

**STATE OF
CHINOOK
SALMON
IN LAKE
HURON
in
1999**

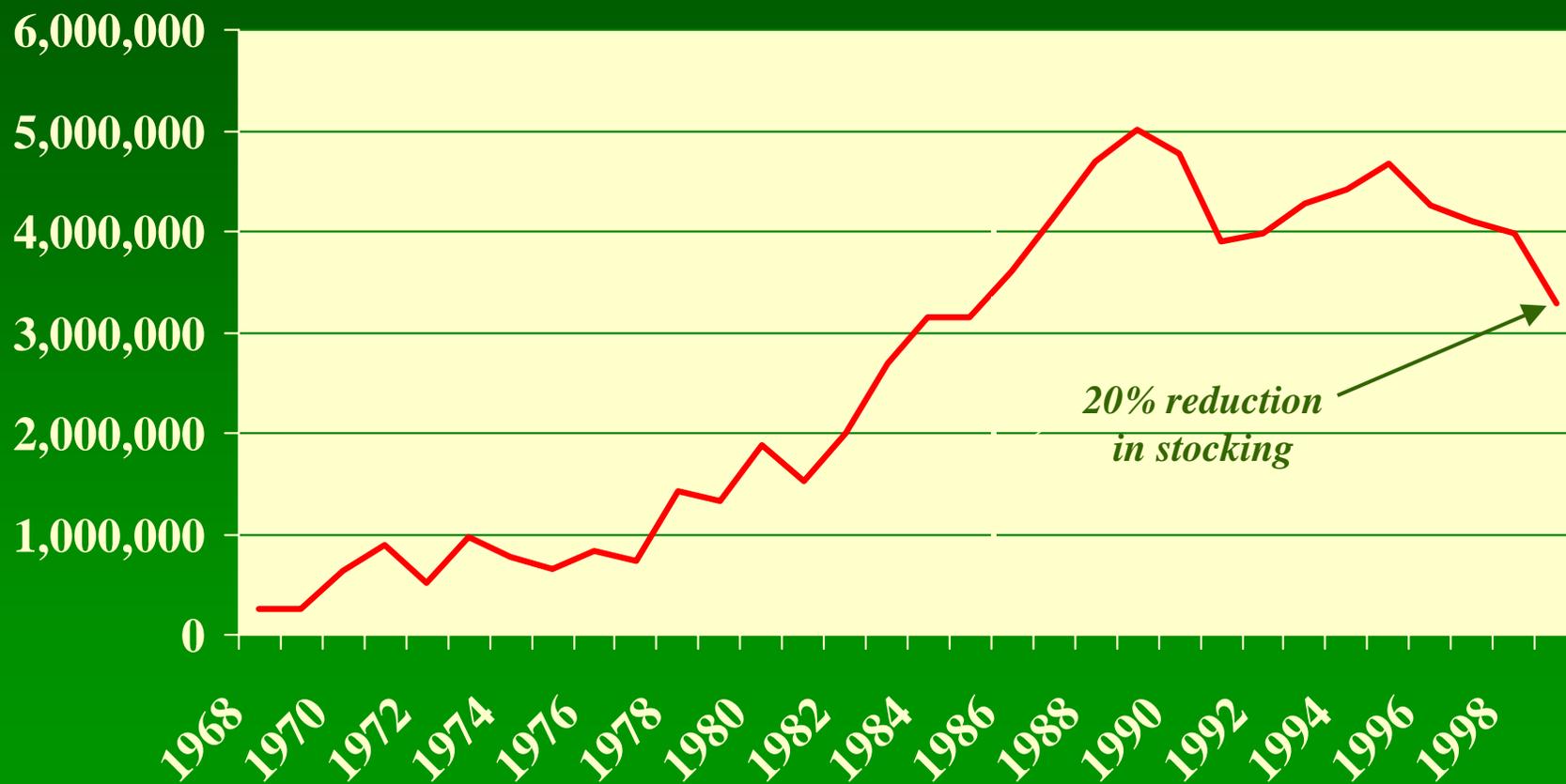


***BY:
Jim Johnson,
Michigan Department
of Natural Resources***

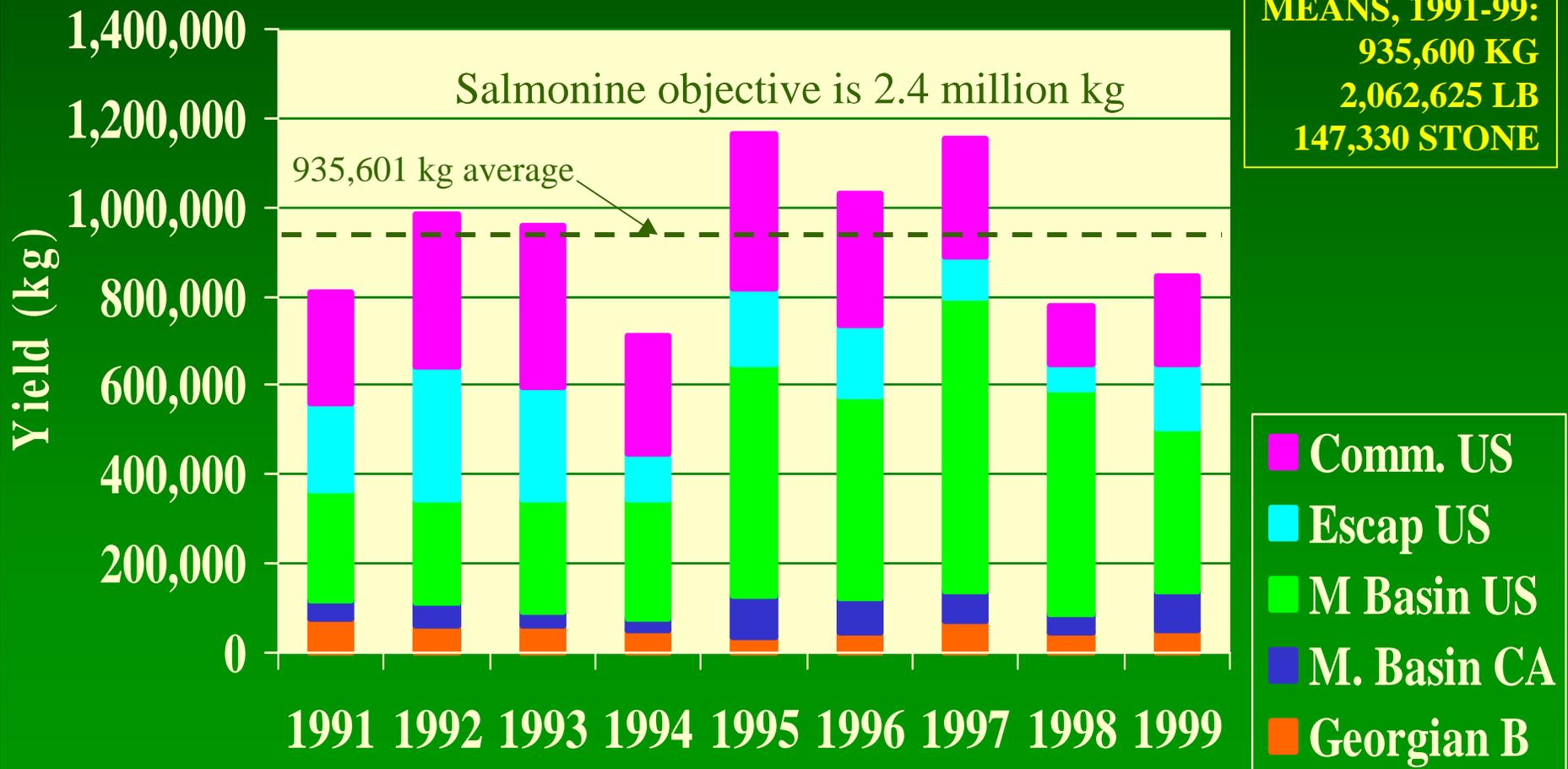
***Lloyd Mohr,
Ontario Ministry of
Natural Resources***

