

An aerial photograph of a mountain slope. The upper part of the slope is covered in a dense forest of tall, thin evergreen trees. Below the forest, there are large, grey, rocky outcrops and a scree slope. The lower part of the slope is again covered in a dense forest of evergreen trees. The overall scene is a mix of green forest and grey rock.

Steelhead Population Monitoring on Lower Yakima River Tributaries

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Yakama Nation Fisheries Management
Program

Toppenish, Washington

▶ Spawning ground surveys

- Index of spawning escapement

▶ Smolt Trap

- Outmigration estimate
- Timing and survival through the Yakima and Columbia rivers

Spawning Ground Surveys

- ▶ Three pass surveys conducted between mid-March through the end of May
- ▶ 32 Miles in the Ahtanum watershed
- ▶ 78 Miles in the Toppenish watershed
- ▶ 93 Miles in the Satus watershed.

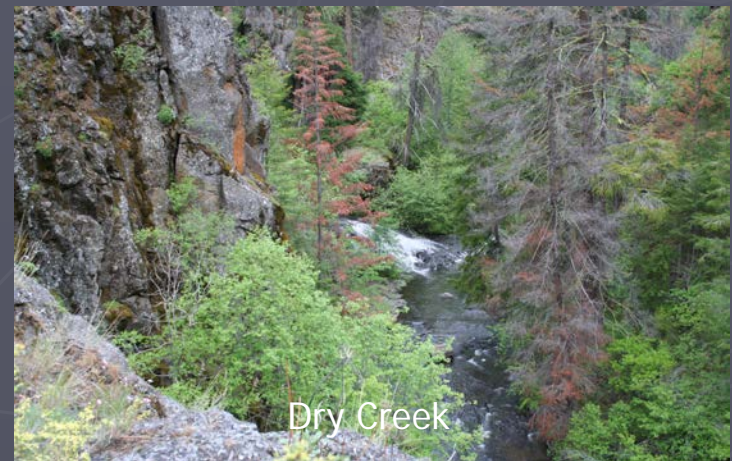
Redd count survey in Satus Creek



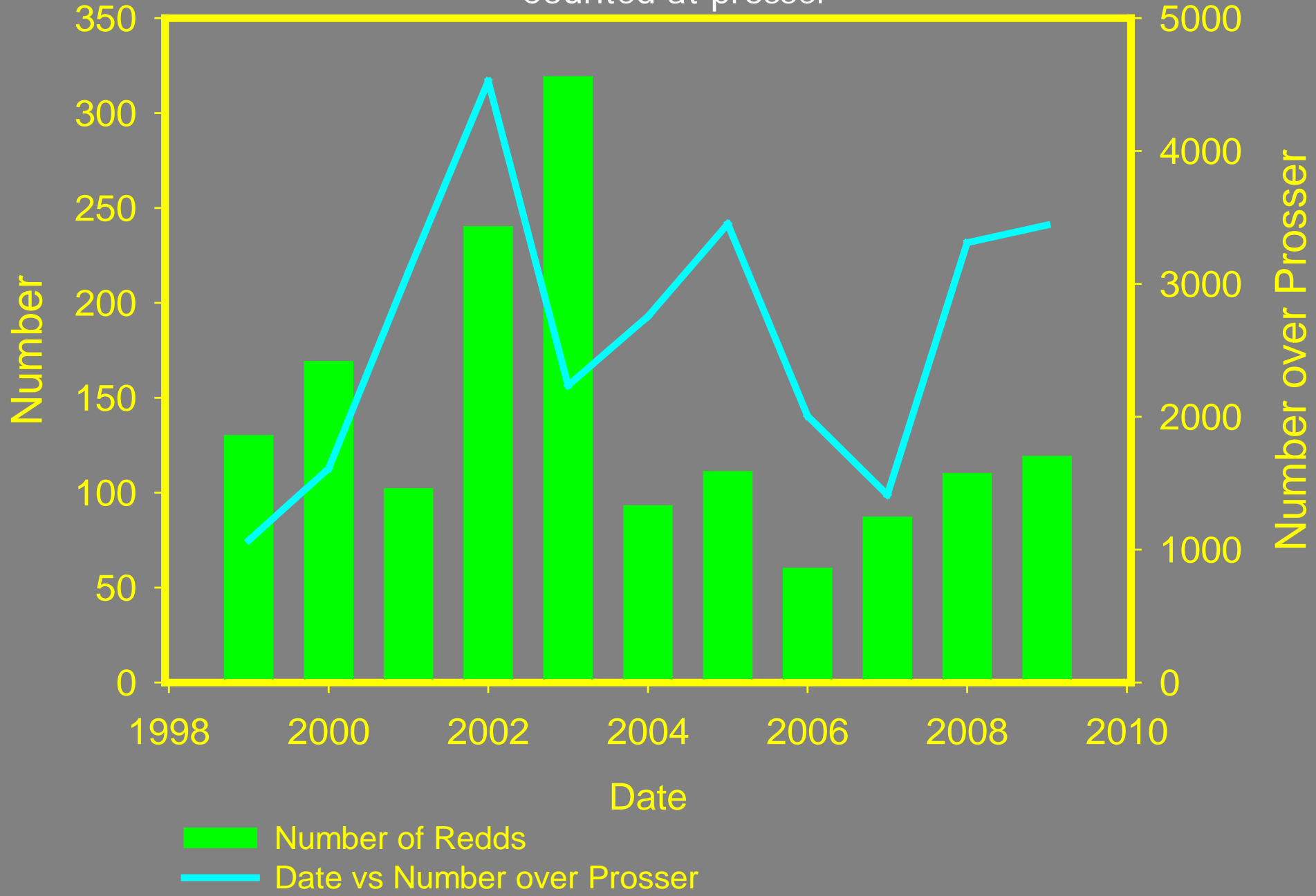
2009 Satus Creek Spawning Survey

- ▶ 3 complete passes of Satus, Logy, and Dry Creek and 2 passes of smaller tributaries
- ▶ 119 Redds were identified
- ▶ Conditions for Redd identification were good

