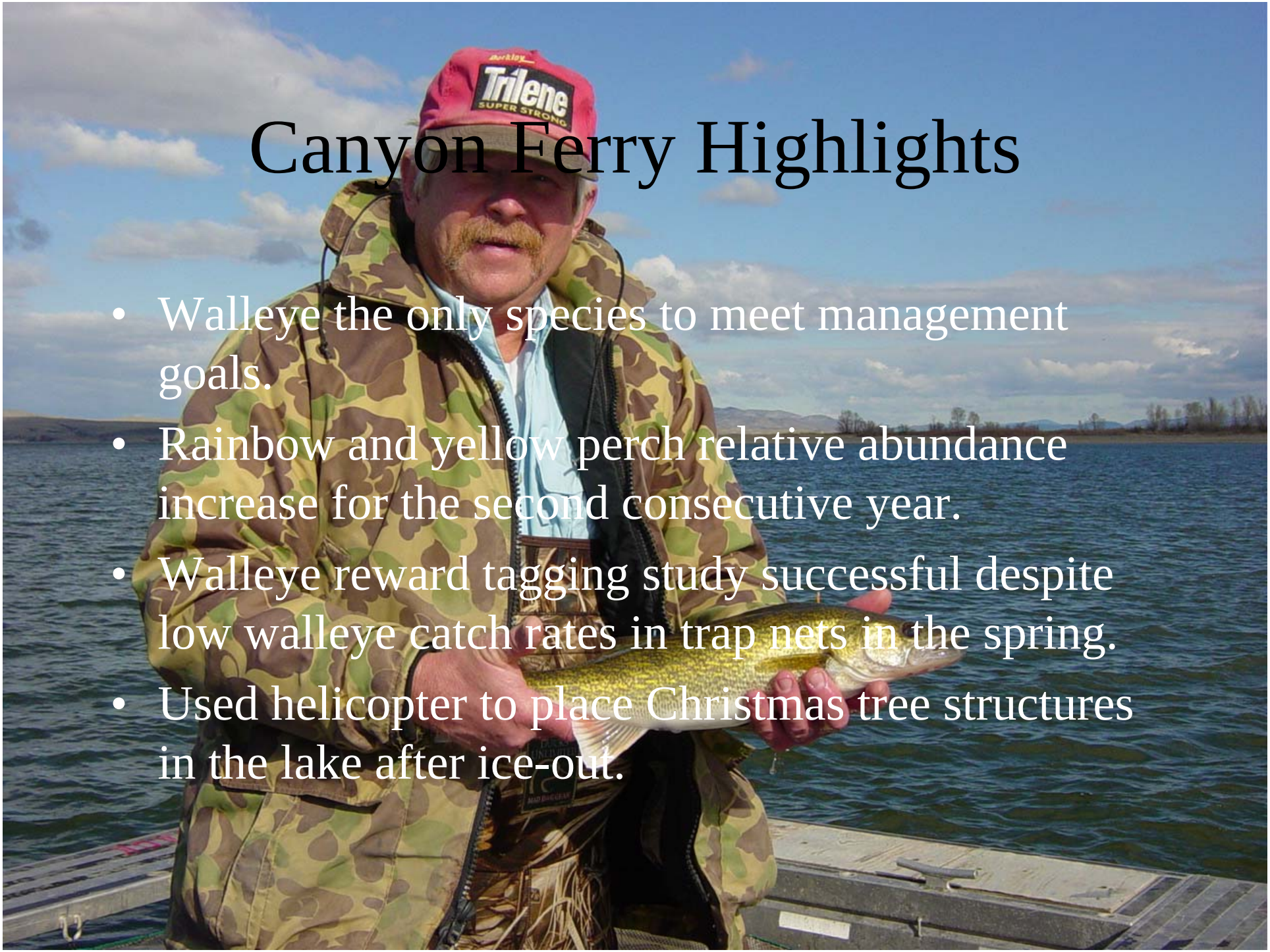
Montana Fish, Wildlife & Parks



Canyon Ferry Highlights

- Walleye the only species to meet management goals.
- Rainbow and yellow perch relative abundance increase for the second consecutive year.
- Walleye reward tagging study successful despite low walleye catch rates in trap nets in the spring.
- Used helicopter to place Christmas tree structures in the lake after ice-out.

Canyon Ferry Netting Trends and Management Goals

Three-year average catch rate (management goals)

- Walleye = 6.0 per net (5-10/net)
- Perch = 4.7 per net (20/net)
- Rainbows = 3.4 per net (10/net)
- Suckers = 10.4 per net (40/net)
- Burbot (ling) = 0.1 per net (0.4/net)
- Brown Trout = 0.2 per net (2/net)

Montana Fish, Wildlife & Parks

Canyon Ferry Netting Trends

2007 Catch Rate (2006 Catch Rate)

- Walleye = 7.2 per net (6.5/net)
- Perch = 7.2 per net (6.4/net)
- Rainbows = 5.0 per net (3.1/net)
- Suckers = 9.6 per net (8.8/net)
- Burbot (ling) = 0.1 per net (0/net)
- Brown Trout = 0.4 per net (0/net)

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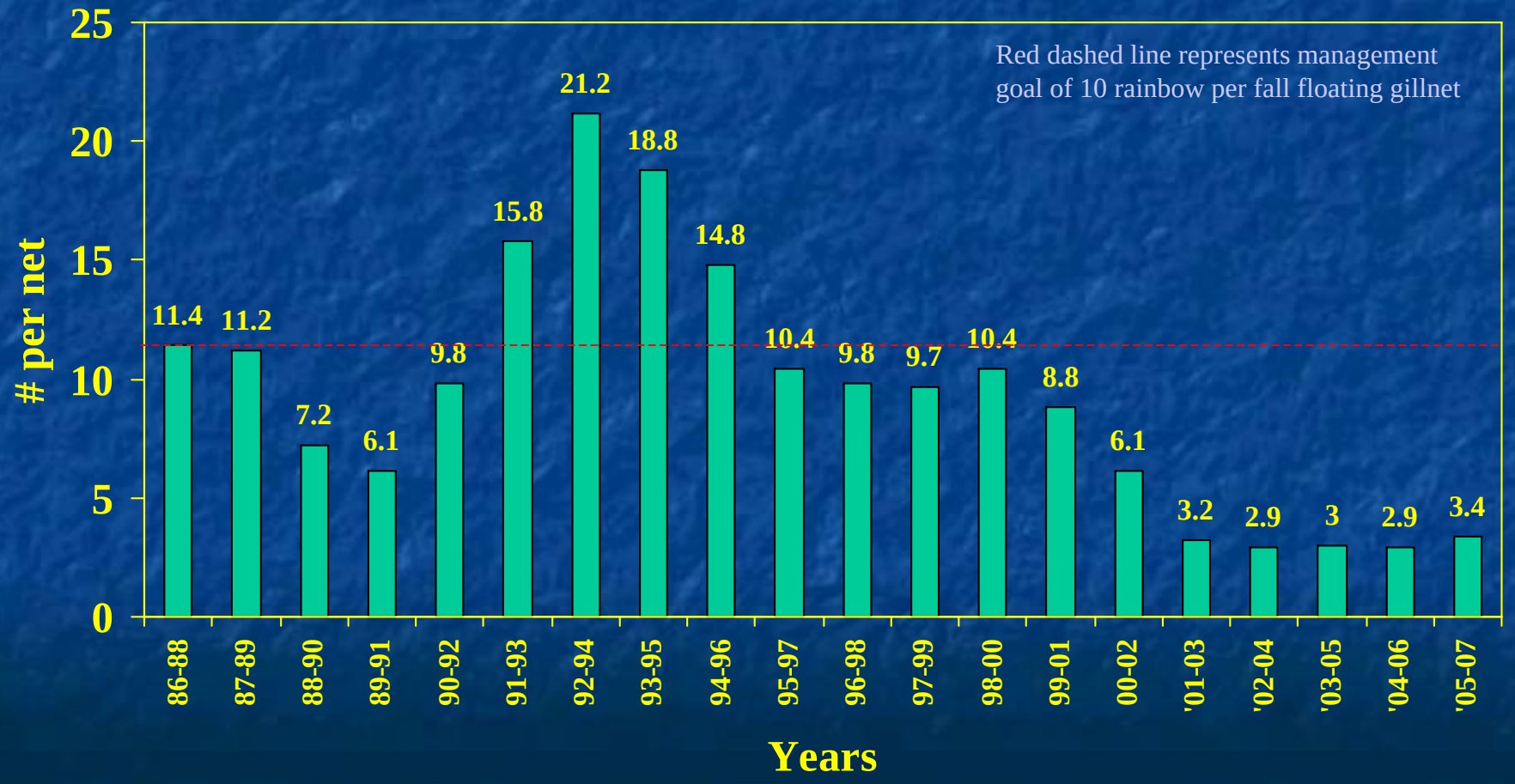
Rainbow Management Trends