***Greg Wright,
Chippewa Ottawa
Fishery Resource
Authority***

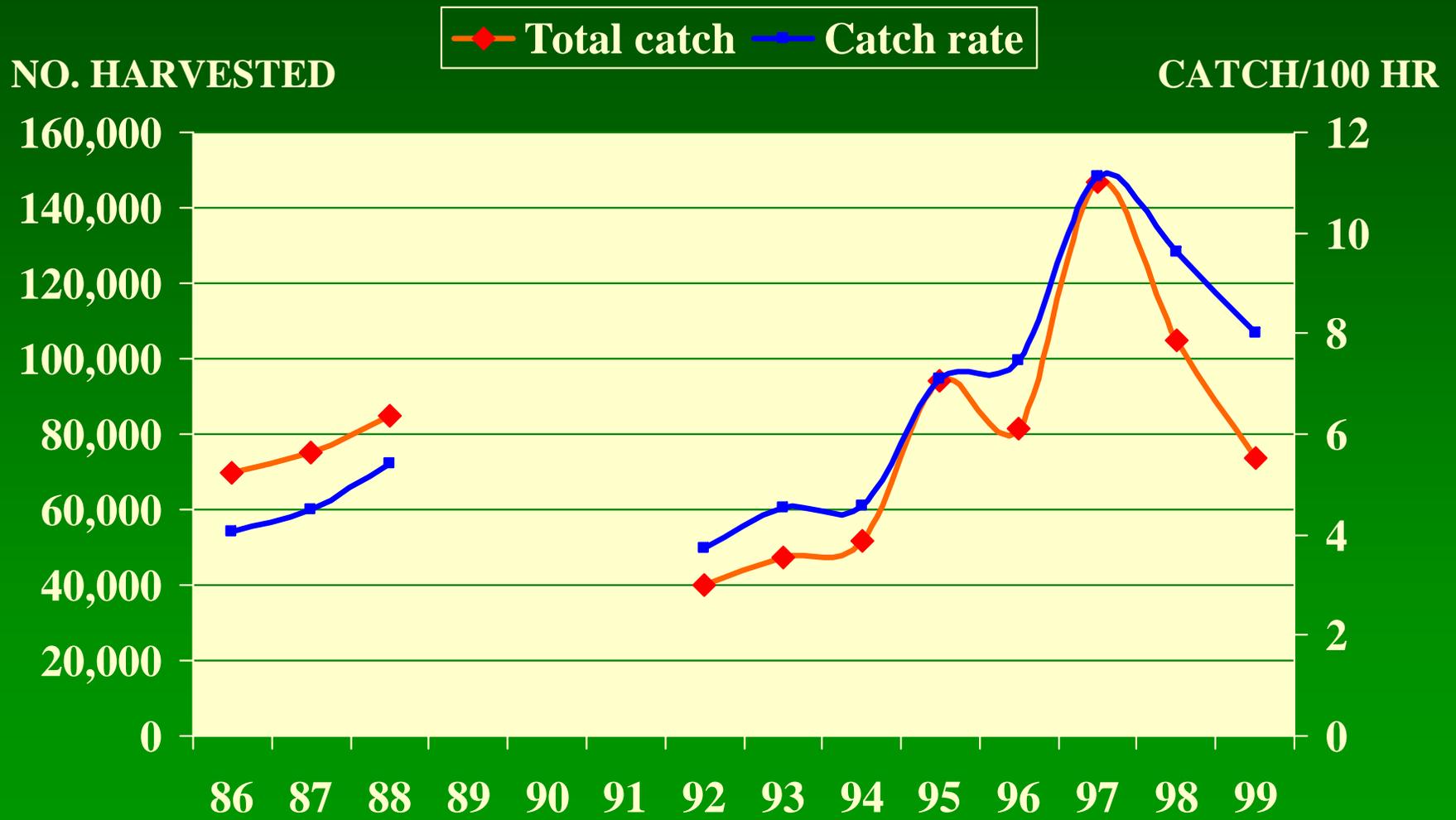
CHINOOK STOCKING TRENDS LAKE HURON, ALL AGENCIES



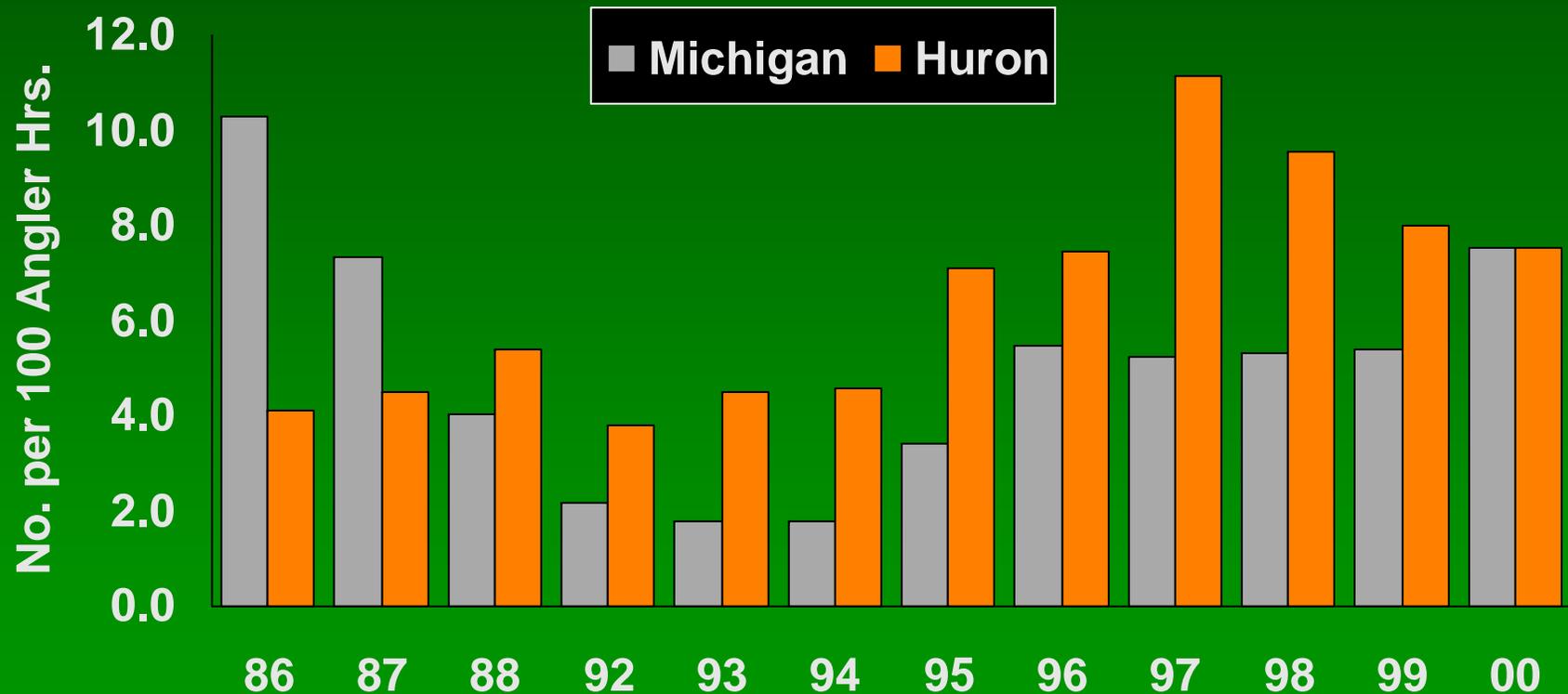
ESTIMATED CHINOOK HARVEST (KG), GEORGIAN BAY & MAIN BASIN L. HURON



CHINOOK CATCH AND CATCH RATES, INDEX PORTS, MAIN BASIN LAKE HURON

