

Preliminary Draft
Coho Populations Scorecards

The Nature Conservancy

May 17, 2011

TNC Coho Monitoring Project

- Goal: Create coho population scorecards that roll up existing population data
- Scorecard is simple comparison of abundance target and adult population estimates
- Approach:
 - Collection of existing monitoring data
 - Focus on adult population estimates
 - Starting points:
 - NPS Overview of longterm coho monitoring programs for the CCESU (Salmon Restoration Conference, Mar 2010)
 - Mendocino Coastal Monitoring Program (S. Gallagher et al.)
 - NOAA Reports on Historical Occurrence, Status Update, etc. (Spence et al.)

CCC Historical Population Estimates and Abundance Targets

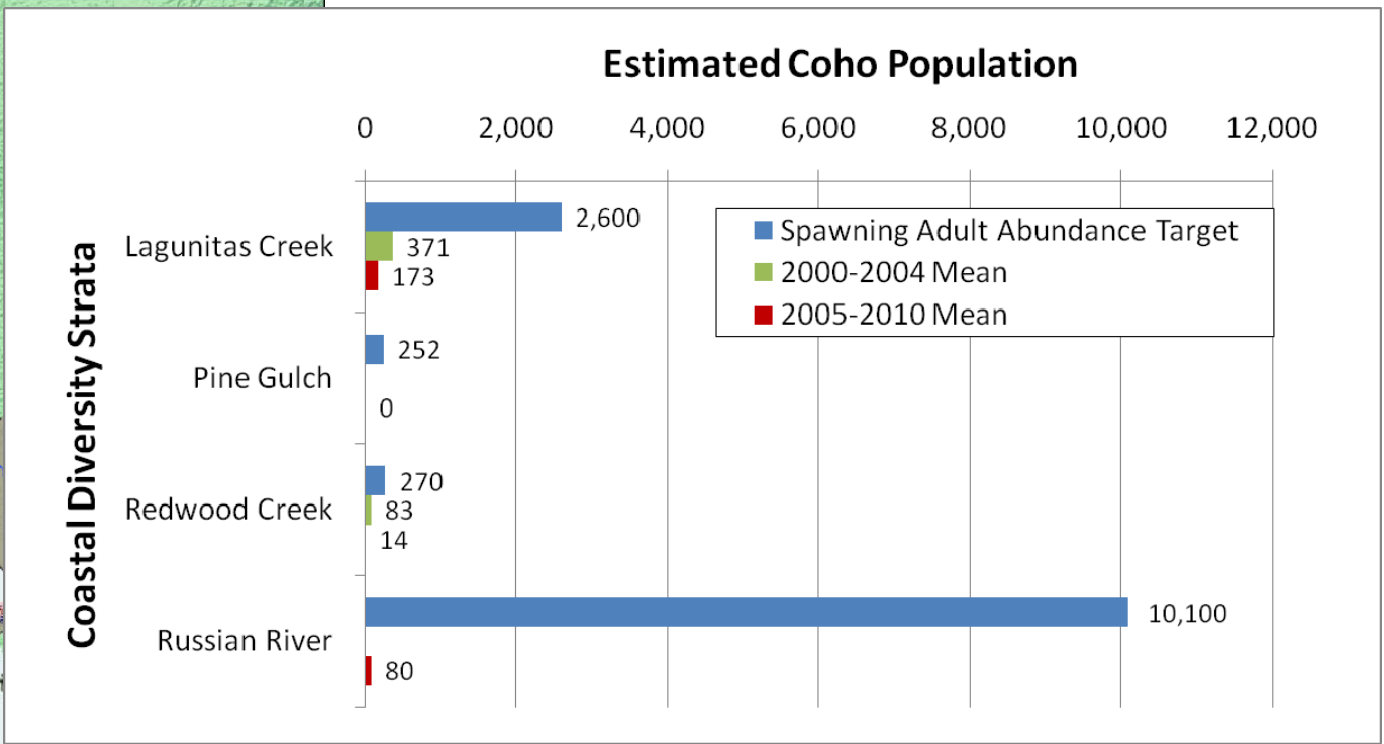
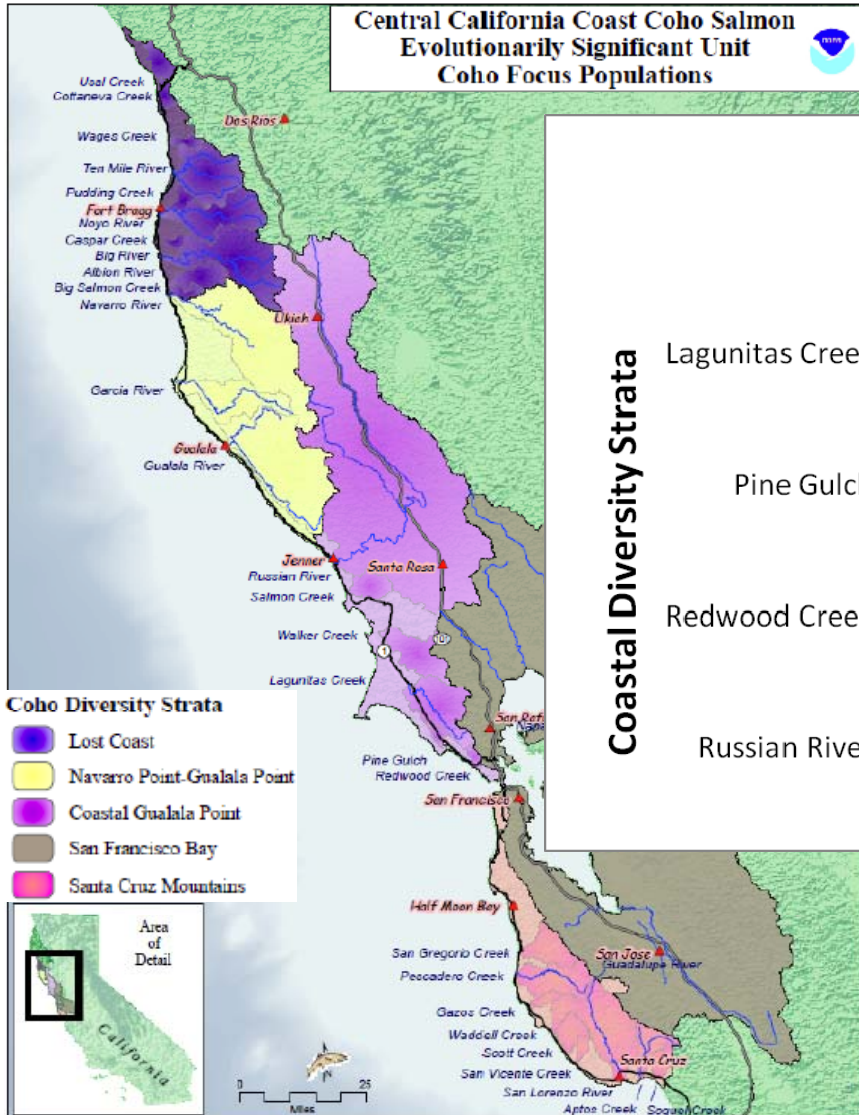
- CCC Historical Estimate: ~100,000^a
 - 12 independent populations; >63 dependent populations
- Total CCC Abundance Target: 113,000^d
- NMFS Priority Abundance Target: 62,000^c

Sources: a. Based on historical estimates of CCC+SONCC between 200,000-500,000 (NMFS, 2010) and SONCC historical estimates of 283,000(Moyle et al, 2008) to 373,000 (NMFS, 2009) b. Moyle et al, 2008 c. NMFS, 2010 e. Abundance Targets for 28 Priority Population (NMFS, 2010) + Non-priority remaining IP-km @ 34 fish/IP-km (where 34 fish/IP-km is standard default in NMFS, 2010)

