

Status and Trends of Trinity River
Anadromous Salmonid Populations

June 17, 2015 TAMWG Presentation

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Presenter

Presentation Topics

- Brief history of adult population monitoring and the Trinity River Division
- Methods review
- Species accounts and TRRP goals
- Harvest opportunity
- Data utility

Brief History of the TRD and Fisheries Monitoring

- Moffett and Smith report, 1950
- Weber, Rodgers, et al 1950's -70's estimates
- PL-386, 1955 Authorized the TRD and included the following statement “The Secretary is authorized and directed to insure the preservation and propagation of fish and wildlife”

Brief History of the TRD and Fisheries Monitoring

Moffett and Smith report, 1950

- Biological Investigations of the Fishery Resources of the Trinity River 1942 -46
- Estimated 12,000 and 9,000 passed Lewiston in '44 and '45. Complete counts were not made due to storms (early November)
- No coho observations during the study
- Less than 500 steelhead counted in any year

Brief History of the TRD and Fisheries Monitoring

Moffett and Smith report, 1950

- Evaluated flows and adult spawning habitat for minimum flow recommendations.
- Spawning habitat thought to be limiting factor for displaced fish above Lewiston.
- Recommended a flow volume of 120,000 AF and maximum flow of 300 cfs.
- Stated their findings as preliminary due to incomplete evaluations.

Brief History of the TRD and Fisheries Monitoring

- 1964 -70 Decline of the fishery resource, hatchery construction, degradation of the river
- TRBF&WTF- 1971
- 1980 EIS, Public Restoration Laws
- 1980's- monitoring the naturally produced component of annual runs (Marking of hatchery fish, estimating hatchery contributions)
- Flow Evaluation Study
- 2000 ROD

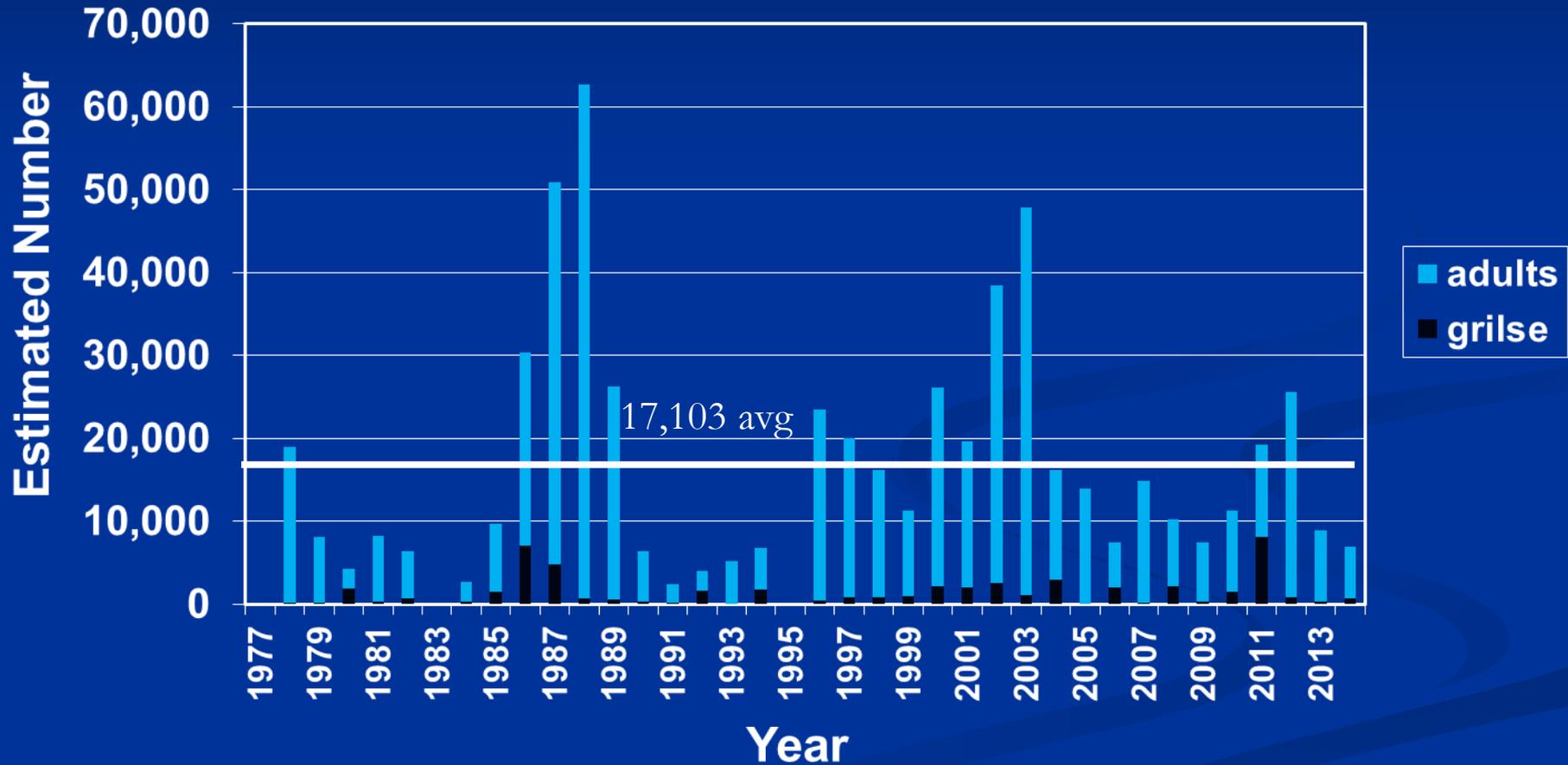


- Mark/Recapture Estimator
- Harvest rates developed from angler tag returns
- Basin estimates above site
- Hatchery mark rates used to develop hatchery component estimates
- Primary assumptions include equal vulnerability to capture, sample entire run, tag recognition, known mortality, etc.
- Biological sampling for age structure (scales)
- Weir is fished to only capture a fraction of the run due to handling, migration delay and ESA concerns (5 days a week with daily openings)

