Status, trends, and long-term monitoring of the Lee's Ferry Tailwater Fishery, 1991-2002

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ROADMAP

- Objectives
- Study Reach
- Methods
  - –Electrofishing
  - –Creel/Angler Interviews
- Results
- Conclusions

OBJECTIVES

- Examine CPE, Kn, and PSD trends from past to present through electrofishing and creel data
- Explain trends in relation to inception of higher minimum and more stable flows during interim and Record of Decision flow regimes

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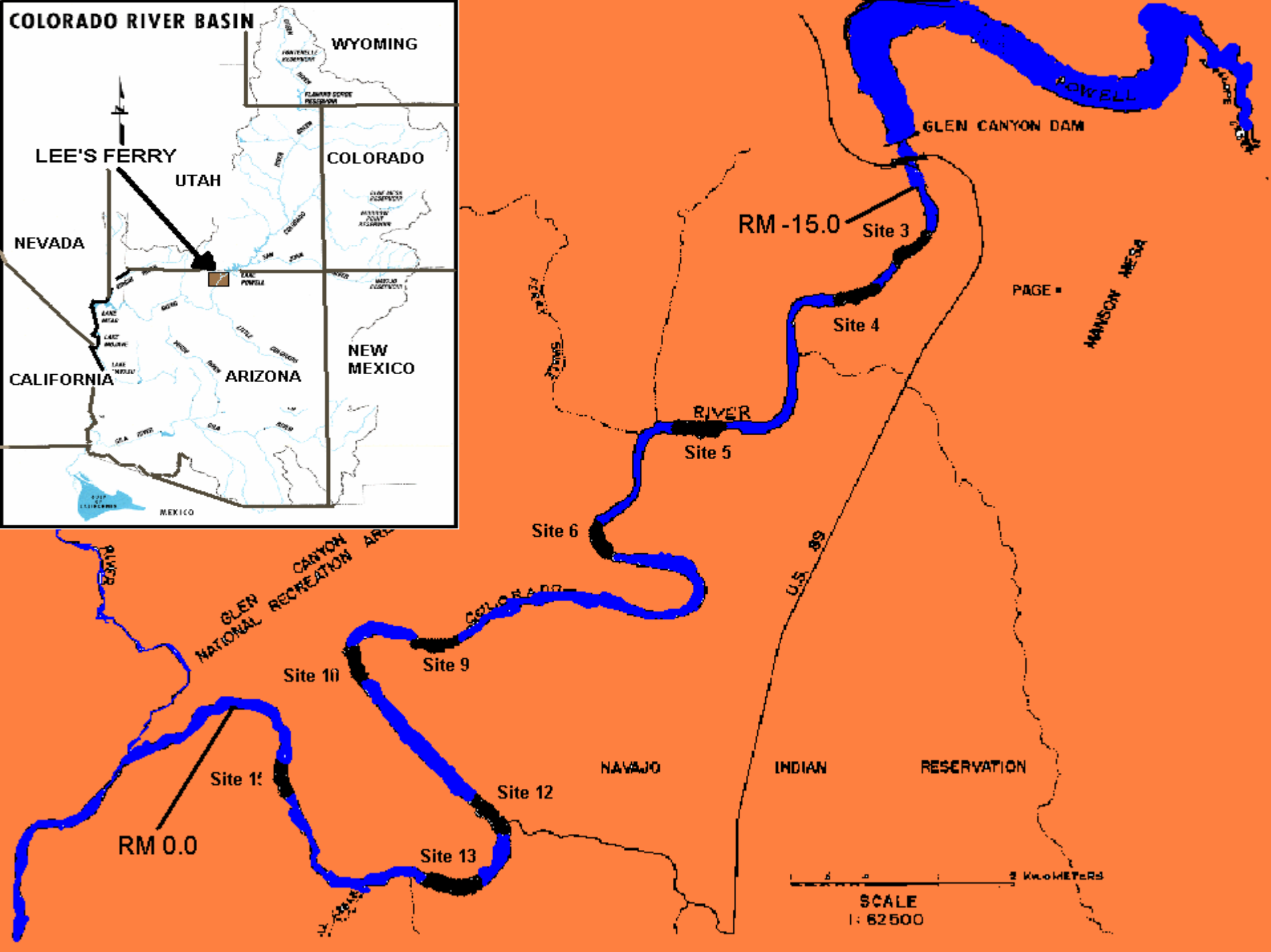
SITE OVERVIEW

- Lee's Ferry is a clear, cold water, 26 km stretch below Glen Canyon Dam
- Trout introduced in 1964
  - initially put-and-take fishery
  - managed as a Blue Ribbon trout fishery since 1981
- Annual visitation of 22,000
- Several million dollars in annual revenues


COLORADO RIVER BASIN
WYOMING
LEE'S FERRY
UTAH
COLORADO
NEVADA
CALIFORNIA
ARIZONA
NEW MEXICO
MEXICO
POWELL
GLEN CANYON DAM
RM -15.0
Site 3
Site 4
PAGE
MANSON MESA
RIVER
Site 5
Site 6
GLEN CANYON NATIONAL RECREATION
Site 9
Site 10
Site 12
Site 13
RM 0.0
NAVAJO
INDIAN
RESERVATION
U.S. 89
SCALE
1:62500

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ELECTROFISHING METHODS

- Electrofishing samples conducted after dark using a hard-hulled aluminum jonboat (1991-2000) or inflatable rafts

