Management Prescription

Rainbow Trout:
Maintain and enhance a wild (self-sustaining) Blue Ribbon Rainbow Trout fishery at Lees Ferry that does not adversely affect the native aquatic community in Grand Canyon National Park with 4 main objectives (Table 1).

Table 1. Lees Ferry Objectives and Adaptive Management Strategies:

Parameters	Objective Guideline	Strategies if Objectives are not met
OBJECTIVE - Maintain a healthy population of Rainbow Trout at Lees Ferry to support recreational fishing.		
Recruitment	Rainbow Trout ≤ 6 inches compose 20% - 50% of the Lees Ferry population as determined by fall electrofishing	• Stocking • Trout Management Flows • HFEs
Abundance	Rainbow Trout electrofishing CPUE exceeds 1 fish per minute (all sizes of trout)	• Stocking • HFEs • Change in regulations
OBJECTIVE – Provide a quality trout fishing experience with catch frequency commensurate with the Blue Ribbon status of the fishery.		
Angler Catch Rate	Angler catch rate ≥ 1 Rainbow Trout per hour	• Stocking • HFEs • Change in regulations
OBJECTIVE – Grow quality sized trout that are available to the angler, consistent with the Blue Ribbon status of the fishery.		
Angler Catch Quality	10 Rainbow Trout ≥ 14 inches caught by the angler in a 10-hour day, at least one ≥ 20 inches Maintain trout condition factor ≥ 1 during the summer months.	• Food base enhancement • Trout Management Flows • Change in regulations
OBJECTIVE – Avoid catastrophic failure of the trout population, and establish protocols for emergency recovery from population loss.		
Water Quality	Dissolved Oxygen ≥ 5 mg/l as measured at outflow from GCD.	• Flow manipulation • Temperature Control Device • Use of river outlet tubes
Catastrophic Failure of Population	If failure of multiple age classes is documented by electrofishing and <0.25 trout per hour is documented in creel surveys, mitigation will be necessary.	• Stocking • Translocation of fish

Lees Ferry Fisheries Update

(preliminary data)

TWG Meeting - October 20, 2015

Bill Stewart, Dave Rogowski, Lisa Winters, Pilar Wolters Robin Osterhoudt, Kristy Manuell

Photo: George Andrejko

NPS Comprehensive Fish Management Plan

- Low Recruitment: < 20% for more than three years.
- Low relative abundance: efishing < 1 fish/min for 2 consecutive years.
- Low angler catch: ≤ 0.5 fish/hour and size is < 14” for two consecutive years.

Angler Recommendations

- Size structure indicative of a stable RBT population (YOY = 20-50% of population)
- Angler catch rate > 1 fish/hr for RBT ≥ 14”
- Angler catch rate > 0.1 fish/hr for RBT ≥ 20”
- A robust body condition (Kn ≥ 1.0 in summer months)
- A diverse aquatic food base with 10% abundance of EPT species