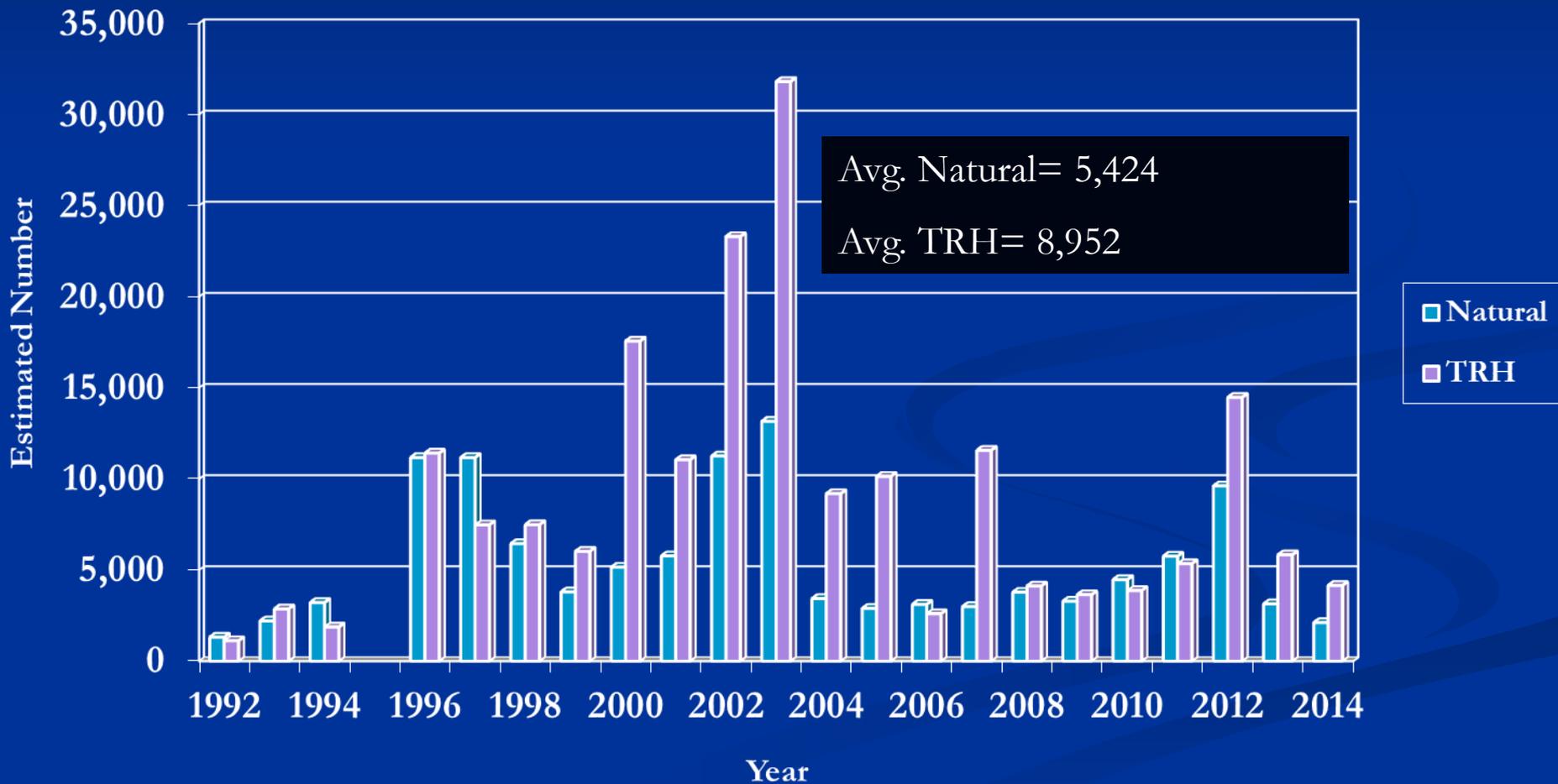


WC Weir

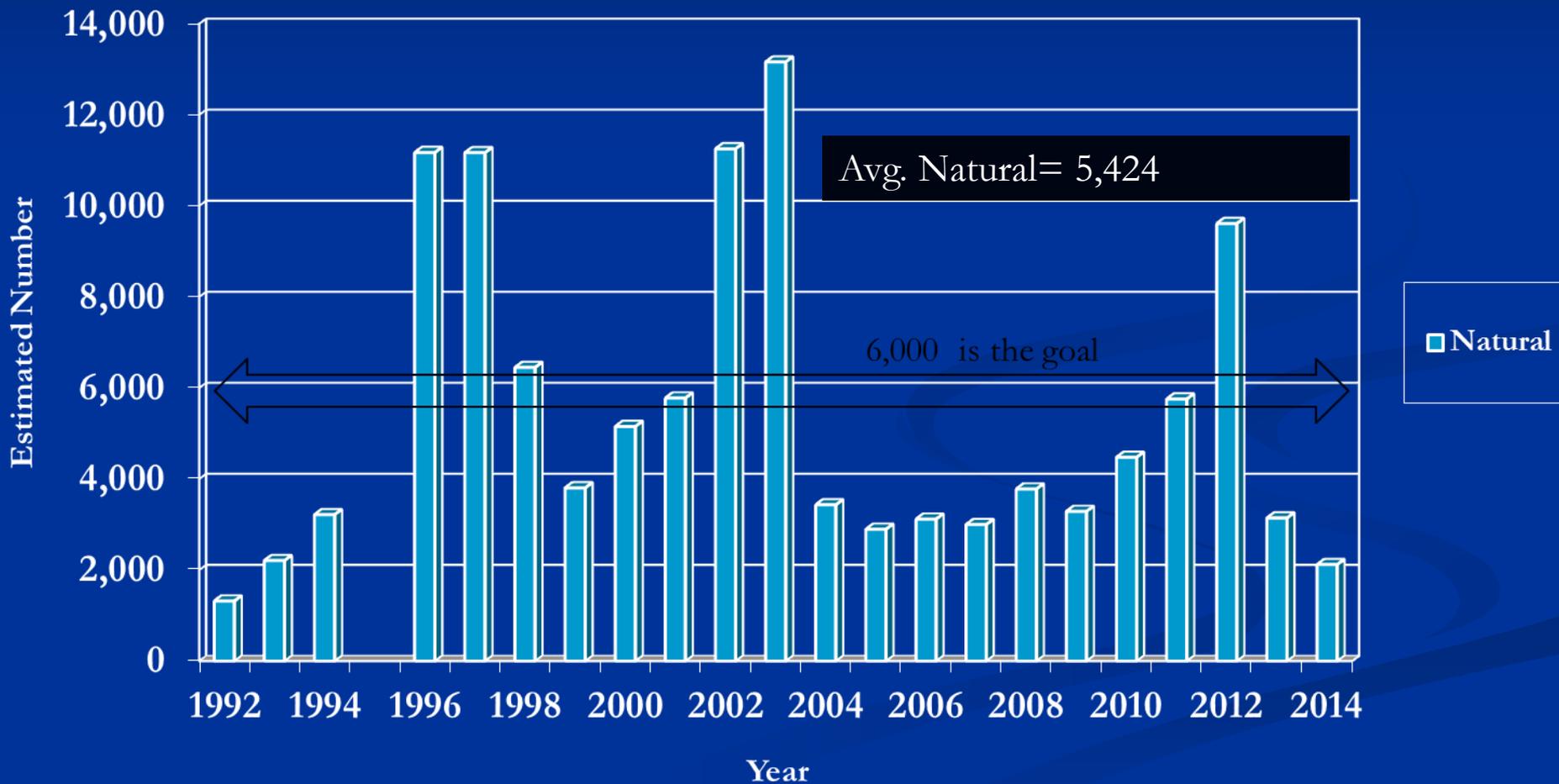
Spring Chinook Run-size, Upstream of Junction City Weir 1978 -2014



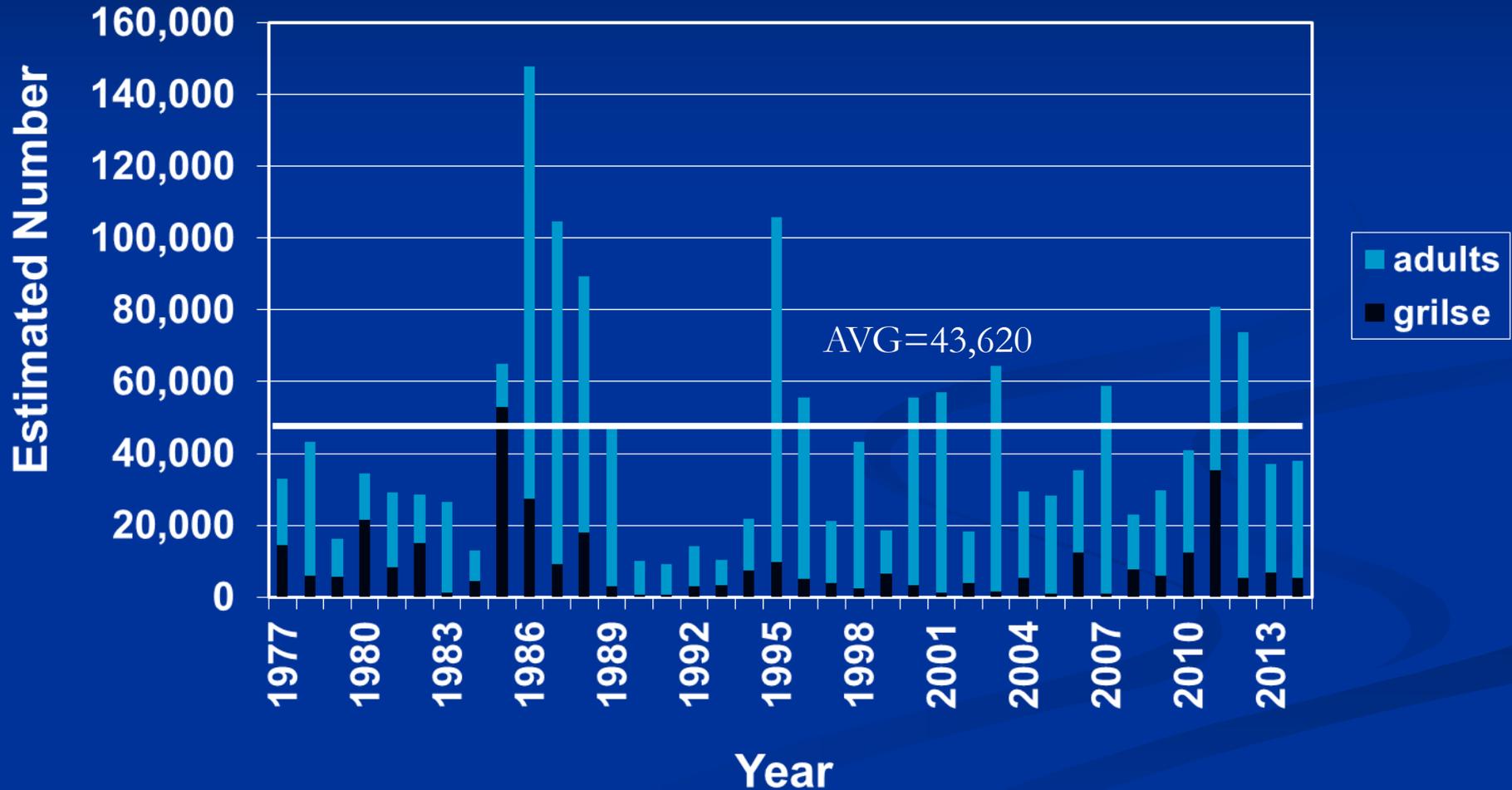
Hatchery and Natural Composition of Adult Spring Chinook Escapement, 1992-2014