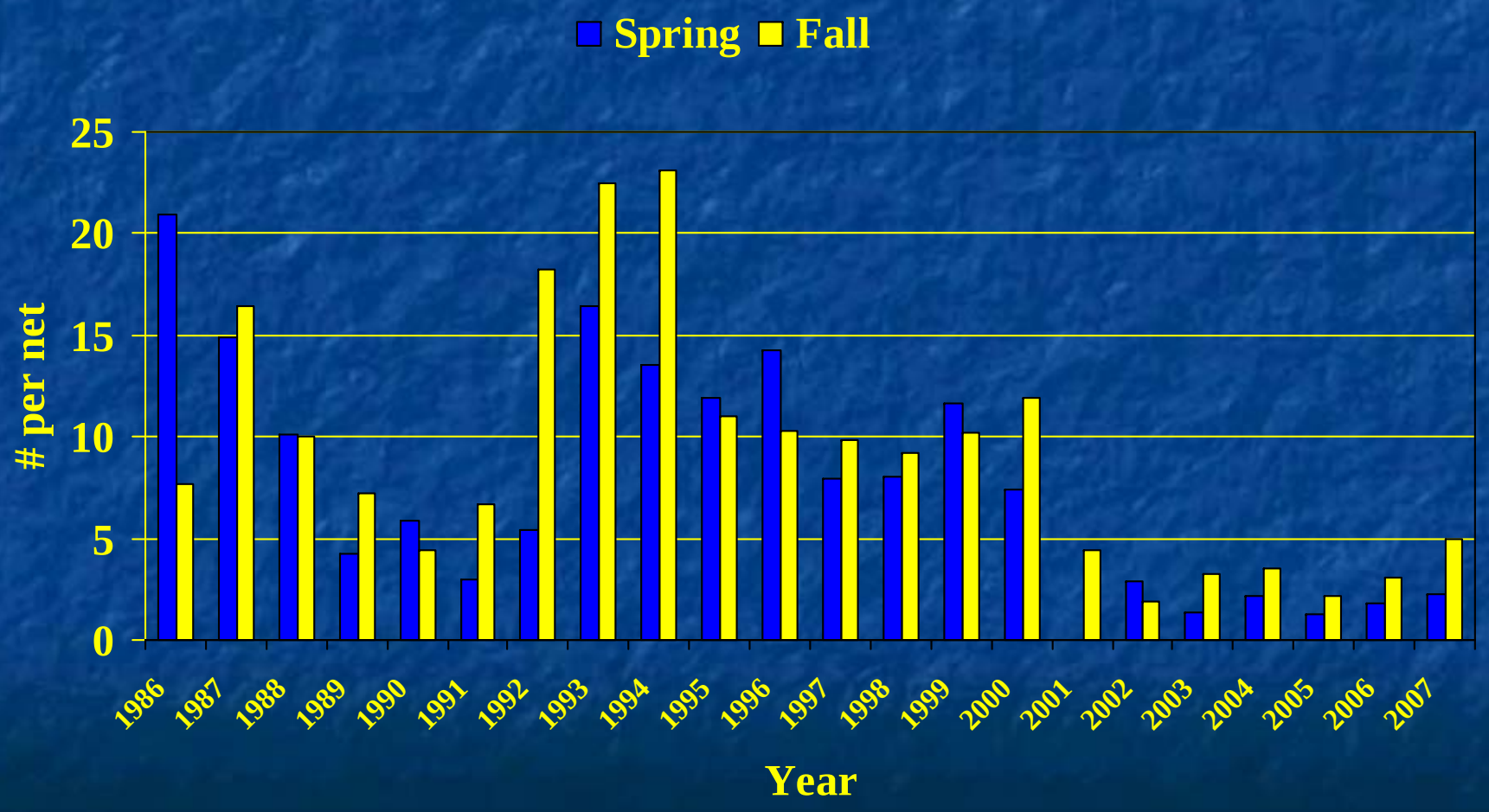
Three-year Average

Fall Floating Experimental Gillnets



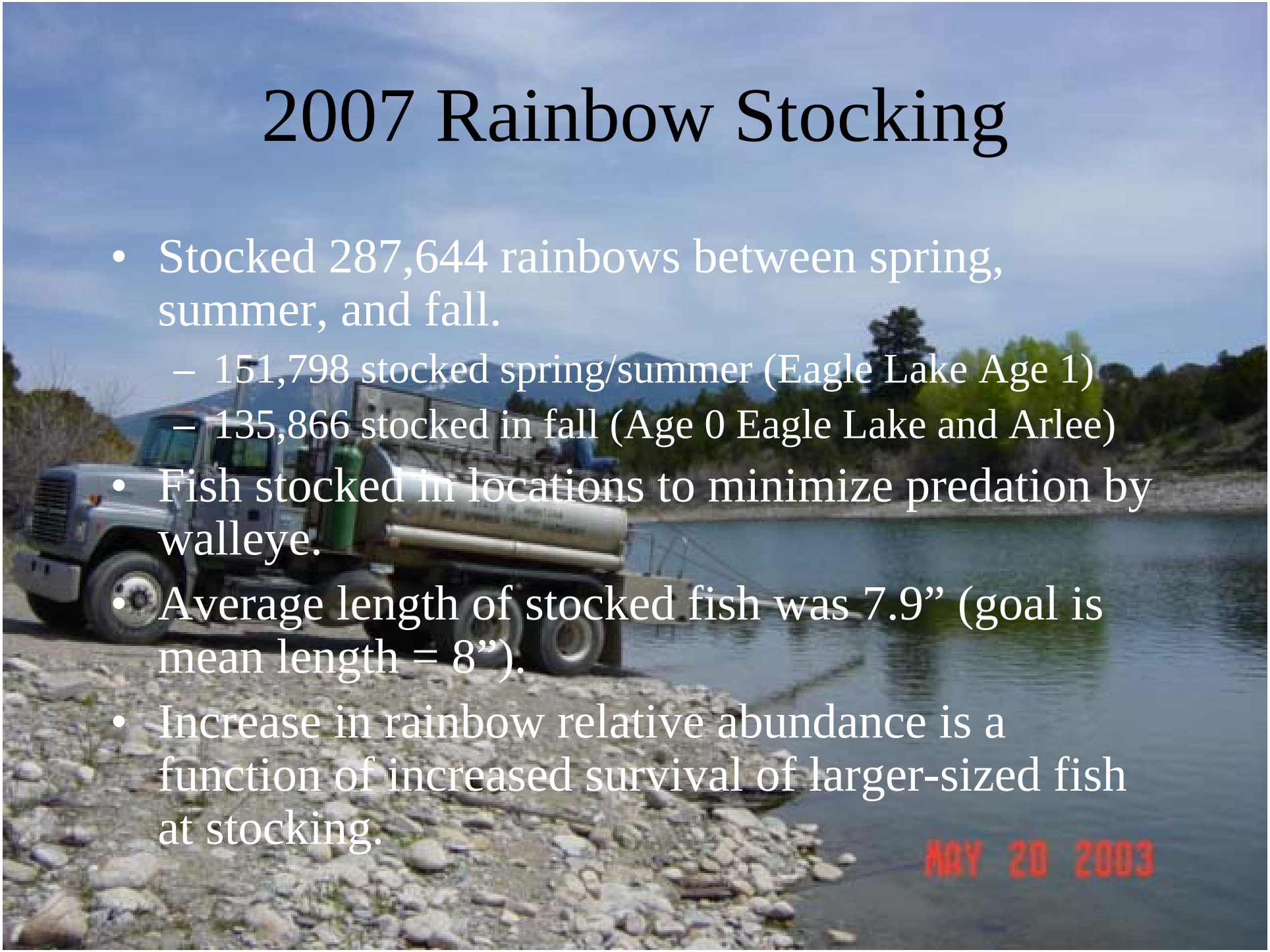
Rainbow Trends

Spring and Fall Floating Experimental Gillnets

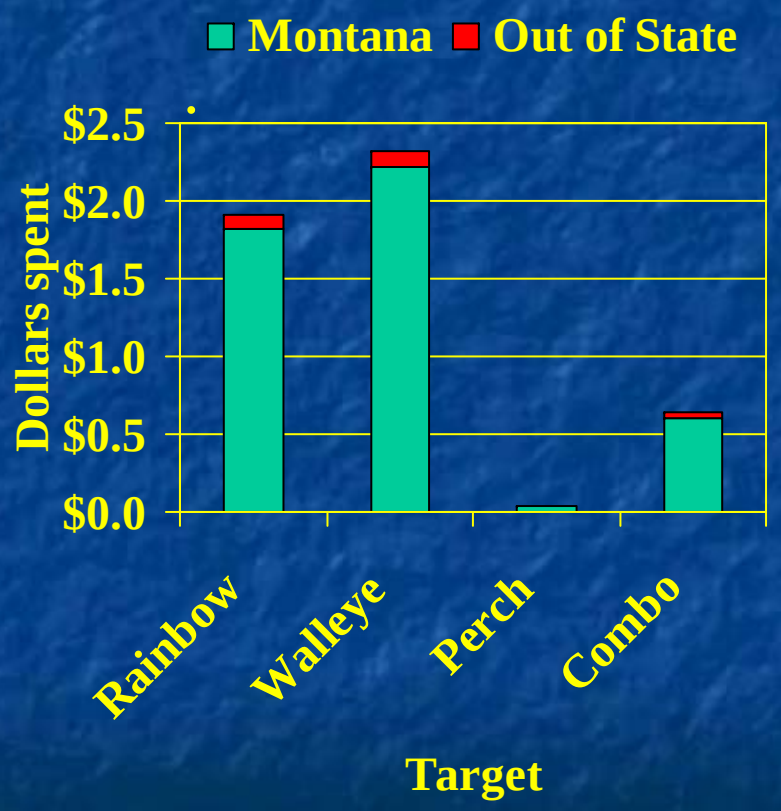


2007 Rainbow Stocking

- Stocked 287,644 rainbows between spring, summer, and fall.
  - 151,798 stocked spring/summer (Eagle Lake Age 1)
  - 135,866 stocked in fall (Age 0 Eagle Lake and Arlee)
- Fish stocked in locations to minimize predation by walleye.
- Average length of stocked fish was 7.9” (goal is mean length = 8”).
- Increase in rainbow relative abundance is a function of increased survival of larger-sized fish at stocking.



Why continue to stock rainbows?

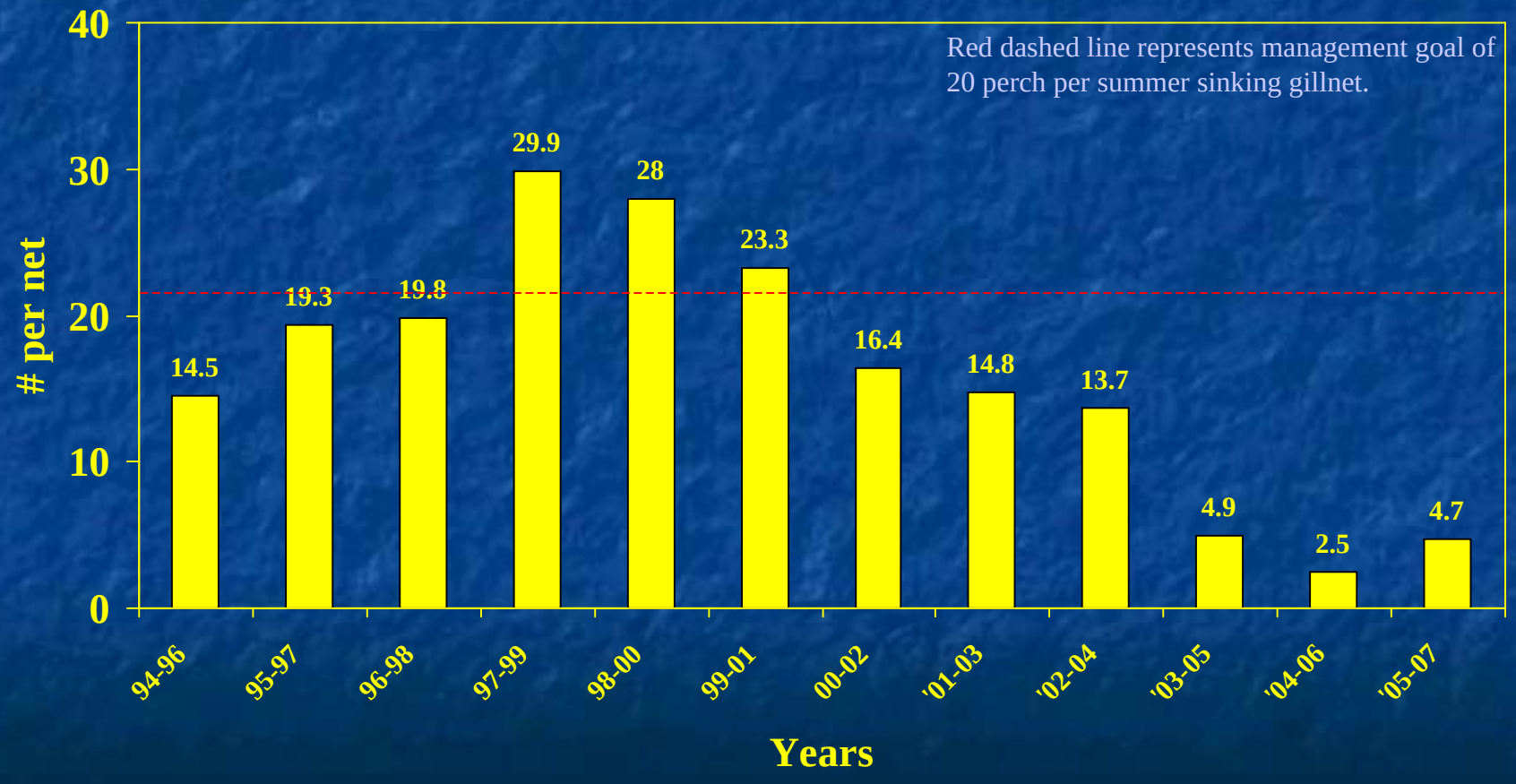


- In 2005, rainbow anglers spent $1.9 M
- Cost to stock RB was $160 K
- 31,226 anglers fished for RB in 2005
- 37,934 fished for WE