CCC Monitoring

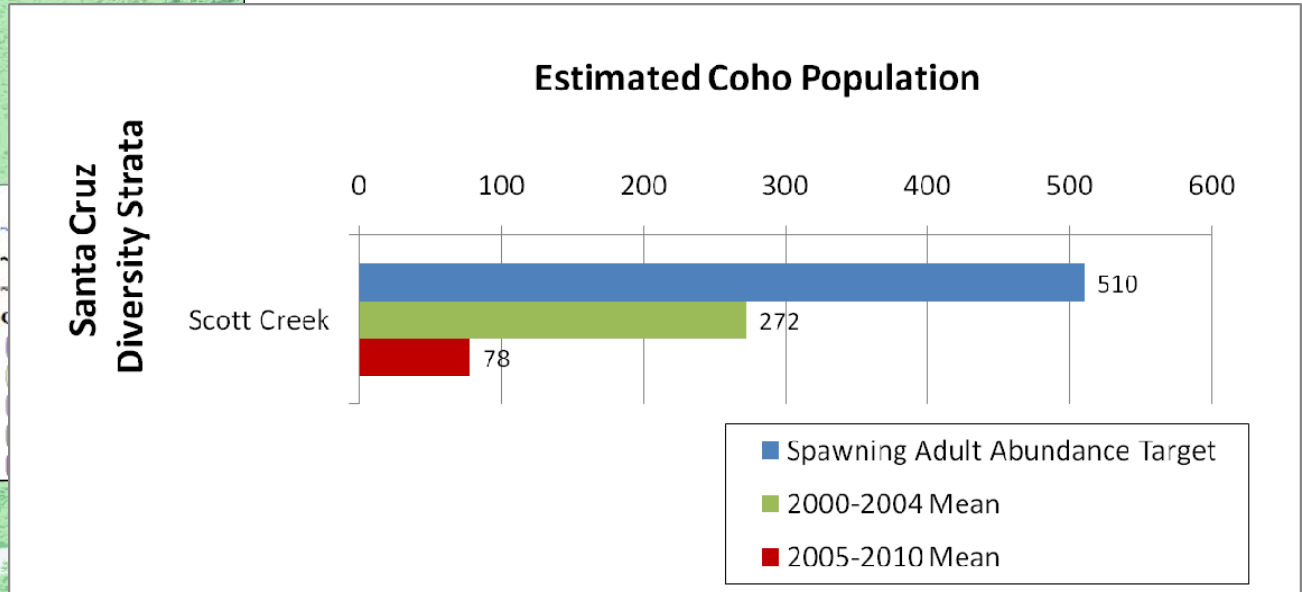
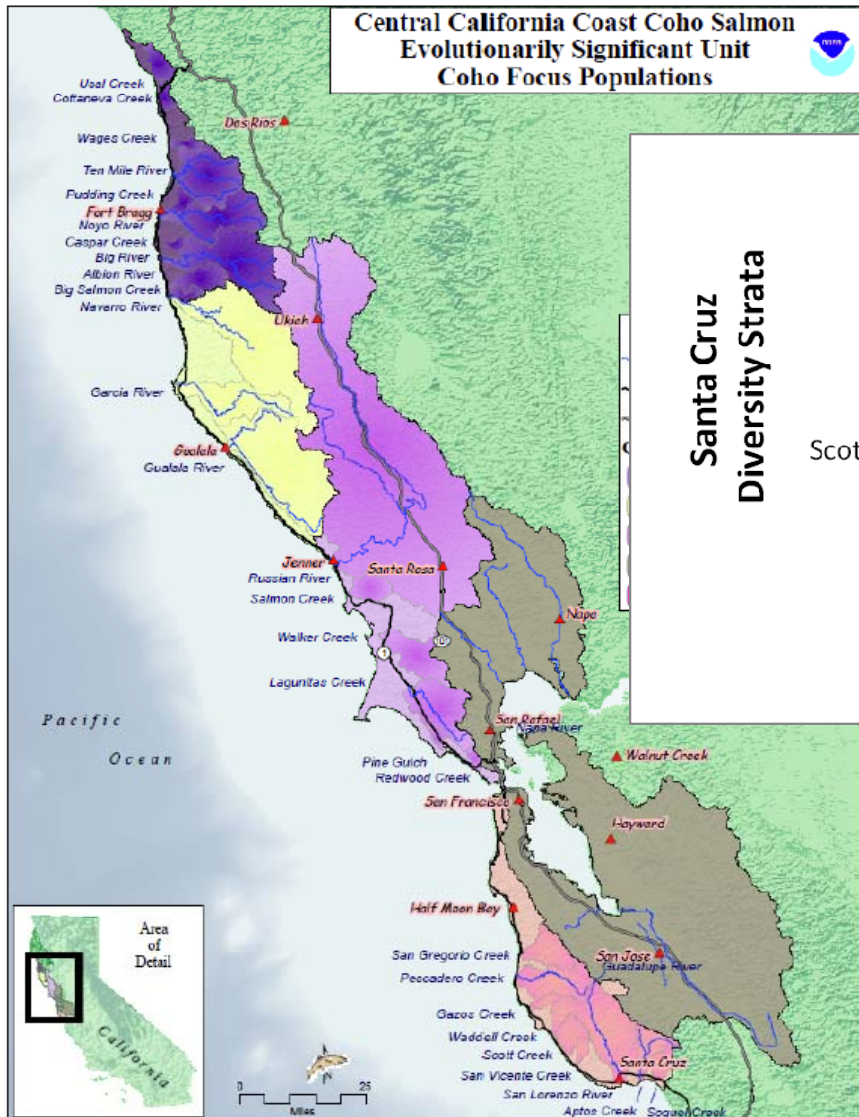
- Mendocino Coastal Monitoring Program
 - 13 monitoring stations
 - 4 with complete longterm monitoring in 2000s (Pudding, SF Noyo, Caspar, Little)
 - 2 more with incomplete data in 2000s (Noyo, Hare)
 - 7 with data from 2008-09, 2009-10, and/or 2010-11 (10 Mile, Big, Garcia, Navarro, Albion, Greenwood, Usal)
- Marin NPS and Partner Monitoring
 - 2 monitoring stations with complete longterm monitoring since 1994 (Lagunitas, Redwood Creeks)
 - 1 with incomplete data in 2000s (Pine Gulch)
- Coho Broodstock/Monitoring Programs
 - 1 monitoring station since 2004 (Scott Creek)
 - Multiple tributary creeks since 2010 (Russian River)