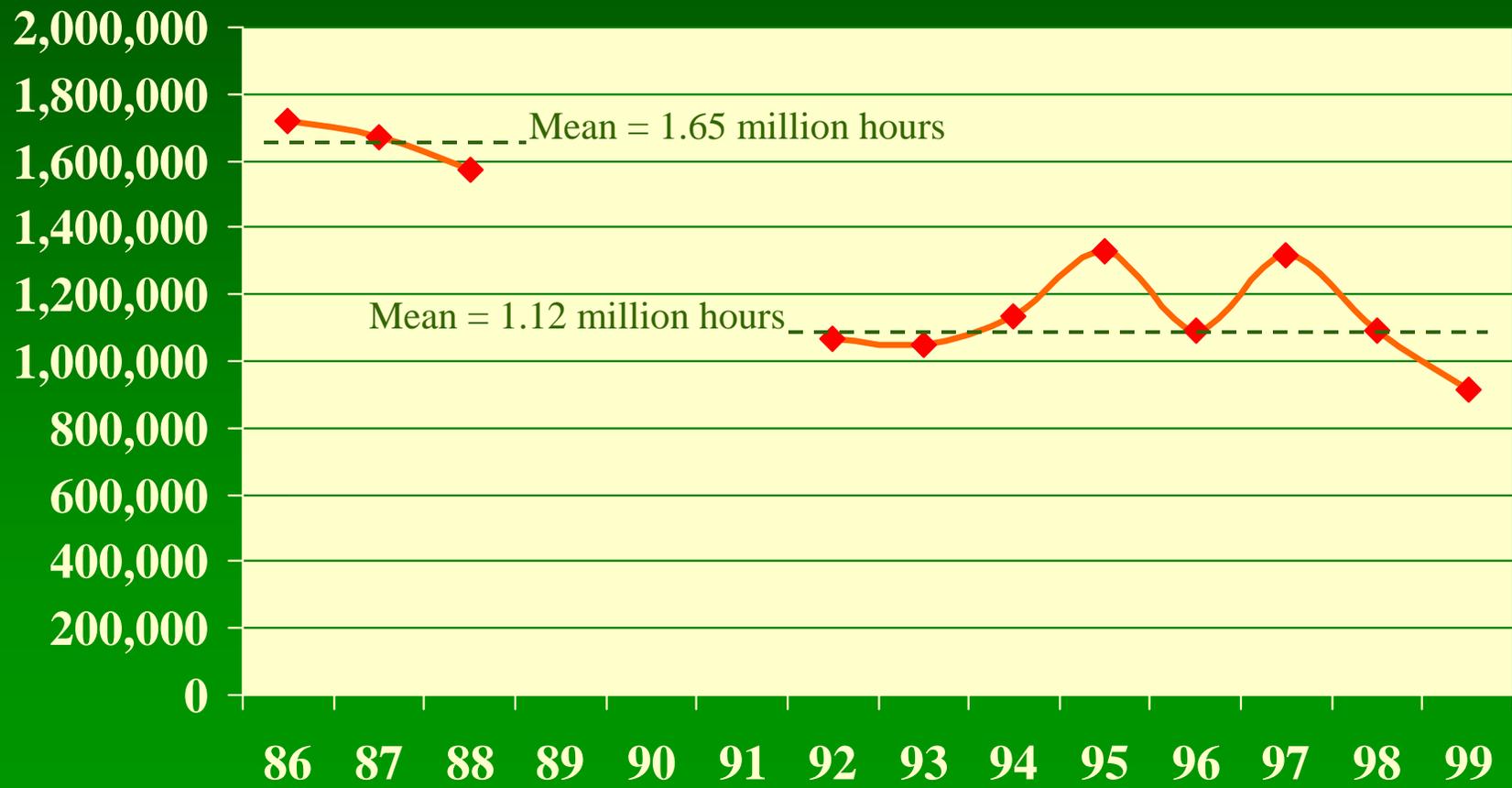


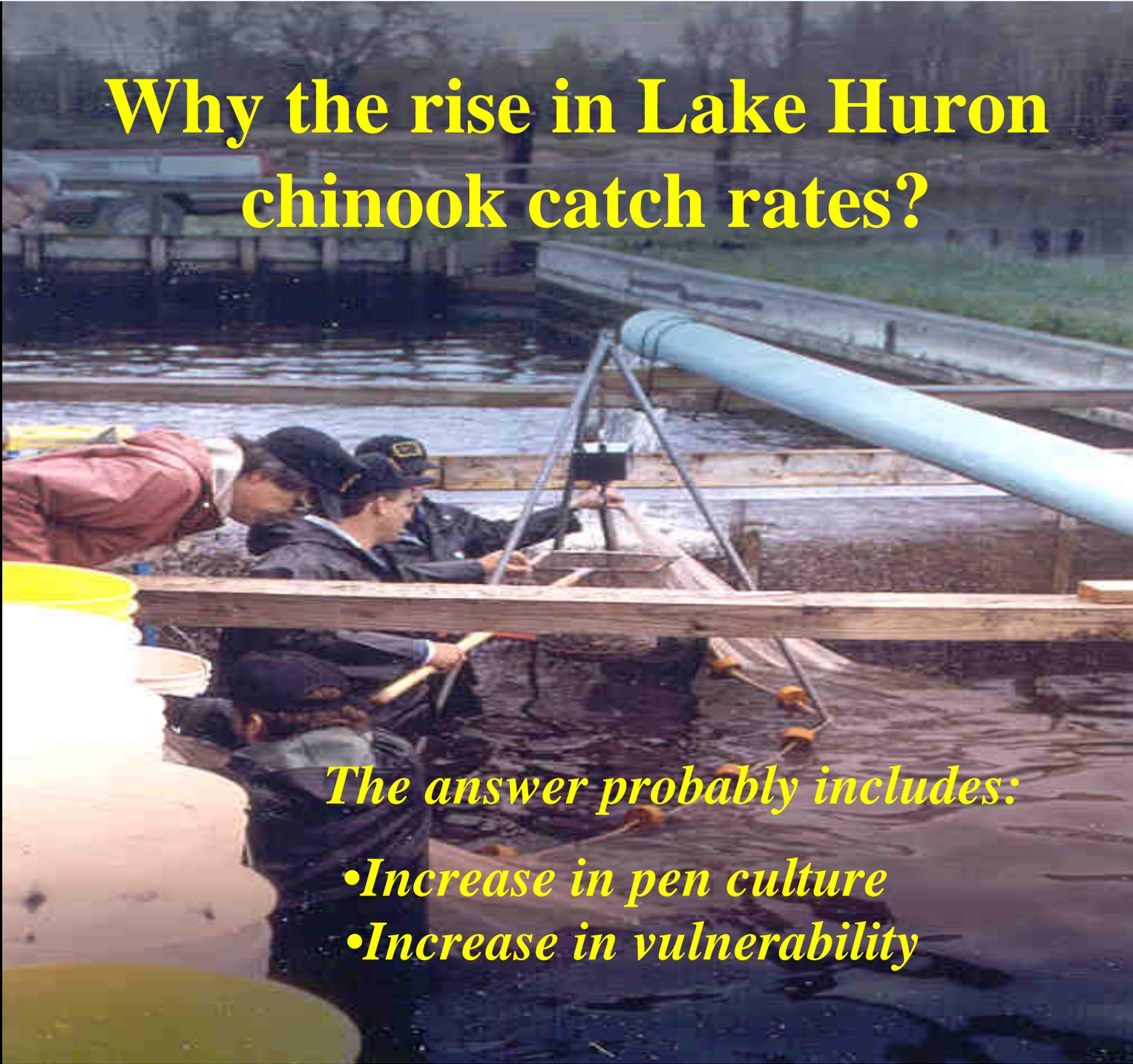
Chinook Salmon Catch Rates on Lake Michigan Compared to Lake Huron



TRENDS IN RECREATIONAL EFFORT, INDEX PORTS, MAIN BASIN LAKE HURON

Hours





Why the rise in Lake Huron chinook catch rates?

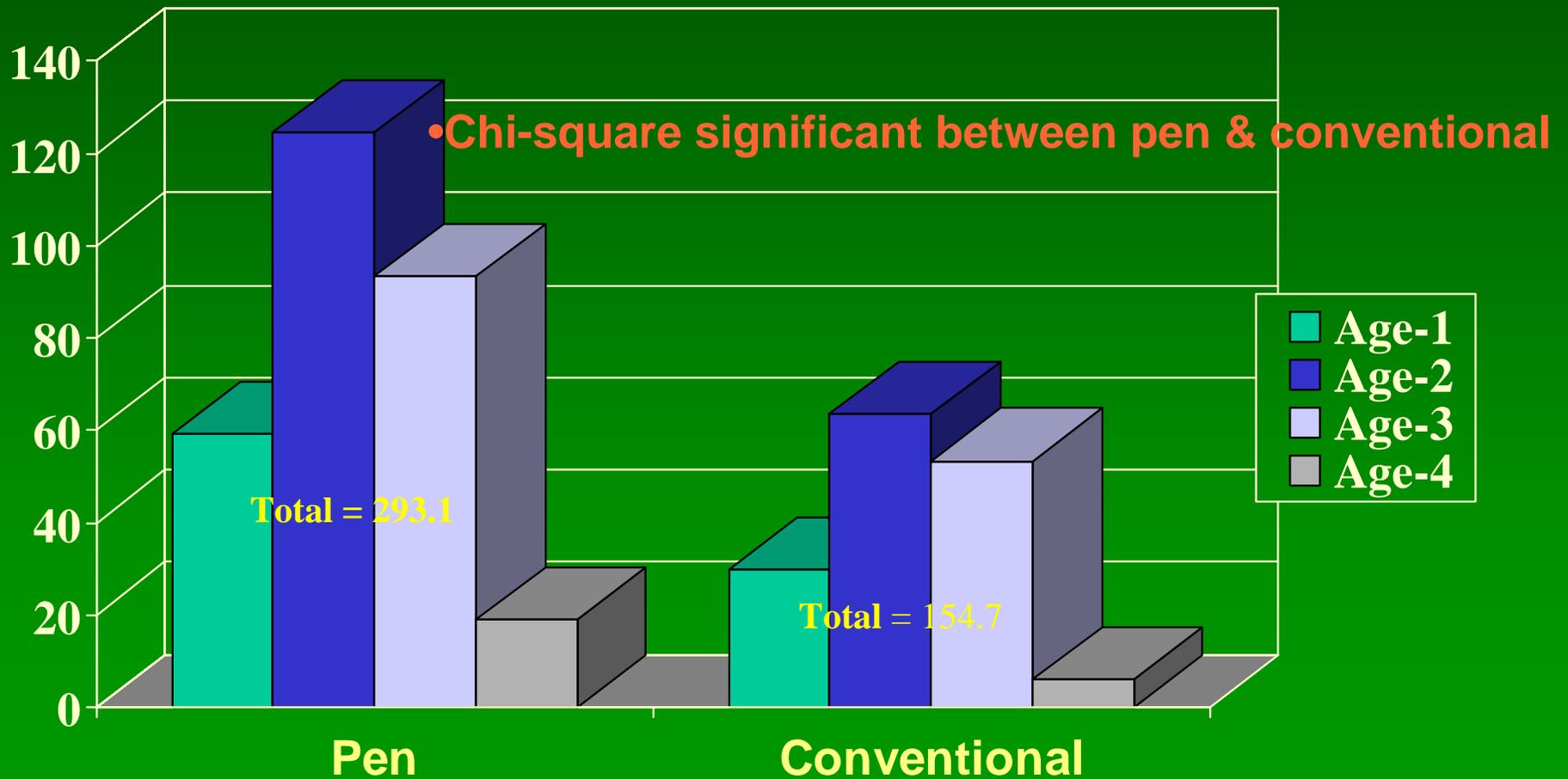
The answer probably includes:

- *Increase in pen culture*
- *Increase in vulnerability*

YEAR CLASS: 1993

Released from pen vs. conventional

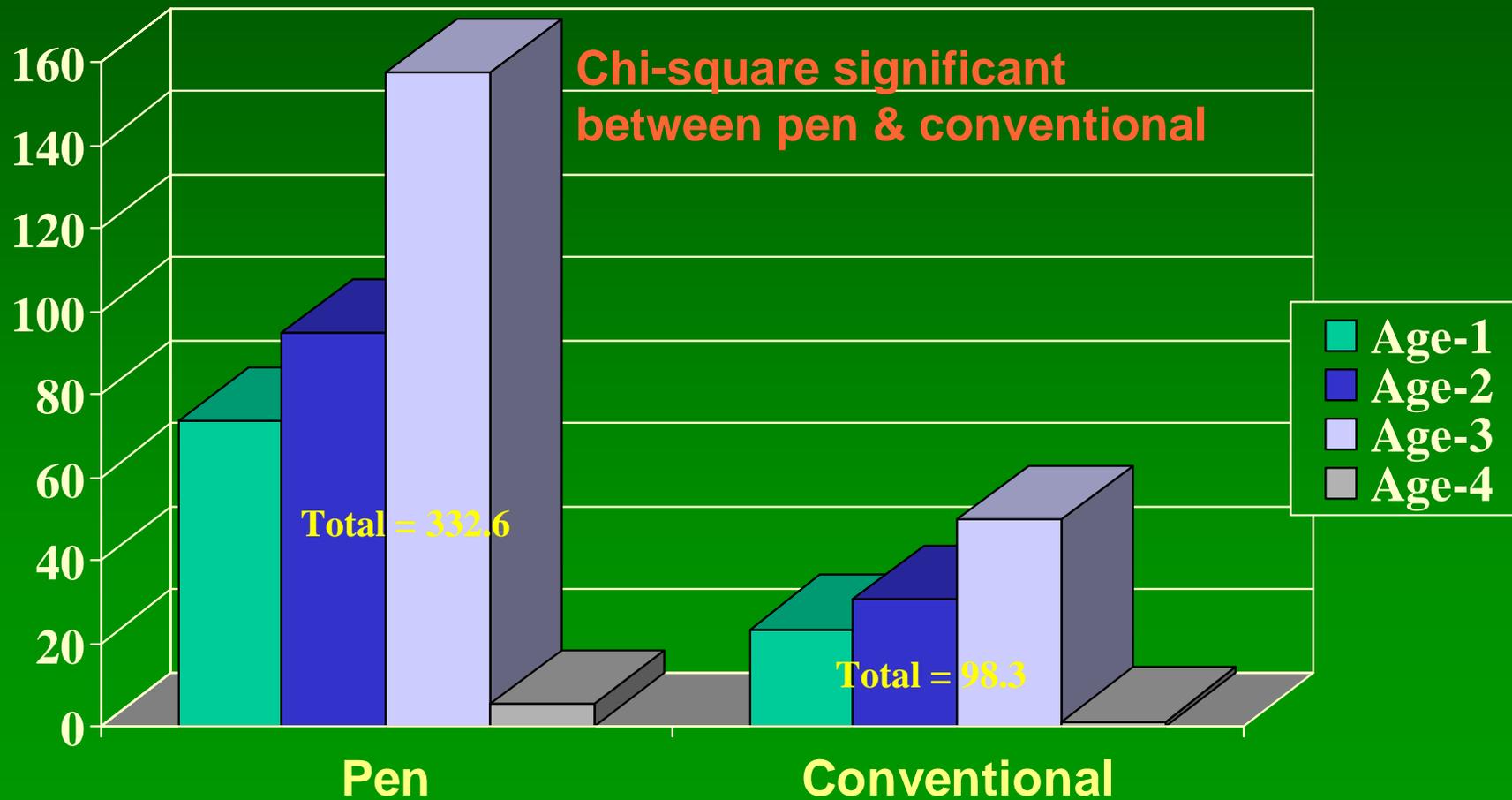
OPEN-WATER RETURNS/100,000 STOCKED,



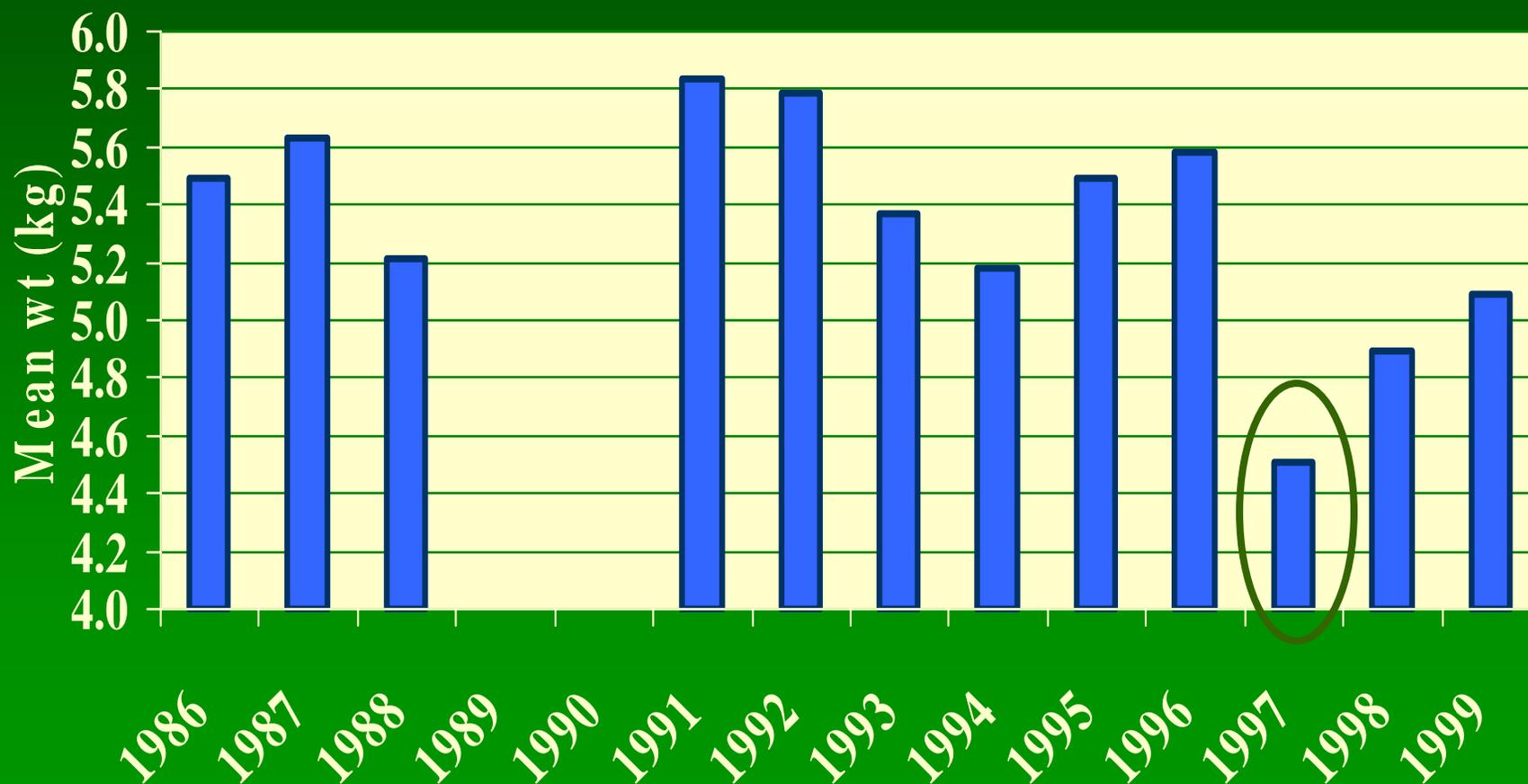
YEAR CLASS: 1994

Pen reared & trucked to lake vs. conventional

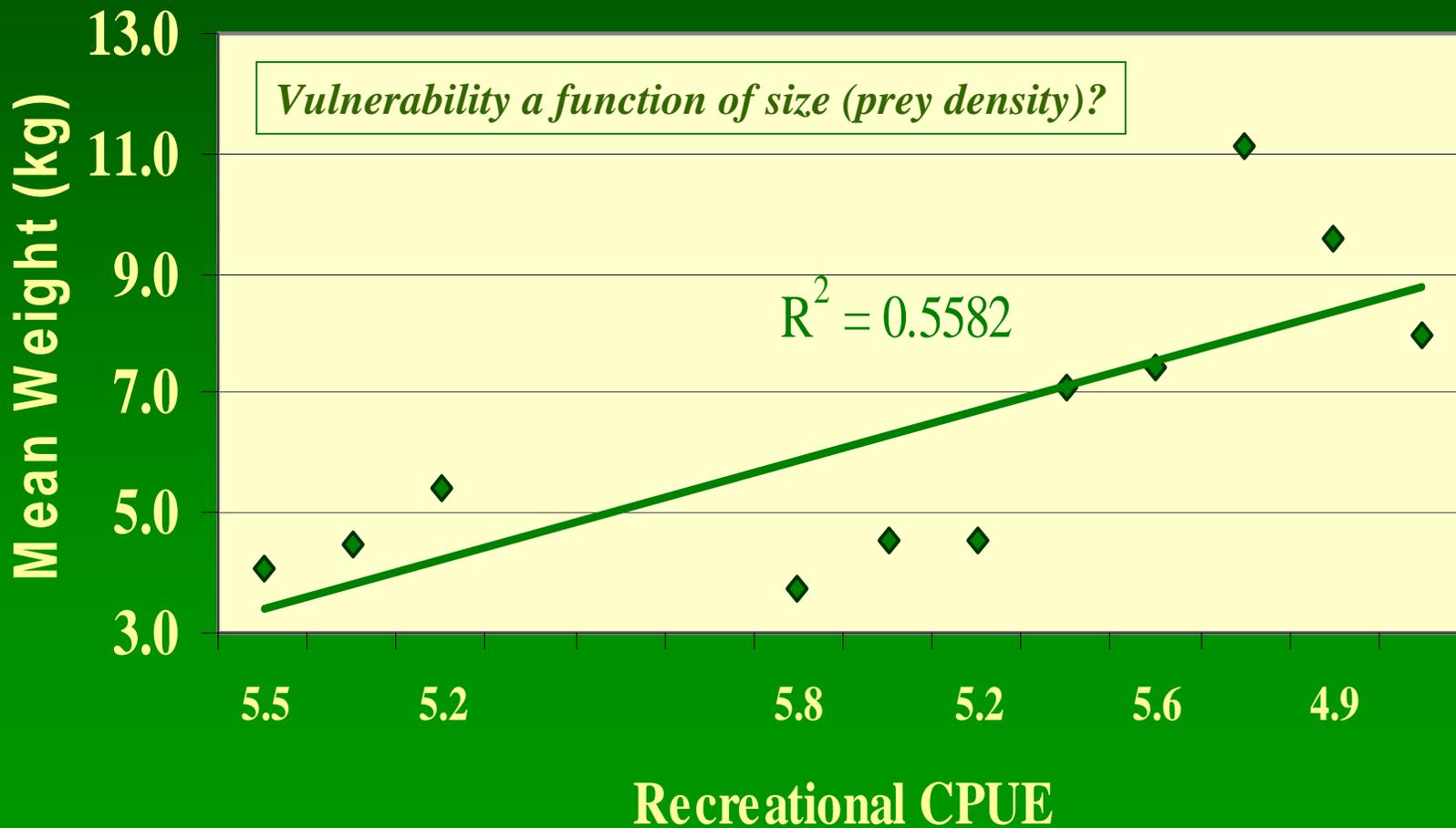
