



2014 Thompson Falls Upstream Fish Passage

Annual TAC Meeting
Missoula, Montana
December 4, 2014



Agenda

- ▶ Introduction
- ▶ PPL Montana transition to NorthWestern Energy
- ▶ Summary of 2014
 - ▶ Fisheries Baseline
 - ▶ Upstream Fish Passage
- ▶ 2014 TAC Project Reports
- ▶ 2015 TAC Proposals
- ▶ 2015 Proposed Activities
- ▶ 2014 Annual Report Schedule
- ▶ Next Meeting



Introduction



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Fisheries Baseline

2014 SAMPLING LOCATIONS

- RESERVOIR (ELECTROFISH AND GILL NET)
- ABOVE ISLANDS (ELECTROFISH)
- PARADISE TO PLAINS (ELECTROFISH)



Thompson Falls

Montana Highway 200

Thompson River

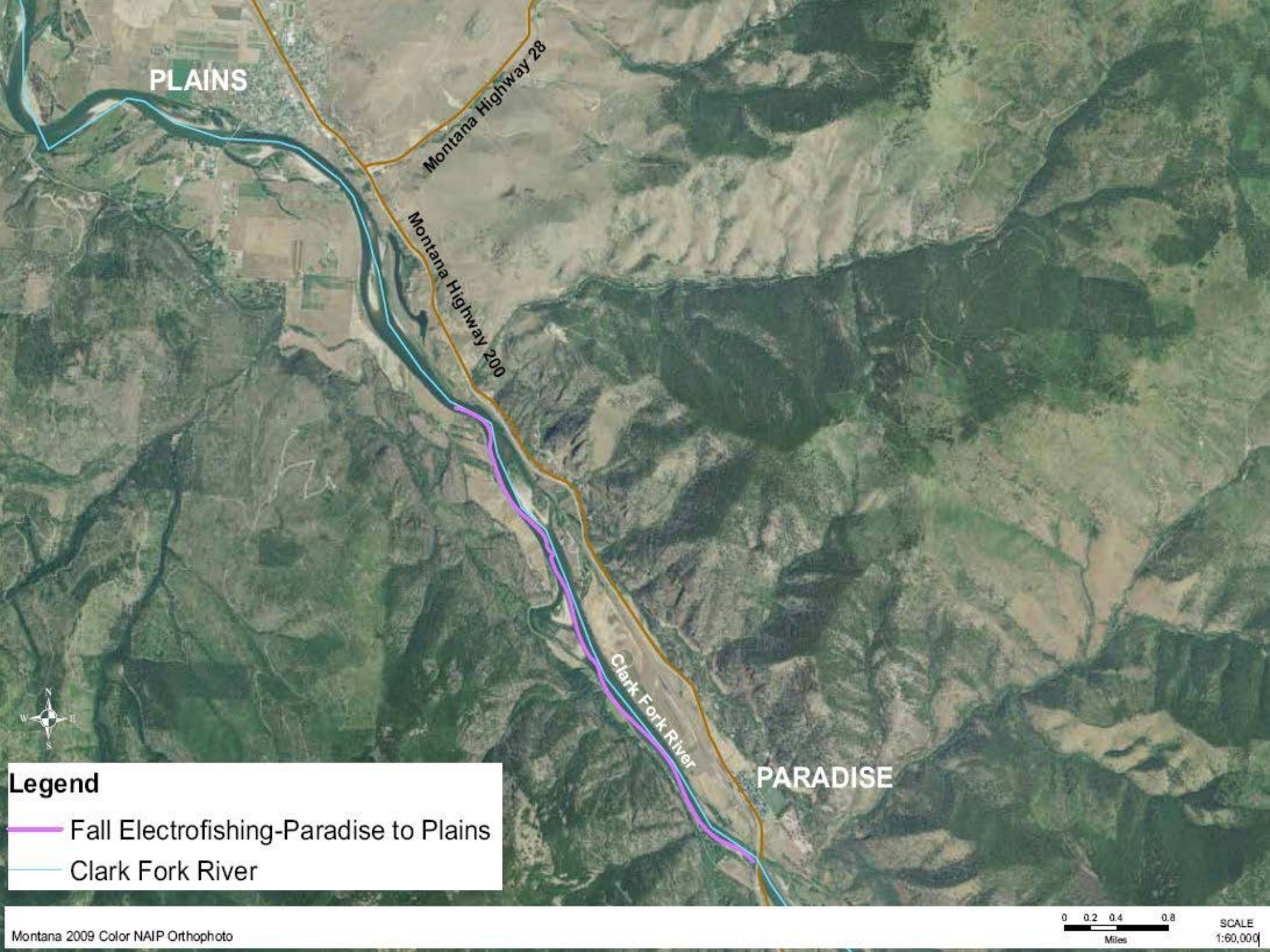
Clark Fork River

Eddy Creek

Legend

- Fall Gillnetting-Reservoir
- 🏰 Thompson Falls Dam
- Fall Electrofishing-Above Island Complex
- Spring Electrofishing - Upstream Section
- Spring Electrofishing - Downstream Section
- River/Streams

0 0.4 0.8 1.6 SCALE



PLAINS

Montana Highway 28

Montana Highway 200

Clark Fork River

PARADISE



Legend
— Fall Electrofishing-Paradise to Plains
— Clark Fork River

0 0.2 0.4 0.8
Miles

SCALE
1:60,000

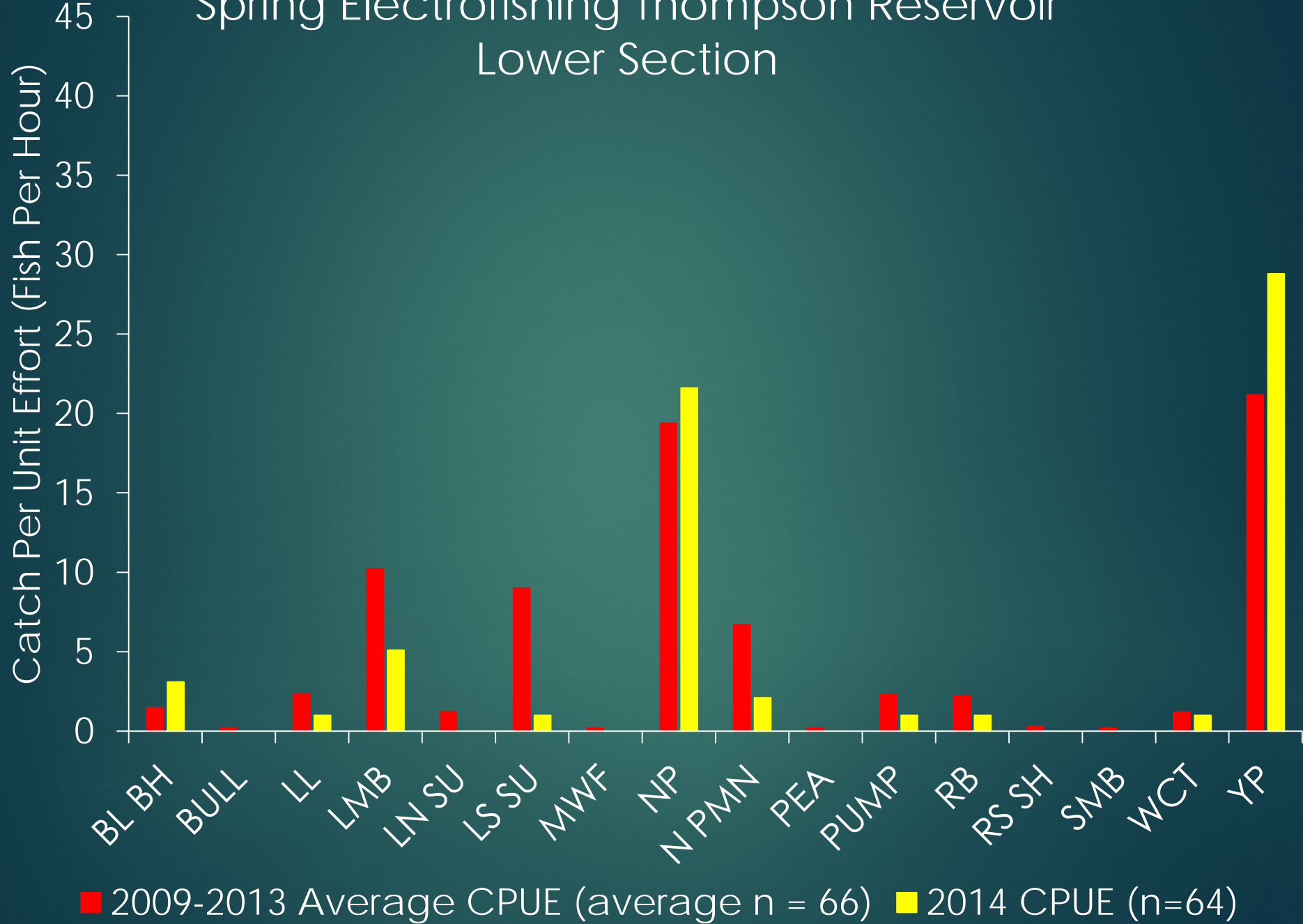


Fisheries Baseline

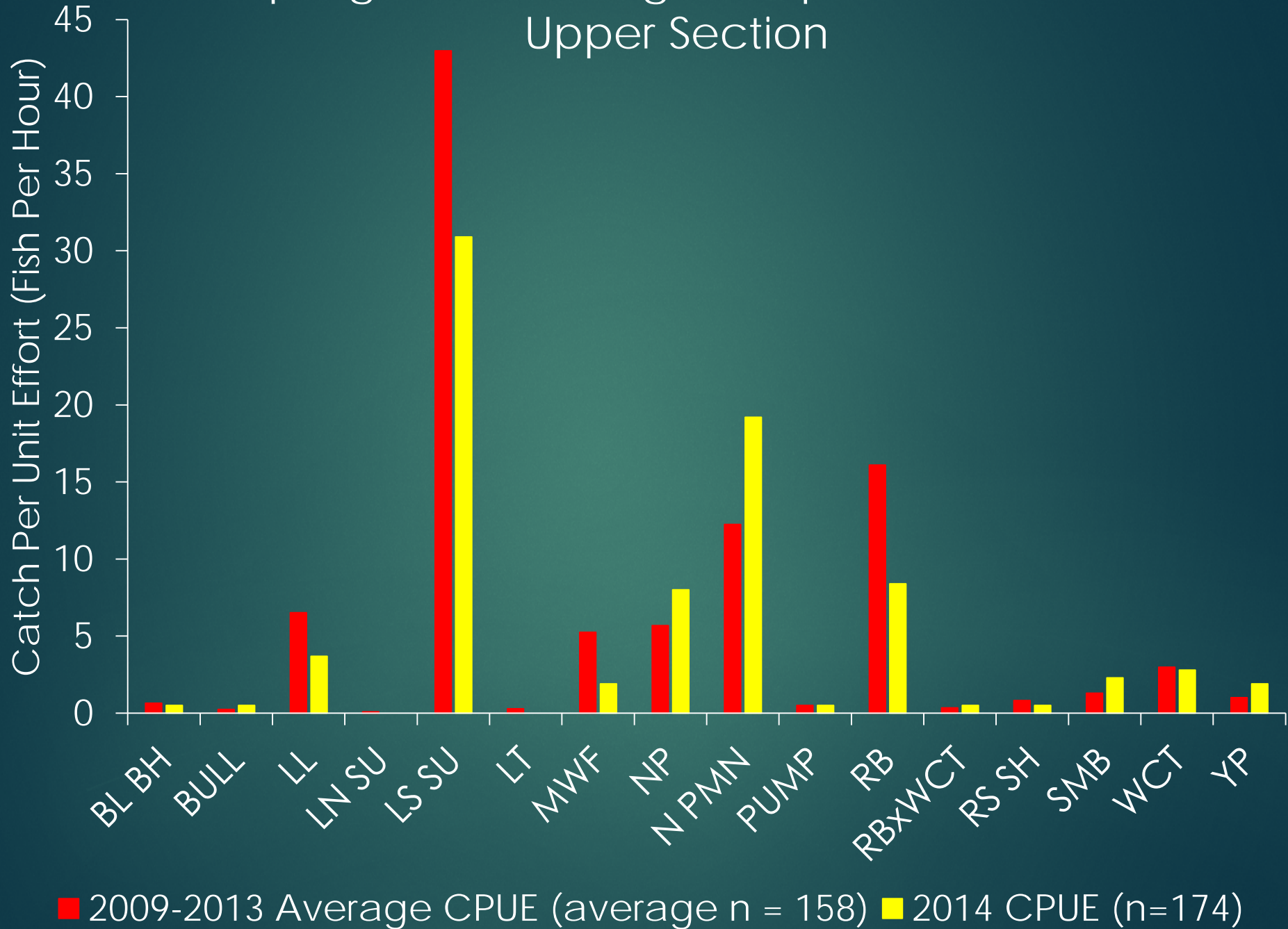
2014 SPRING ELECTROFISHING CLARK FORK RIVER

- ✓ LOWER RESERVOIR – APRIL 14
- ✓ UPPER RESERVOIR – APRIL 15

Spring Electrofishing Thompson Reservoir Lower Section

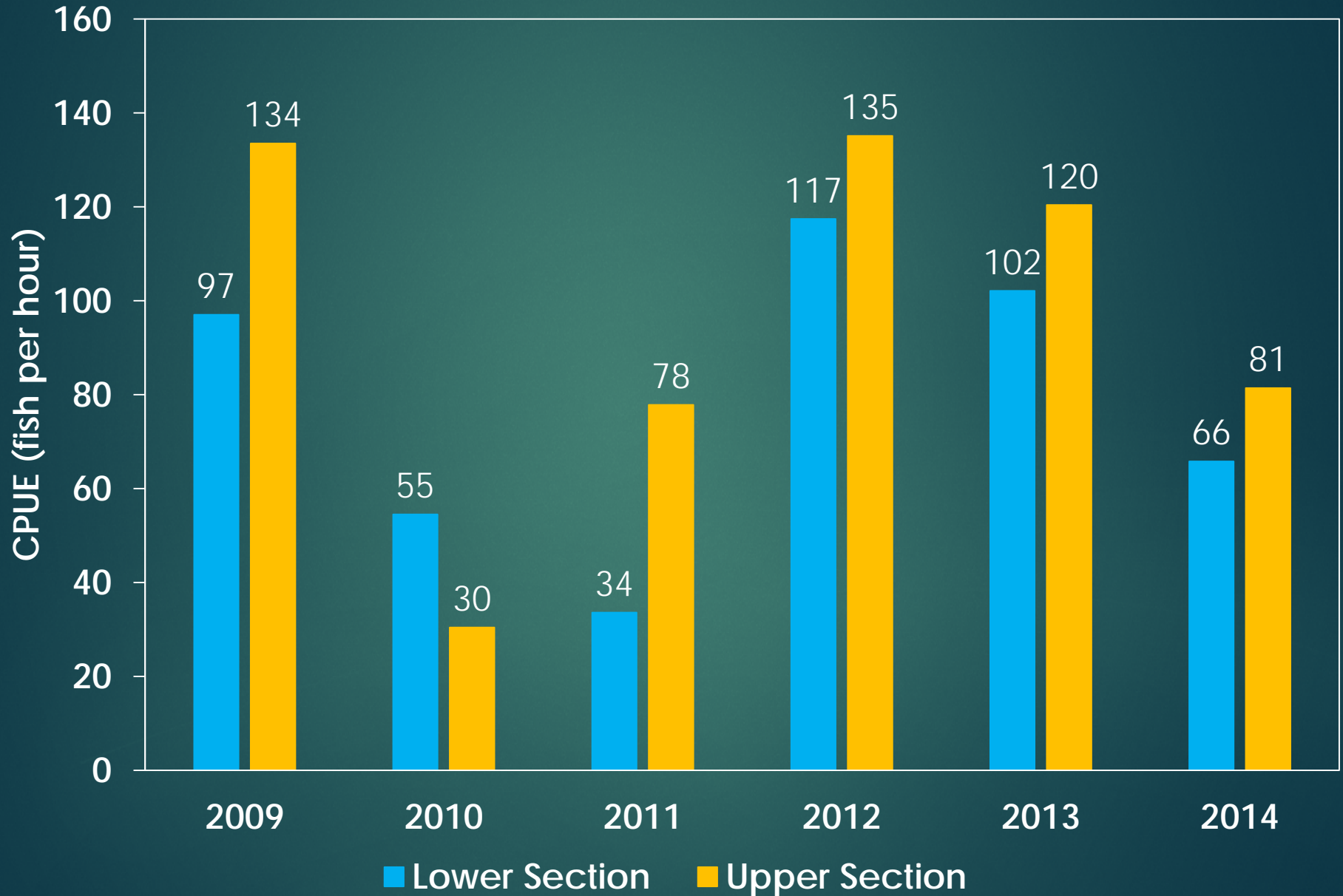


Spring Electrofishing Thompson Reservoir Upper Section



Thompson Reservoir Spring Electrofishing 2014

Total Catch Per Unit Effort (fish per hour)



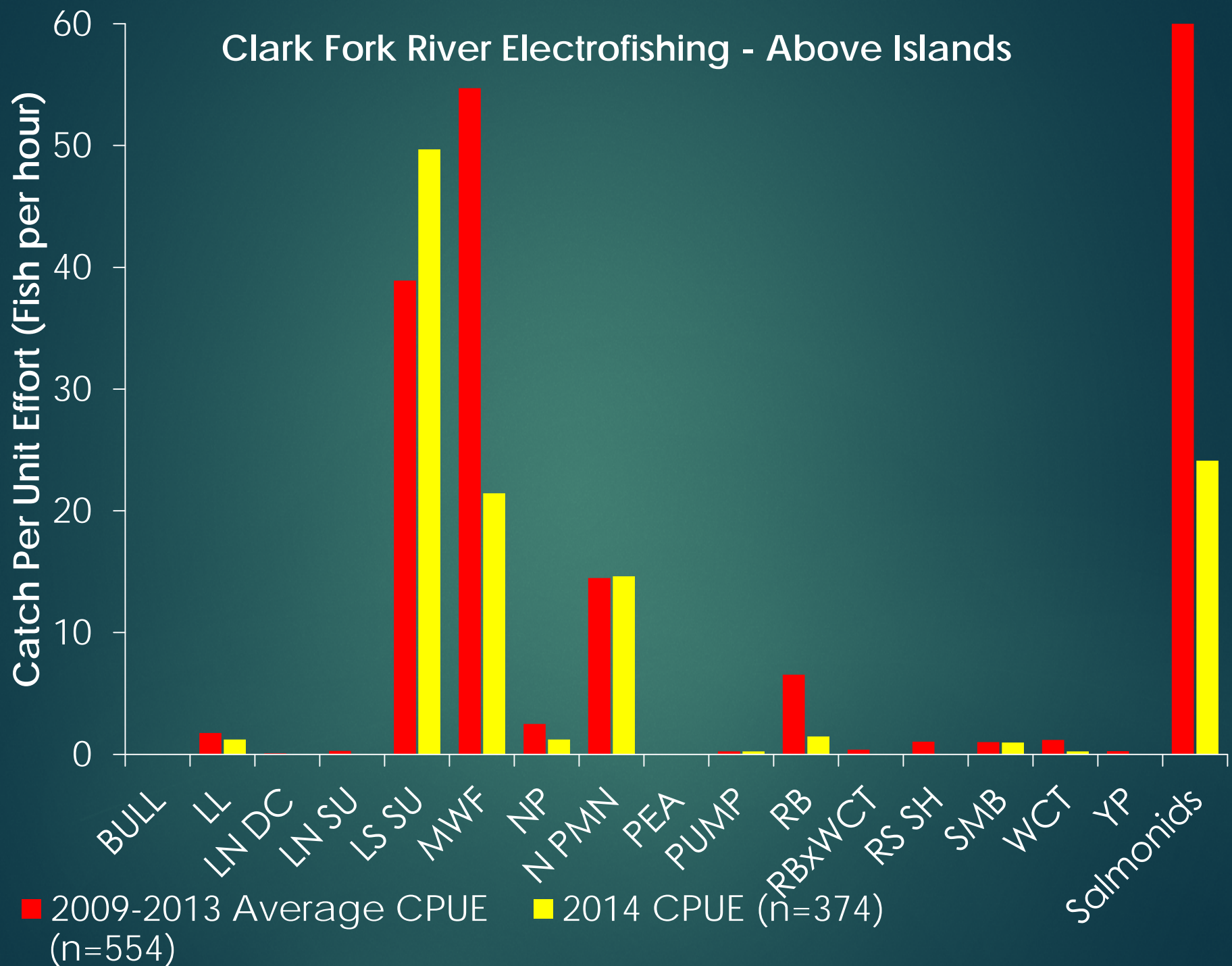


Fisheries Baseline

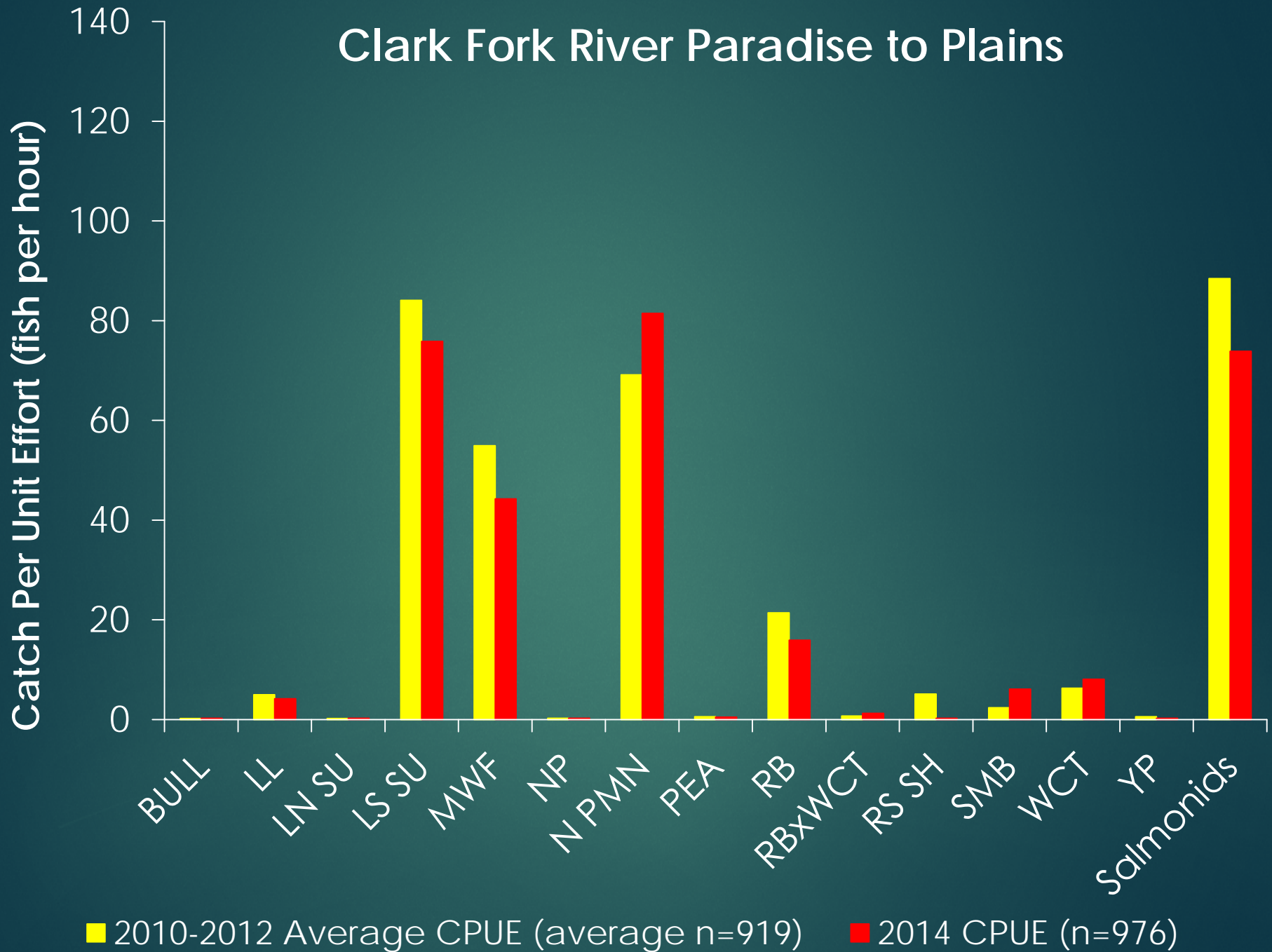
2014 FALL ELECTROFISHING

- ✓ ABOVE ISLANDS – SEPTEMBER 25 (RR) AND 29 (RL)
- ✓ PARADISE TO PLAINS – OCTOBER 22 (RL) AND 28 (RR)