Coastal Diversity Strata



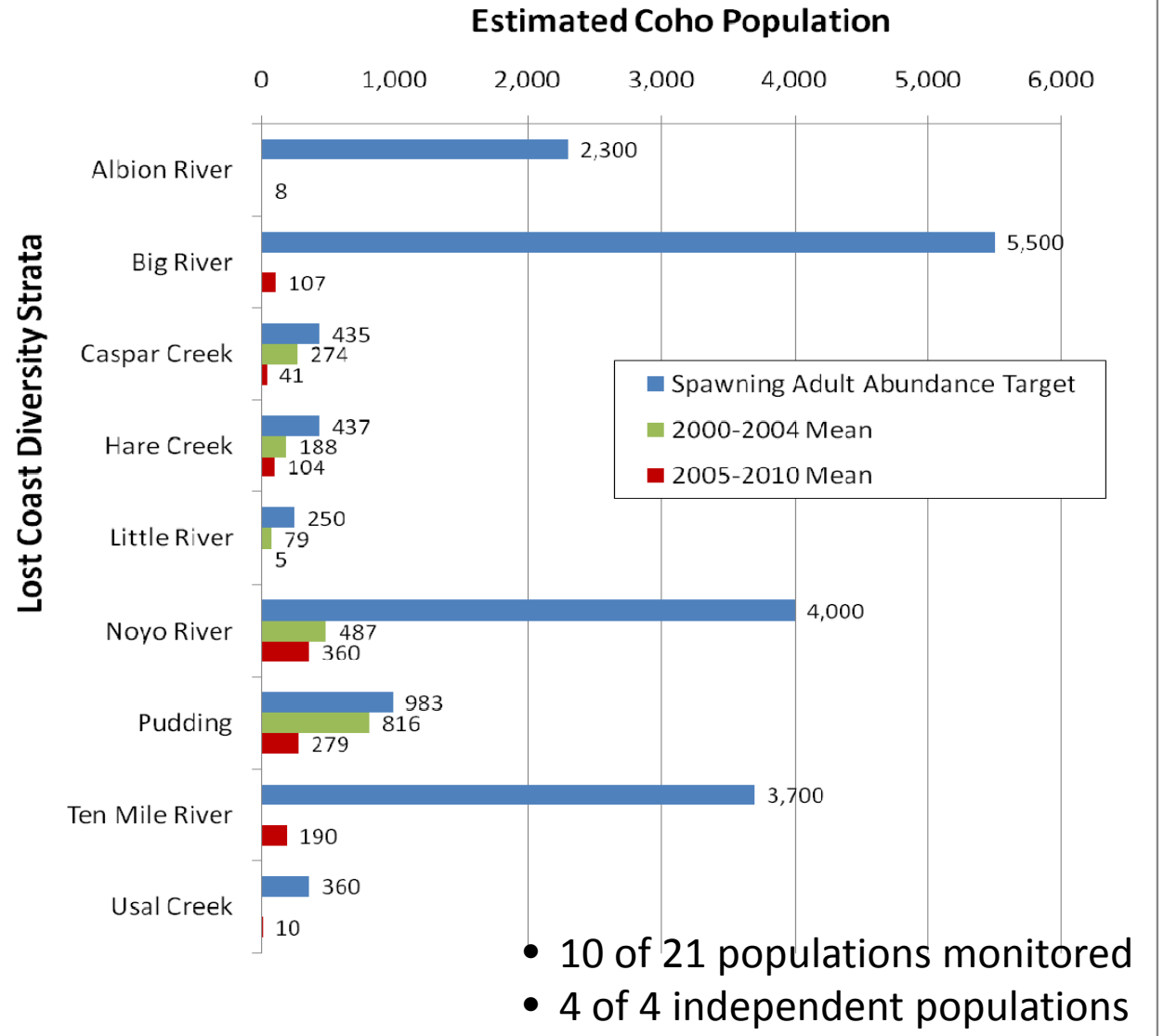
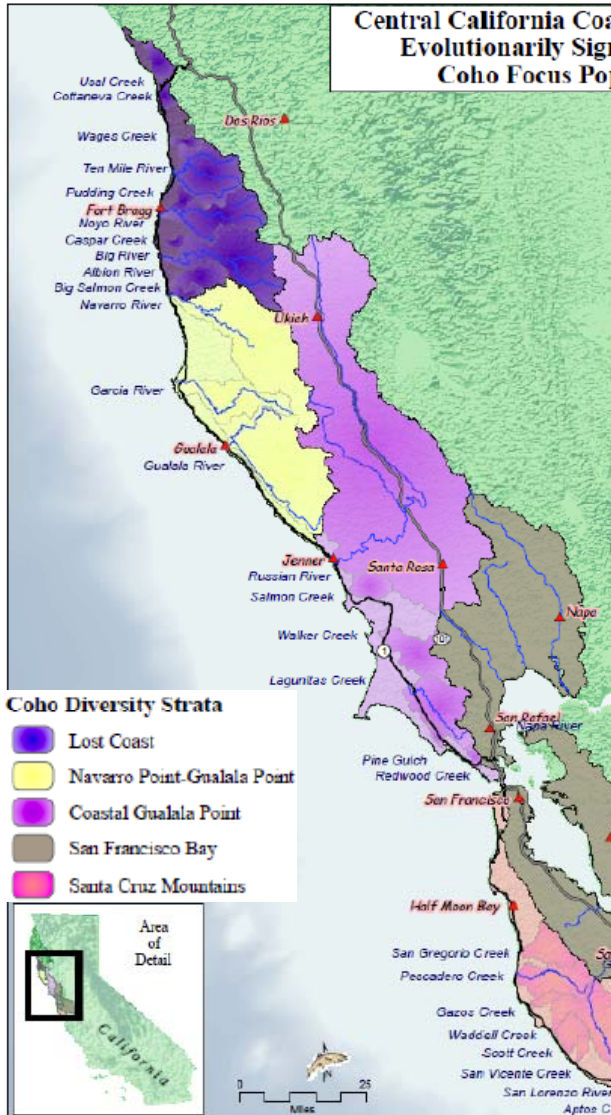
- 4 of 12 populations being monitored
- incl. 2 independent populations monitored