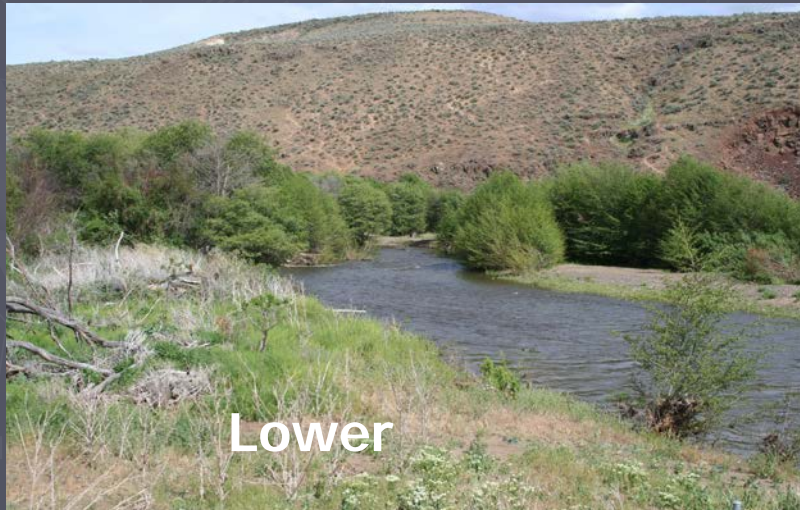
Satus Watershed Barriers



Steelhead redd numbers in Satus Creek and number of adults
Counted at prosser



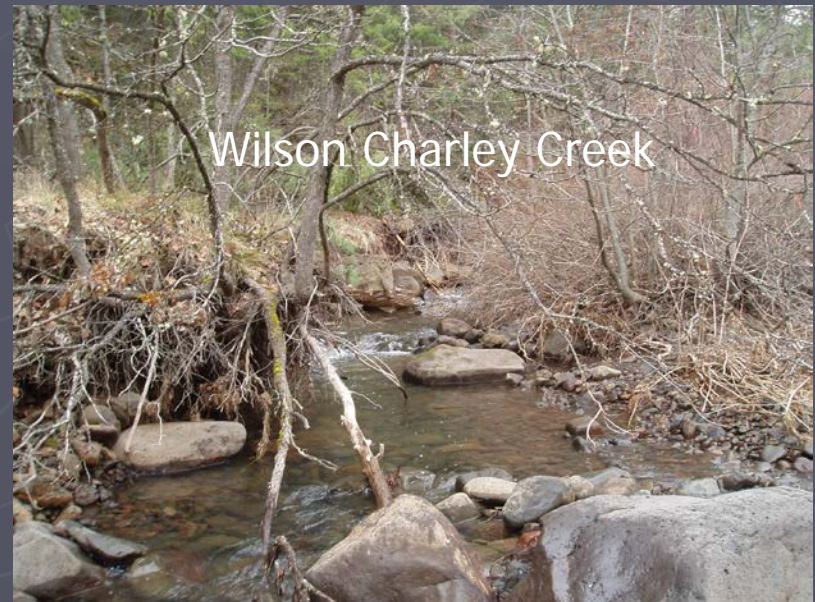
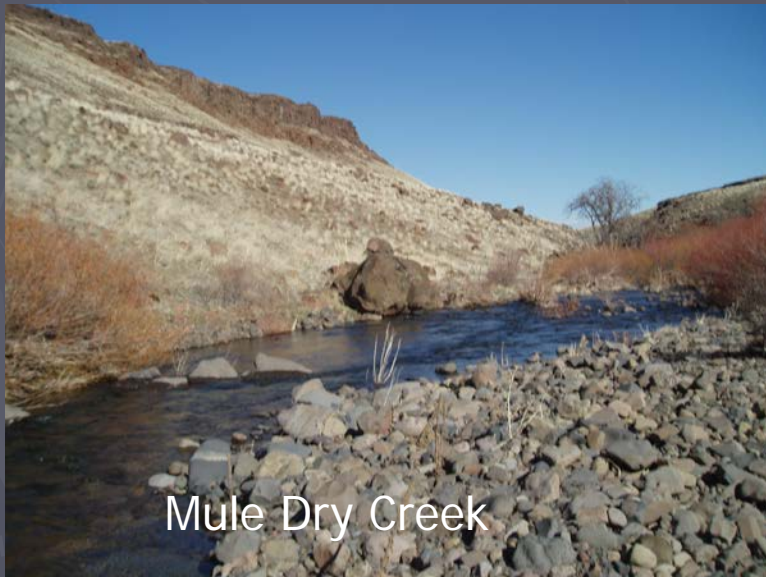
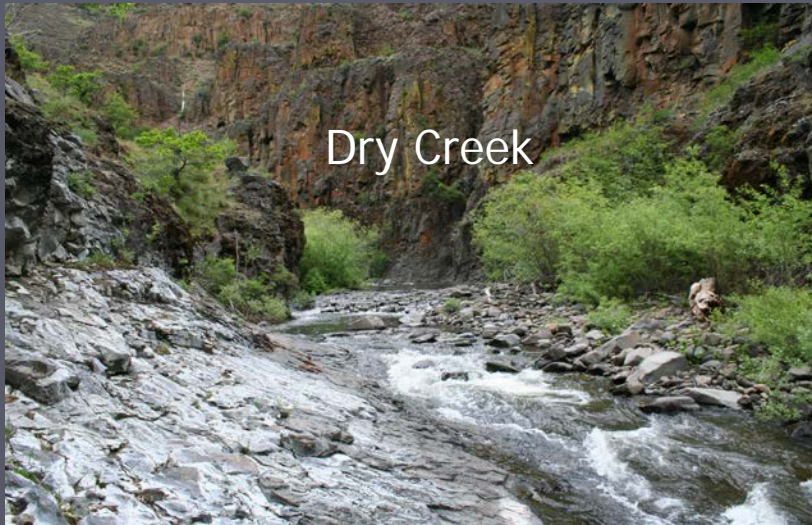
Satus Creek