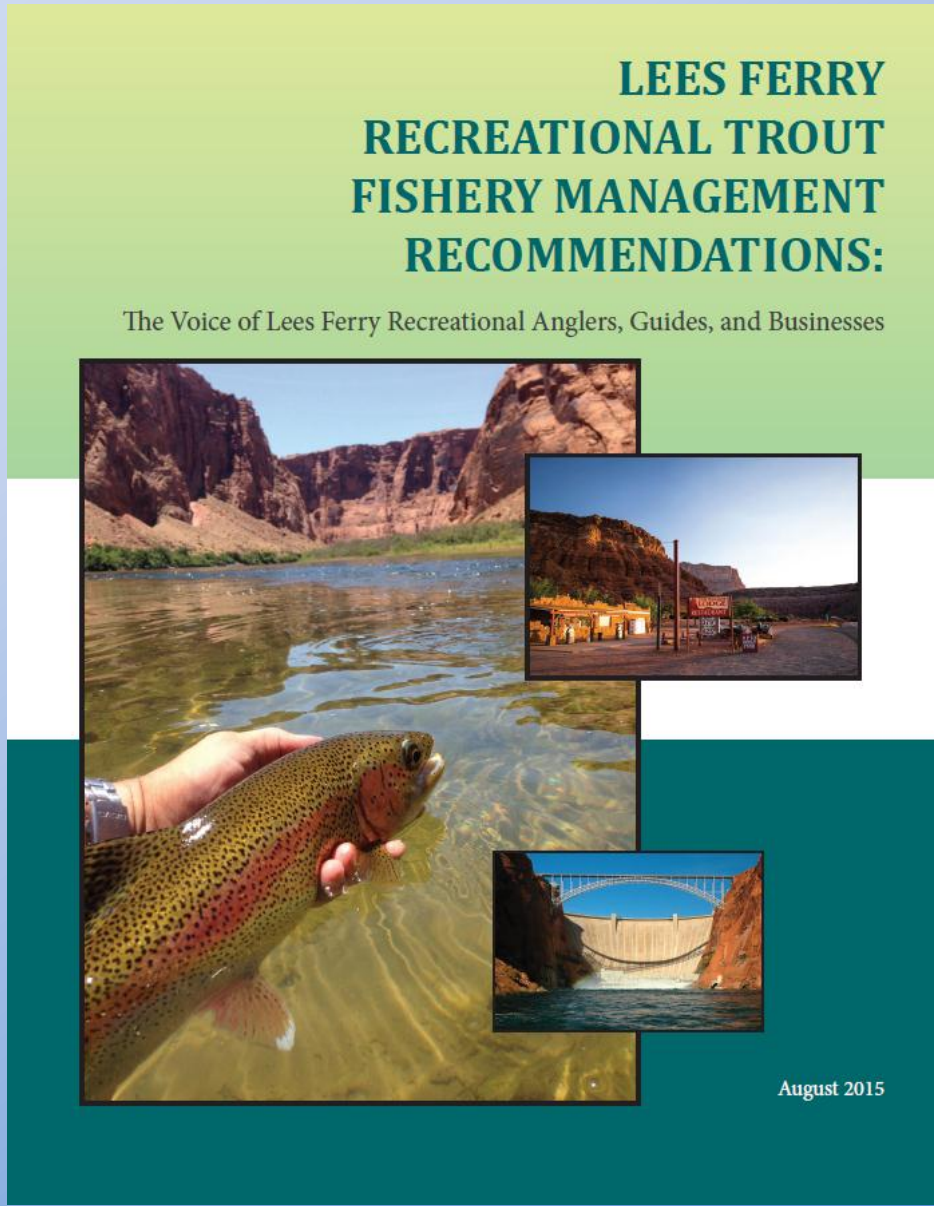

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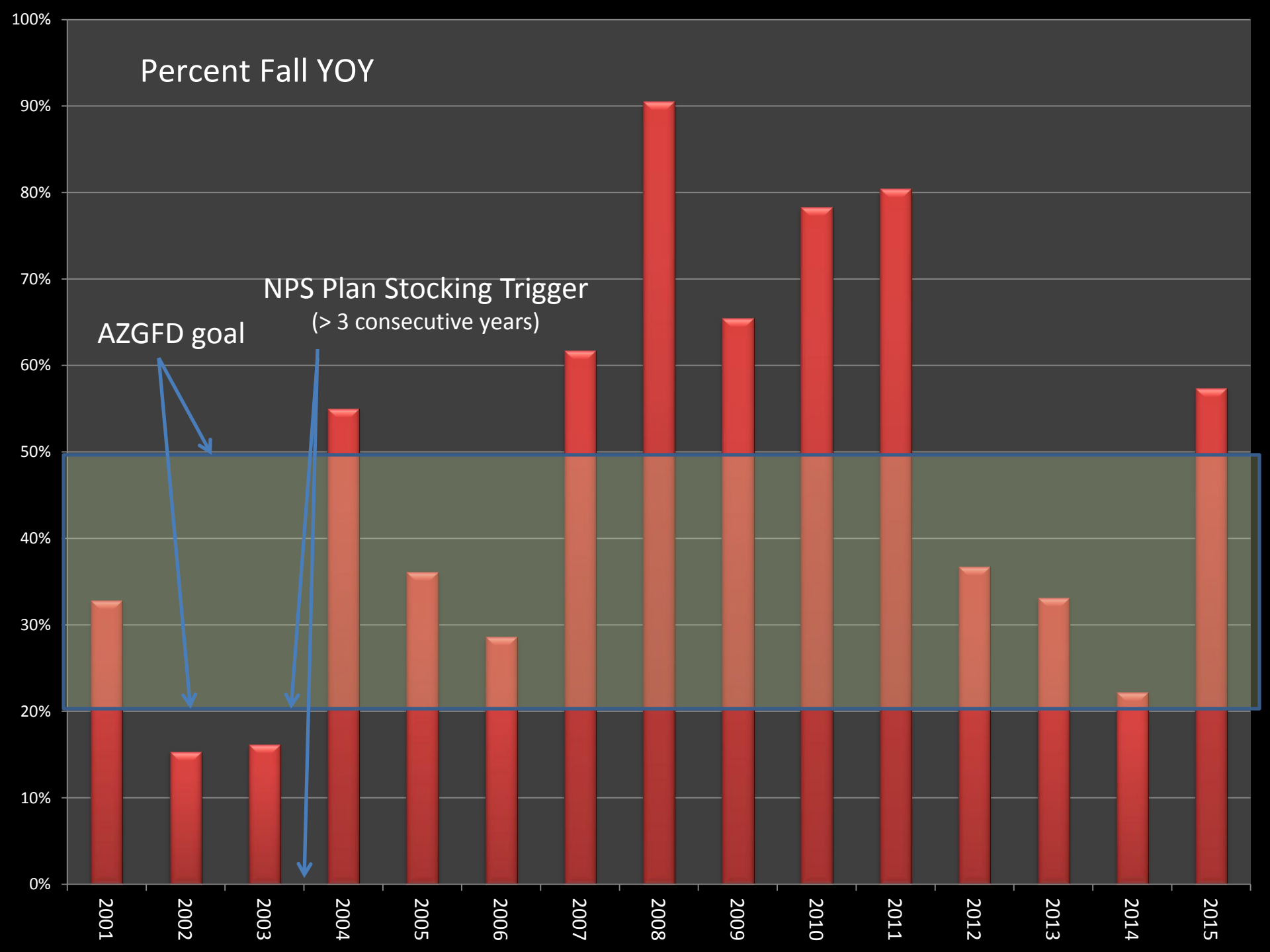
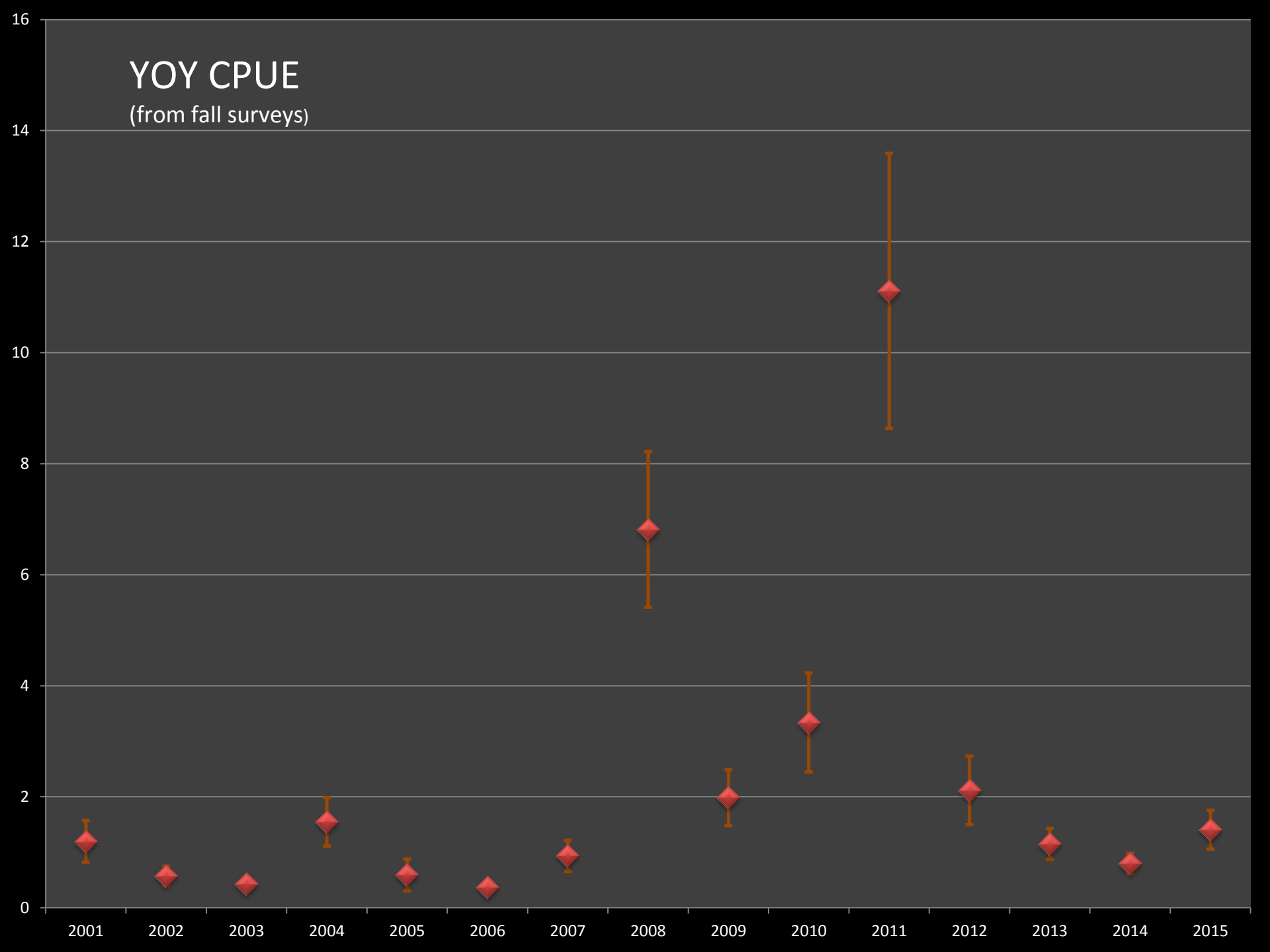
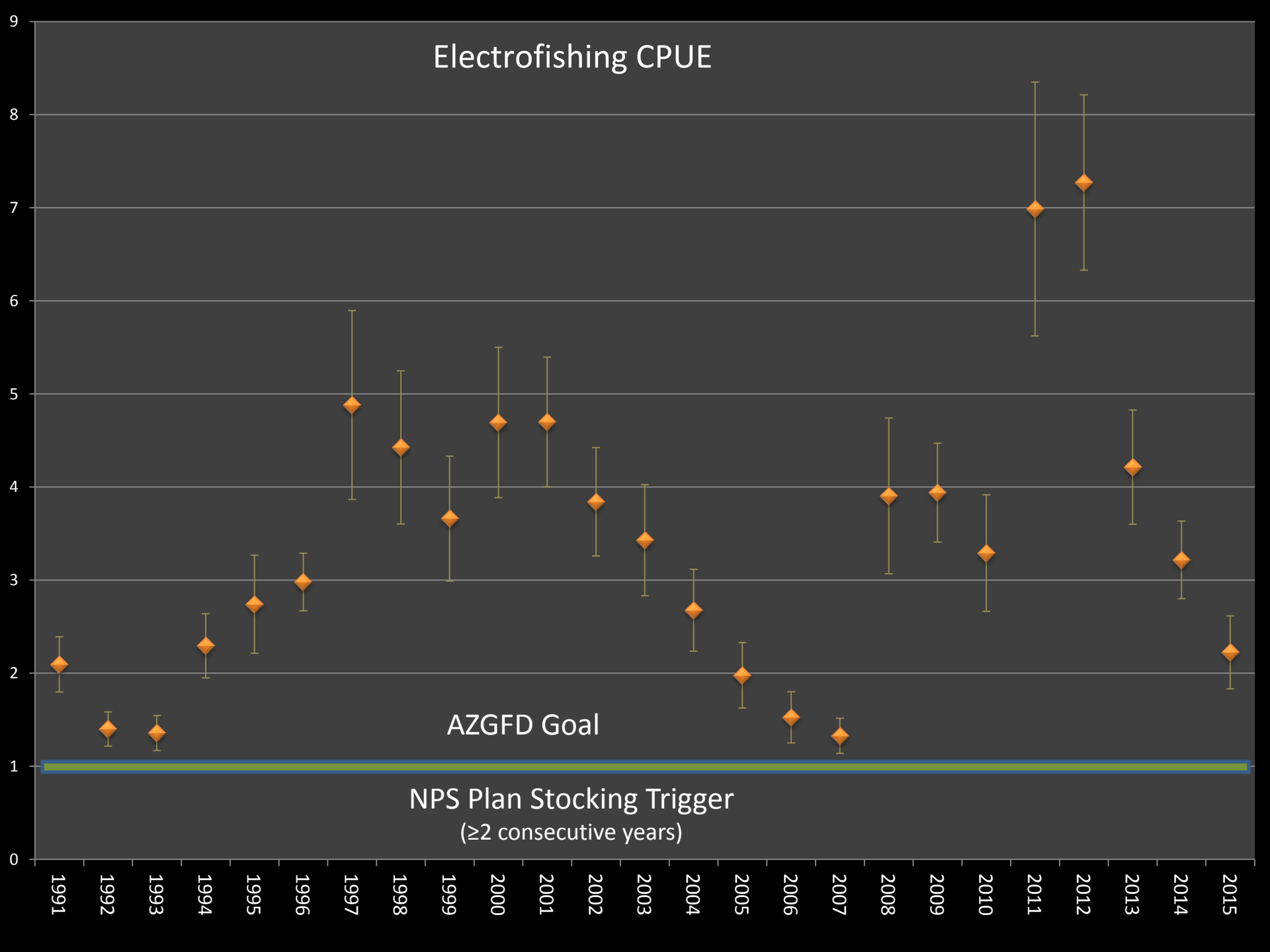
Photo: George Andrejko