Santa Cruz Diversity Strata

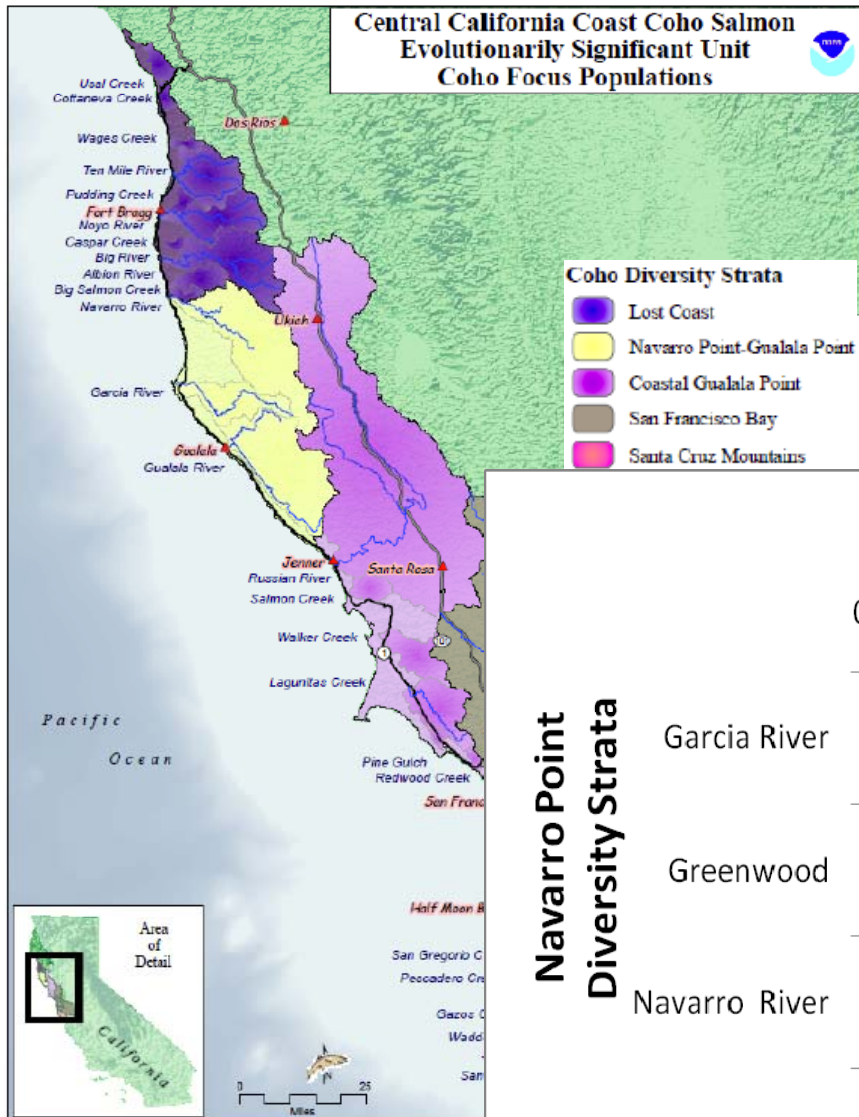


- 1 of 16 populations being monitored
- 0 of 2 independent populations monitored

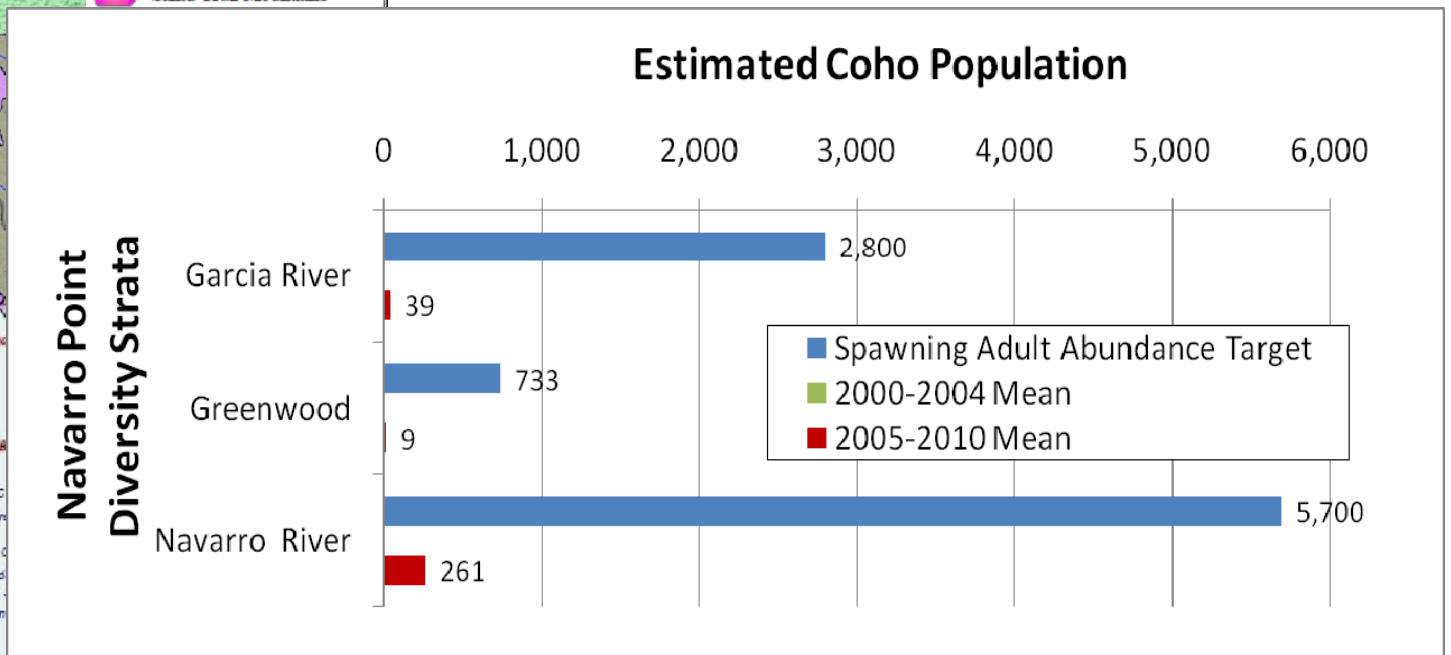
Lost Coast Diversity Strata



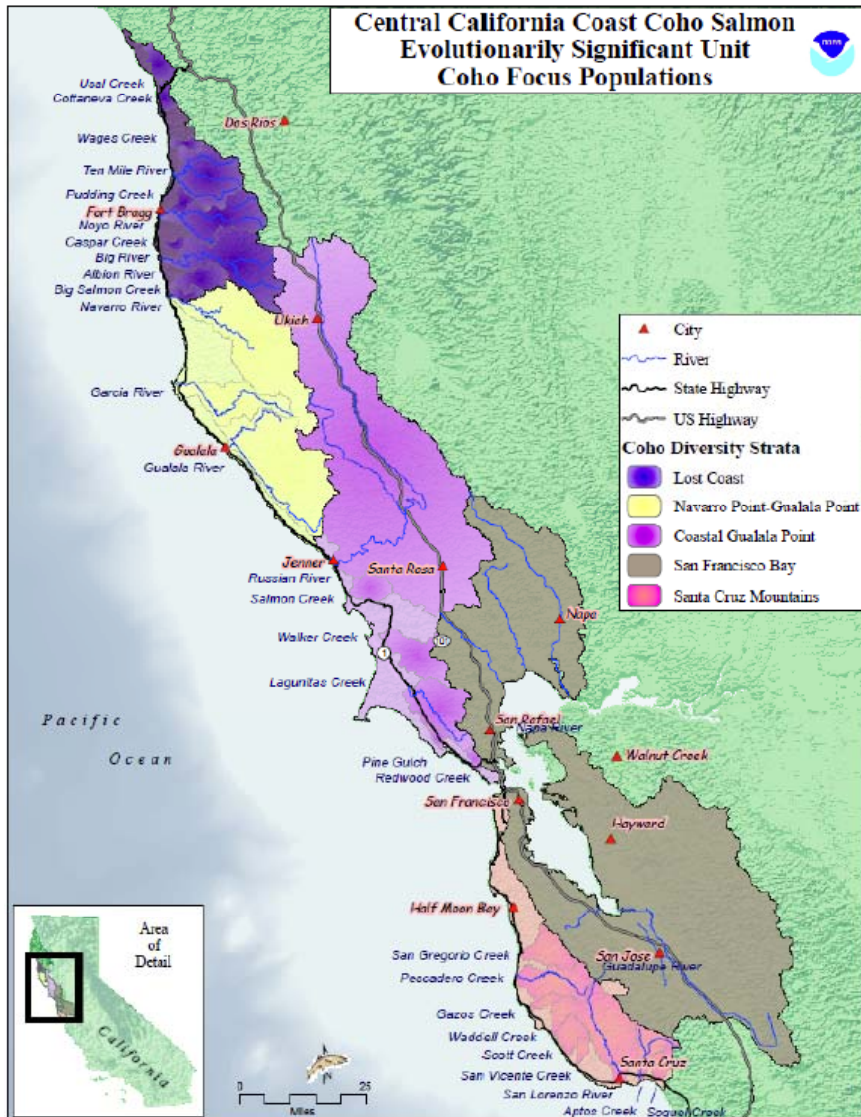
Navarro Point Diversity Strata



- 3 of 10 populations being monitored
- 2 of 3 independent populations monitored



San Francisco Bay Diversity Strata



- Extirpated Populations
- 17 populations

CCC Overall Scorecard

	Spawning Adult Abundance Target ^a	2000-2004 Data		2005-2010 Data	
		Avg	%	Avg	%
All 17 Stations	40,930	-	-	1,759	4%
8 Longterm Stations	9,485	2,570	27%	1,055	11%
Lost Coast Diversity Strata	20,635	-	-	1,059 ^b	5%
Navarro Pt Diversity Strata	17,440	-	-	513 ^b	3%

Sources: a. Priority Population Abundance Targets from NMFS, 2010 + Non-priority remaining IP-km @ 34 fish/IP-km
 b. S. Gallagher. Preliminary results for 2009-2010. Email to J. Carah, September 2010.

CCC Conclusion

- 2000-2004
 - Adult populations range from 12% to 83% of their abundance targets
 - **Overall: 27%**
- 2005-2010
 - Adult populations range from 1 to 28% of their abundance targets
 - **Overall: 4%**
 - In general, 2005-2010 populations hurt by poor ocean conditions
- Extrapolation to Entire CCC:
 - 2000-2004: 22,000 (27% of 83,000)
 - 2005-2010: 3,000 (4% of 83,000)
 - CCC Current Estimates: <500^b; 500-3,000^c

SONCC Population Estimates and Abundance Targets

- Historical Estimate: 283,000^a to 373,000^b
(of which ~75% CA Only^c)
 - CA Only: 31 populations in 5 diversity strata
- Current Estimate: 11,000 wild; 20,000 hatchery^b
- Total Abundance: 124,000 (CA Only)
- NMFS 50% Abundance Target: 62,000^b (CA Only)
- Monitored Populations Target:
 - 9 CA populations in 4 diversity strata