Yellow Perch Management Trends

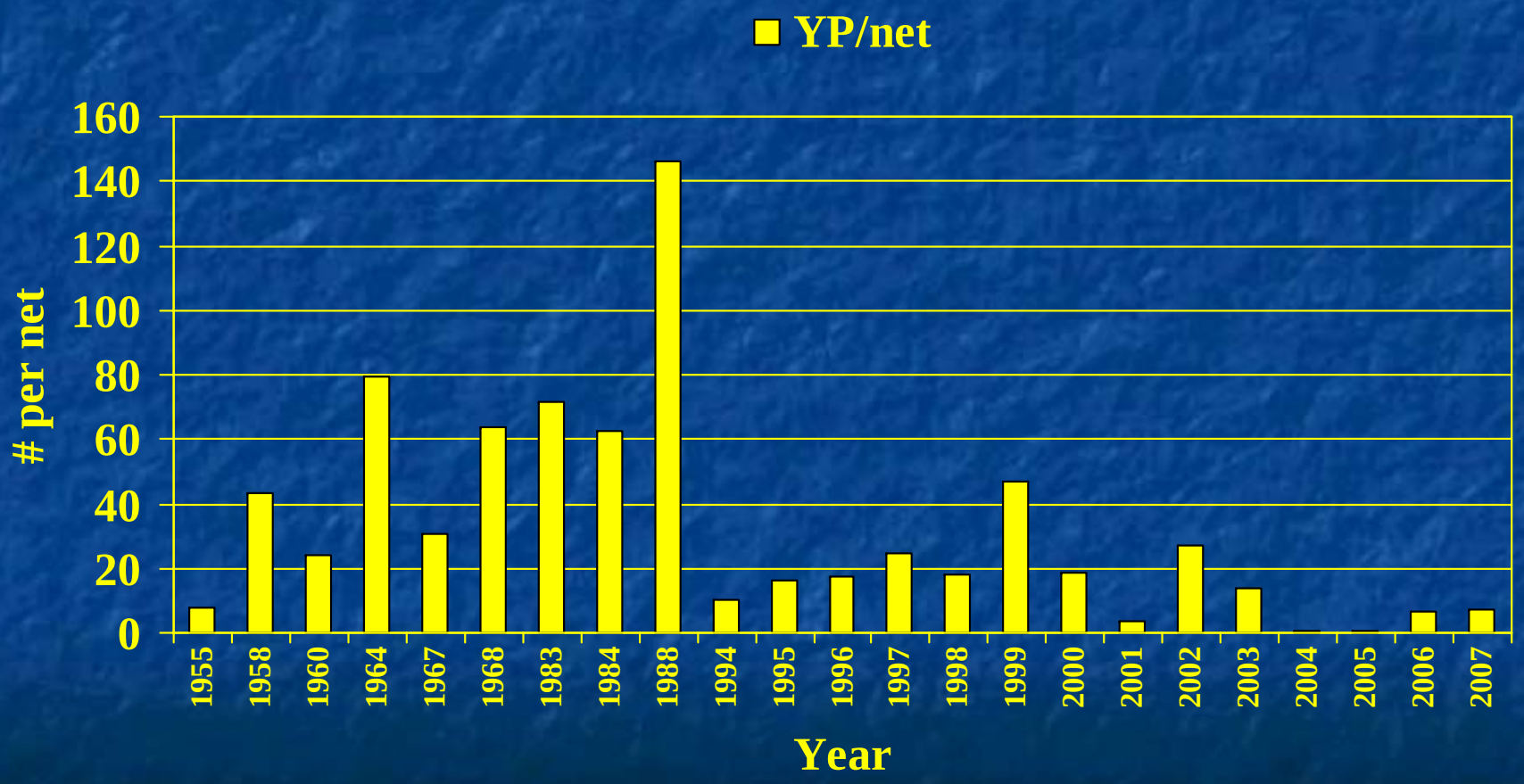
Three-year average

Summer Experimental Sinking Gillnets



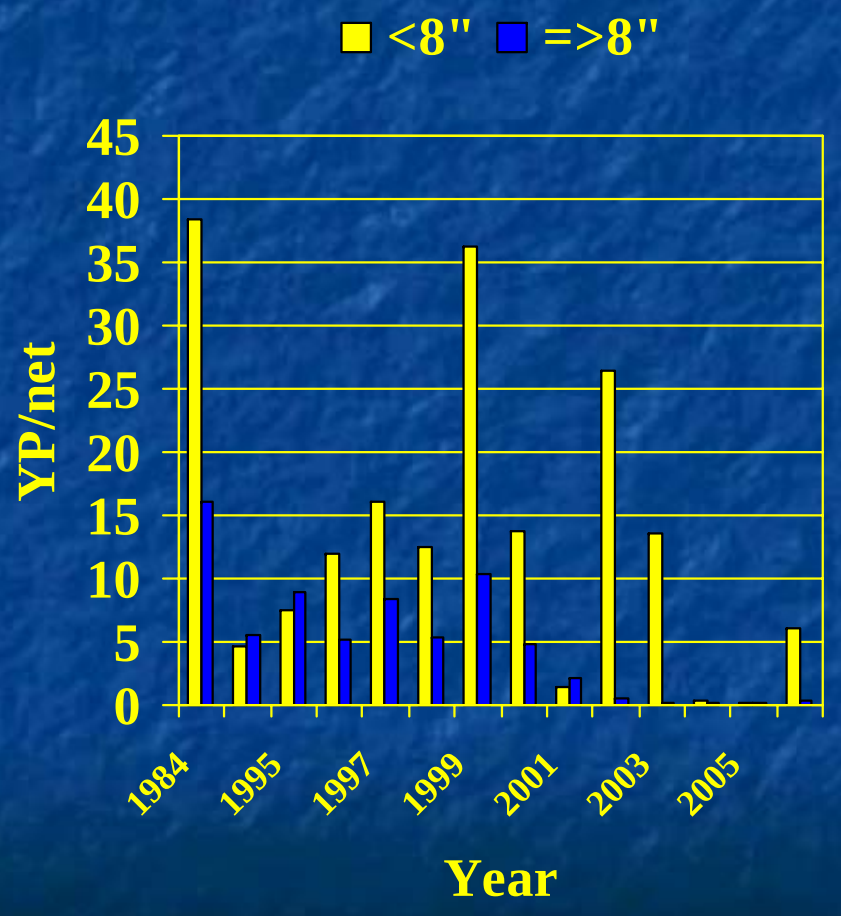
Yellow Perch Trends

Summer Experimental Sinking Gillnets



Yellow Perch Trends

Summer Experimental Sinking Gillnets



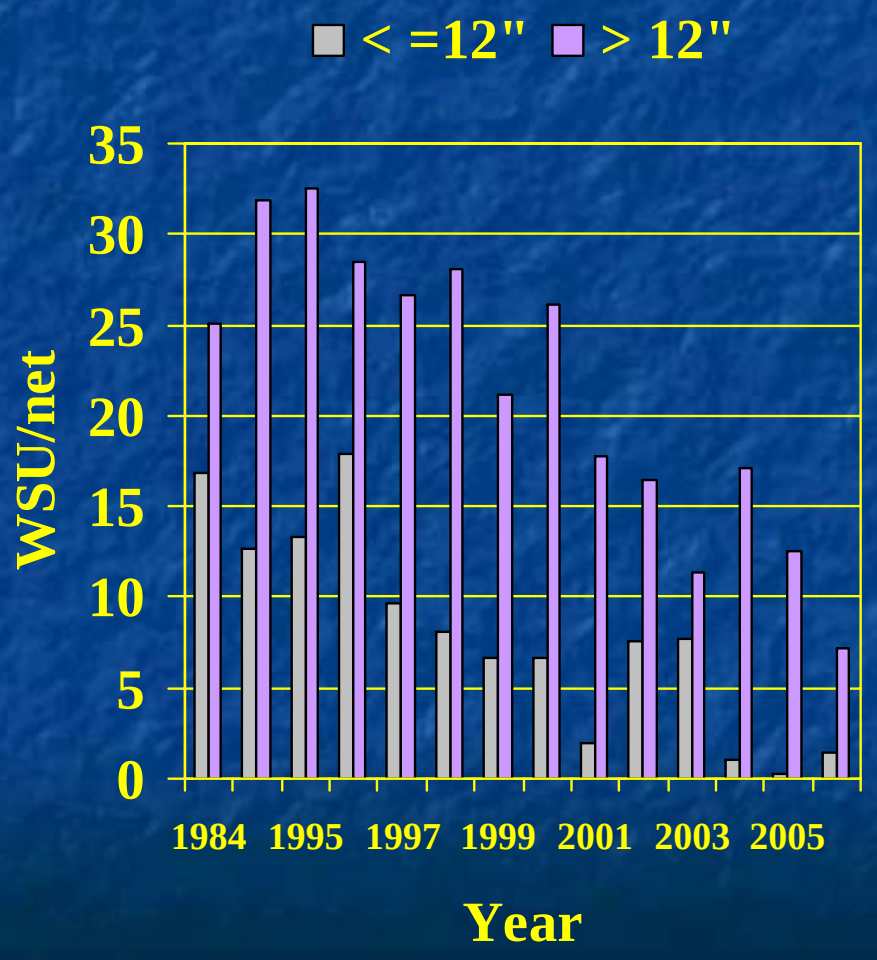
- Limited survival of perch over the past 7 years.
- There is currently enough spawning stock to produce large year-classes of perch (e.g., 2001) however few perch are recruiting to the sport fishery (> 8”).
- Perch are currently sustaining as a forage fish, but the perch sport fishery has suffered.

Yellow Perch Habitat Enhancement

- Continue to recycle trees from the City of Helena, Bozeman, and Townsend to enhance perch spawning habitat in the reservoir.
- Cooperative effort between FWP, Walleyes Unlimited, Townsend Chamber of Commerce, and other area sportsmen.
- In 2007 we did not get all the trees in place before ice-out, so DNRC used a helicopter to place trees in the reservoir.

Sucker Trends

White Suckers in Summer Experimental Sinking Gillnets

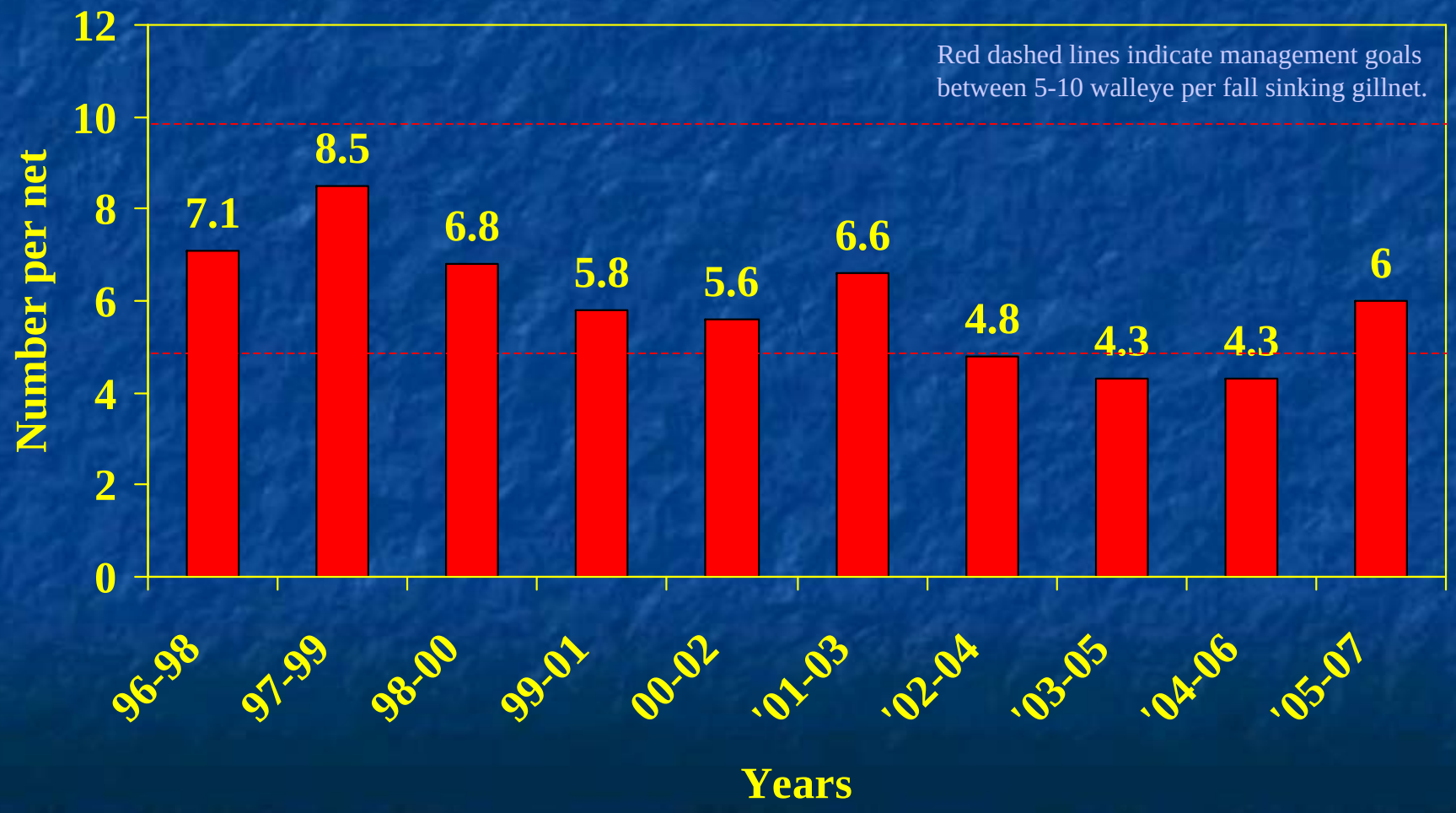


- Suckers can be a good indicator of forage availability because they are not directly influenced by angler harvest.
- Like perch, suckers are seeing limited recruitment from juveniles to adults.
- Average length of the sucker population has increased as relative abundance decreased.