Percent Fall YOY
AZGFD goal
NPS Plan Stocking Trigger
(> 3 consecutive years)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

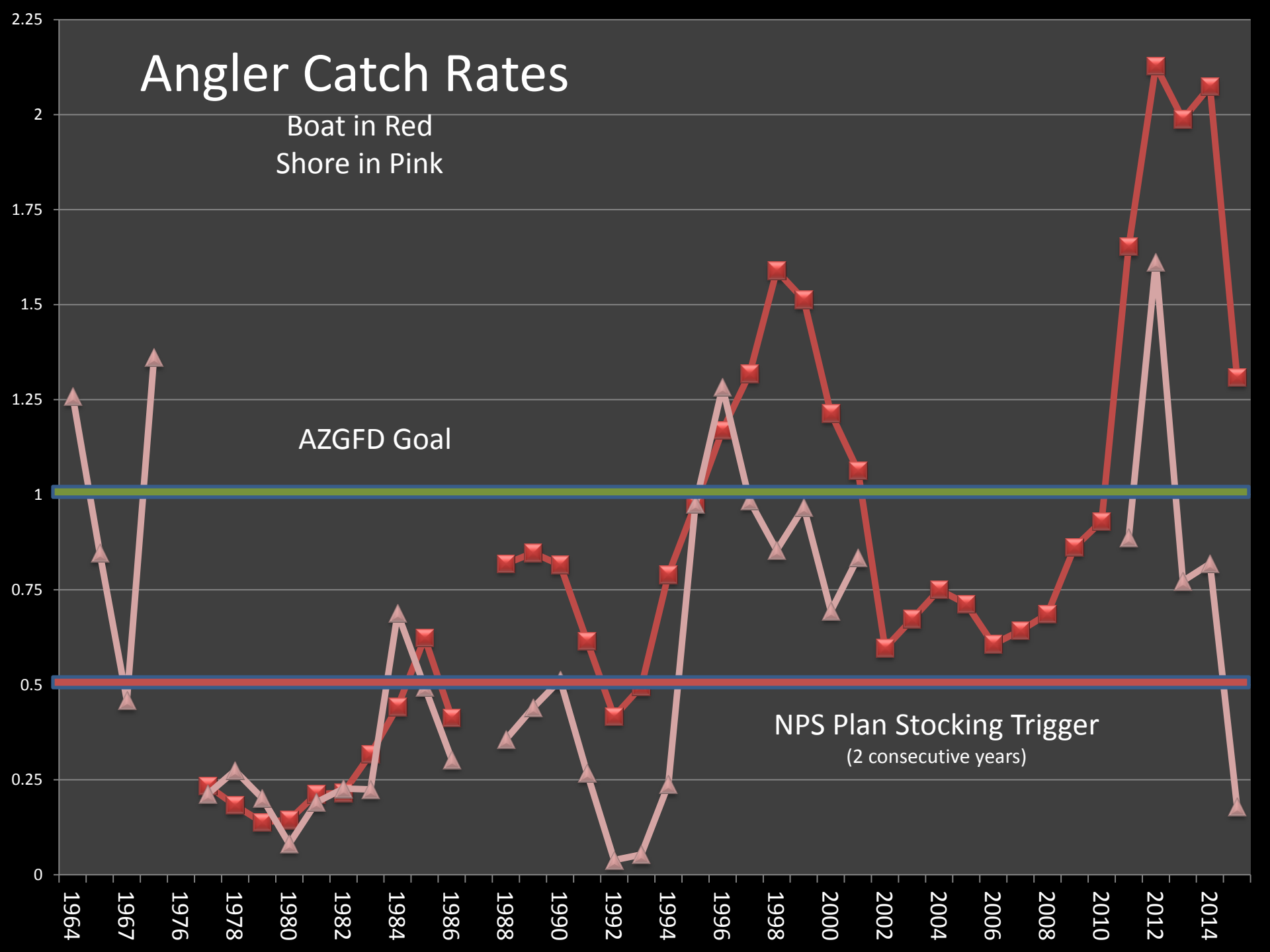

YOY CPUE
(from fall surveys)
16
14
12
10
8
6
4
2
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

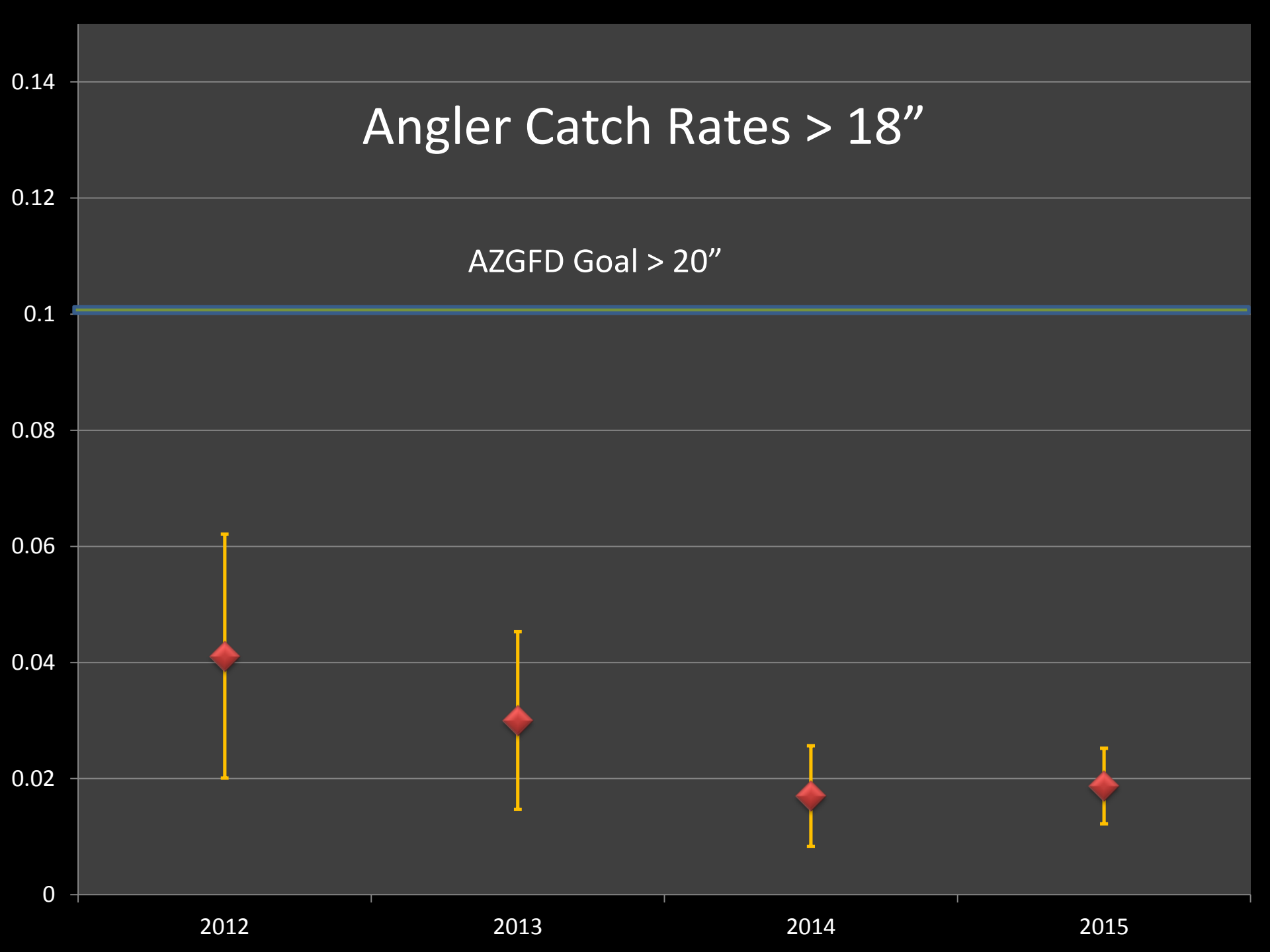

Electrofishing CPUE
AZGFD Goal
NPS Plan Stocking Trigger
(≥2 consecutive years)
0
1
2
3
4
5
6
7
8
9
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

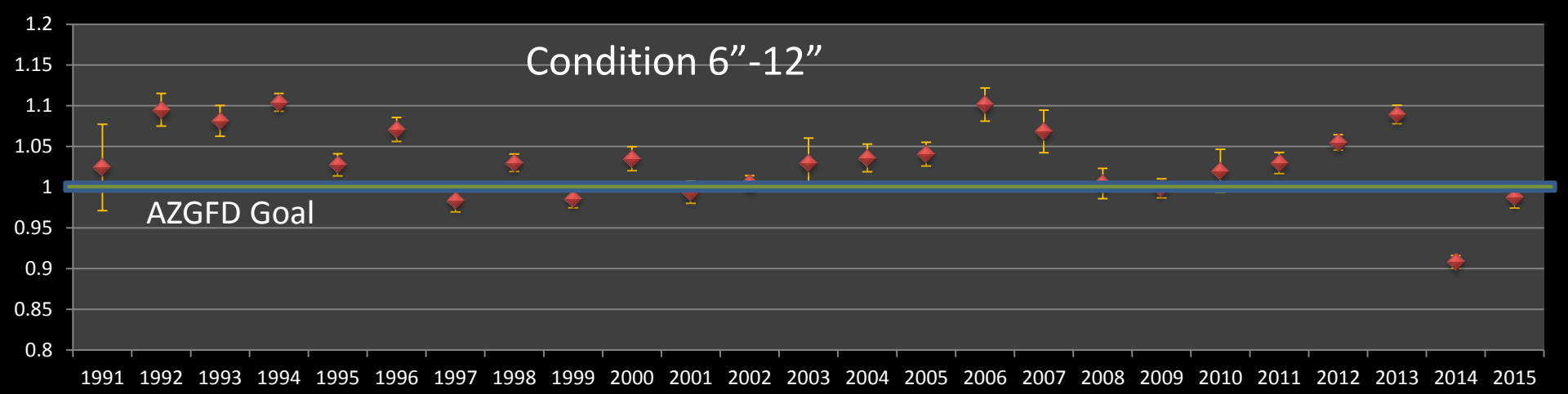
Objective – Provide a quality trout fishing experience with catch frequency commensurate with the Blue Ribbon status of the fishery.