CREEL INTERVIEWS

- Interviews conducted several times per month since 1981
- Interviews are conducted at the boat launch as it is the only major access point to the entire fishery

ANALYSES

- CPE: RBT Catch per minute in electrofishing data;
  RBT Catch per Angler hour in creel surveys

- Kn: Relative Condition Factor; defined by:

  $$Kn = \text{weight} / 10^{(-4.6 + 2.856\log10(\text{length}))}$$

- PSD: Proportional Stock Density; defined by:

  $$PSD = (\ \#\ \text{Trophy Fish} / \#\ \text{Stock Fish}) \times 100$$

  (> 406mm TL) (> 305mm TL)

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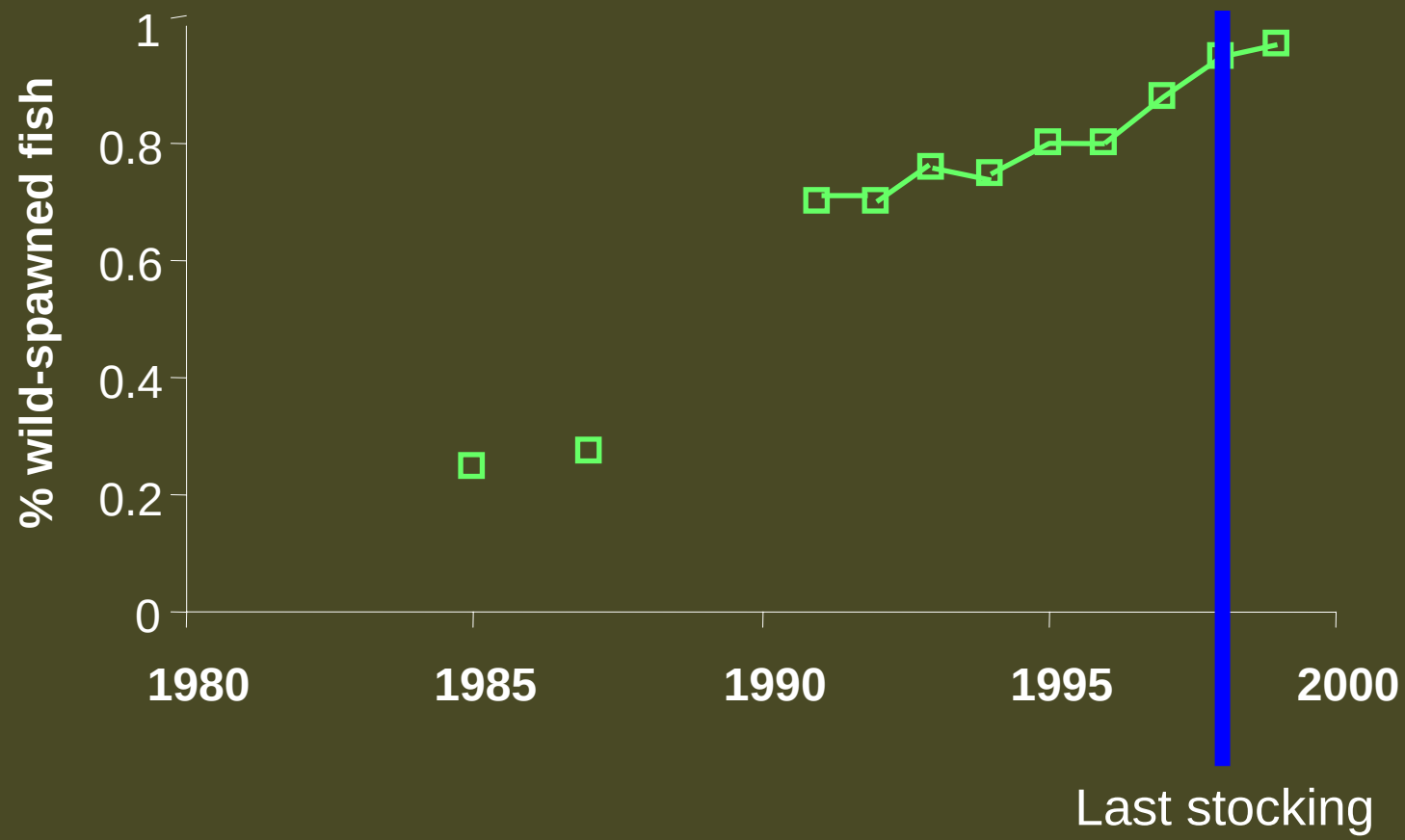
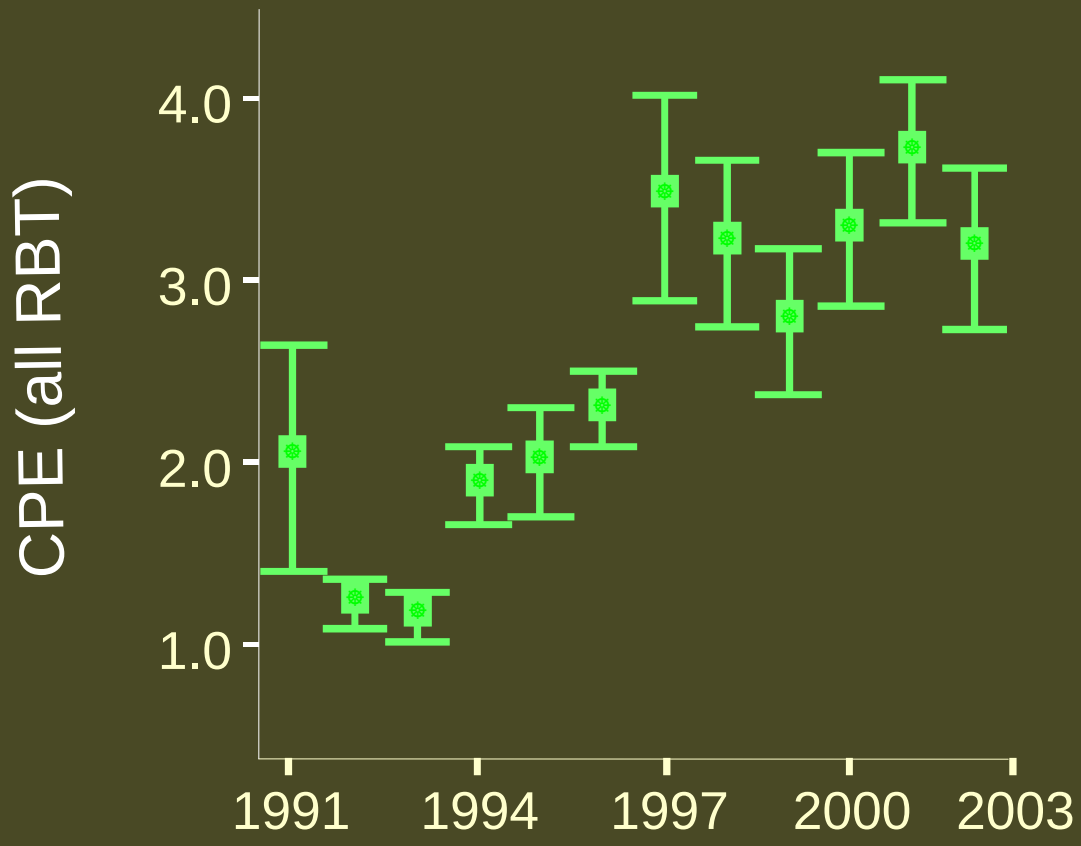
MEAN MONTHLY RELEASES FROM GLEN CANYON DAM, 1965 - 2002