Clark Fork River Electrofishing - Above Islands



Clark Fork River Paradise to Plains



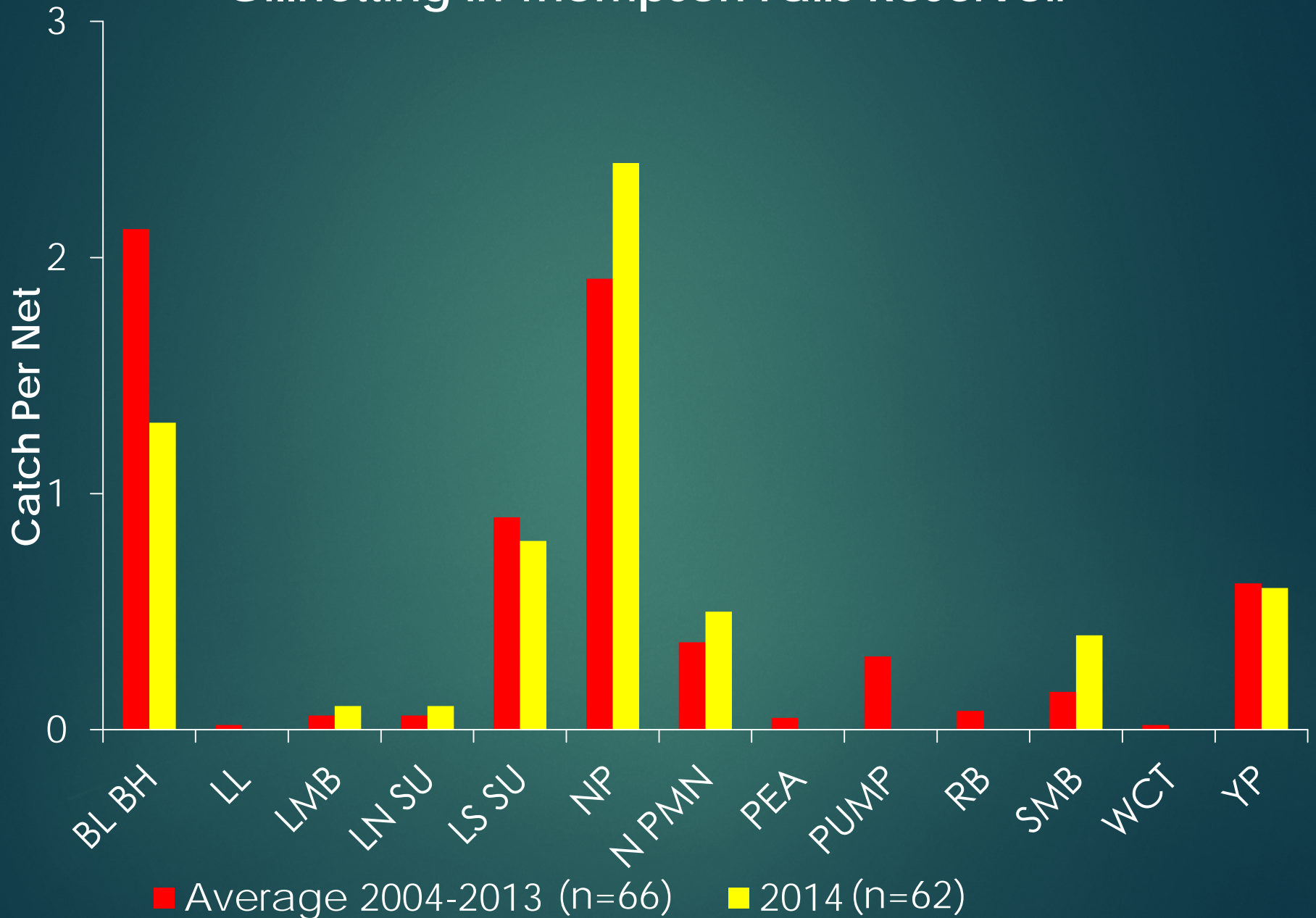


Fisheries Baseline

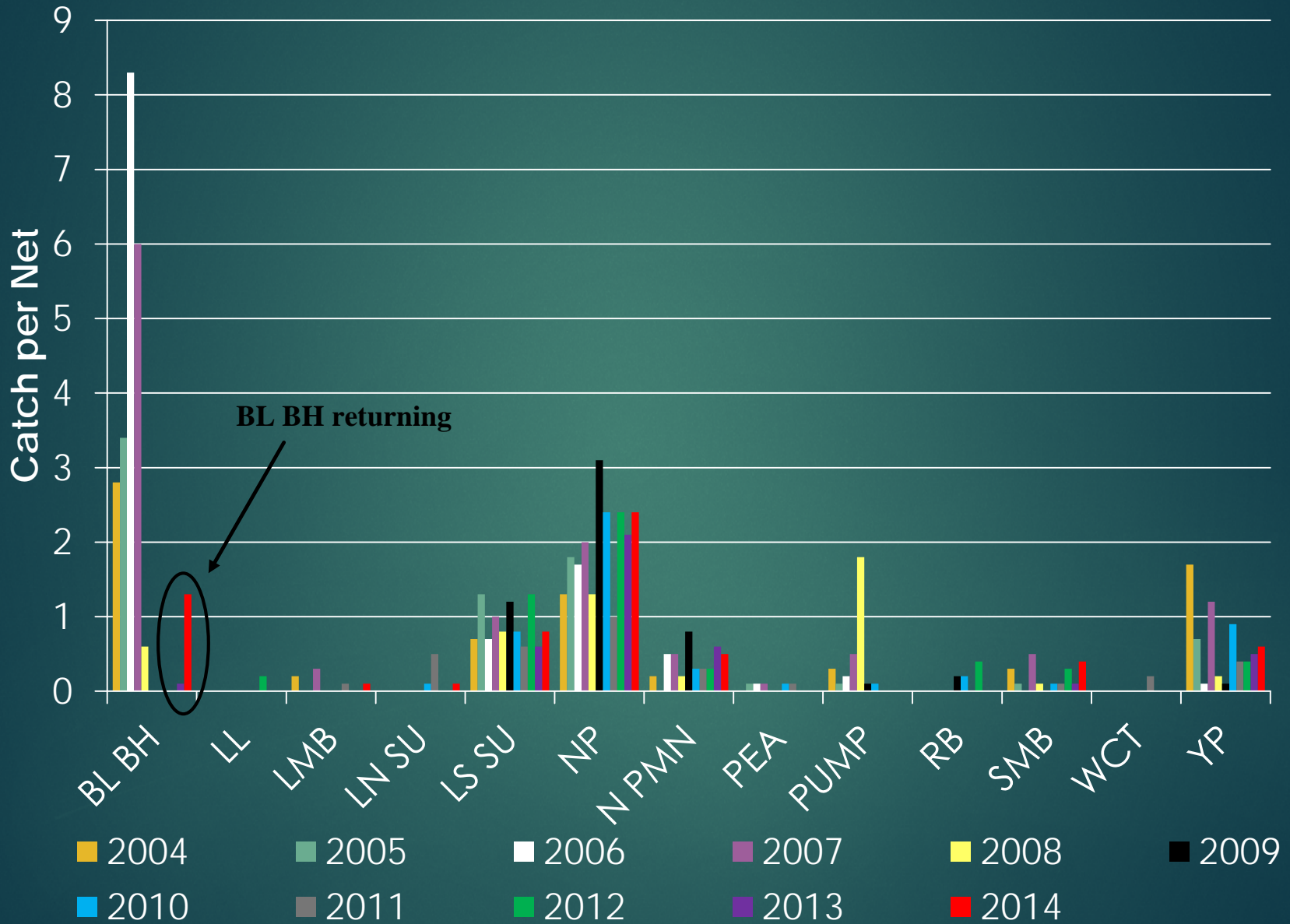
2014 FALL GILL NETTING

✓ THOMPSON FALLS RESERVOIR – OCTOBER 15-16

Gillnetting in Thompson Falls Reservoir



Thompson Falls Reservoir Gillnetting 2004-2014





Upstream Fish Passage

MARCH – OCTOBER 2014

- ▶ Ladder Operations
- ▶ Clark Fork River Hydrology & Water Temperature
- ▶ Total Fish Count
 - ▶ Daily Fish Movement by Species
 - ▶ Monthly Fish Movement Patterns
 - ▶ Individual Species Movement Patterns
 - ▶ Time to Ascend the Ladder
 - ▶ Recaptures at the Ladder
 - ▶ Fallback
 - ▶ Morphology
 - ▶ Biomass
 - ▶ Growth
- ▶ Bull Trout (Avista Transport & Monitoring)
- ▶ TDG and GBT



Ladder Operations

Year	Season	Total Fish	Salmonids	Non-Salmonids
2011	Mar 17 – Oct 17	1,805	242	1,563
2012	Mar 13 – Oct 15	2,668	305	2,366
2013	Mar 13 – Oct 15	3,830	392	3,438
2014	Mar 25 – Oct 21	5,735	573	5,162
TOTAL		14,038	1,512	12,526

- ✓ Numbers represent all fish that have ascended the ladder
- ✓ In 2014, all but 2 fish (1 SMB, 1 LT) were released upstream

Ladder Operations

Year	Season	Total # of Times Ladder Checked*	# of Days Ladder Closed	% of Ladder Checks with No Fish
2011	Mar 17 – Oct 17	160	84	44.4%
2012	Mar 13 – Oct 15	168	22	41.7%
2013	Mar 13 – Oct 15	147	14	27.2%
2014	Mar 25 – Oct 21	133	16	26.3%

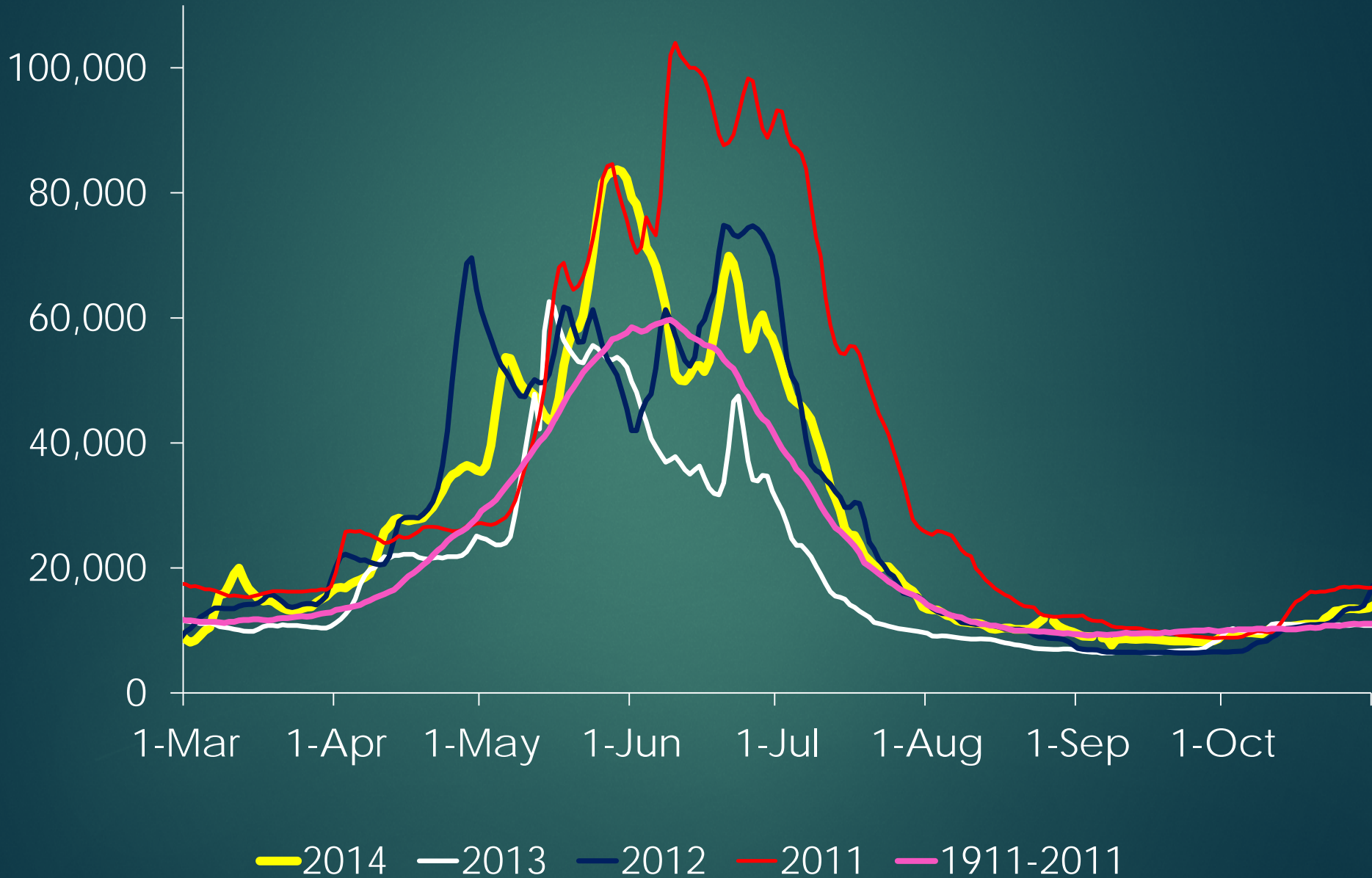
*Some Days the Ladder is Checked Twice a Day

March – October Statistics

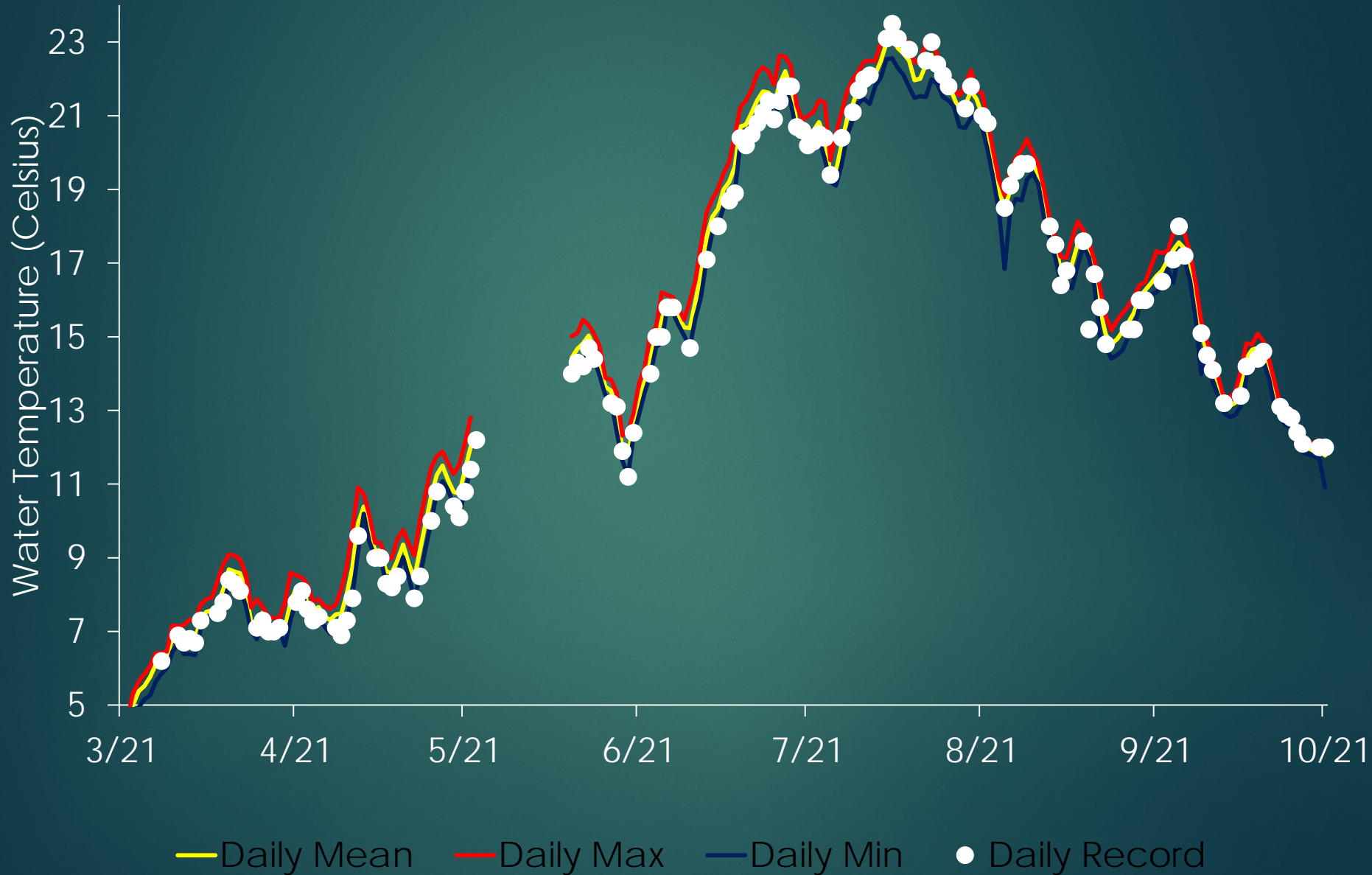
Year	Peak Flow*	Mean Flow*	Max Water Temp (C)	Mean Water Temp (C)
2011	104,000	35,672	24.8	12.0
2012	75,300	27,647	22.8	14.4
2013	63,700	19,507	24.7	16.1
2014	82,800	27,528	23.6	14.6

Note: Mean data represent the mean between March and October
Water Temp: Mean of daily average between March and October (based on logger data for 2011, 2013, and 2014 and daily ladder check in 2012). Dataset not continuous for all months depending on ladder closures.

Mean Daily Streamflow



2014 Water Temperature Thompson Falls



Mean Daily Water Temperature at the Ladder



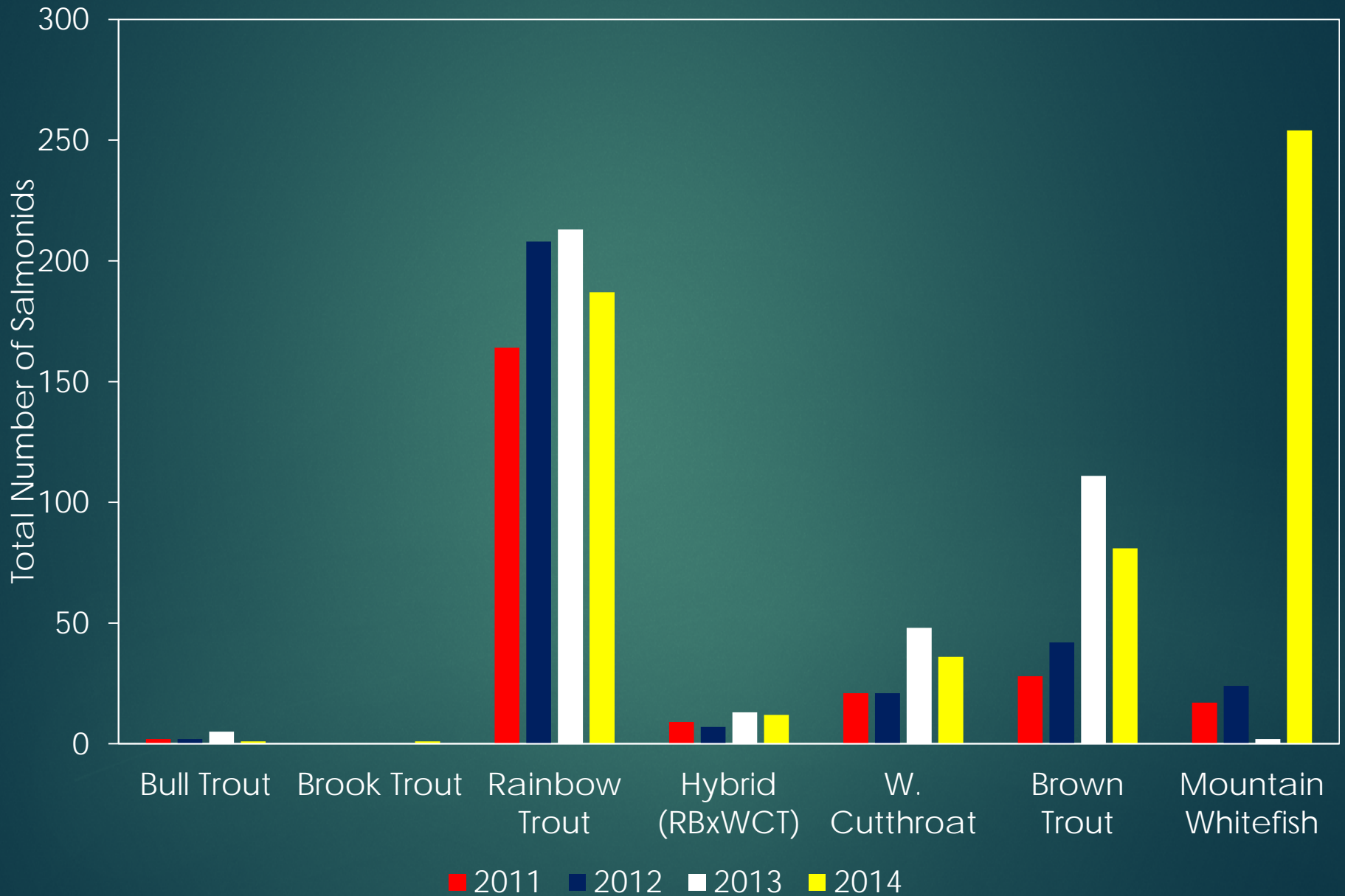
Total Fish Count

	2011	2012	2013	2014	TOTAL
Salmonids	242	305	392	573	1,512
Non-Salmonids	1,563	2,363	3,438	5,162	12,526
Total Fish	1,805	2,668	3,830	5,735	14,038
Recapture*	13	12	31	58	
Fallback	13	2	4	12	