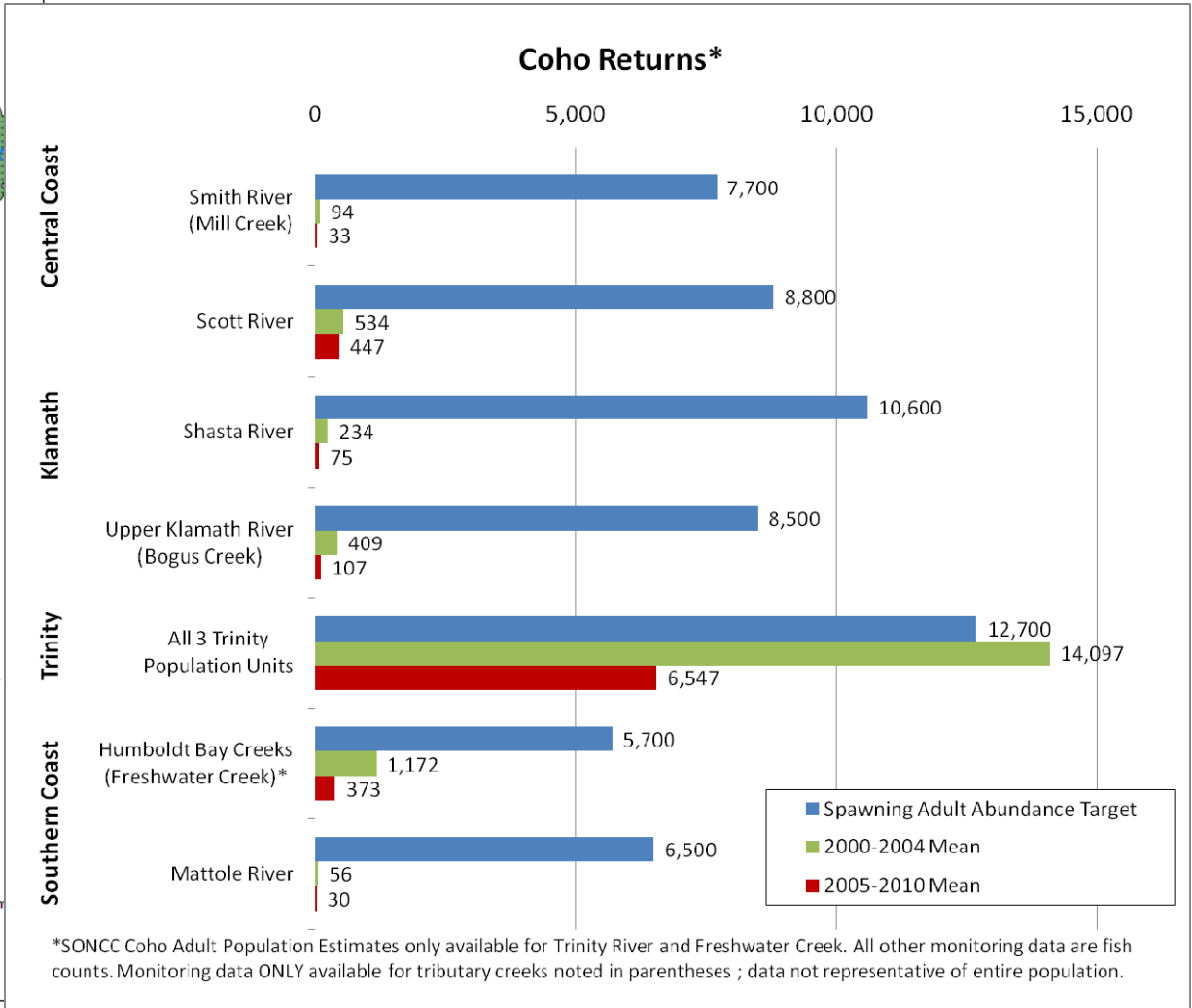
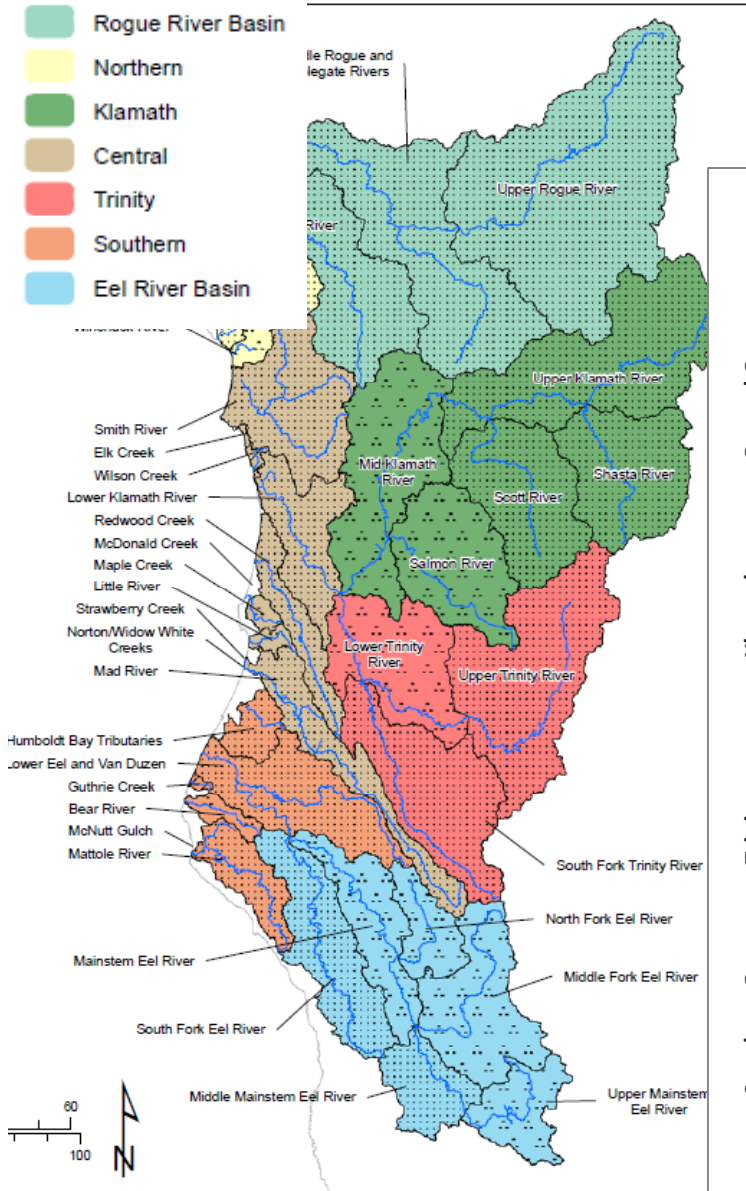
*Represents portions of 9 CA population units. Hatchery averages are 9,441 and 7,360 for same time periods.

Notes: a. Moyle et al, 2008 b. NMFS, 2009 c. 210,000 to 280,000

SONCC CA Monitoring Data

Diversity Strata

- Rogue River Basin
- Northern
- Klamath
- Central
- Trinity
- Southern
- Eel River Basin



SONCC Conclusion

	Spawning Adult Abundance Target	2000-2004 Data		2005-2010 Data	
		Avg	%	Avg	%
8 Longterm Stations*	60,500	15,539	26%	6,172	10%

*Represents portions of 9 CA population units. Hatchery averages are 9,441 and 7,360 for same time periods.

- 2000-2004
 - Adult populations range from 1% to 111% of their abundance targets
 - Trinity Natural Spawning is 19% wild/81% hatchery fish.
 - **Overall: 26%**
- 2005-2010
 - Adult populations range from 0.4 to 41% of their abundance targets
 - Trinity Natural Spawning is 23% wild/77% hatchery fish.
 - **Overall: 10%**
 - In general, 2005-2010 populations hurt by poor ocean conditions
- Extrapolation to entire SONCC:
 - 2000-2004: 32,000 (26% of 124,000)
 - 2005-2010: 12,000 (10% of 124,000)

Data Slides

Differences
in 2011
CCC Status
Update
and TNC
review of
DFG & NPS
Reports

CCC Coho Spawner Abundance Estimates ⁺																		
	Mendocino Coastal Monitoring Program										Redwood Creek	Redwood Creek- NOAA Review	Lagunitas Creek- NOAA Review Update	Lagunitas Creek	Lagunitas Creek	Lagunitas Creek	Scott Creek ^c	Scott Creek- NOAA Review
	Pudding	Pudding- NOAA Review Update	Noyo River	Noyo River- NOAA Review Update	Noyo South Fork ^d	Noyo South Fork- NOAA Review Update	Caspar Creek	Caspar Creek- NOAA Review Update	Little River	Little River- NOAA Review Update			inc. Lagunitas, Devils Gulch, Nicasio, San Geronimo, Olema	Olema Creek	San Geronimo Creek ^a	John West Fork Creek		
Year*																		
1989							8-28'											
1991							29-196'											
1993																		
1994											58			52				
1995							170"				27			106		8		
1996											57			175		0		
1997											58			88		12		
1998						70					46	58	226	42		10		
1999					190	58	87	87	16	16	10	7	213	8		19		
2000		279		950	220	86	106	106	20	20	49	35	290	102		58		
2001	524	524		568	112	144	386	386	88	88	105	47	344	90	324	20		
2002	367	367	487	487	401	297	91	91	45	45	23	7	163	19		28		5
2003	1,204	1,204		nd	647	310	238	238	91	91	67	43	471	139		40		123
2004	1,167	1,167		nd	536	183	548	548	152	152	171	93	588	183		85	272	200
2005	709	709	602	1,394	285	74	126	126	14	14	24	12	192	11		9	329	46
2006	401	401		330	114	59	54	54	5	5	29	21	404	80		29	46	2
2007	228	228	259	259	54	15	16	16	2	2	0	0	177	12		10	<10?	2
2008	50	50	294	294	19	19	6	6	4	4	4	2	27	21		0	<20?	1
2009	9	9	286	286	63	46	5	46	2	2	12	23	65	2		5	13-32?	0
2010														8				
Mean	518		386		240		151		40		46	29	263	67		22		
2000-2004 Mean													371					
2005-2010 Mean													173					
Target ¹	983		4,000				435		250		270		2,600	2,600		510		
Source:	2,3(2009)		2,3(2009)		2,3(2009)		2,3(2009)		2,3(2009)		4			4		4		

⁺These are *population estimates* based on fish count.