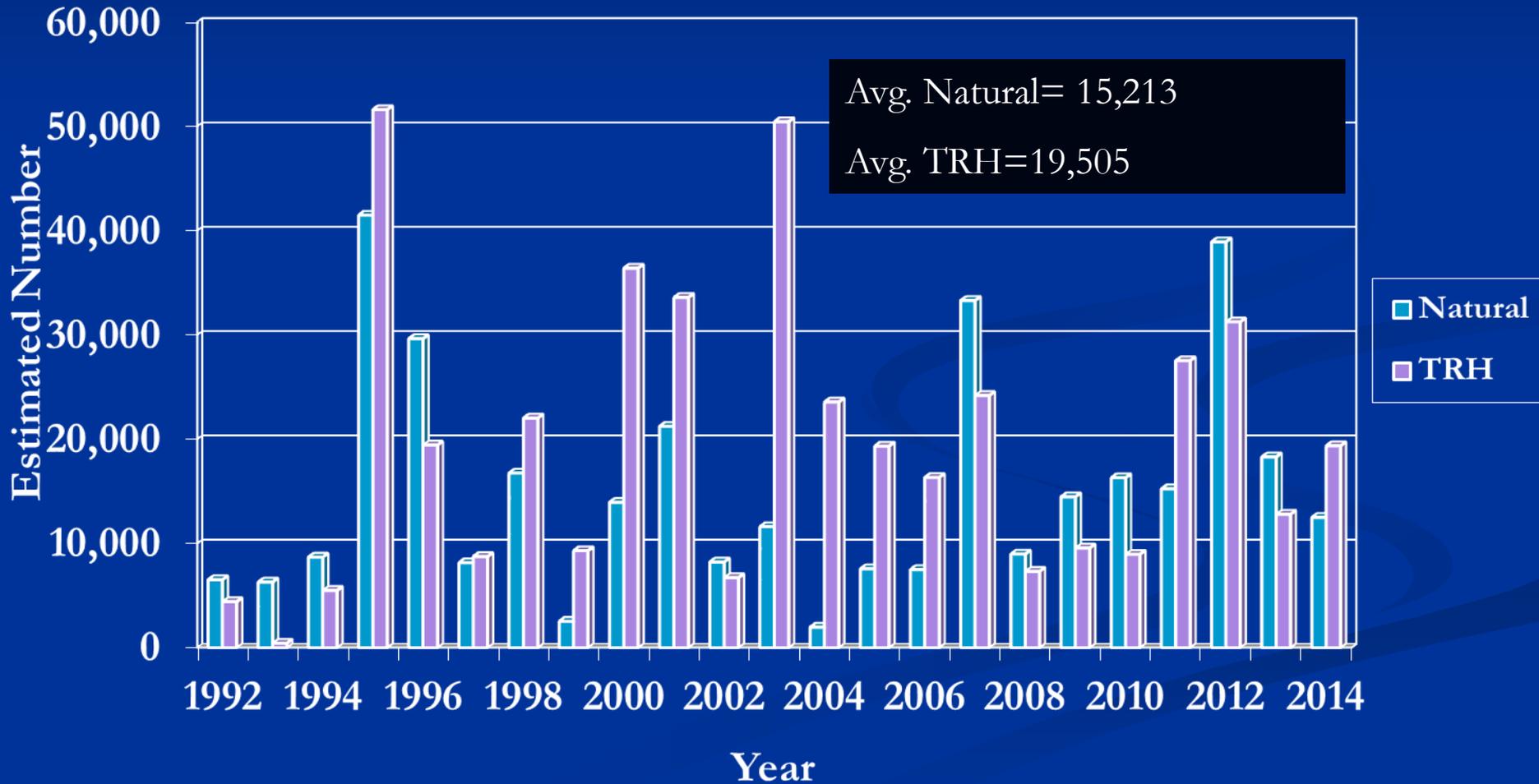
Natural Adult Spring Chinook Escapement, 1992-2014



