

Current Status and Future of the Hudson River American shad stock

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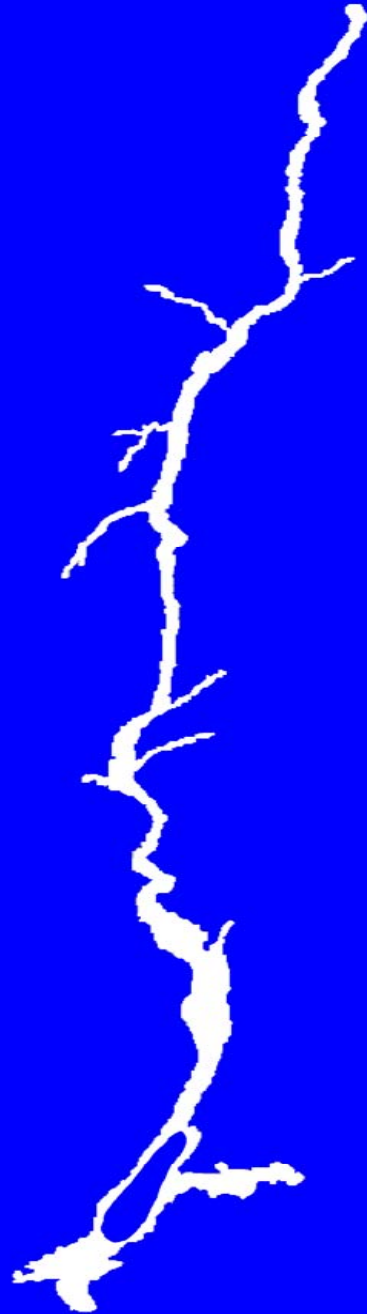
Life history

- **Young-of-year and immature fish**
 - Spend first summer in river
 - Move to near-shore ocean
 - Immature fish gradually join coastal migratory stock
- **Mature adults**
 - Return to natal river to spawn
 - Females ~ age 5-7, males ~ age 4-7
 - Oldest fish age 13
 - Ocean migration
 - Summer: Gulf of Maine to Bay of Fundy
 - Winter: coastal Virginia / Maryland