Walleye Management Trends

Three-year Average Catch Rate

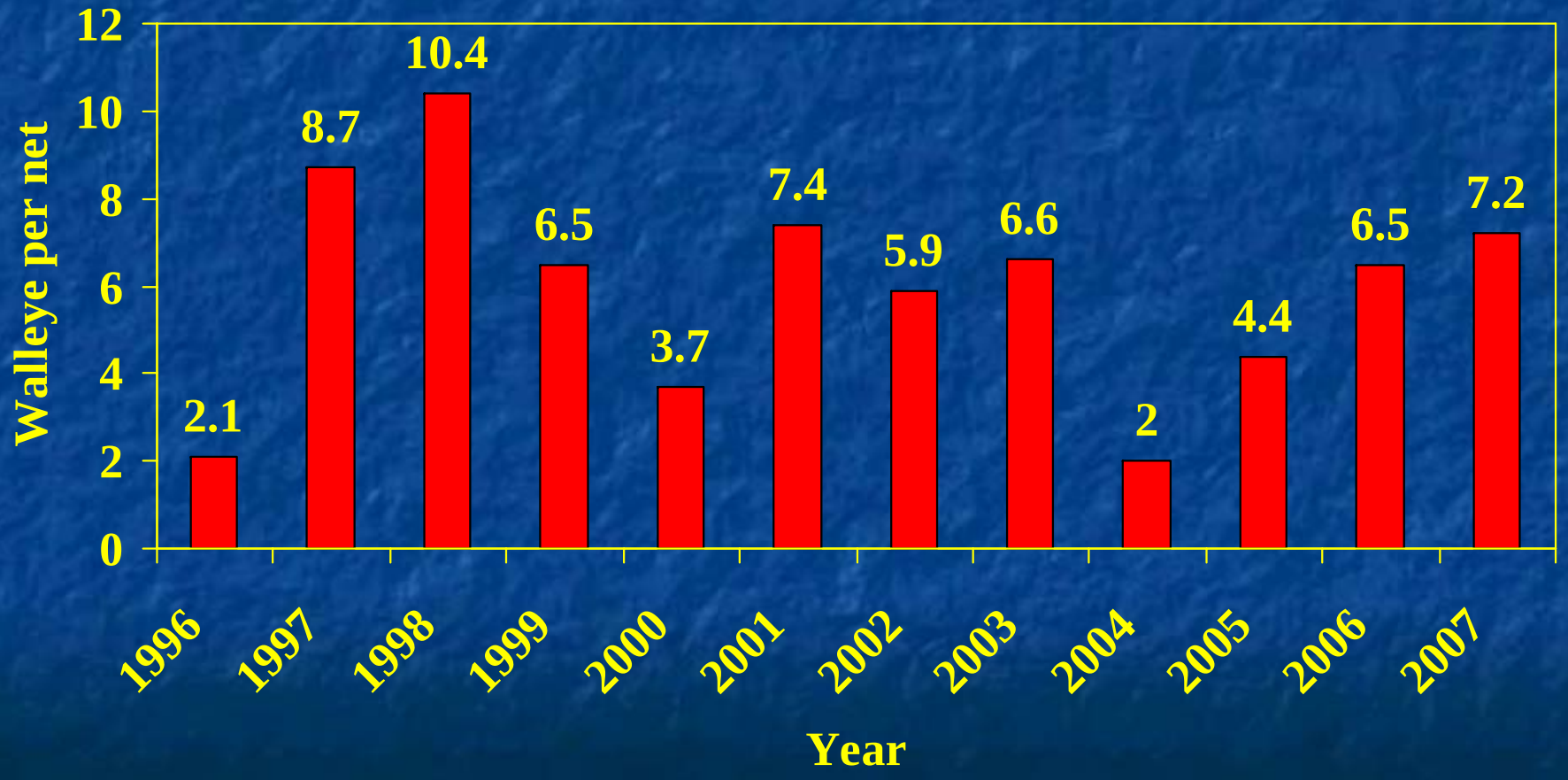
Fall Sinking Gillnet



Walleye Trends

Annual Relative Abundance

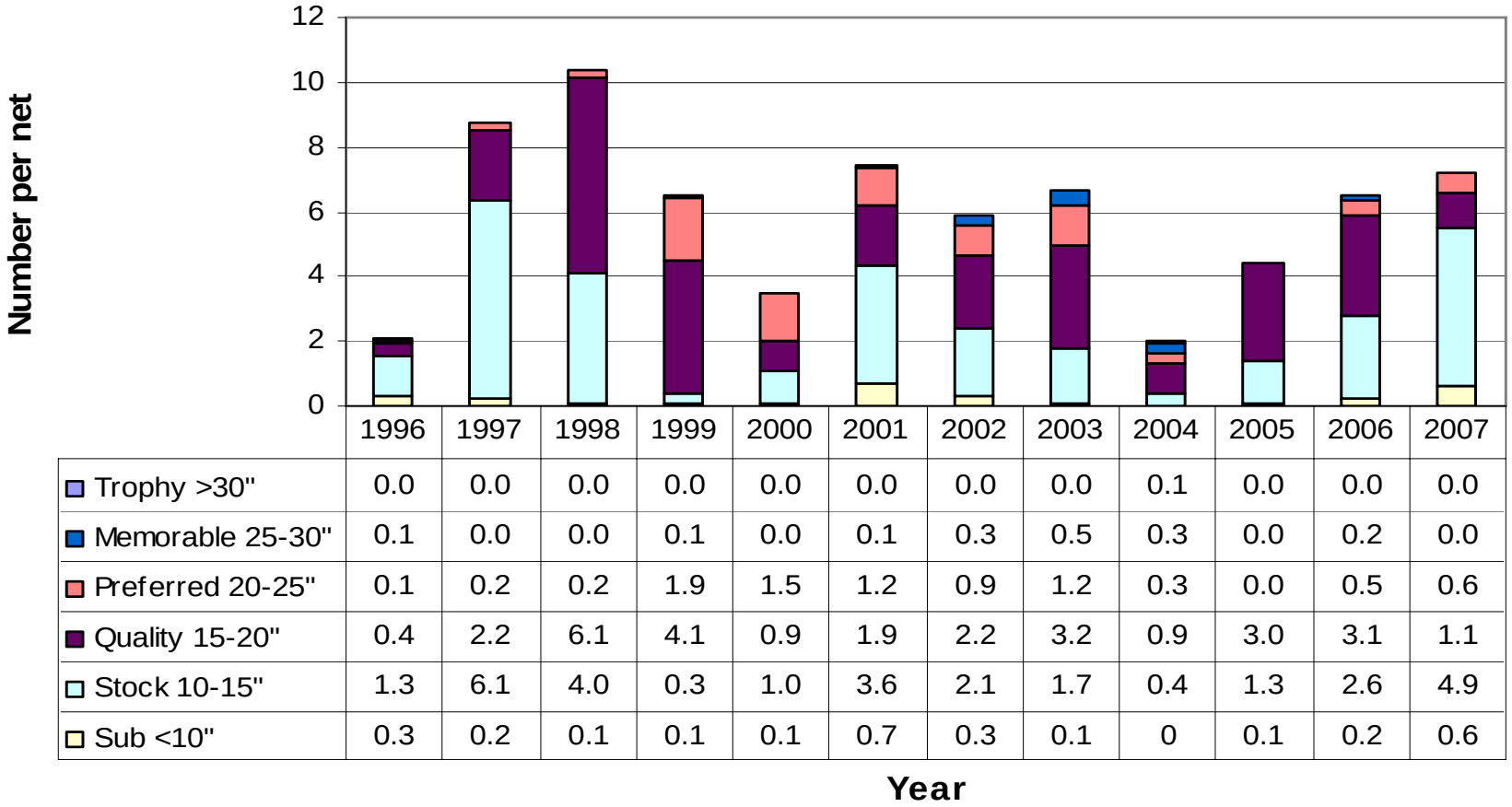
Fall Experimental Sinking Gillnets



Walleye Trends

Annual Relative Abundance by Size

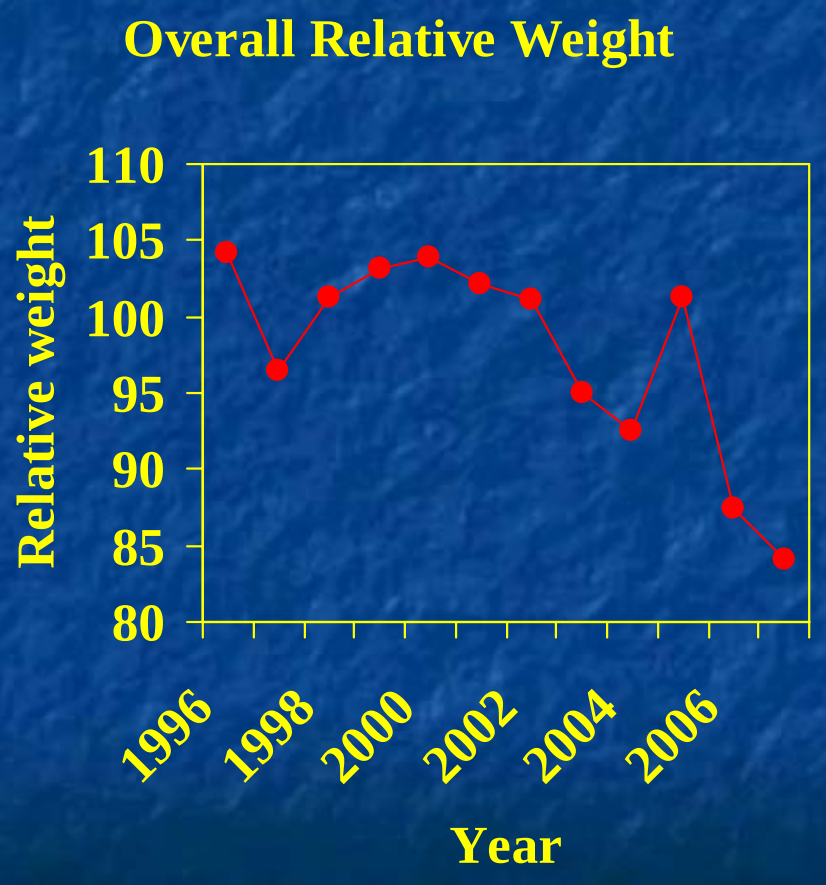
Fall Experimental Sinking Gillnets



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Trophy >30"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Memorable 25-30"	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.5	0.3	0.0	0.2	0.0
Preferred 20-25"	0.1	0.2	0.2	1.9	1.5	1.2	0.9	1.2	0.3	0.0	0.5	0.6
Quality 15-20"	0.4	2.2	6.1	4.1	0.9	1.9	2.2	3.2	0.9	3.0	3.1	1.1
Stock 10-15"	1.3	6.1	4.0	0.3	1.0	3.6	2.1	1.7	0.4	1.3	2.6	4.9
Sub <10"	0.3	0.2	0.1	0.1	0.1	0.7	0.3	0.1	0	0.1	0.2	0.6

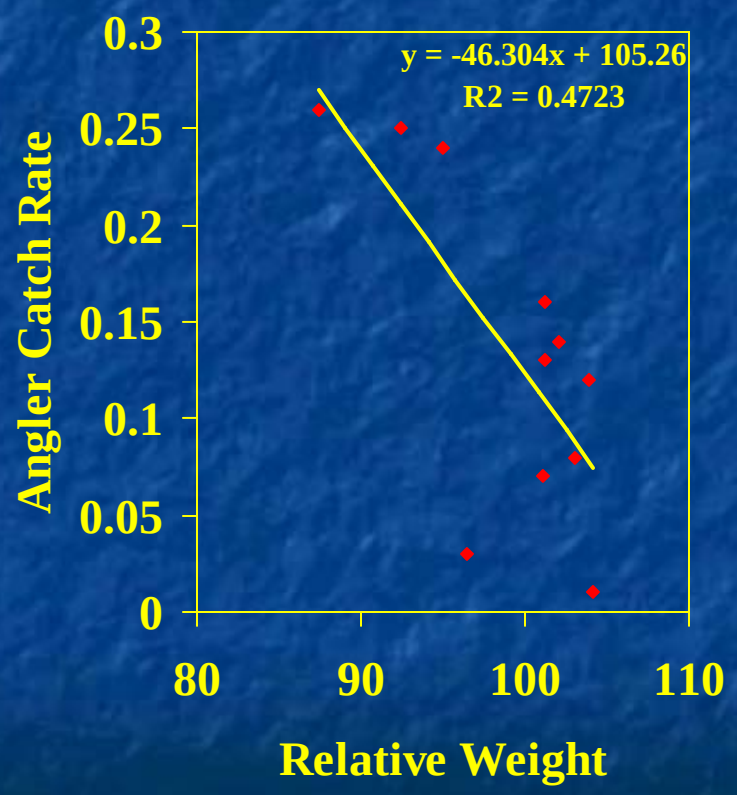
Walleye Relative Weight

Fall Experimental Sinking Gillnets



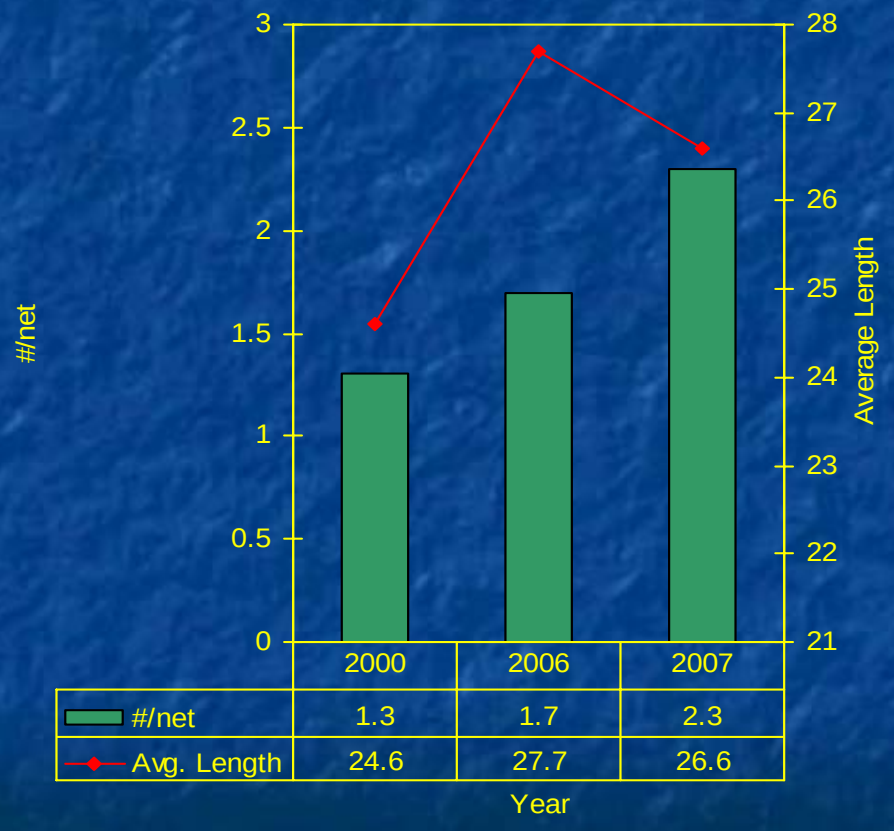
- Relative weight refers to the “robustness” of a fish.
- Value of 100 indicates ideal growing conditions.
- Lower relative weight values are indicative of forage limitations.
- Generally, larger walleye (> 20”) in Canyon Ferry still have high relative weights.

Walleye Relative Weights and Angler Catch Rates



- Angler catch rates and walleye relative weight are inversely proportional.
- As relative weights decrease, angler catch rates increase.
- In 2007, relative weight for small walleye (10-15”) were low, so angler catch rates for these small fish was high.
- High harvest due to low relative weight is good for the walleye population over the long term.

Fall Three-inch Mesh Gillnets



- In 2000, 2006, & 2007 fall standardized gillnets were supplemented with 3-inch mesh gillnets at 6 locations.
- Objective is to get long-term standardized data on larger-sized WE.
- Average WE length from experimental gill nets = 16.1”
- Average WE length from 3-inch mesh gillnets = 26.3”

2007 Fish Tagging

- Fished 4 Merwin traps from April 29-May 18, 2007.
- Two primary objectives:
  - Tag as many walleye as possible for a lake-wide population estimate.
  - Tag a portion of walleyes with $75 reward tags to estimate harvest.
- Due to low catch rates in the traps, we were unable to obtain a population estimate.
- Reward tagging was very successful and we should be able to use that information to estimate harvest.

2007 Fish Tagging Results

- Tagged 164 walleye with $75 reward tags.
- 102 tags were recaptured (62.2%) as of 11/01/2007.
- Accounting for bias due to poor mixing of tags into the population, actual harvest rate is around 50%.
- Reporting rate for reward tags was significantly higher than for non-reward tags.
- Reward tagging results are incomplete until we process creel data (winter ’07) and compile results from angler pressure estimates (summer ’08).

2008 Fish Tagging Plans

- Merwin Traps will be set to trap walleyes in spring 2008.
  - Variable temperatures likely effected spawning movements in 2007.
- With a more consistent weather pattern, we may be able to mark a large number of fish.
  - We believe that we need to mark 1,000 or more walleye in order to get a lake-wide population estimate.
- Will use reward tags again on a portion of the marked fish.
  - By following up with additional reward tags we can evaluate how harvest rates vary from year to year.