OPEN-WATER RETURNS/100,000 STOCKED



MEAN WEIGHTS (KG) OF CHINOOK HARVESTED, MICHIGAN RECREATIONAL CATCH, MAIN BASIN LAKE HURON

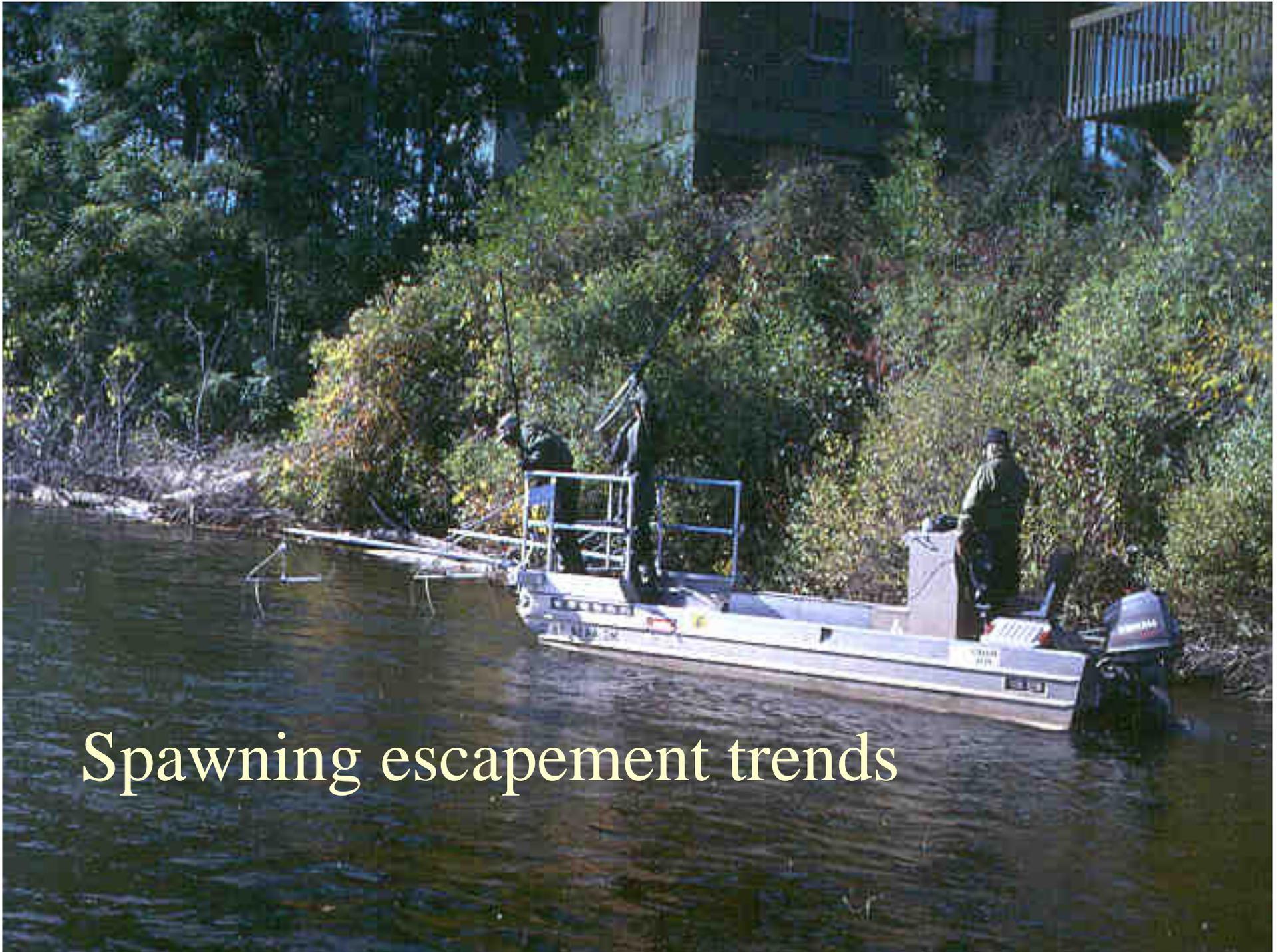


REGRESSION OF CPUE WITH MEAN WEIGHT, CHINOOK RECREATIONAL CATCH, MICHIGAN MAIN BASIN LAKE HURON

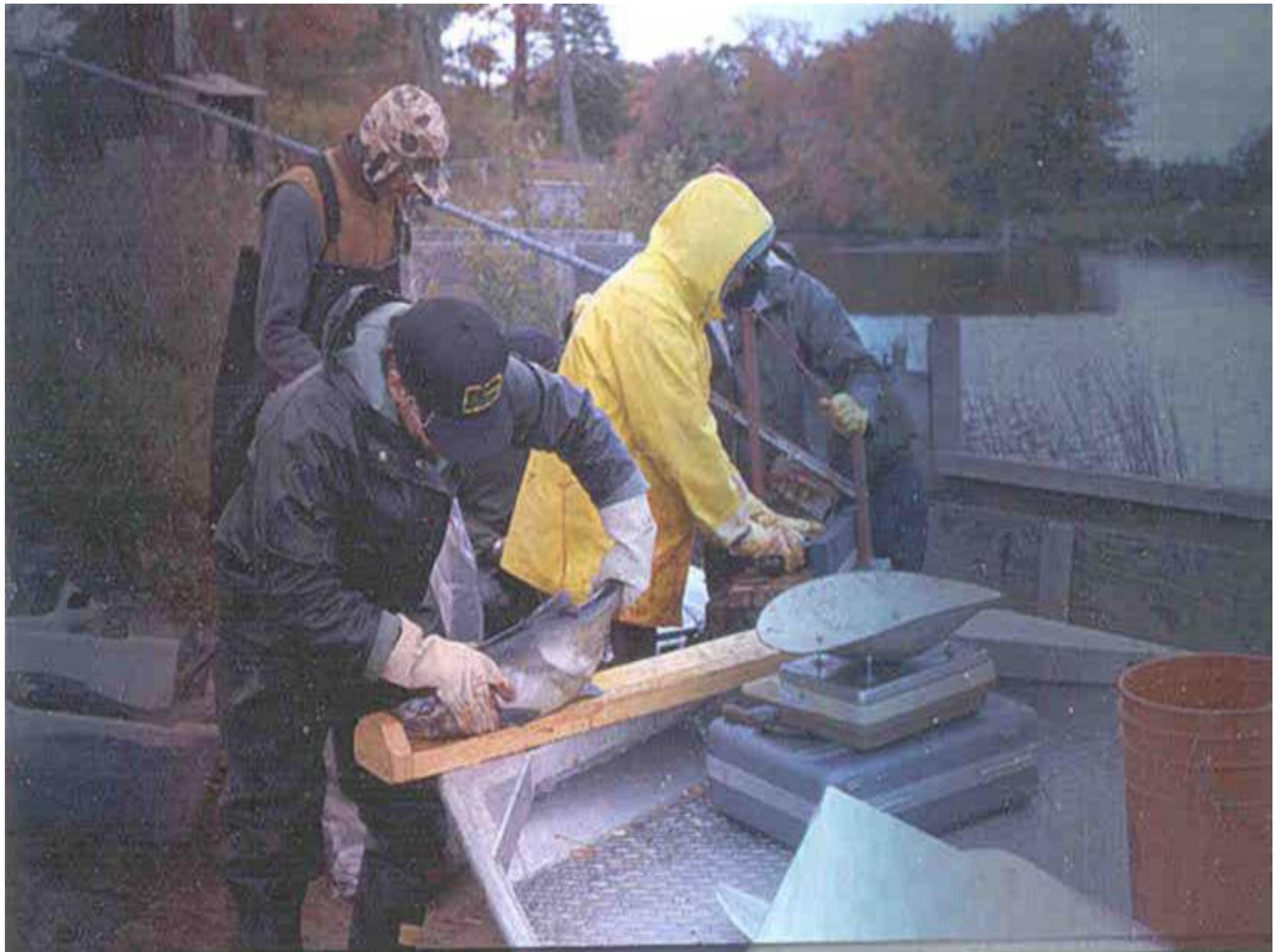


PREY CONSUMPTION, CHINOOK SALMON, LAKE HURON