Spawning Nursery



Areas
used



152- Troy

140- Albany

111- Catskill

91- Kingston

60- Newburgh Bay

52- West Point

37- Haverstraw Bay

27- Tappan Zee

0- Battery

Verrazano Narrows

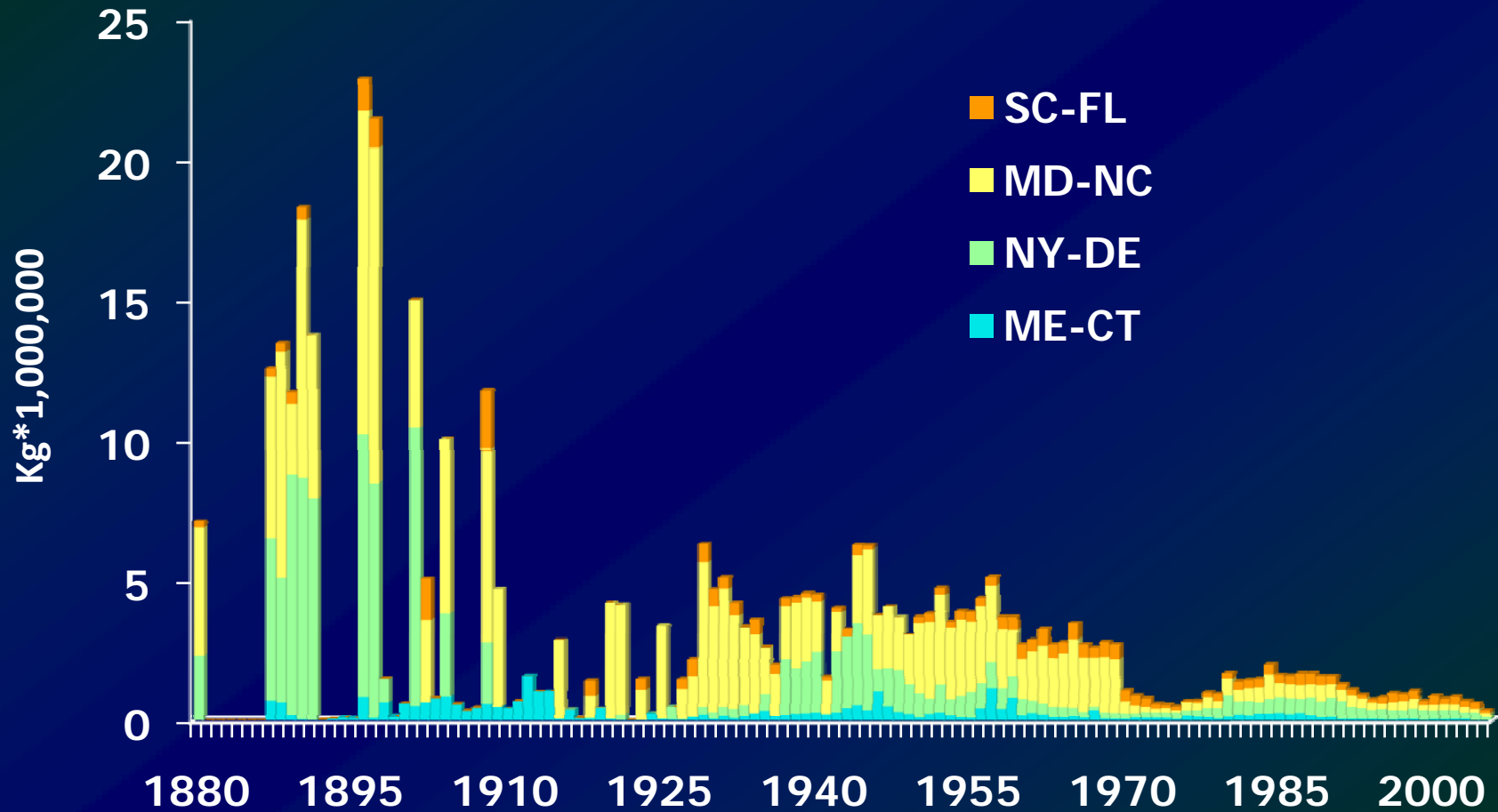