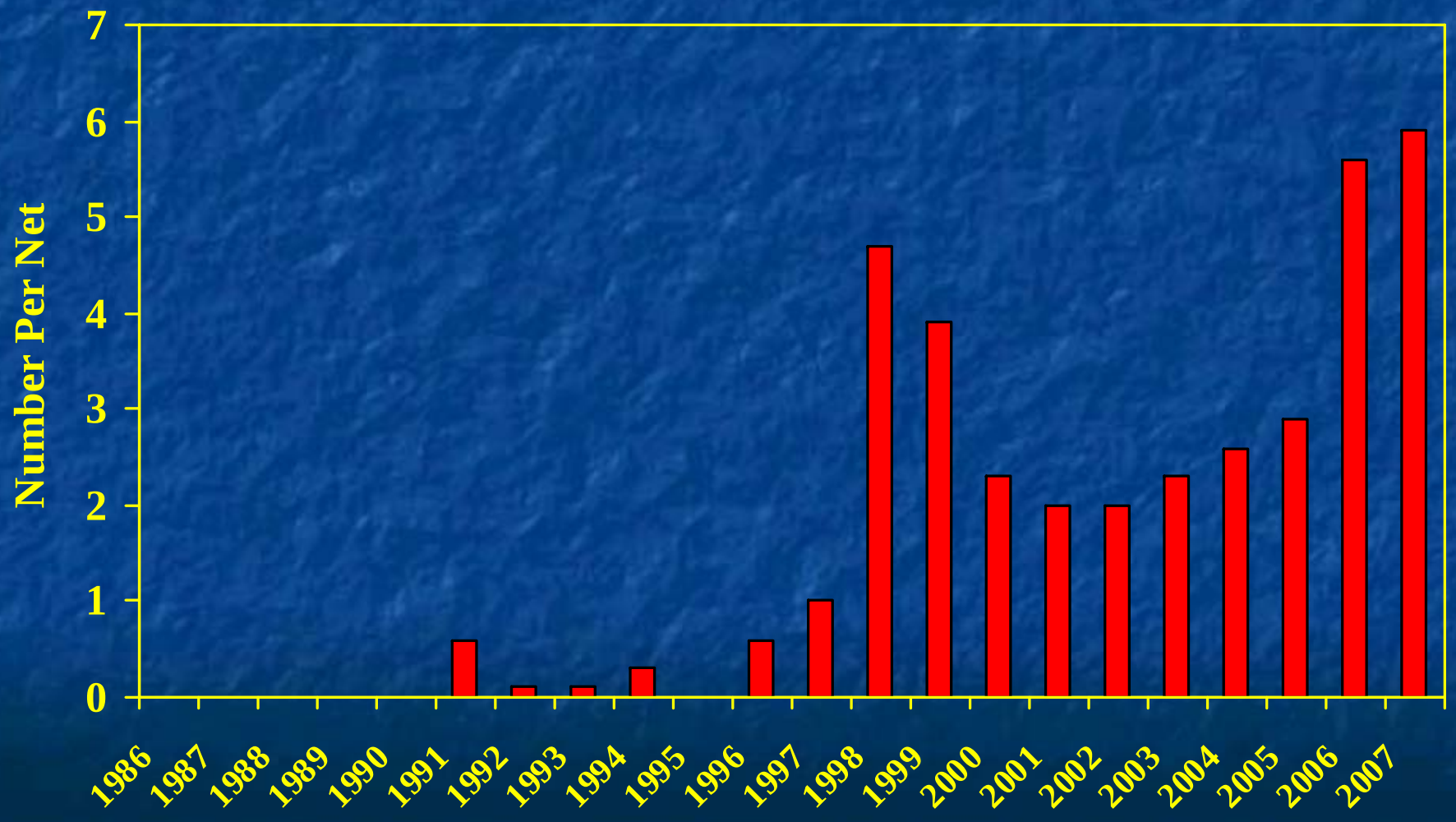
Hauser Reservoir Fisheries Update–2007

Walt Goodman with his state record Mountain Whitefish 5.11 pounds. Caught in Hauser Reservoir in 2007.

- Angler catch rates for rainbow jumped to a four-year high nearly doubling the 2006 catch rate.
- Walleye abundance hit another record high in 2007. 2006 was the previous high.
- Walleye population is dominated by age 2 fish that average 10.3” and weigh 0.3 pounds.
- Yellow Perch abundance fell to a record low (tying the record set in 1999)

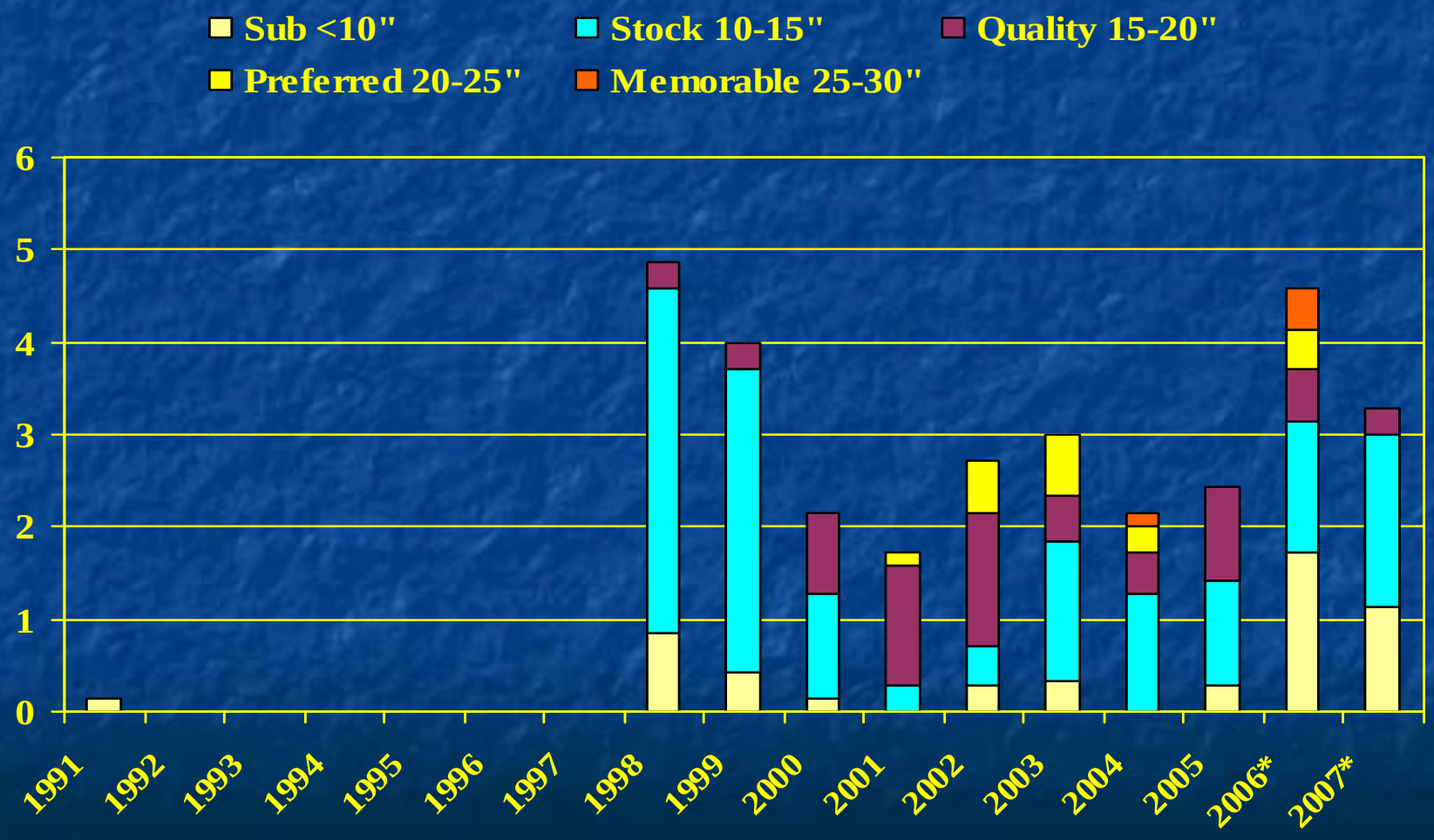
Walleye Trends – Hauser Reservoir

Annual Relative Abundance
Fall Experimental Sinking Gillnets



Walleye Trends – Hauser Reservoir

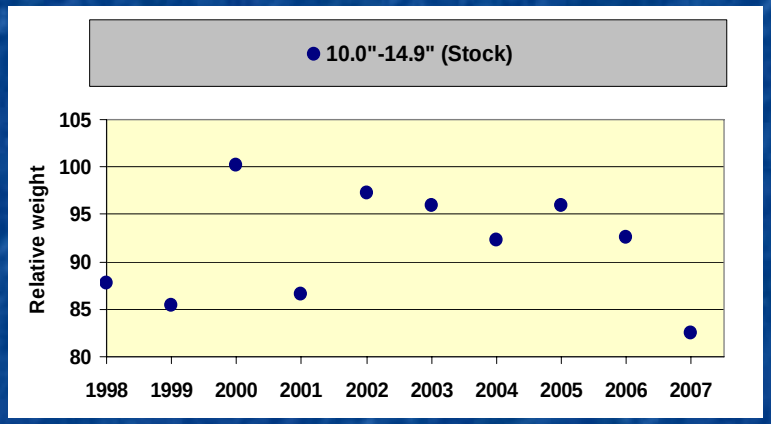
Annual Relative Abundance by Size
Fall Experimental Sinking Gillnets

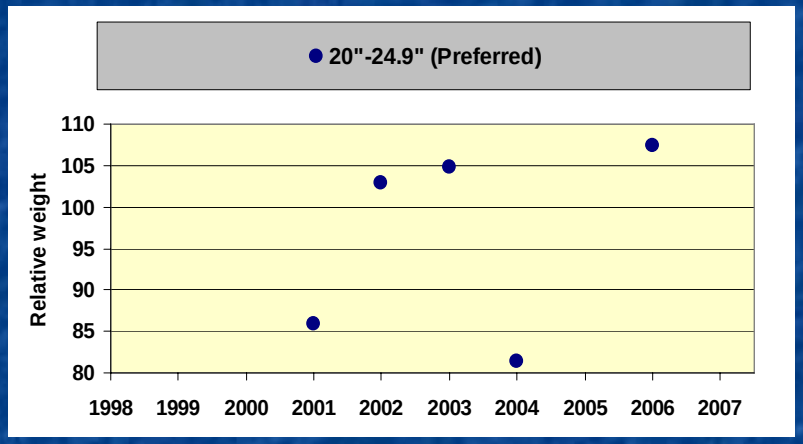


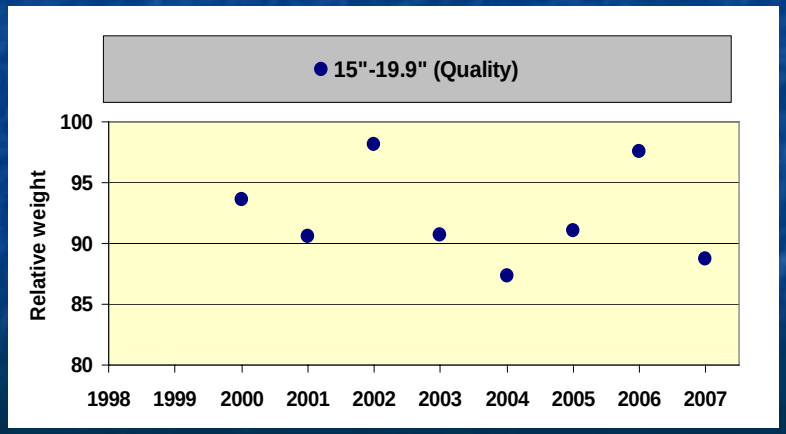
*Includes fish collected in three-inch mesh gillnets

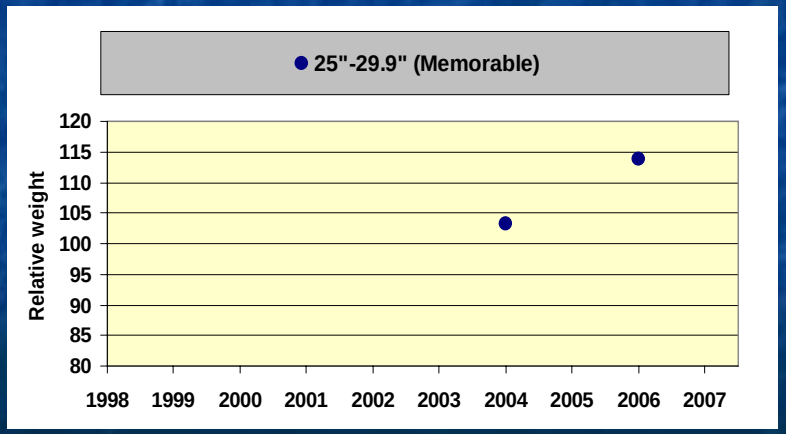
Walleye Relative Weights – Hauser Reservoir

