

Draft Presentation  
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Does not represent  
final NOAA Decision/Policy.  
5/3/08

## **J: SNE/MA Winter flounder**

### **Fishery dependent**

- **Commercial Landings**
- **Commercial Discards**
- **Recreational Landings**
- **Recreational Discards**

### **Fishery Independent**

- **NEFSC winter, spring, and fall**
- **MADMF spring**
- **RIDMF spring**
- **CTDEP spring**
- **NJDFW ocean and river**
- **Recruits: MA, RI, CT, NY, DE**

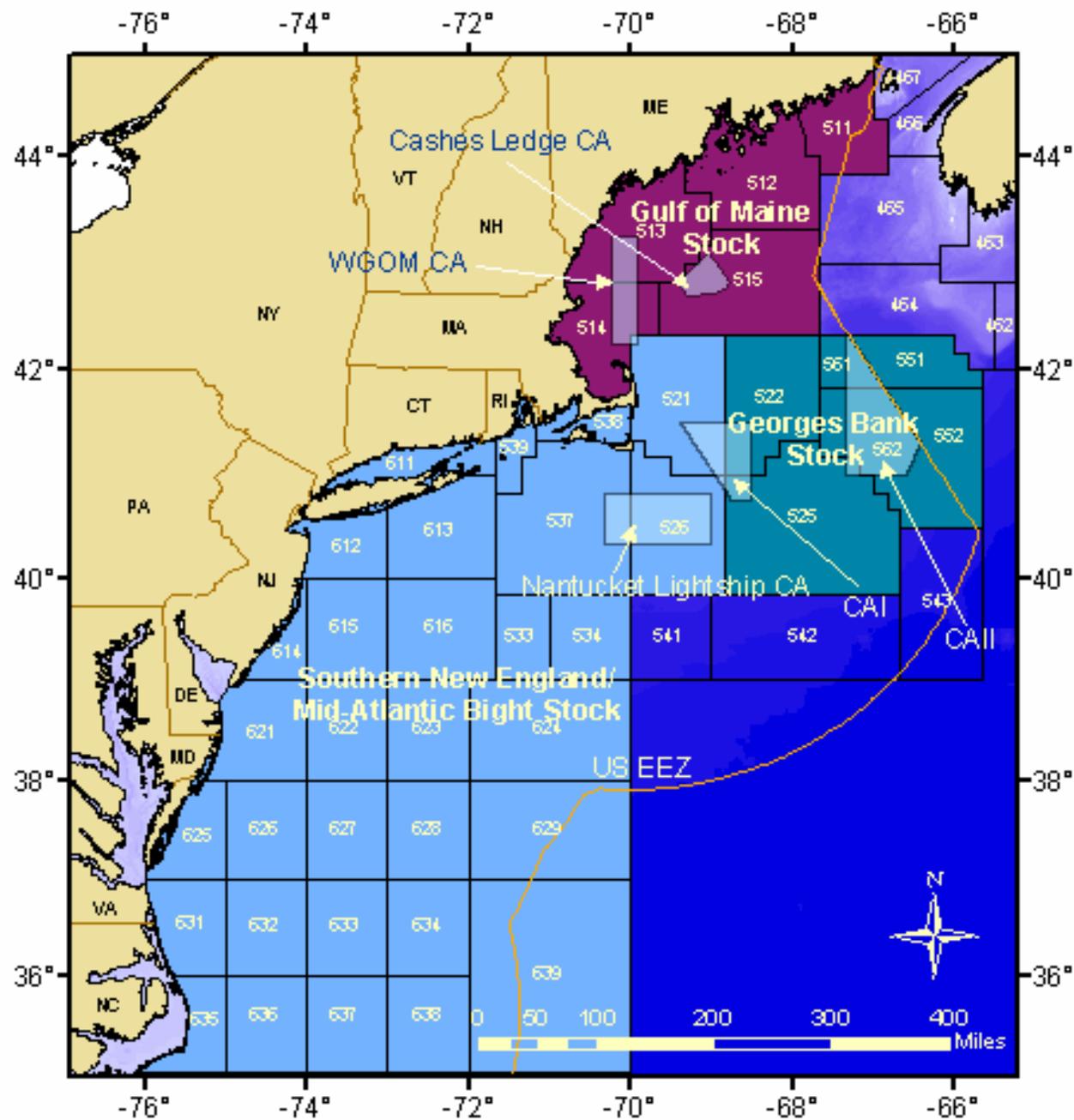
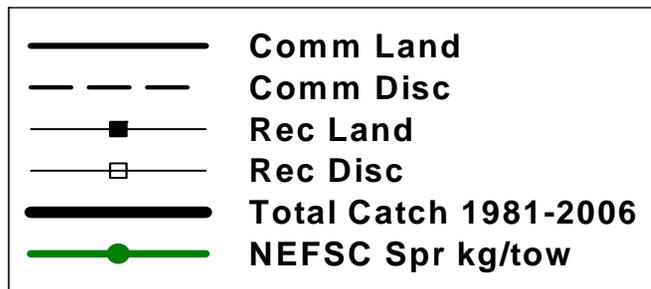
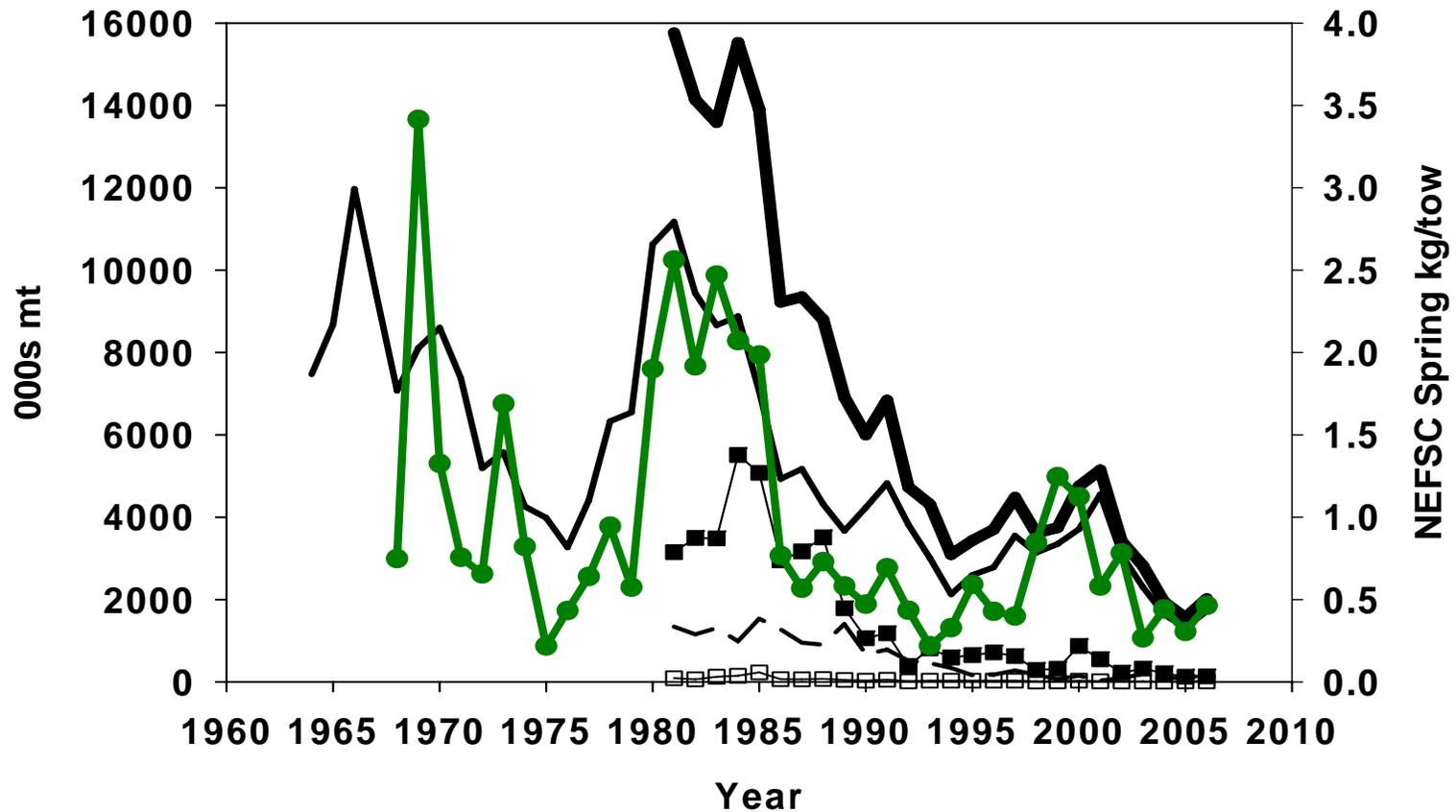
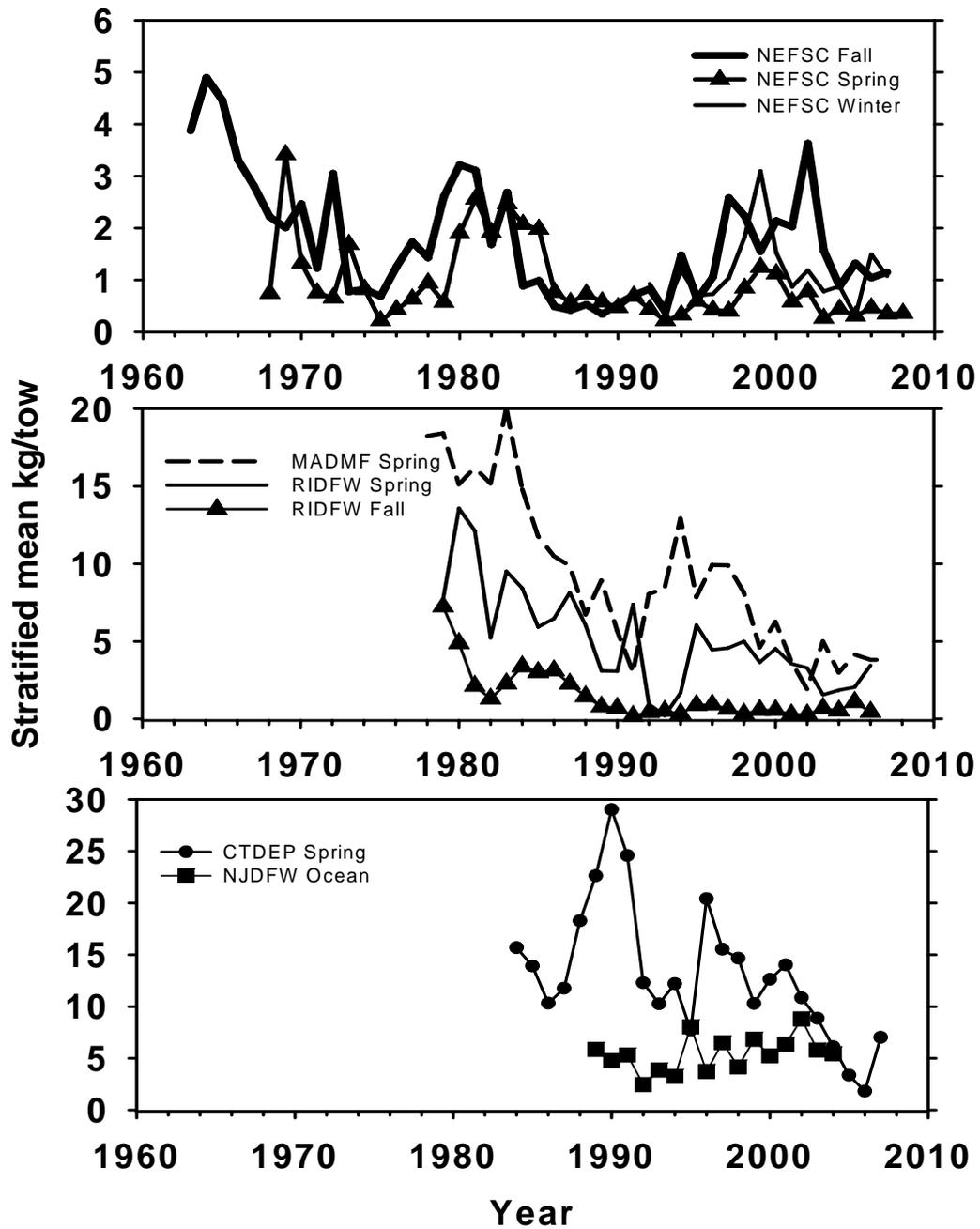


Figure 11.1. Statistical areas used to define the Gulf of Maine, Georges Bank, and Southern New England/Mid-Atlantic Bight winter flounder stocks.