Recreational

Commercial

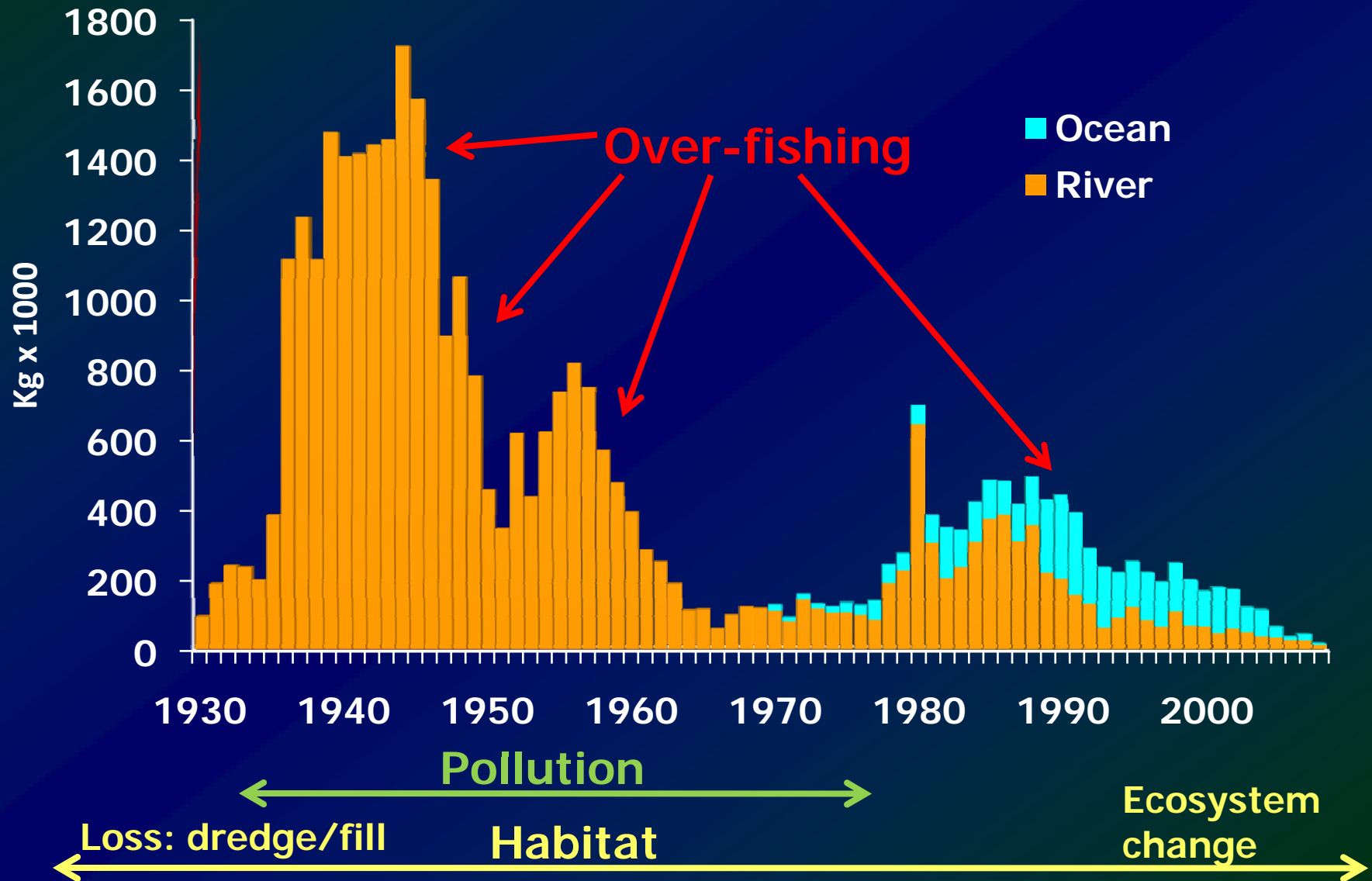
Fisheries



Coastwide Commercial Harvest American shad



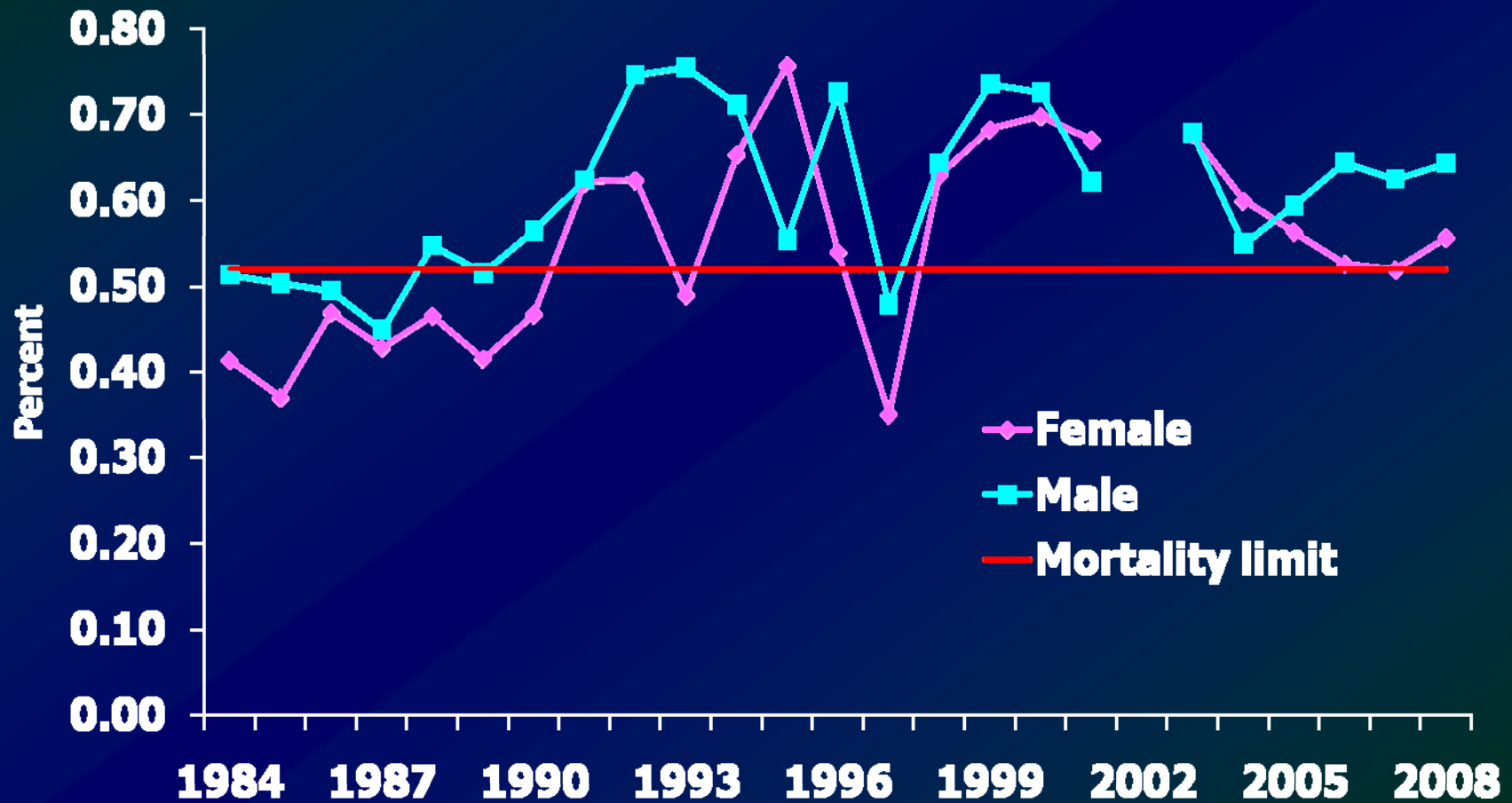
Hudson River Directed Commercial harvest