Fall Experimental Sinking Gillnets



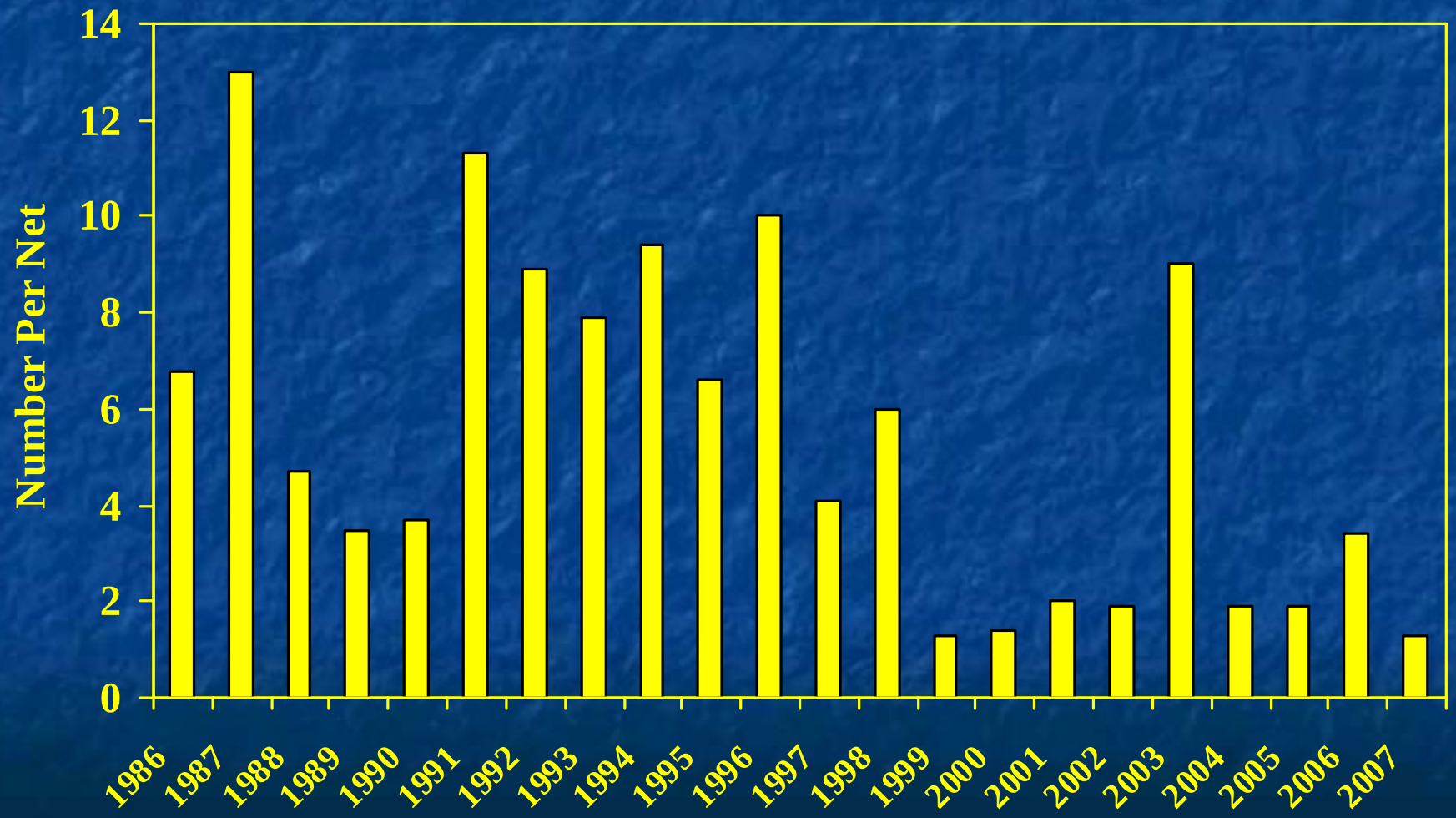






Yellow Perch Trends – Hauser Reservoir

Fall Experimental Sinking Gillnets



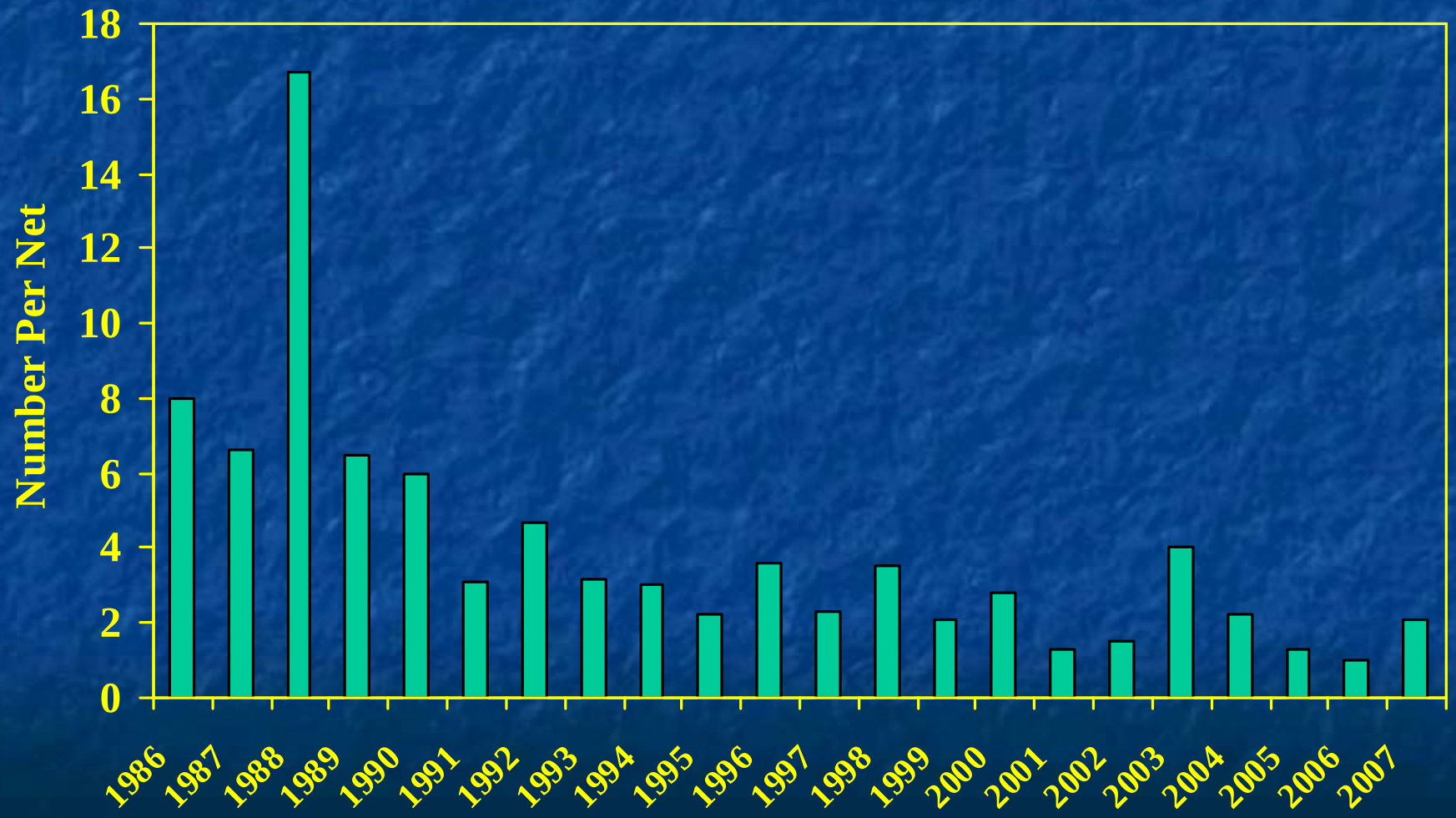
Angler Catch Rates for Yellow Perch

Hauser Reservoir – Winter Season

Rainbow Trout Trends – Hauser Reservoir

Annual Relative Abundance

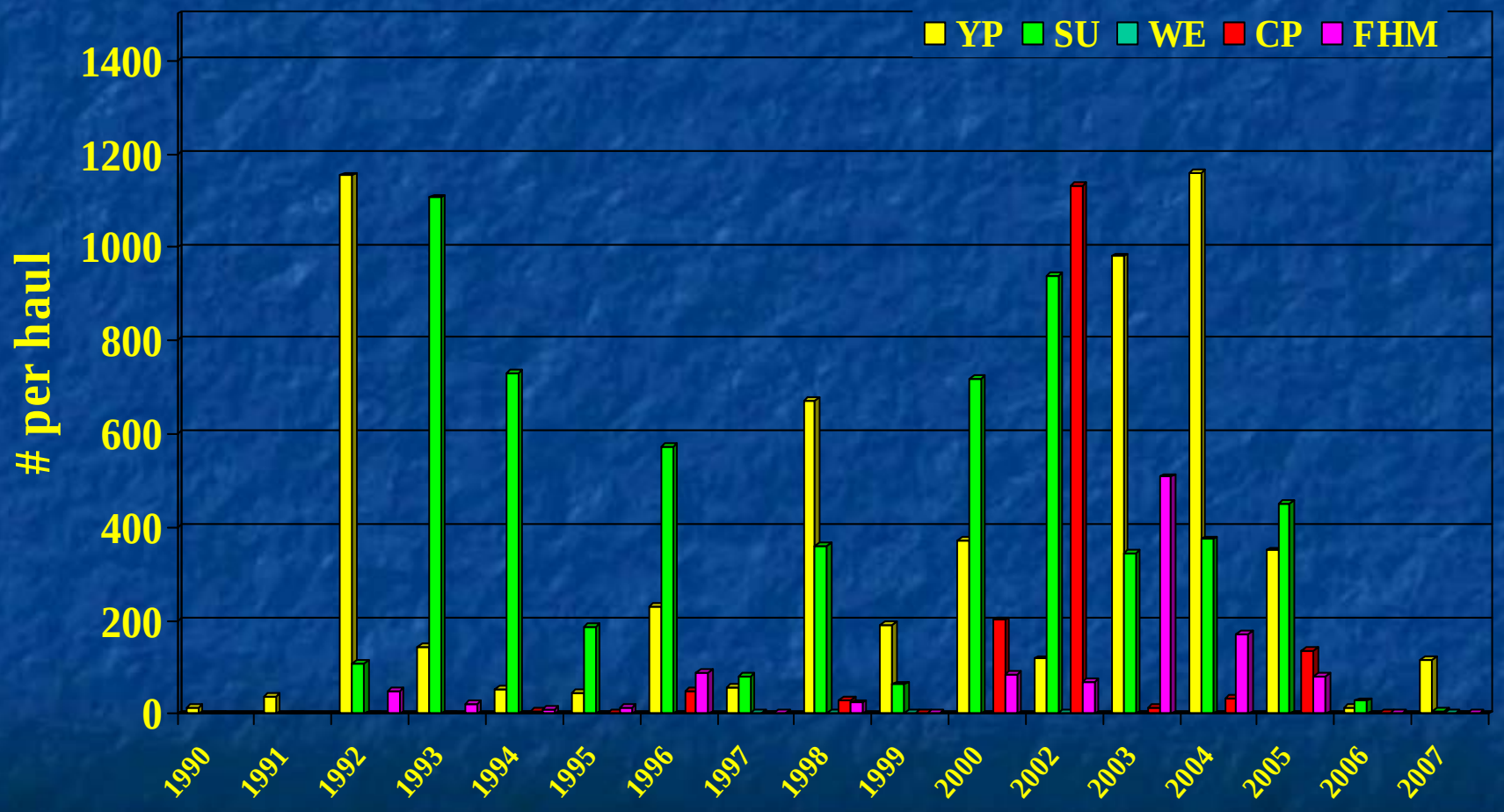
Spring and Fall Experimental Floating Gillnets



Angler Catch Rates for Rainbow Trout

Hauser Reservoir – Summer Season

Hauser Forage Fish Relative Abundance
(Number per beach seine haul)



YP=Yellow Perch, SU=Suckers, WE=Walleye, CP=Carp, FHM=Fat Head Minnow

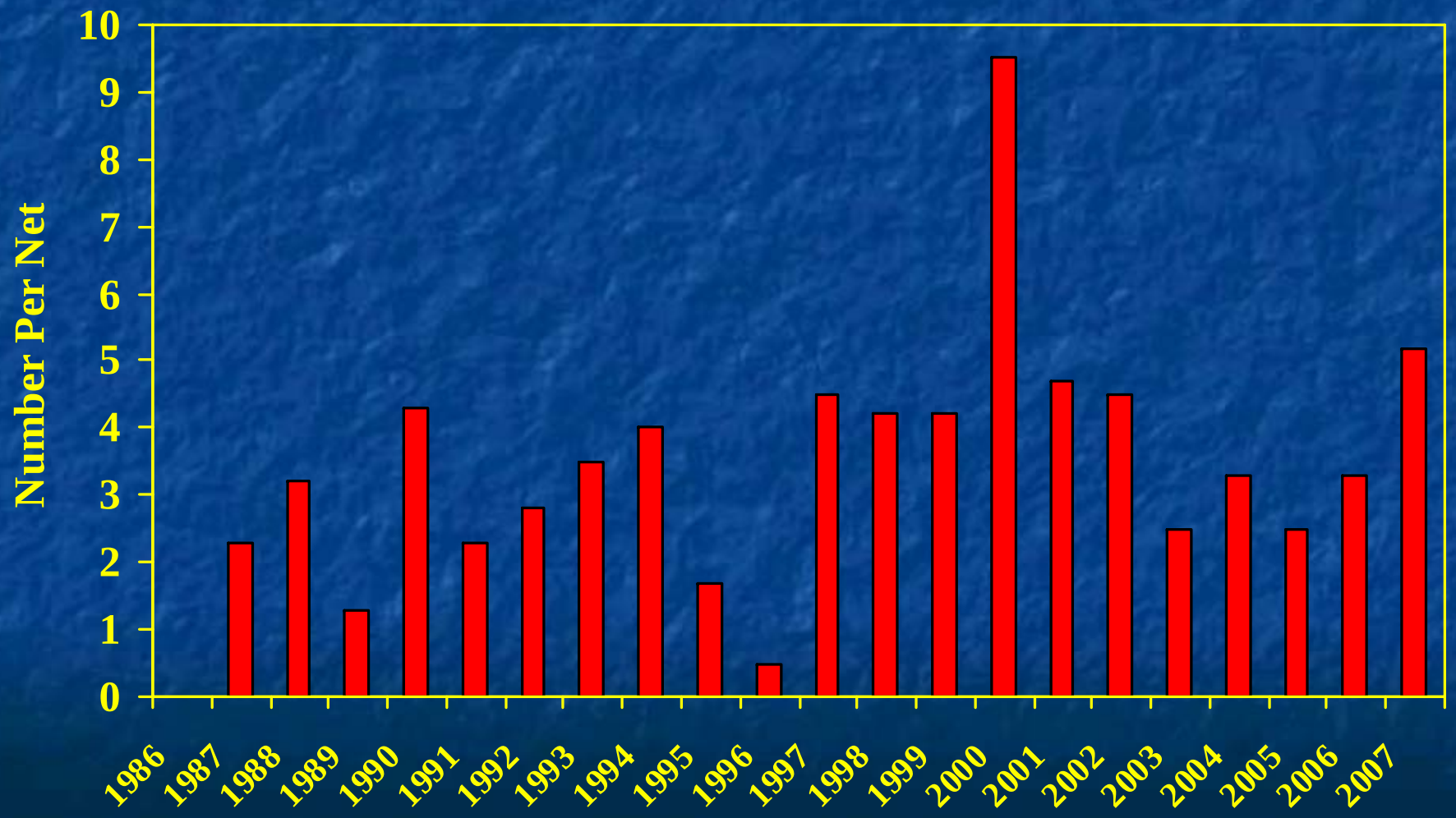
Holter Reservoir Fisheries Update–2007

- **Walleye were the only species to meet and exceed management targets,**
- **Walleye fishing was the best ever recorded. Angler catch rates were the highest in the 22 year period of record,**
- **Walleye relative abundance was the second highest on record. Holter contains good walleye age class diversity with high densities of small walleye. Additionally, abundance of walleyes larger than 26 inches was high in the fall of 2007,**
- **Yellow Perch abundance was the fourth lowest on record (since 1986),**
- **Angler catch rates for rainbow trout reached a 19 year high in 2007. Early spring fishing from shore was again popular in 2007.**

Jim Drissel of the Big Spring State Fish Hatchery in Lewistown strips eggs from a female Eagle Lake strain rainbow on Holter Reservoir. MFWP personnel collected 283,000 eggs from Holter in 2007. These will be raised at Big Spring Hatchery and many will return to Holter as 8” hatchery fish in 2008.

