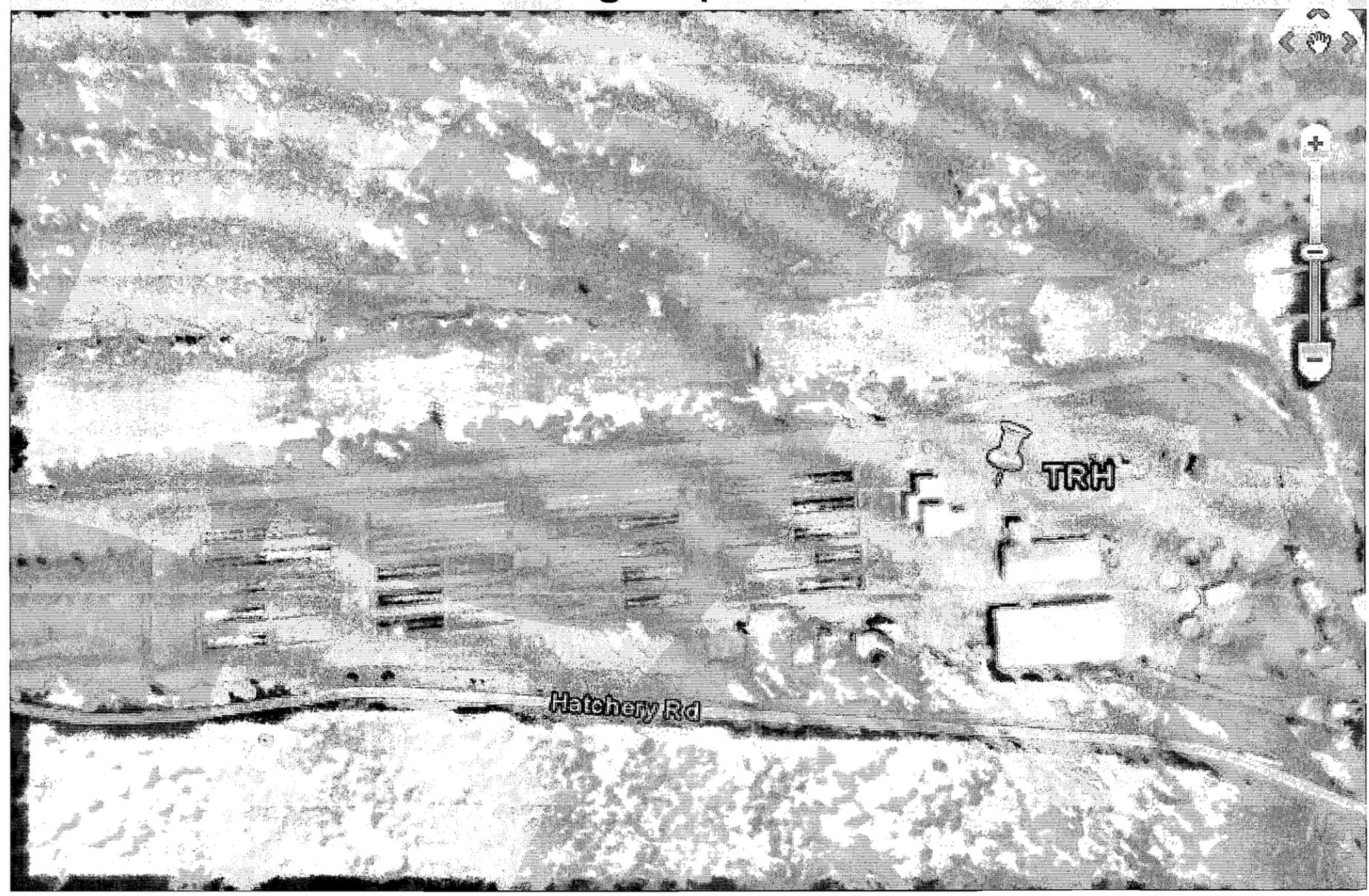


# The Balancing Act; Maximizing Trinity River Hatchery Benefits While Minimizing Impacts on Natural Stocks



# Presentation Topics

- What we know
- What we don't know
- What data and analysis (information) are necessary for guiding hatchery operational decisions
- Available management tools
- Collaborative framework and decision making process
- Desired outcome