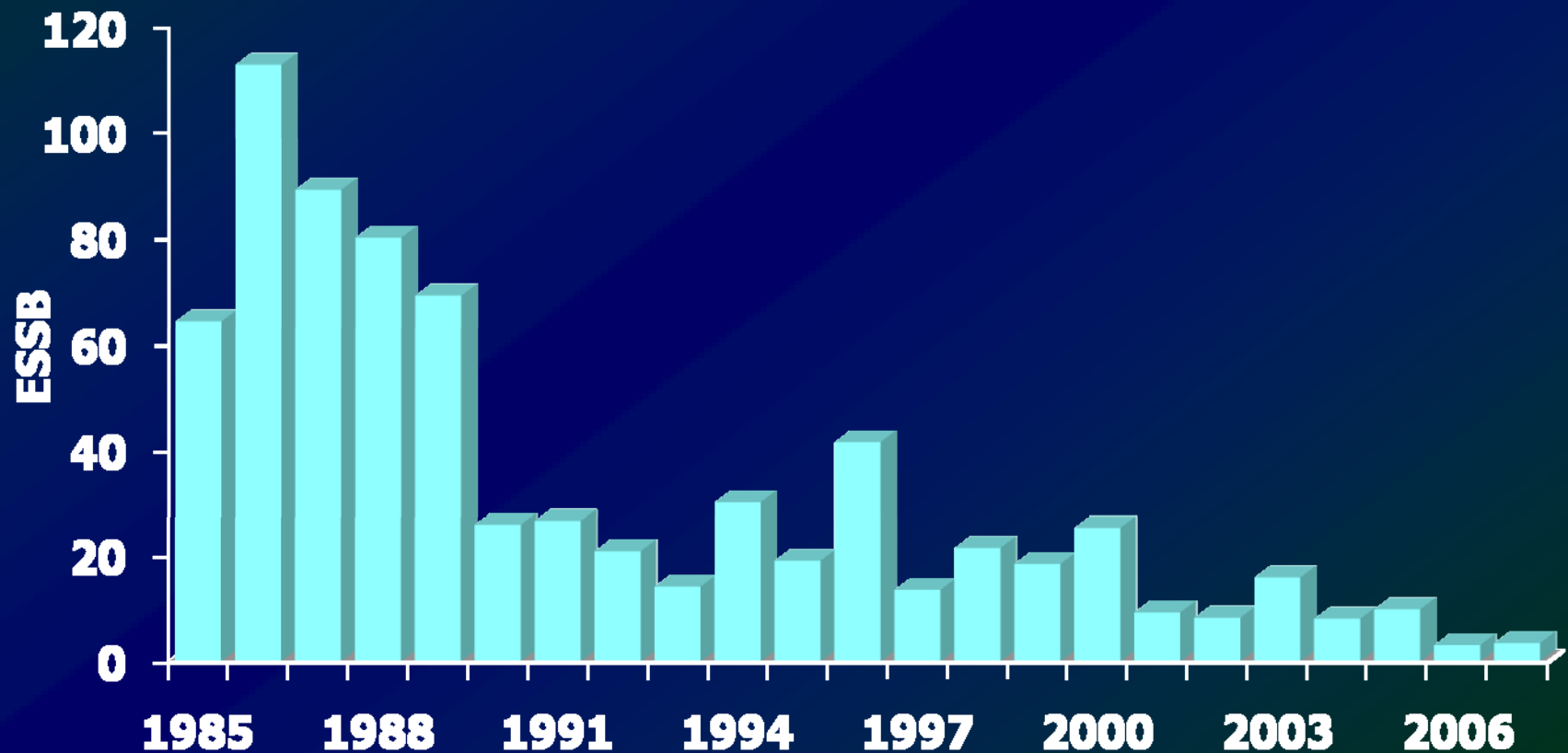
Current stock status

- We use monitoring data as indicators
 - Adult spawning stock
 - Juvenile survey
- Where we are: **Stock collapse**
 - Excessive adult mortality from fishing
 - Reduced adult abundance and size
 - Recruitment over-fishing
 - Too few adults = few young
 - Ecosystem effects
 - Zebras mussels depleted larval fish food supply