Main Stem Satus Creek

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Upper	61	27	36	17	16	9	11	11	22
Mid	57	86	76	36	33	16	23	31	26
Lower	32	12	29	8	34	3	5	4	9
Total	150	125	141	61	83	28	39	46	57

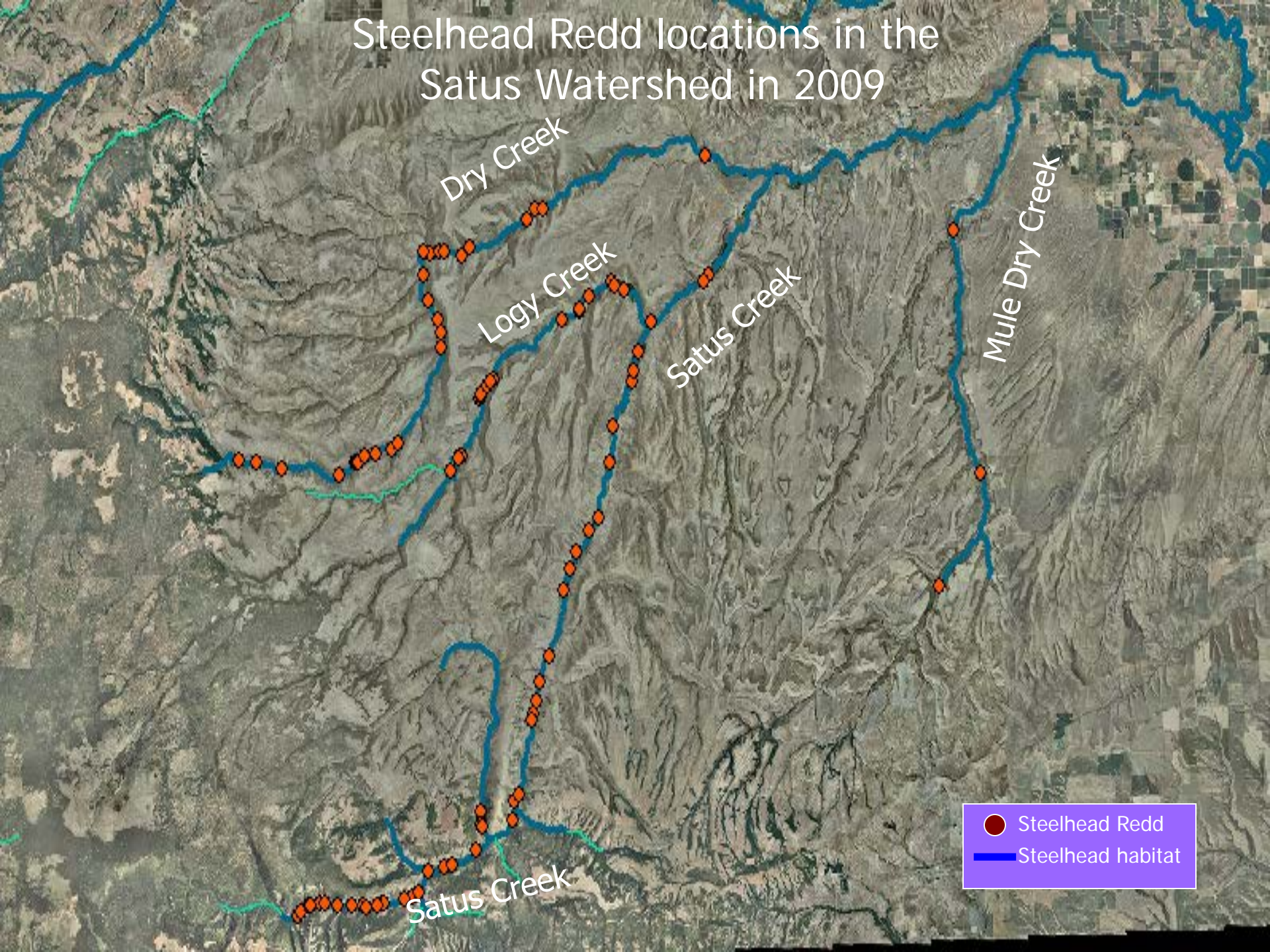
Satus Creek Tributaries



Satus Creek Tributaries Redd Numbers

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Dry	37	61	104	8	6	15	24	35	34
Logy	57	57	45	24	19	11	20	19	20
Kusshi	5	21	7	4	0	1	3	0	3
Wilson Charley	3	6	5	4	0	2	1	1	0
Shinando	0	0	0	0	0	0	0	0	1
Mule Dry	0	27	16	4	0	3	0	0	3