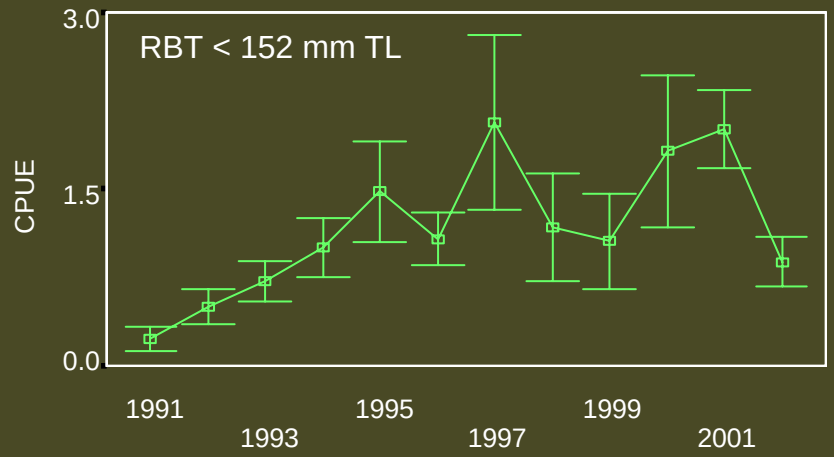
Natural Spawning in Lee's Ferry Reach

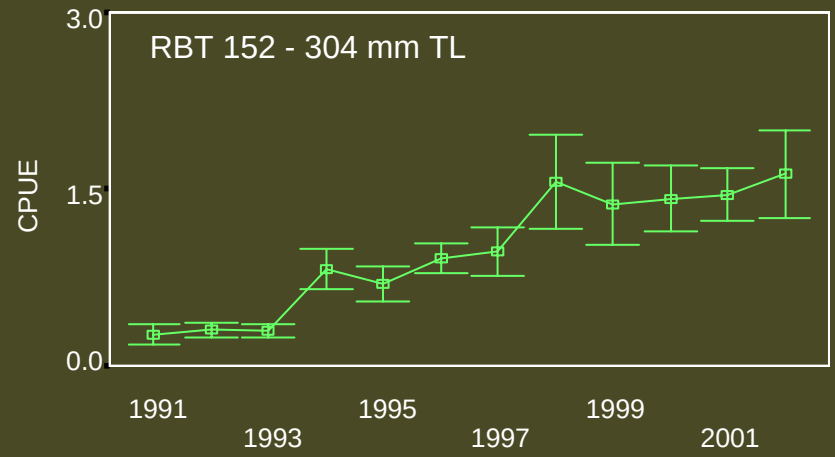


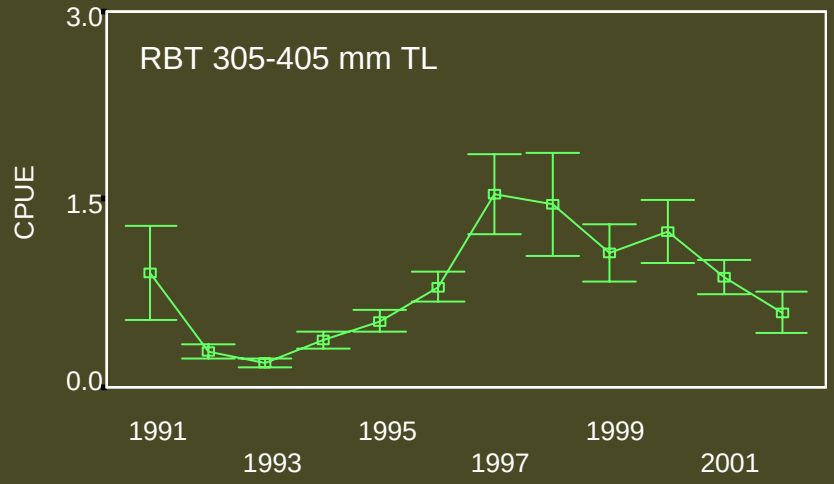
ELECTROFISHING CPE

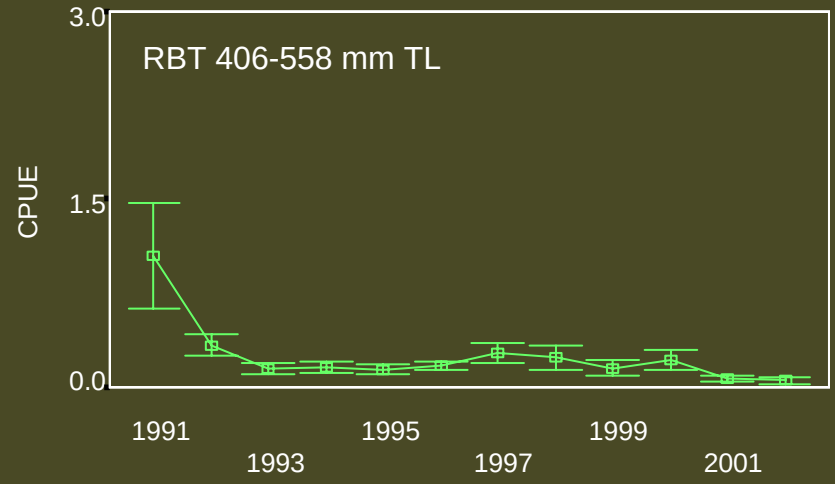


ELECTROFISHING CPE

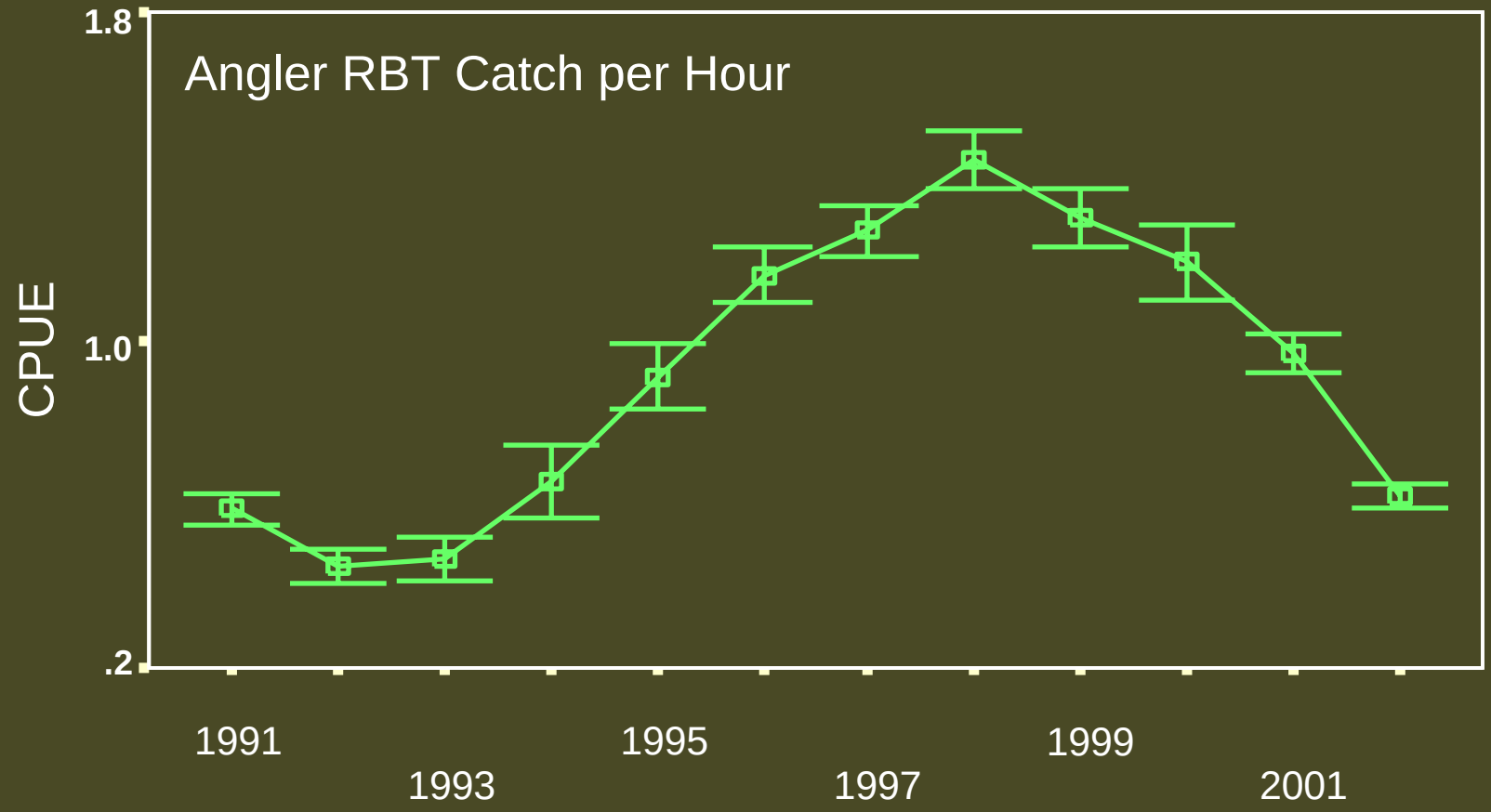