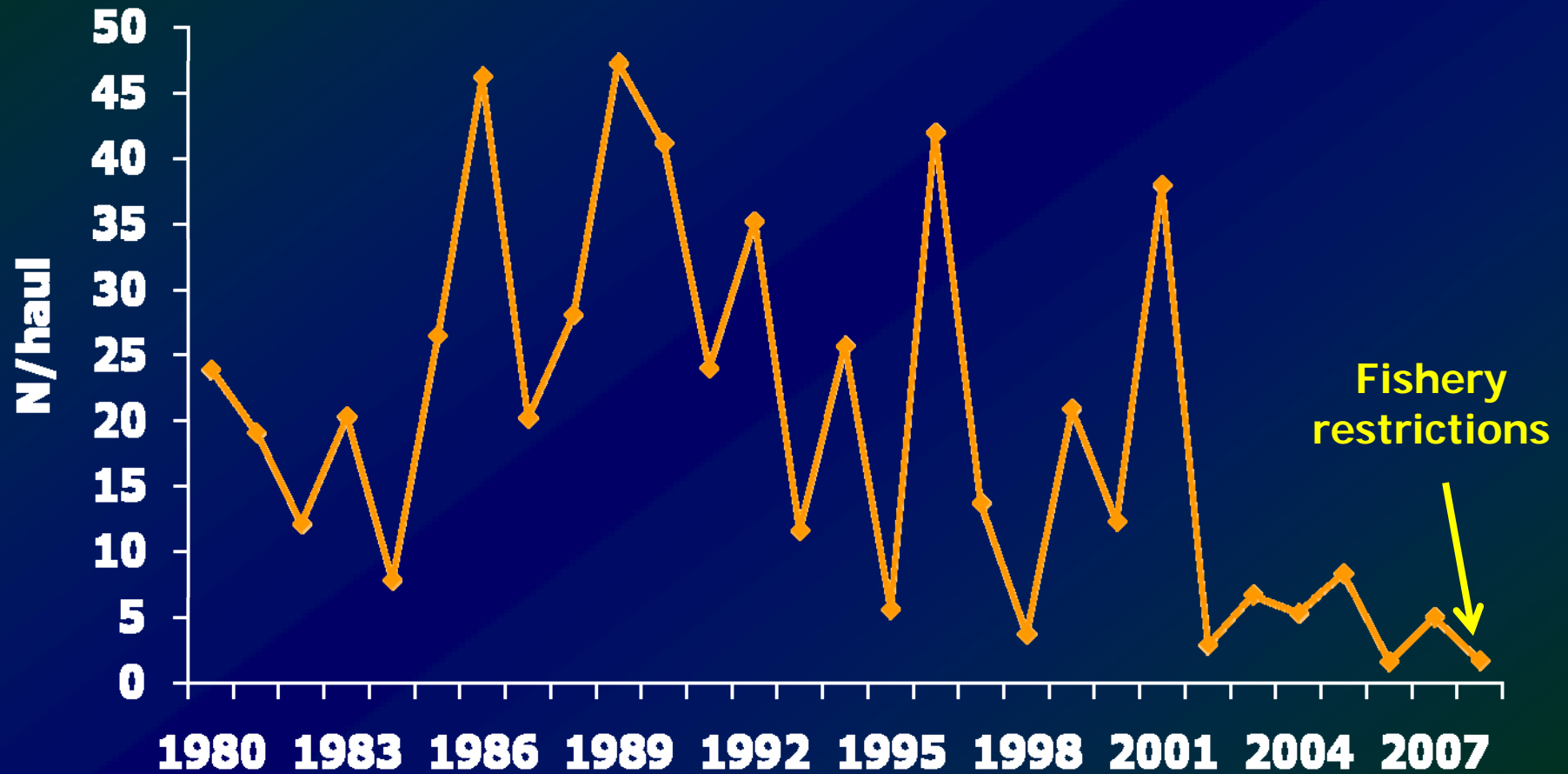
Adult mortality



Hudson Female Spawning stock biomass index



Relative abundance of juveniles (young-of-year)



Problem summary

- **Mortality on stock too high**
 - **Over-fishing**
 - Sources: river, ocean , bycatch
 - **Other**
 - Water intakes
- **Habitat change**
 - **Pollution**
 - **Loss from dredge/fill**
 - **Ecosystem alteration**
- **Fisheries management**
 - **1994, ACFCMA, focus on species like shad**
 - **1998, ASMFC Shad FMP Amendment 1**

Now & the future....

Hudson Shad Recovery Plan

- **Maintain monitoring programs**
- **Reduce mortality**
- **Identify & protect habitat**
- **Understand ecosystem change**

Now & the future....

Hudson Shad Recovery Plan

- **Maintain monitoring programs**
 - **Continue annual DEC monitoring**
 - **Adult spawning stock survey**
 - **Juvenile (young of year) survey**
 - **HR Generator Long River survey**
 - **Data for Spawning stock index**

Now & the future....

Hudson Shad Recovery Plan

- **Reduce mortality**
 - **Over-fishing**
 - Closed directed ocean
 - ASMFC Amendment 1, 2005
 - **Ocean Bycatch study**
 - **DEC in cooperation with ME & MA, 2009-2010**
 - **Stock identification of shad caught in Delaware Bay, 2009**
 - **Close state fisheries, 2010**
 - **Power plant entrainment & impingement**
 - **Ongoing permits – closed cycle or modifications**

Now & the future....