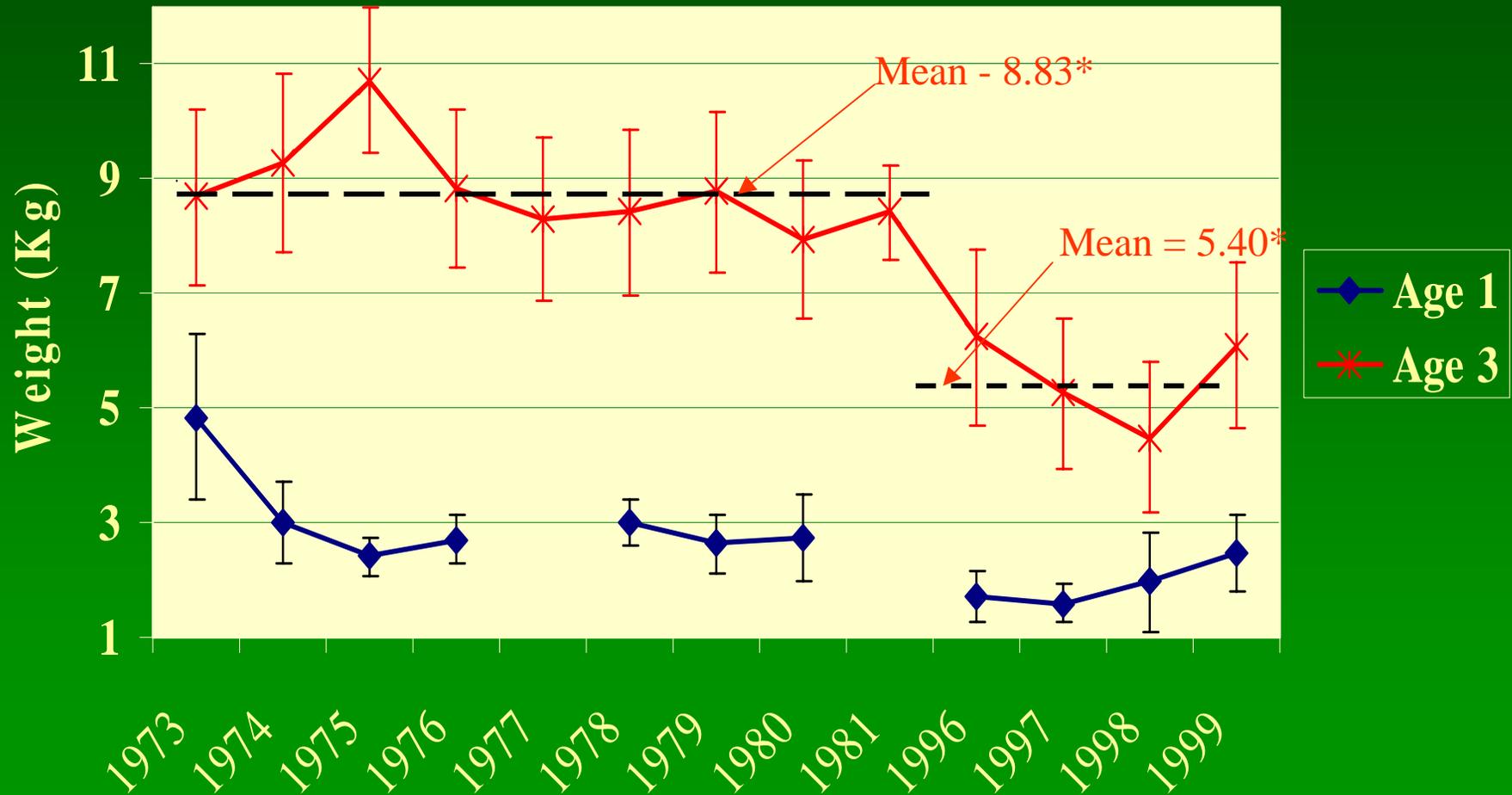
	1997 & 1998 Combined N = 103; 55.5% Void		1999 N = 84; 51.2% Void	
	Number consumed/fish	Wt. (gm) consumed/fish	Number consumed/fish	Wt. (gm) consumed/fish
Smelt	0.17	0.86	1.07	3.21
Alewives	<u>0.69</u>	<u>9.58</u>	<u>1.07</u>	<u>4.61</u>
Total/Stomach	1.2	11.79	2.65	7.82