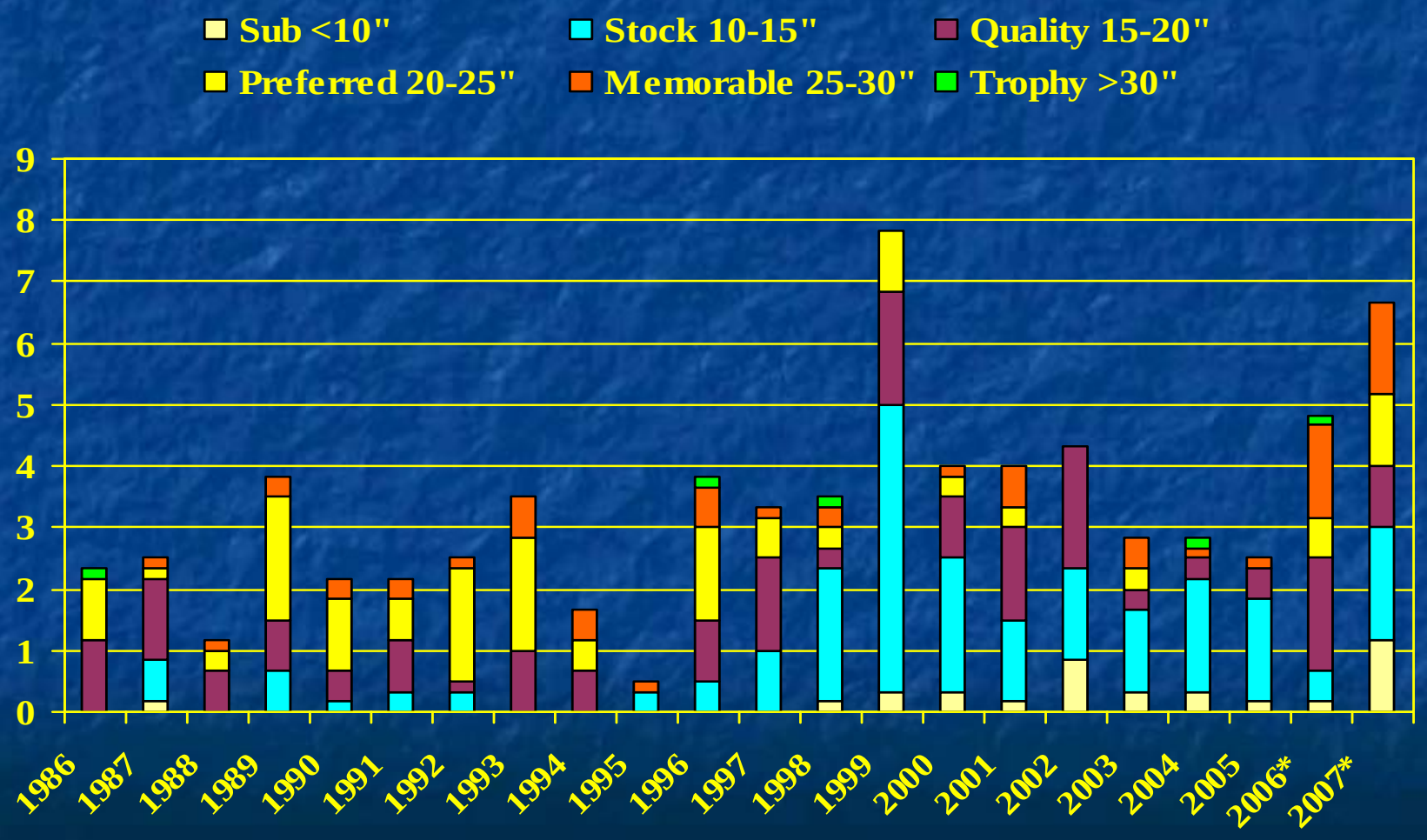
Walleye Trends –Holter Reservoir

Annual Relative Abundance
Fall Experimental Sinking Gillnets



Walleye Trends – Holter Reservoir

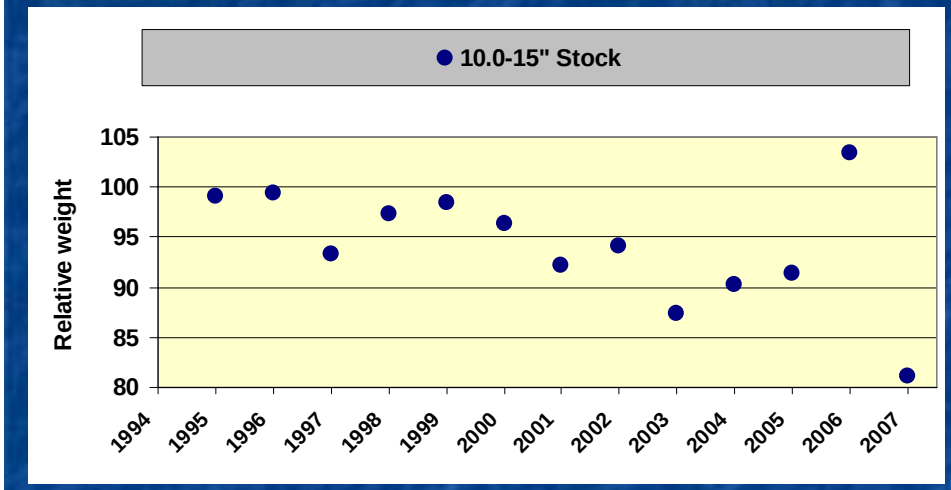
Annual Relative Abundance by Size
Fall Experimental Sinking Gillnets

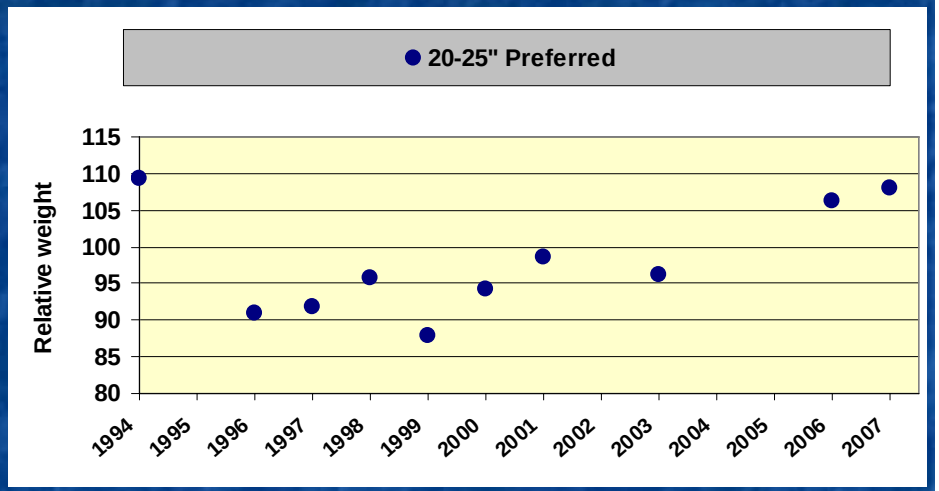


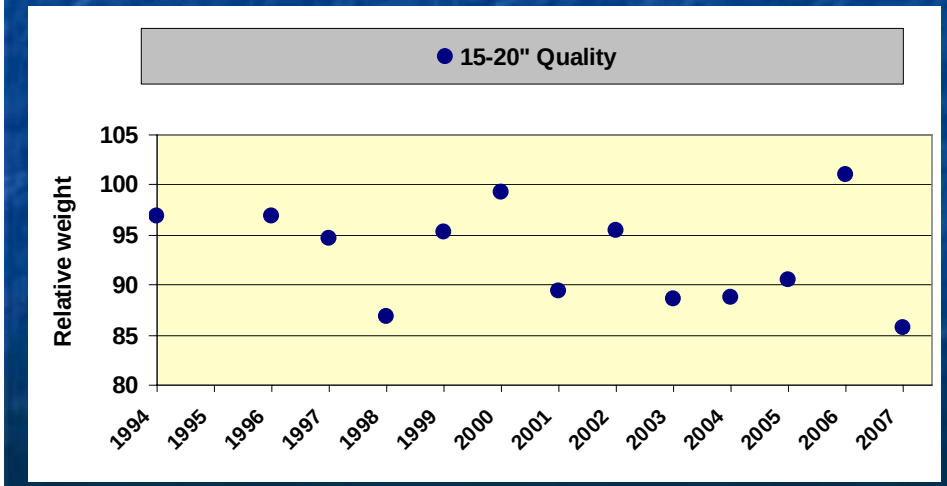
*Includes fish collected in three-inch mesh gillnets

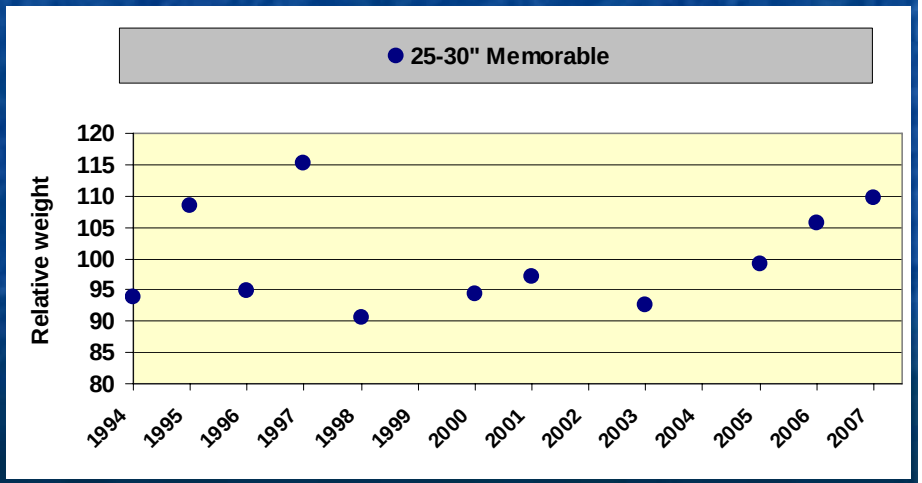
Walleye Relative Weights – Holter Reservoir

Fall Experimental Sinking Gillnets



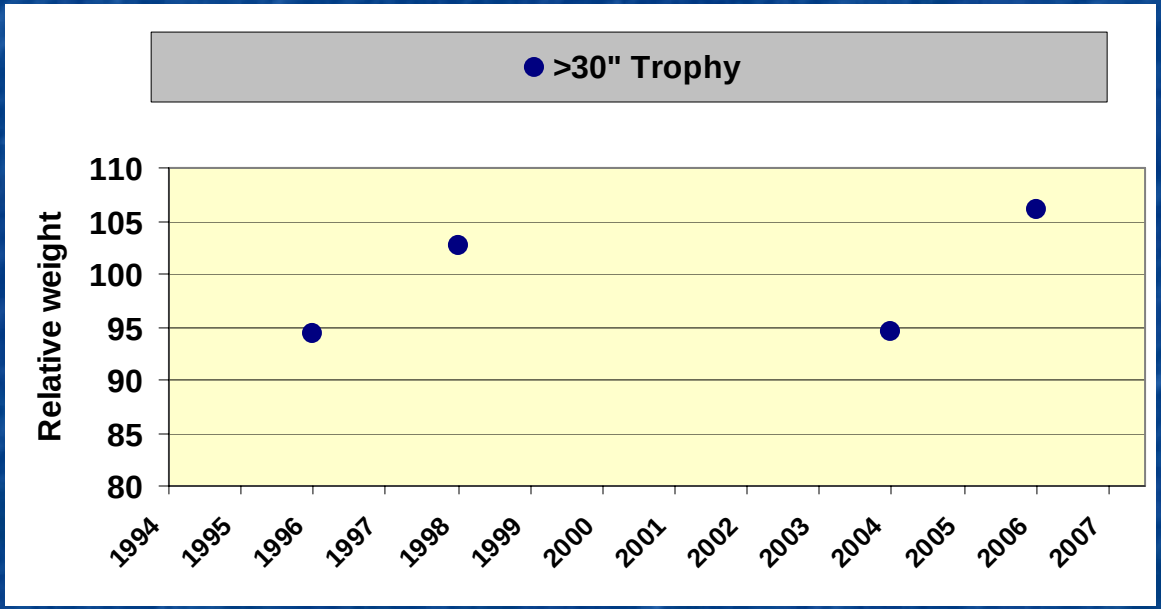






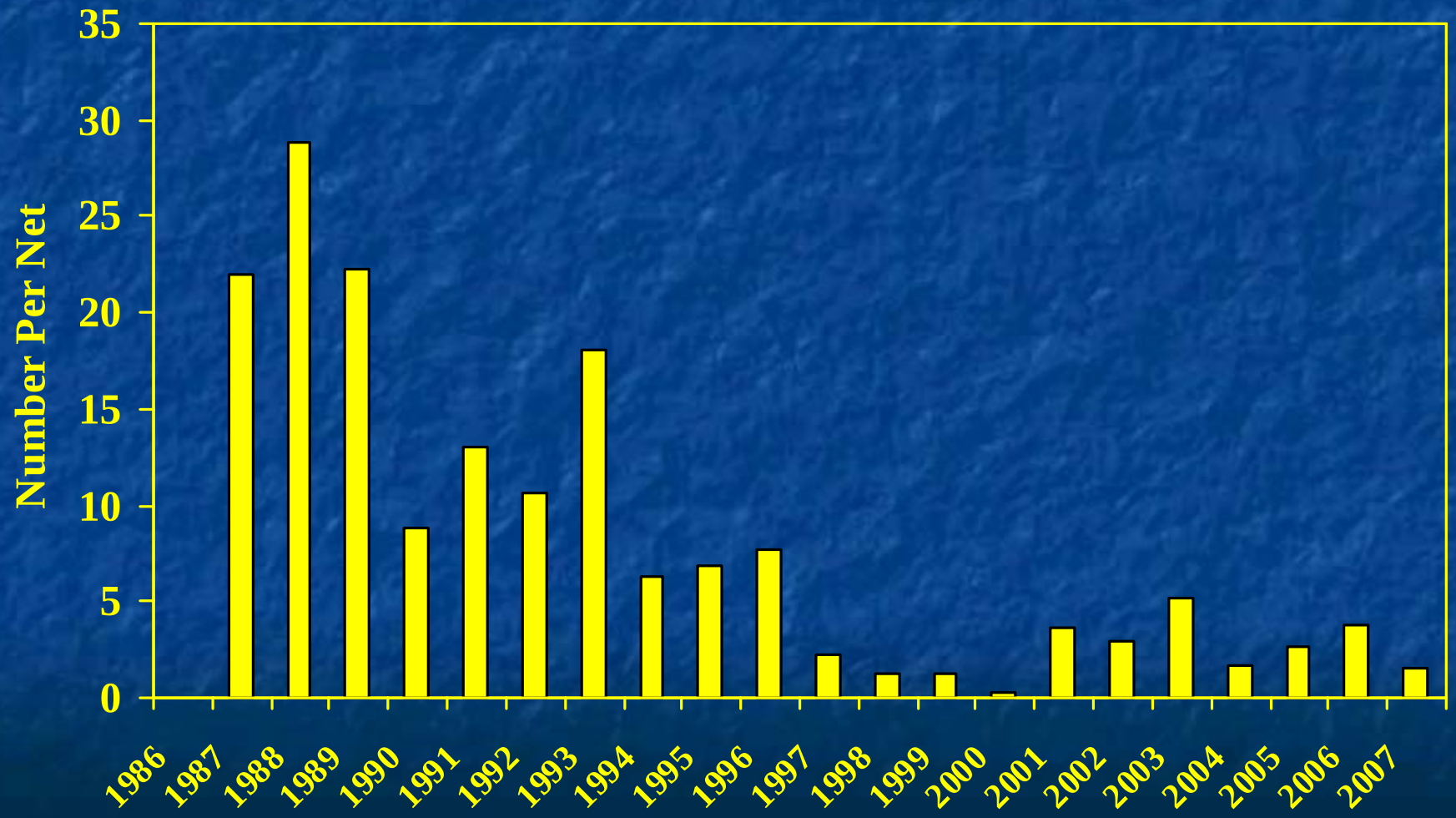
Walleye Relative Weights – Holter Reservoir