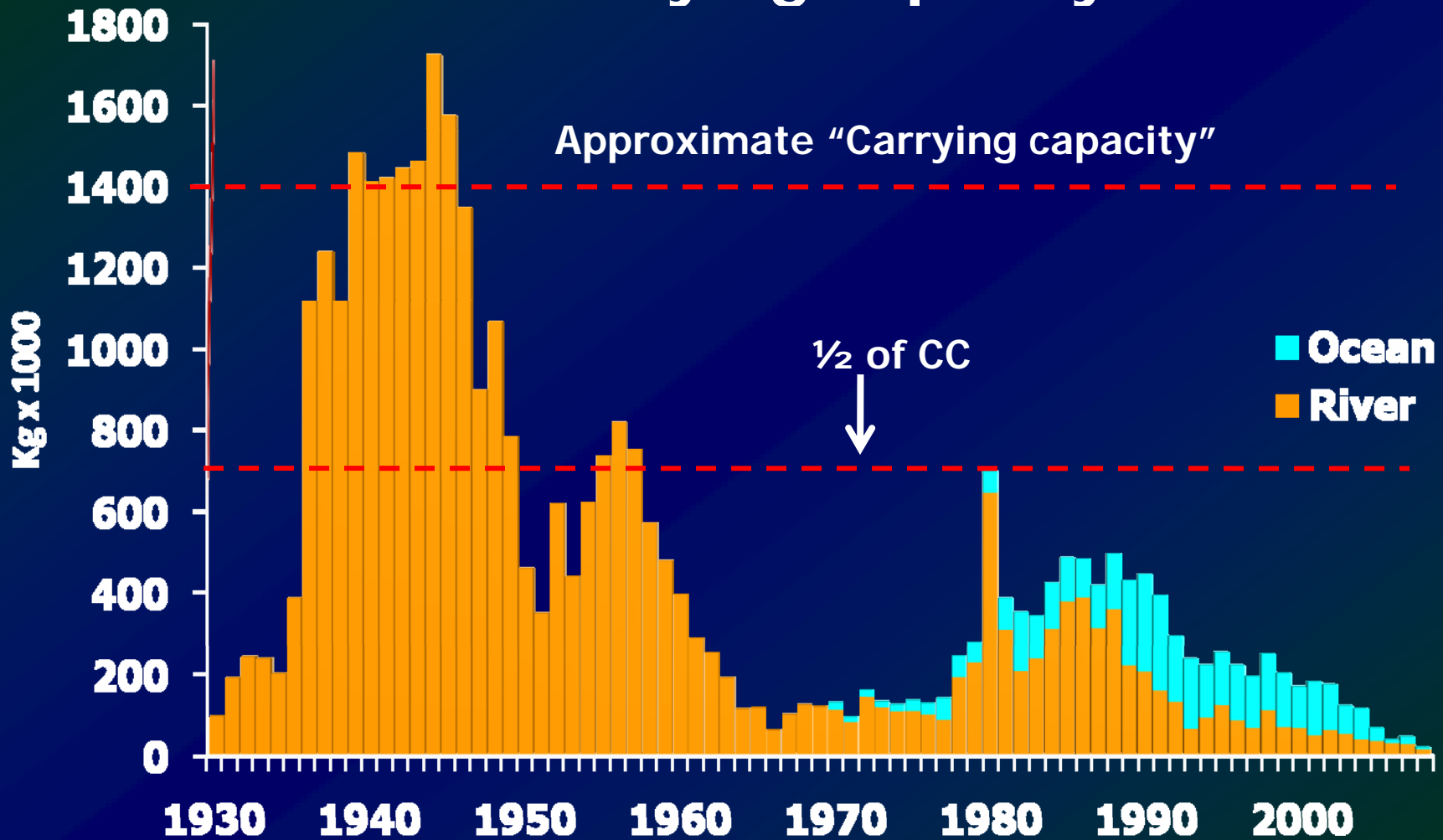
Hudson Shad Recovery Plan

- **Identify & protect habitat**
 - Spawning adult tracking project
 - HRFU 2009-2011
 - **Nursery habitat, 2010-2012**
- **Ecosystem change**
 - Predator-prey study 2008-2011
 - Freshwater and marine predators
 - Larval fish diet competition 2010-2012
 - Zebra mussel interactions

Setting fishery benchmarks *where the stock should be*

- **What will increase the stock**
 - Low annual mortality rates
 - Robust spawning stock index
 - Strong juvenile production
- **Need measurable targets**
 - Use historical monitoring data

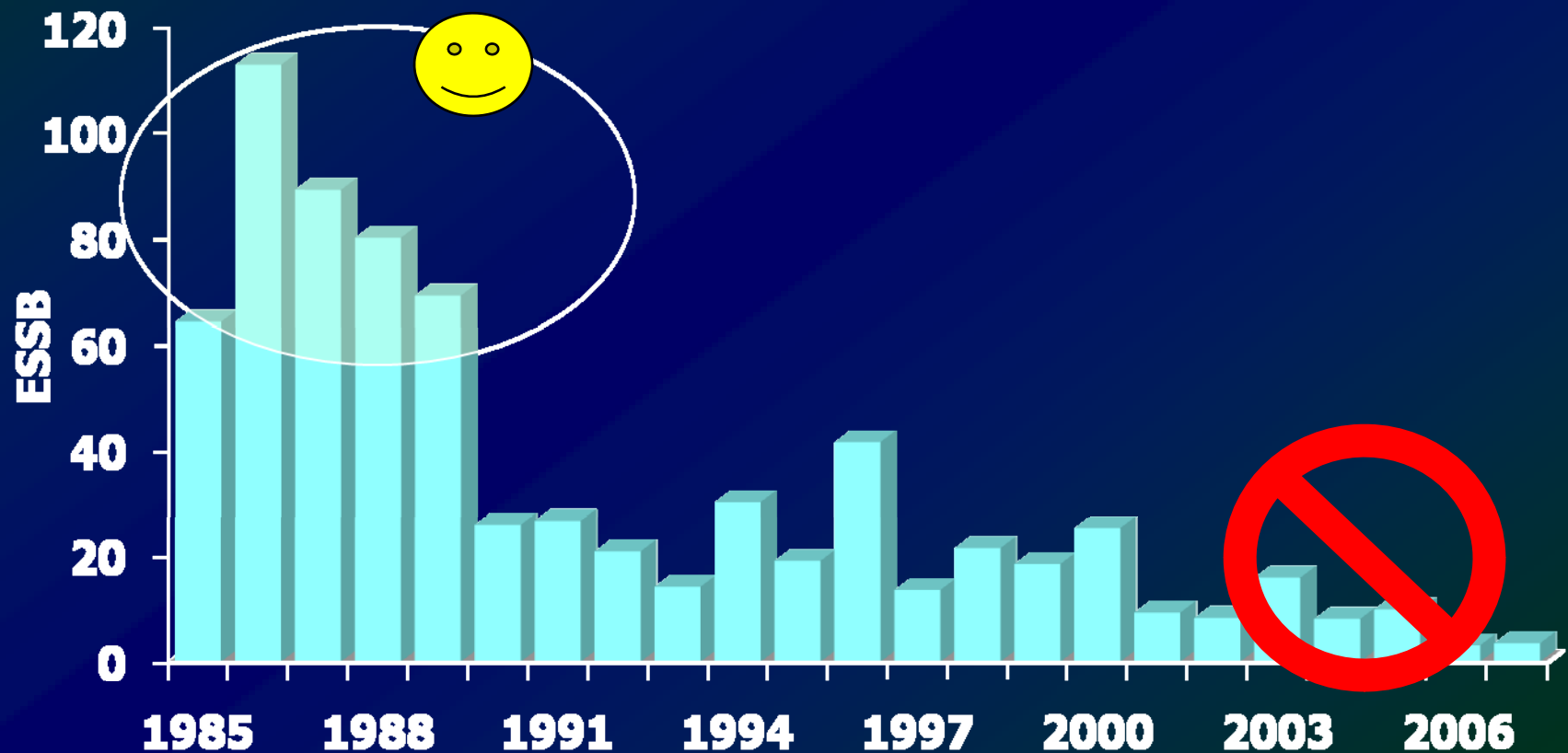
River harvest as proxy for "Carrying capacity"