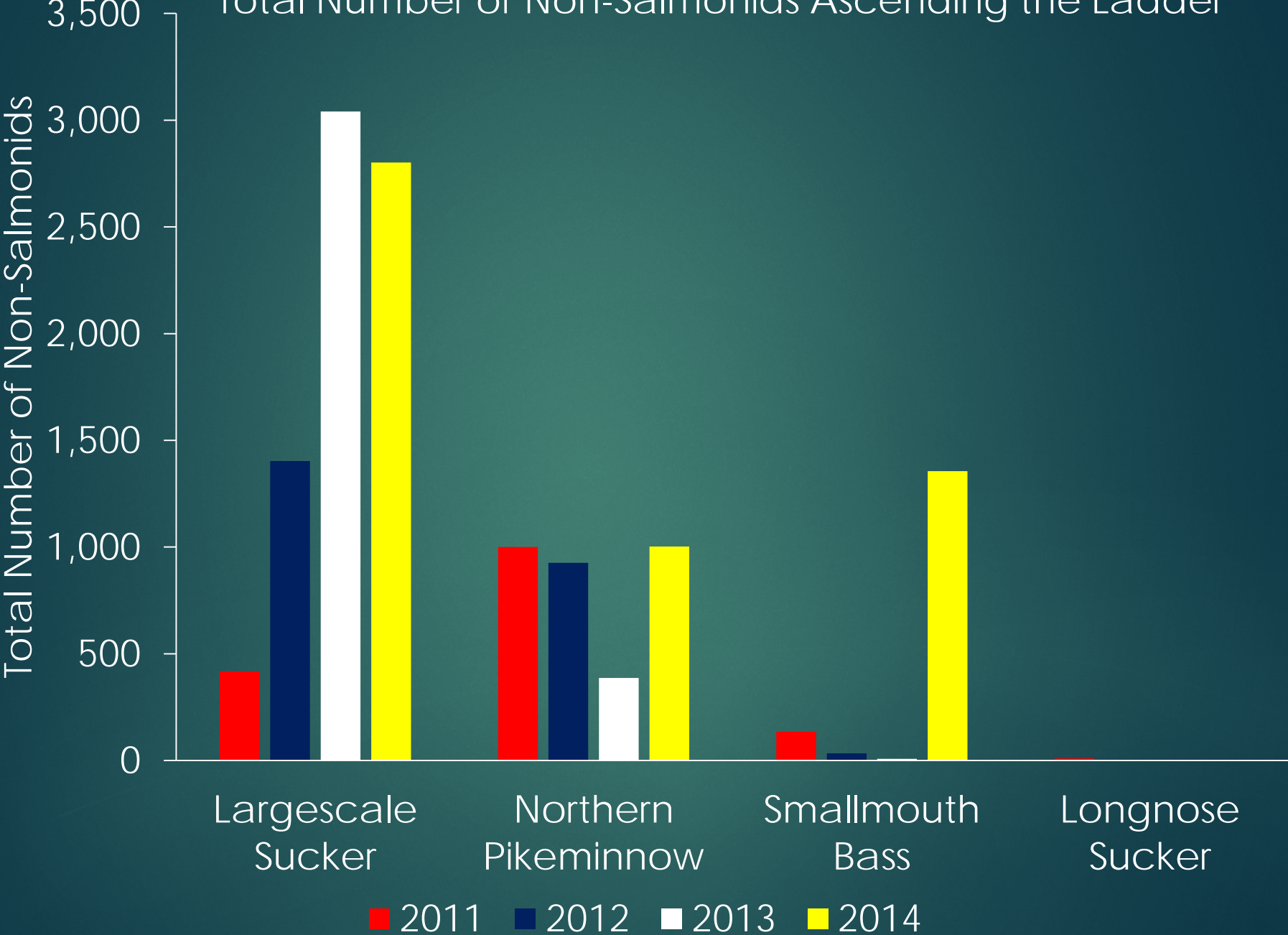
*Fish that were initially tagged at the ladder and have returned to the ladder

	Total Number of Fish Released Upstream				
Species	2011	2012	2013	2014	Total
BULL	2	1	5	1	9
EB	0	0	0	1	1
RB	162	207	211	187	767
RBxWCT	9	7	13	12	41
WCT	21	21	48	36	126
LL	28	42	107	81	258
MWF	17	24	2	254	297
LN SU	9	0	2	1	12
LS SU	417	1,399	3,036	2,802	7,654
N PMN	927	925	386	1,003	3,241
SMB	131	34	8	1,355	1,528
Total Released Upstream	1,723	2,660	3,818	5,733	13,934
Total Ascended Ladder	1,805	2,668	3,830	5,735	14,038
Mortalities at Ladder	82	8	12	2	104

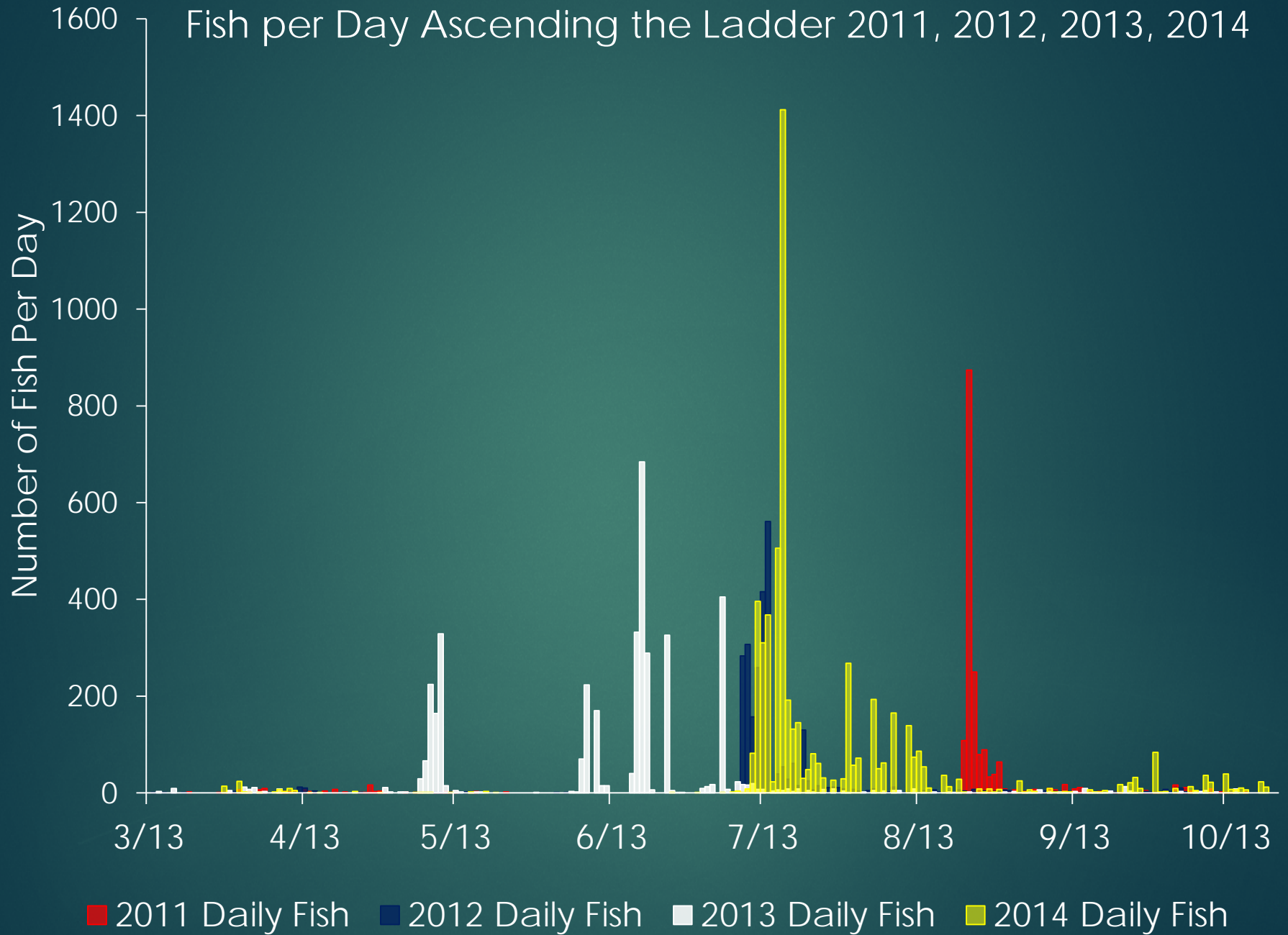
Total Number of Salmonids Ascending the Ladder

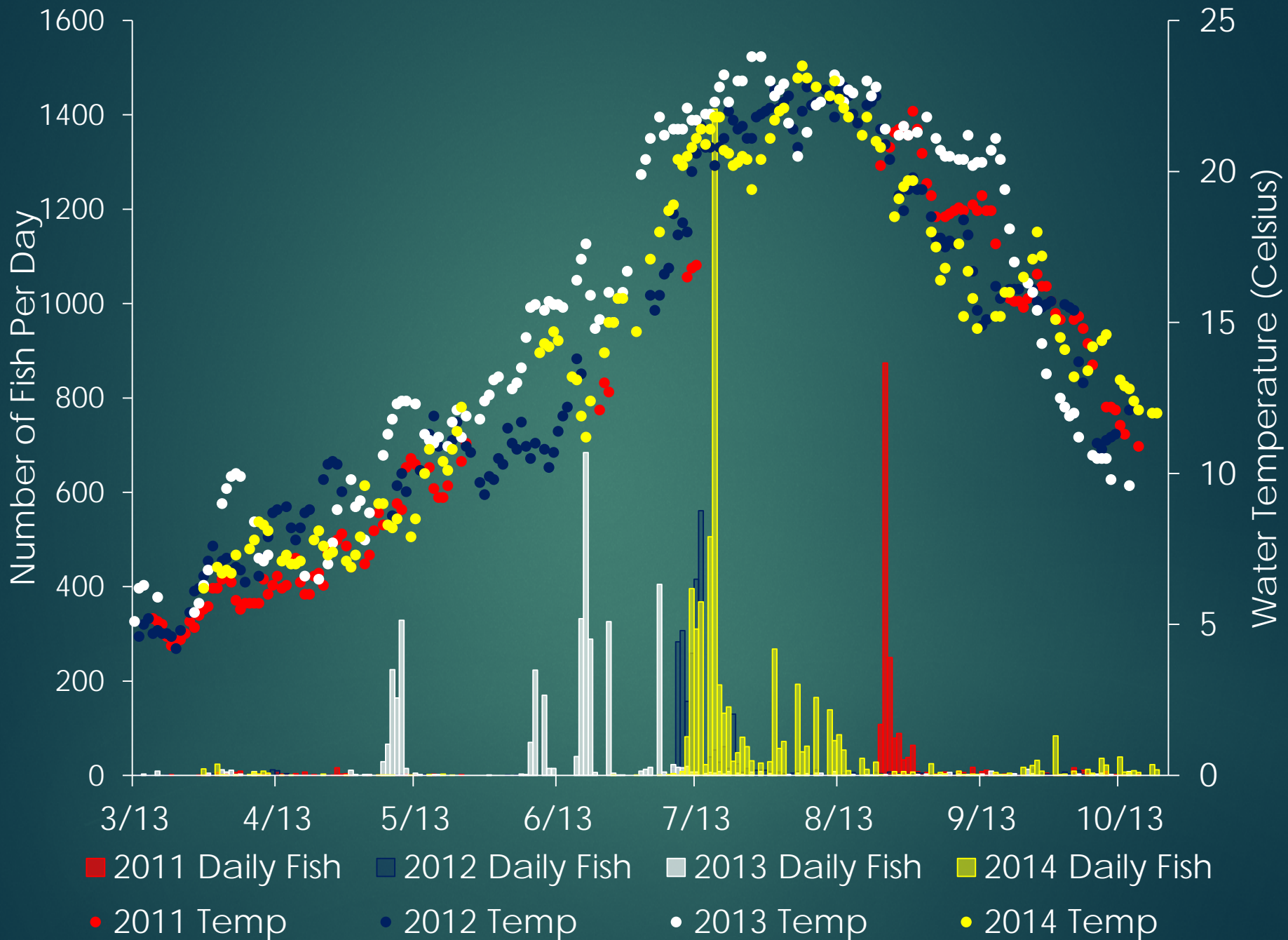


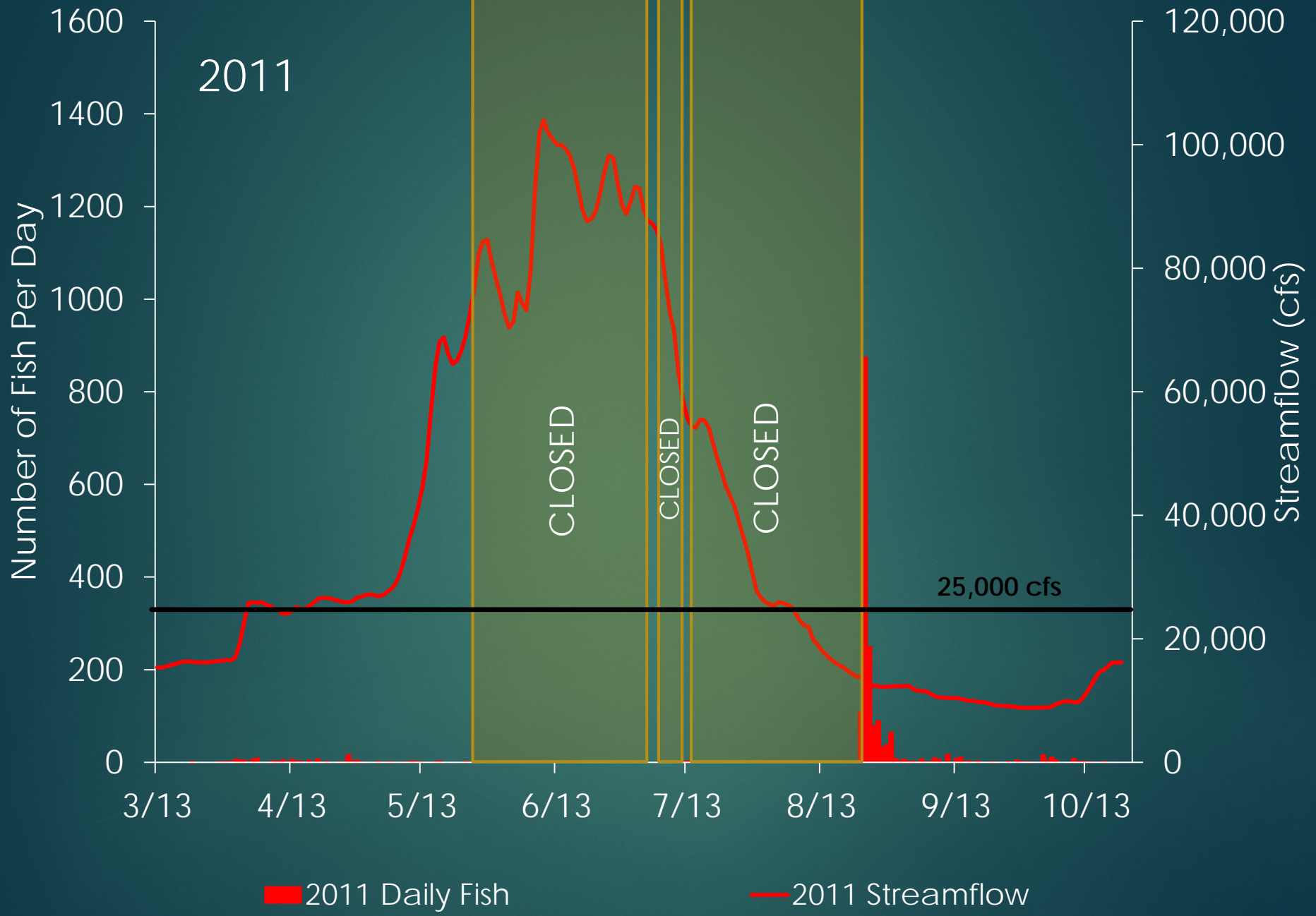
Total Number of Non-Salmonids Ascending the Ladder

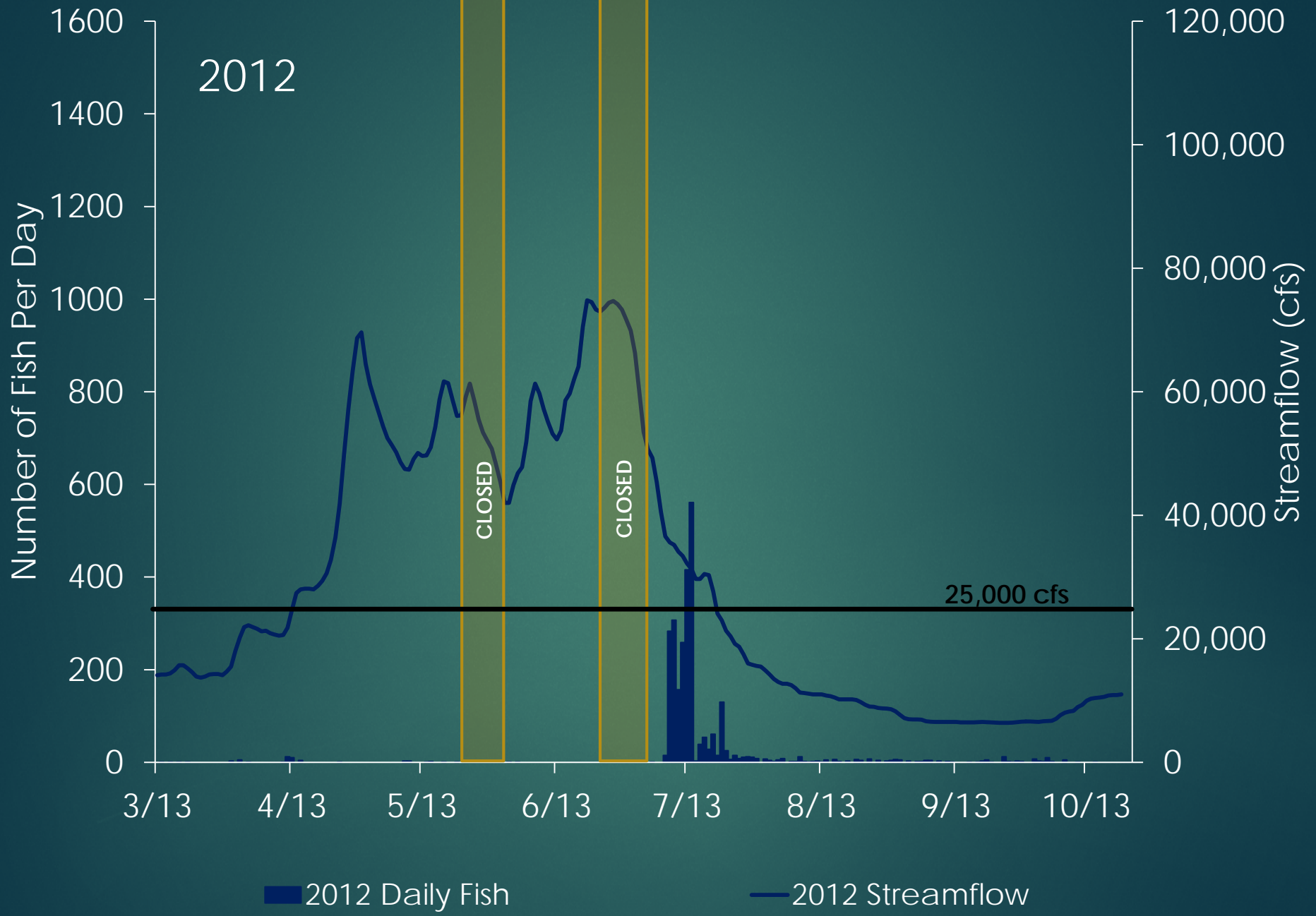


Fish per Day Ascending the Ladder 2011, 2012, 2013, 2014

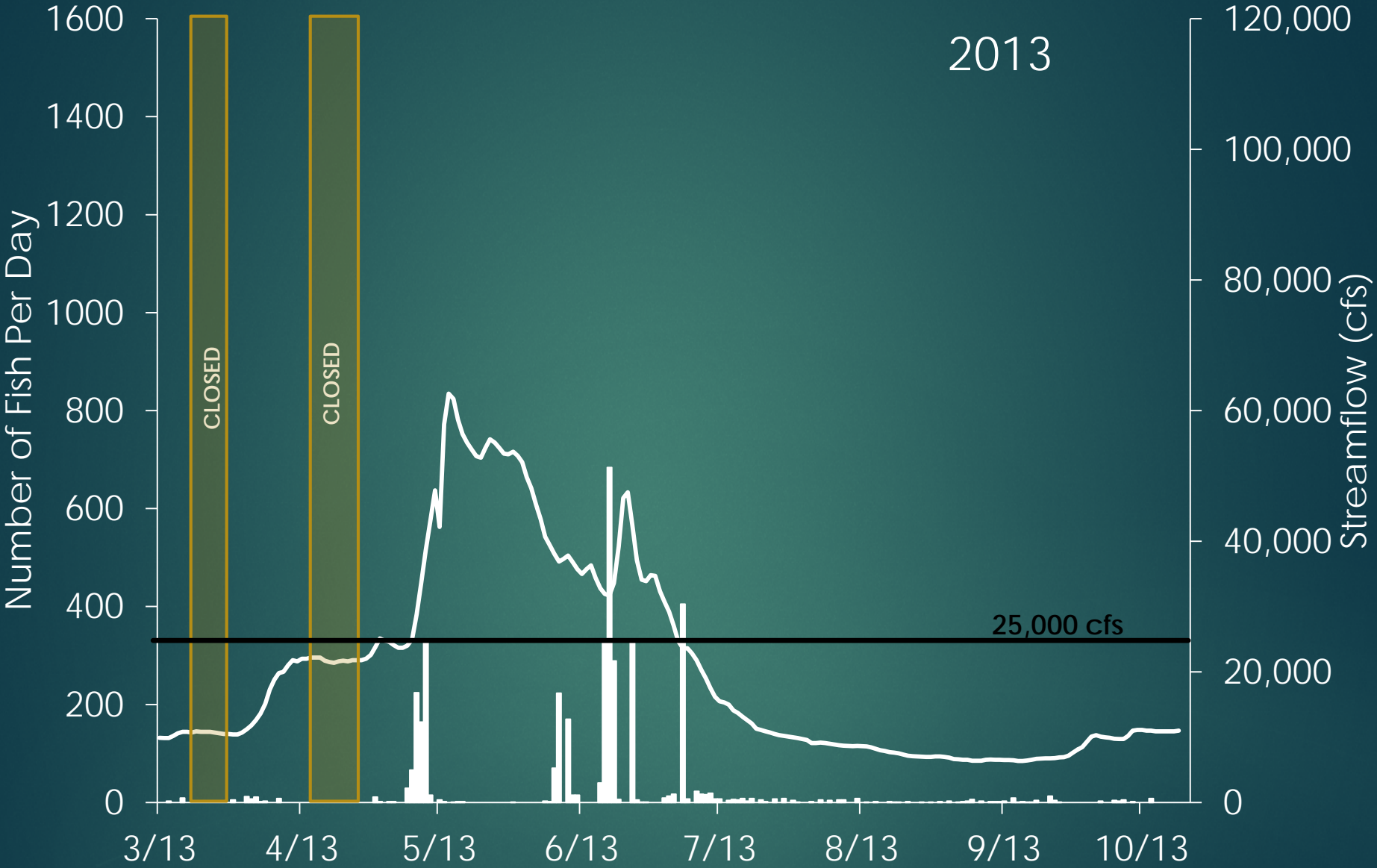








2013



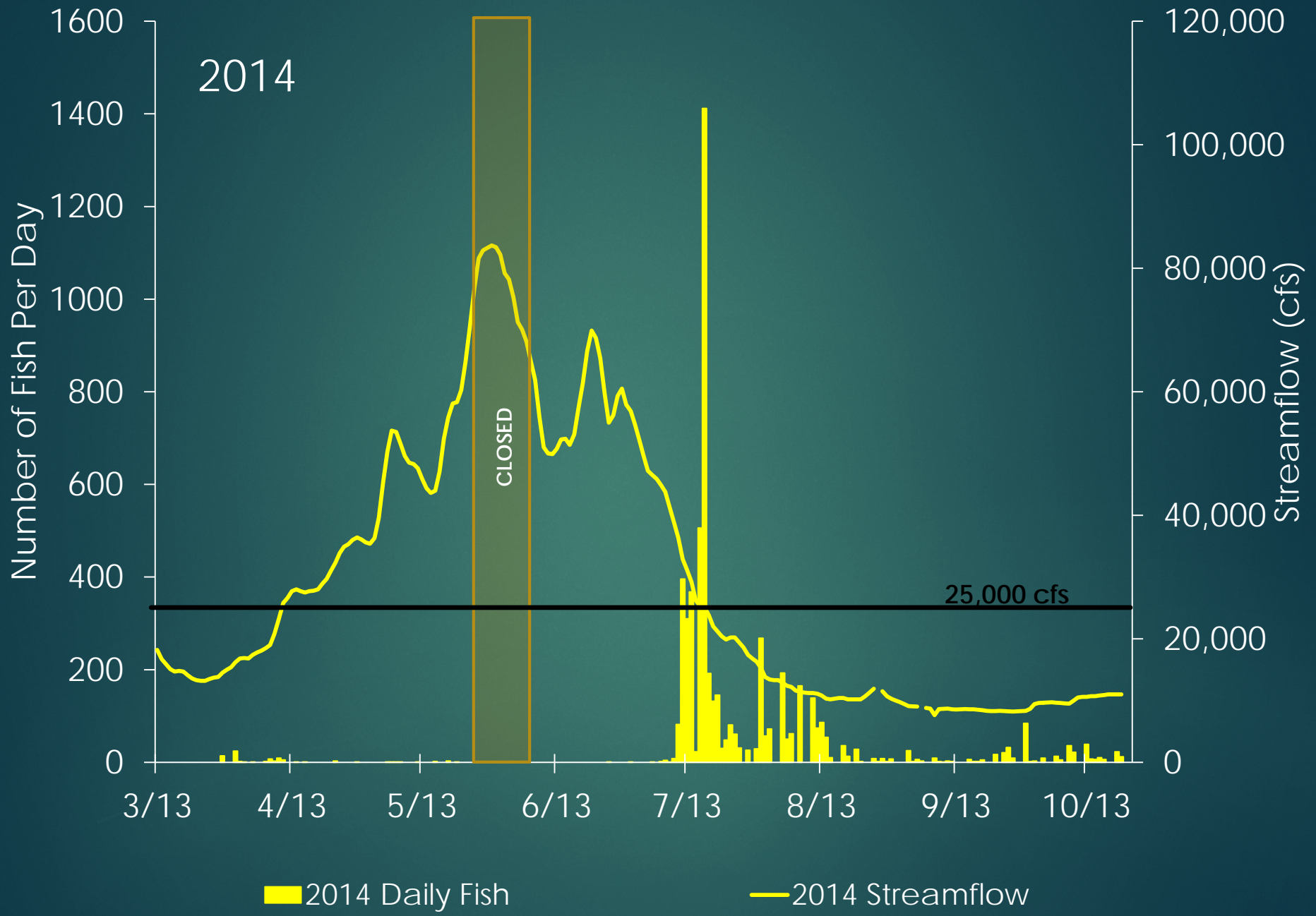
Number of Fish Per Day

Streamflow (cfs)