Spawning escapement trends

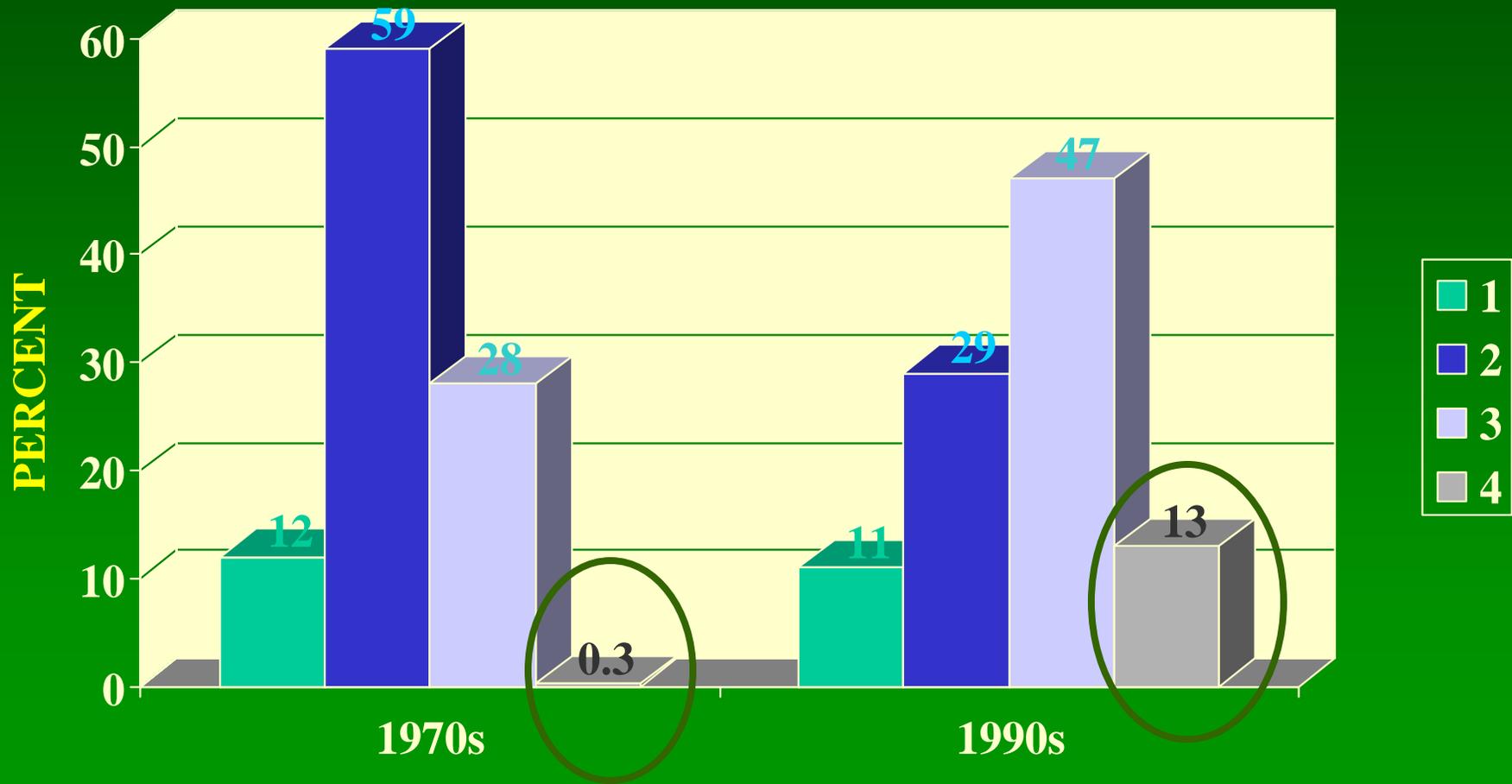


Chinook Salmon Weights (Kg), AuSable River, 1973-1999



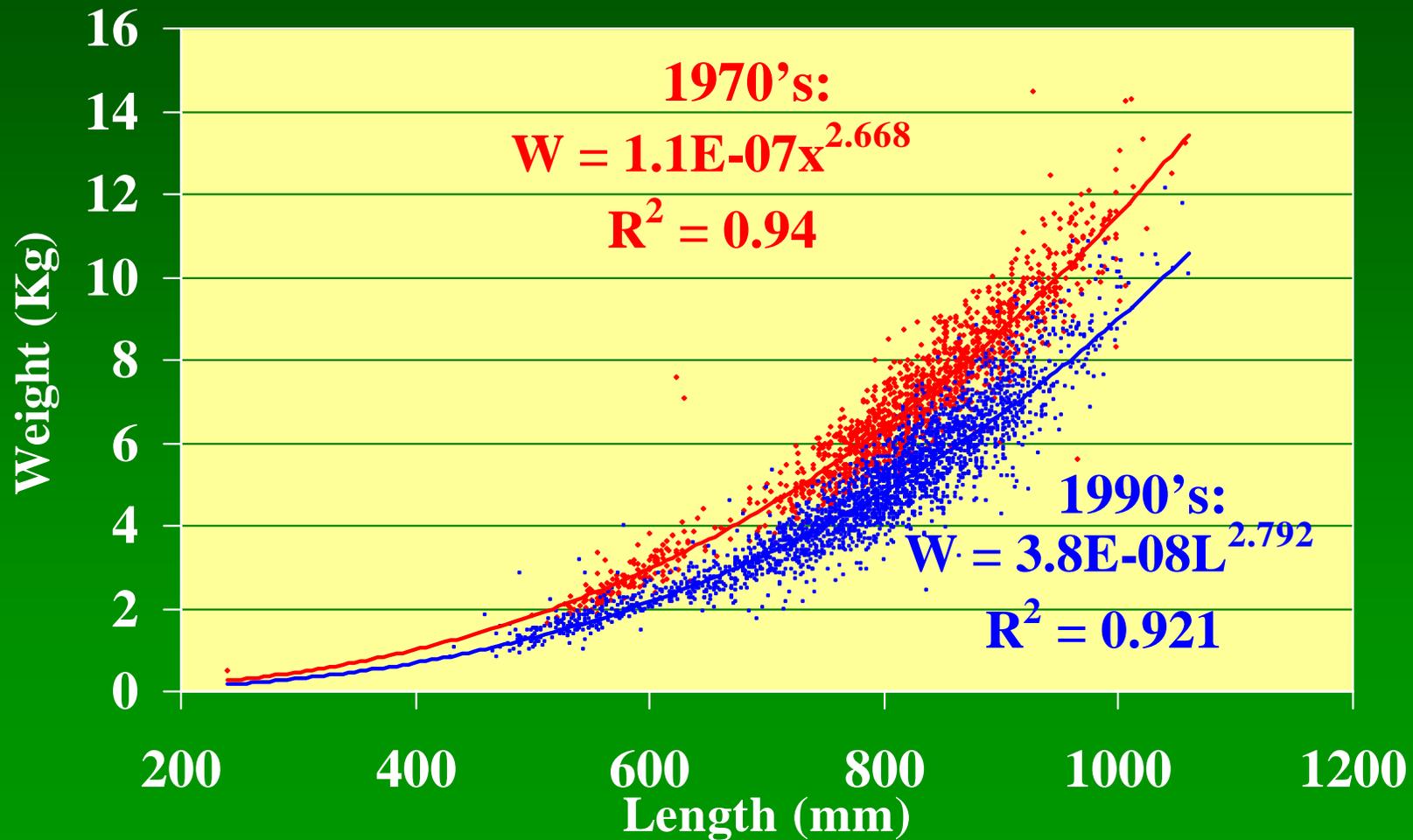
***Significant ($p < 0.001$) decline in growth at age 3**