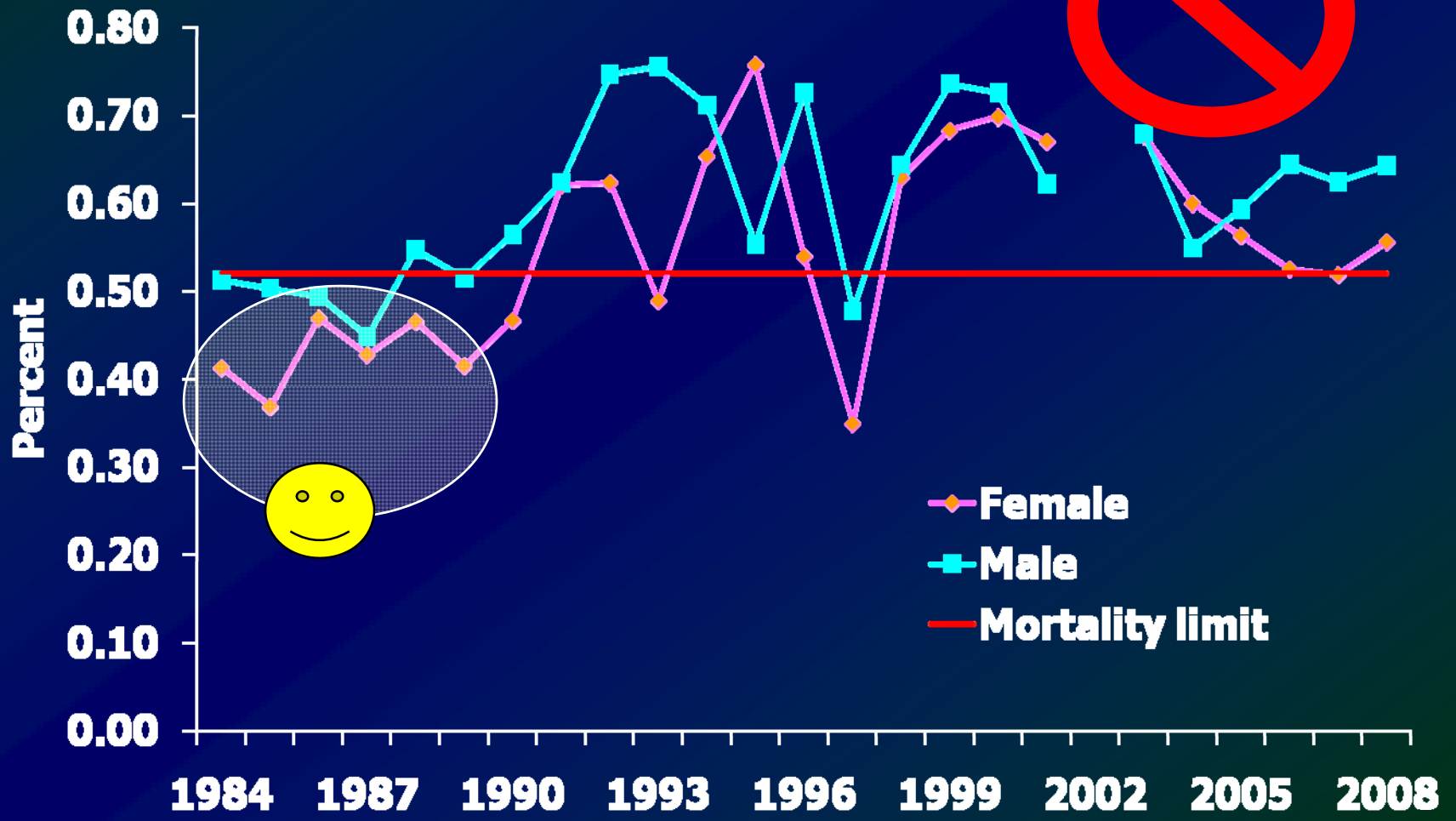
Setting benchmarks *where the stock should be*

- **Re-opening a fishery when stock size = $\frac{1}{2}$ carrying capacity**
 - End of habitat loss: 1930s-1940s
- **Measurable targets**
 - Stock size during 1985-1989
 - Just below $\frac{1}{2}$ carrying capacity
 - Use stock indices
 - Adult SSB, annual mortality & juvenile production
 - Multi- year running average of indices