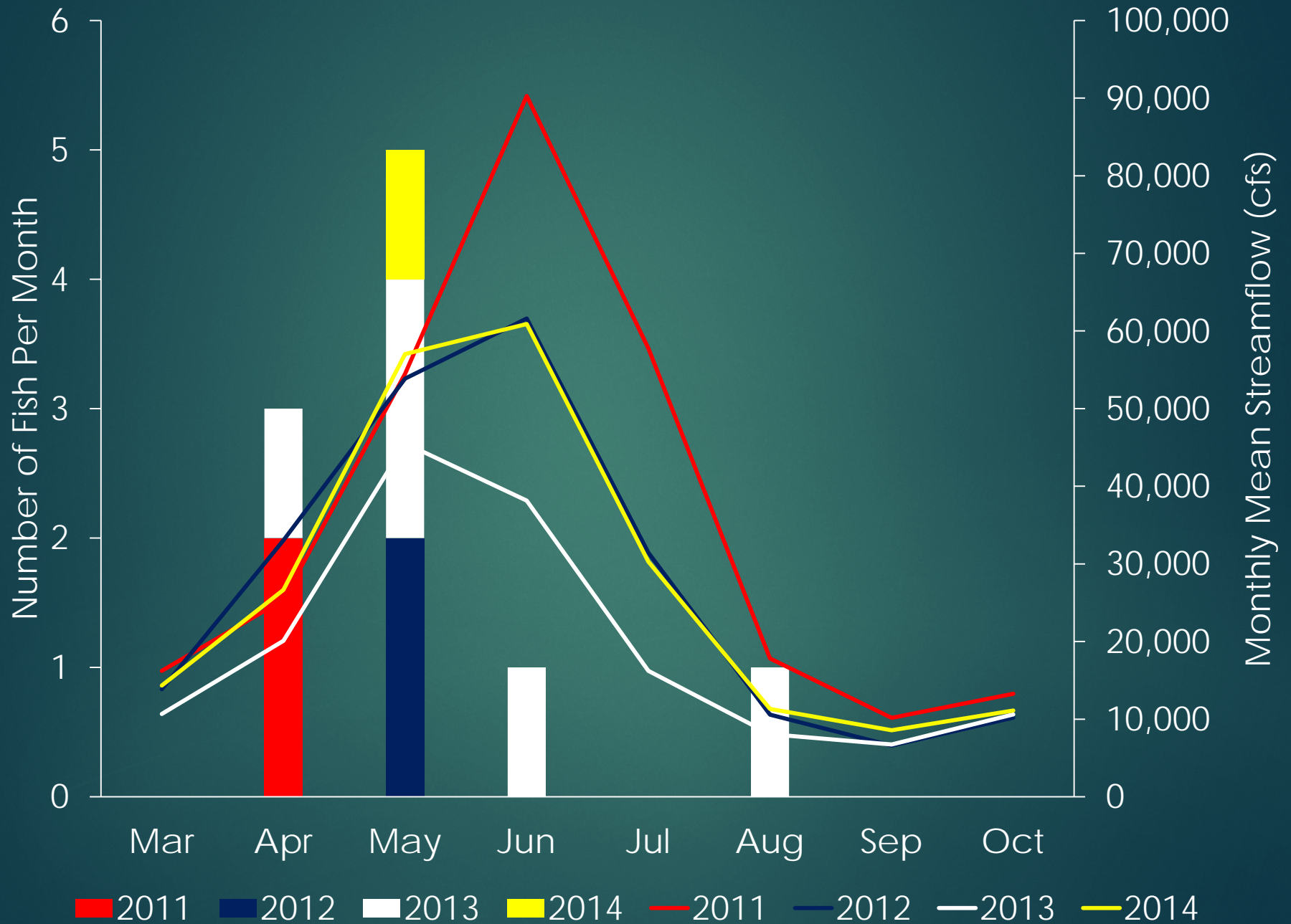
25,000 cfs

2013 Daily Fish

2013 Streamflow



Bull Trout at Thompson Falls Ladder



Bull Trout Ascending Thompson Falls Ladder

Date Recorded at Ladder	Water Temp (°C)	USGS Daily Mean Streamflow (cfs)
4/13/11	6.6	24,500
4/26/11	7.8	25,900
5/15/12	11.3	51,000
5/21/12*	11.1	56,100
4/30/13	8.9	25,100
5/6/13	10.6	24,000
5/7/13	11.3	25,000
6/7/13	15.5	38,100
8/9/13	22.2	8,680
5/16/14**	10.8	44,000

Range of
Sizes for BULL:

365 – 598 mm

365 – 2306 g

* Mortality at ladder

** Mortality gillnetting in Noxon in October 2014

Bull Trout Sampled in 2014

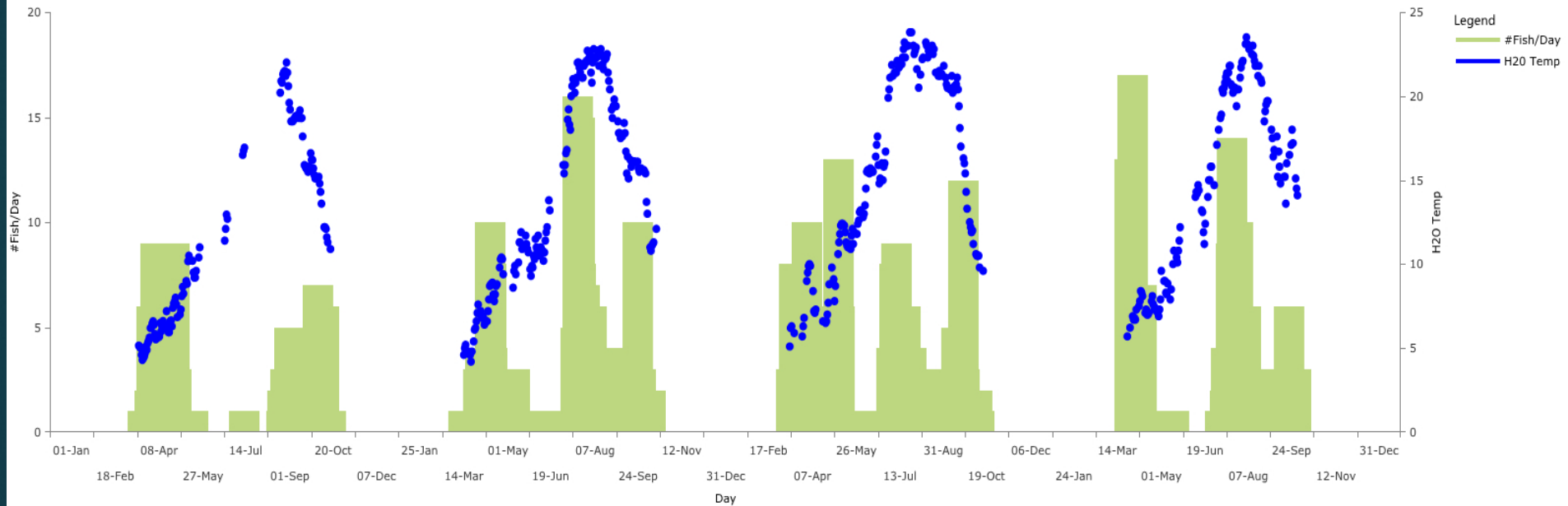
Date	Location	Comments
4/7	Electrofishing below Thompson Falls Dam	Released Live
4/15	Electrofishing Upper Thompson Reservoir	Released Live
5/16	Thompson Falls Ladder	Released Live Upstream of Thompson Falls Dam. Recaptured gillnetting in Noxon 10-13 (mortality)
5/28	Electrofishing below Thompson Falls Dam	Released Live. Initially tagged below CGD 6-2-2011 by Avista
6/3	Electrofishing below Thompson Falls Dam	Released Live 118-32
10/29	Electrofishing Paradise to Plains	Released Live