Fall Chinook Run-size, Upstream of Willow Creek Weir 1977 -2014

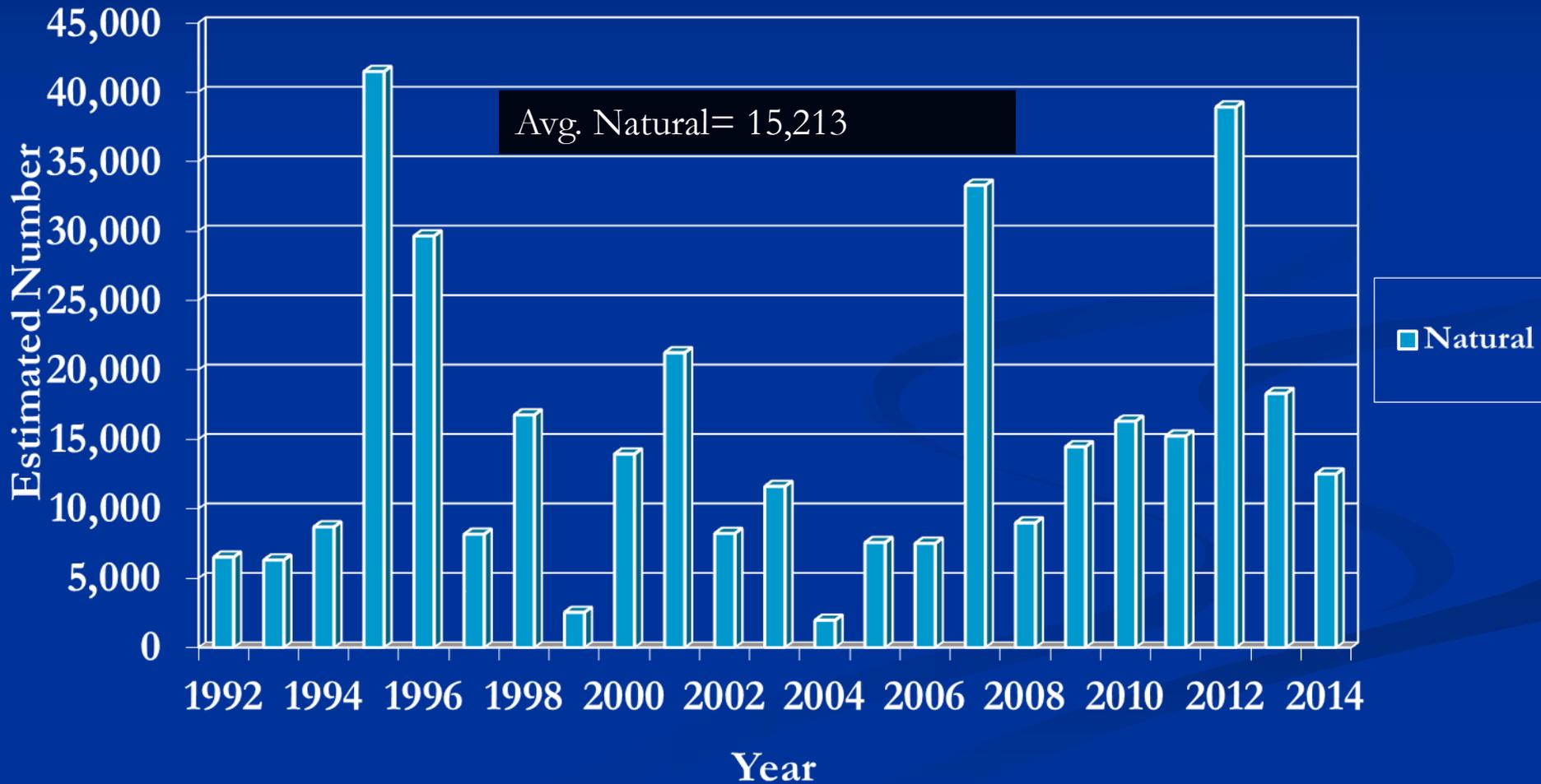


Hatchery and Natural Composition of Adult Fall Chinook Escapement, 1992-2014

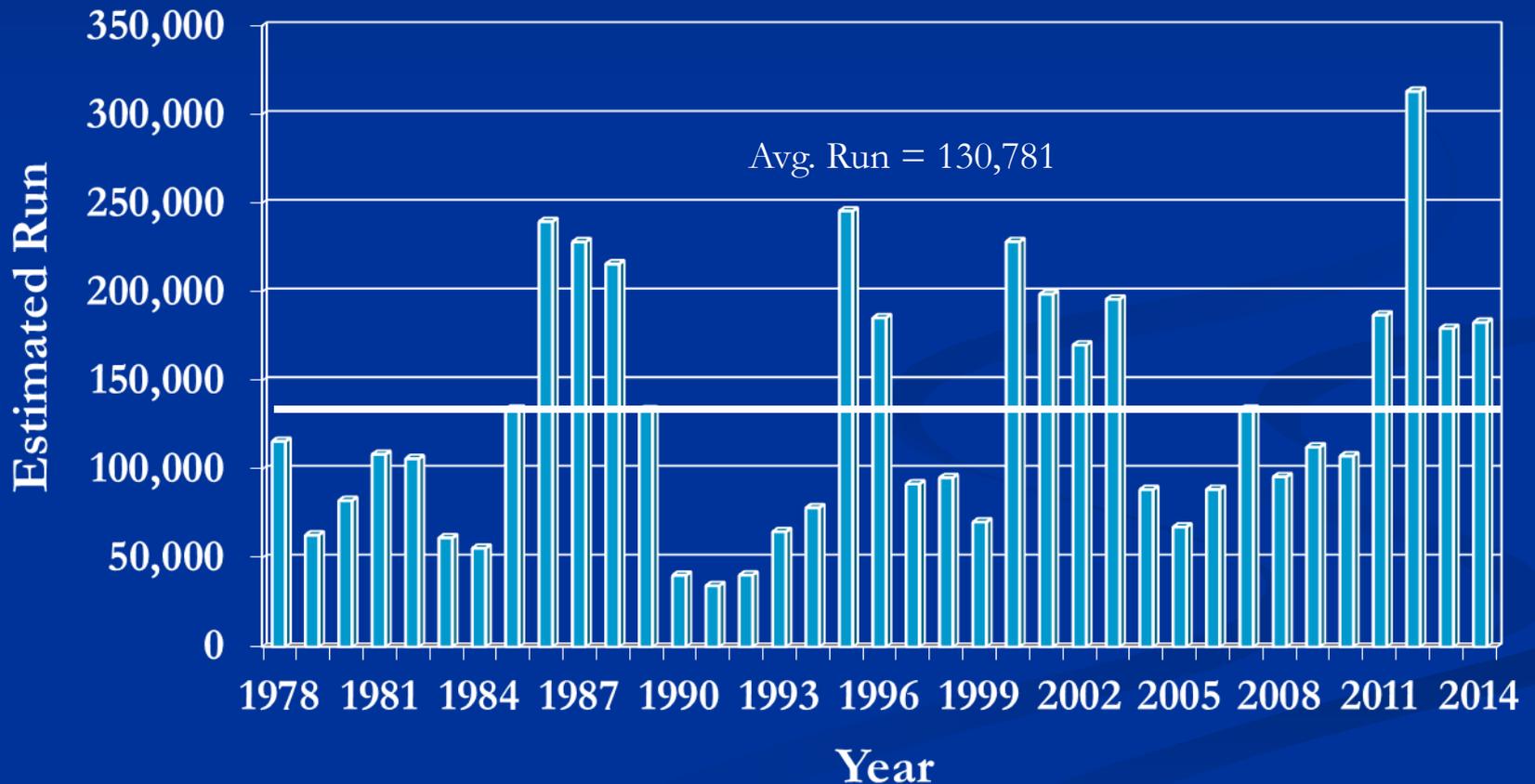


Natural Adult Fall Chinook Escapement, 1992-2014

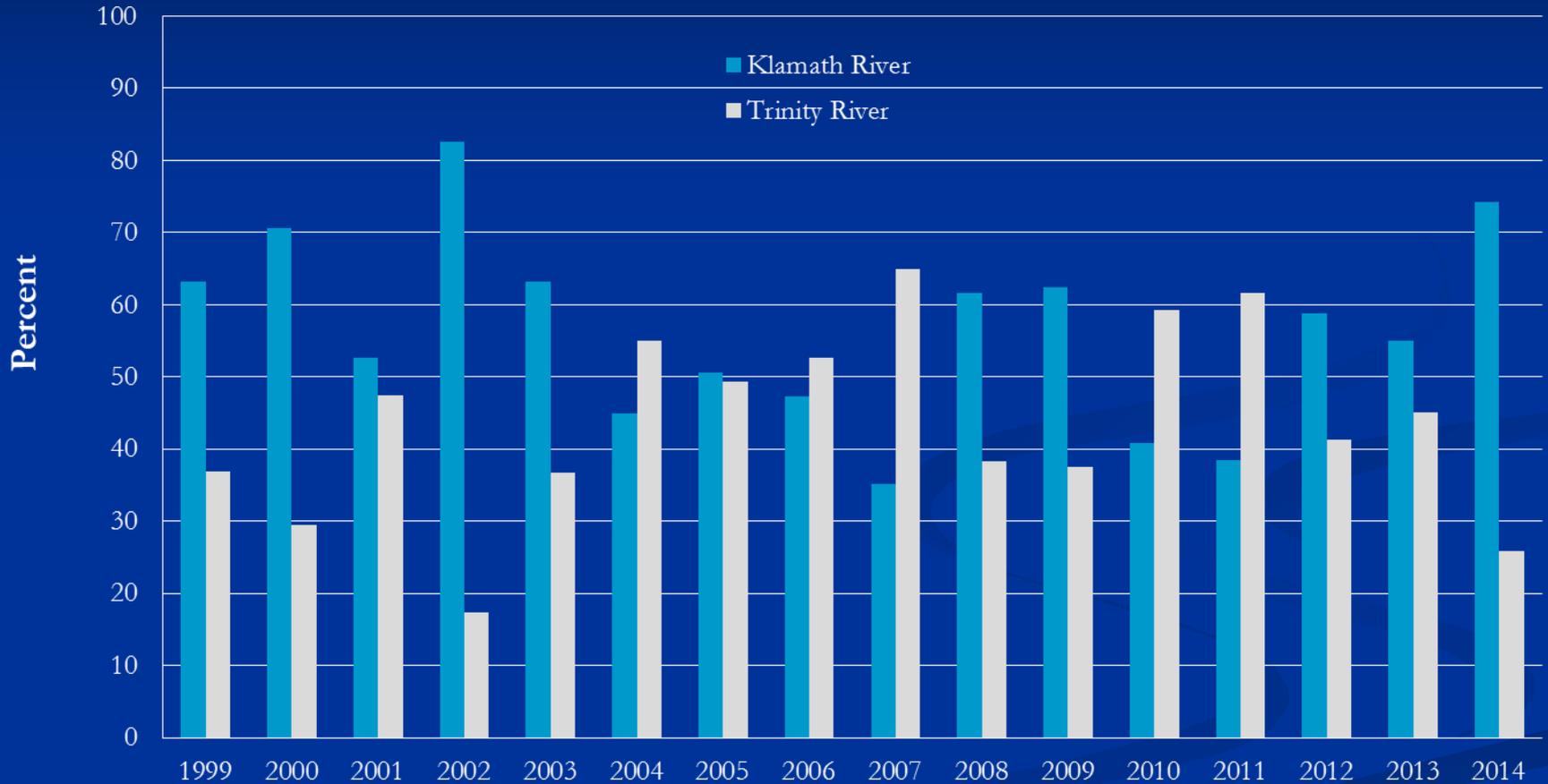
← Goal is 62,000 →



Kalamth Basin Fall Chinook Run-size Estimates, 1978 - 2014