## What We Know

- Current hatchery mitigation goals (expressed as juvenile production) 1.4 million spring Chinook, 2.9 million fall Chinook, 800,000 steelhead, and 500,000 coho
- Hatchery escapement targets (expressed as adult returns) 3,000 spring Chinook, 9,000 fall Chinook, 2,100 coho, and 10,000 steelhead
- Hatchery stocks contribute to harvest in commercial, recreational, and tribal fisheries

## What We Know

- TRRP restoration goals (expressed as adult natural origin escapement) 6,000 spring Chinook, 62,000 fall Chinook, 1,400 coho, and 40,000 steelhead
- Status and trends of Trinity River salmonid populations since 1977
- Hatchery fish interact with wild fish (predation, competition, straying, disease)
- Coho and steelhead are primarily tributary spawners.

# What We Don't Know

- Complete information on the genetic composition of wild and hatchery stocks
- Main stem habitat carrying capacity i.e. how many juvenile and adult fish can the habitat support?
- Distribution and extent of straying by hatchery stocks
- Extent of predation on wild fish by hatchery fish
- What effects will changes in hatchery operations have on population levels (both wild and hatchery)

# Informational Needs

- Genetic stock identification of wild and hatchery stocks
- Quantify carrying capacity
- Comprehensive stock status of summer, fall and winter steelhead runs and coho salmon
- Literature review of existing information regarding hatchery management practices

## Potential Management Tools

- Revision of hatchery practices (feeding rates, size at release, numbers released, timing of release, broodstock selection, marking practices)
- In-stream flow management
- Minimize straying of hatchery origin adults to natural areas (exclusionary weirs, culling, imprint homing on hatchery)

# Collaborative framework and decision making process

- Form ad hoc hatchery evaluation team to develop science based recommendations regarding hatchery practices
- Evaluate feasibility of recommendation (operations, legality, cost)
- Solicit comments on recommendations from all stakeholders
- Review and evaluate stakeholder comments for merit or applicability
- Adopt or reject recommendation (with or without modifications from review process) and implement accordingly

## Desired outcome

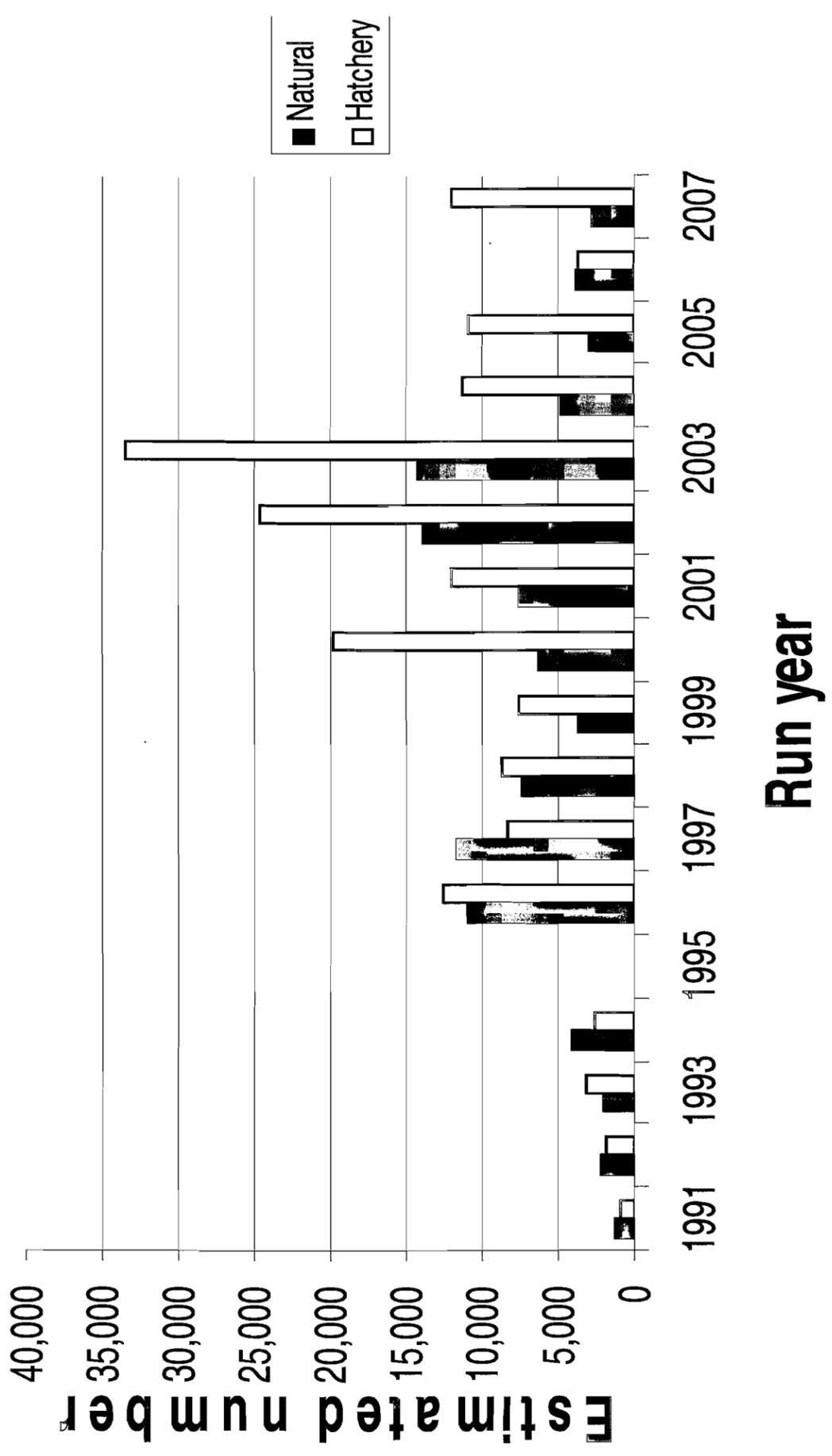
- Reaping the benefits of hatchery production in the form harvest opportunity while minimizing negative impacts on wild stocks.
- Maintaining robust, diverse, self sustaining natural populations