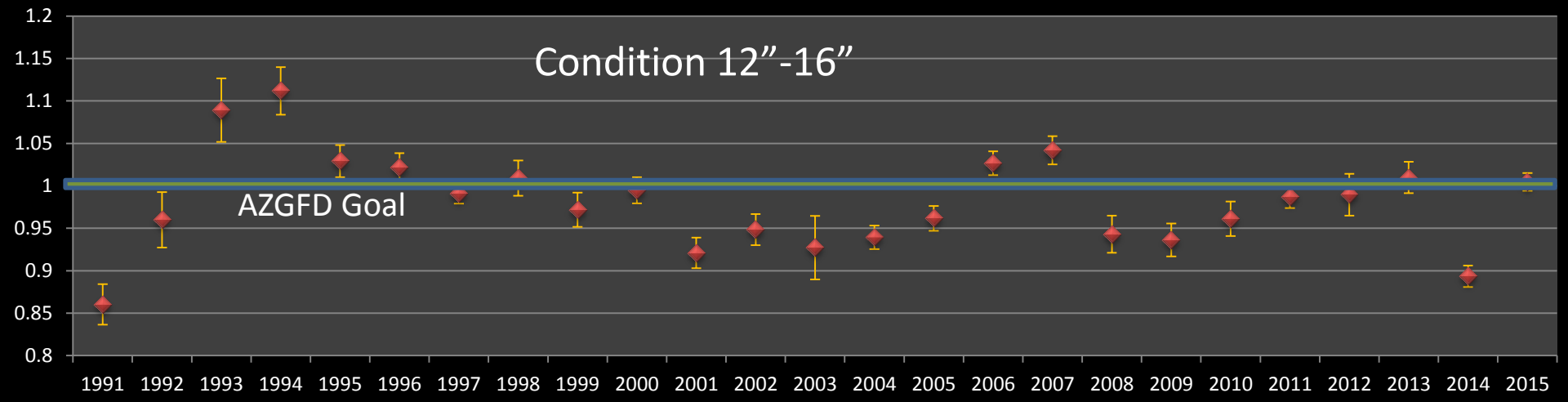
Objective – Grow quality sized trout that are available to the angler, consistent with the Blue Ribbon status of the fishery.