# SNE/MA Winter Flounder Landings and Discards



# SNE/MA Winter Flounder Survey Biomass Indices



# **J: SNE/MA WFL**

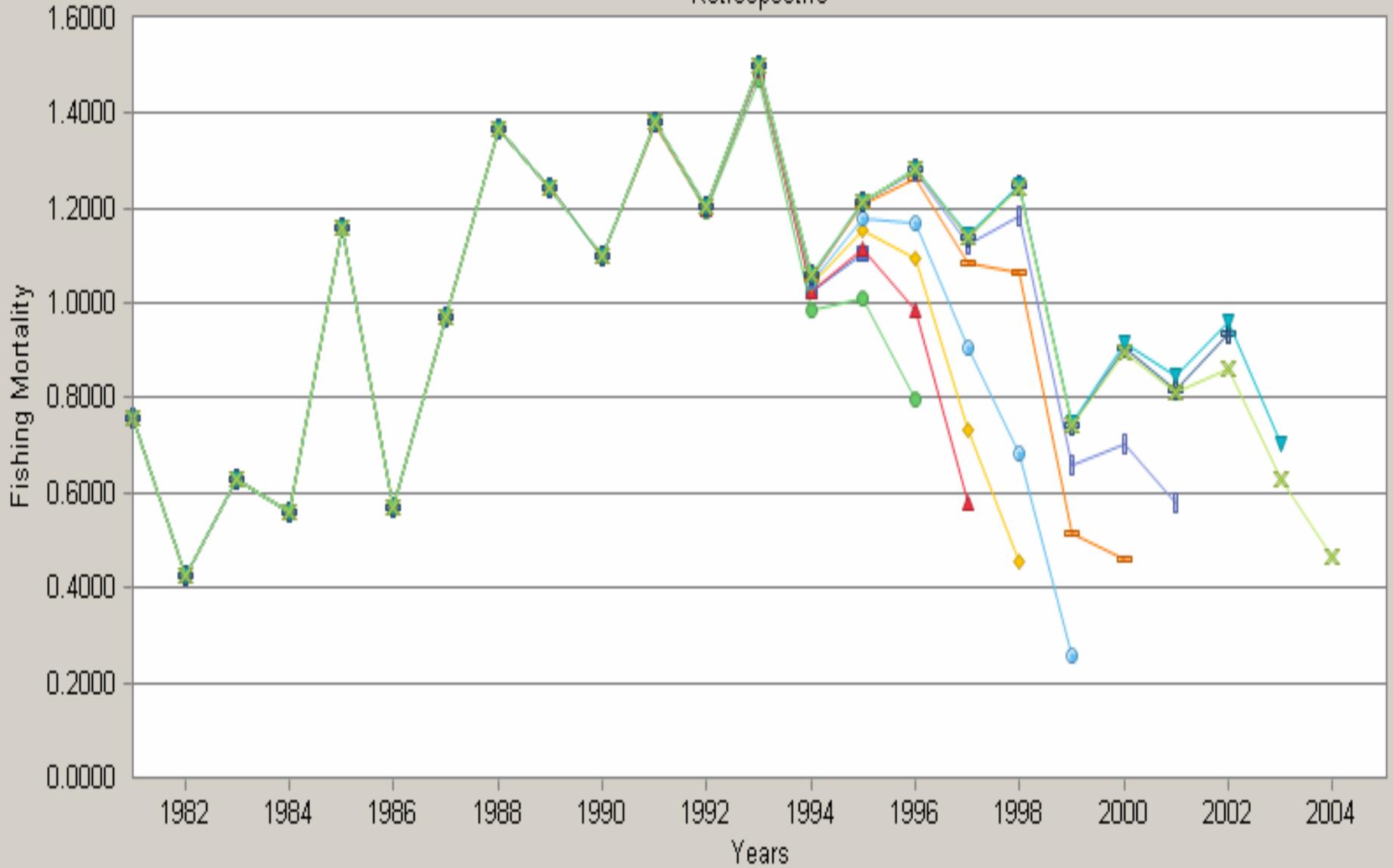
## **GARM 3 Modeling Panel**

- **Reviewed GARM 2 VPA (thru 2004) and same data in ASAP**
- **Both GARM2 VPA and ASAP exhibited retrospective pattern in late 1990s thru 2001**
- **Modeling Panel recommended update VPA thru 2006, check for continuing retrospective pattern**
- **If retro persists, split survey series at 1993/1994 (comm. discard method, comm. reporting)**

**J: SNE/MA WFL**  
**GARM 2 VPA: 1981-2004**  
**Reviewed by GARM 3 Model Panel**

# Average F 4-5

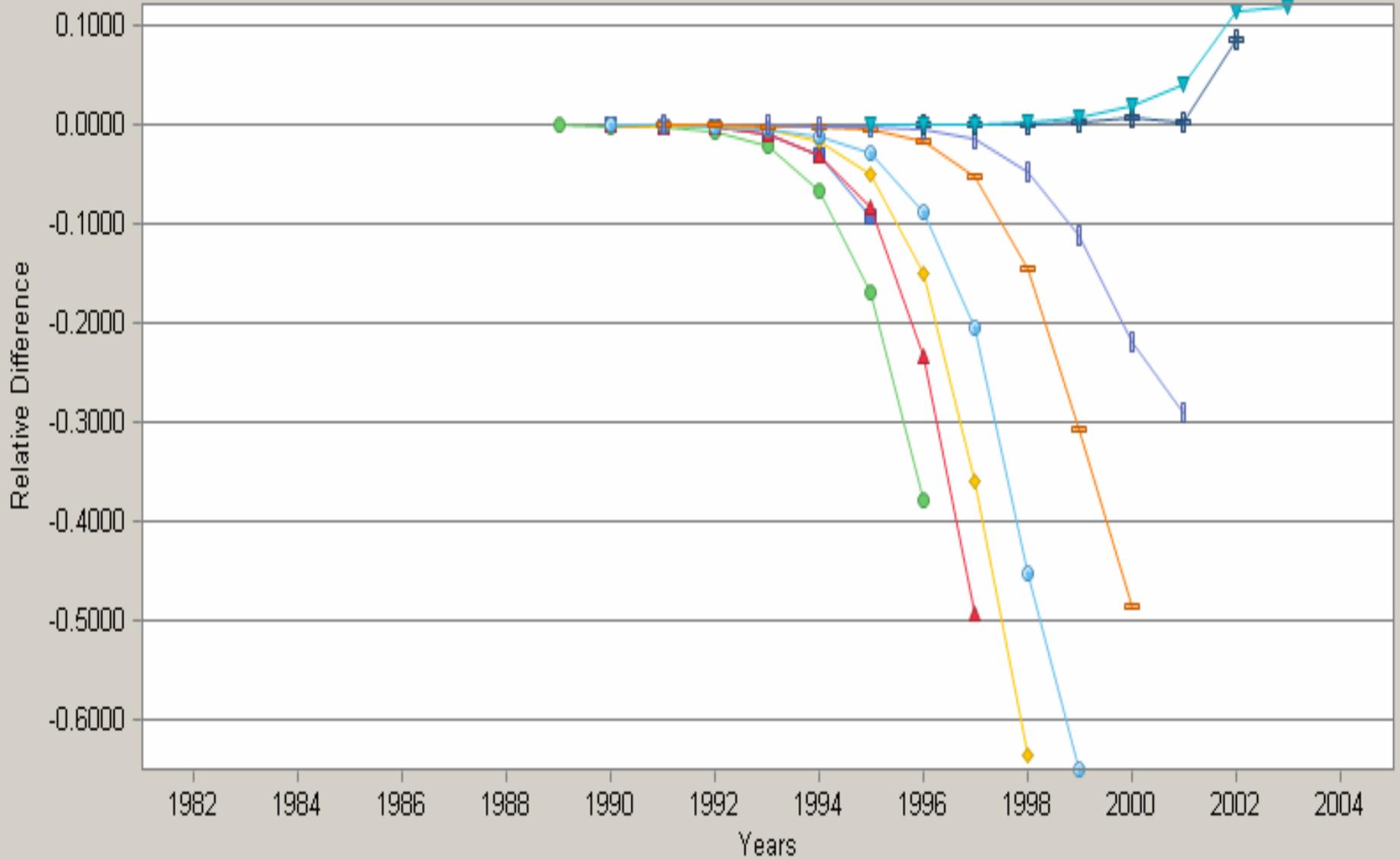
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 ⊕ 2002 ▼ 2003 × 2004

# Average F 4-5

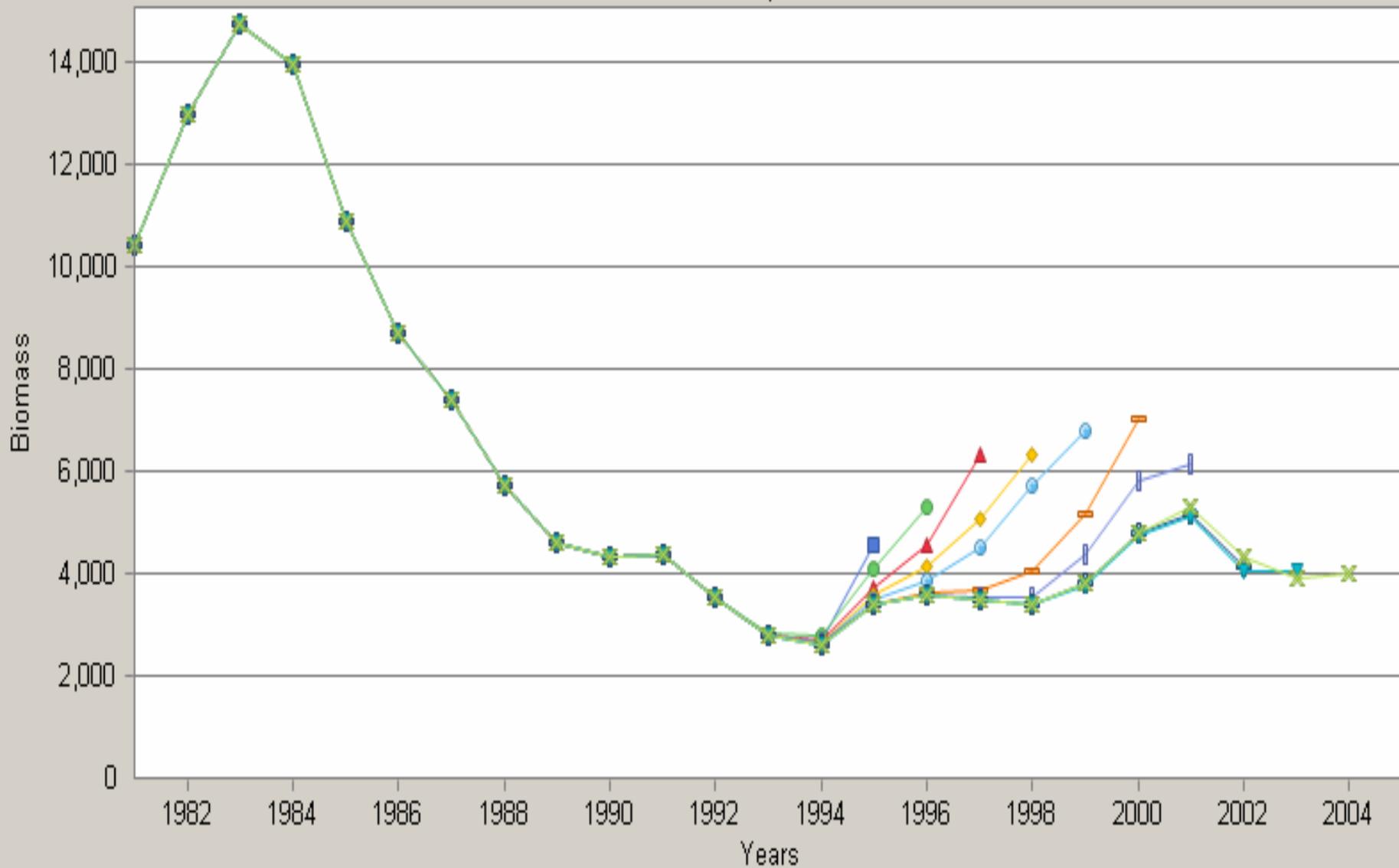
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 ⊕ 2002 ▼ 2003

# Spawning Stock Biomass

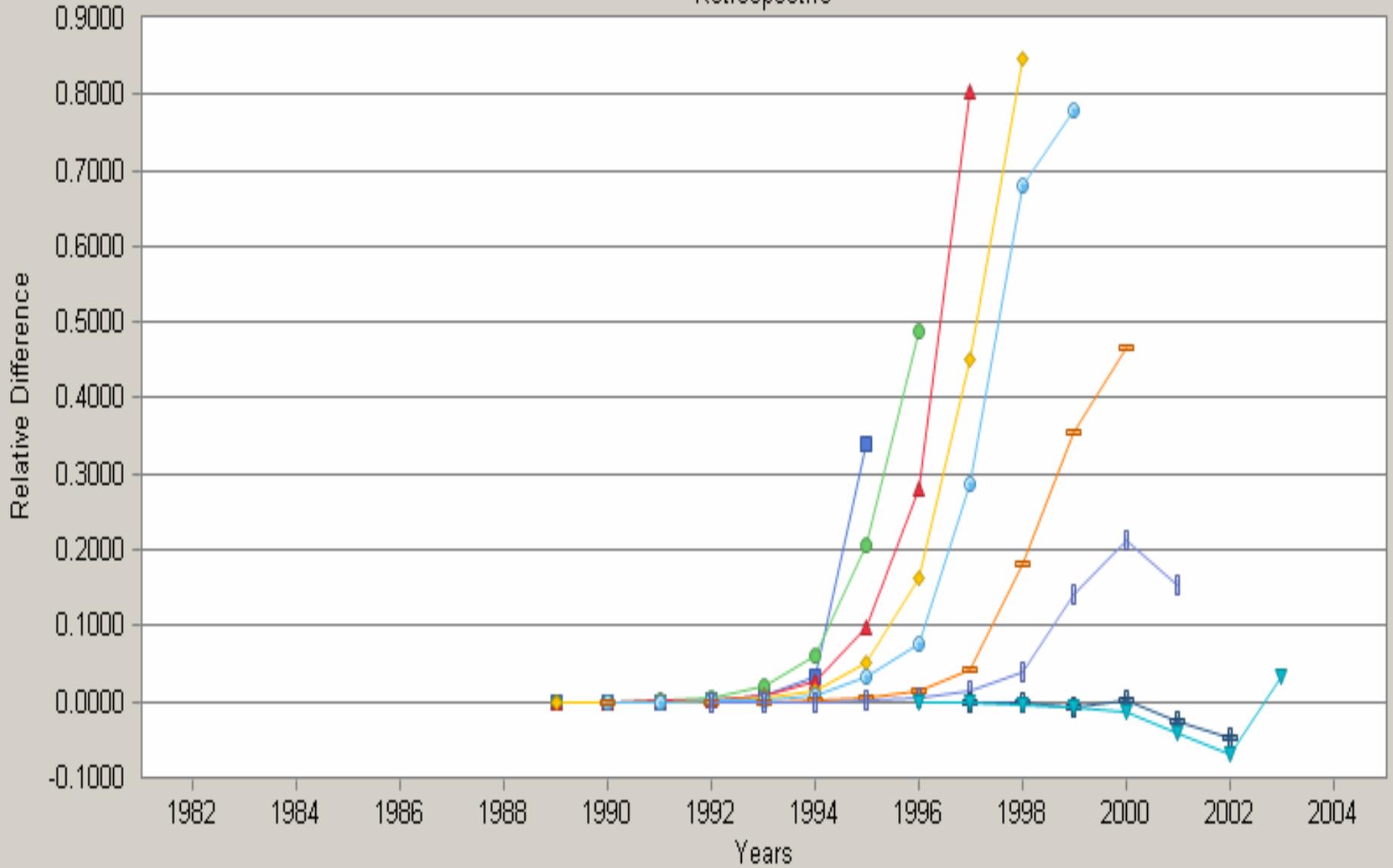
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 × 2002 ▼ 2003 × 2004