*starting year (e.g., 1999 is 1999/2000 winter)

Notes:

- a. Population estimate of 550 in Lagunitas in 2001, with 50% from San Geronimo Creek tributary.
- b. Live count (not population estimate).
- c. Scott Creek estimate includes wild and captive broodstock hatchery (which are Scott Creek stock)
- d. Noyo ECS

¹Redd-based population estimate.

"Range of AUC live and carcass based estimates.

'''Maahs' range based on review & analysis of carcass-based estimates; redd-based range; AUC live estimates.

Sources:

1. NOAA NMFS. 2010. Public Draft CCC Coho Salmon Recovery Plan.
2. Table 9. S. Gallagher and D. Wright. 2009. Coastal Mendocino County salmonid life cycle and regional monitoring:
3. S. Gallagher. Preliminary results for 2009-2010. Email to J. Carah, September 2010.
4. 2010. National Park Service. Salmon Escapement Monitoring Summary. Figure 12. Salmon escapement Estimates (Peak Live plus Cumulative Dead)

CCC Monitoring Data

CCC Coho Spawner Abundance Estimates and Fish Counts ⁺																							
Mendocino Coastal Monitoring Program																	Redwood Creek	Lagunitas Creek	Lagunitas Creek	Lagunitas Creek	Scott Creek ^c	Russian River	Pine Gulch
	Mendocino Coast	Lost Coast Diversity Strata	Navarro Point Diversity Strata	Pudding	Noyo River	Noyo South Fork ^d	Caspar Creek	Little River	Hare Creek	Ten Mile River	Garcia River	Big River	Navarro River	Albion River	Greenwood	Usal Creek		Olema Creek	San Geronimo Creek ^a	John West Fork Creek	many creeks ^e		
Year*																							
1989							8-28'			32-86"	0												
1991							29-196'			14-42'	0												
1993																							
1994																	58	52					
1995										170"							27	106		8			
1996																	57	175		0			
1997											0						58	88		12			
1998																	46	42		10			
1999						190	87	16									10	8		19			
2000						220	106	20			0						49	102		58			
2001				524		112	386	88									105	90	324	20			
2002				367	487	401	91	45	188								23	19		28			
2003				1,204		647	238	91									67	139		40			
2004				1,167		536	548	152									171	183		85	272		
2005				709	602	285	126	14	192								24	11		9	329		
2006				401		114	54	5									29	80		29	46		
2007				228	259	54	16	2	16								0	12		10	<10?		
2008				50	294	19	6	4			69	80	70	8	9	18	4	21		0	<20?		
2009	898	1,059	513	9	286	63	5	2		190	9	134	452			2	12	2	5	13-32?	0		
2010																		8			80		
2000-2004 Mean				816	487	383	274	79	188								83	107	324	46	272		
2005-2010 Mean				279	360	107	41	5	104	190	39	107	261	8	9	10	14	22		11	78		
Target [†]				983	4,000		435	250	437	3,700	2,800	5,500	5,700	2,300	733	360	270	2,600		510	10,100		
Source:	3(2009)	3(2009)	3(2009)	2,3(2009)	2,3(2009)	2,3(2009)	2,3(2009), 5	2,3(2009)	2,3(2009)	2,3(2009), 5	2,3(2009), 7	2,3(2009)	2,3(2009)	2,3(2009)	2,3(2009)	2,3(2009)	4	4		4	6		

⁺Population estimates based on different methodologies: mark-recapture; redd counts. Fish counts are provided where populations estimates are not available.

*starting year (e.g., 1999 is 1999/2000 winter)

Notes:

a. Population estimate of 550 in Lagunitas in 2001, with 50% from San Geronimo Creek tributary.

b. Live count (not population estimate).

c. Scott Creek estimate includes wild and captive broodstock hatchery (which are Scott Creek stock)

d. Noyo ECS

e. Russian River: Devil Creek, Dry Creek, Dutch Bill Creek, East Austin Creek, Gilliam Creek, Grape Creek, Gray Creek, Green Valley Creek, Mill Creek, Palmer Creek, Russian River Mainstem, Sheephouse Creek

[†]Redd-based population estimate.

[‡]Range of AUC live and carcass based estimates.

[¶]Maahs' range based on review & analysis of carcass-based estimates; redd-based range; AUC live estimates.

Sources:

1. NOAA NMFS. 2010. Public Draft CCC Coho Salmon Recovery Plan.

2. Table 9. S. Gallagher and D. Wright. 2009. Coastal Mendocino County salmonid life cycle and regional monitoring: monitoring status and trends. Final report to California Department of

3. S. Gallagher. Preliminary results for 2009-2010. Email to J. Carah, September 2010.

4. 2010. National Park Service. Salmon Escapement Monitoring Summary. Figure 12. Salmon escapement Estimates (Peak Live plus Cumulative Dead)

5. M. Maahs. 1996. A Salmon Spawning Survey for Portions of Ten Mile River, Caspar Creek, and Garcia River 1995-96. Prepared for Humboldt County Resource Conservation District.

6. Winter 2010-2011 updates on coho salmon observations in Russian River streams. <http://ucanr.org/sites/RussianRiverCoho/>

7. M. Maahs. 1999. Spawning Survey for Portions of the Garcia River 1998-99. Prepared for Mendocino County Resource Conservation District.

8. 2010. National Park Service. Salmon Escapement Monitoring Summary. Figure 12. Salmon escapement Estimates (Peak Live plus Cumulative Dead)

SONCC Monitoring Data

SONCC Adult Coho Salmon Returns [†]																	
Year*	Trinity Natural Spawning Areas	Trinity Natural Spawning Areas	Trinity Natural Spawning Areas	Trinity Hatchery	Shasta River	Scott River	Upper Klamath	Iron Gate Hatchery	Mattole River ^a	Smith River	Smith River	Humboldt Bay Creeks	Humboldt Bay Creeks	Humboldt Bay Creeks	TOTAL	Total - Natural	Total - Hatchery
	Wild	Trinity River					Bogus Creek			Mill Creek	Rock Creek	Freshwater Creek	NF Elk Creek	SF Elk Creek			
1986													399	40			
1987													260	108			
1988													126	42			
...																	
1993										143							
1994									10	81	0						
1995									12	80	0						
1996									24	71	0						
1997	232	885	1,097	887				1,872	25	16	0				3,897	1,138	2,759
1998	886	1,009	5,995	4,014				511	15	4	0				10,539	6,014	4,525
1999	440	1,256	1,696	3,118				151	28	12	0				5,005	1,736	3,269
2000	288	6,297	6,585	3,461				723	15	28	0				10,812	6,628	4,184
2001	2,945	15,770	18,715	9,755	291	173 ^b		2,466	70	54	0				31,351	19,130	12,221
2002	372	7,440	7,812	6,495	86	17		1,193	66	121	0	1810			17,600	9,912	7,688
2003	3,264	10,991	14,255	10,396	187	8		1,317	47	29	0	731			26,970	15,257	11,713
2004	7,830	15,287	23,117	9,906	373	1,577	409	1,495	82	237	0	974			38,170	26,769	11,401
2005	1,728	9,974	11,702	16,624	69	28	102	1,395	50	49	0	767			30,786	12,767	18,019
2006	1,416	7,454	8,870	9,839	47	5	46	263	27	18	0	391			19,506	9,404	10,102
2007	940	1,612	2,552	2,653	249	1622	233	625	51	36	0	241			8,262	4,984	3,278
2008	861	2,204	3,065	4,539	30	62	111	1,278		30	0	376			9,491	3,674	5,817
2009	438	1,718	2,157	2,579	9	81	6	46	13			89			4,980	2,355	2,625
2010	654	2,113	2,766	3891	46	881	145	428	10						8,167	3,848	4,319
2000-2004 Mean	2,940	11,157	14,097	8,003	234	534	409	1,439	56	94	0	1,172			24,981	15,539	9,441
2005-2010 Mean	1,006	4,179	5,185	6,688	75	447	107	673	30	33	0	373			13,532	6,172	7,360
Target (Spawner Threshold)			12,700		10,600	8,800	8,500		6,500	7,700		5,700				60,500	
Depensation Level									250								
Source	6; 7	6; 7	6; 7	1; 5 (2009 on)	3	1; 3 (2007 on)	3	1; 5(2010)	3	4	4						

[†]Only Trinity River & Freshwater Creek have population estimates; all others are only fish counts.