Adult returns of anadromous fish species to Trinity River Hatchery, 1977- 2008.  
32 year period of record

Year	Spring Chinook	Fall Chinook	Coho	Steelhead
1977	1,124	2,035	698	285
1978	3,680	6,034	1,279	683
1979	1,658	1,335	742	382
1980	547	4,099	1,778	2,005
1981	2,405	2,370	2,529	1,004
1982	1,226	2,058	3,975	713
1983	930	5,494	514	599
1984	736	2,166	1,134	142
1985	2,645	2,583	7,549	461
1986	7,083	15,795	2,589	3,780
1987	8,466	13,934	20,473	3,007
1988	13,905	17,352	12,073	817
1989	4,983	11,132	4,893	4,765
1990	2,433	1,348	1,462	930
1991	614	2,482	2,590	446
1992	1,313	3,779	2,372	455
1993	2,630	815	2,024	885
1994	1,943	3,264	134	411
1995	8,722	15,178	4,503	705
1996	5,131	6,411	9,835	4,012
1997	4,892	5,387	887	429
1998	4,679	14,296	4,014	441
1999	3,671	5,037	3,118	1,571
2000	11,594	26,018	3,461	768
2001	6,366	17,971	9,755	2,333
2002	10,440	3,475	6,495	6,008
2003	14,512	29,752	10,396	10,224
2004	5,251	12,384	9,906	5,725
2005	6,966	13,758	16,624	8,143
2006	2,565	8,056	9,839	11,547
2007	5,981	18,081	2,653	11,397
2008	3,438	4,451	4,539	2,495
77- 08 Mean:	4,767	8,698	5,151	2,737
98-08 mean:	6,860	13,934	7,345	5,514
Escapement goal:	3,000	9,000	2,100	10,000
% of escapement goal:	158.9	96.6	245.3	27.4
Number of Times Adult Escapement Goal Met	18 56%	12 37.50%	23 71.80%	3 9.40%