# Spawning Stock Biomass

Retrospective

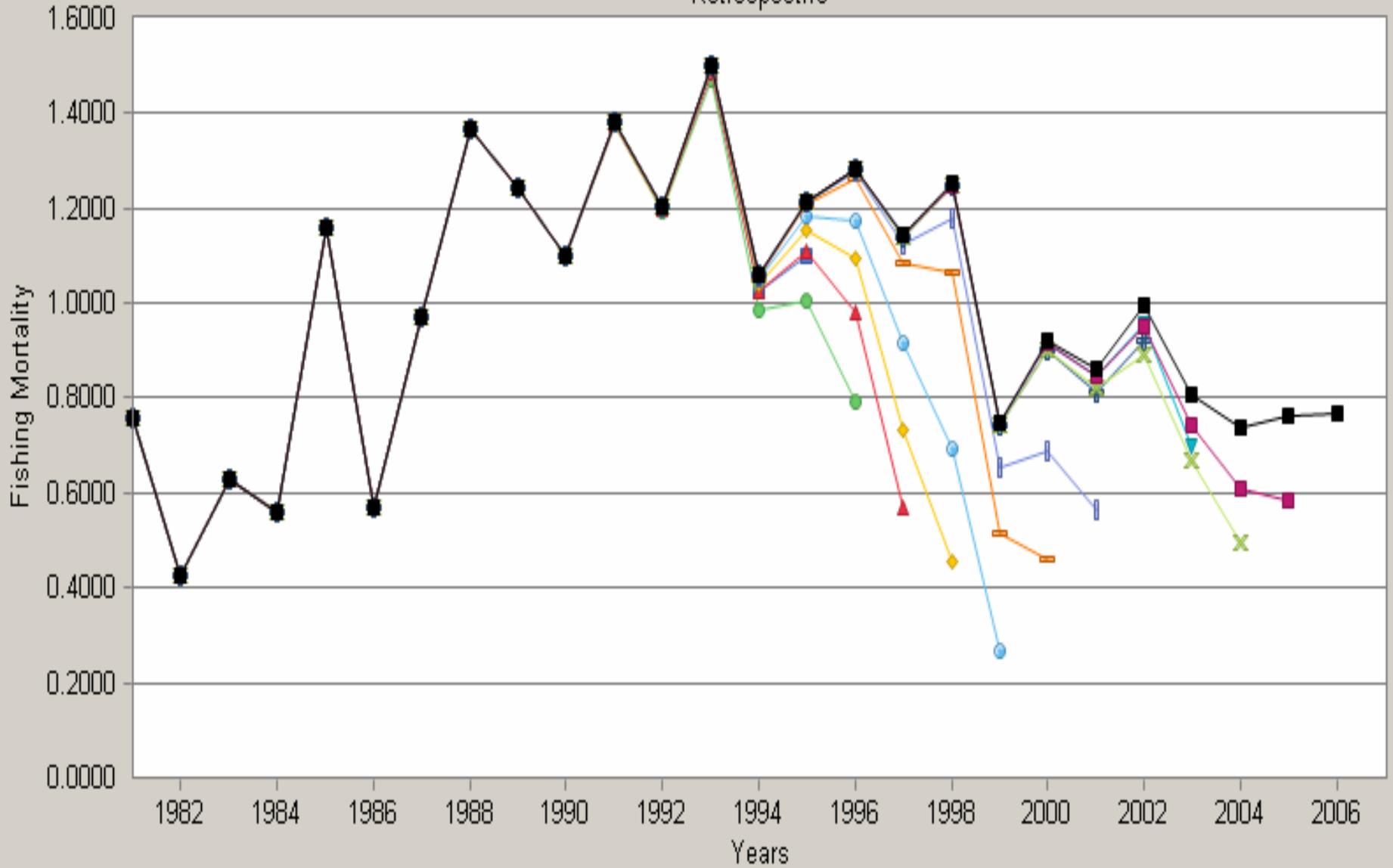


■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 ⊕ 2001 ⊕ 2002 ▼ 2003

**J: SNE/MA WFL  
GARM 3 VPA: 1981-2006  
BASE**

# Average F 4-5

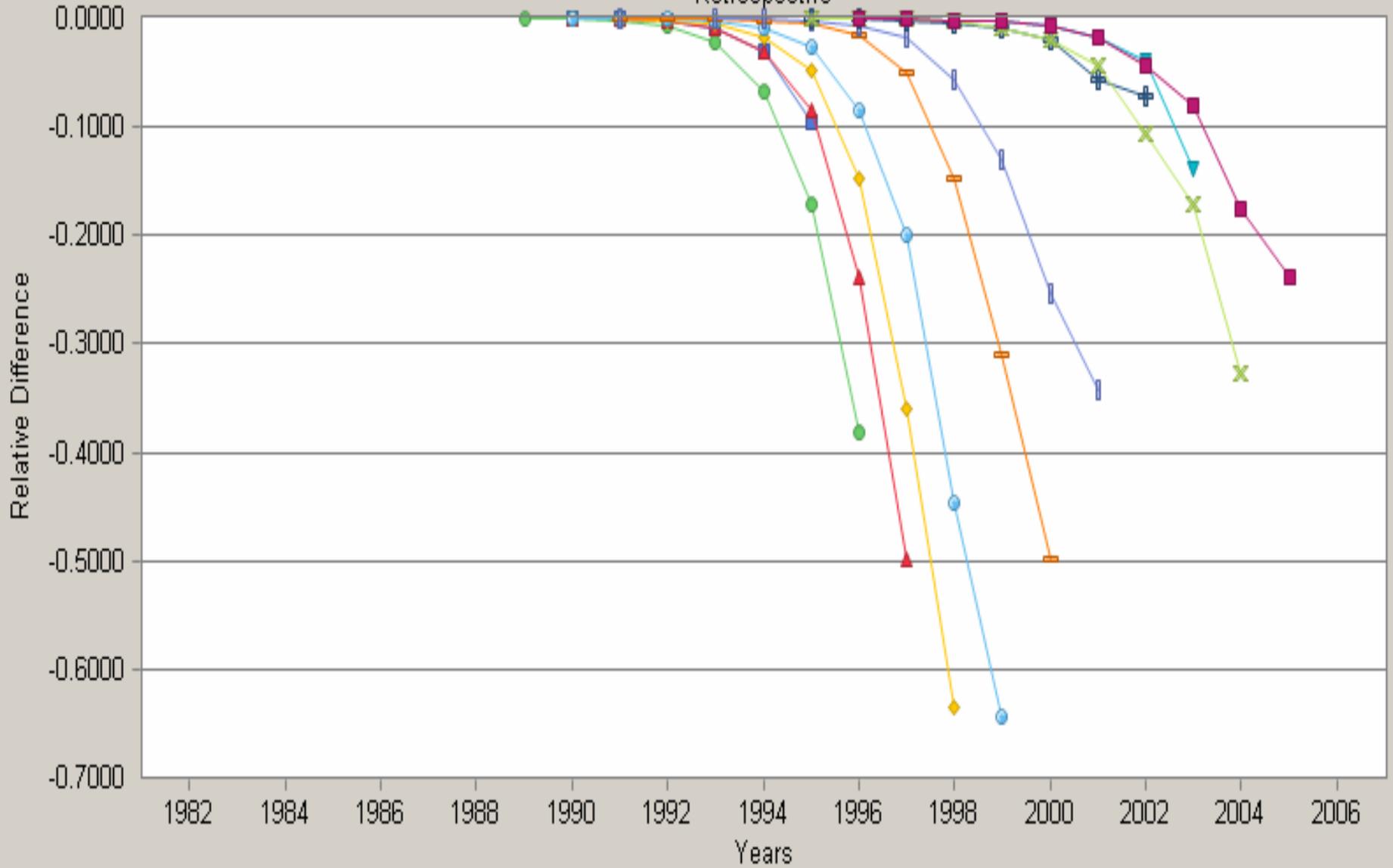
Retrospective



1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006

# Average F 4-5

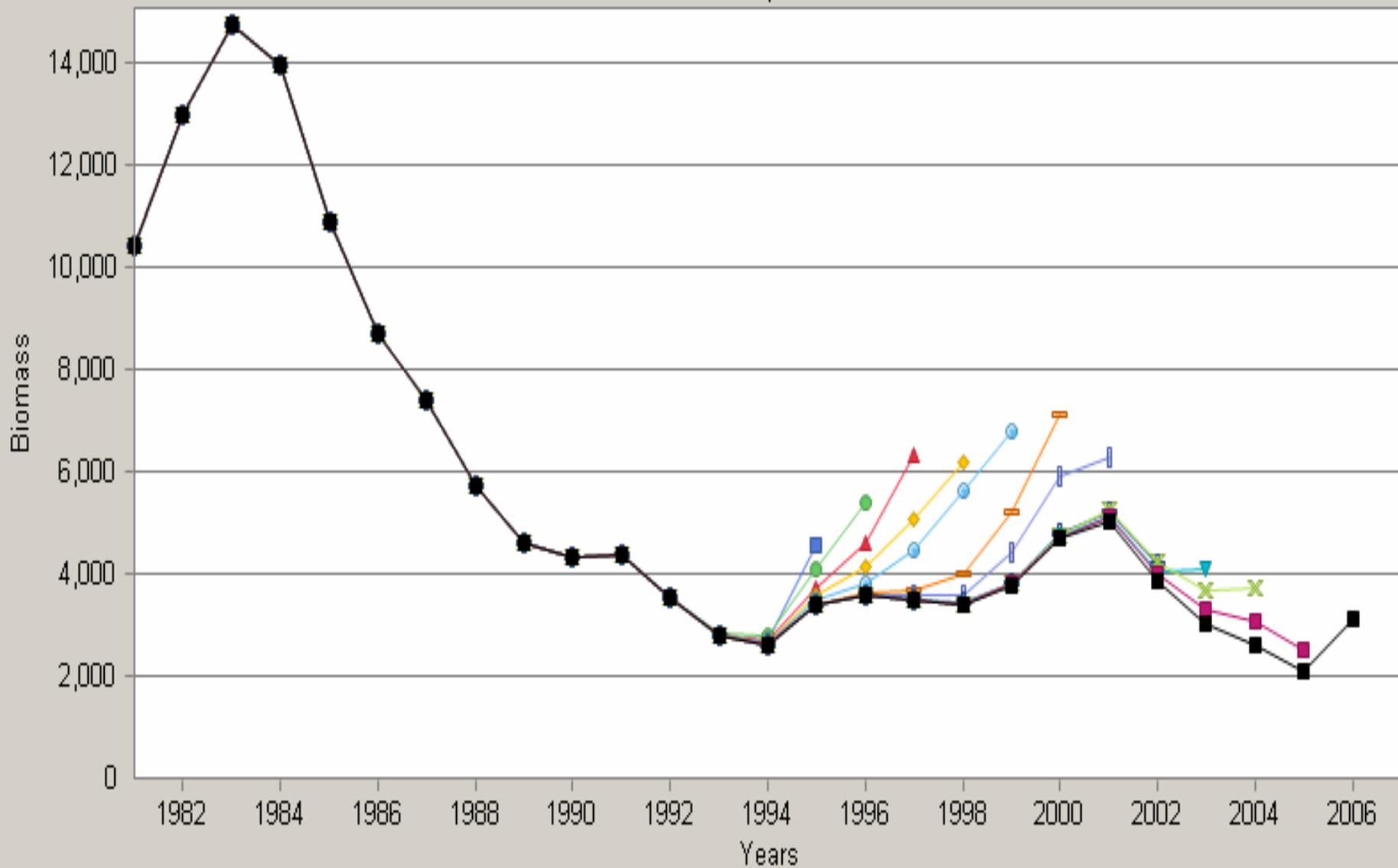
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 ⊕ 2002 ▼ 2003 × 2004 ■ 2005