Steelhead Redd locations in the Satus Watershed in 2009



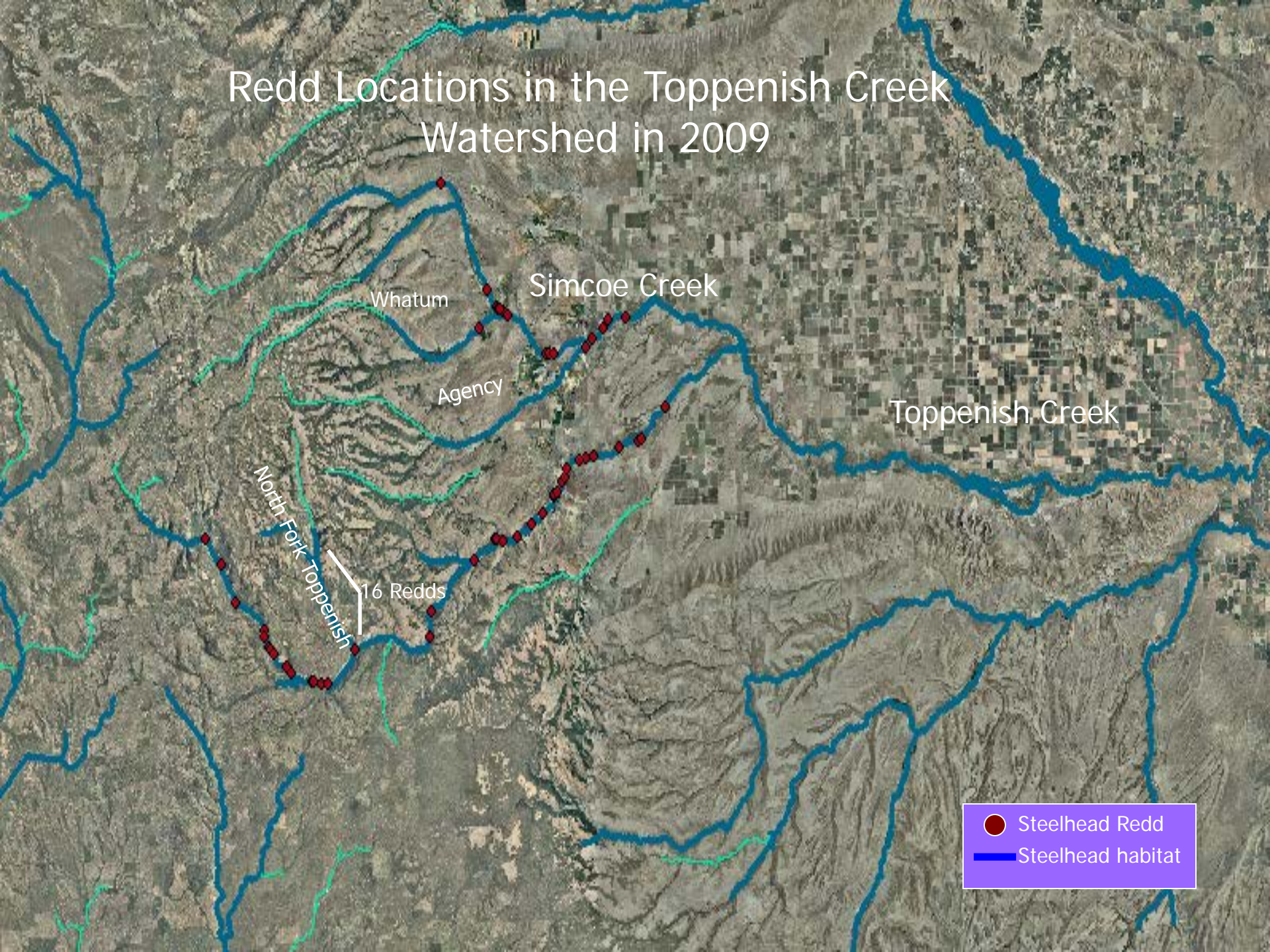
Toppenish Creek



Toppenish Creek

- ▶ 2 passes completed of Lower Toppenish mainstem, Simcoe Creek, and tributaries. Only one pass completed of the upper portion of Toppenish.
- ▶ 79 Redds identified

Redd Locations in the Toppenish Creek Watershed in 2009



Out Migration Studies

Toppenish Creek Screw Trap



Smolt Trap

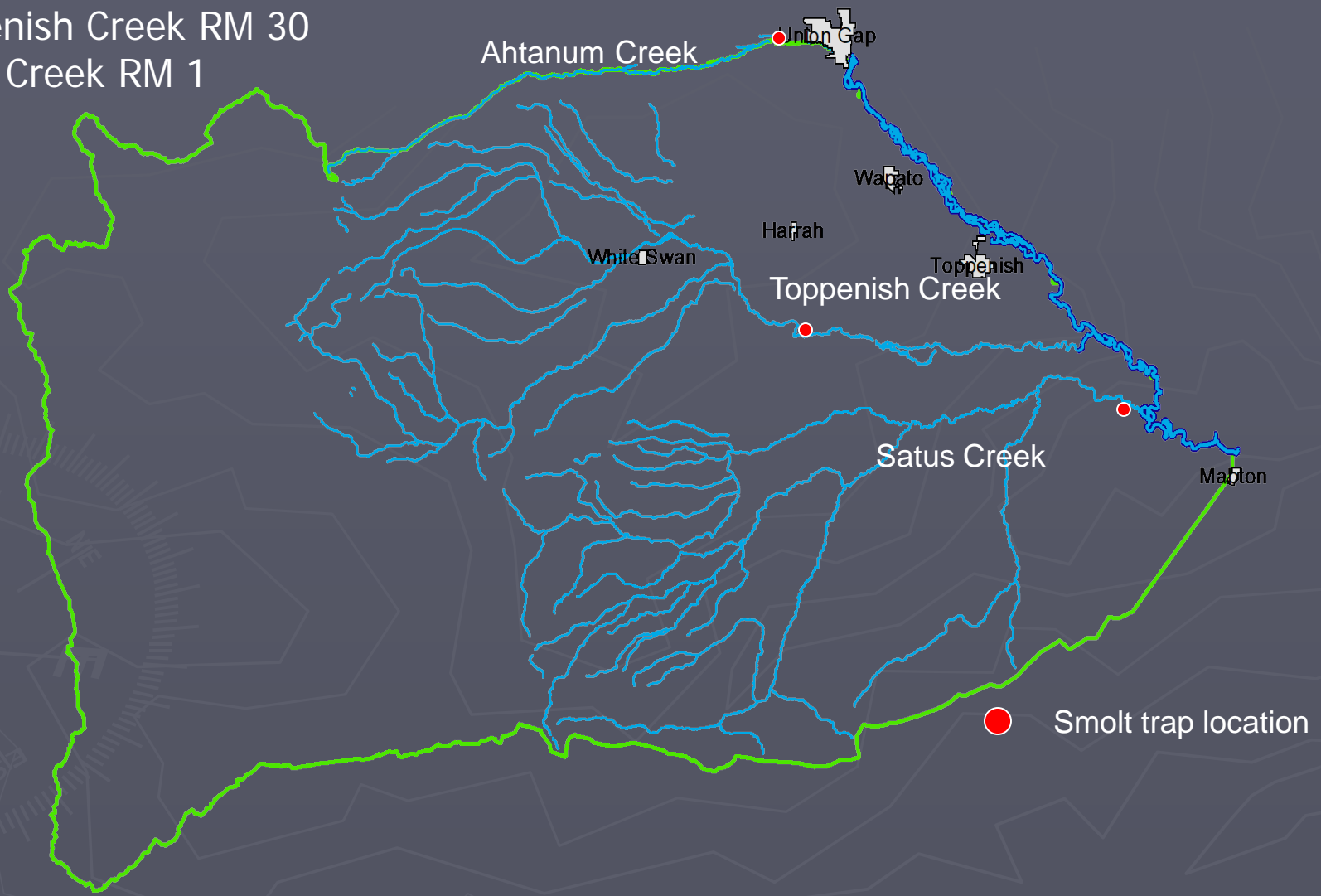
- ▶ 5-foot diameter rotary screw trap
- ▶ Located downstream from known spawning and rearing habitat on Satus, Toppenish, and Ahtanum Creek
- ▶ Operated continuously from November through early June at each tributary