Fall Experimental Sinking Gillnets



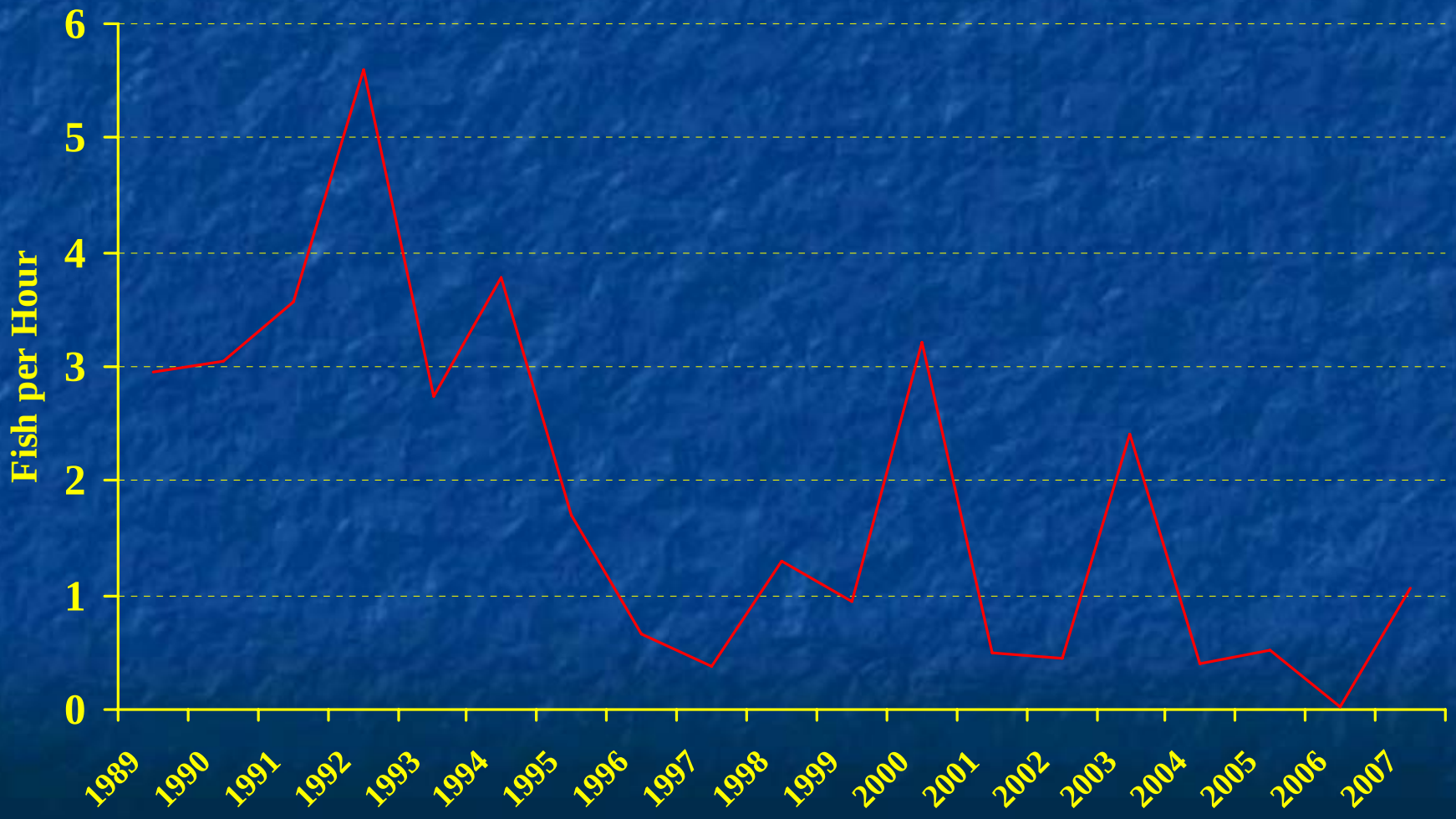
Yellow Perch Trends –Holter Reservoir

Fall Experimental Sinking Gillnets



Angler Catch Rates for Yellow Perch

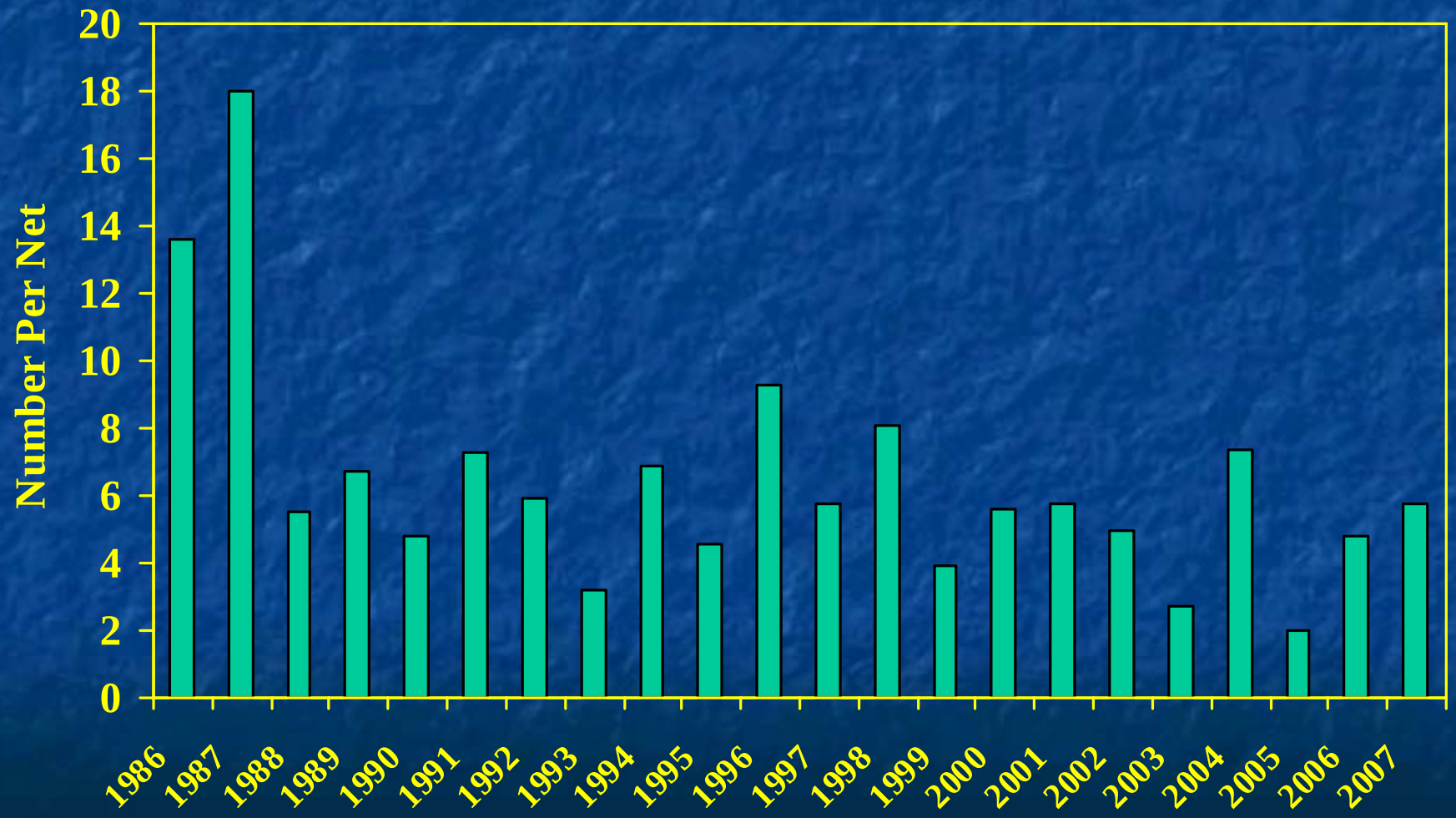
Holter Reservoir – Winter Season



Rainbow Trout Trends – Holter Reservoir

Annual Relative Abundance

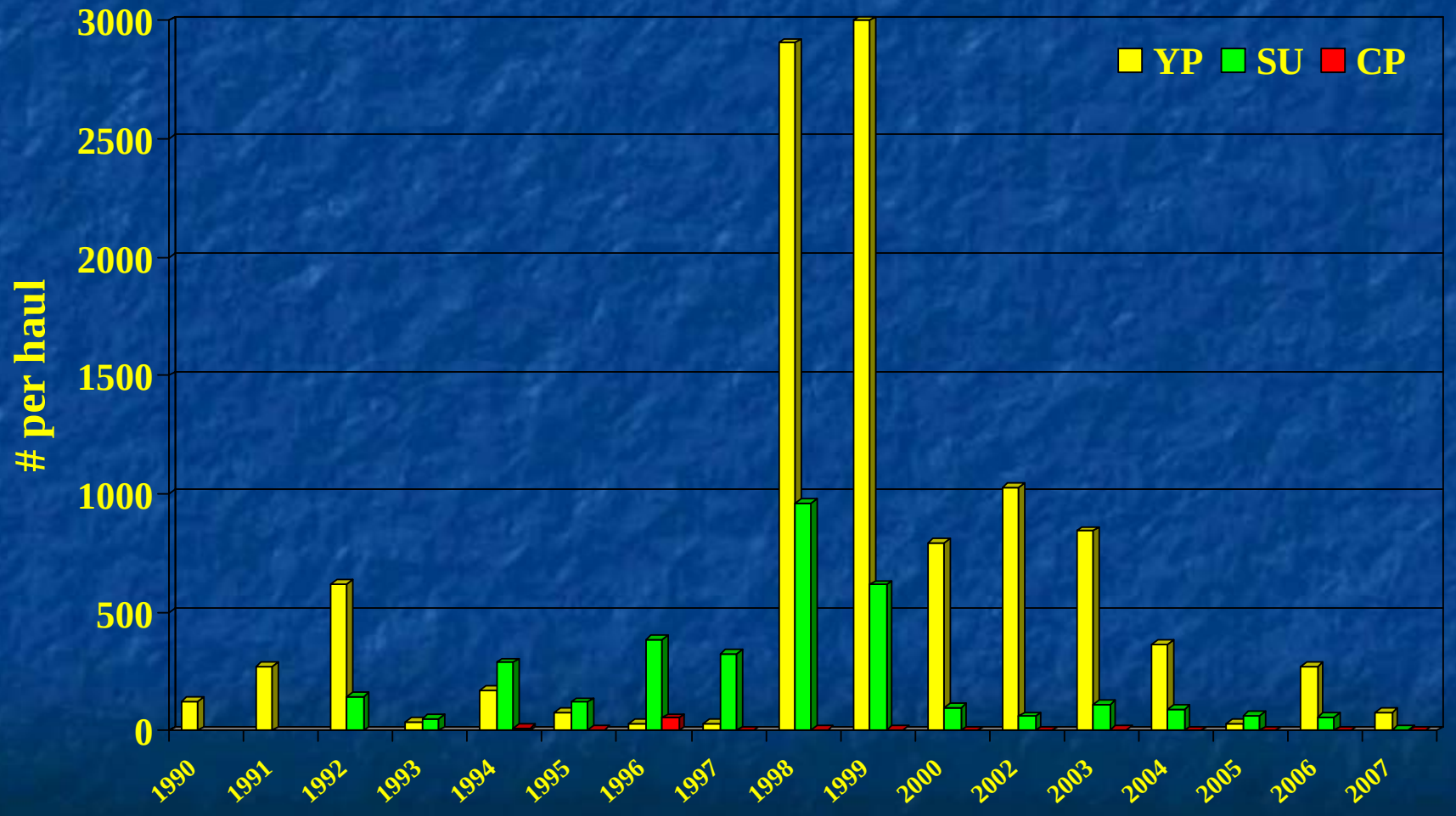
Spring and Fall Experimental Floating Gillnets



Angler Catch Rates for Rainbow Trout

Holter Reservoir – Summer Season

Holter Forage Fish Relative Abundance
(Number per beach seine haul)



YP=Yellow Perch, SU=Suckers, CP=Carp

Contributors

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