# Spawning Stock Biomass

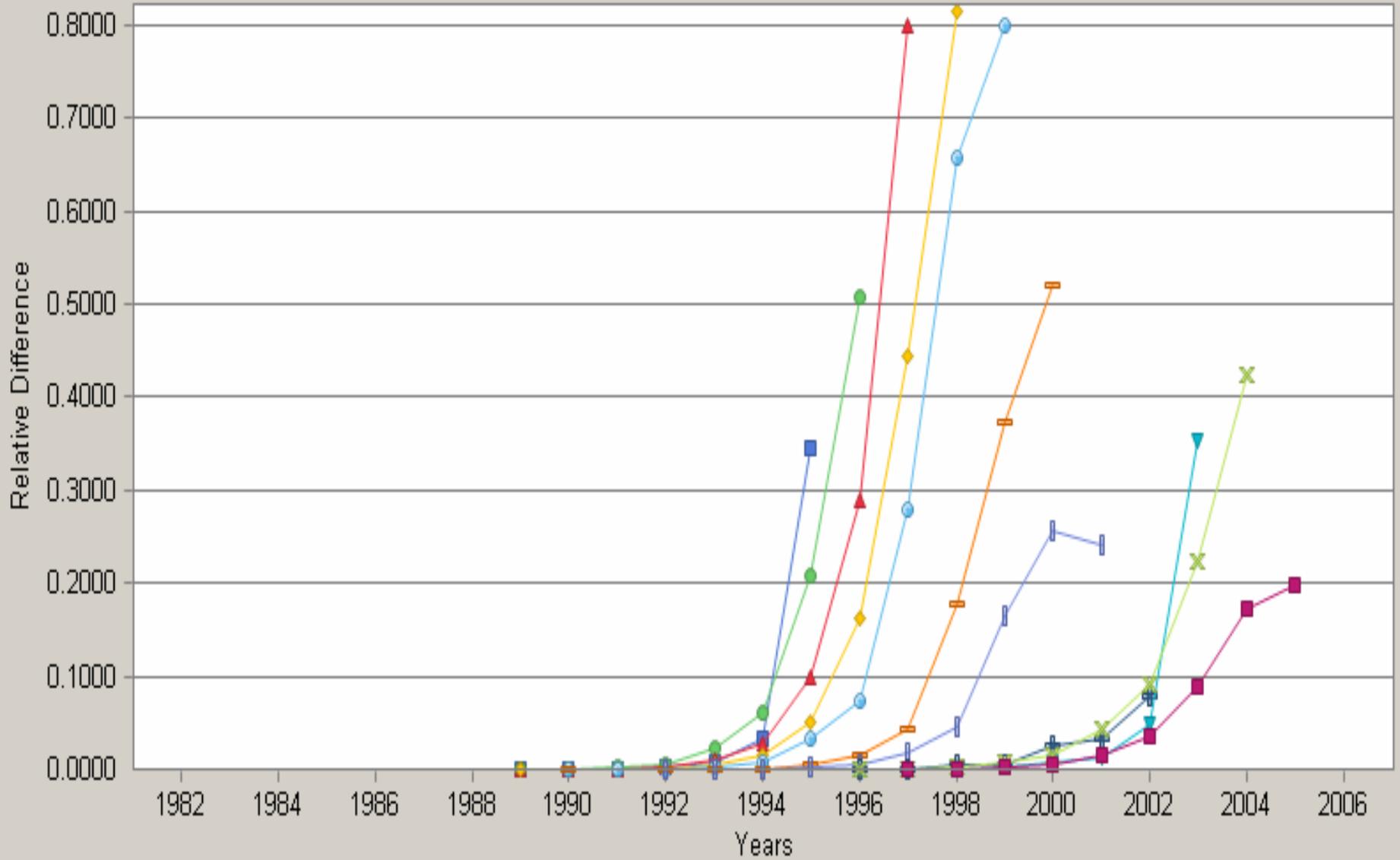
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 × 2002 ▼ 2003 ✕ 2004 ■ 2005 ■ 2006

# Spawning Stock Biomass

Retrospective



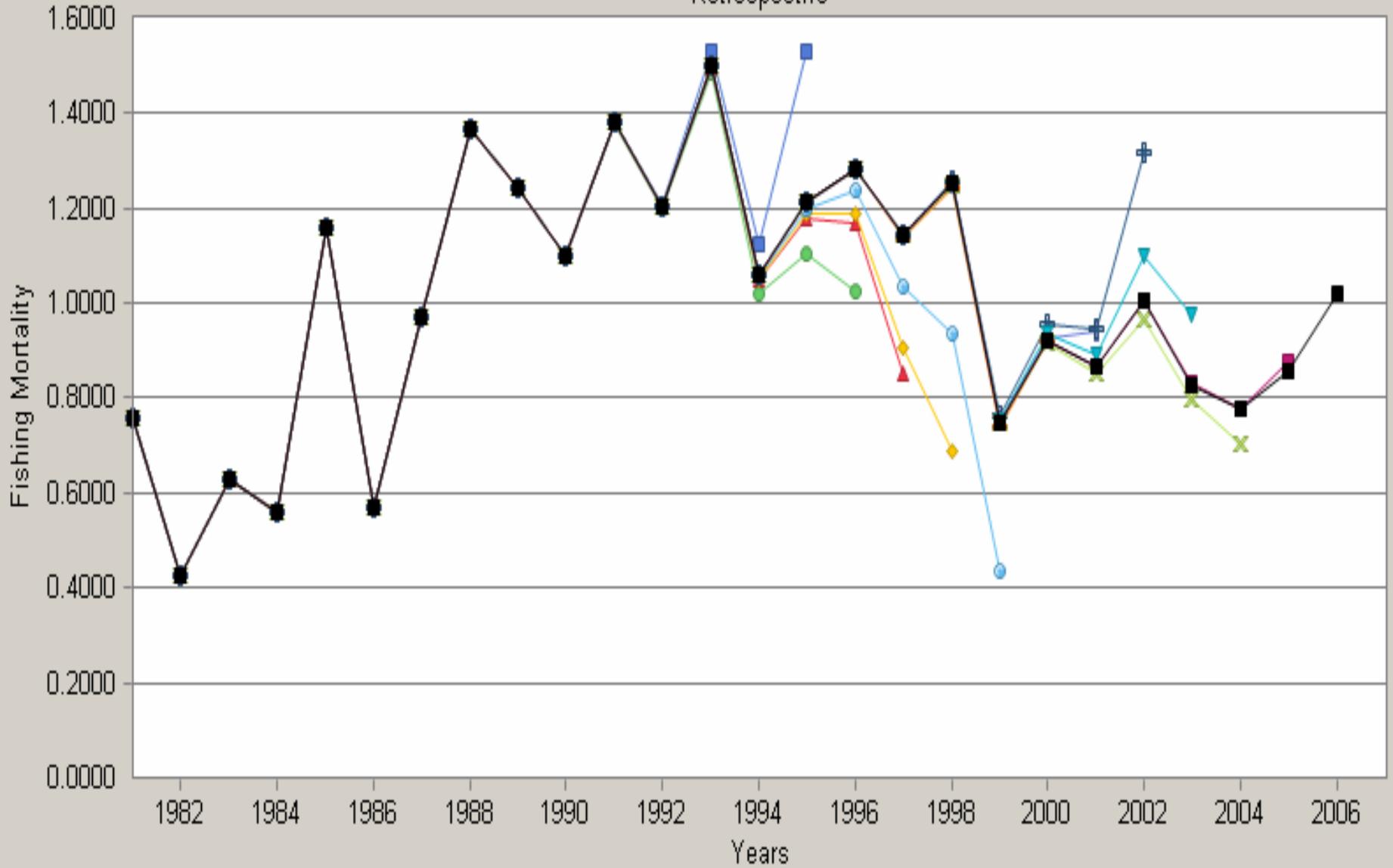
■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 ⊕ 2002 ▼ 2003 × 2004 ■ 2005

**J: SNE/MA WFL  
GARM 3 VPA: 1981-2006  
SPLIT**

- **Split SV series 1993/1994**
- **NOT split: NEFSC Winter (1992),  
NJ Ocean (1993), NJ Rivers (1995)**

# Average F 4-5

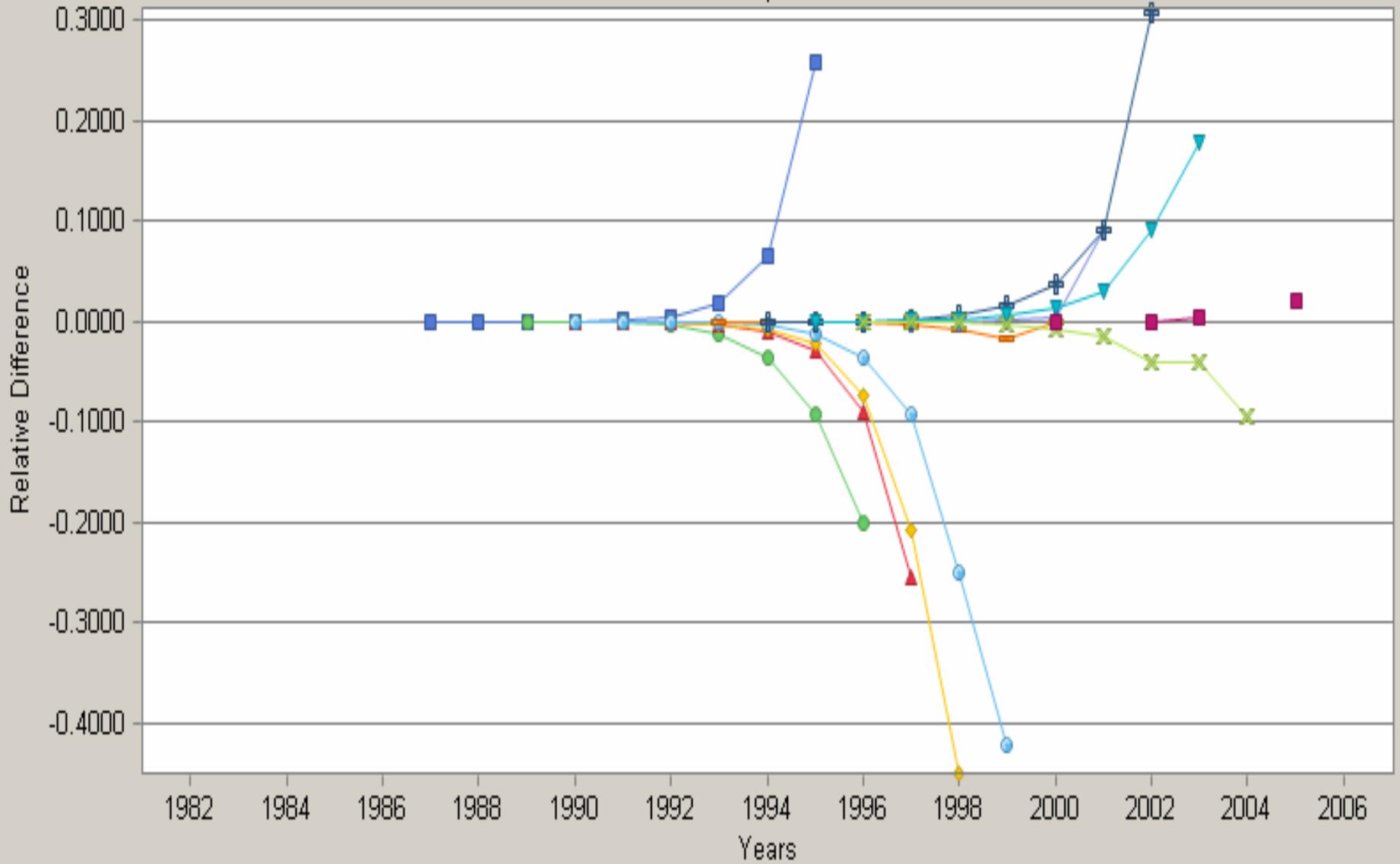
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 ○ 2000 + 2001 + 2002 ▼ 2003 × 2004 ■ 2005 ■ 2006