Rainbow Trout

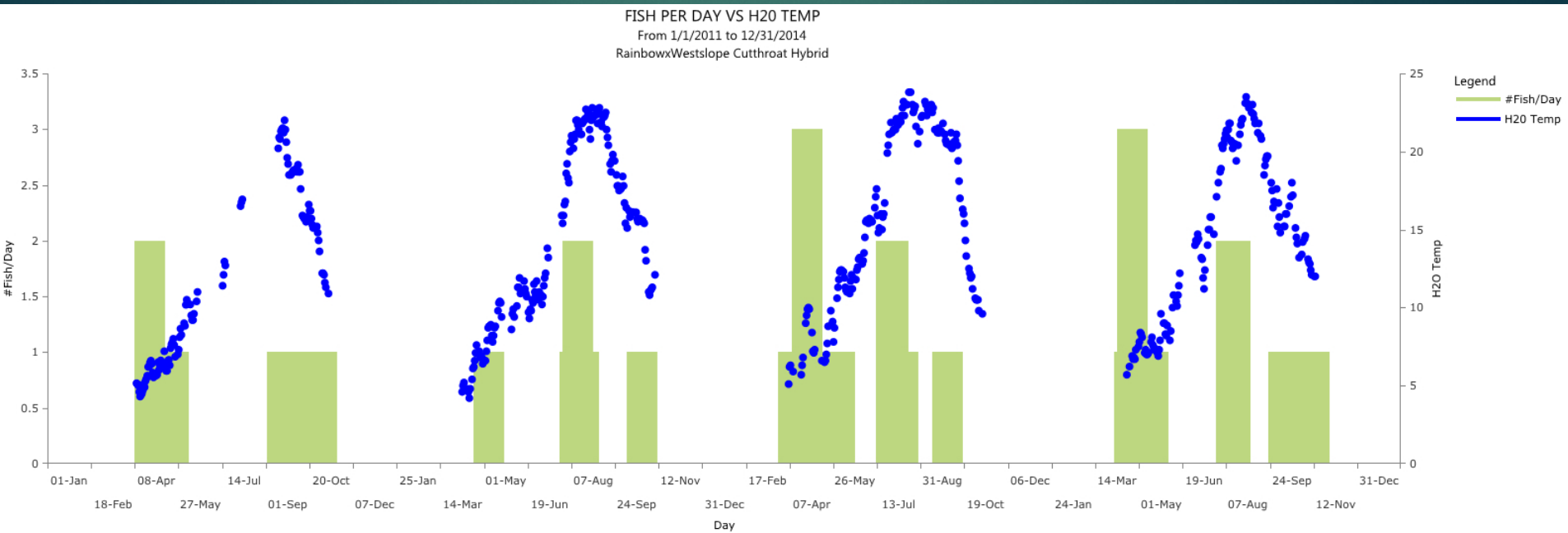
FISH PER DAY VS H2O TEMP

From 1/1/2011 to 12/31/2014

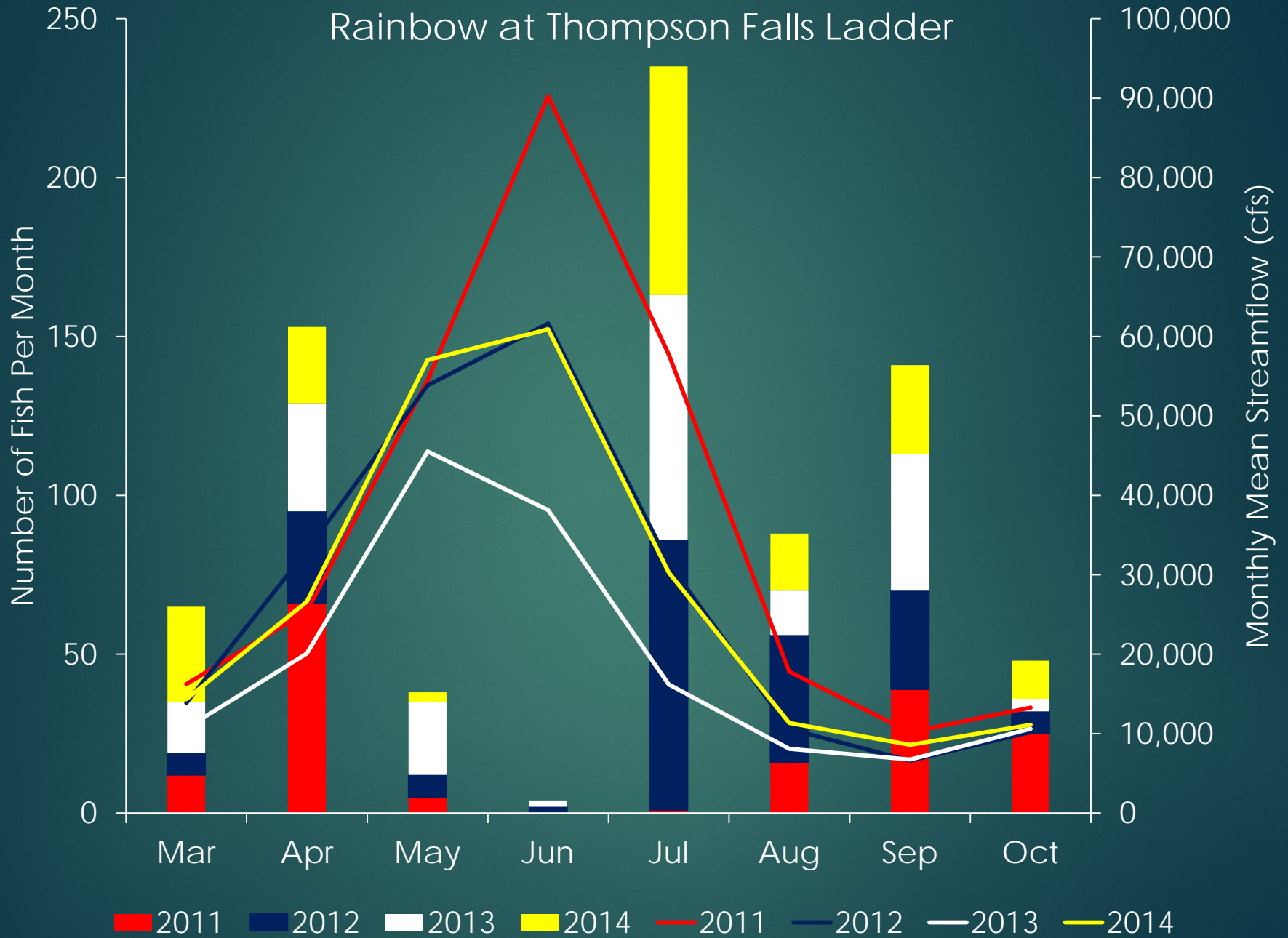
Rainbow Trout



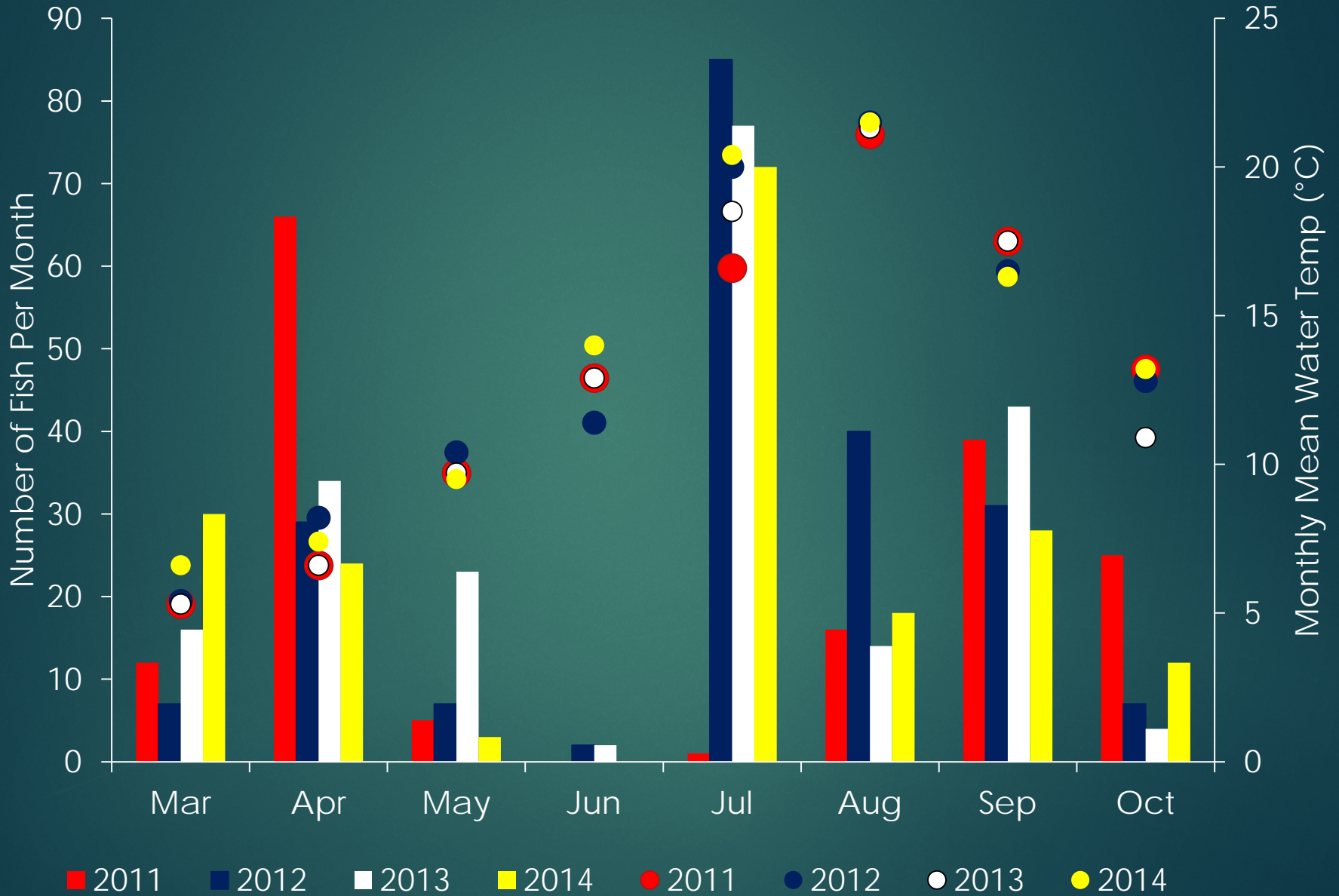
Rainbow x Westslope



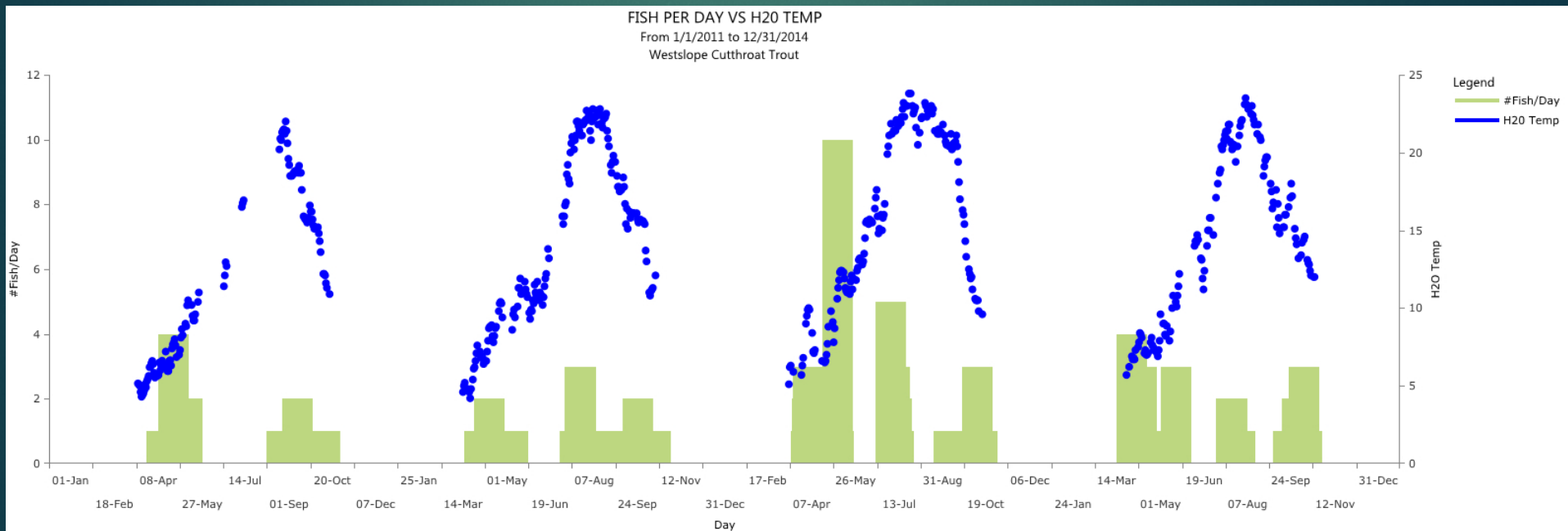
Rainbow at Thompson Falls Ladder



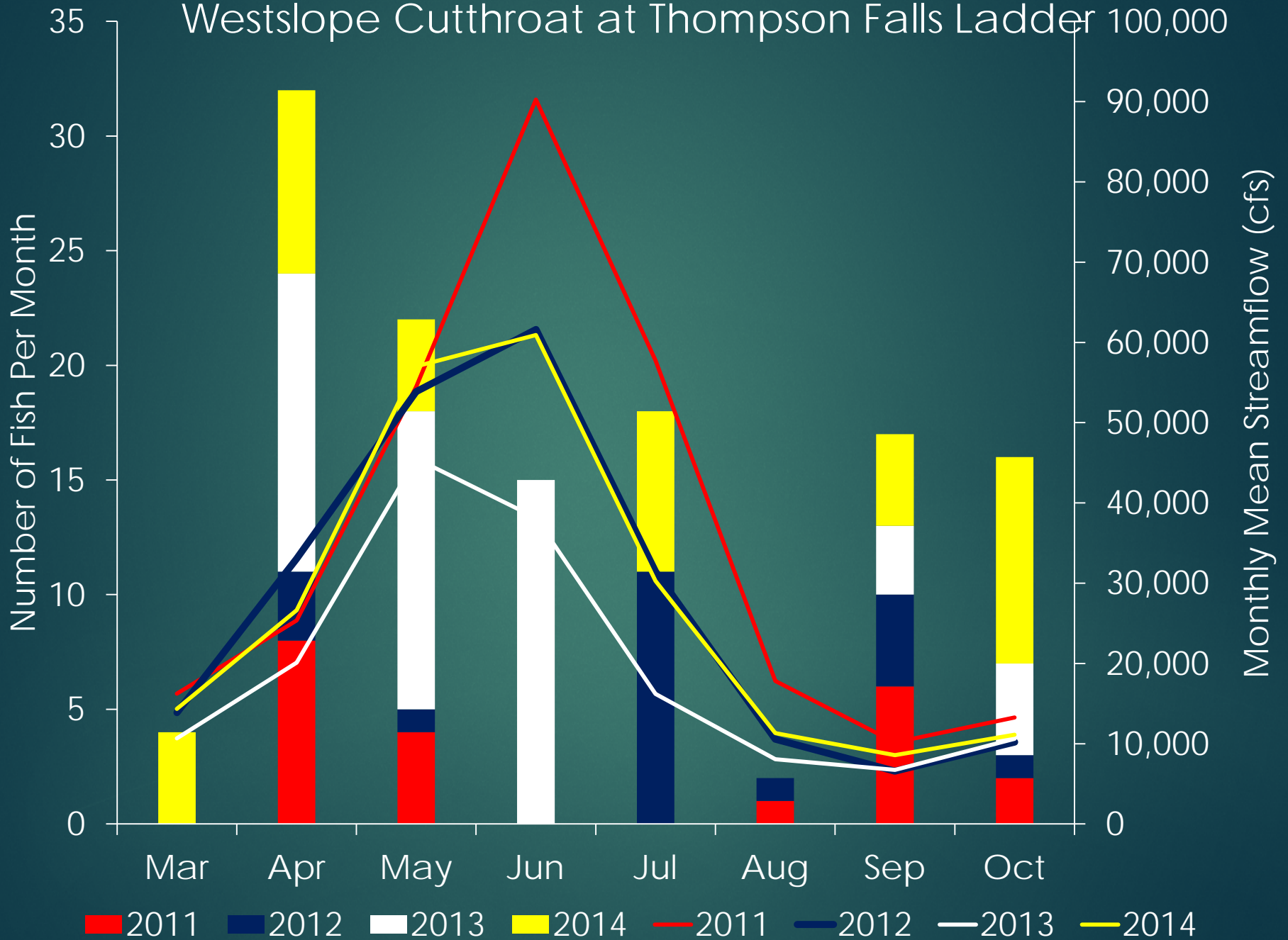
Rainbow at Thompson Falls Ladder



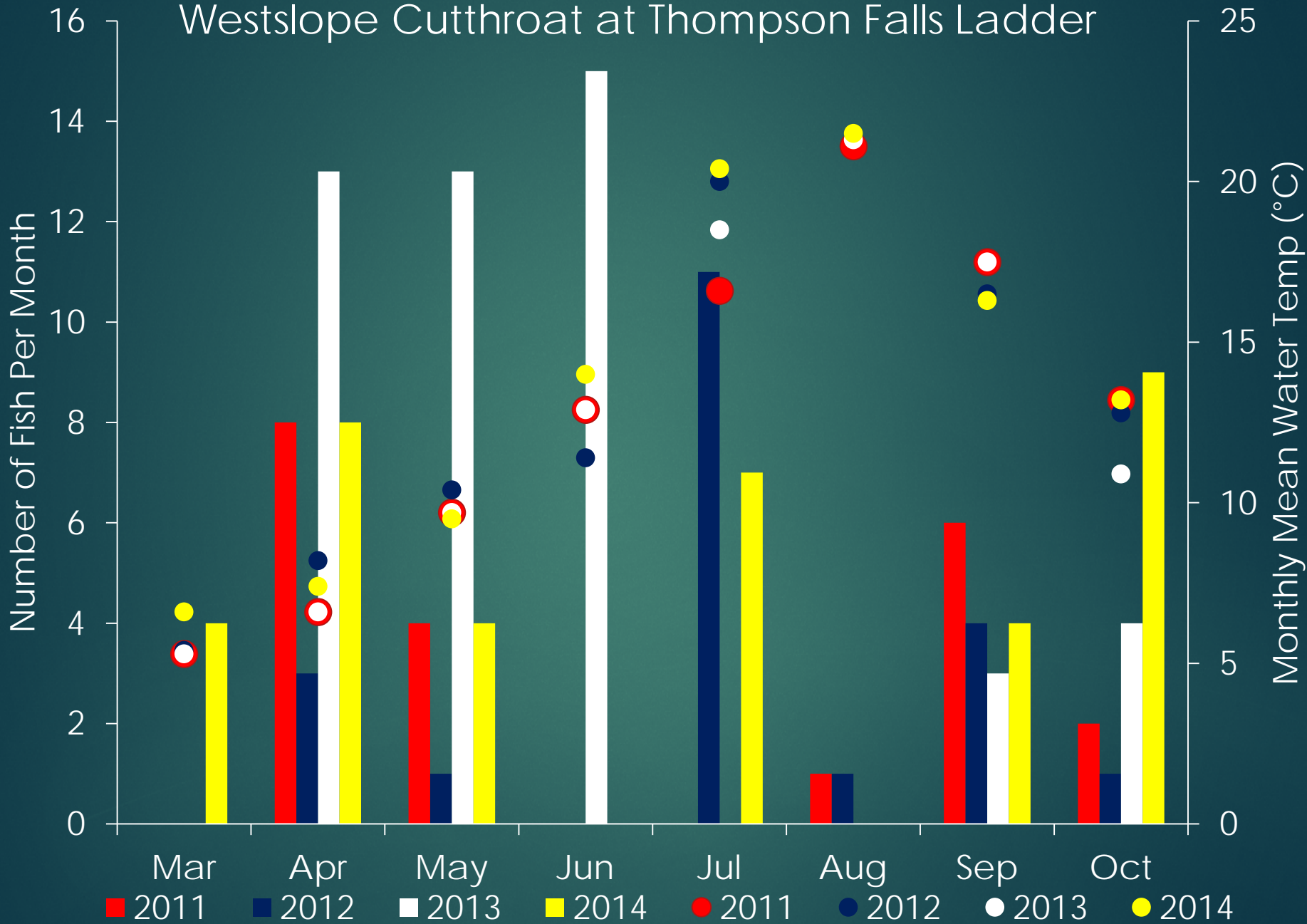
Westslope Cutthroat



Westslope Cutthroat at Thompson Falls Ladder 100,000

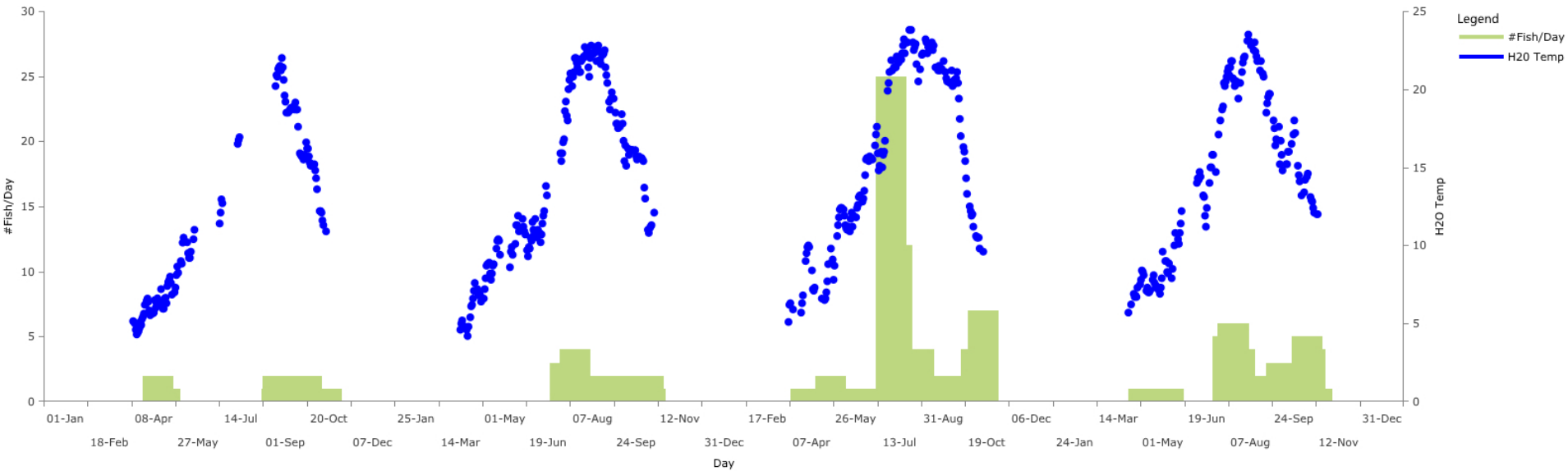


Westslope Cutthroat at Thompson Falls Ladder



Brown Trout

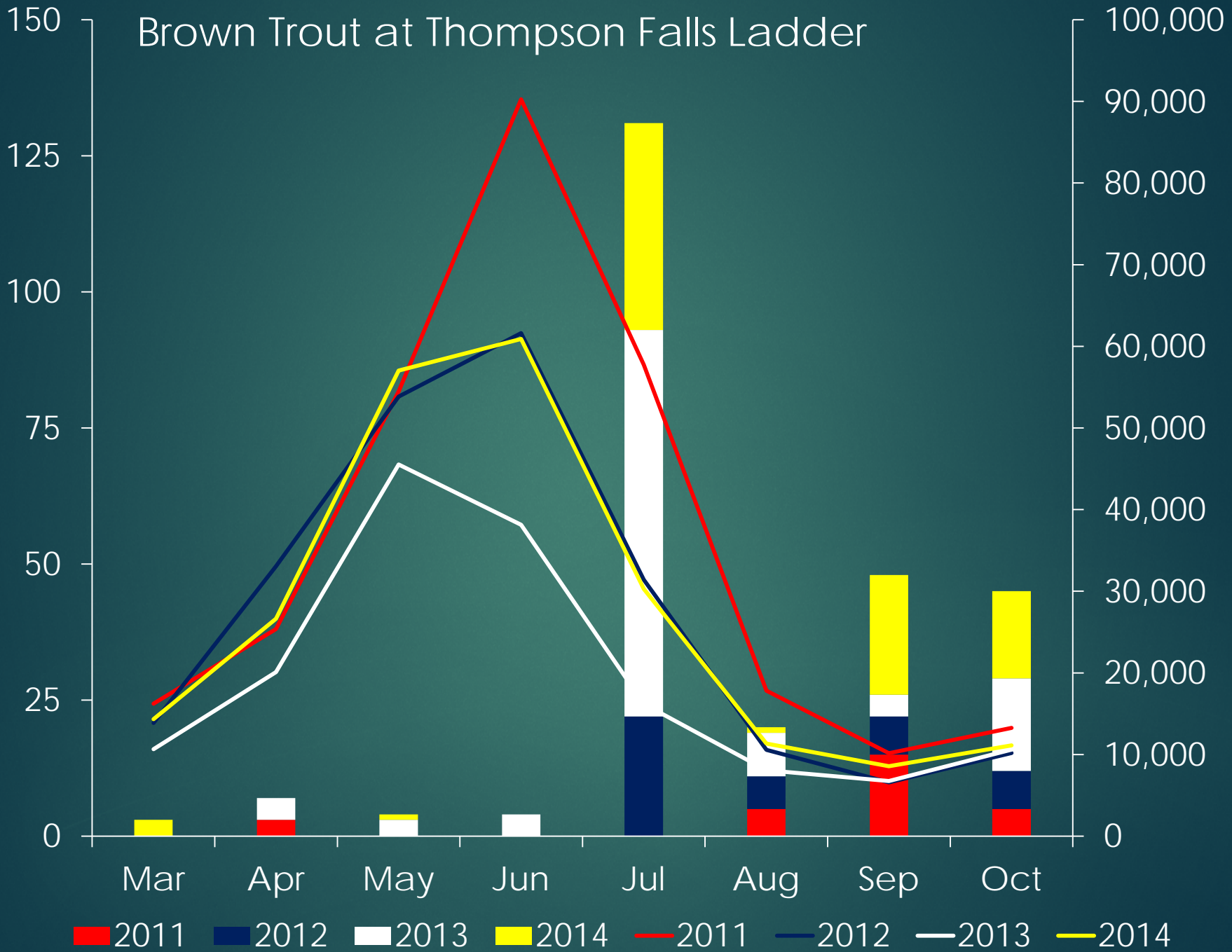
FISH PER DAY VS H2O TEMP
From 1/1/2011 to 12/31/2014
Brown Trout



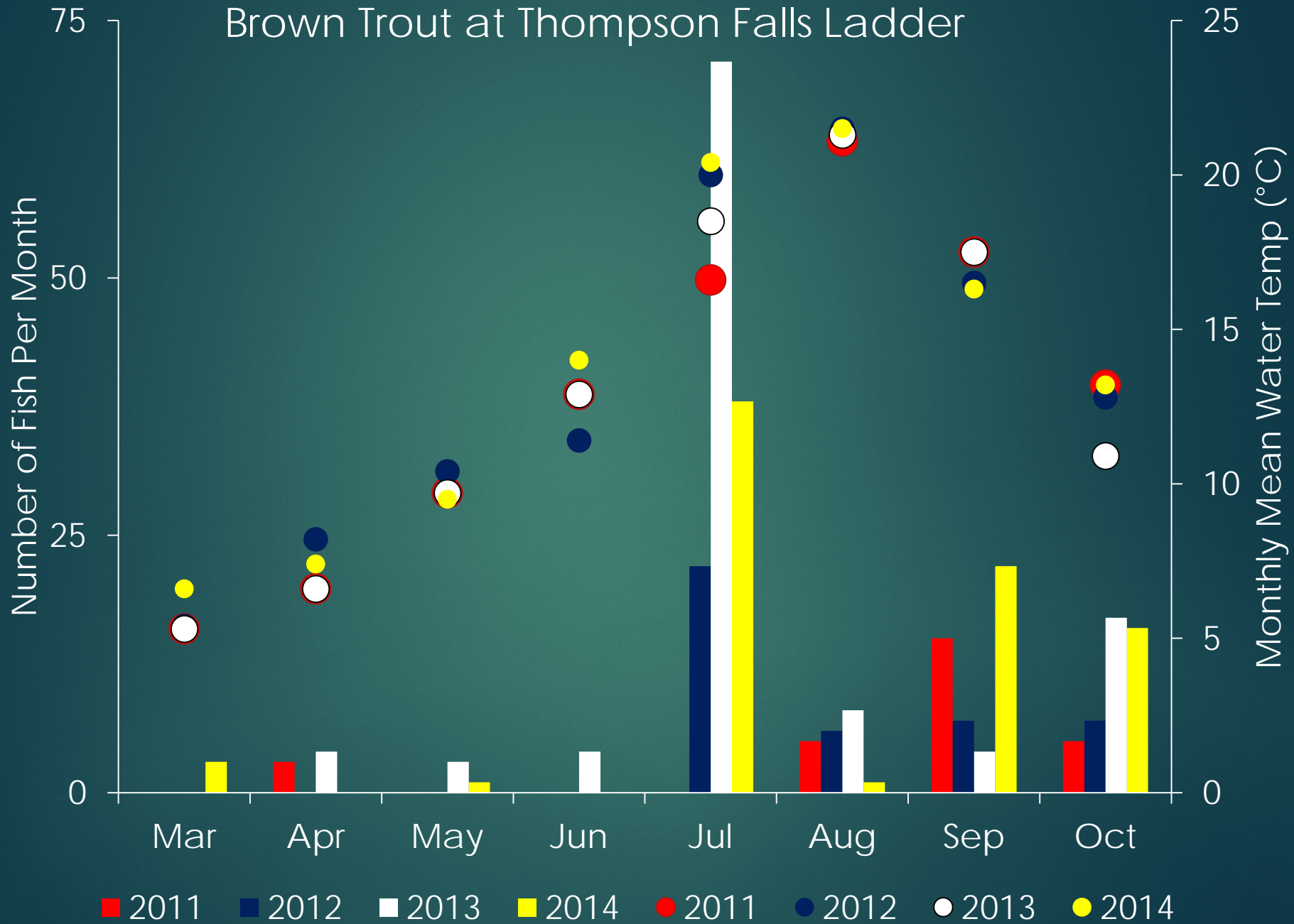
Brown Trout at Thompson Falls Ladder

Number of Fish Per Month

Monthly Mean Streamflow (cfs)

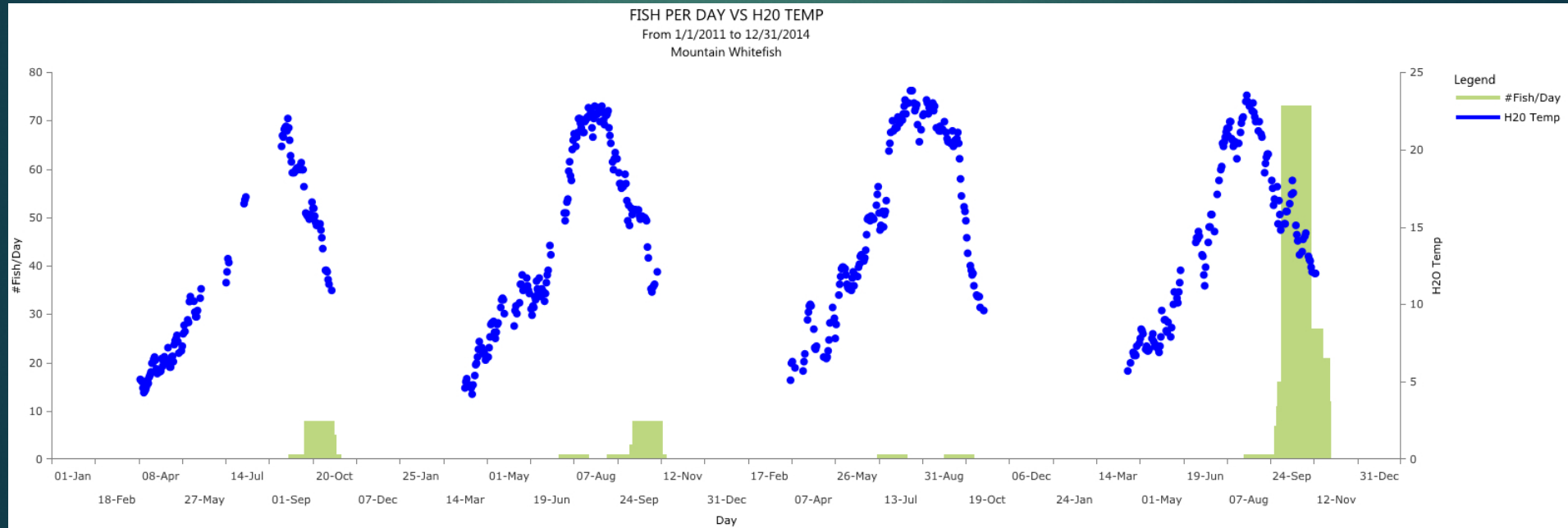


Brown Trout at Thompson Falls Ladder

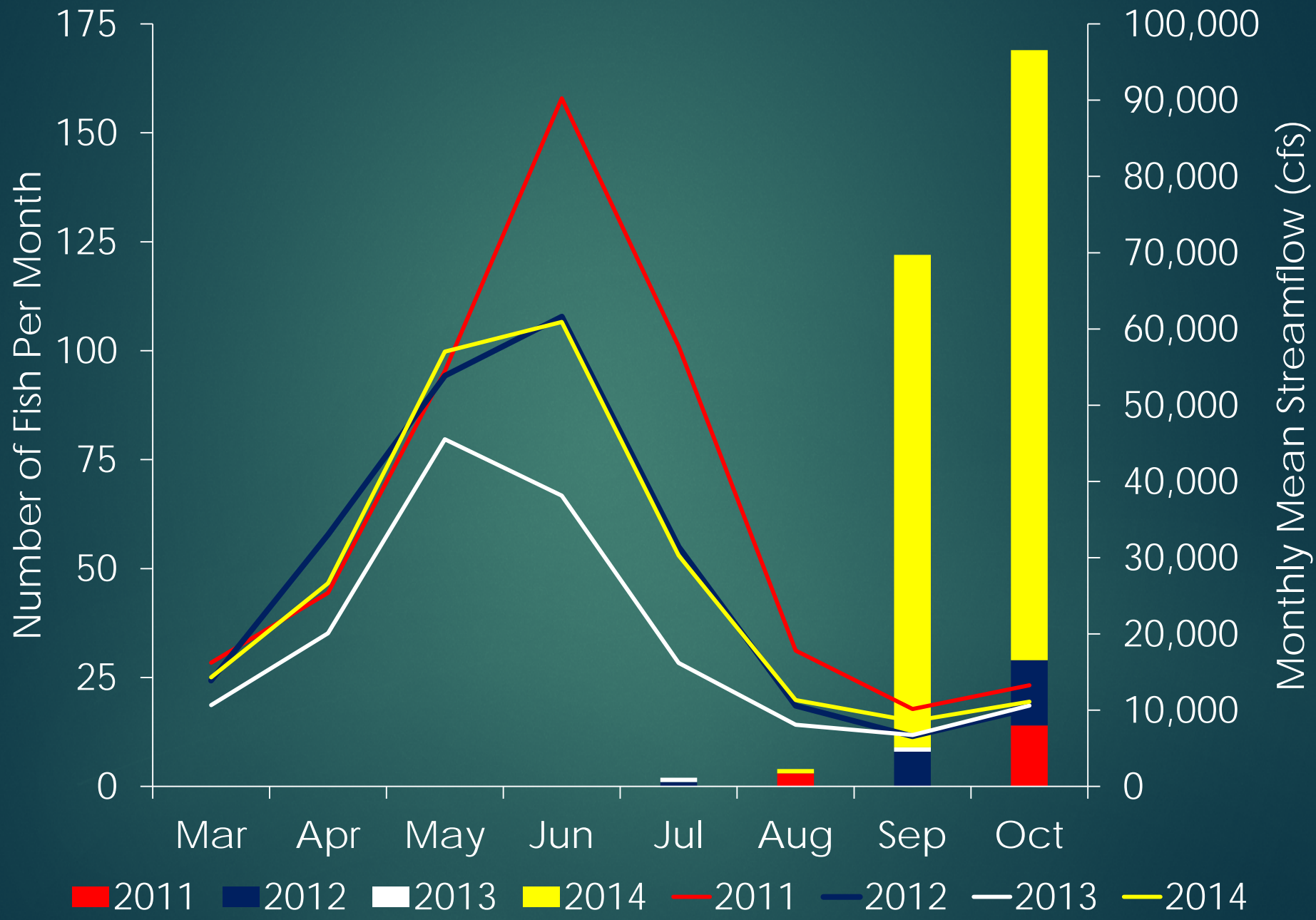


Mountain Whitefish

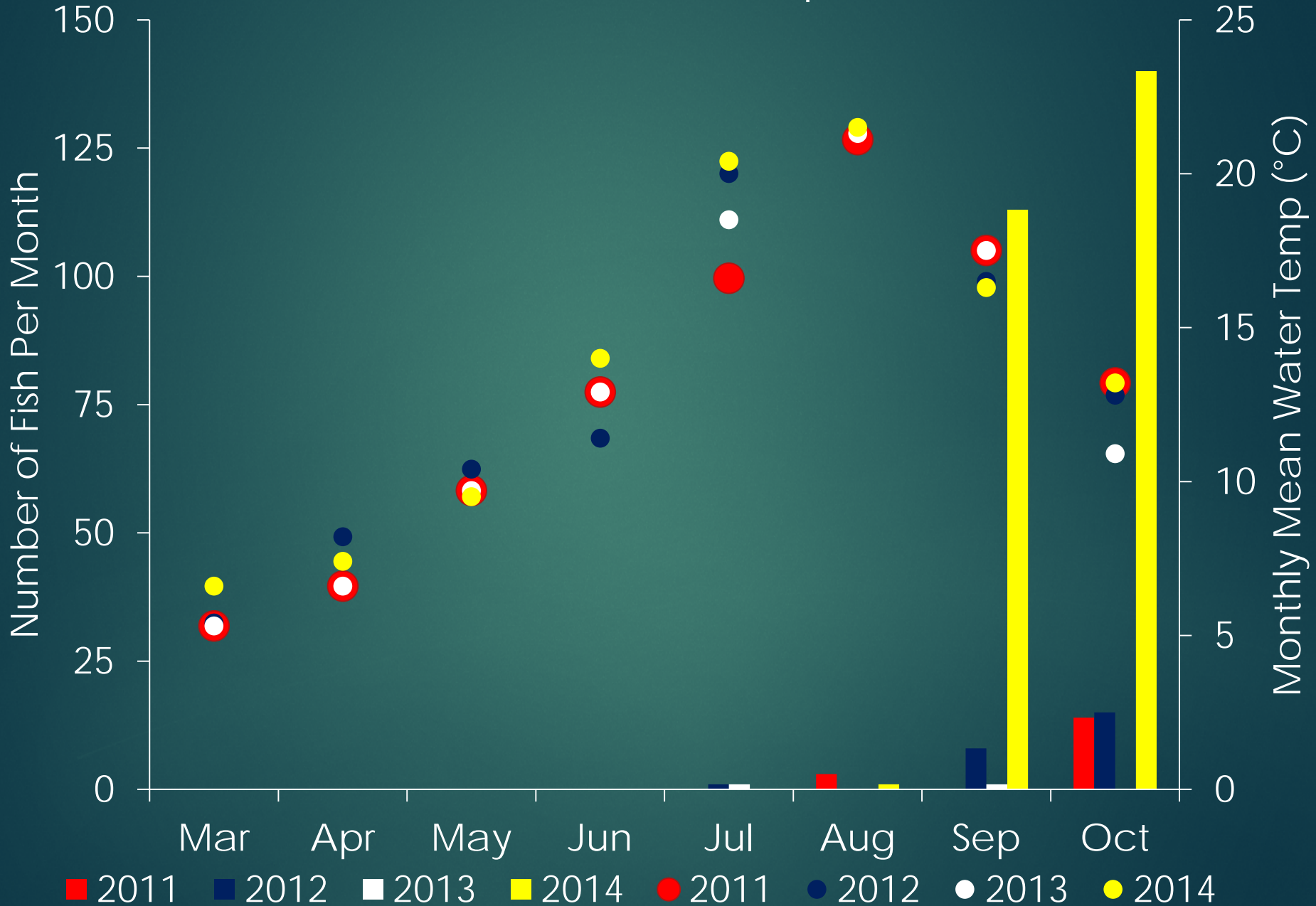
FISH PER DAY VS H2O TEMP
From 1/1/2011 to 12/31/2014
Mountain Whitefish