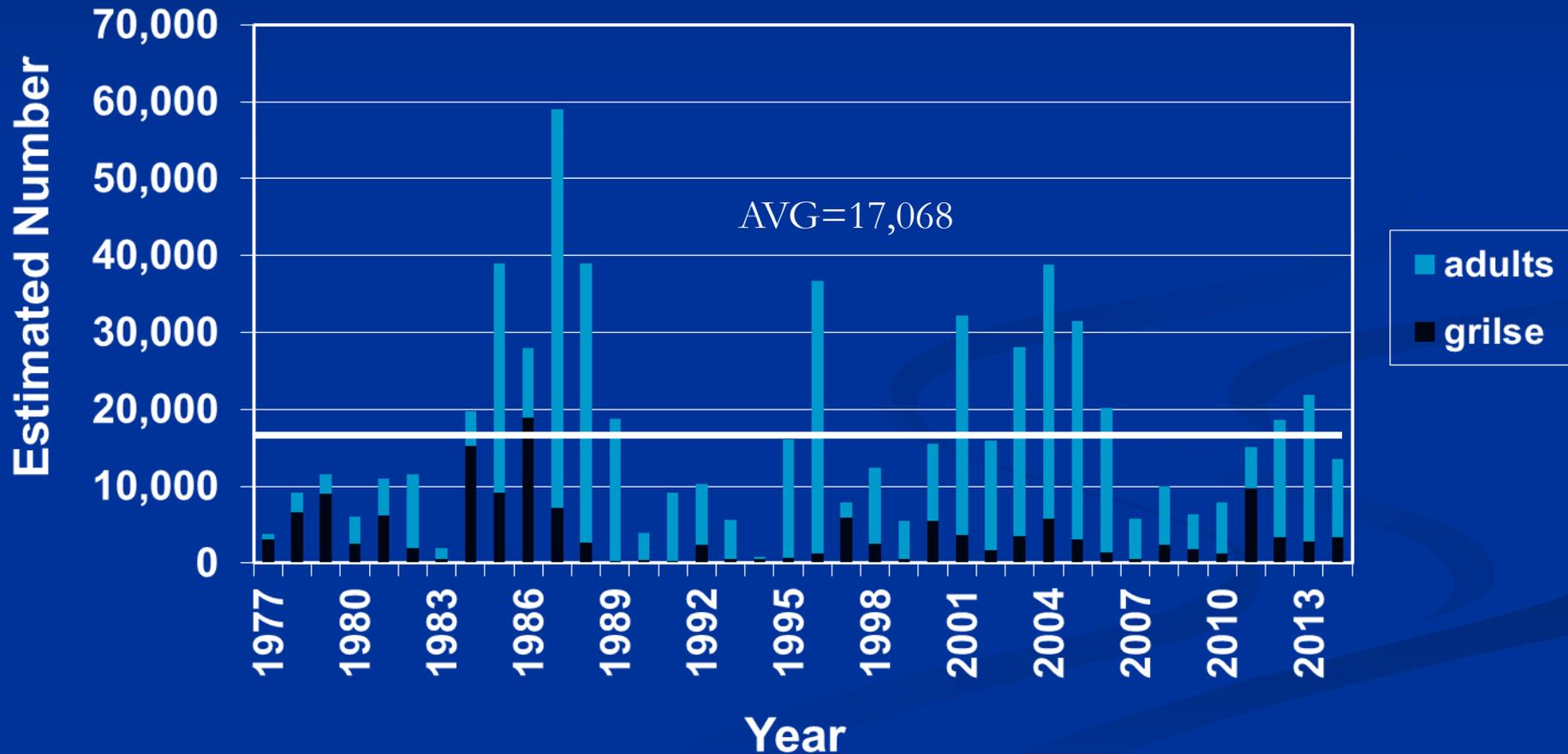


Klamath Basin Adult Fall Chinook Natural Area Spawner Percentages

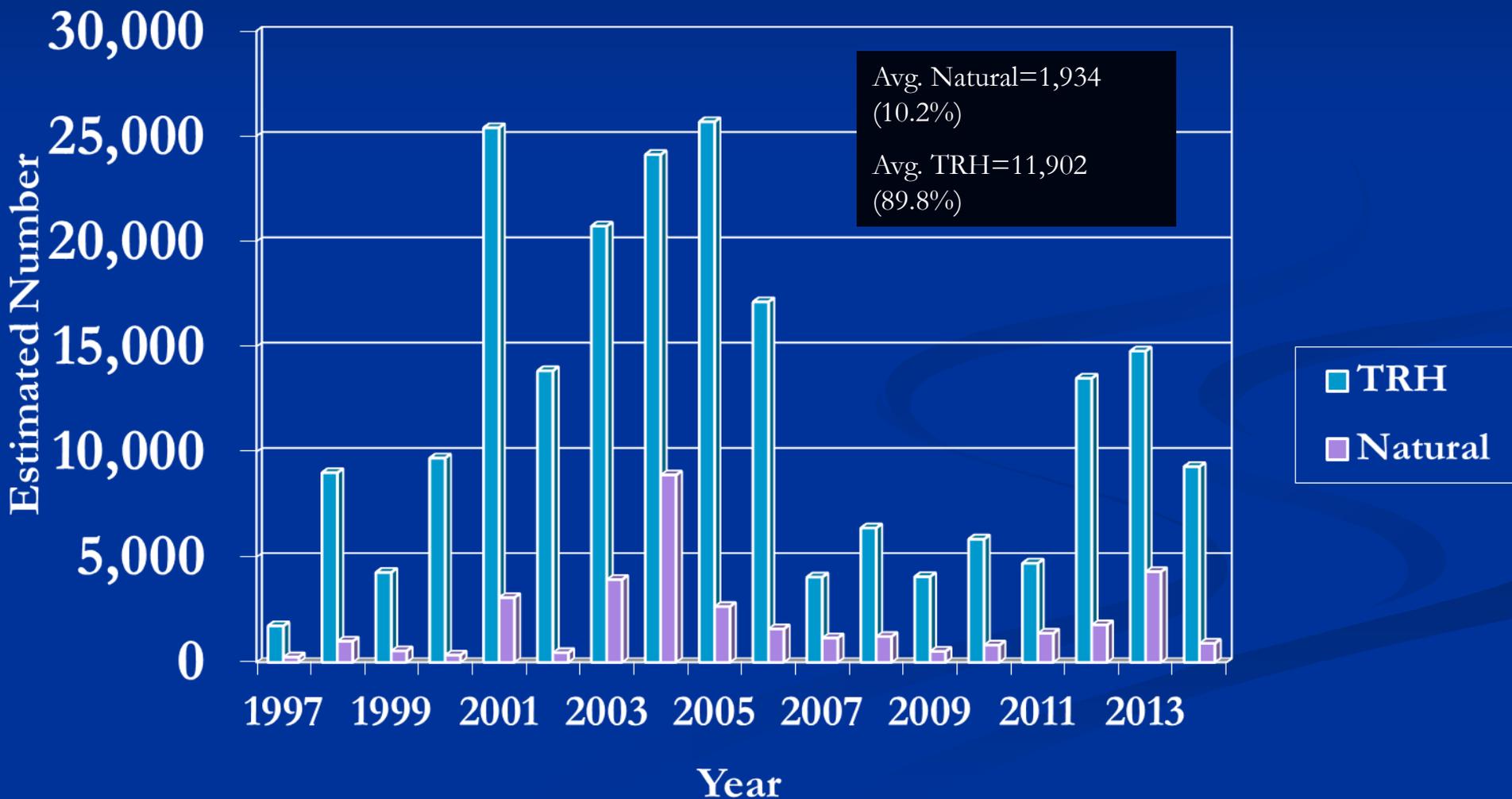


Long term average – 56% Klamath, 44% Trinity

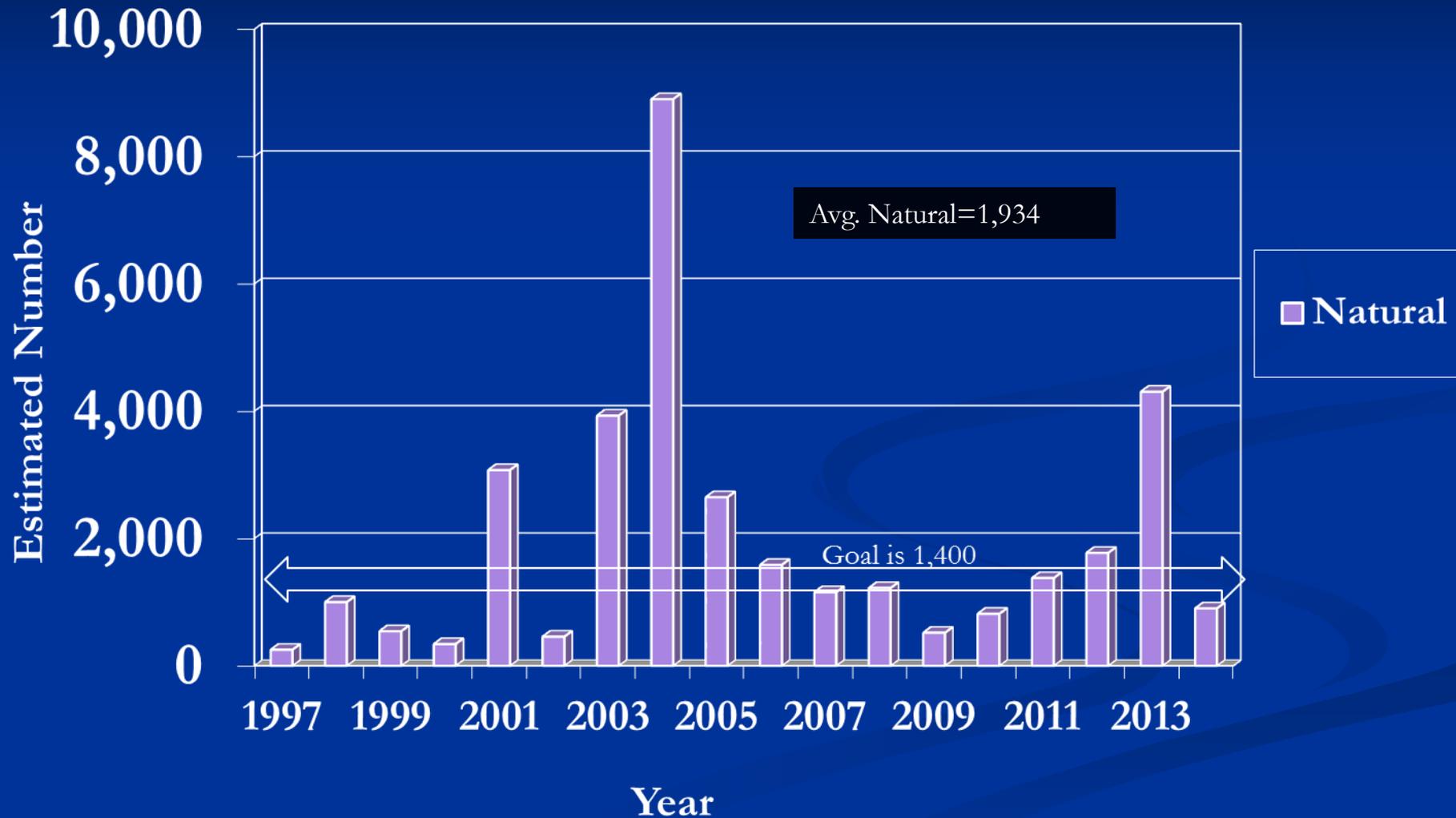
Coho Run-size, Upstream of Willow Creek Weir 1977 -2014



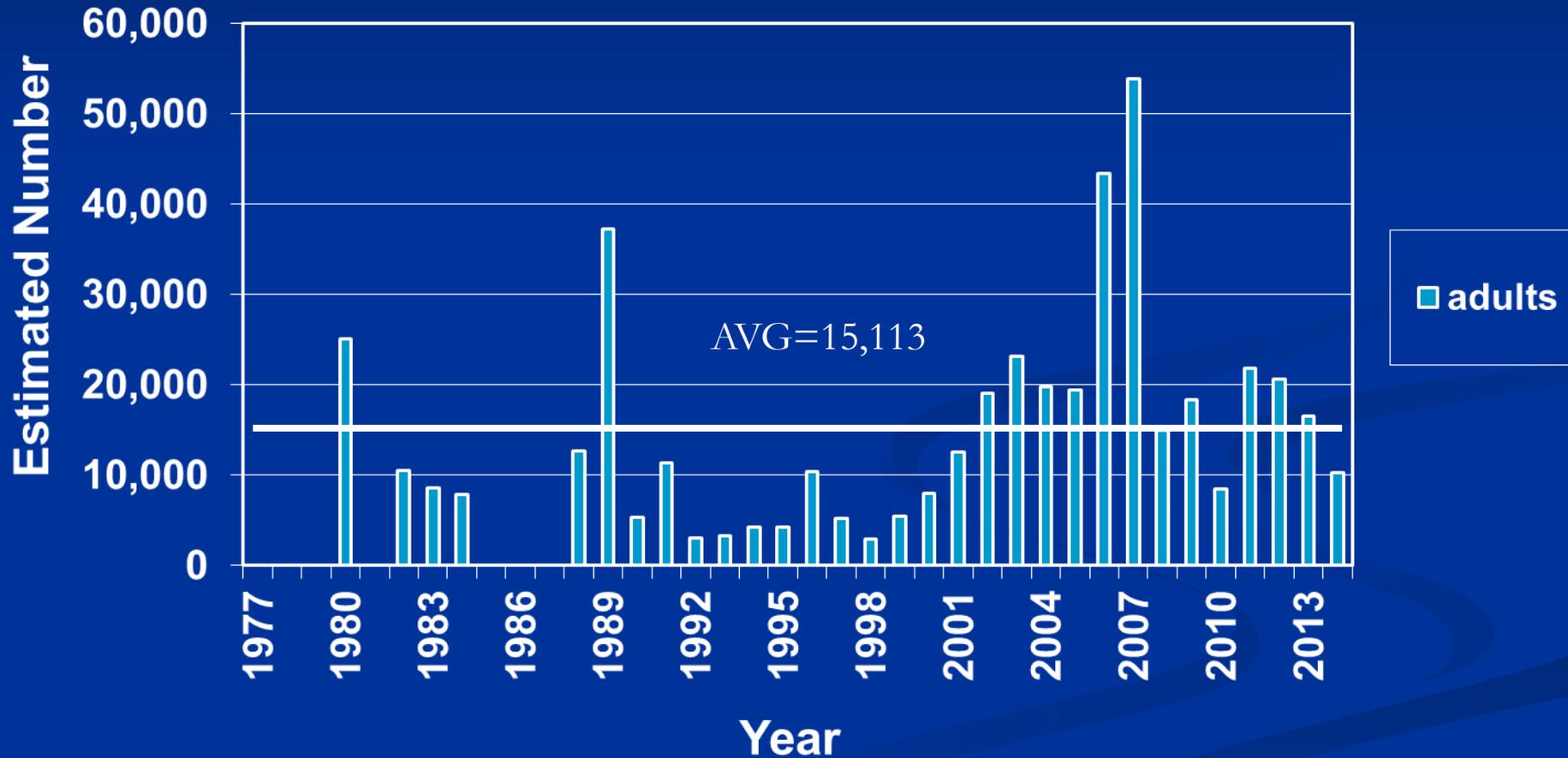
Natural and Hatchery Composition of Adult Coho Escapement, 1997-2014