# Average F 4-5

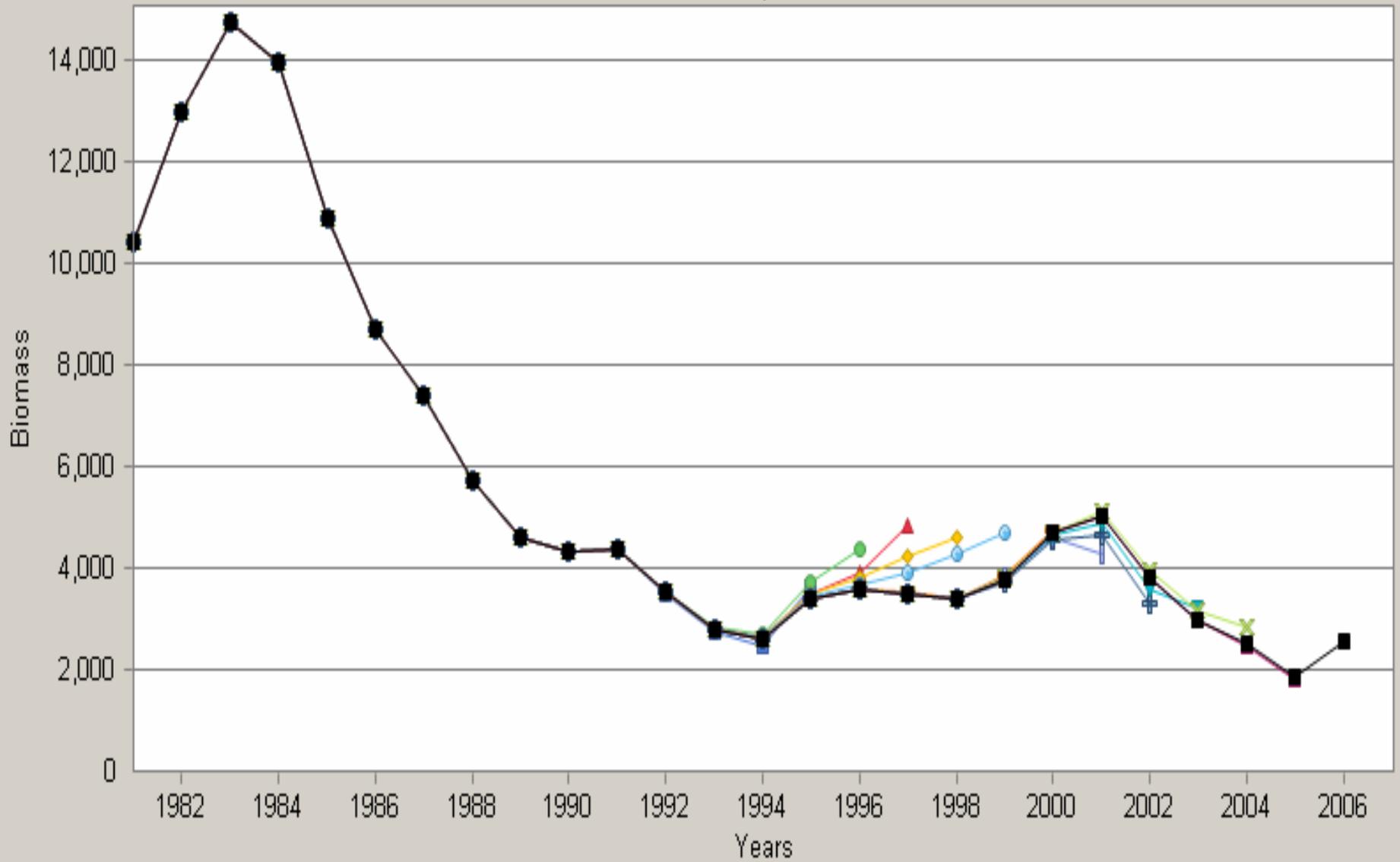
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 ▬ 2000 + 2001 + 2002 ▼ 2003 × 2004 ■ 2005

# Spawning Stock Biomass

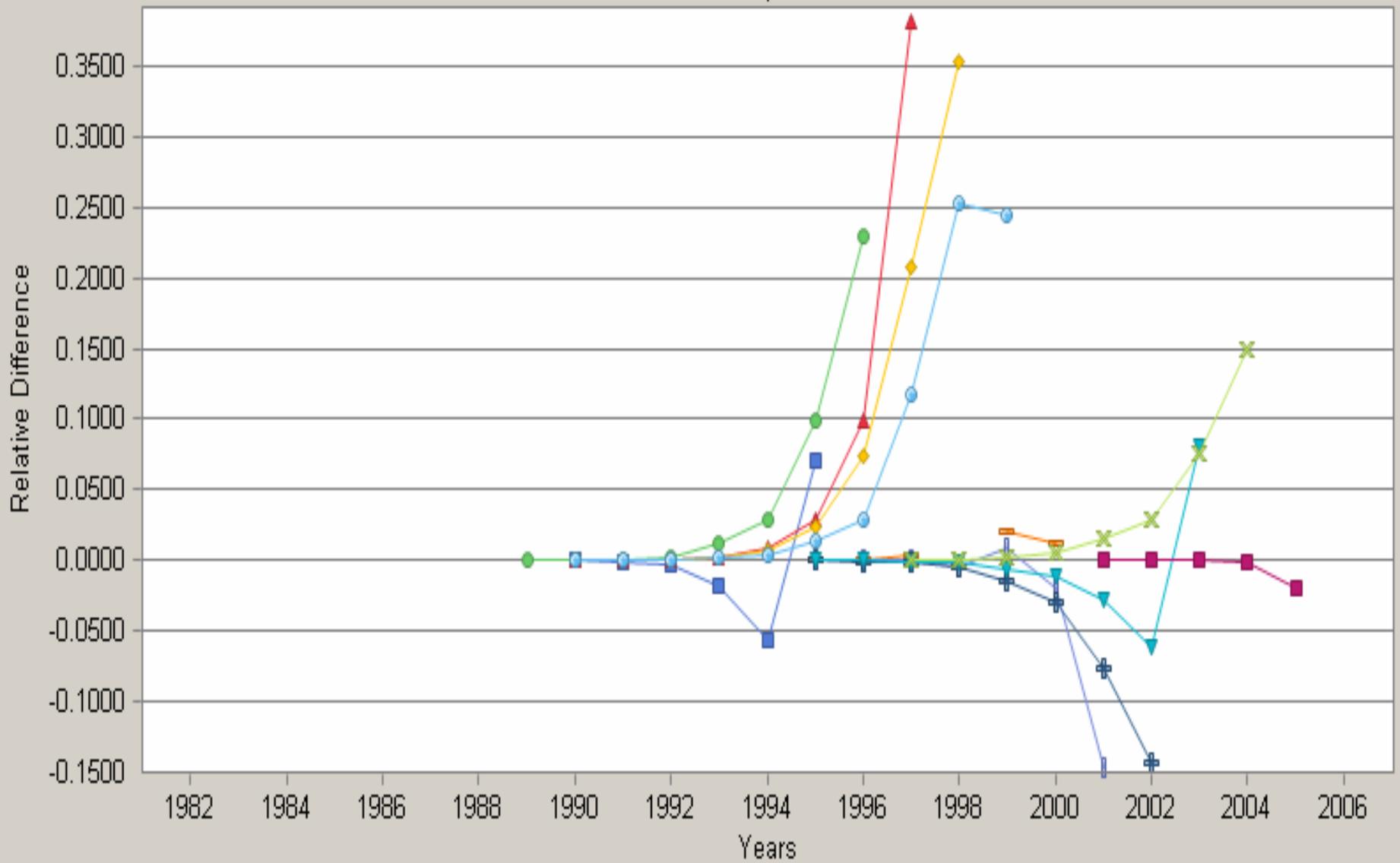
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 — 2000 + 2001 + 2002 ▼ 2003 × 2004 ■ 2005 ■ 2006

# Spawning Stock Biomass

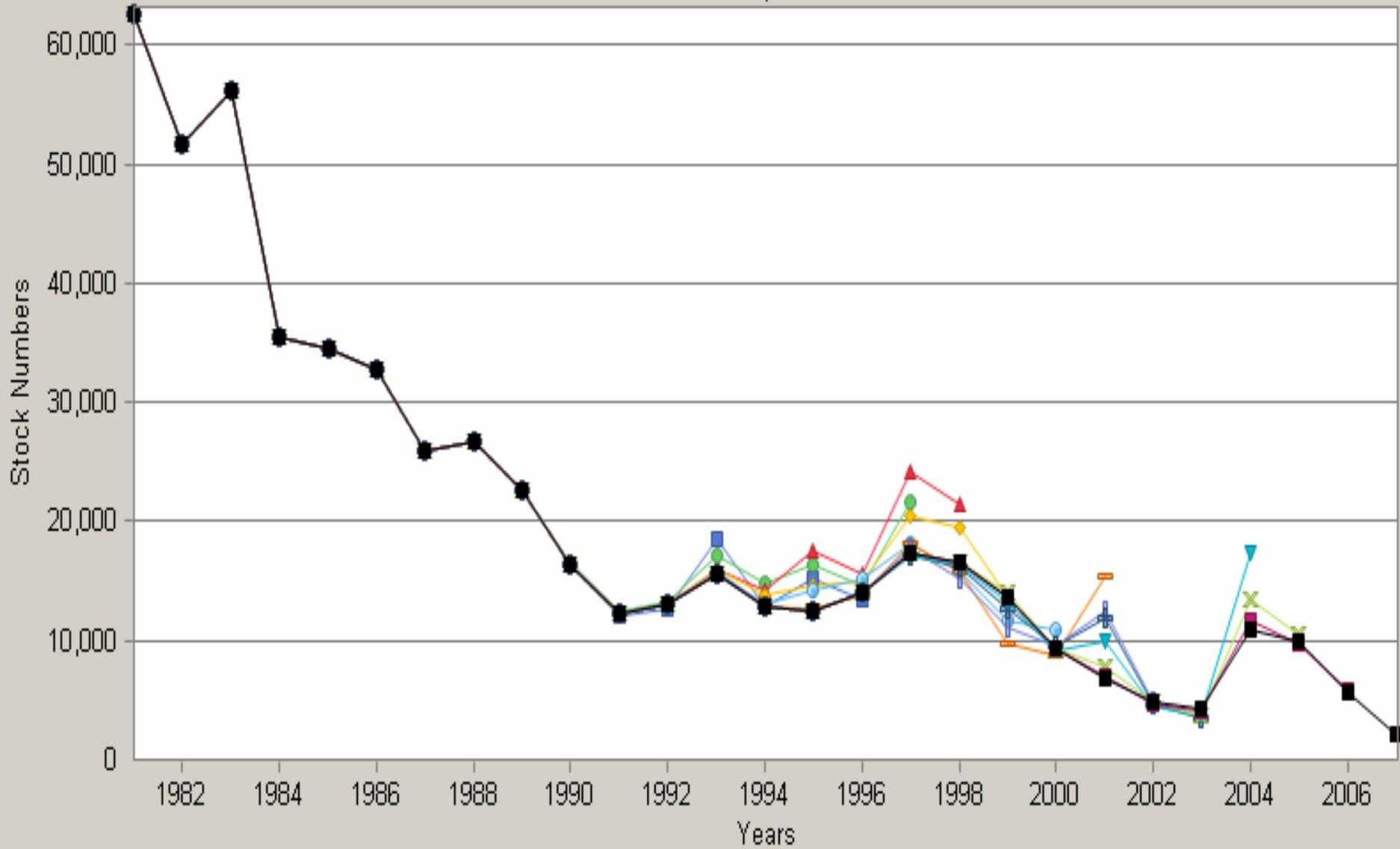
Retrospective



■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 ▨ 2000 + 2001 + 2002 ▼ 2003 × 2004 ■ 2005