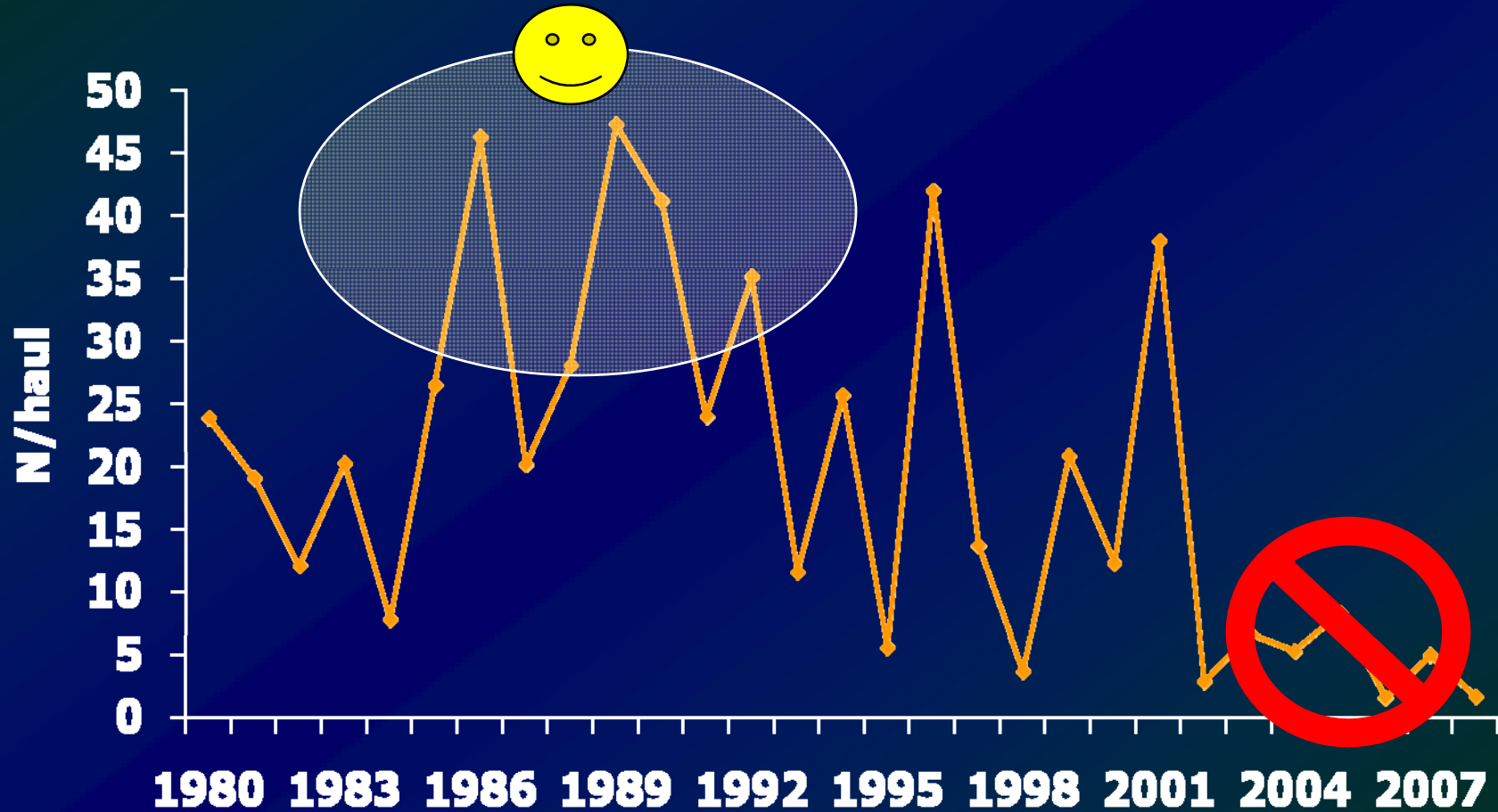
Hudson Female Spawning stock biomass index



Adult Annual Mortality



Relative abundance of juveniles (young-of-year)



Meeting Recovery Objectives

- **Implement Recovery Plan strategies**
 - Maintain monitoring programs
 - Reduce mortality
 - Identify & protect habitat
 - Understand ecosystem change
- **How long will it take?**
 - Annual evaluation
 - Females mature ~ 5 to 7 years
 - All that's left to rebuild the stock - 8 yrs poor juvenile production

Interstate management

Atlantic States Marine Fisheries Commission

- **Draft Amendment 3- Shad**
 - **Implement 2007 coast wide stock assessment recommendations**
 - **Will set fishery management standards**
 - **Public hearing**
 - **East Greenbush NY Community Library**
 - **September 28, 2009, 7 pm**

Regulatory time table

(* estimated start date)

5 Oct 2009*	Submit Notice of Proposed Rule making (NPR) package for DEC internal legal review
3 Nov 2009	File NPR with Dept of State
18 Nov 2009	Published in State Register Opens 45 day Public comment period Public hearing in December
4 Jan 2010	45 Day Public comment period closes
4-18 Jan 2010	Compile Assessment of Public Comment (APC), prepare Notice of Adoption (NOA)
18 Jan 2010	Submit NOA and APC for internal DEC review
16 Feb 2010	File NOA with Dept of State
3 Mar 2010	Published in State Register, rule adopted

Recent Kill, in numbers, of Hudson River American shad (2007-08 average)

- **River commercial fishery :** 7,100
- **River recreational fishery:** 605
- **NY Ocean comm. bycatch:** 435
- **Del. Bay comm. Fishery:** 5,500
- **Ocean bycatch:** ?



**Questions?
Please contact the
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or

phone: 845-256-3071