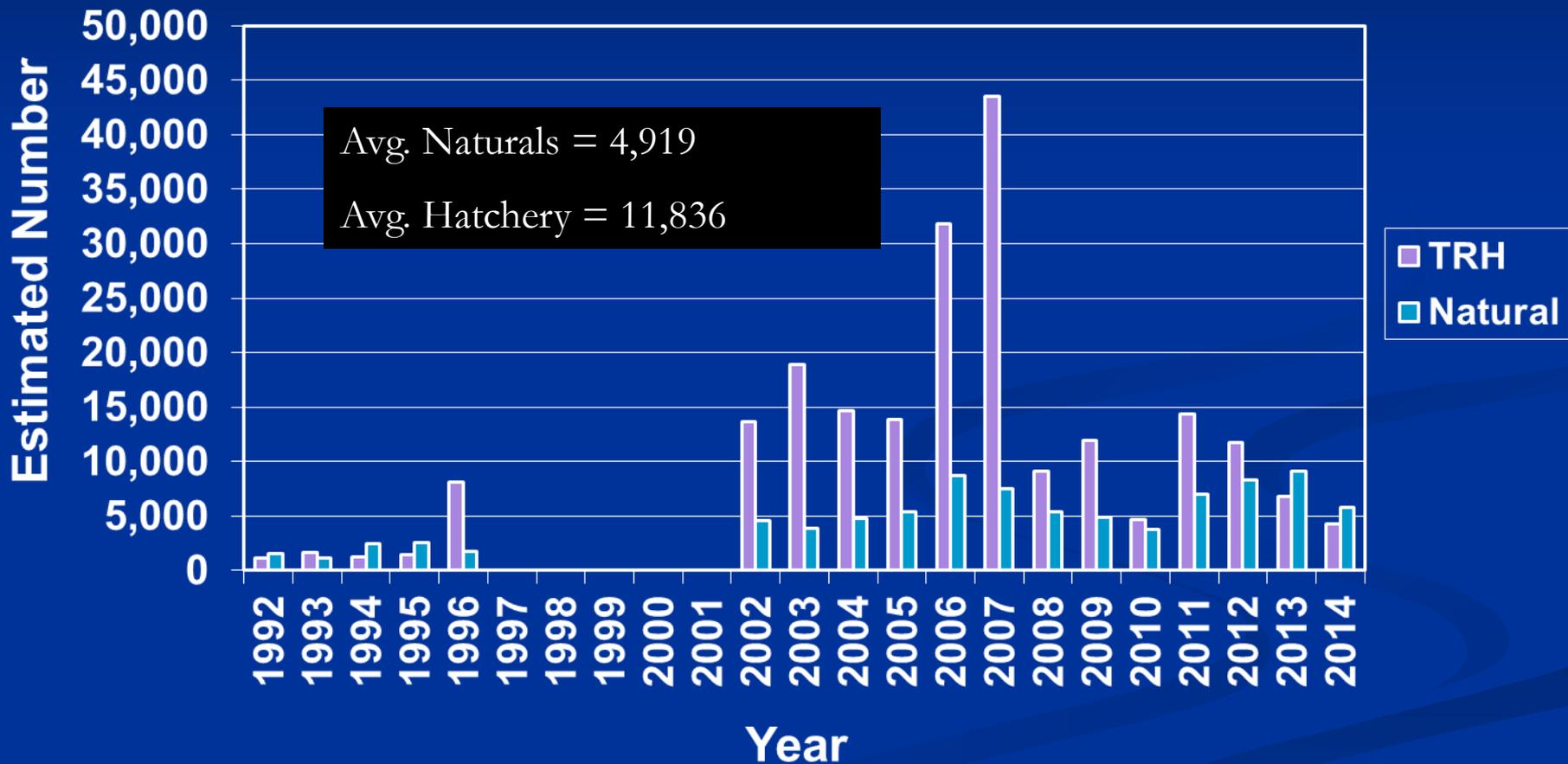
Natural Adult Coho Escapement, 1997-2014



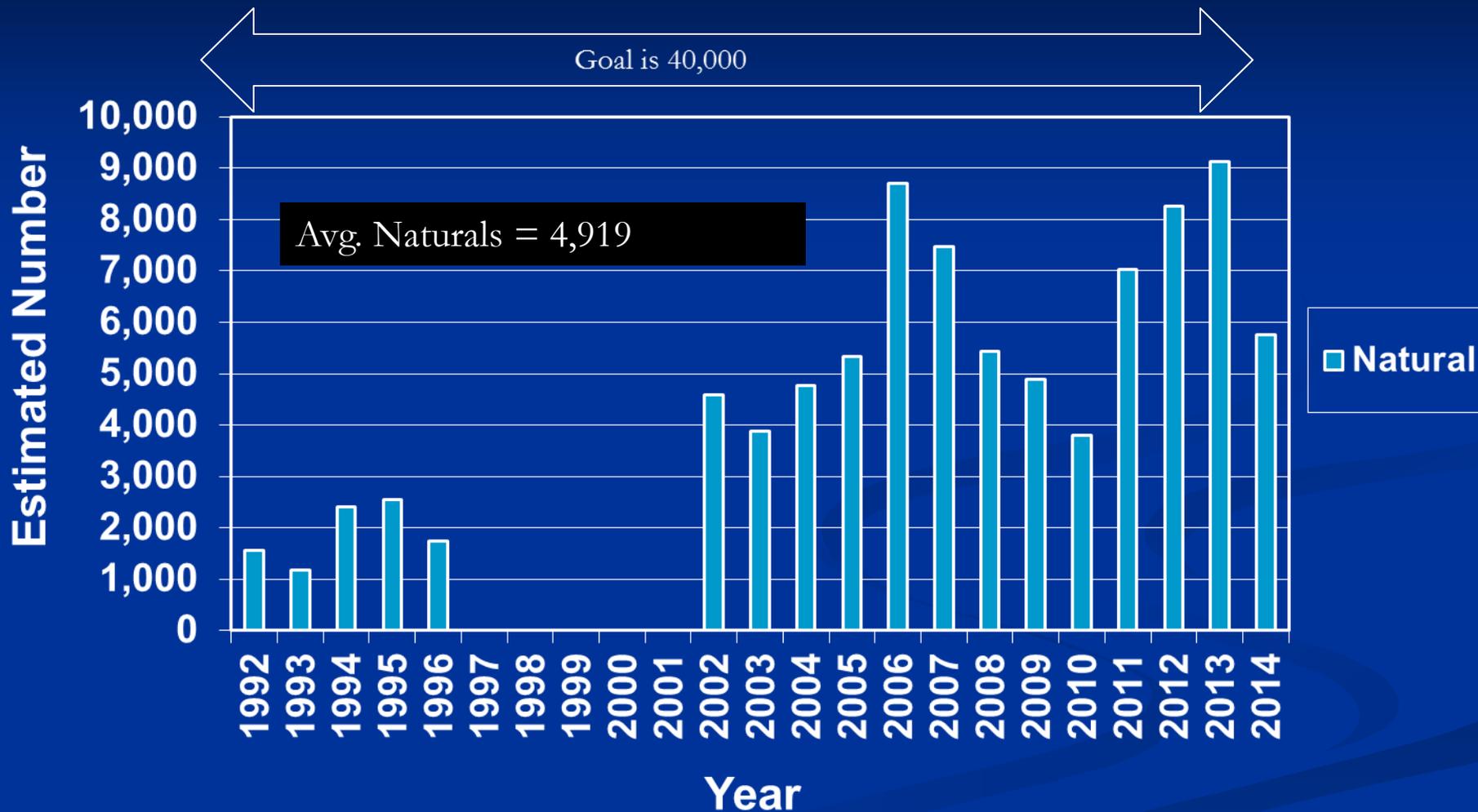
Adult Fall-run Steelhead Run-size, Upstream of Willow Creek Weir 1980-2014



Hatchery and Natural composition of Adult Fall-run Steelhead Escapement, 1992-2014