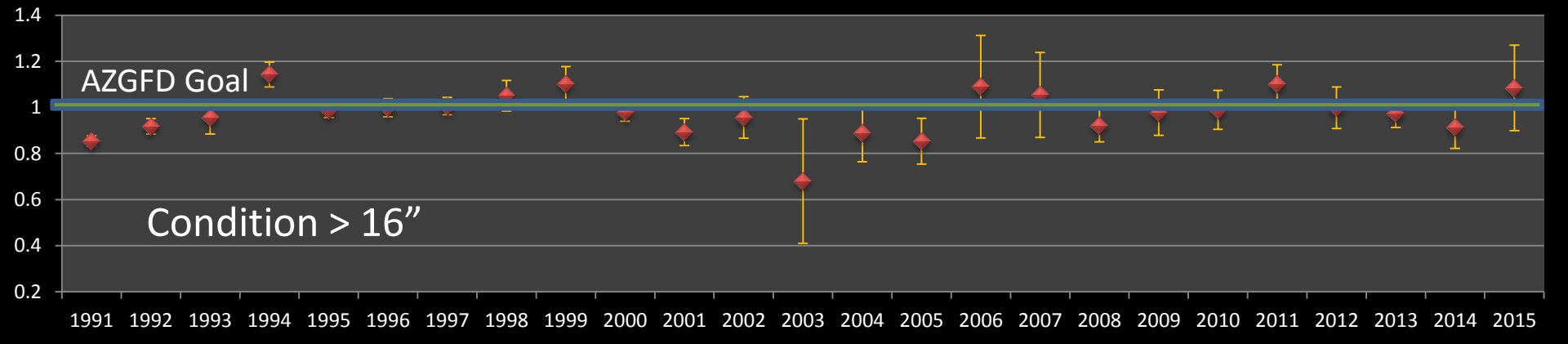
Photo: George Andrejko

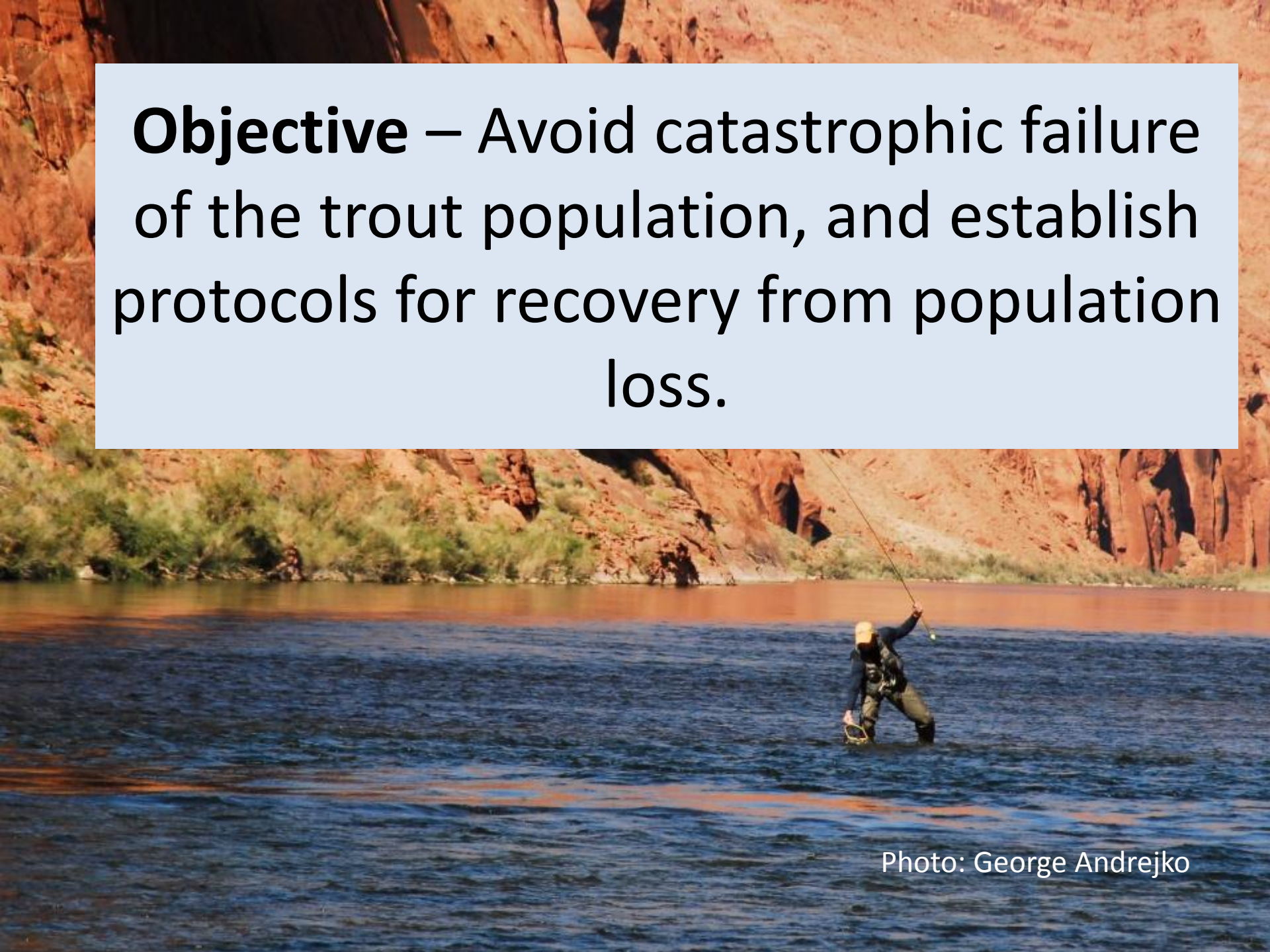

Angler Catch Rates
Boat in Red
Shore in Pink
AZGFD Goal
NPS Plan Stocking Trigger
(2 consecutive years)
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
1964
1967
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014


Angler Catch Rates > 18”
AZGFD Goal > 20”
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
2012
2013
2014
2015


Condition 6”-12”
AZGFD Goal
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


Condition 12”-16”
AZGFD Goal
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015


AZGFD Goal
Condition > 16”
1.4
1.2
1
0.8
0.6
0.4
0.2
1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015



Objective – Avoid catastrophic failure of the trout population, and establish protocols for recovery from population loss.