AGE DISTRIBUTIONS, 1973-1981 COMPARED TO 1996-1998, LAKE HURON

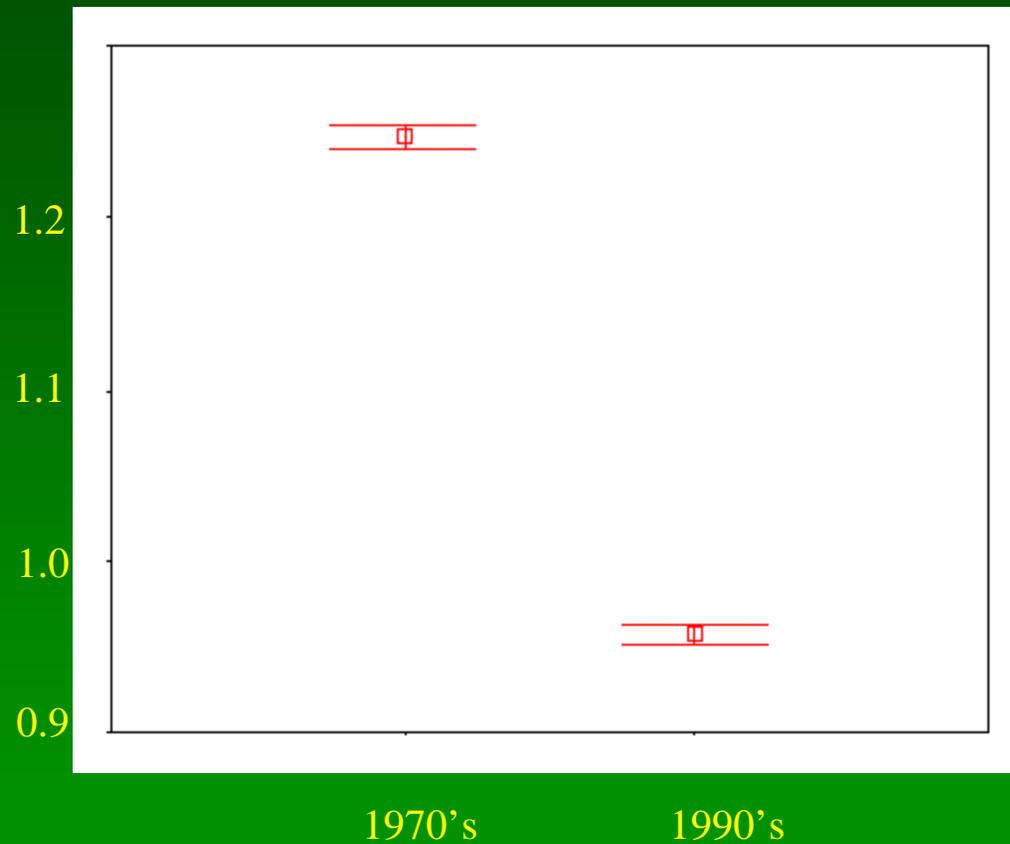


WEIGHT-LENGTH REGRESSIONS

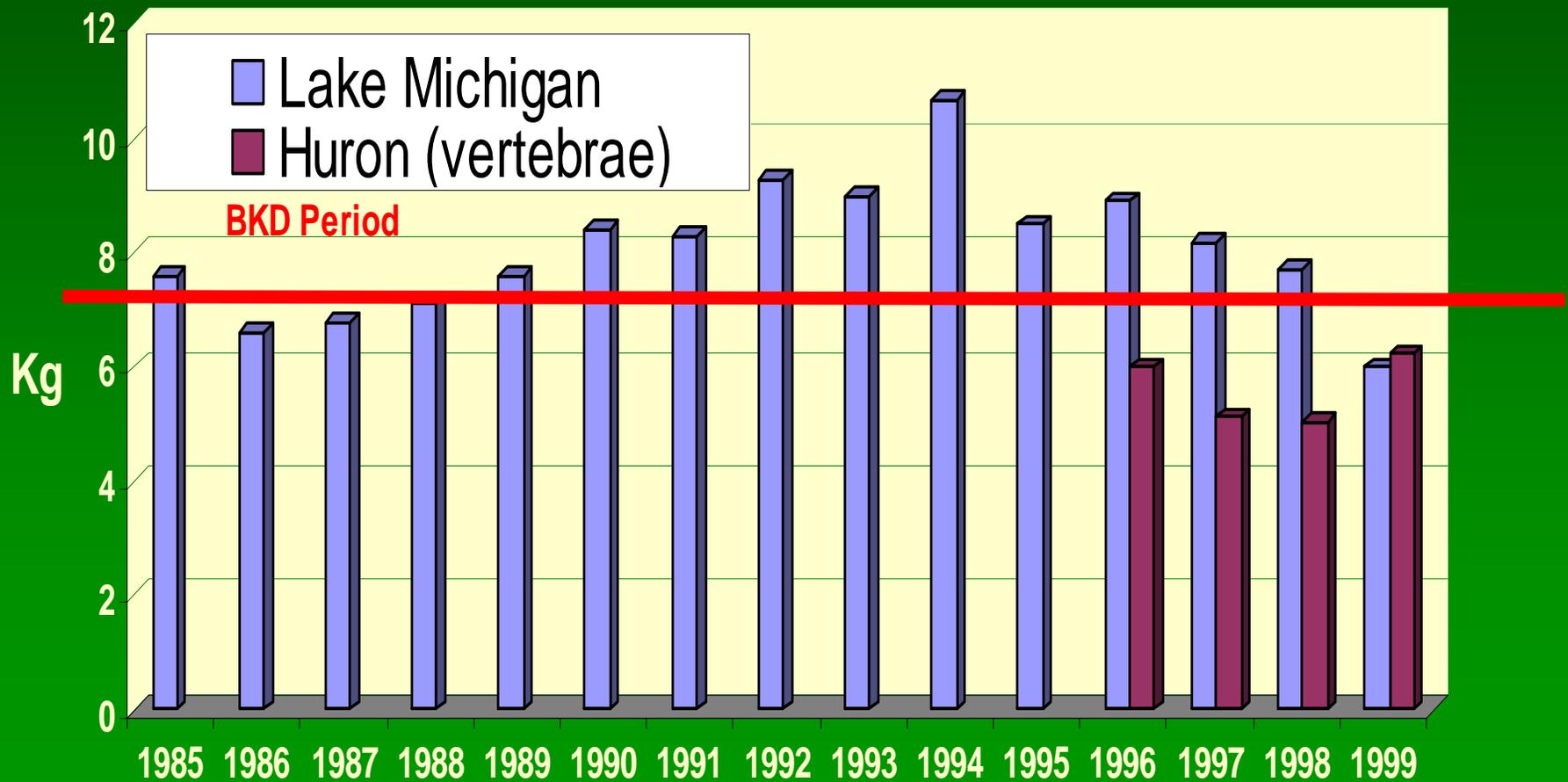
AuSable River, 1973-1981 compared with 1996-1999 Escapement Catch from AuSable and Swan



Condition (Ktl) of Chinook, AuSable R. & Swan R. Escapement, 1970's compared with 1990's

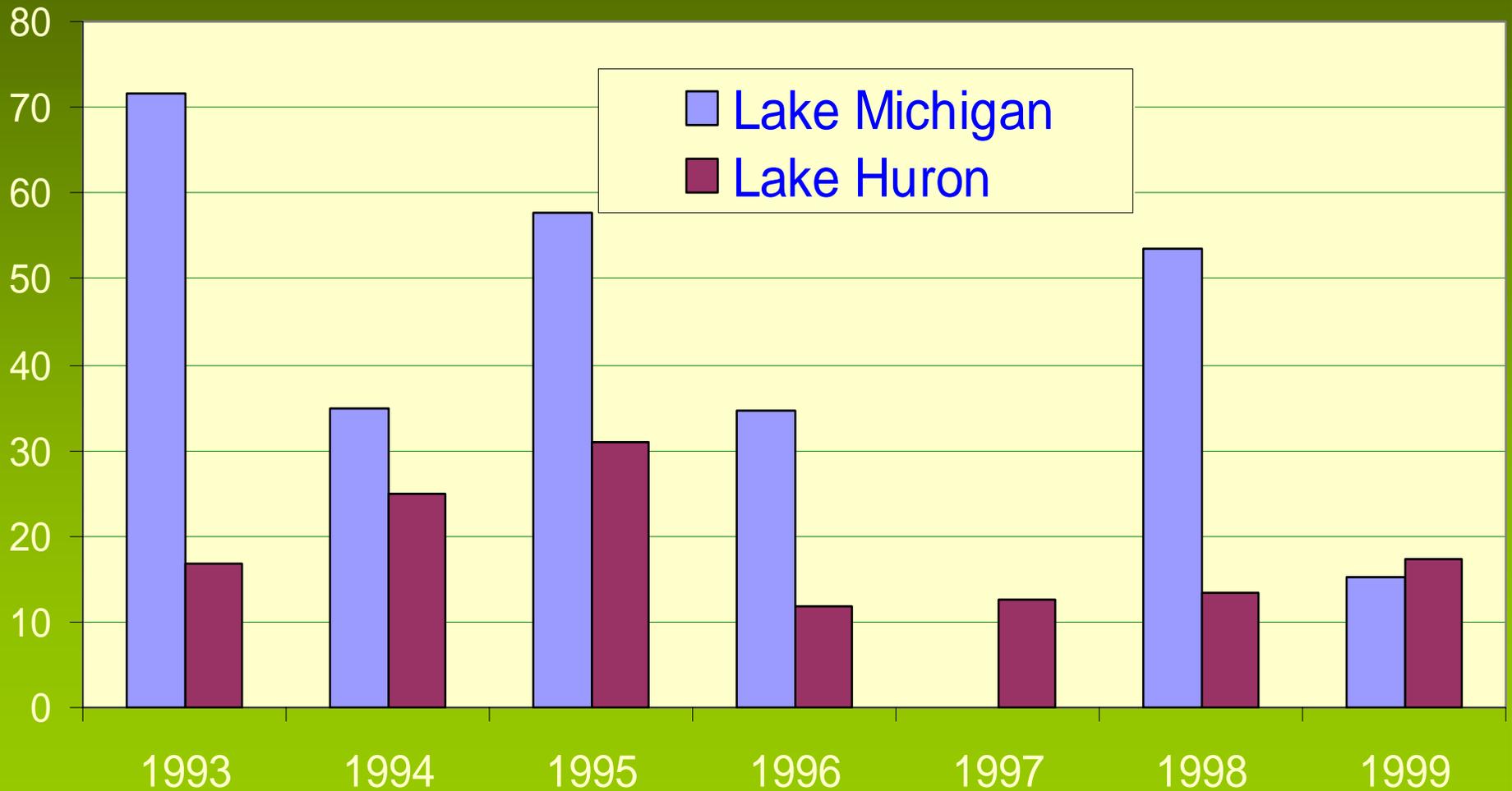


Chinook salmon mean weight (kg) at age 3 from Strawberry Creek wier, Lake Michigan and Swan & AuSable rivers, Lake Huron



Comparison of BKD positive fish sampled at spawning weirs from Lakes Michigan and Huron (using QELISA), 1993-99

Percent (+)



BKD random sampling from MDNR fish hatcheries
using DFAT on kidney smears 1995-99.

Year	Number of Positive Samples	Total Number Tested	Percent
1995	1	780	0.13%
1996	3	540	0.56%
1997	0	823	0.00%
1998	1	539	0.19%
1999	0	654	0.00%

Species include: Chinook and coho salmon, rainbow trout, steelhead

Data provided by John Hnath, MDNR

MANAGEMENT IMPLICATIONS



GAPS IN KNOWLEDGE

- Recruitment, especially from wild;
- Consumption and conversion efficiency rates; especially in winter;
- Site-specific post-stocking survival;
- Consequences of prey limitation:
 - on recruitment rates;
 - disease (BKD);
 - nutrition (EMS).

FUTURE DIRECTIONS

- Maintain 20% reduction in stocking;
- Continue site-specific marking & collections;
- Continue fall biological sampling;
- Start reproduction study (new):
 - mark all stocked chinooks;
- Encourage funding for archival depth & temperature tagging.

REPRODUCTION STUDY -LAKE HURON TECH. COMM.-

Objective: Determine rates of recruitment, especially from wild

- Experimental design (Done in June '00)
- Mark all chinook stocked 2000-2003
- Head-hunt during summer 2002-2006
- Fall escapement surveys 2003-2006