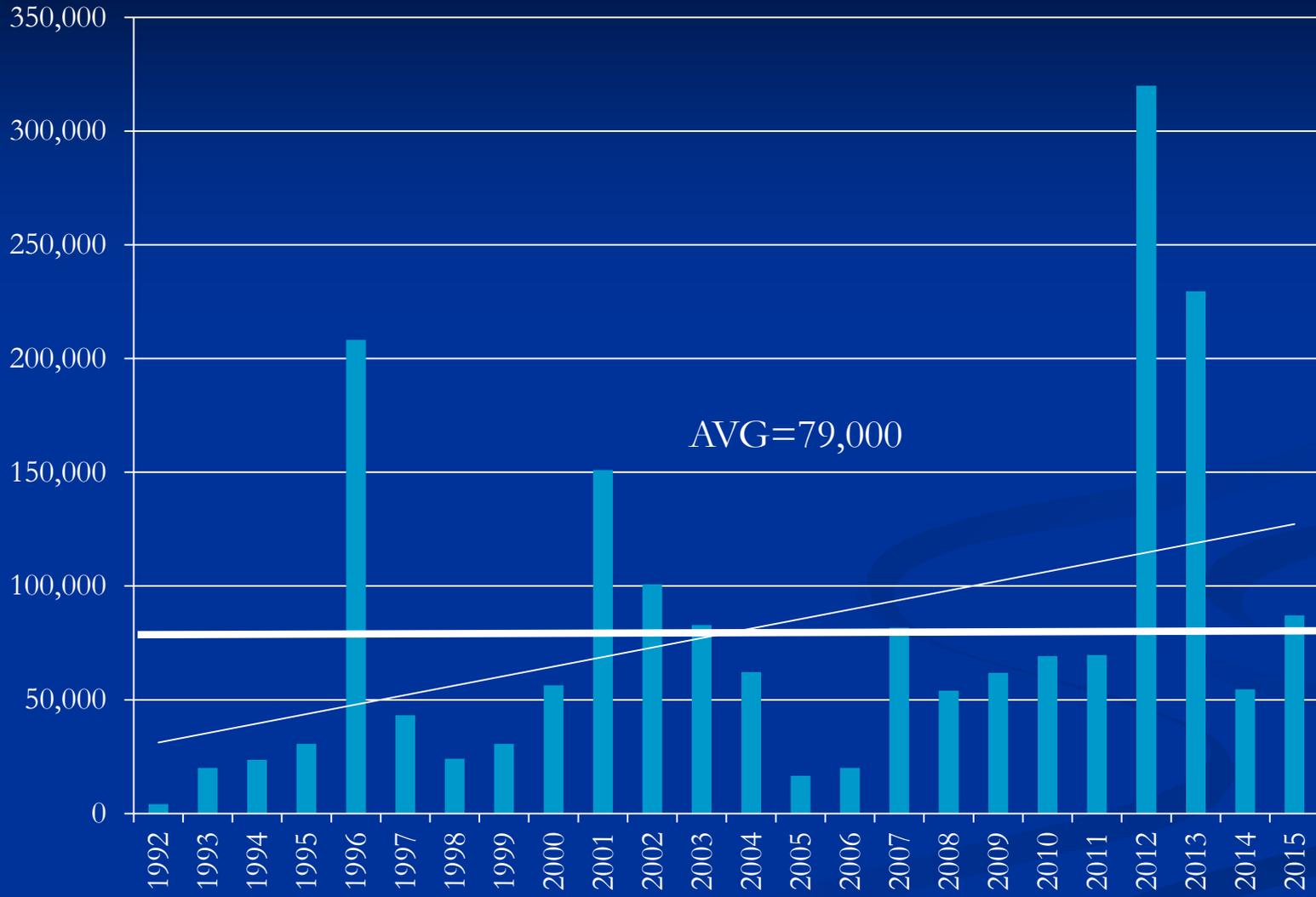
Natural Adult Fall-run Steelhead Escapement, 1992-2014



Sport Harvest Opportunity

- Current harvest opportunity is constrained by ESA, abundance, regulatory dynamics
- Fall Chinook salmon are allocated based on pre season forecasts
- Spring Chinook are statically managed as a two fish per day bag and possession limit with area closures.
- Coho take is not allowed (listed species)
- Steelhead take is limited to 2 hatchery marked fish per day, 4 in possession.

Klamath Basin Origin Adult Fall Chinook Harvest Allocation (Ocean, tribal, in-river combined)



Age composition of the 2006 Klamath Fall Chinook Run

	Age				Total Adults	Total Run
	2	3	4	5		
Hatchery Spawners						
Iron Gate Hatchery	2,386	4,215	7,251	138	11,604	13,990
Trinity River Hatchery	4,076	2,576	5,244	97	7,918	11,994
Hatchery Spawners subtotal	6,462	6,791	12,495	235	19,522	25,984
Natural Spawners						
Klamath Basin subtotal	6,515	6,278	7,753	233	14,264	20,779
Trinity Basin subtotal	8,065	2,747	12,972	438	16,158	24,223
Natural Spawners subtotal	14,580	9,025	20,725	671	30,422	45,002
Sport Angler Harvest						
Klamath River harvest	5,202	8	42	7	57	5,259
Trinity River harvest	266	5	0	0	5	271
Sport Harvest subtotal	5,468	13	42	7	62	5,530
Tribal Net Harvest						
Klamath River harvest	270	1,652	4,244	226	6,122	6,392
Trinity River harvest	145	736	3,327	100	4,163	4,308
Tribal Harvest subtotal	415	2,388	7,571	326	10,285	10,700
Dropoff + Hook&Release mortality						
Sport Dropoff Mortality 2.0%	112	23	52	2	76	188
Tribal Dropoff Mortality 8.7%	36	208	658	28	894	930
Hook-and-release adult mortality	0	111	250	8	368	368
Mortality subtotal	148	342	960	37	1,339	1,487
Klamath Fall Chinook Run	27,073	18,559	41,793	1,278	61,630	88,703

2007 Sept 1 Ocean Abundance Estimates for Klamath River Fall Chinook

- Age 3: 515,400 fish (highest predicted '85-'06)
- Age 4: 26,100 fish (lowest predicted '85-'06)
- Age 5: 4,700 fish

KOHM Forecasts for the Klamath Basin

Sector	No fishing in 07	2006 regulations
Adult Spawners		
Natural Areas	73,400	65,300
Hatcheries	63,700	57,000
Adult Harvest		
Ocean Commercial	300	4,200
Ocean Recreational	600	4,800
River Recreational	0	0
Tribal	0	9,000

Since we are projected to attain the 35,000 natural adult spawner escapement in 2007, it appears that the in-river sport harvest allocation will be between 8,000 – 12,000 fall Chinook.

Proposed sport fishing regulations for the 2007 season

- Spring Chinook closures to protect severely depressed wild stock
- Three fish daily bag on fall Chinook, with no more than two adults (>22 inches). Possession limit of 12, with no more than 4 adults.
- Five fish daily bag on brown trout, 10 in possession
- One fish daily bag for AD-clipped steelhead or trout
- April 1 opener in the Lewiston fly fishing section (Lewiston Dam to old Lewiston Bridge)

Data Utility

- TRRP goal achievement
- ESA evaluations, Bi-op evaluations
- HGMP development, hatchery evaluation and adaptive management (HCT)
- fall flow management
- stock recruitment analyses, fishery development, fisheries modeling