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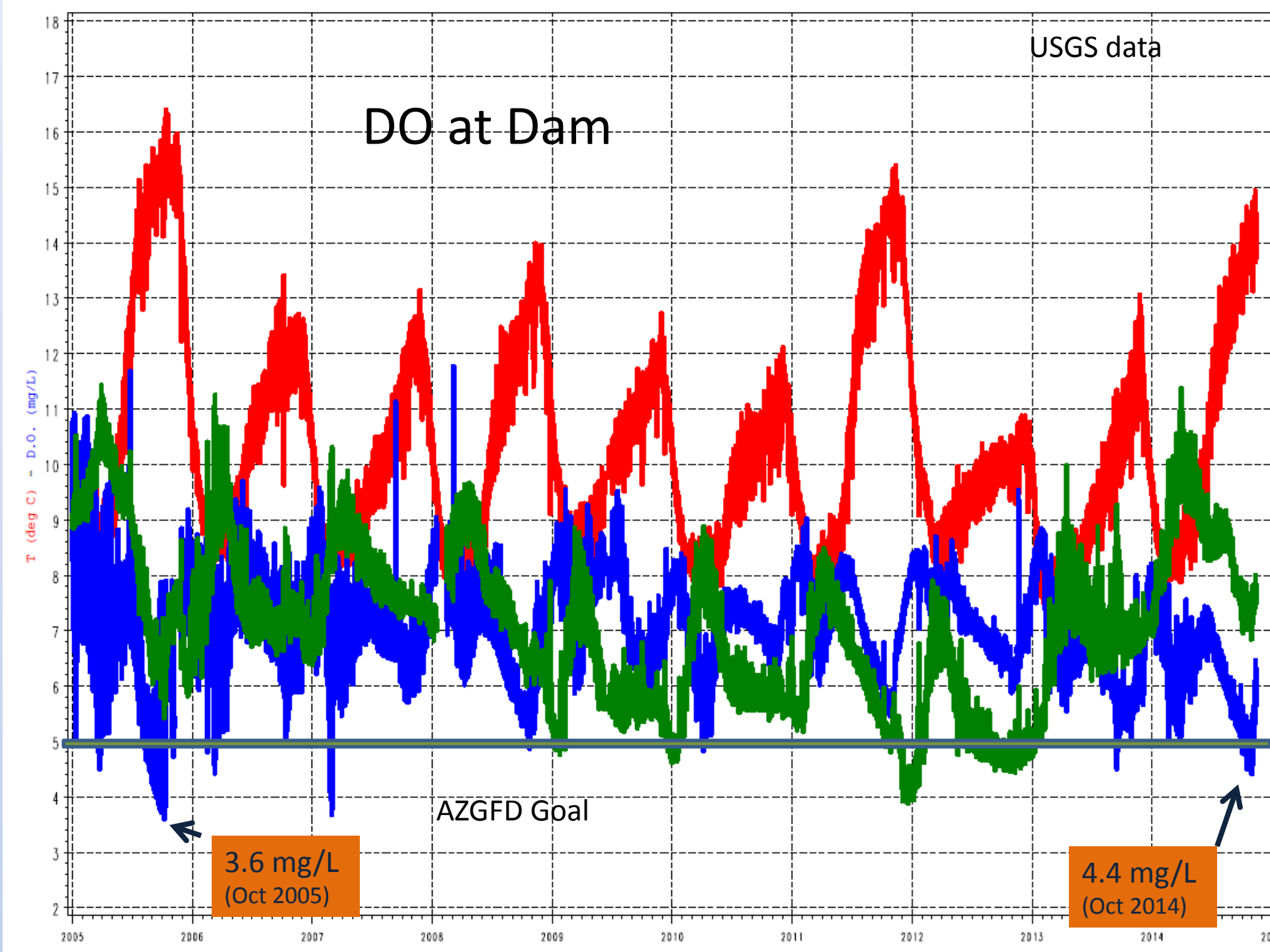