*starting year (e.g., 1999 is 1999/2000 winter)

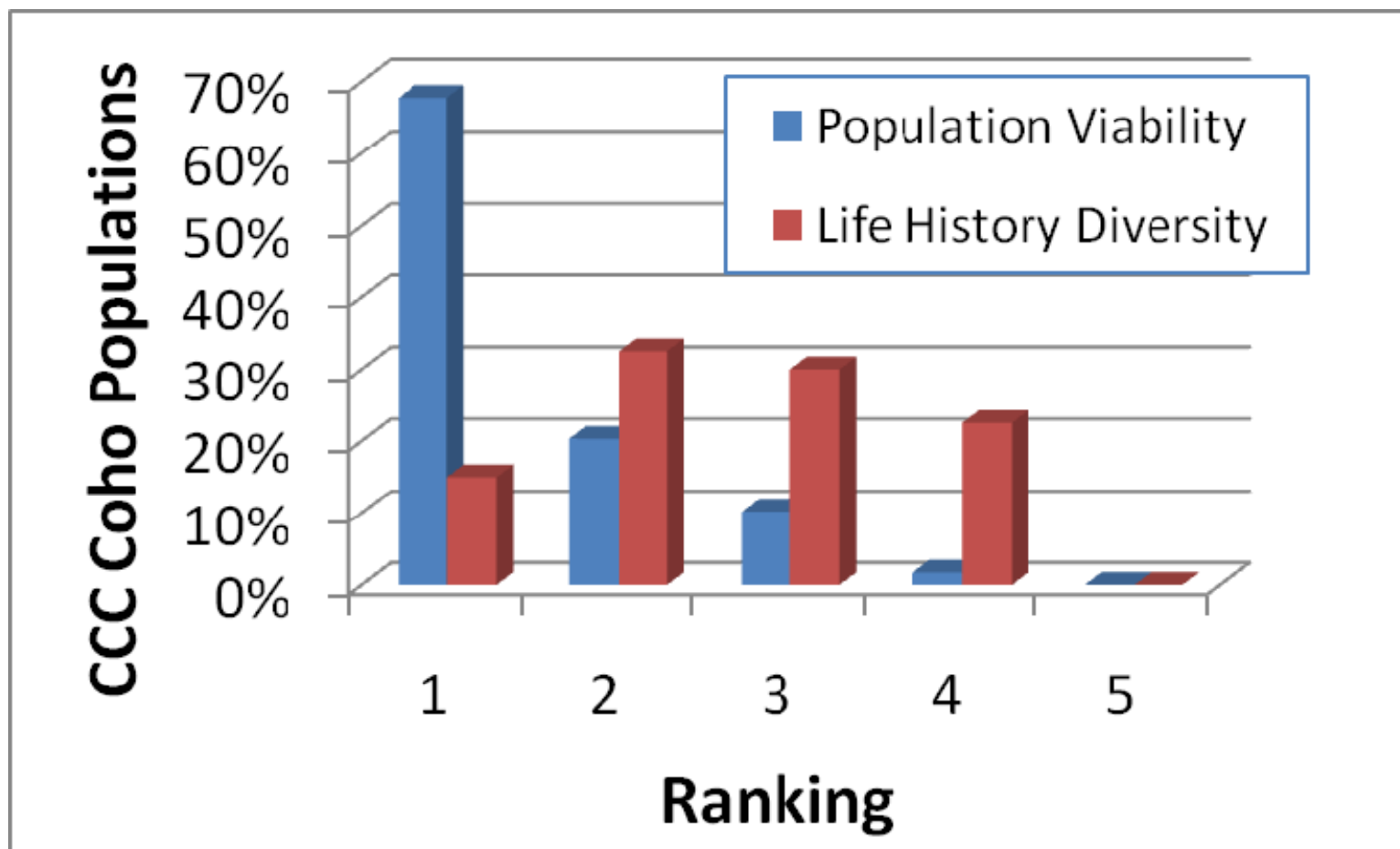
^aMattole Salmon Group non-statistical estimate of population: low 100s.

^bTotal live fish/carcass # is 288. These #s may need to be revisited. (USFS.2002. Scott River Watershed Coho Salmon Spawning Survey, 2001, 2002.)

Sources:

2010. Yurok Tribe Fisheries Program. Fish Surveys Related to the Proposed Del Norte Highway 101 Klamath Grade Raise Project. Prepared for Caltrans. Table 3.
2009. Fisheries Monograph. Mattole River & Range Partnership. Figure 1
- DFG. Klamath River Project. Shasta Scott Bogus Summary 2010.
- McLeod, R.F., and C. F. Howard. 2010. Mill Creek Fisheries Monitoring Program, Final Report, Del Norte County, California.
- DFG Hatchery Trap Count. Week of 4-03-11 to 4-09-11. not include grilse.
- DFG. 2010. Final Annual Report Trinity River Basin Salmon and Steelhead Monitoring Project 2008-2009 Season.
- W. Sinnen. Preliminary results for 2009 and 2010. Email to S. Liu, May 2011.

CCC Viability and Life History Diversity

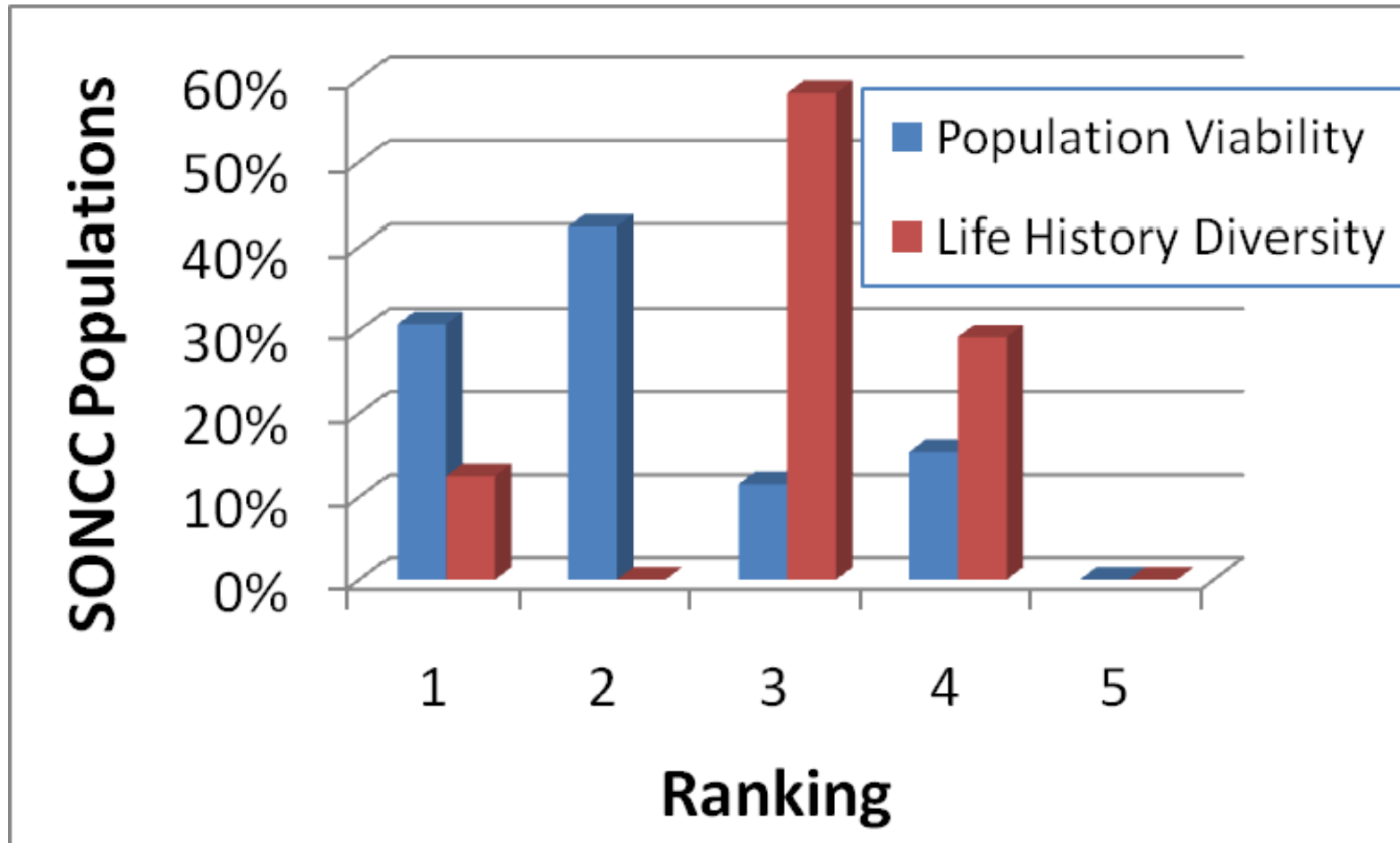


Source: Wild Salmon Center Index (2010)