# Age 1 Numbers

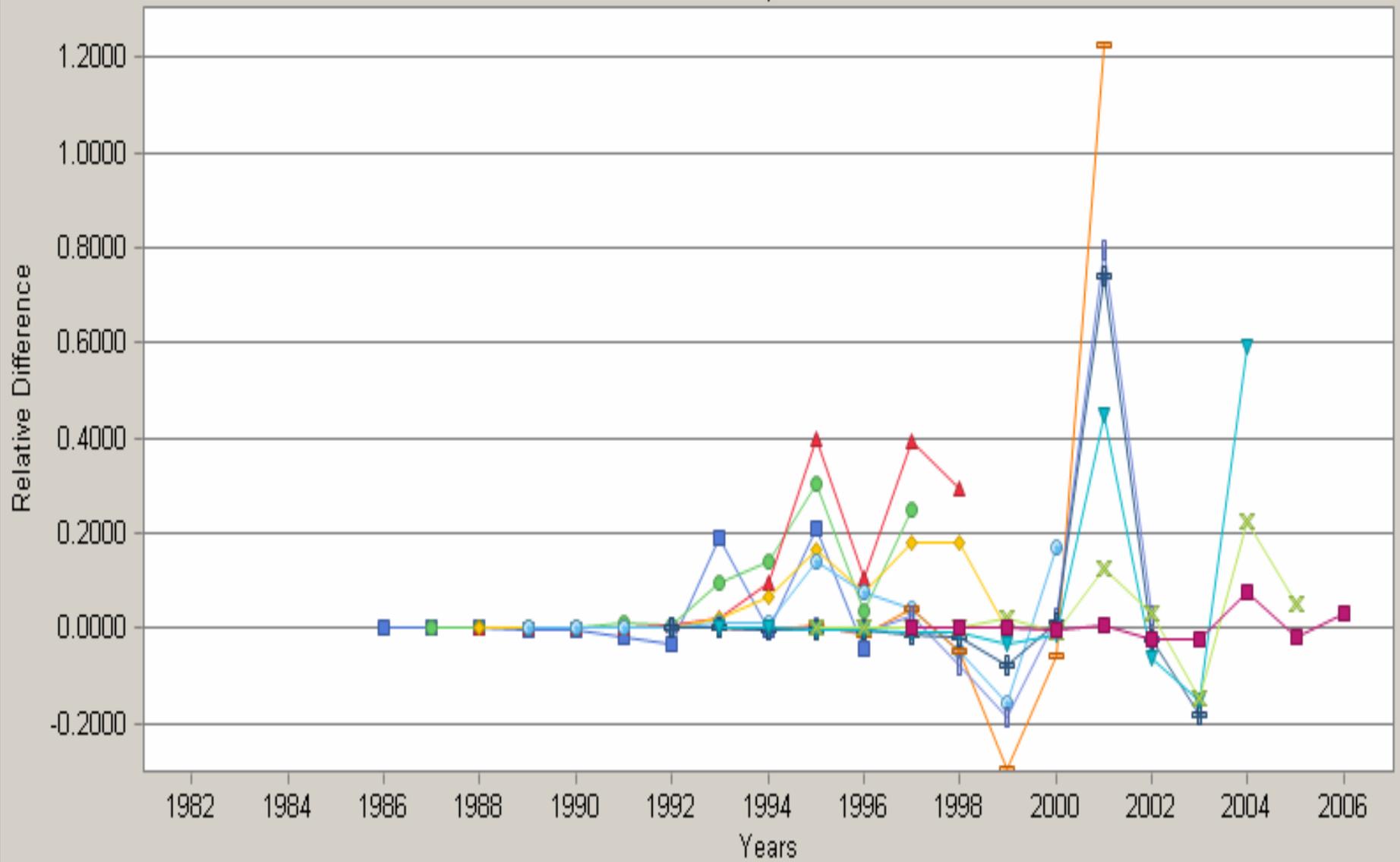
Retrospective



- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006

# Age 1 Numbers

Retrospective



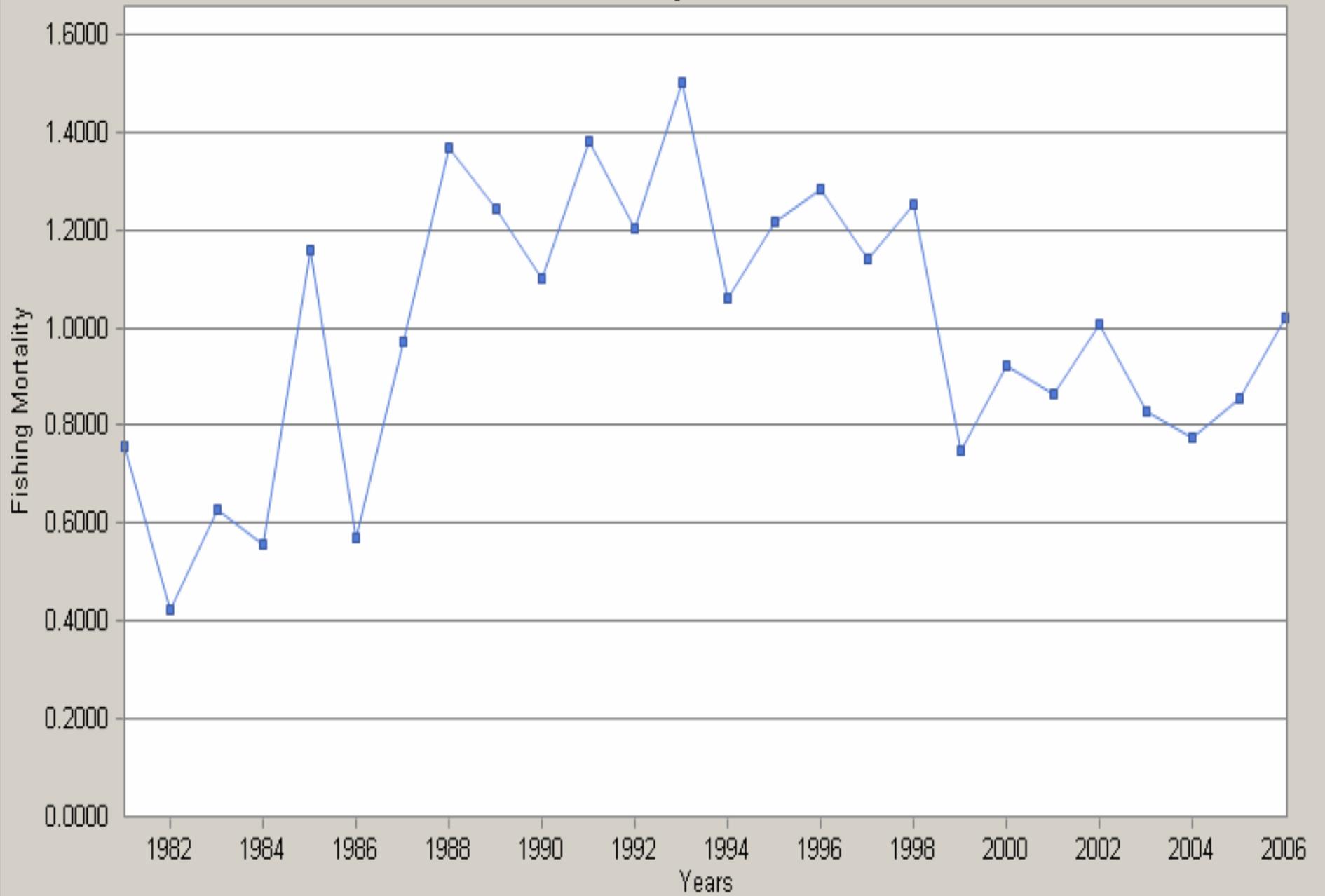
■ 1995 ● 1996 ▲ 1997 ◆ 1998 ○ 1999 □ 2000 + 2001 ⊕ 2002 ▼ 2003 × 2004 ■ 2005

**J: SNE/MA WFL  
GARM 3 VPA: 1981-2006  
Popdy Branch Meeting**

- **SPLIT run favored**
- **Compute Parametric (S-R model) and Empirical (YPR, SSBR) BRPs and Projections**
- **SPLIT results to be used for stock status**

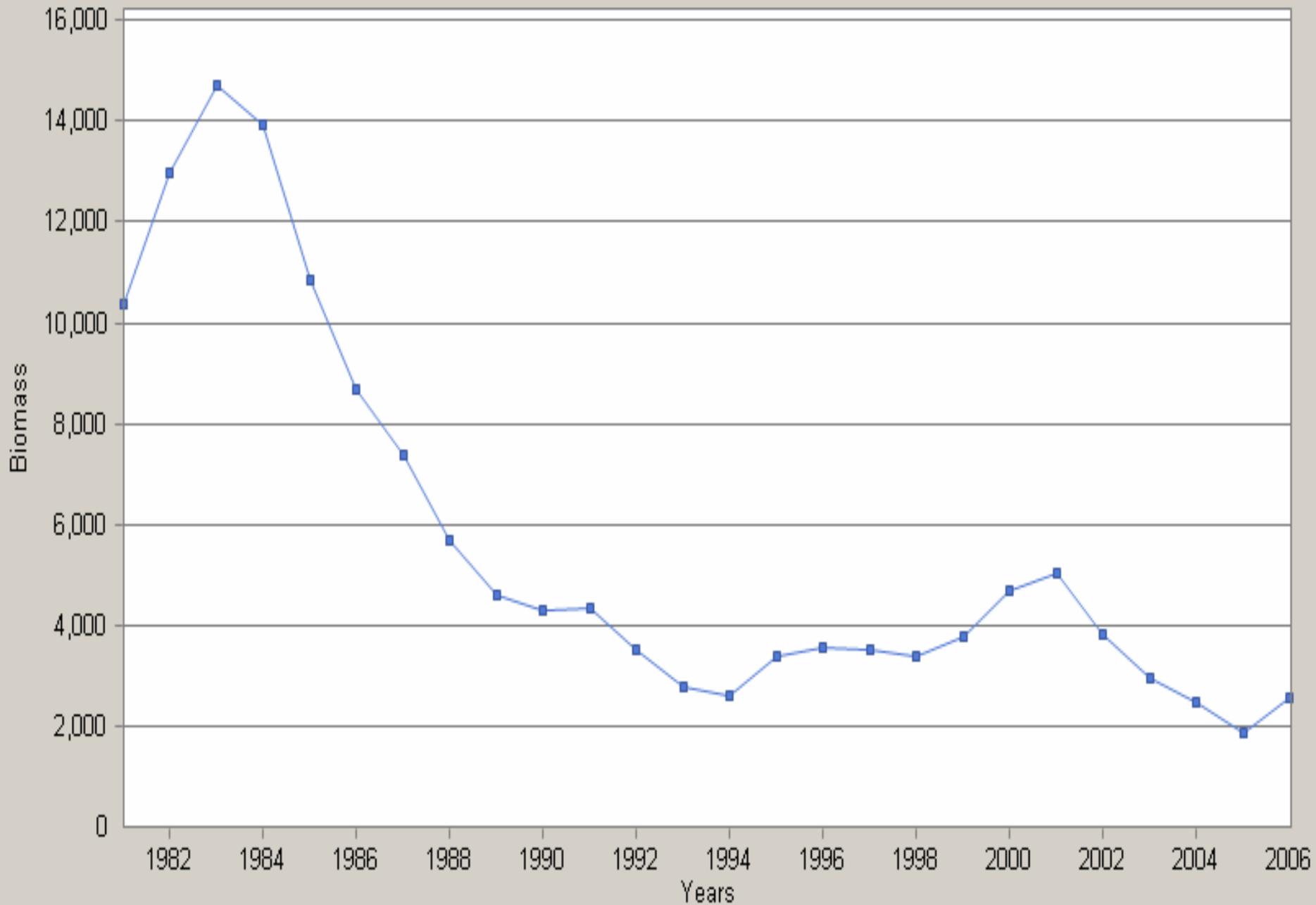
# Average F

Ages 4 - 5



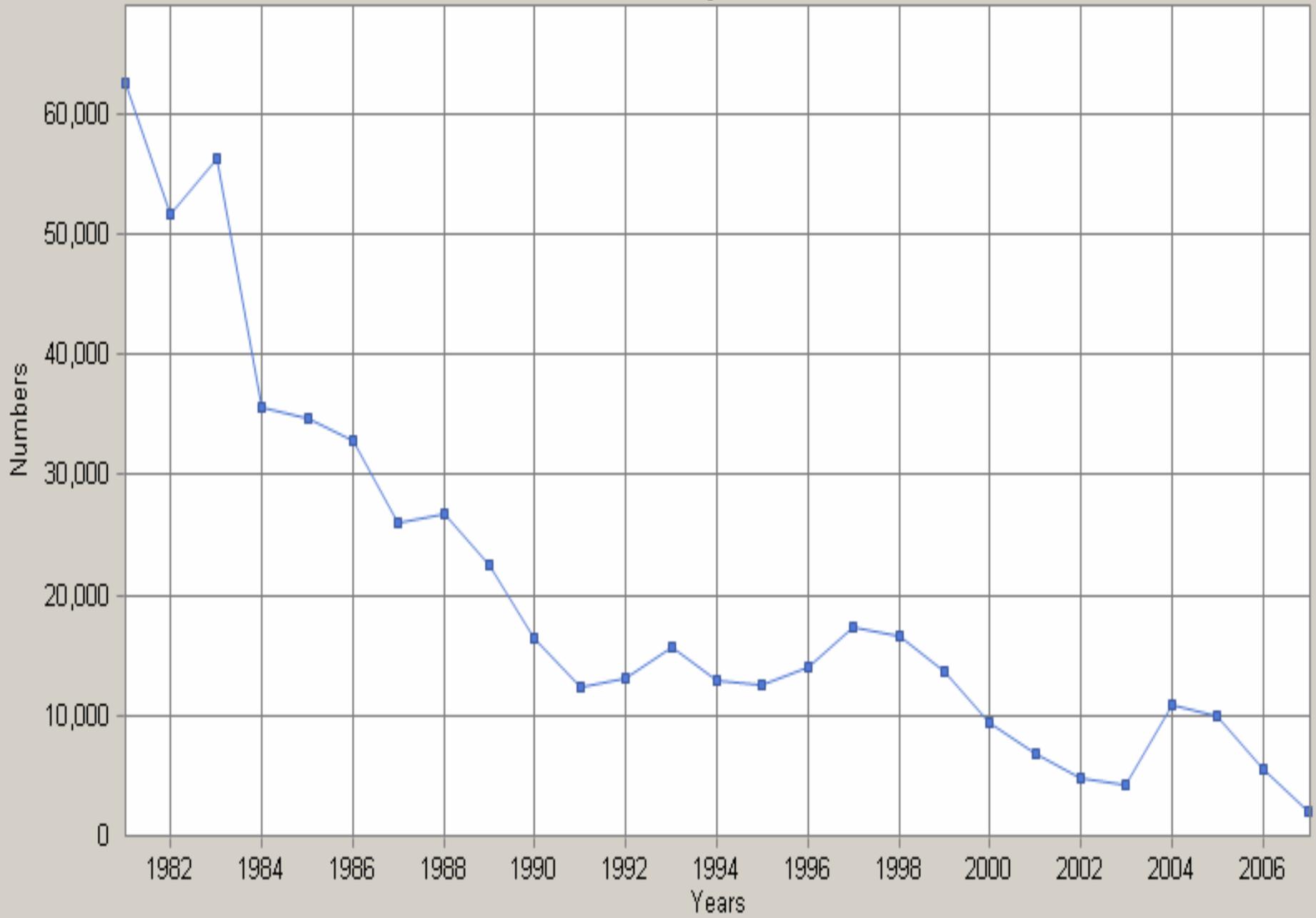
# Spawning Stock Biomass

Total



# JAN-1 Stock Numbers

Age 1



## **J: SNE/MA Winter Flounder Biological Reference Points**

- **NEFSC BRPWG 2002: YPR and S-R models**
  - **Based on SARC 28 assessment results**
- **B-H S-R model w/recruitment prior**
- **MSY = 10,600 mt**
- **FMSY = 0.32**
- **BMSY = 30,100 mt**
- **Retained by 2002 SAW 36, 2005 GARM 2**