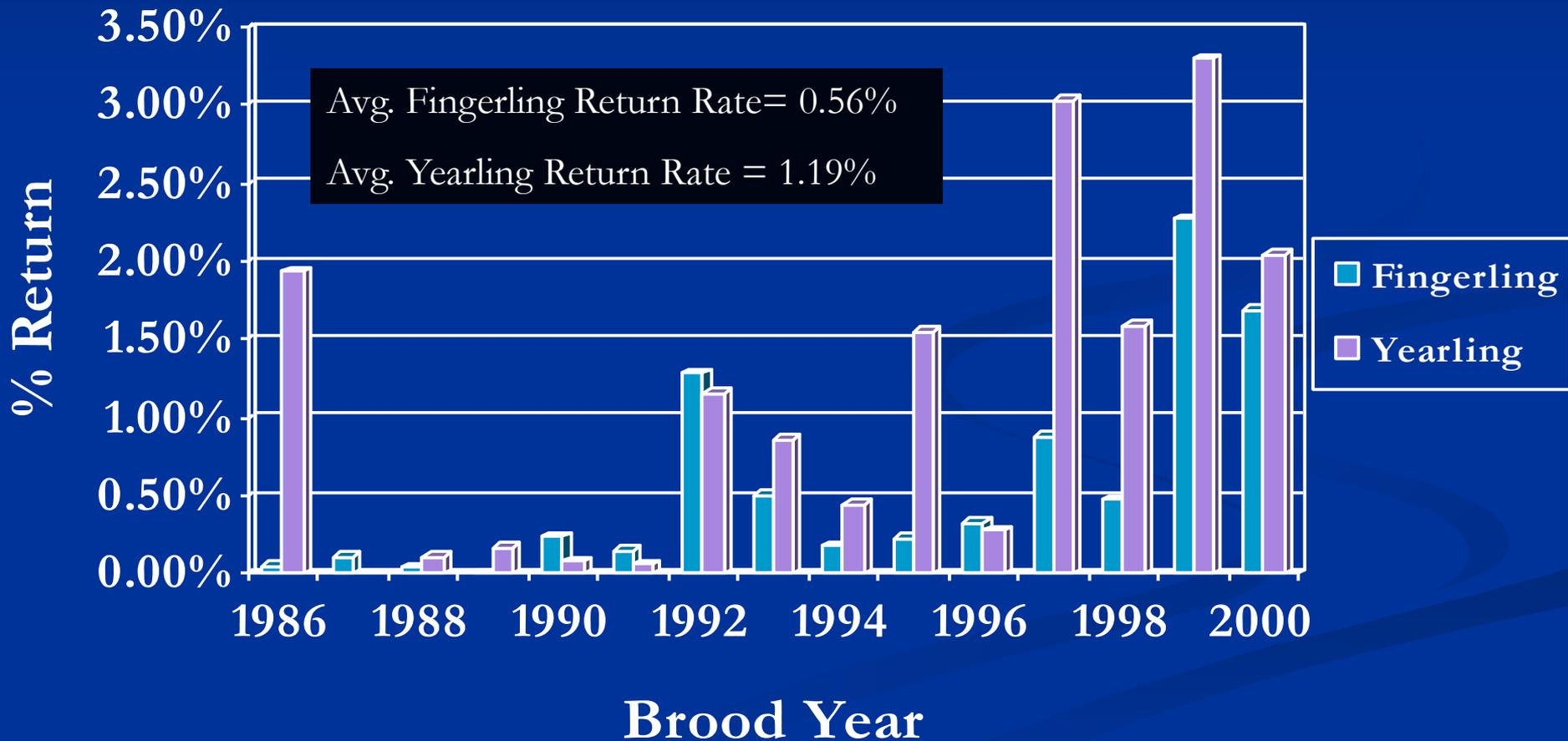
Chinook smolt recruits



WC RST
Estimates

Fall and Spring Chinook adult spawner escapement

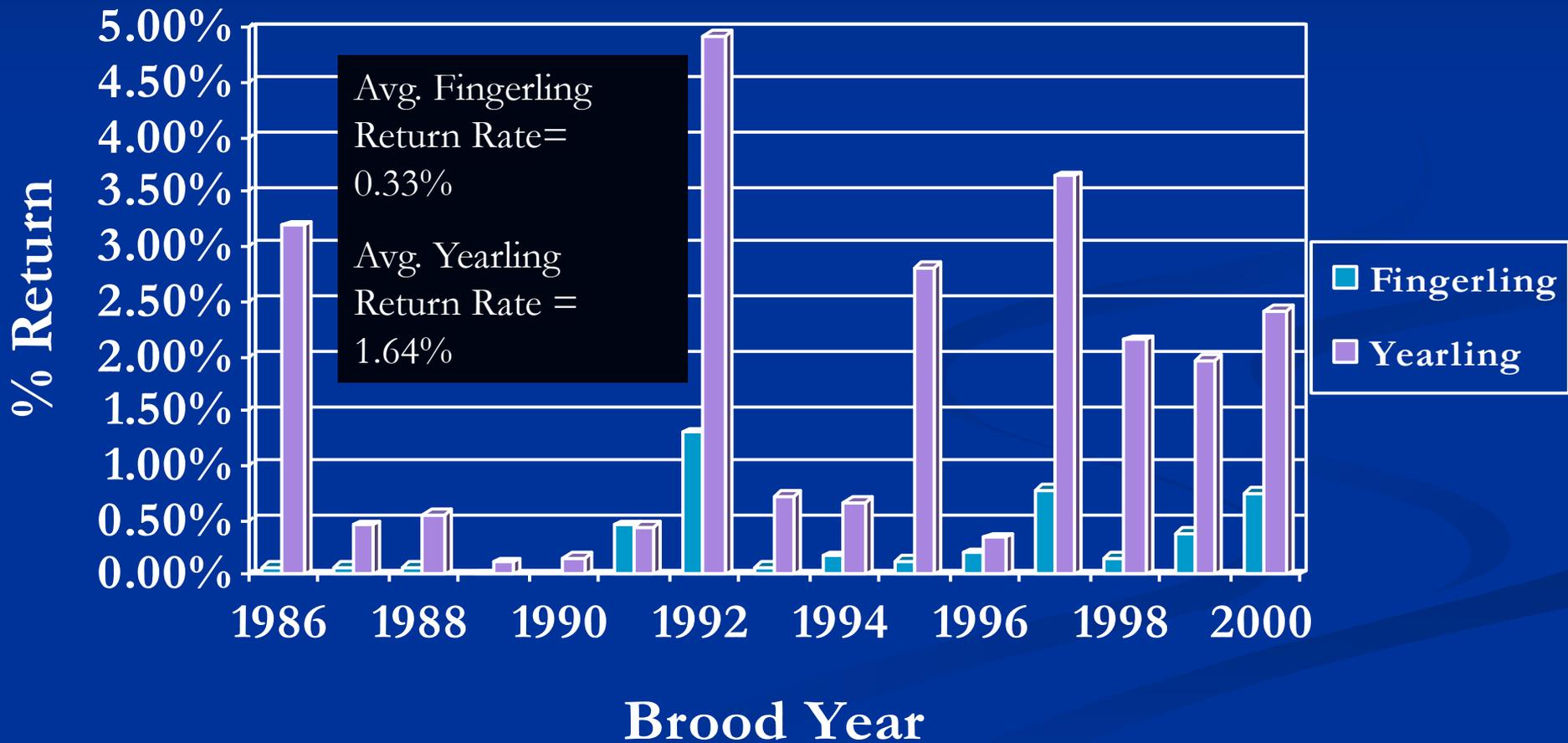
Estimated Return Rates (%) of Trinity River Hatchery Produced Spring Chinook Salmon (Upstream of Junction City Weir)



Spring Chinook Model Gaming

- The current spawning escapement target for natural spring Chinook adults is 6,000 fish.
- Based on the average TRH smolt return rates of .0056 (0.56%) and the average return of 6,668 natural spring Chinook we would estimate that, on average, the Trinity River has produced 1,190,714 spring Chinook smolts.
- If half of the 6,668 fish were females and they produced on average 4,500 eggs/female, we would estimate that the egg to smolt survival rate is approximately is .079 (7.9%).
- If we make the assumption that naturally produced smolts have a higher survival rate than their hatchery produced counterparts, say 25% better, then the smolt estimate would be reduced to 952,571 fish.

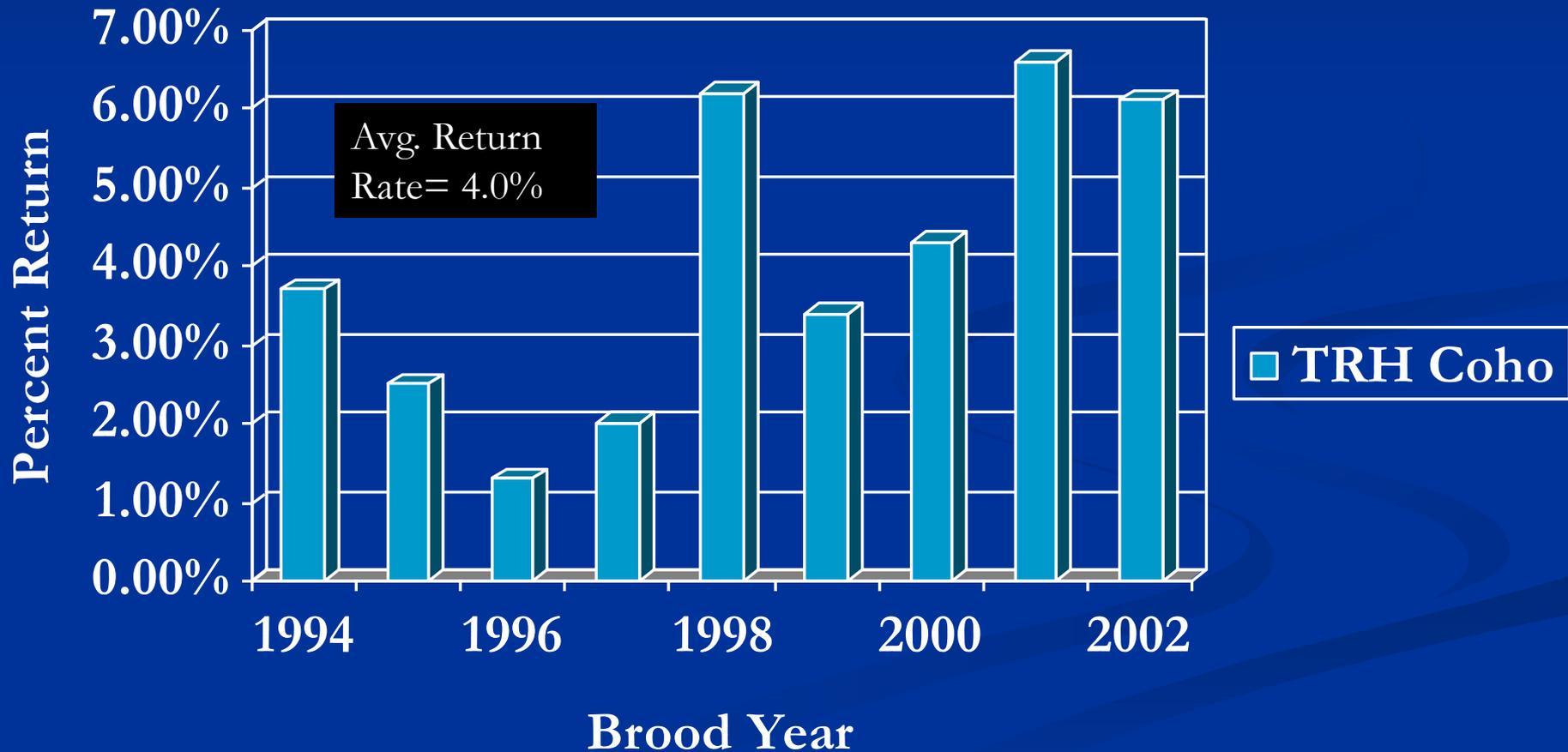
Estimated Return Rates (%) of Trinity River Hatchery Produced Fall Chinook Salmon (Upstream of Willow Creek Weir)



Fall Chinook Model Gaming

- The current spawning escapement target for natural fall Chinook adults is 62,000 fish.
- Based on the average TRH smolt return rates of .0033 (0.33%) and the average return of 15,362 natural fall Chinook we would estimate that, on average, the Trinity River has produced 4,655,152 fall Chinook smolts.
- The estimated number of smolts needed to produce 62,000 returning natural fall Chinook, based on the TRH smolt survival rates, is roughly 18.8 million.
- If we make the assumption that naturally produced smolts have a higher survival rate than their hatchery produced counterparts, say 25% better, then the smolt estimate would be reduced to roughly 15 million.

Estimated Return rates (%) of Trinity River Hatchery Produced Coho Salmon, Brood Years 1994 - 2002 (Upstream of Willow Creek Weir)



Coho Model Gaming

- The current spawning escapement target for natural Coho adults is 1,400 fish.
- Based on the average TRH yearling return rates of .04 (4.0%) and the average return of 2,528 natural coho we would estimate that, on average, the Trinity River has produced 63,200 coho yearlings.
- The estimated number of smolts needed to produce 1,400 returning coho, based on TRH yearling survival rates, is 35,000.
- If we make the assumption that naturally produced yearlings have a higher survival rate than their hatchery produced counterparts, say 25% better, then the yearling estimate would be reduced to 28,000.