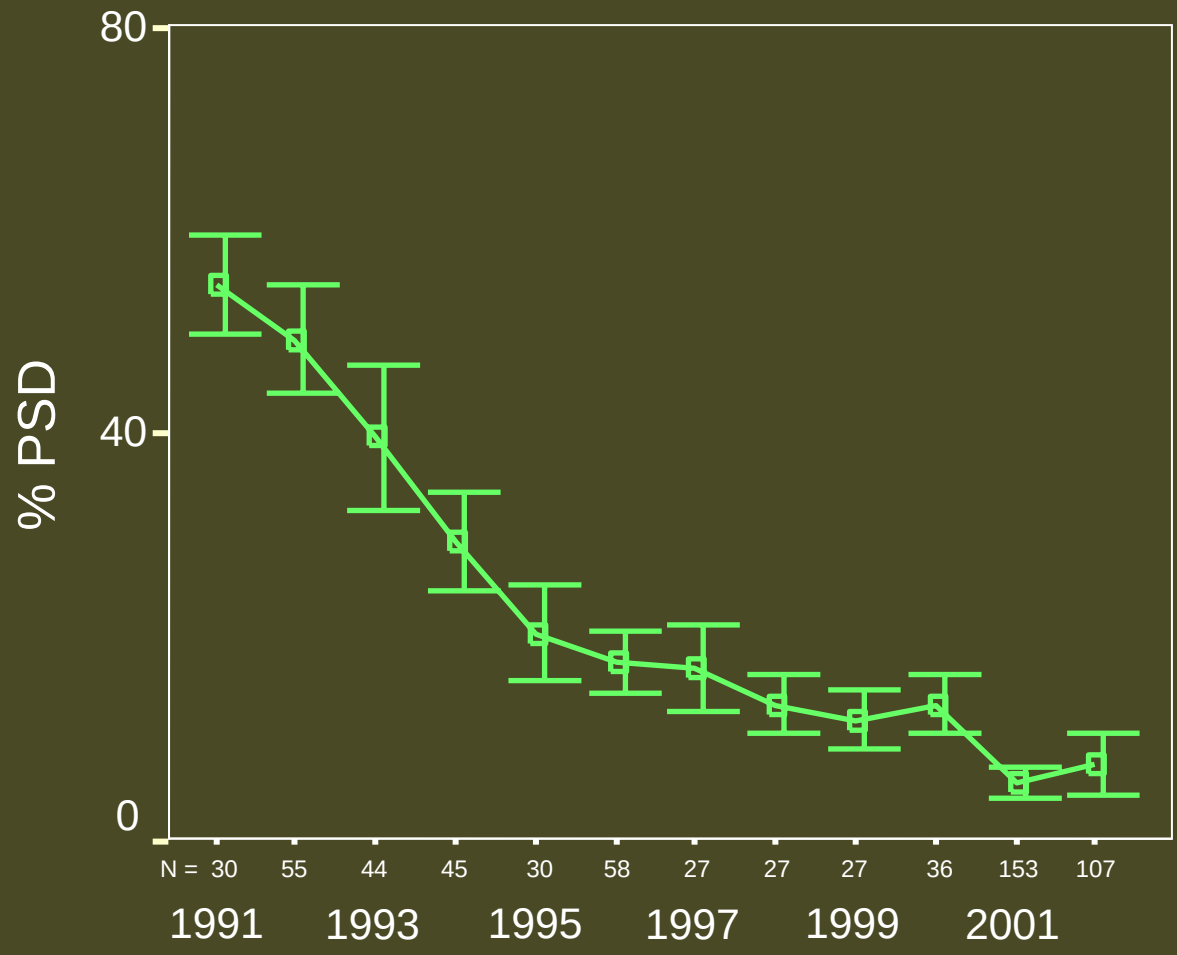


ANGLER CPE

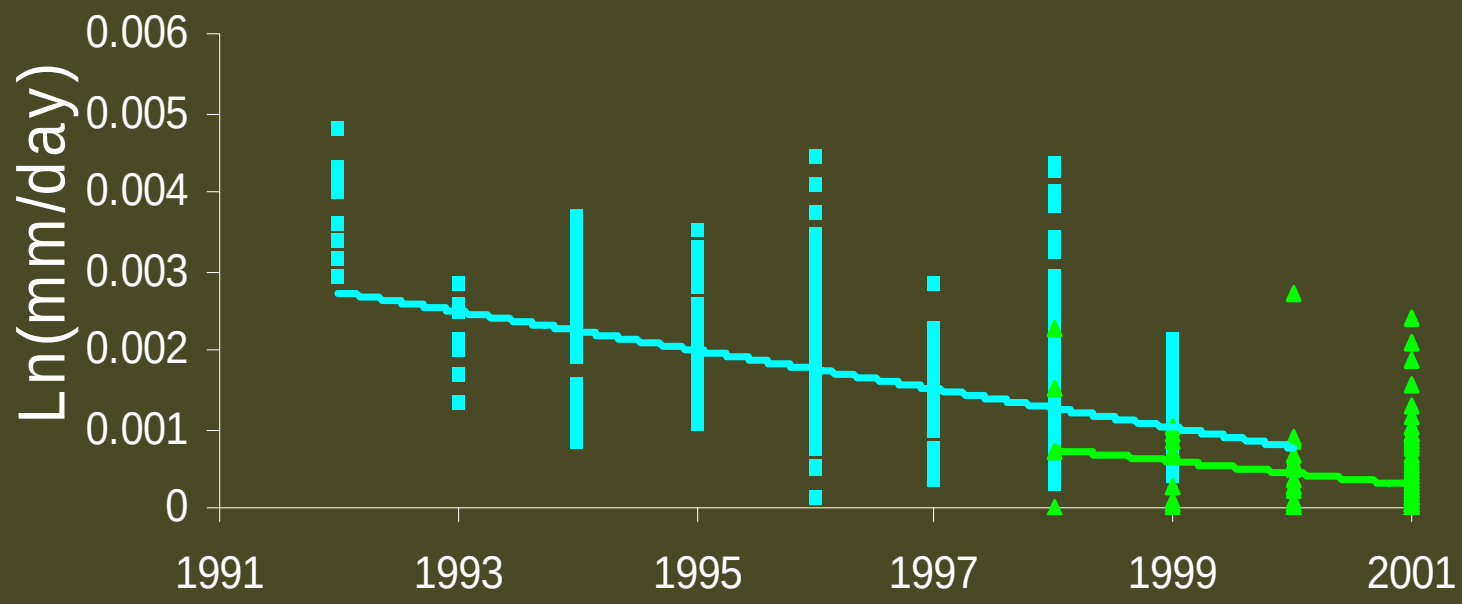

Angler RBT Catch per Hour
CPUE
1.8
1.0
.2
1991
1993
1995
1997
1999
2001

PSD

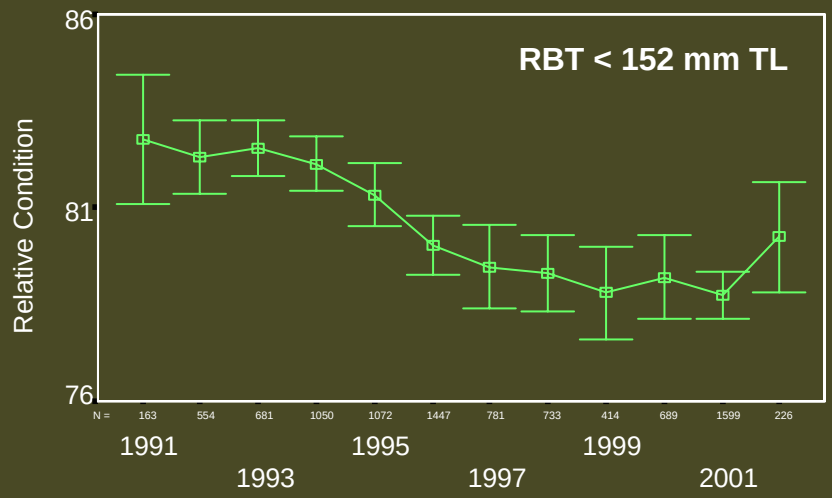
(# Trophy fish / # Stock fish) x 100

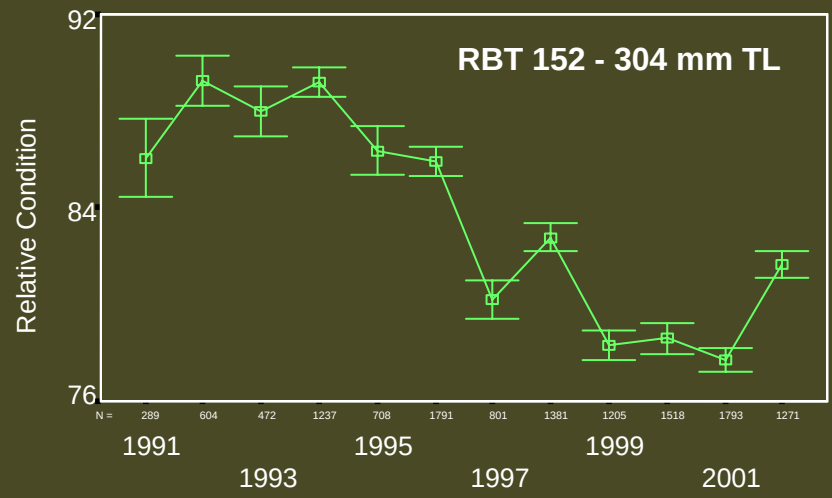


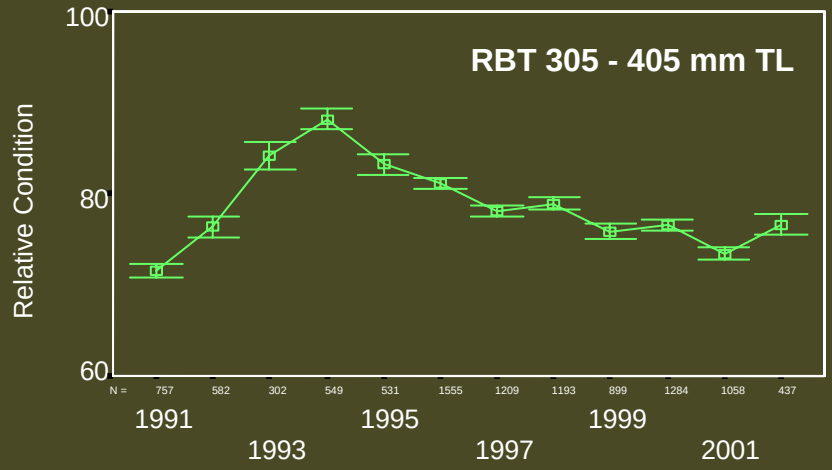