Smolt trap

- ▶ Captured smolts are measured and weighed
- ▶ We PIT tag a subsample of steelhead juveniles over 100 mm
- ▶ PIT tagged smolts are released above the trap once a week to estimate efficiency
- ▶ DNA samples
- ▶ Scale samples

Location of smolt traps on Lower Yakima River

- Ahtanum creek RM 2
- Toppenish Creek RM 30
- Satus Creek RM 1



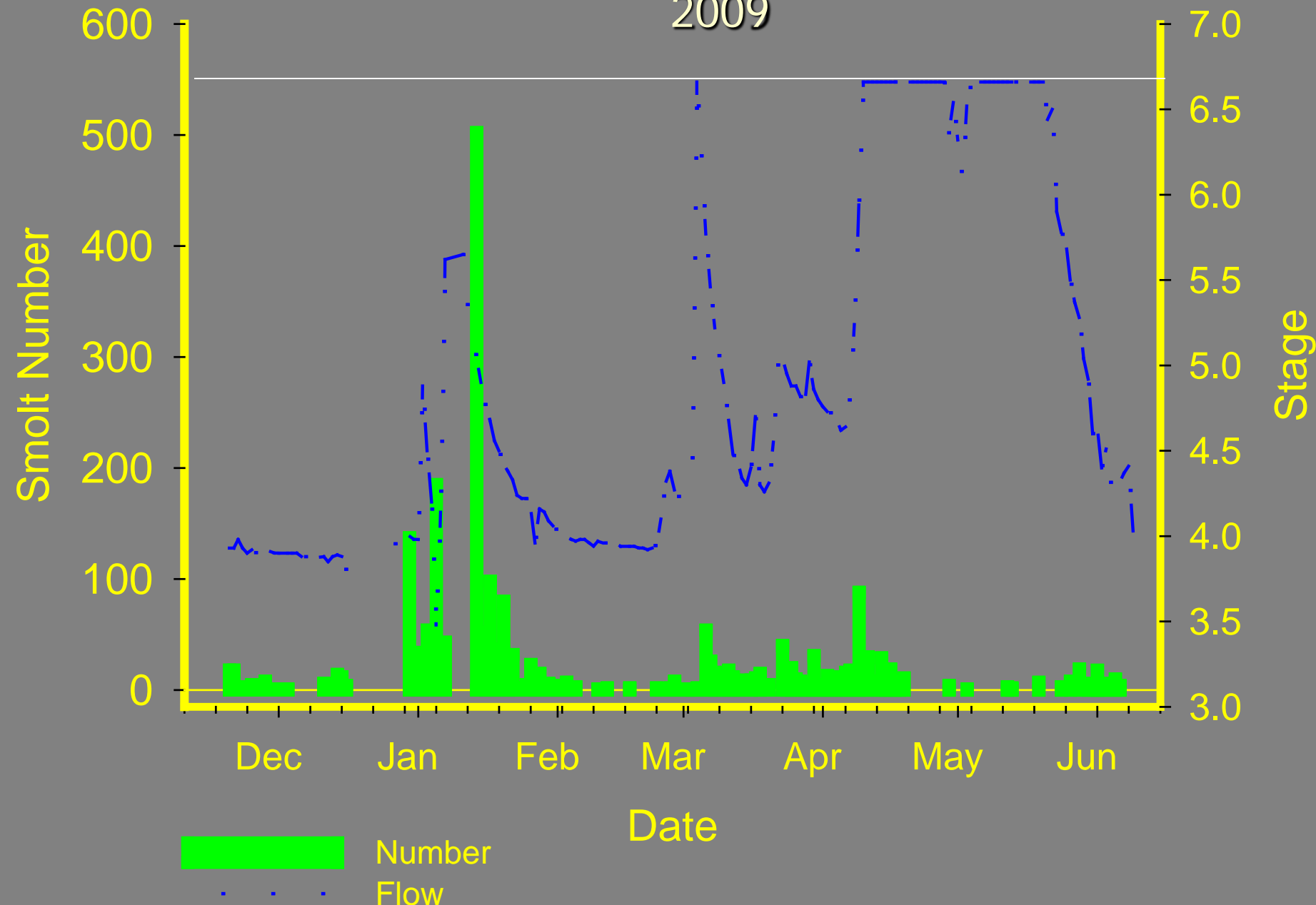
Toppenish Creek Screw Trap



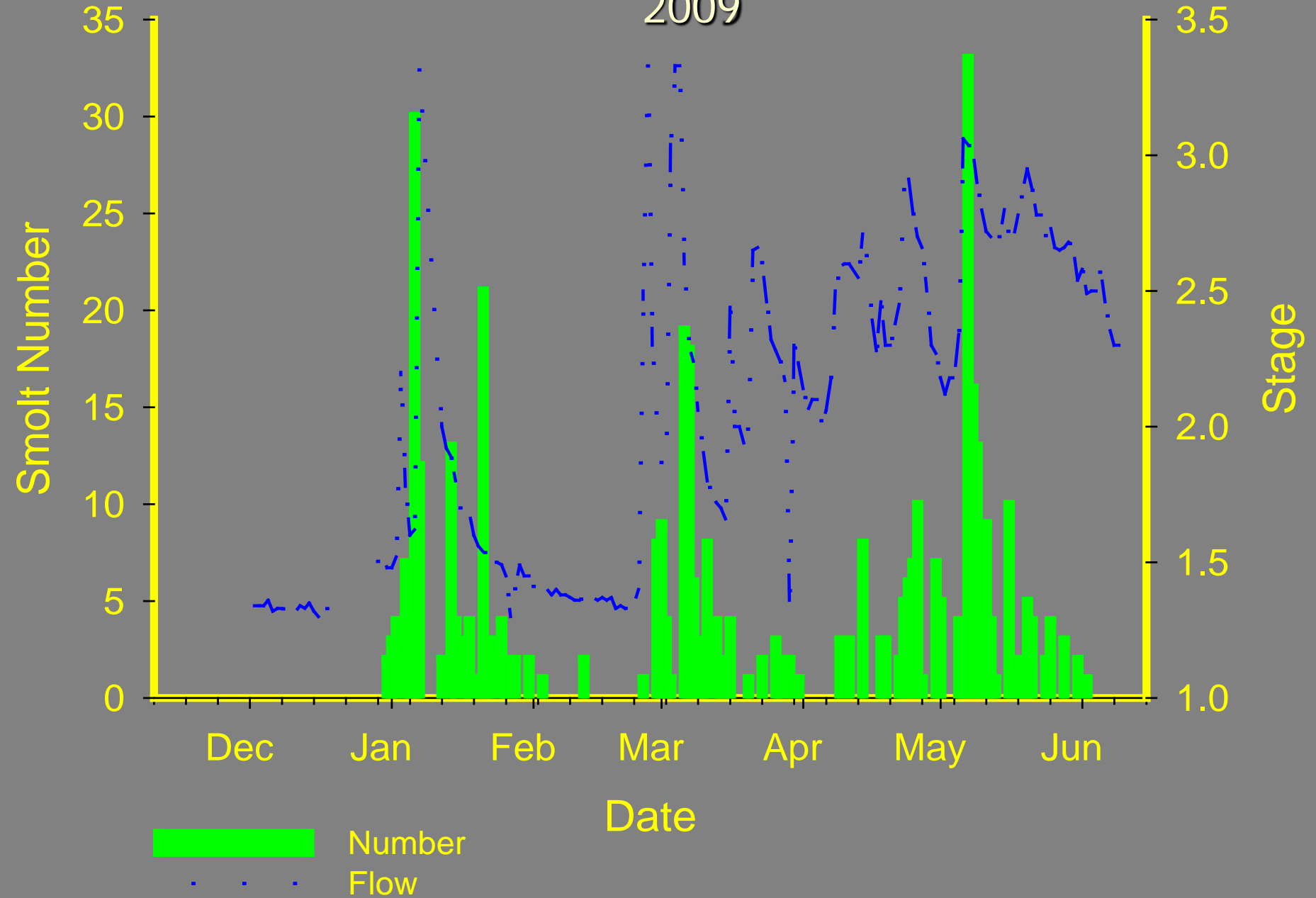
Smolt Traps 2009

- ▶ Toppenish Creek – 2418 Steelhead smolts captured, 1178 PIT tagged
- ▶ Satus Creek – 415 Steelhead smolts captured, 322 PIT tagged
- ▶ Ahtanum Creek – 22 Steelhead smolts captured, 17 PIT tagged