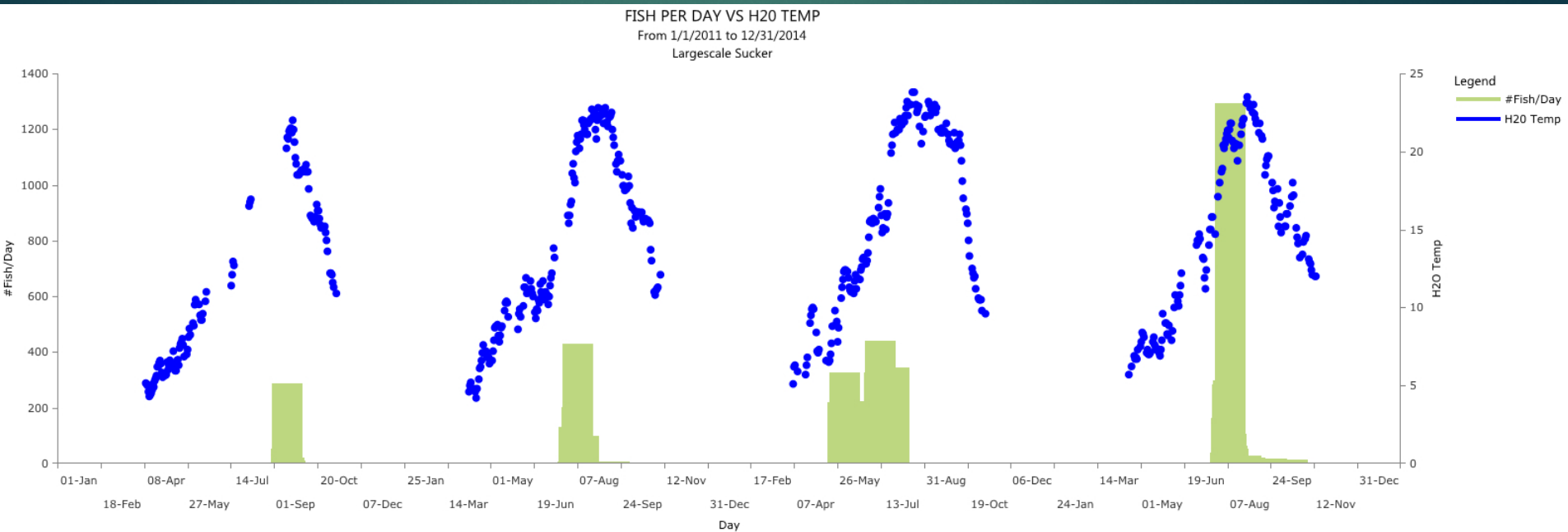
Mountain Whitefish at Thompson Falls Ladder



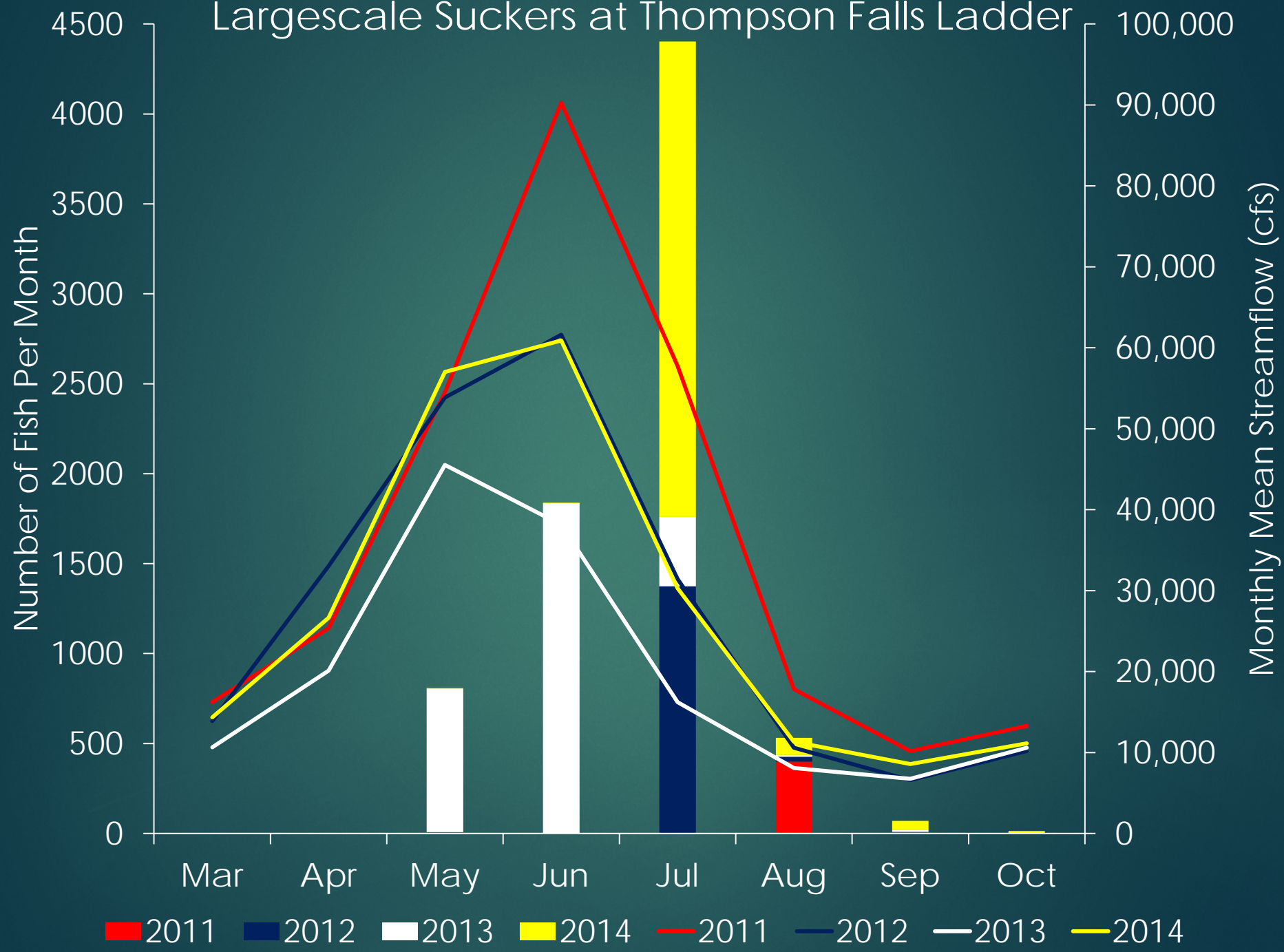
Mountain Whitefish at Thompson Falls Ladder



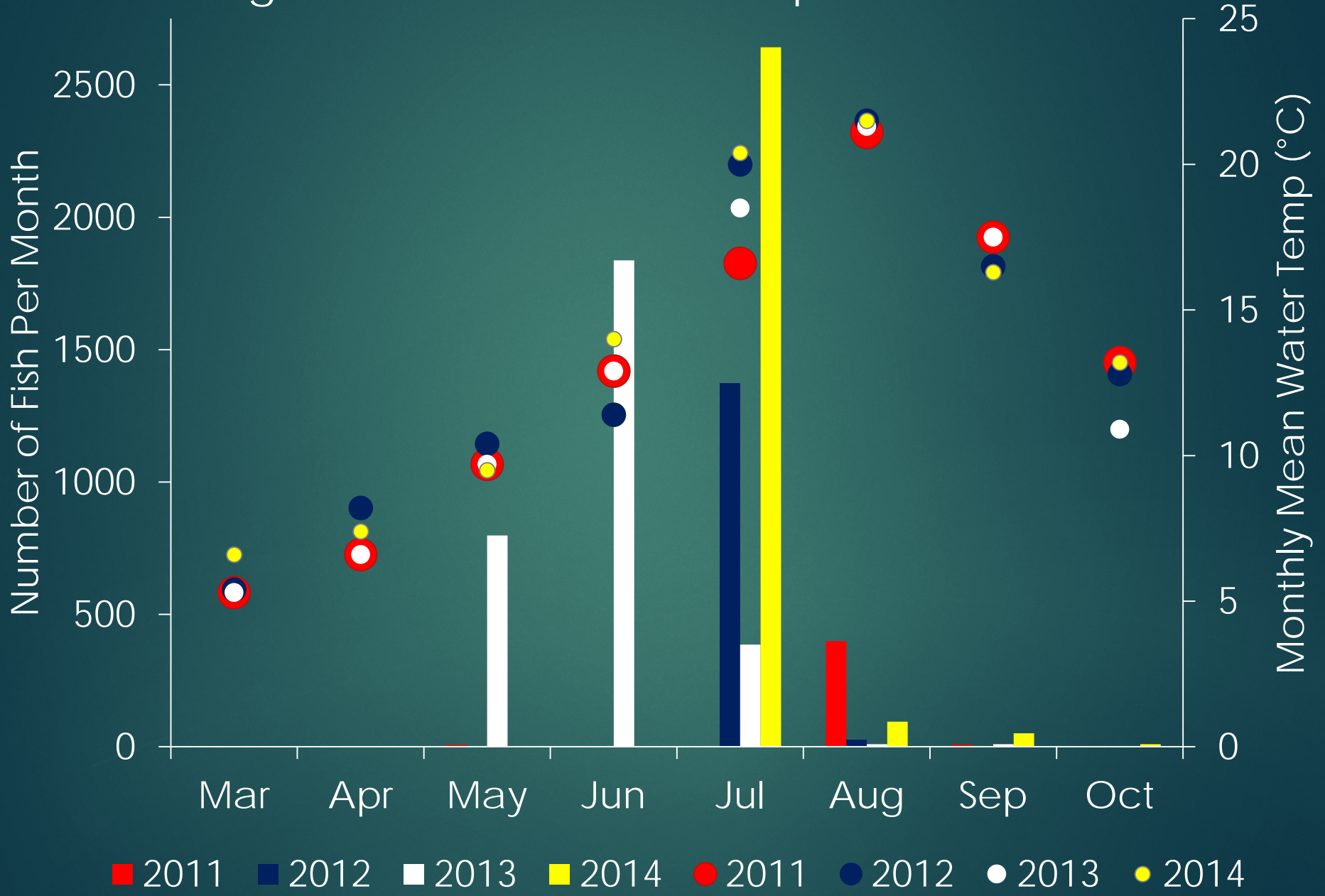
Largescale Suckers



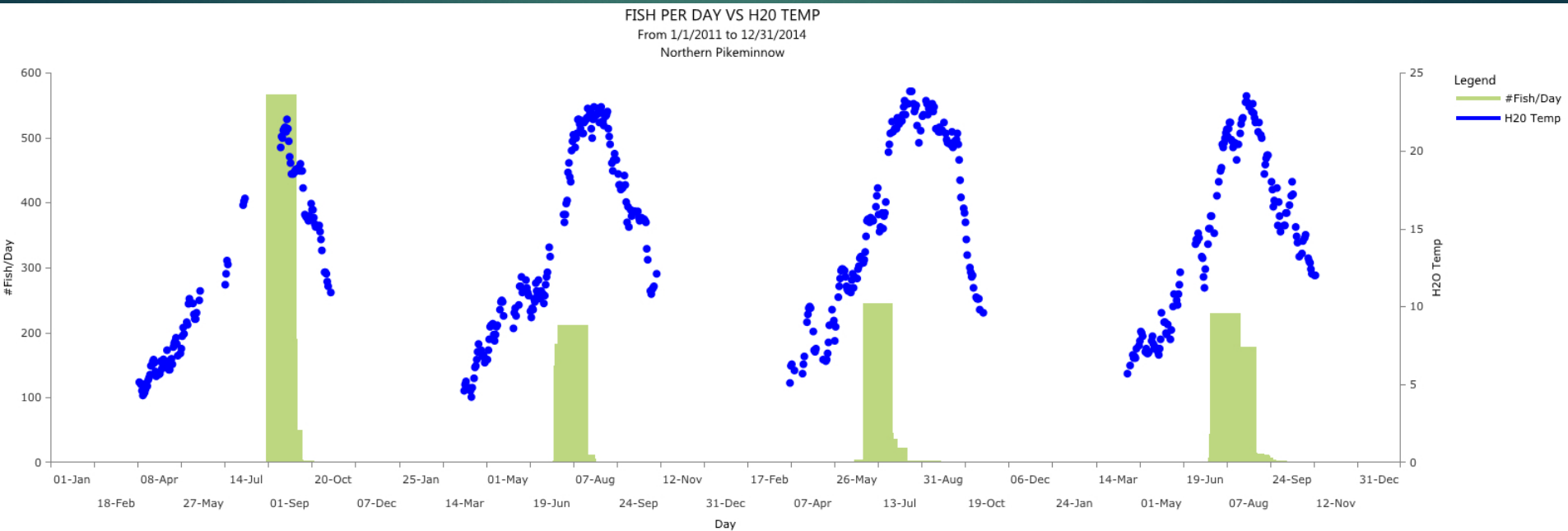
Largescale Suckers at Thompson Falls Ladder



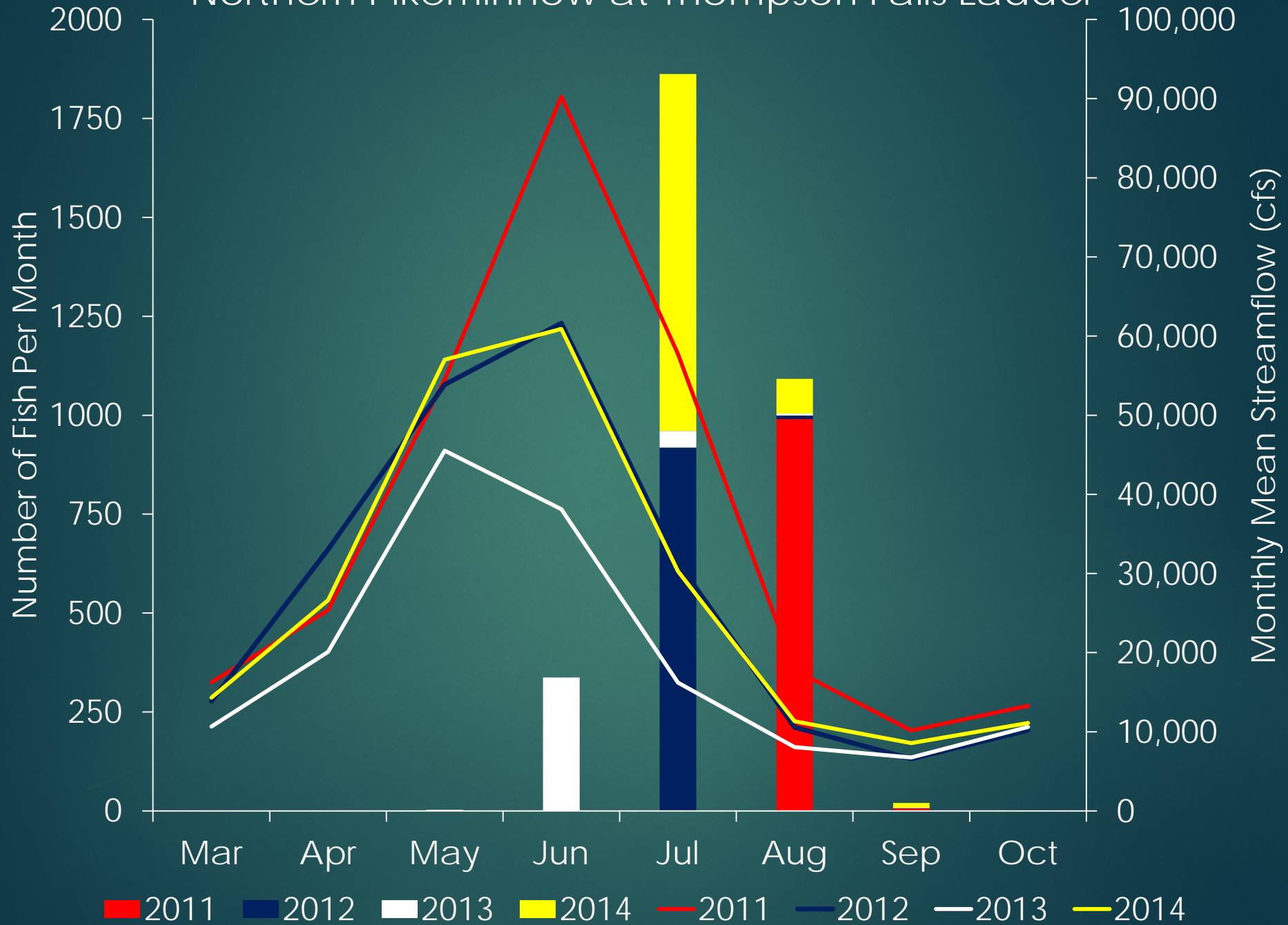
Largescale Suckers at Thompson Falls Ladder