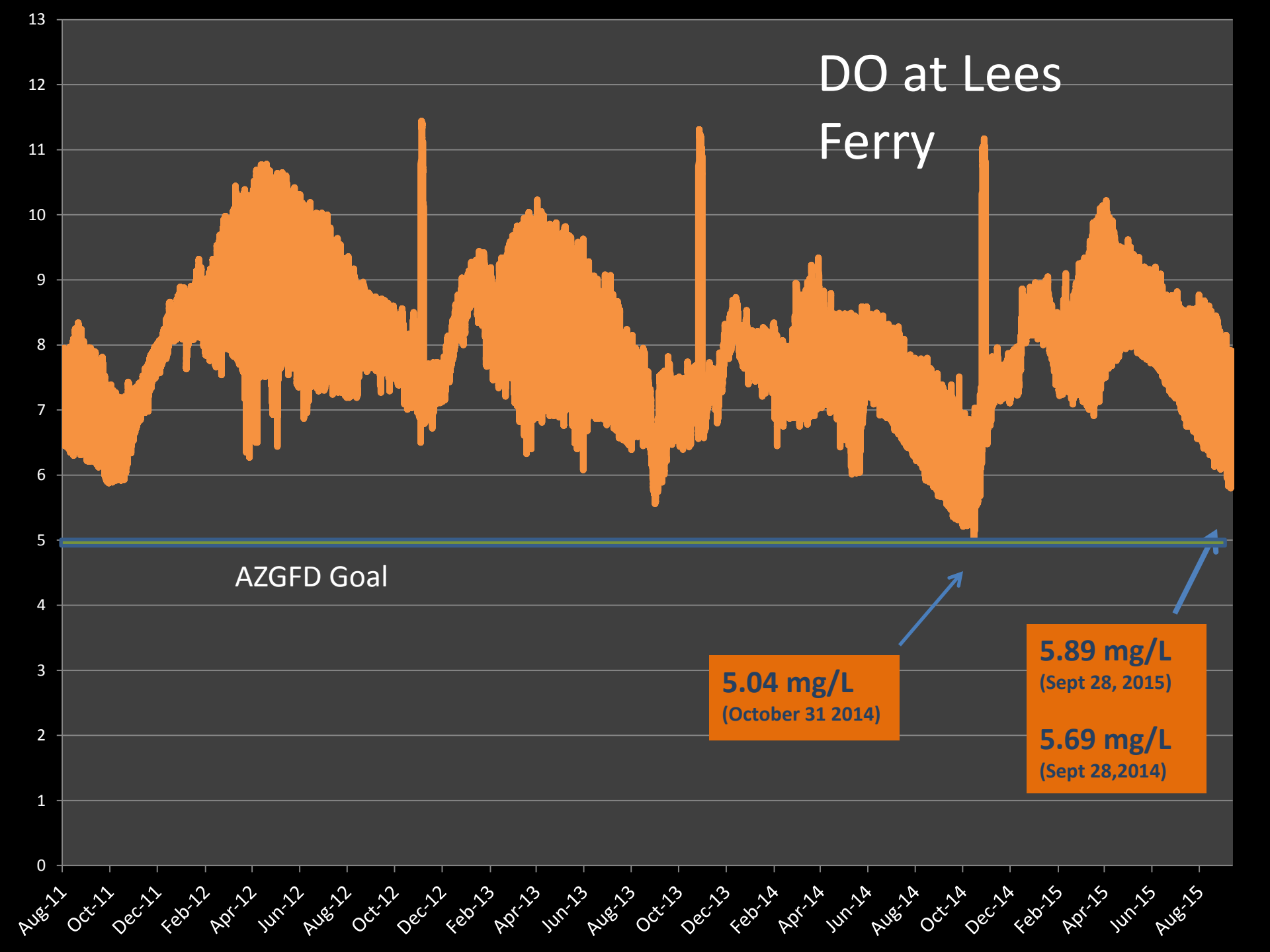
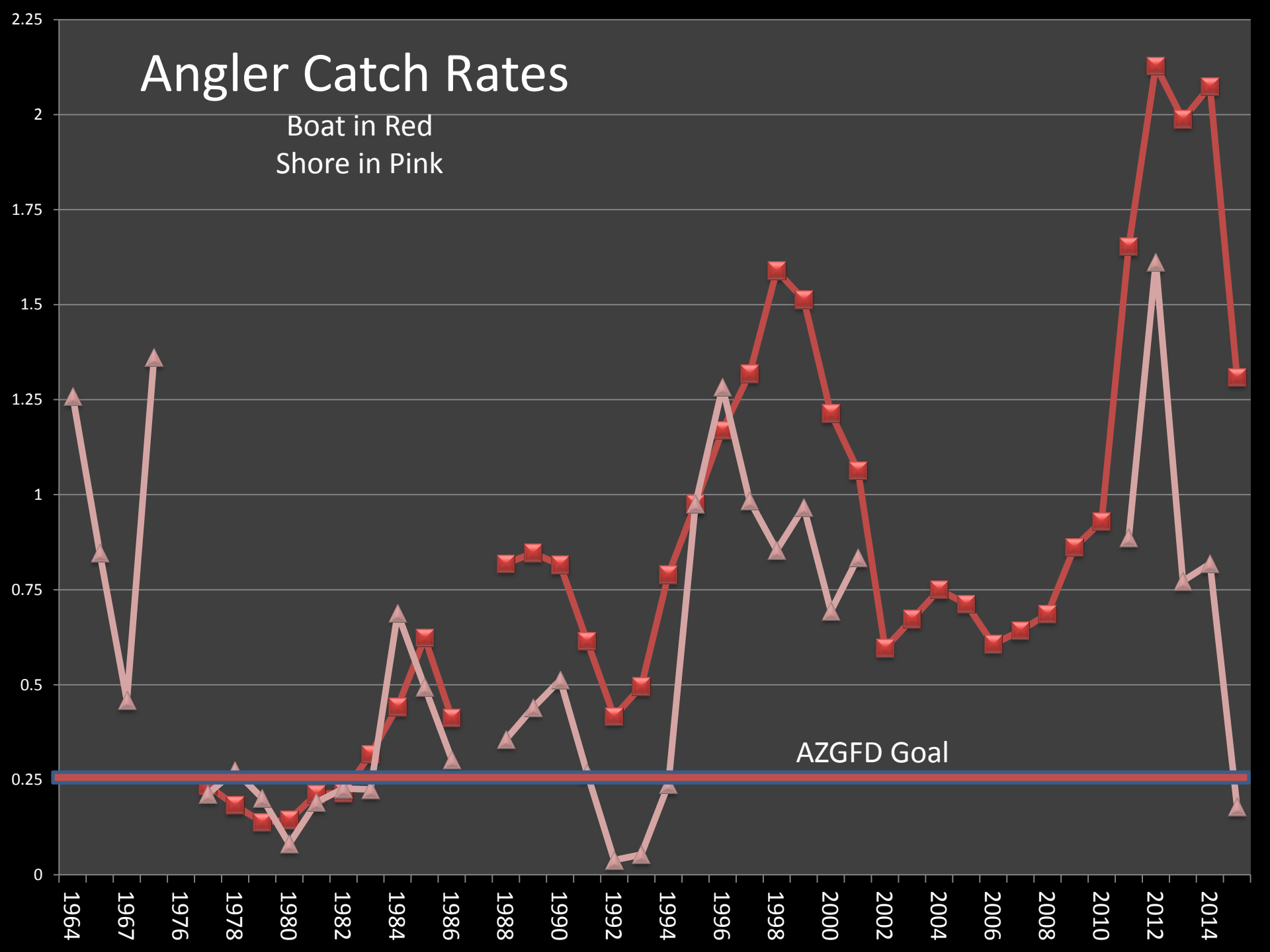
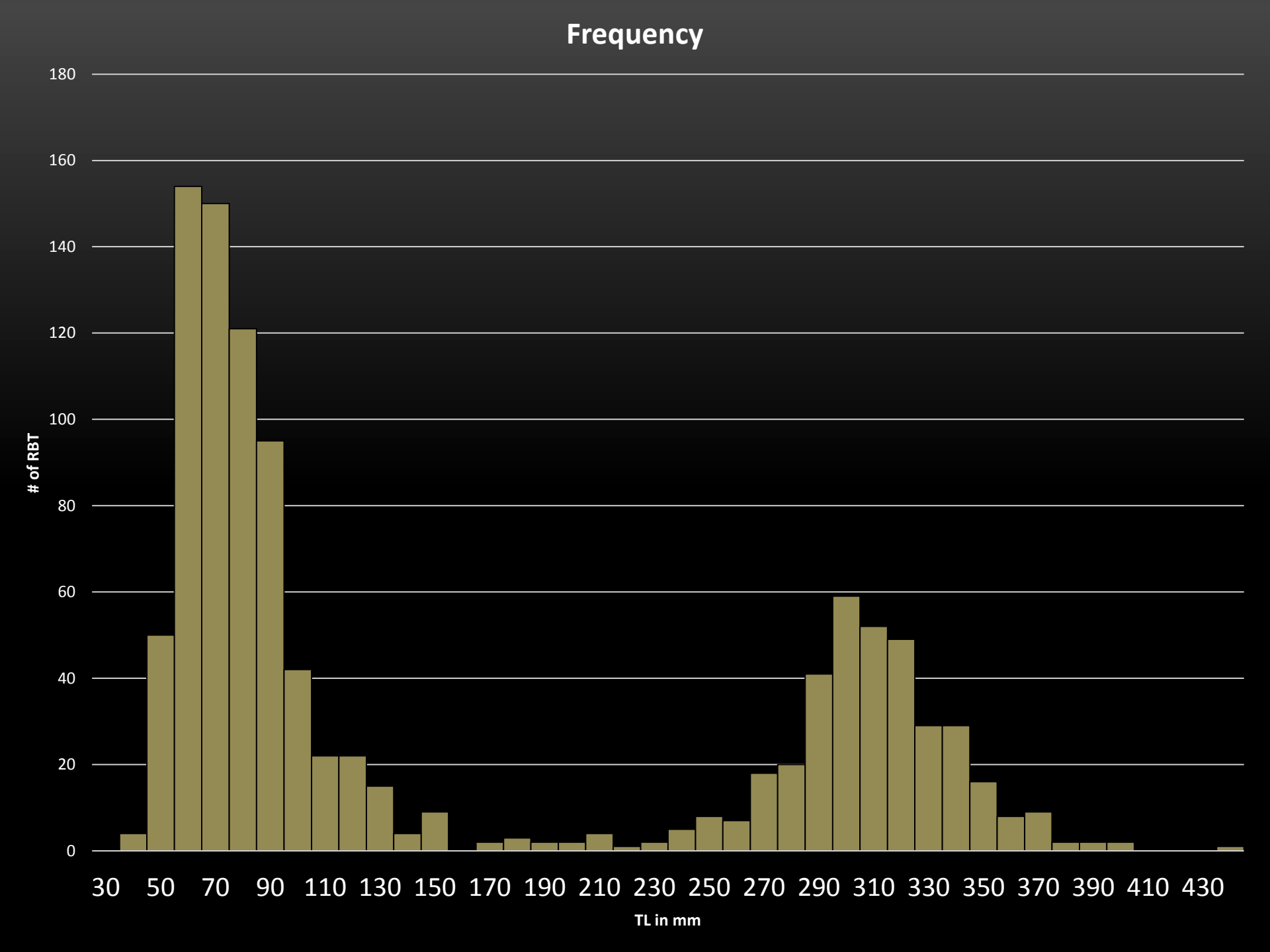