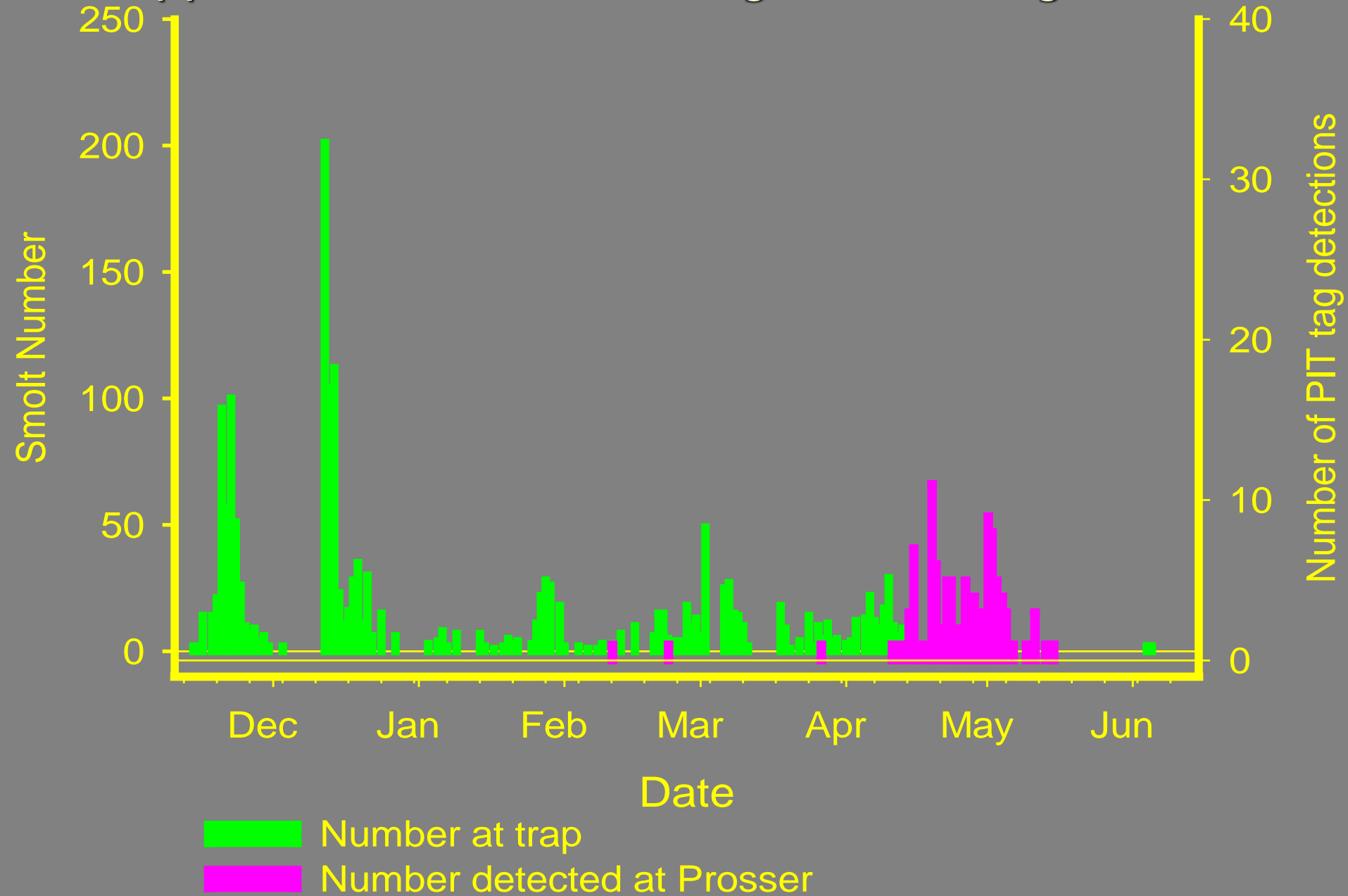
Smolt Numbers Compared with Flows in Toppenish Creek 2009



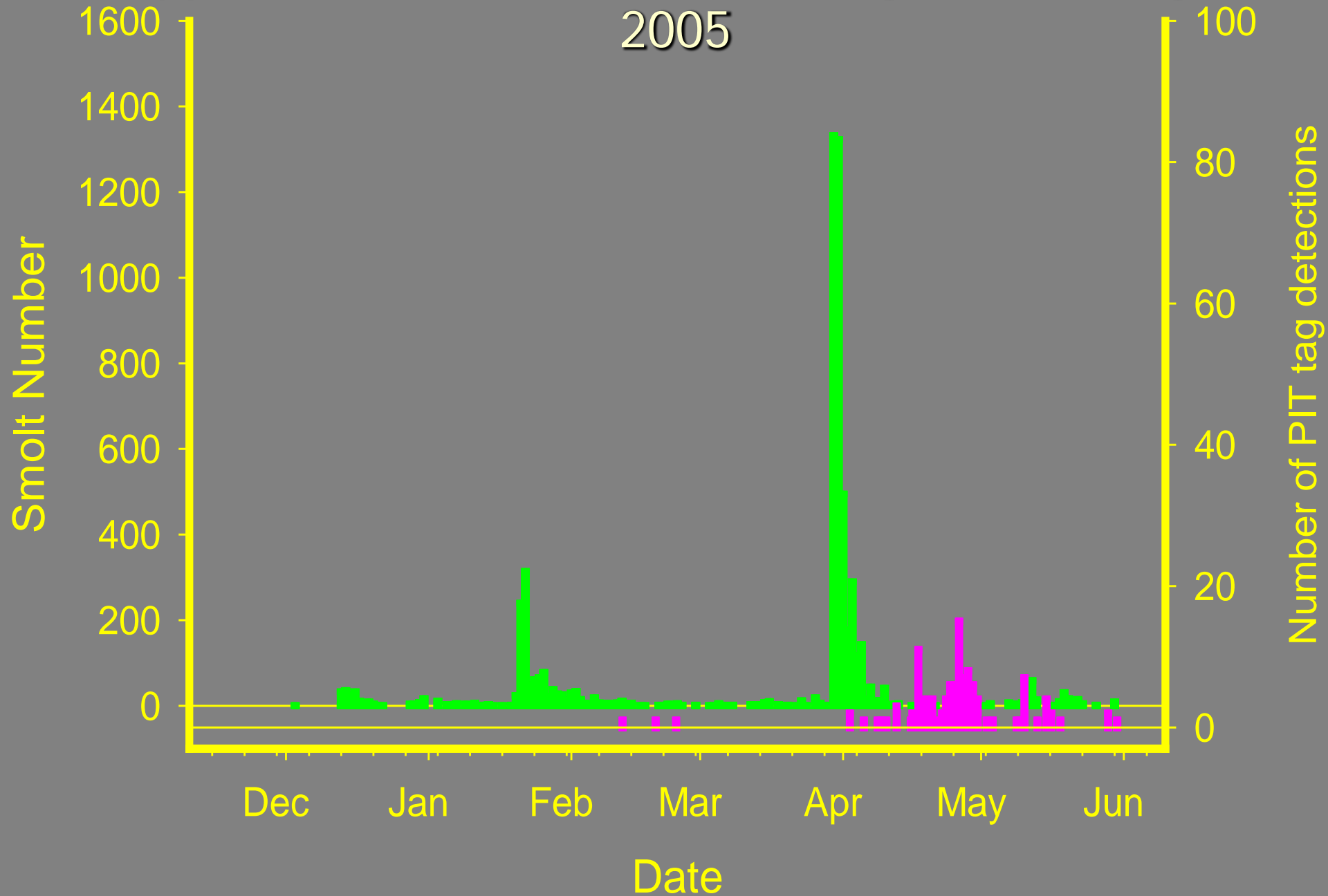
Smolt Numbers Compared with Flows in Satus Creek 2009