Instantaneous Growth

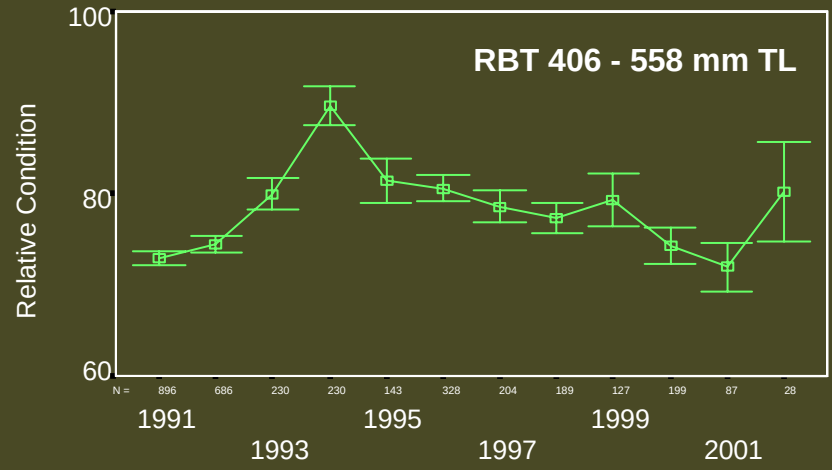


Age Class Relative Condition

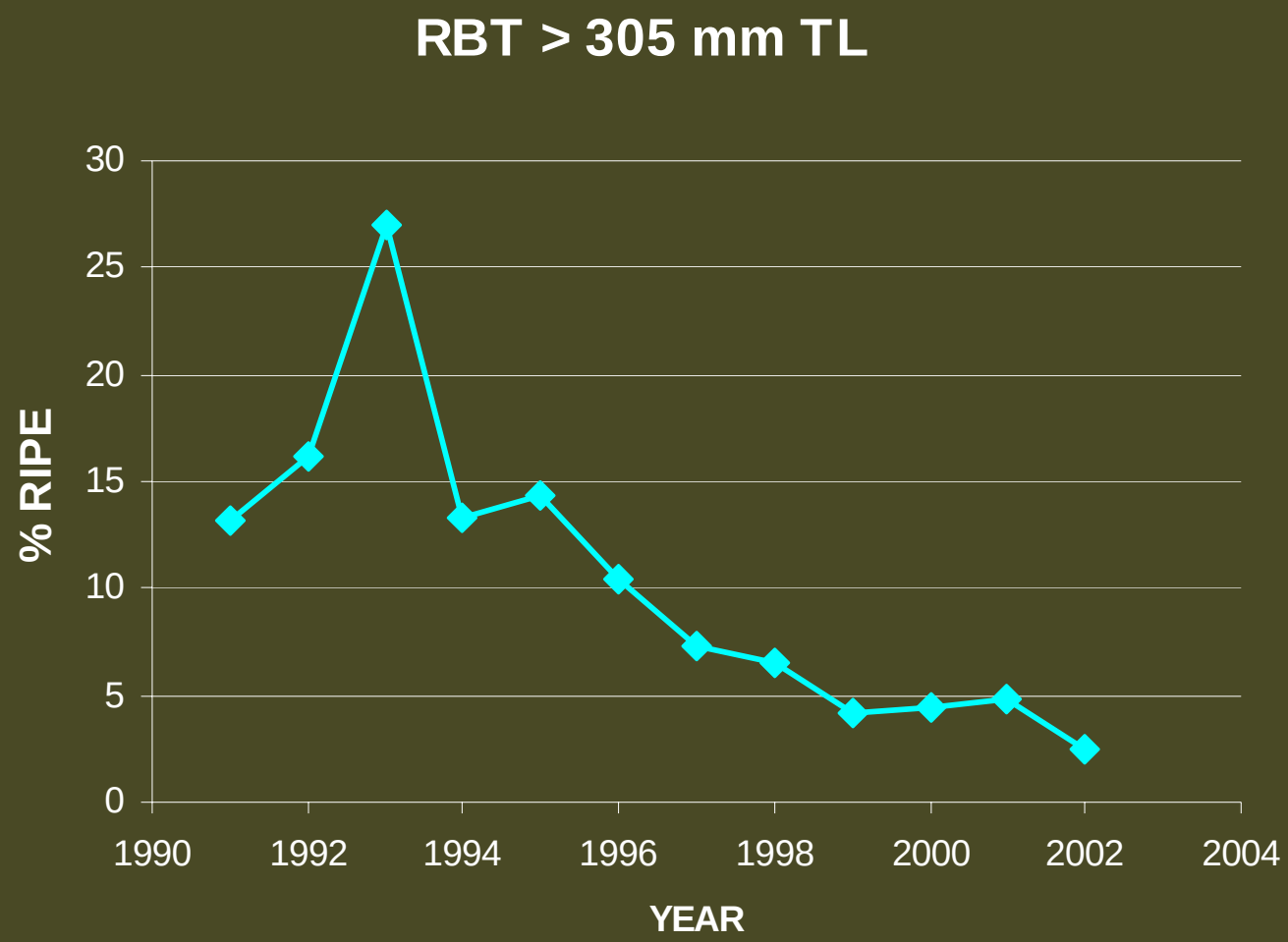




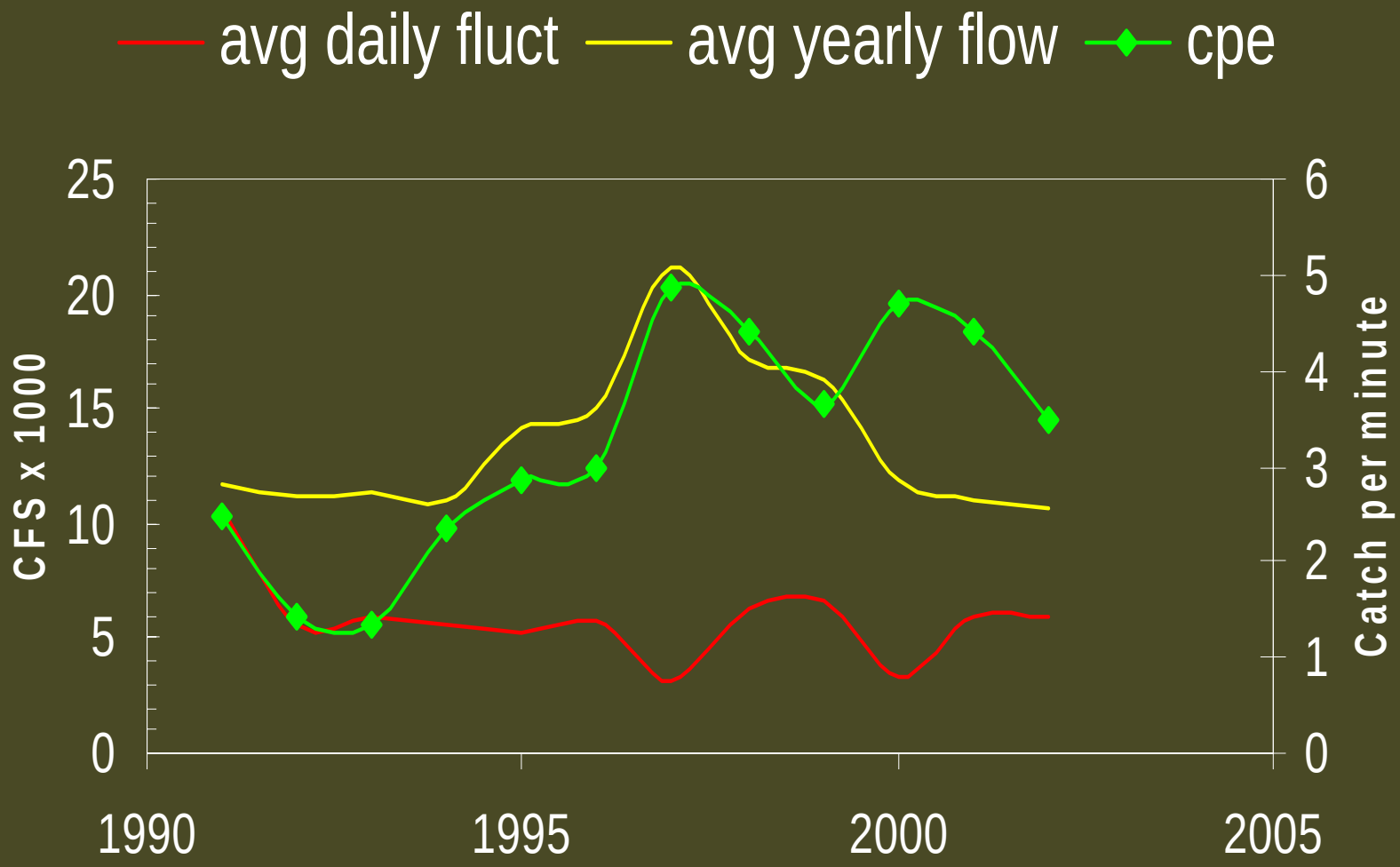




Adult Ripeness



Fishery Response to Flow Regime



RESULTS SUMMARY

- CPE of small fish (< 305 mm TL) has increased while CPE of large fish (> 305 mm TL) has declined
- Growth rates have declined with increasing density.
- PSD indicates an over-abundance of juvenile fish which may describe declines in ripeness and angler CPE
- Recent increase in relative condition across all size classes (since 2001; may be due to lower fish densities and/or decreased spawning activity)

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CONCLUSIONS

- Flows control densities → densities control growth and condition → growth and condition determine angler success and satisfaction

- Fluctuating flows are currently underway to further limit RBT recruitment in the Lee's Ferry tailwater. By controlling recruitment, we hope density-dependent constraints on growth will be lessened.

- Continuation of ongoing long-term monitoring activities (electrofishing & creel) gives us the ability to document the impact of these fluctuating flows on RBT.