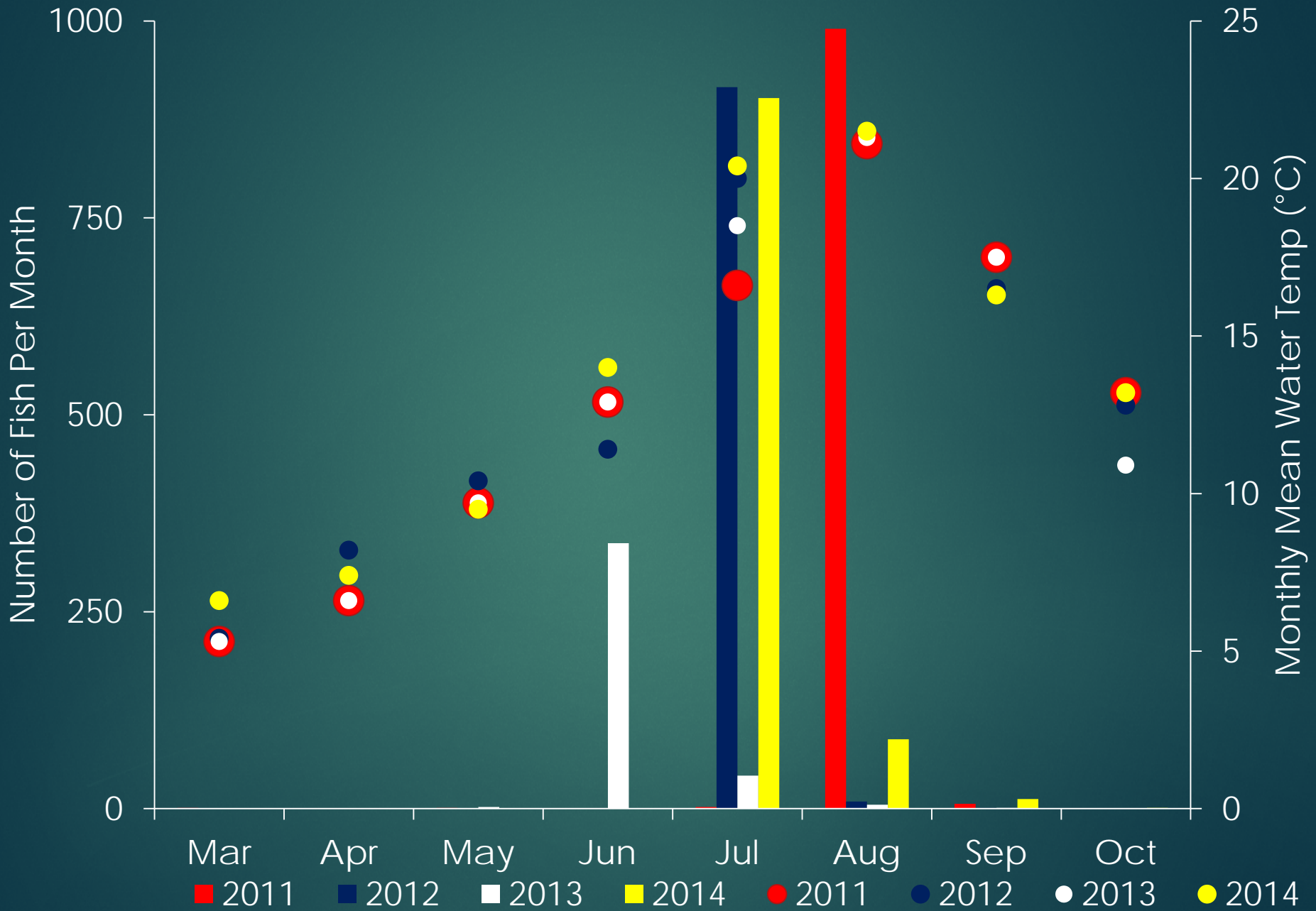
Northern Pikeminnow



Northern Pikeminnow at Thompson Falls Ladder

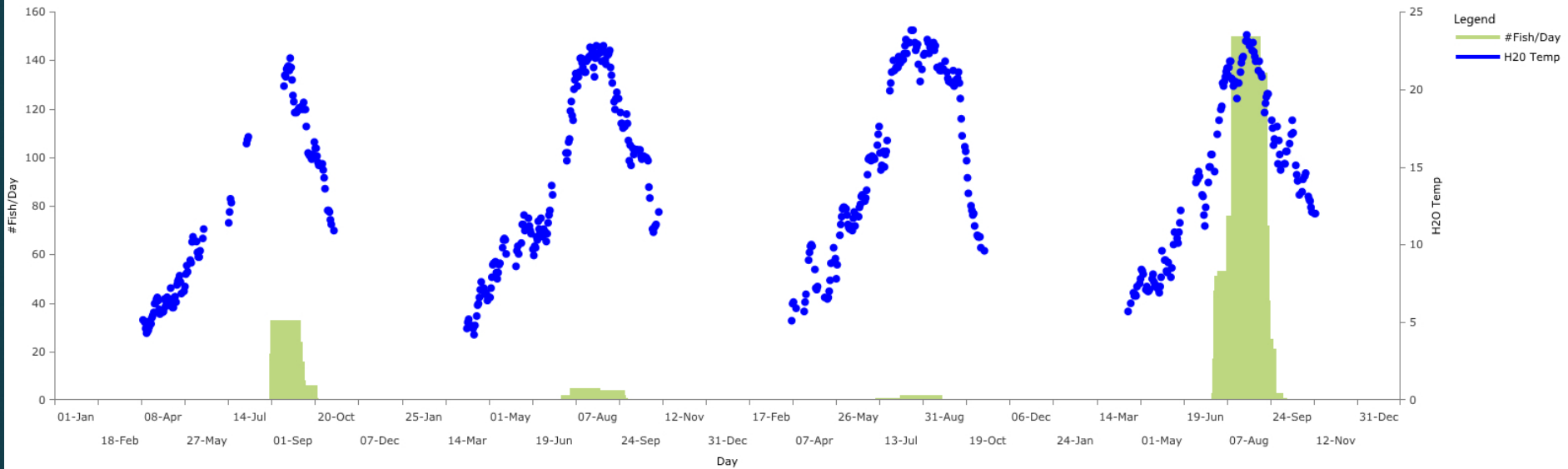


Northern Pikeminnow at Thompson Falls Ladder

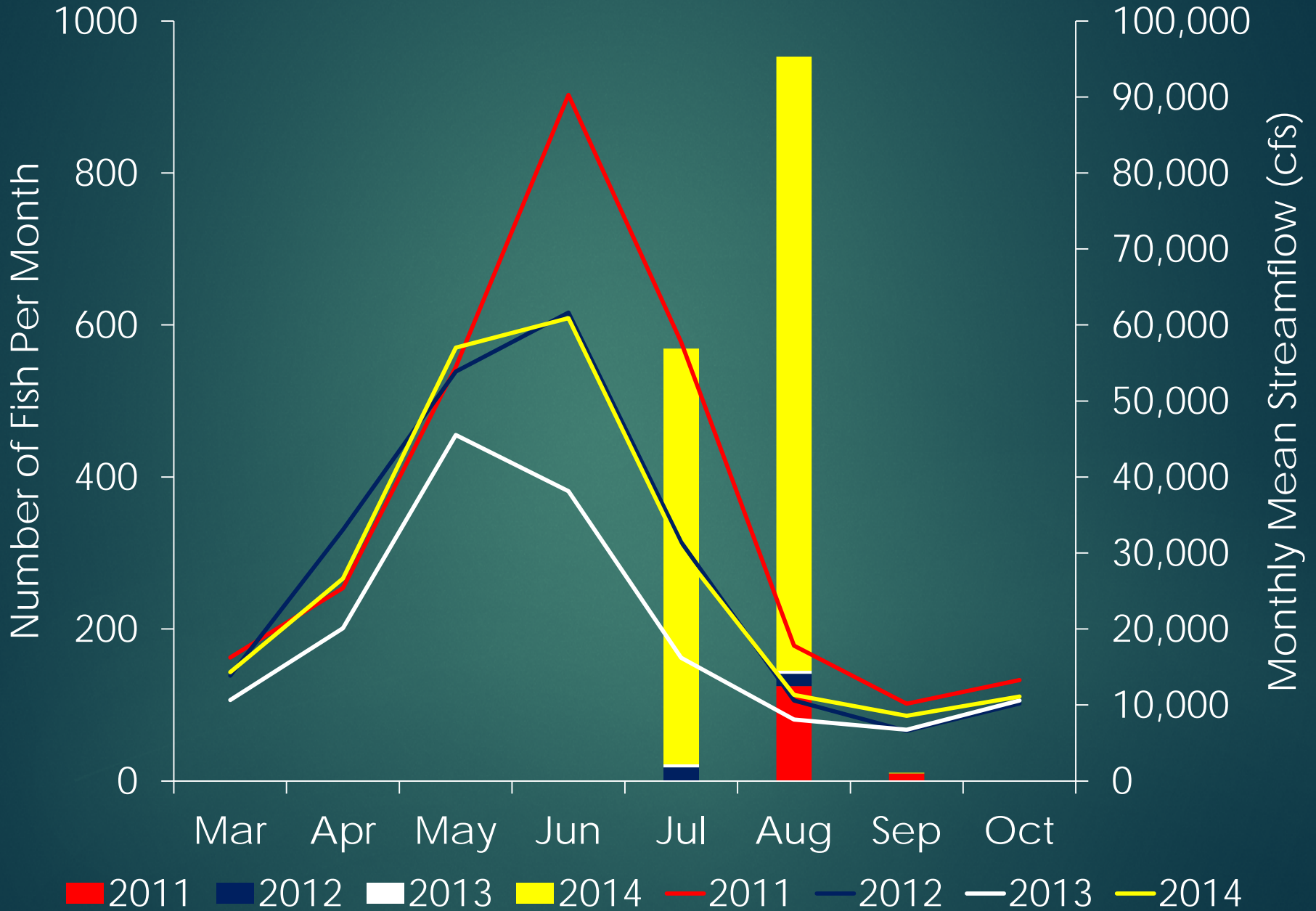


Smallmouth Bass

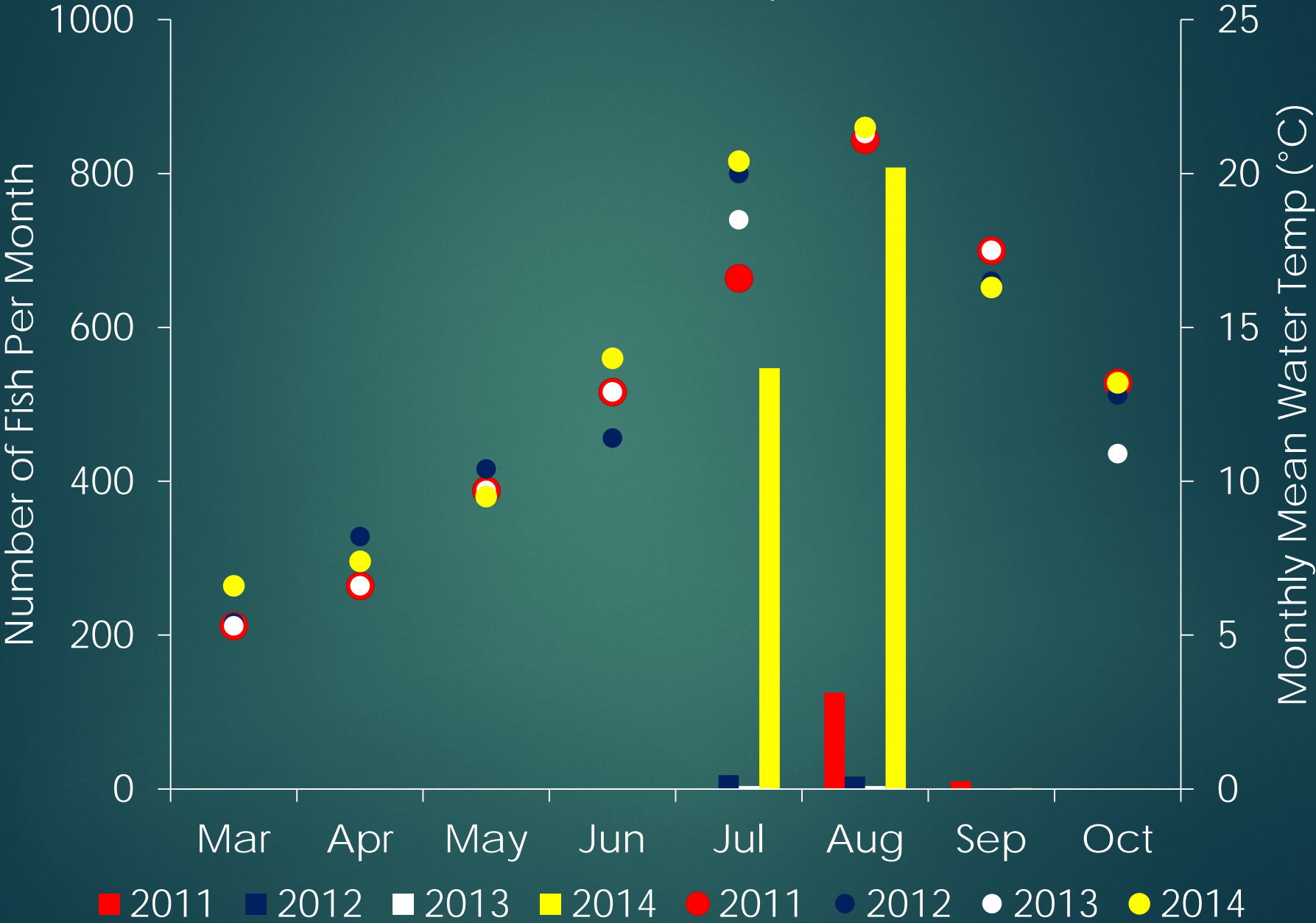
FISH PER DAY VS H2O TEMP
From 1/1/2011 to 12/31/2014
Smallmouth Bass



Smallmouth Bass at Thompson Falls Ladder

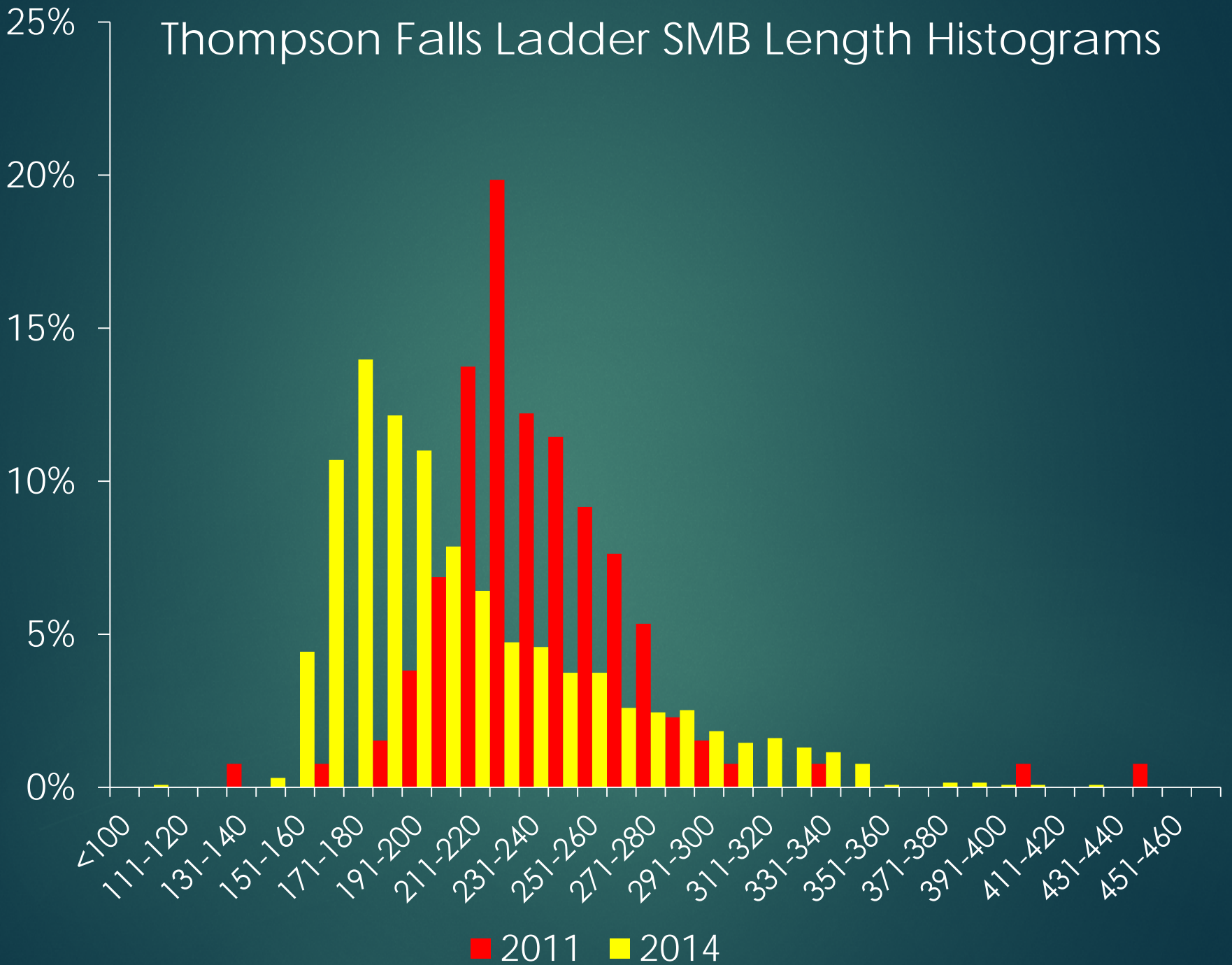


Smallmouth Bass at Thompson Falls Ladder



Thompson Falls Ladder SMB Length Histograms

% of Smallmouth Bass



Time to Ascend Ladder

Year	# of Species	# of Fish	Avg (Hrs)	Median (hrs)	Range (Hrs)
2011	3 + hybrid	17	5.0	3.0	0.9 - 19.8
2012	6	30	2.4	2.3	0.7 - 8.3
2013	4 + hybrid	52	6.3	2.0	1.0 - 40.8
2014	3	18	1.9	1.6	0.8 - 6.4

Species include: BULL, RB, RBxWCT, LS SU, LL, MWF, and WCT

Year	Species	#	Avg (Hrs)	Median (hrs)	Range (Hrs)
2011	RB	15	4.7	3.0	0.9 - 19.8
	LS SU	1	3.6	3.6	
	LL	1	10.8	10.8	
	Total	17	5.0	3.0	0.9 -19.8
2012	BULL	2	2.6	2.6	2.4 - 2.8
	LL	1	1.1	1.1	
	RB	18	2.2	2.0	0.7 - 4.4
	MWF	1	2.1	2.1	
	WCT	1	1.7	1.7	
	LS SU	7	4.6	3.2	2.3 - 8.3
	Total	30	2.4	2.3	0.7 - 8.3

Year	Species	#	Avg (Hrs)	Median (hrs)	Range (Hrs)
2013	LL	14	2.0	1.8	1.0 - 3.3
	RB	24	6.7	1.8	1.0 - 40.8
	RBxWCT	1	19.1	19.1	
	WCT	3	2.0	2.0	1.4 - 2.5
	LS SU	10	11.6	8.2	1.7 - 31
	Total	52	6.3	2.0	1.0 – 40.8
2014	RB	12	1.6	1.6	0.8 - 2.6
	WCT	2	5.1	5.1	3.8 - 6.4
	LL	4	1.3	1.2	1.0 - 1.7
	TOTAL	18	1.9	1.6	0.8 - 6.4

Tagging (Recap) at the Ladder

Species	2011 through 2014 Tagging (Total Recaps)
Bull	7 (1)
EB	1
LL	231 (18)
RB	660 (82)
RBxWCT	39 (2)
WCT	119 (4)
MWF	17
N PMN	2
LN SU	1
LS SU	6
SMB	133 (9*)
PIT Tags	1,083 (107)
Floy Tags	134 (9)
Total	1,217 (116*)

*3 of the SMB recaps in 2014 were LC Punch

Tagging (Recap) at the Ladder

	2011	2012	2013	2014	Totals
PIT Tags	225	256	344	258	1,083 (107)
Floy Tags	74	30	7	23	134 (9)
Total	299	286	351	281	1,217 (116*)

*3 of the SMB recaps in 2014 were LC Punch

% of Tagged Salmonids that Returned to the Ladder in 2014

Species	# of Fish at Ladder (2014)	# of Total Tagged (all years)	2014 Recaps at Ladder	% of all Tagged Fish Return	% of 2014 Species that are Returning to the Ladder
BULL	1	7	-	-	-
EB	1	1	-	-	-
RB	187	660	37	5.6%	19.8%
RBxWCT	12	39	1	2.6%	8.3%
WCT	36	119	2	1.7%	5.6%
LL	81	231	11	4.8%	13.6%
MWF	254	17	-	-	-
Total Salmonids	572	1,067	51	4.8%	8.9%

Tagging Below Thompson Falls Dam & Recaps at Ladder

Species	Totals Tags 2011, 2012, 2014	Total # Observed @ Ladder	% Observed at Ladder
Bull	5	1	20%
EB	1		
LL	33	3	9.1%
RB	169	16	9.5%
RBxWCT	4		
WCT	28	3	10%
MWF	83	1	1.2%
LWF	1		
N PMN - PIT	7		
LN SU	11		
LS SU	242	4	1.7%
NP - FLOY	15		
SMB - PIT	1		
SMB - FLOY	4		
PIT Tags	585		
Floy Tags	19		
Total	604	28	4.6%

Fallback

	# of Fish			
Species	2011	2012	2013	2014
BULL				1
LL				2
RB	11	2	3	5
RBxWCT			1	-
WCT	2			-
SMB				4
TOTAL (% of Total PIT/Floy Tagged Fish)	13 (4.8%)	2 (0.7%)	4 (1.1%)	12 (4.3%)

Fallback = Fish that either returned to the ladder a second time in the same year or fish collected downstream of the dam within the same year of passing through the ladder

Fallback Fish 2014

Spp.	Tag ID	Date 1	L (mm)	Wt (g)	Date 2	L (mm)	Wt (g)	Duration (days)
BULL	982000357016169	5/16	523	1264	10/13	508	870	150
LL	985121010670000	7/20	410	606	7/30	410	602	10
LL	985121027399527	7/13	421	772	7/19	427	756	6
RB	985121027366855	4/10	510	1290	7/31	531	1566	112
RB	985121010648331	3/31	368	470	4/8	363	458	8
RB	985121010716657	3/28	475	1078	7/23	470	858	117
RB	985121027325369	3/31	400	592	10/9	386	384	192
RB	985121027441384	5/12	265	170	7/12	331	344	61
SMB	LC Punch	Jul-Aug			8/13	207		< 30
SMB	LC Punch	Jul-Aug			8/18	164		<30
SMB	LC Punch	Jul-Aug			8/21	163		<30
SMB	Y-Floy 16973	7/14	286	310	7/17	292	292	3

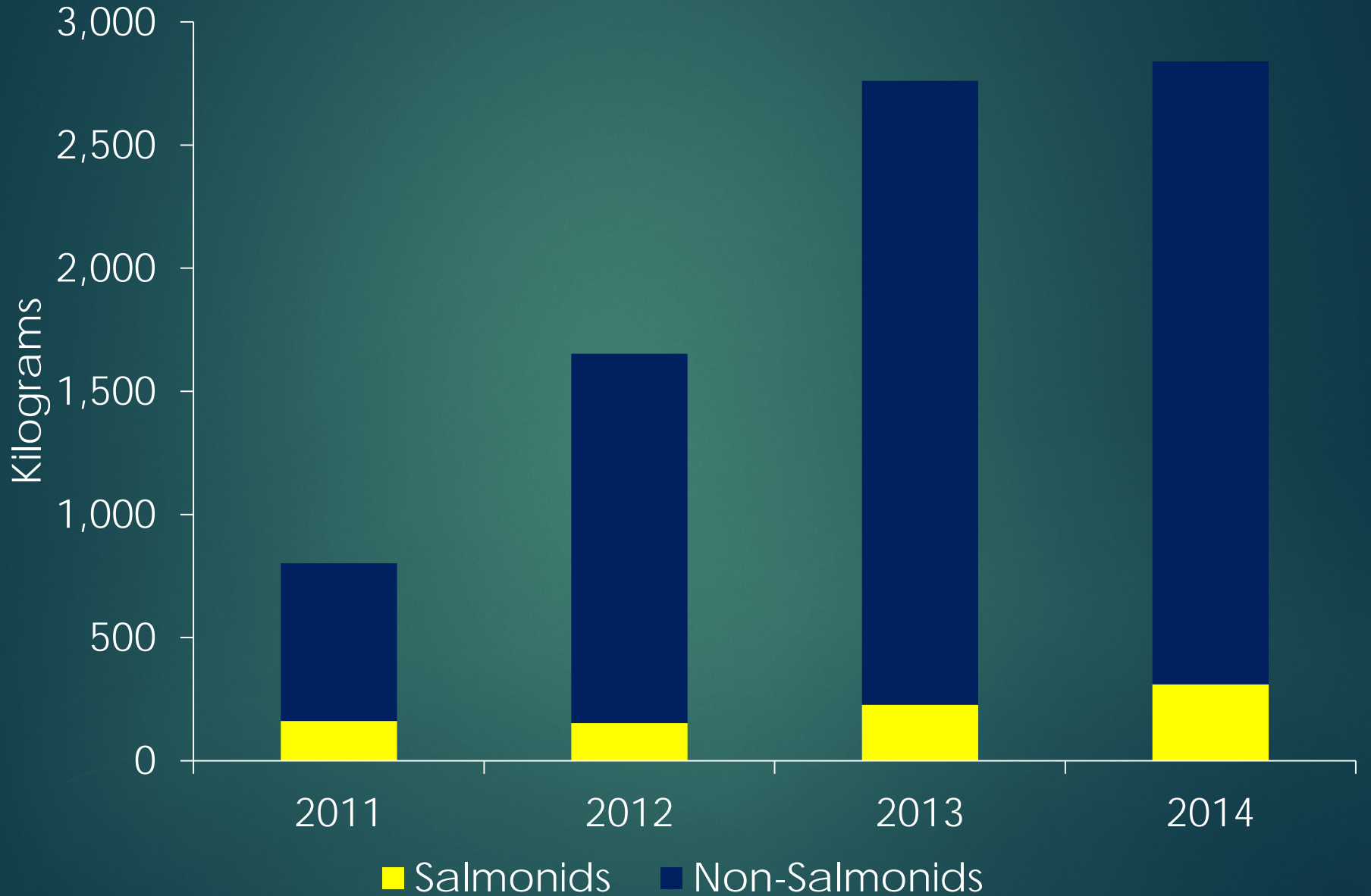
Size of Fish at Ladder in 2014

Species	Count	Length Range (mm)	Weight Range (g)
BULL	1	523	1,264
EB	1	382	574
RB	187	195 - 575	66 - 1,990
RBxWCT	12	281 - 555	220 - 1,398
WCT	36	180 - 467	50 - 982
LL	81	107 - 575	14 - 1,844
LS SU	2,802	245 - 519	168 - 1,354
LN SU	1	422	800
MWF	254	295 - 428	256 - 686
N PMN	1,003	200 - 532	4 - 1,396
SMB	1,356	109 - 430	30 - 1,156