# SNE/MA Winter Flounder

## SSB - RECRUIT DATA FOR 1981-2004 YEAR CLASSES

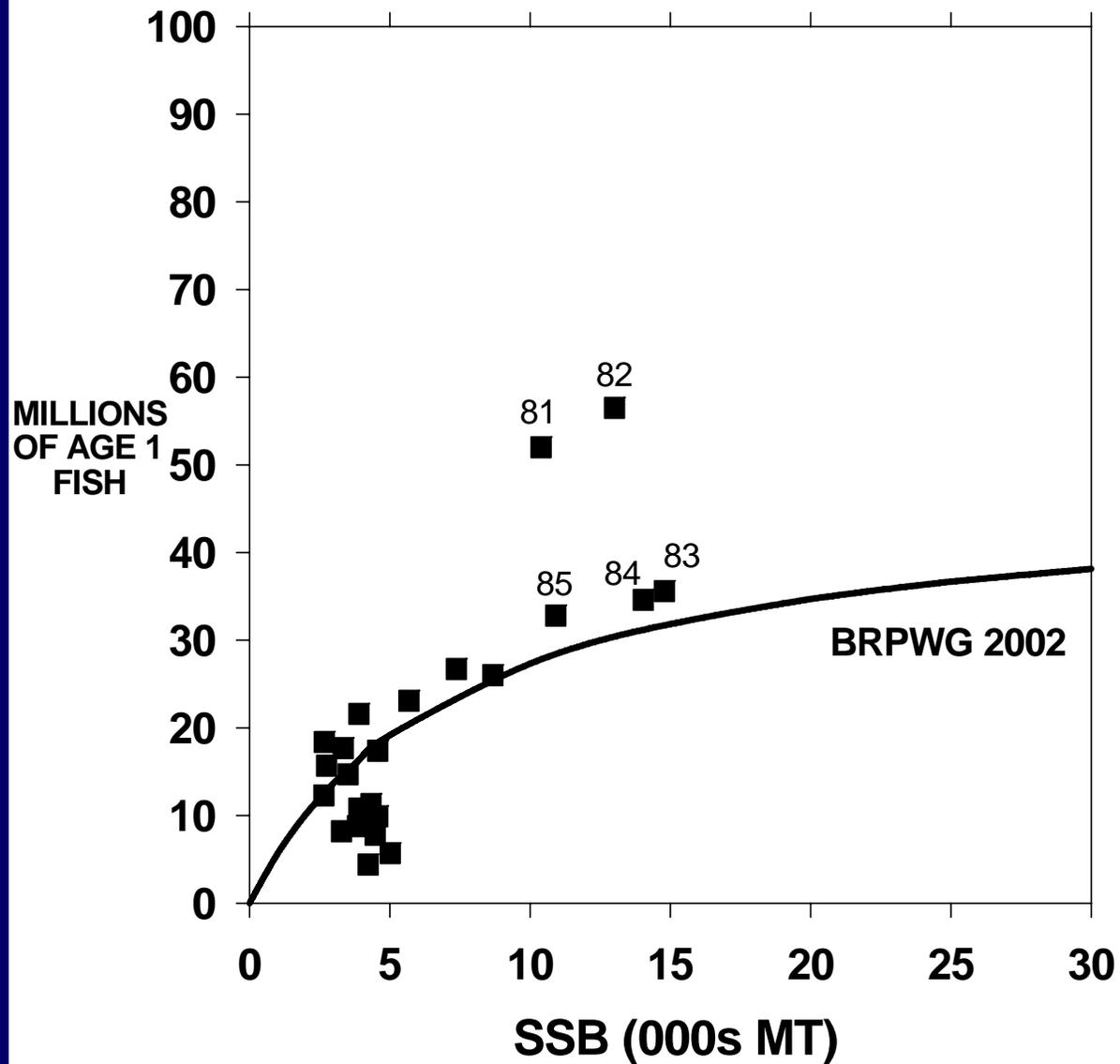


Figure . SNE/MA winter flounder GARM2 VPA SSB and recruit data for the 1981-2004 year classes. BRPWG 2002 line is the S-R function fit by the Reference Point Working Group (NEFSC 2002) to the SARC 28 VPA results.

## **J: SNE/MA Winter Flounder Biological Reference Points**

- **Evaluate patterns in fishery and survey mean weights at age and maturity**
- **Evaluate fishery selectivity pattern estimated by VPA**
- **Evaluate approaches to estimation of BRPs**

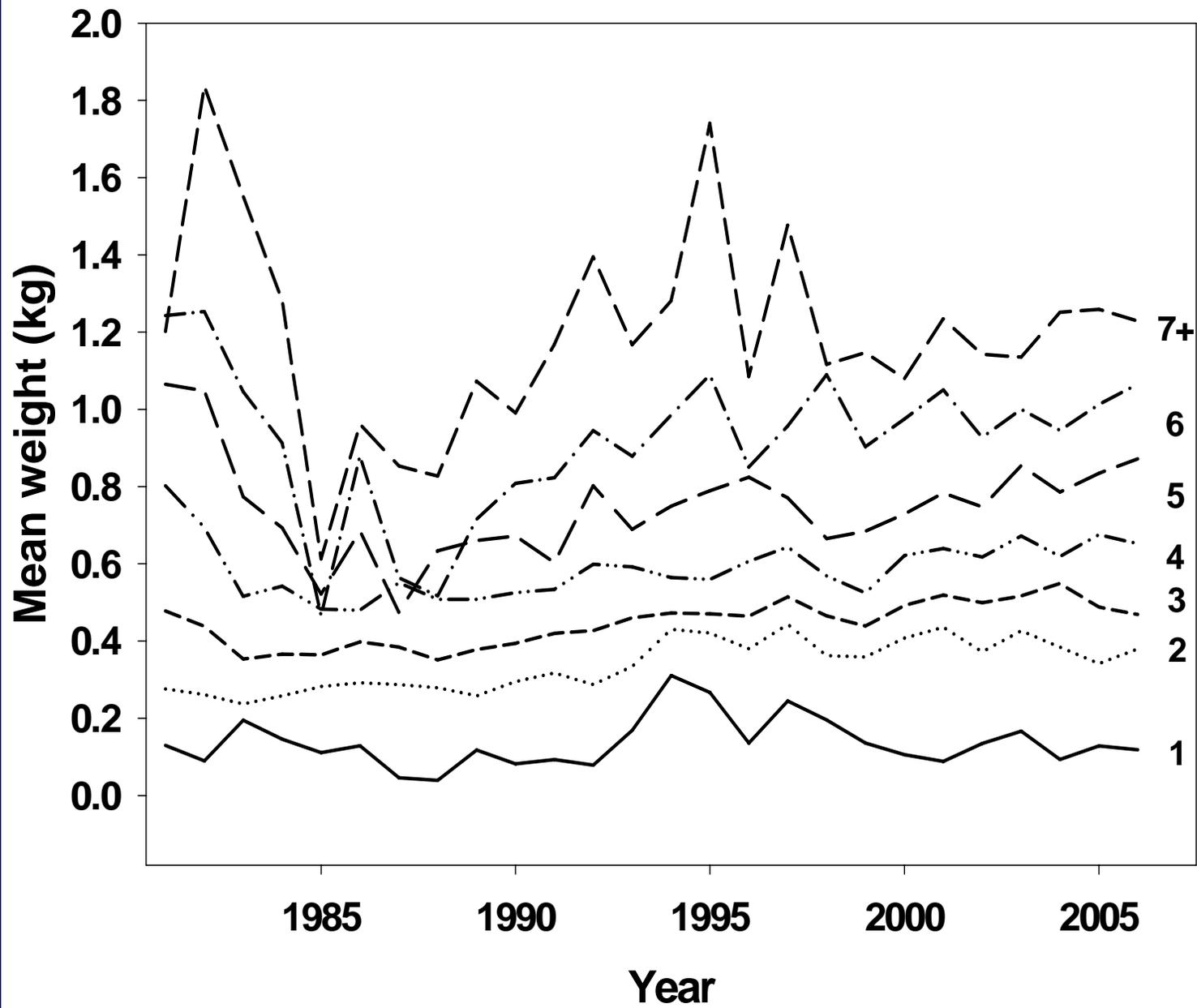


Figure J11. Trends in mean weight at age in the total catch of SNE/MA winter flounder.

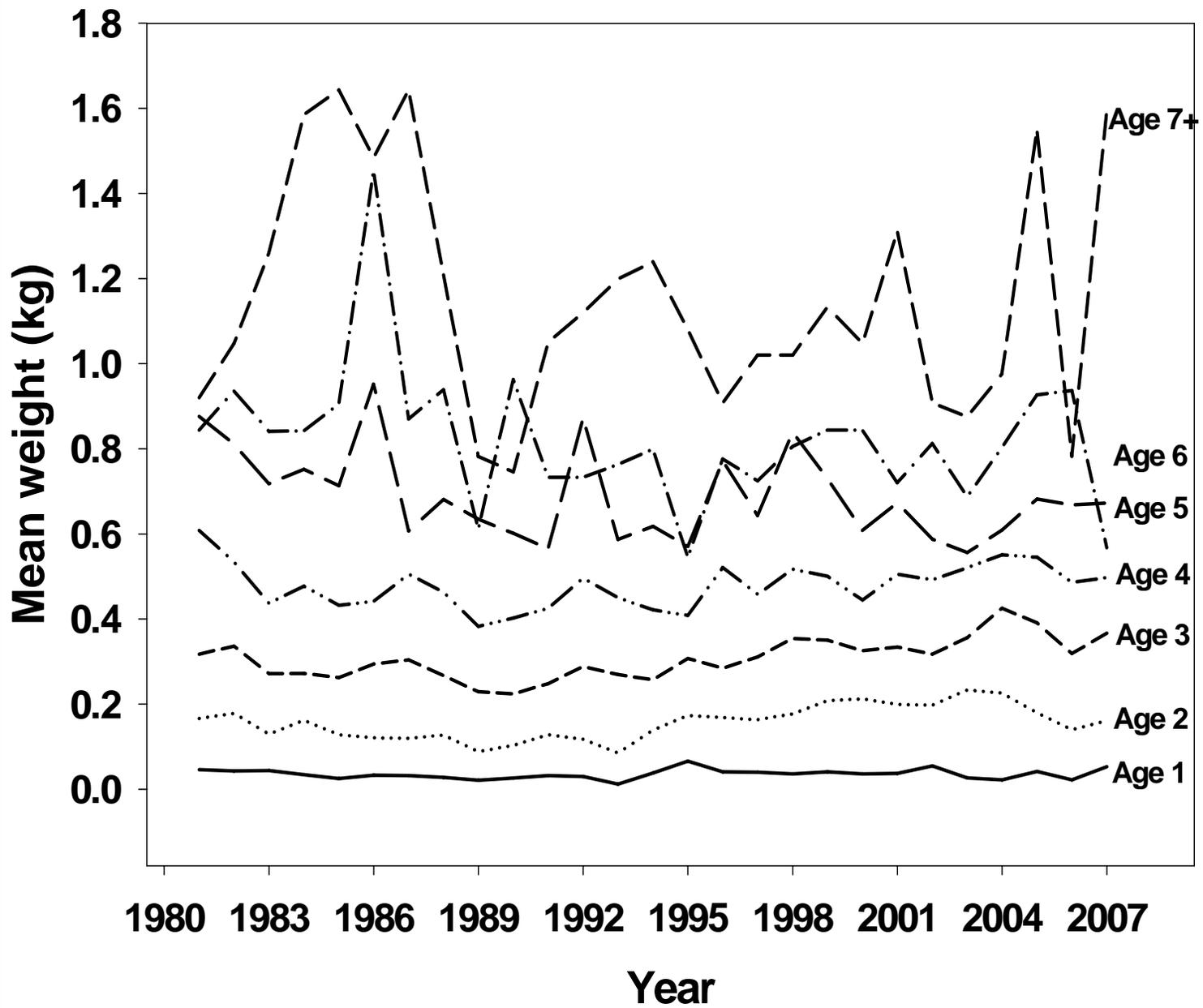
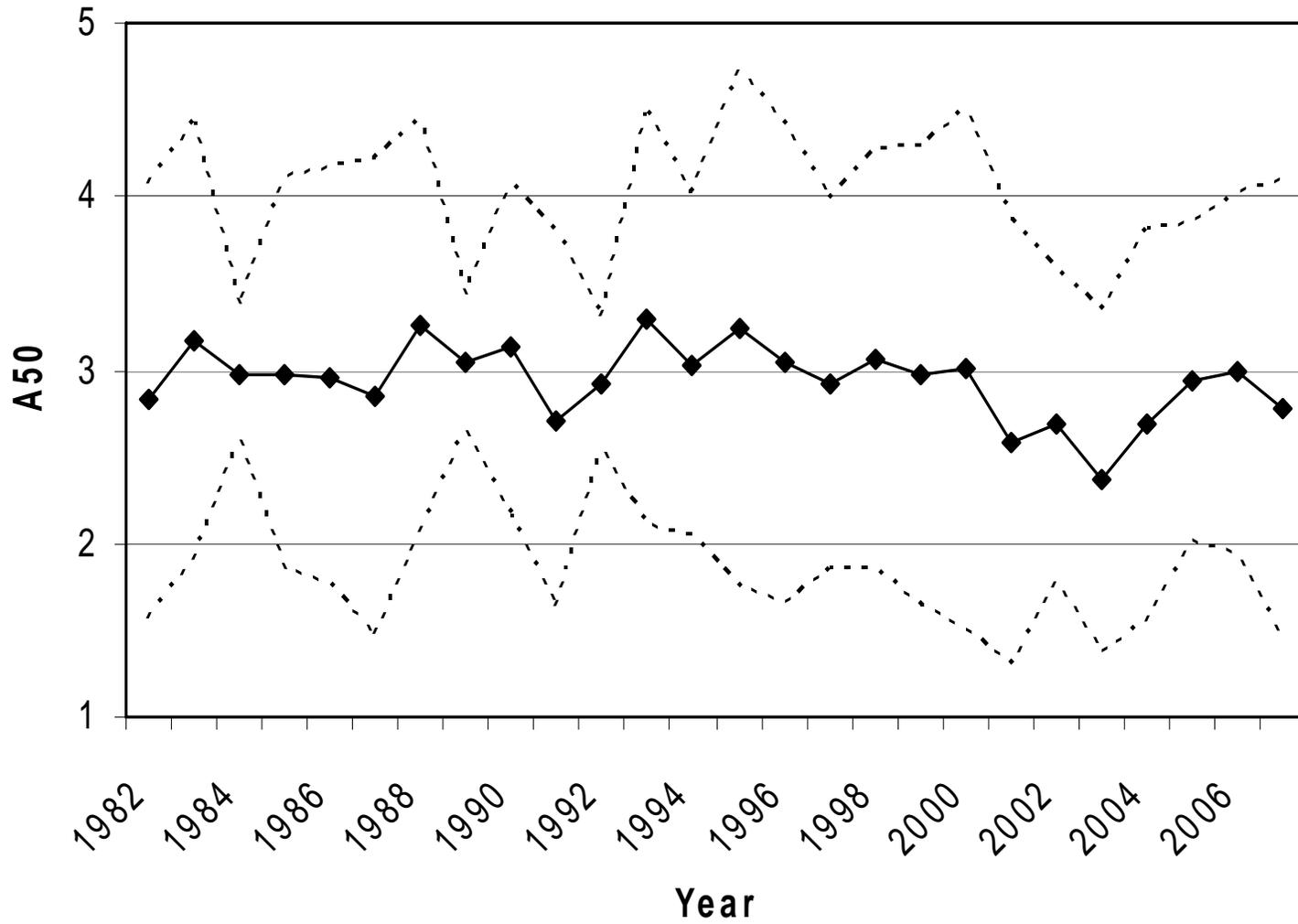