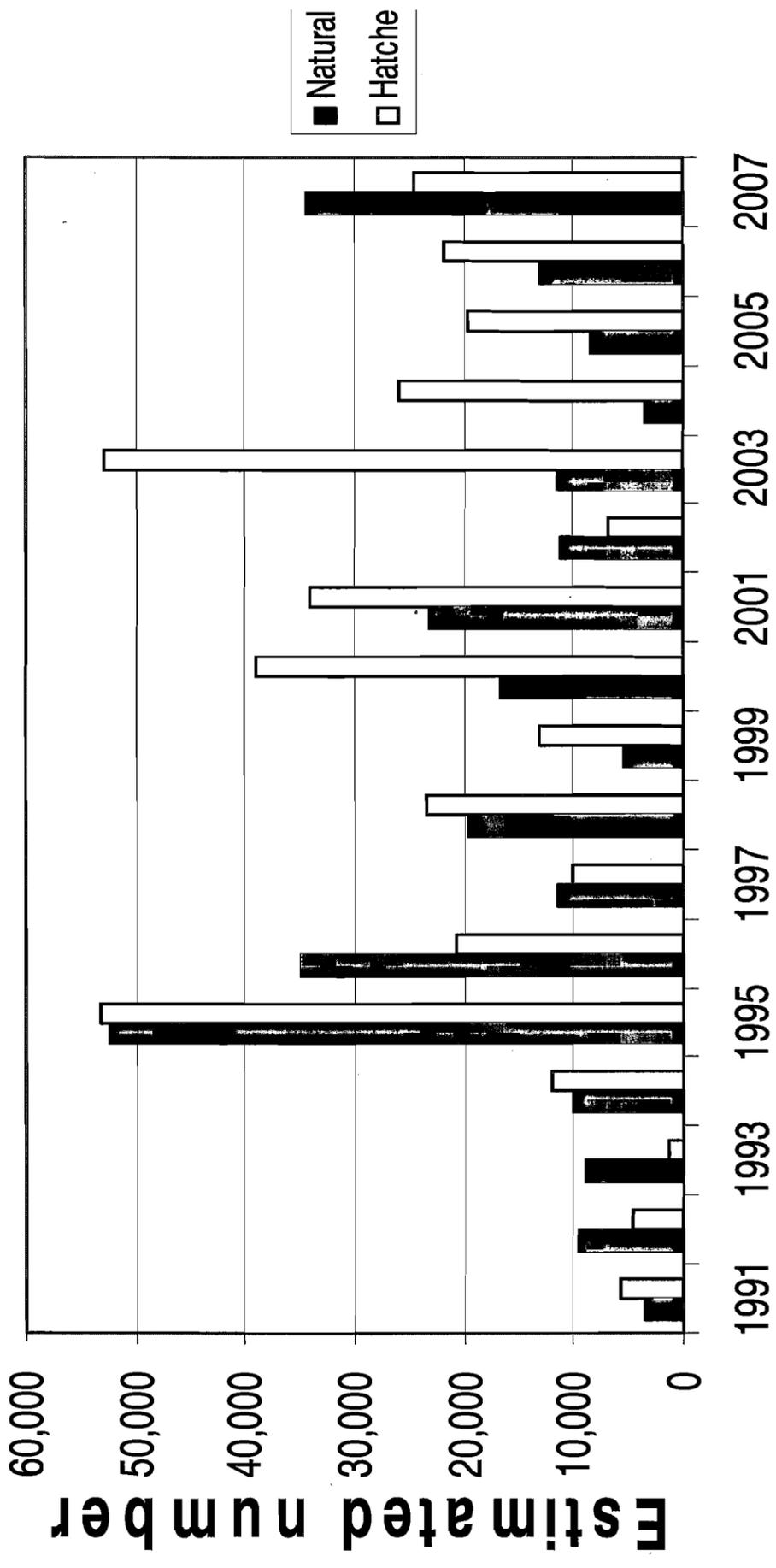
Adult Returns of Anadromous Salmonids to Trinity River Hatchery