Data for 59 populations (12 independent/47 dependent populations)

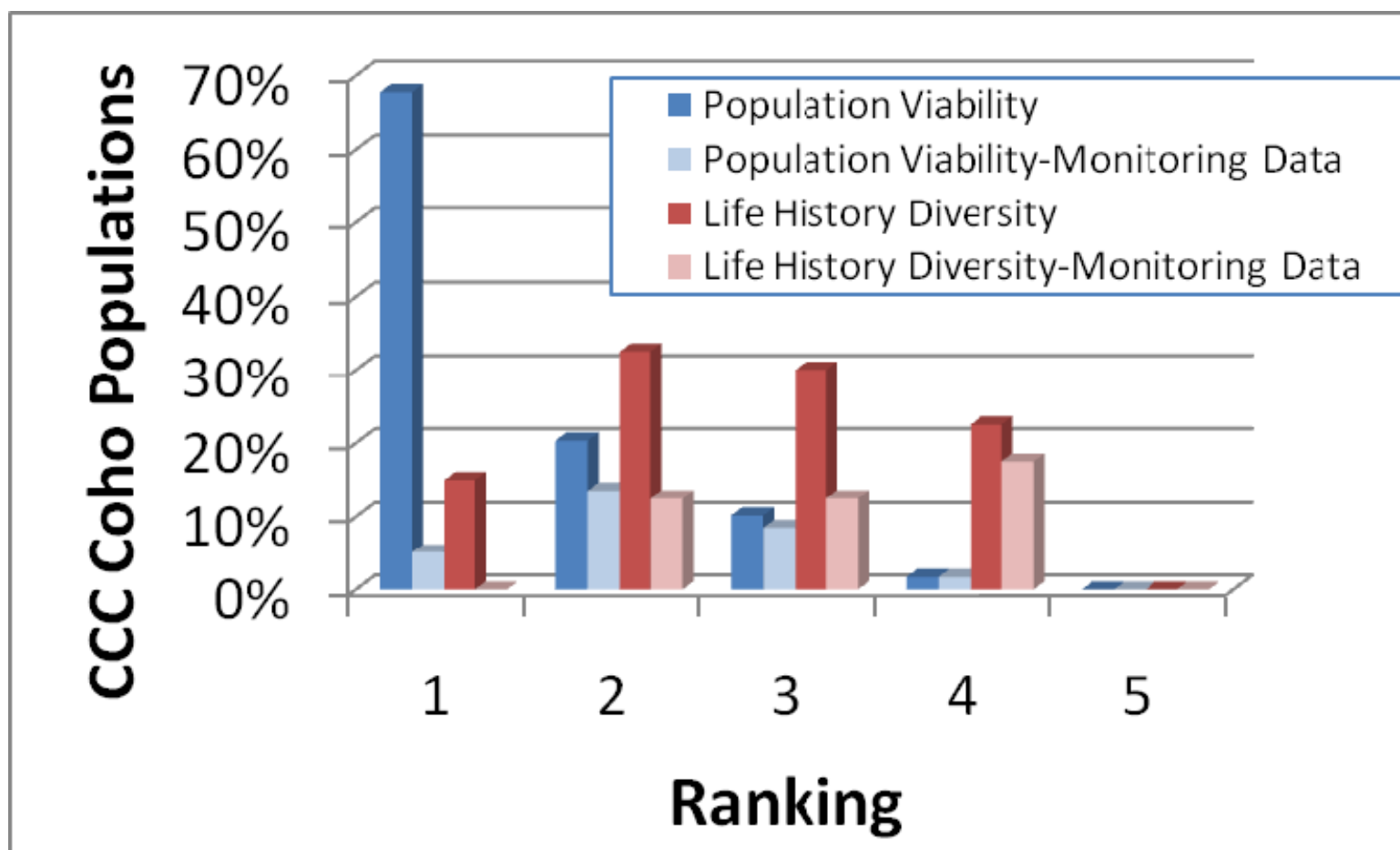
1 to 5: Poor to Good

SONCC Viability and Life History Diversity



Source: Wild Salmon Center Index (2010)
Data for 26 populations (incl. 24 independent)
1 to 5: Poor to Good

CCC Viability and Life History Diversity

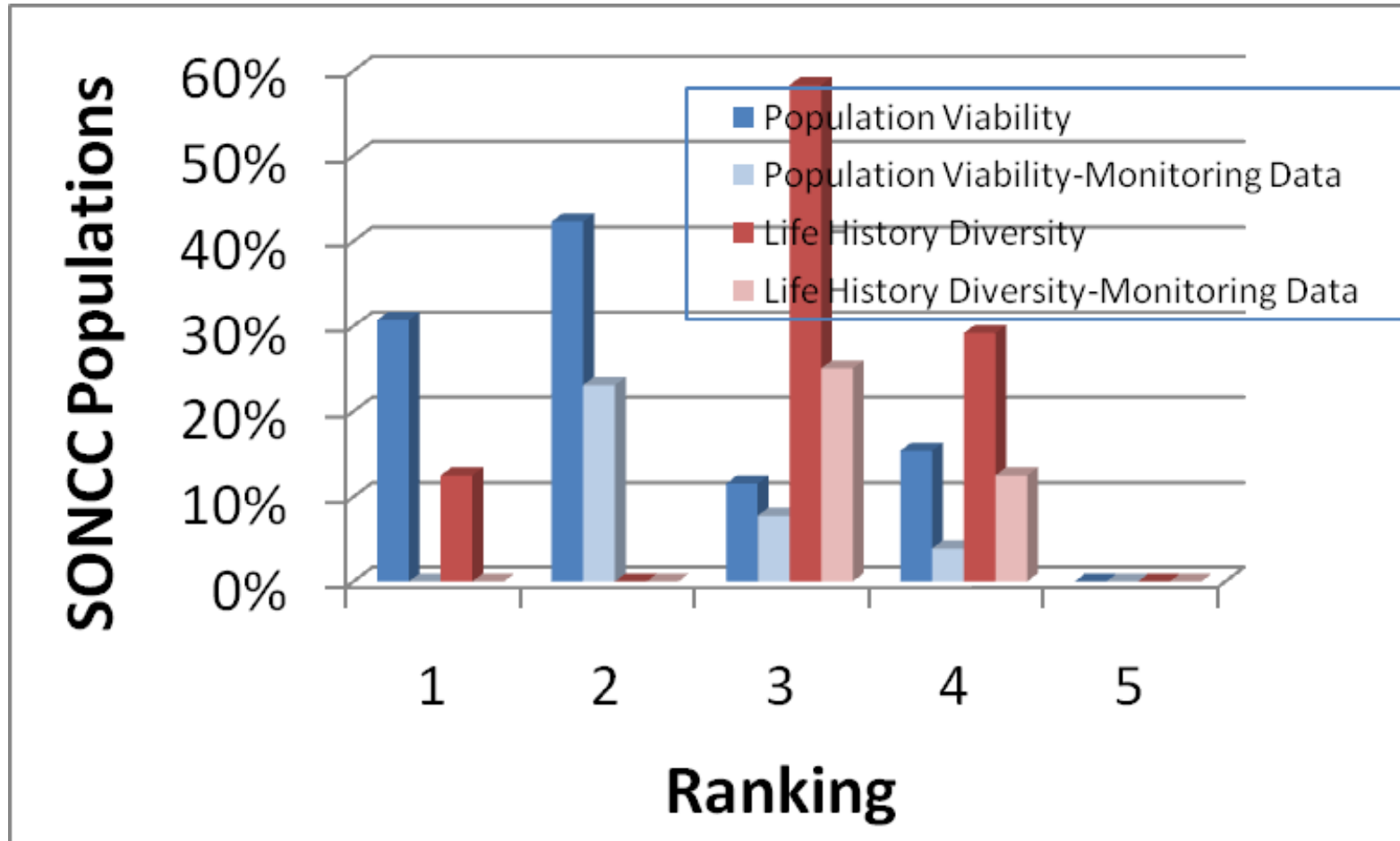


Source: Wild Salmon Center Index (2010)

Data for 59 populations (12 independent/47 dependent populations)

1 to 5: Poor to Good

SONCC Viability and Life History Diversity



Source: Wild Salmon Center Index (2010)
Data for 26 populations (incl. 24 independent)
1 to 5: Poor to Good