Figure J12. Trends in mean weight at age in the NEFSC Spring survey catch of SNE/MA winter flounder.

### SNE/MA WFL Females Annual Estimates

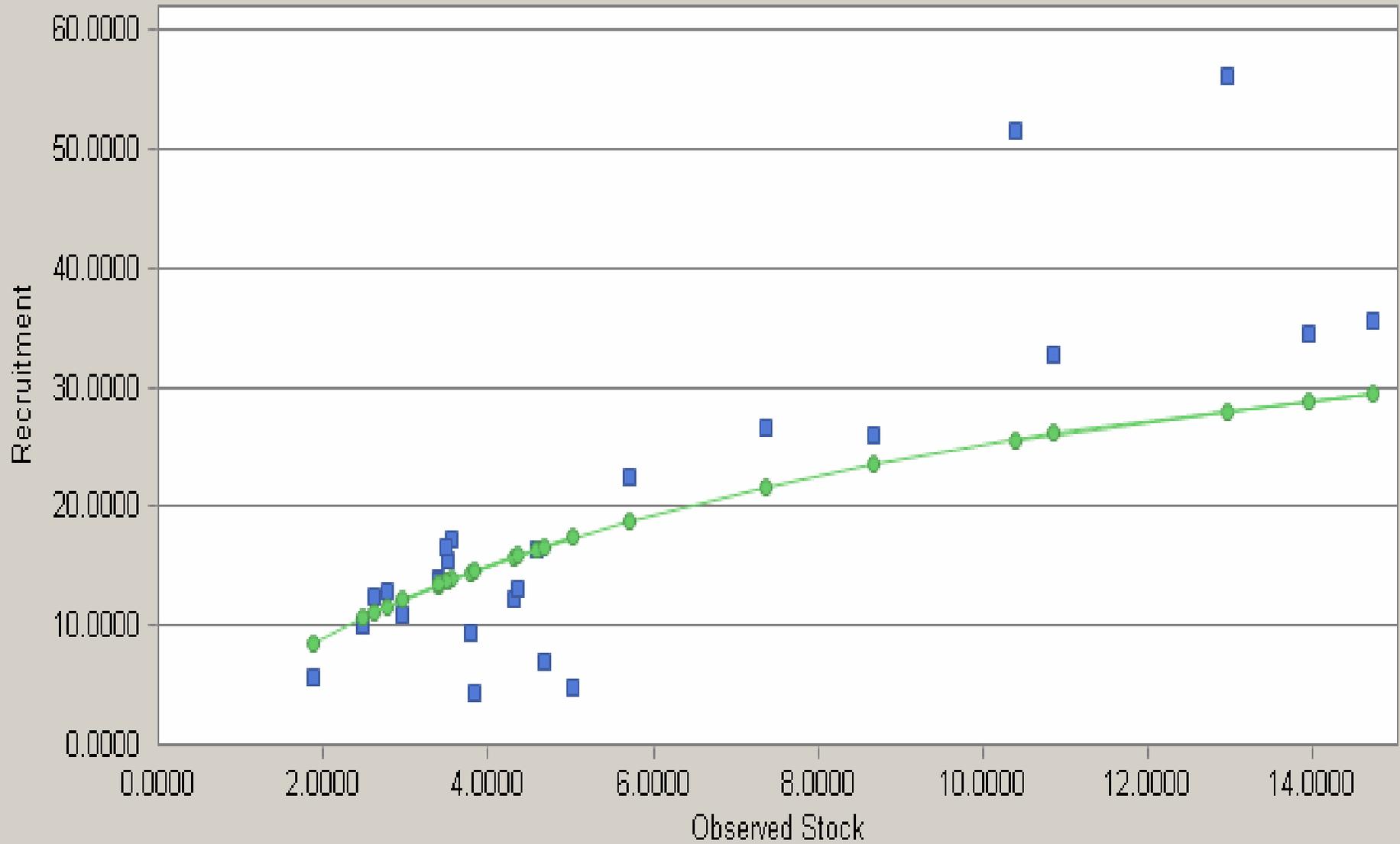


—◆— Females    - - - - - U95    ····· L95

J: SNE/MA WFL: Projection Inputs for GARM 3					
M = 0.2					
Age	PR	Maturity	Mid-Year Catch XW	SSB XW	Jan 1 XW
1	0.01	0.00	0.119	0.066	0.066
2	0.11	0.00	0.389	0.213	0.213
3	0.53	0.55	0.506	0.446	0.446
4	0.98	0.95	0.645	0.574	0.574
5	1.00	1.00	0.811	0.721	0.721
6	1.00	1.00	0.999	0.887	0.887
7+	1.00	1.00	1.207	1.207	1.207

# Stock Recruitment Model Prediction

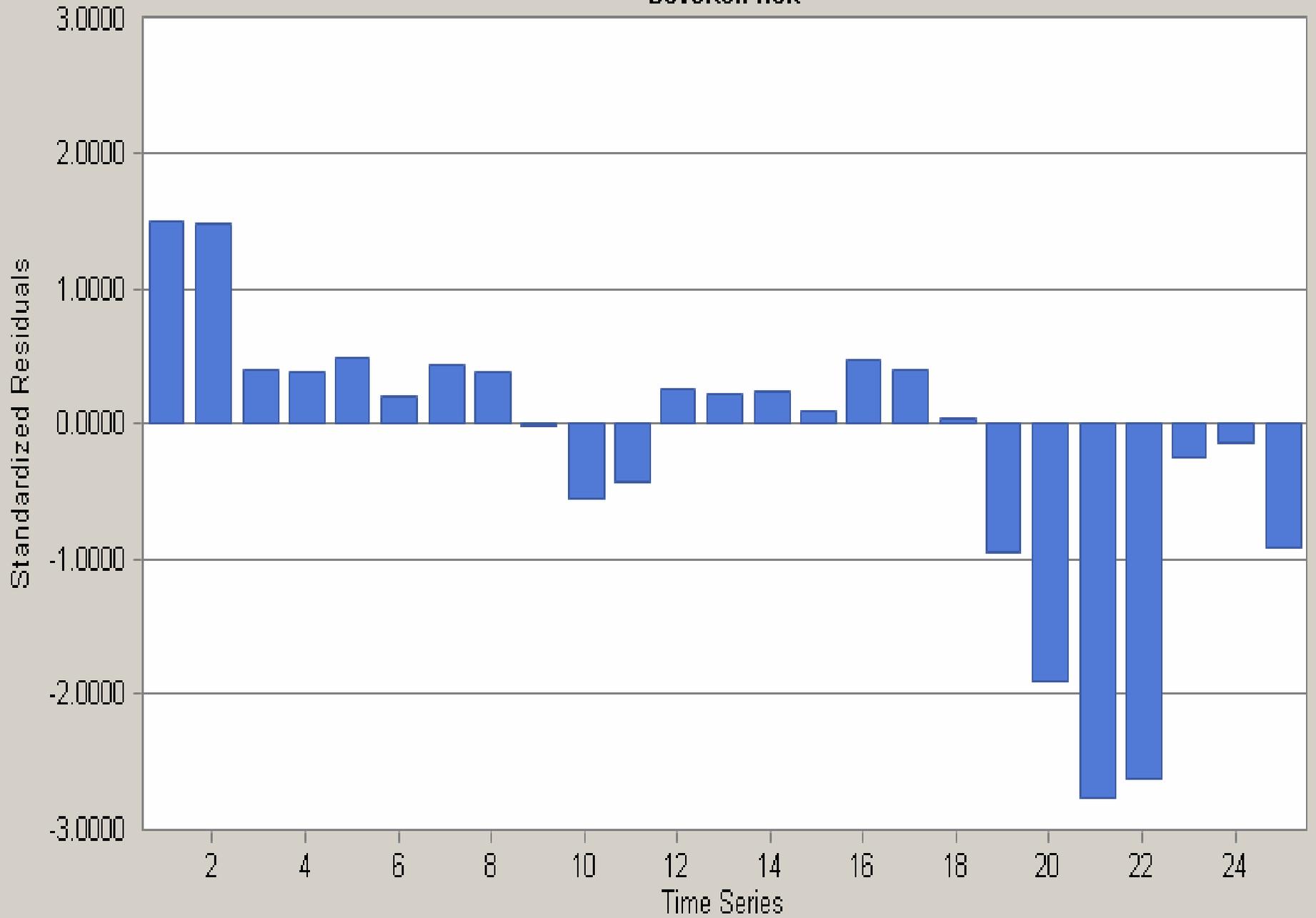
Beverton Holt



■ Observed Recruitment ● Predicted Recruitment

# Stock Recruitment Model Prediction

Beverton Holt



## Parametric BRPs

	BRP2002; GARM 2 SRFIT	GARM 3 BASE SRFIT	GARM 3 SPLIT SRFIT	GARM3 BASE AGEPRO	GARM3 SPLIT AGEPRO
Unfished R Prior (Top 5 Rs)	42314	42186	42186	42186	42186
SE Prior	2.219	2.179	2.179	2.179	2.179
MSY	10606	10750	10683	11806	11806
FMSY	0.32	0.34	0.34	0.34	0.34
SSBMSY	30144	31884	32347	35262	35240
alpha	47.536	45.489	45.646	45.489	45.646
beta	7.398	7.729	8.115	7.729	8.115
sigma	0.344	0.451	0.467	0.451	0.467
steepness	0.816	0.803	0.796	0.803	0.796

## Empirical BRPs

### Top 5 Rs

	BRP2002; GARM 2	GARM 3 BASE	GARM 3 SPLIT	GARM 3 BASE	GARM 3 SPLIT
		Mean R	Mean R	AGEPRO	AGEPRO
F40%	0.21	0.26	0.26	0.26	0.26
YPR	0.24620	0.27430	0.27430	0.27430	0.27430
SSBR	1.10630	1.07009	1.07009	1.07009	1.07009
Mean R	42314	42186	42186	41584	41584
MSY	10420	11572	11572	11446	11446
SSBMSY	46810	45143	45143	44538	44538

### Top 8 Rs

	BRP2002; GARM 2	GARM 3 BASE	GARM 3 SPLIT	GARM 3 BASE	GARM 3 SPLIT
		Mean R	Mean R	AGEPRO	AGEPRO
F40%	0.21	0.26	0.26	0.26	0.26
YPR	0.24620	0.27430	0.27430	0.27430	0.27430
SSBR	1.10630	1.07009	1.07009	1.07009	1.07009
Mean R	35920	35771	35771	35239	35239
MSY	10420	9812	9812	9658	9658
SSBMSY	46810	38278	38278	37608	37608

# **J: SNE/MA WFL**

## **Projection Recommendations**

- **Mean weights at age: 2002-2006**
- **Fishery selectivity (PR): 2002-2006**
- **Maturity at age: MADMF 1982-2006, female time series logistic**
- **Non-parametric empirical @ F40% = 0.26 using R for SSB > ~ 6,000 mt (i.e., largest 8 Rs, 1981-1988 year classes)**
- **SSB<sub>MSY</sub> from AGEPRO projection using largest 8 Rs cdf**

**J: SNE/MA WFL**  
**GARM3 SPLIT VPA Stock Status**  
**thru 2006**

- **Overfished (7% of  $SSB_{MSY} = 37,608$  mt)**
- **Overfishing is occurring ( $4X F_{MSY} = F40\% = 0.26$ )**
- **$F_{2006} = 1.02$ ;  $SSB_{2006} = 2,544$  mt**