Toppenish steelhead out-migration timing in 2008



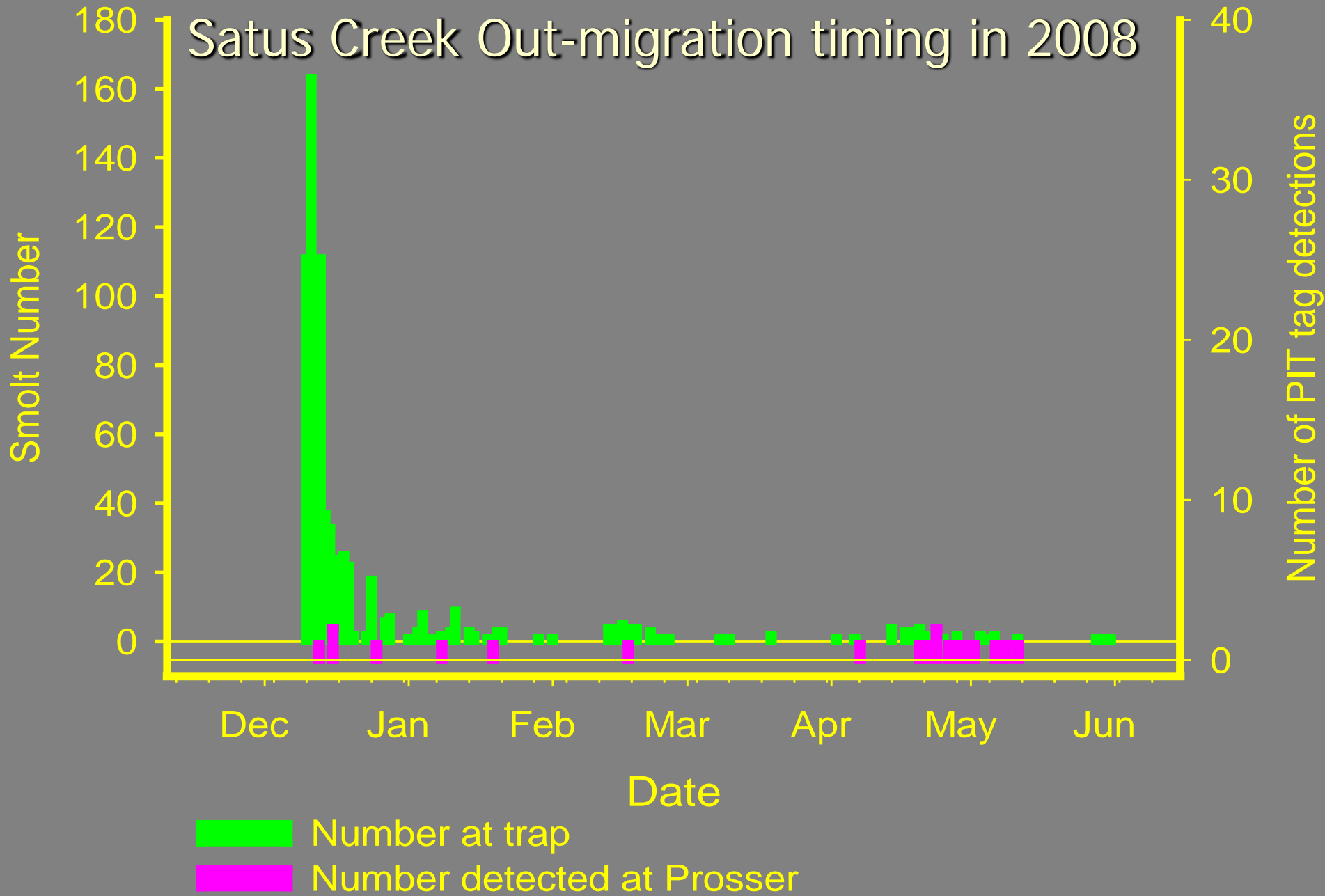
Toppenish Creek steelhead out-migration timing in 2005



Travel of Steelhead Smolts in Toppenish Creek between the screw trap and the Prosser PIT tag scanners


Year	Average Travel Time (Days)
2005	62.2*
2006	99.4
2007	104.2
2008	111.0

Satus Creek Out-migration timing in 2008



Out-migration Timing

- ▶ Steelhead Smolt Out-migration triggered by the first significant discharge spike in late autumn or early winter.
- ▶ Juveniles spend a significant amount of time overwintering in the lower section of tributaries and the Yakima River

A scenic view of a mountain valley. The foreground is a rocky, rocky slope with some yellow wildflowers and green grass. The middle ground shows a deep valley with a dense forest of evergreen trees. In the distance, a small waterfall is visible on a rocky ledge. The background shows more mountain ranges under a clear sky.

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