**Hatchery and natural contributions to total spring Chinook run-size, upstream of Junction City Weir, 1991 - 2007**



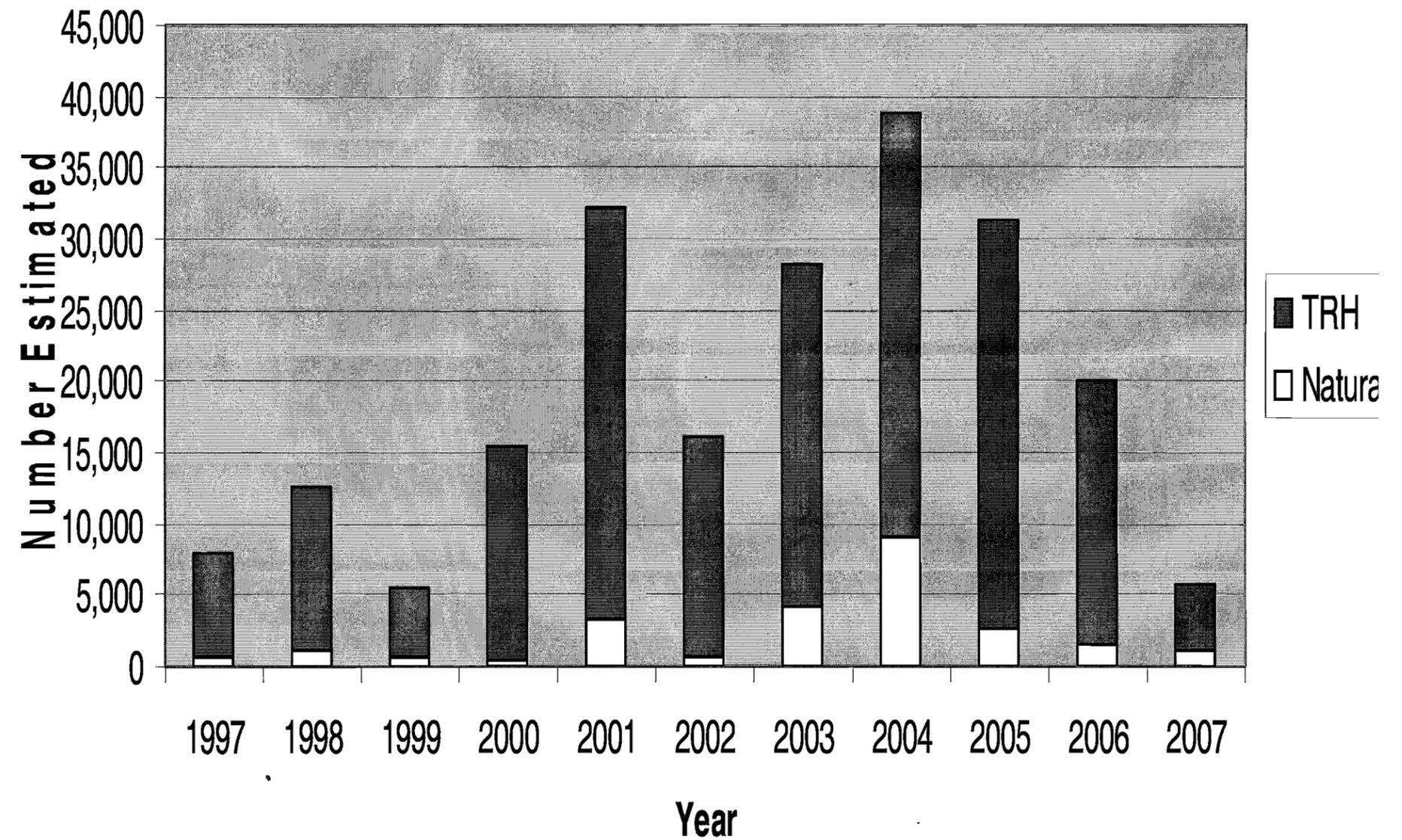


# Hatchery and natural contributions to total fall Chinook run-size, upstream of Willow Creek Weir, 1991 - 2007



Run year

## Estimated Coho Run-size Upstream of Willow Creek Weir



Trinity River Adult fall-run steelhead estimates, upstream of Willow Creek weir

Year	Run-size estimate				Total
	Hatchery b/		Wild c/		
	Number	Percent	Number	Percent	
1977	No estimates				
1978	"				
1979	"				
1980	8,449	33.7	16,645	66.3	25,094
1981	No estimates				
1982	2,106	20.0	8,426	80.0	10,532
1983	No estimates for hatchery/wild components				8,605
1984	"				7,833
1985	No estimates				
1986	"				
1987	"				
1988	No estimates for hatchery/wild components				12,743
1989	"				37,276
1990	"				5,348
1991	"				11,417
1992	1,315	43.2	1,731	56.8	3,046
1993	1,894	58.4	1,349	41.6	3,243
1994	1,477	34.8	2,767	65.2	4,244
1995	1,595	37.2	2,693	62.8	4,288
1996	8,598	82.4	1,837	17.6	10,435
1997	No estimates for hatchery/wild components				5,212
1998	"				2,972
1999	"				5,470
2000	"				8,042
2001	"				12,638
2002	14,408	75.6	4,650	24.4	19,058
2003	19,245	83.0	3,947	17.0	23,192
2004	15,038	75.7	4,817	24.3	19,855
2005	14,049	72.4	5,363	27.6	19,412
2006	32,609	78.8	8,781	21.2	41,390
2007	46,522	86.1	7,529	13.9	54,051