USGS data
DO at Dam
T (deg C) - D.O. (mg/L)
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
AZGFD Goal
3.6 mg/L
(Oct 2005)
4.4 mg/L
(Oct 2014)


DO at Lees Ferry
AZGFD Goal
5.04 mg/L
(October 31 2014)
5.89 mg/L
(Sept 28, 2015)
5.69 mg/L
(Sept 28,2014)
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Aug-11
Oct-11
Dec-11
Feb-12
Apr-12
Jun-12
Aug-12
Oct-12
Dec-12
Feb-13
Apr-13
Jun-13
Aug-13
Oct-13
Dec-13
Feb-14
Apr-14
Jun-14
Aug-14
Oct-14
Dec-14
Feb-15
Apr-15
Jun-15
Aug-15


Angler Catch Rates
Boat in Red
Shore in Pink
AZGFD Goal
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
1964
1967
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014


Frequency
180
160
140
120
100
80
60
40
20
0
# of RBT
30
50
70
90
110
130
150
170
190
210
230
250
270
290
310
330
350
370
390
410
430
TL in mm

Parameters	Objective Guideline	2015 Status (preliminary)
OBJECTIVE - Maintain a healthy population of Rainbow Trout at Lees Ferry to support recreational fishing.		
Recruitment	Rainbow Trout ≤ 6 inches compose 20% - 50% of the Lees Ferry population as determined by fall electrofishing	57%
Abundance	Rainbow Trout electrofishing CPUE exceeds 1 fish per minute (all sizes of trout)	2.22 fish/min
OBJECTIVE – Provide a quality trout fishing experience with catch frequency commensurate with the Blue Ribbon status of the fishery.		
Angler Catch Rate	Angler catch rate ≥ 1 Rainbow Trout per hour	Boat = 1.31 fish/hr Walk-in = 0.18 fish/hr
OBJECTIVE – Grow quality sized trout that are available to the angler, consistent with the Blue Ribbon status of the fishery.		
Angler Catch Quality	10 Rainbow Trout ≥ 14 inches caught by the angler in a 10-hour day, at least one ≥ 20 inches Maintain trout condition factor ≥ 1 during the summer months.	0.019 fish/hr (>18”) Kn = 0.98-1.08
OBJECTIVE – Avoid catastrophic failure of the trout population, and establish protocols for emergency recovery from population loss.		
Water Quality	Dissolved Oxygen ≥ 5 mg/l as measured at outflow from GCD.	Likely to go below 5 mg/L at Dam (LF reading 5.89 on Sept 28th)
Catastrophic Failure of Population	If failure of multiple age classes is documented by electrofishing and <0.25 trout per hour is documented in creel surveys, mitigation will be necessary.	See above and multiple age classes exist.

Recommendations

- Real time DO information from GCD
- Development of a low DO action plan
- Development of food base enhancement strategies
- Creation of an ad hoc group to address strategies for reaching objectives
- If sand budget allows would support a Spring HFE

Questions