Biomass Released Upstream

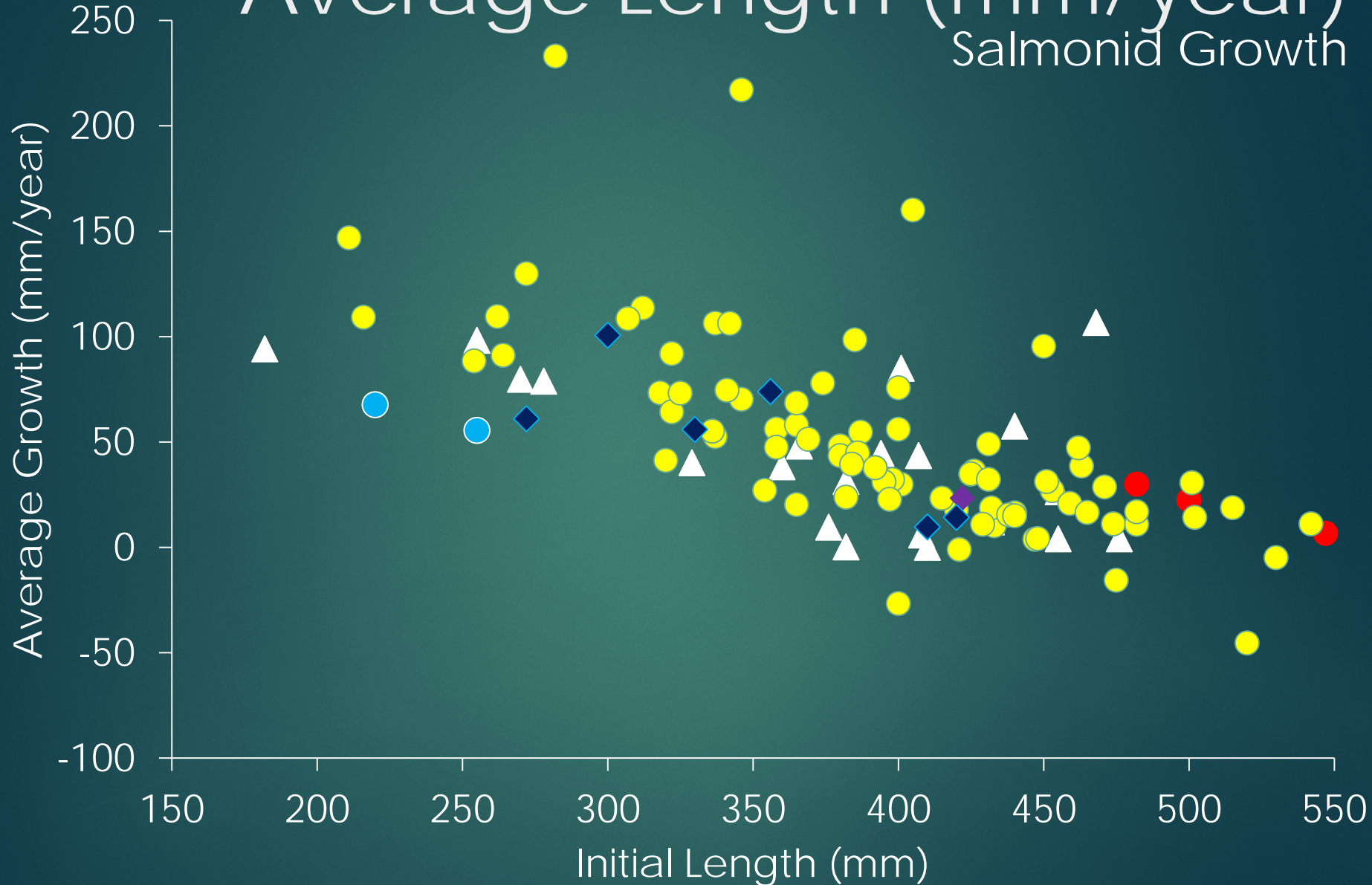
Species	Total Biomass (kg) Passed Upstream of Thompson Falls Dam				
	2011	2012	2013	2014	Total
BULL	2	1	8	1	12
EB	0	0	0	1	1
RB	119	102	116	124	461
RBxWCT	5	4	8	8	25
WCT	11	10	25	15	61
LL	18	28	69	61	176
MWF	6	8	1	100	114
LN SU	5	0	1	1	7
LS SU	268	1,041	2414	2,037	5,760
N PMN	344	445	115	320	1,225
SMB	24	12	3	172	210
TOTAL	801	1,650	2,761	2,840	8,052

Biomass Passed Upstream Per Year



Average Length (mm/year)

Salmonid Growth



● BULL ▲ LL ● MWF ● RB ◆ RBxWCT ◆ WCT



Avista Bull Trout

- DETECTIONS IN PROSPECT CREEK
- TRANSPORT FROM BELOW CGD UPSTREAM TO REGION 4

Bull Trout Prospect Creek Avista Samples 2014

Tag Date(s)	PIT # and Location	Length, Weight	Detection Date in Prospect Creek
5-6-2013	At Thompson Falls Ladder	576mm, 1694g	9-21-2014
6-2-2011 & 5-28-2014	Initial capture in 2011 electrofishing LCFR – ID; Recapture in 2014 electrofishing below Thompson Falls Ladder	567mm, 1640g (in 2014)	9-18-2014

Bull Trout Transported from CGD to R4

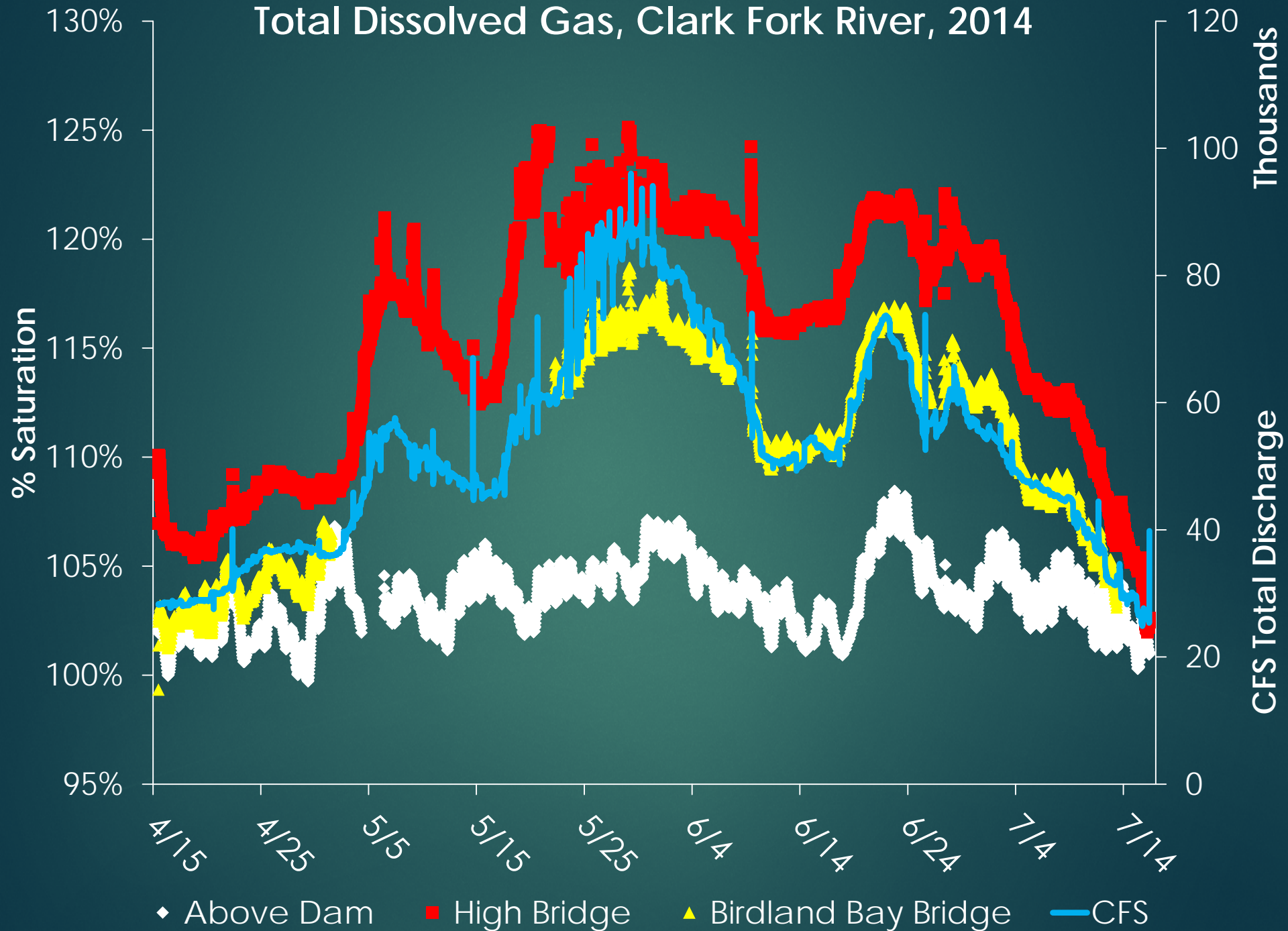
#	Date 2014	Length (mm)	Weight (g)	Genetic Assignment	Release Location
1	4/20	528	1304	Thompson	WF Thompson
2	4/22	572	2126	Little Joe	St. Regis
3	4/29	525	1247	Thompson	WF Thompson
4	5/11	718	3629	SF Jocko	Paradise
5	6/15	540	1360	Thompson	WF Thompson
6	7/2	648	2523	Thompson	WF Thompson
7	7/13	614	2211	Thompson	WF Thompson
8	7/17	532	1304	Thompson	WF Thompson
9	7/24	566	1644	Fishtrap	Fishtrap
10	9/6	684	2721	Fishtrap	Fishtrap
11	9/24	614	2324	Fishtrap	Fishtrap
12	10/3	570	1531	WF Thompson	WF Thompson



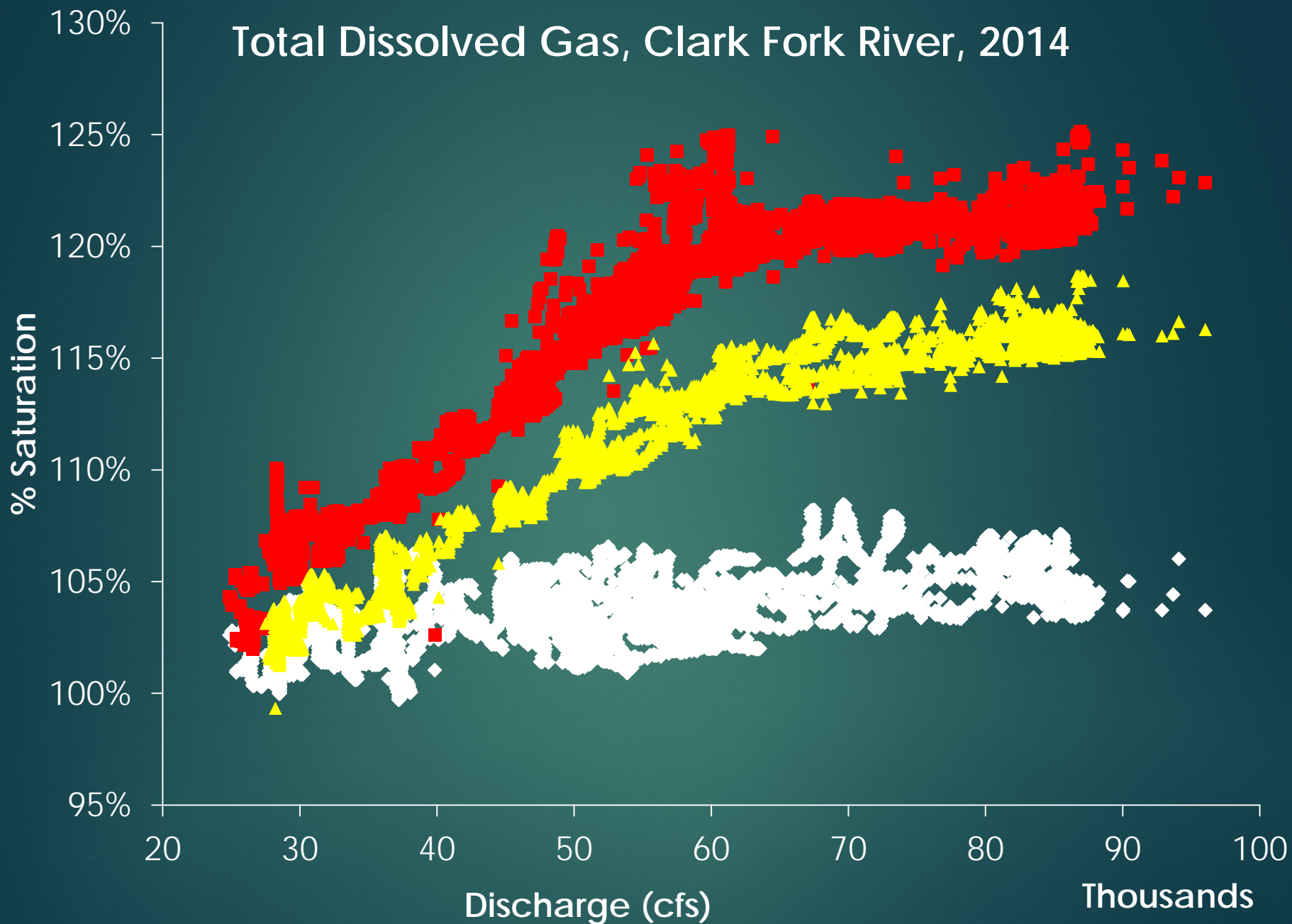
Total Dissolved Gases

2014 GAS BUBBLE TRAUMA

Total Dissolved Gas, Clark Fork River, 2014



Total Dissolved Gas, Clark Fork River, 2014



◆ Above Dam

■ High Bridge

▲ Birdland Bay Bridge

Comparison of 2014 to Previous Years

Range of Discharge (kcfs)	Long Term Ave TDG at BBB (% sat)	# Years of Data (2002-2012)	Ave TDG at BBB in 2014 (% sat)
>23, <30	102.7	10	102.7
>30, <40	105.6	10	104.7
>40, <50	109.5	10	108.7
>50, <60	112.5	8	111.6
>60, <70	114.0	7	114.7
>70, <80	114.6	6	115.4
>80, <90	114.7	2	116.2

GBT Studies Below TFalls Dam

Year	Peak Flow (cfs)	# of Fish	# of Species	# of Fish with GBT Symptoms (% of fish sampled)	Species with Symptoms
2008	75,600	220	16	1 (0.4%)	L WF
2009	57,700	276	14	0	None
2010	58,000	No Sampling	-	-	-
2011	104,000	949	15	67 (7%)	RB, L WF, LS SU, PUMP, N PMN, LL
2012	75,300	295	11	3 (1%)	LS SU, SMB, RB
2013	63,700	No Sampling	-	-	-
2014	82,800	340	13	8 (2%) ¹	RB, LL, L WF, MWF, SMB

¹ An additional 23 fish (21 L WF, 1 MWF, 1 SMB) were noted as having a frayed caudal fin, but no bubbles.



2014 TAC Project Reports

2015 Proposals



West Fork Fish Creek

- ▶ Land Acquisition – Rehbein Property
- ▶ MFWP – Ladd Knotek
- ▶ TAC Fund Request: \$40,000




Proposed Funding Sources	Cost	% of Budget
Thompson Falls TAC (requested)	\$40,000	3%
MT FWP - Wildlife P-R Funding (secured)	\$1,050,000	75%
Westslope Chapter Trout Unlimited (to be requested)	\$10,000	1%
Other Private/Non-Federal Sources (to be requested)	\$300,000	21%
Total Proposed Funds	\$1,400,000	100%

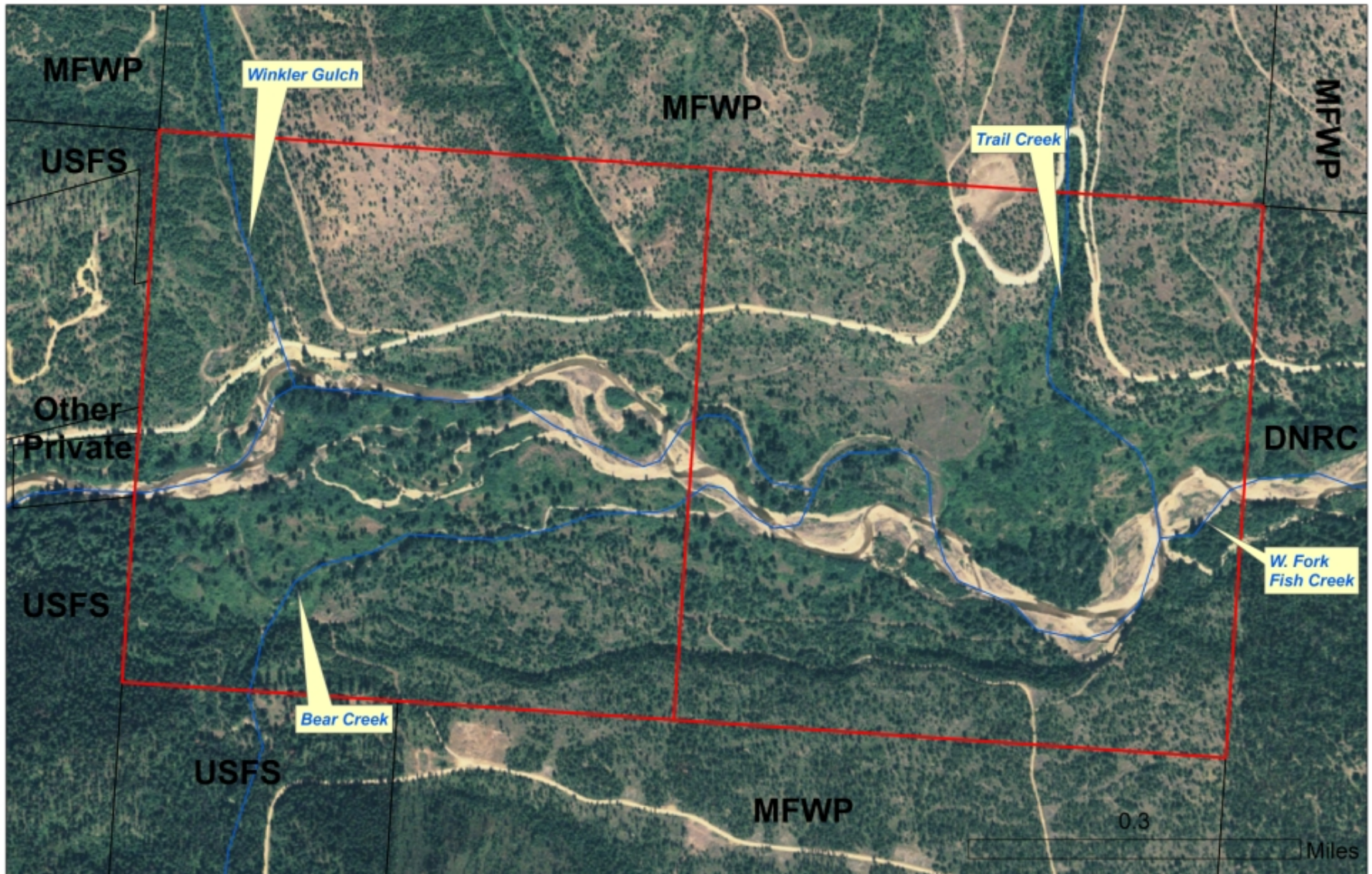


Fish Creek WMA - West Fork Fish Creek Addition Rehbein Property, 360 acres

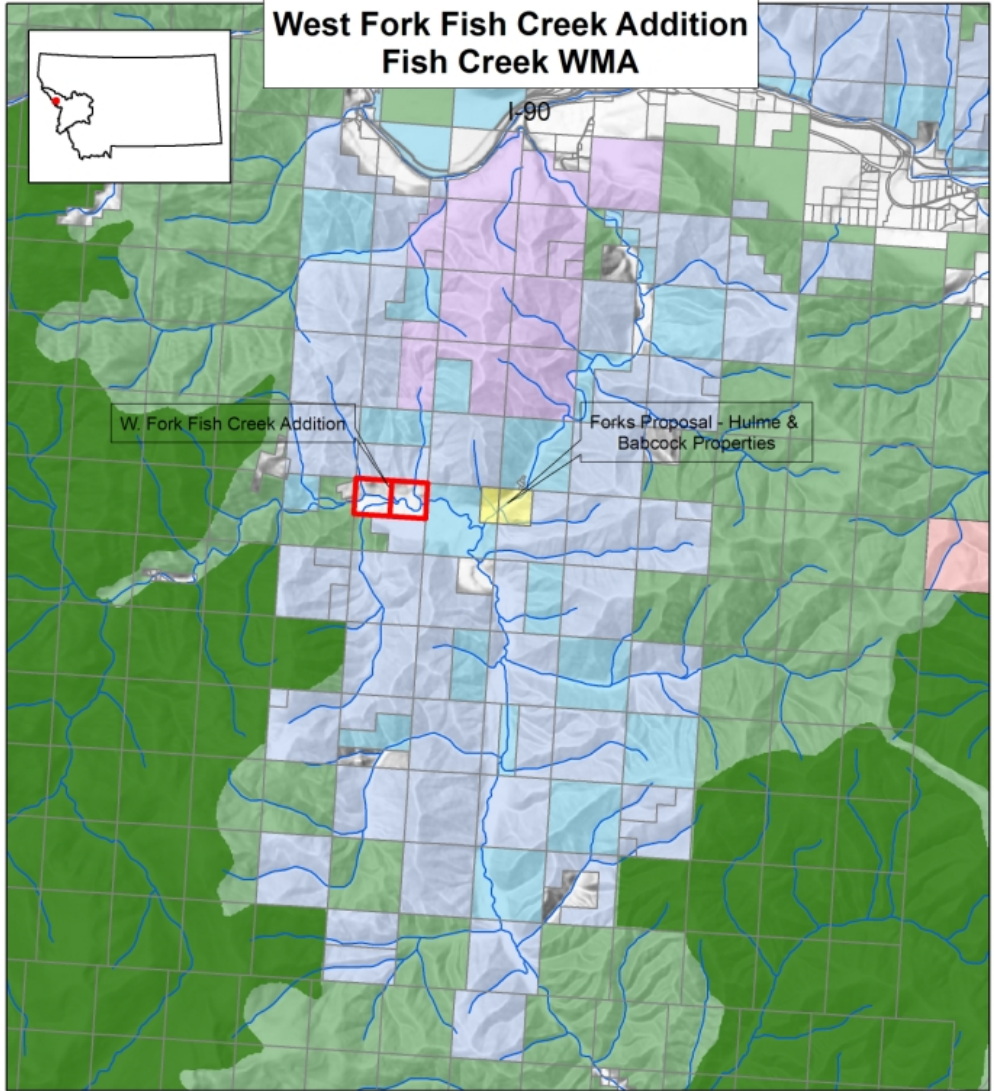
June 13, 2013: V. Edwards, R2

Legend

-  Rehbein's 360 acres
-  Mineral County Cadastral
-  Streams



West Fork Fish Creek Addition Fish Creek WMA



Legend

- Rehbein's 360 acres
- USFS Roadless Areas
- The Nature Conservancy
- Streams
- Montana State Trust Lands
- US Forest Service
- MFWP Fish Creek State Park
- State of Montana
- MFWP Fish Creek WMA



Add Map Path and Mappers initials

June 13, 2013: V. Edwards, WfFish.mxd

2015 Activities

- ▶ Baseline Fisheries
 - ❑ Spring Electrofishing (Reservoir)
 - ❑ Fall Electrofishing (Above Islands)
 - ❖ Paradise to Plains (next in 2016?)
 - ❑ Fall Gill Netting(Reservoir)
- ▶ Upstream Fish Passage (March – October)
- ▶ MSU Graduate Study (Thompson River)
- ▶ Electrofish Below Dam (target BULL?)
- ▶ Complete fish survey of Murr and Alder Cks?
- ▶ Thompson River PIT tag data collection?
- ▶ Other?

2014 Annual Report

- ▶ **Draft Report to TAC for Review**
 - ❑ Friday, February 13, 2015
- ▶ **Comments from TAC Due**
 - ❑ Friday, March 13, 2015
- ▶ **Finalize Report, Submit to FWS for Signature Approval**
 - ❑ March 23-27, 2015
- ▶ **E-File with FERC (deadline April 1, 2015)**
 - ❑ March 30, 2015

Other Comments/Questions

