

**Green Diamond Resource Company's Annual
Report**

to

National Marine Fisheries Service

for

Permit 1060 – Mod 1

**Summer Juvenile Salmonid Population Sampling
Program**

2012

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Submitted by:

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INTRODUCTION

In 2012, Green Diamond Resource Company (GDRCo) conducted its eighteenth year of summer juvenile salmonid population monitoring, under a National Marine Fisheries Service (NMFS) Section 10 Permit (1060-Mod 1). This permit is required to cover take of Endangered Species Act (ESA) listed salmonids that may result from monitoring activities. The covered species include the Southern Oregon/North Coastal California (SONCC) coho salmon (*Oncorhynchus kisutch*) evolutionarily significant unit (ESU), the California Coastal (CC) Chinook Salmon (*Oncorhynchus tshawytscha*) ESU, and the Northern California (NC) steelhead trout (*Oncorhynchus mykiss*) distinct population segment (DPS).

Single stream summer juvenile salmonid population monitoring is a component of the Effectiveness Monitoring Program under the GDRCo Aquatic Habitat Conservation Plan. This monitoring program allows GDRCo to obtain annual estimates on juvenile salmonids (coho salmon, Chinook salmon, steelhead trout and coastal cutthroat trout). Where possible, the summer estimates for juvenile coho can be compared with coho smolt production estimates from an outmigrant trapping program to yield an apparent over-winter survival rate for juvenile coho populations. The apparent over-winter survival rates are provided in the outmigrant trapping report. The summer population estimates help to establish baseline and long-term trend data on the abundance of juvenile salmonid populations.

Fifteen creeks were sampled and are distributed among five hydrographic planning areas (HPAs) as defined in the GDRCo Aquatic Habitat Conservation Plan. The sample design and protocol employed was that described by Hankin and Mohr (2001), and is based primarily on diver observations, with repeat passes and electrofishing used to calibrate the probability of detection. Counts of juvenile coho salmon, 1+ steelhead trout and coastal cutthroat trout were conducted in 2012 and population sizes were estimated.

This report presents the results from the 2012 summer juvenile population monitoring effort and makes select comparisons to past monitoring dating as far back as 1995 in some of these streams. In addition to population estimates, this report summarizes the number of ESA listed salmonids observed, handled, and incidentally taken during each part of project implementation.

METHODS

Study Sites

Fifteen monitoring sites were sampled in 2012. The streams surveyed were Ah Pah Creek, Cañon Creek, East Fork Hunter Creek, Heightman Creek, Hunter Creek, Little Surpur Creek, Lower South Fork Little River, Railroad Creek (Little River basin), South Fork Ah Pah Creek, South Fork Rowdy Creek / Savoy Creek, South Fork Winchuck River, Sullivan Gulch, Tarup Creek, Upper South Fork Little River and Wilson Creek. One of these sites, Tarup Creek, was new and sampled for the first time in 2012. Collectively, these sites represent five HPAs along north coastal California; Smith River, Coastal Klamath, Little River, North Fork Mad River, and Mad River (Appendix 1). These monitoring sites are restricted to anadromous coho salmon habitats located in sub-basins within lands predominantly owned by GDRCo. Each site consists of a linear segment(s) of stream and the extent of each reach was determined by evidence of coho anadromy and can vary from year to year.

Sampling Design

The sampling methodologies used by GDRCo for estimating summer juvenile salmonid populations have evolved over the past seventeen years with advances in fisheries population monitoring techniques. The sampling design described by Hankin and Reeves (1988) was used from 1995 to 2000. From 2001 to the present the two phase sampling design described by Hankin and Mohr (2001) was employed. This new sampling design increased the use of diver counts and reduced the amount of electrofishing and the associated deleterious effects on listed species and other stream biota. Using this technique, sampling varies based on stream habitat type. The sampling rate for deep pools is 50% for Phase I and 100% for Phase II dives. For shallow units the sampling rate is 50% for both Phase I and Phase II dives. Riffles are sampled systematically at 8.5% (1 in 12) with a random start. The electrofishing protocol is a minimum of 3 passes and depletion. Detailed GDRCo field protocols are maintained and available upon request. Details on the electrofishing equipment used are provided in Appendix 2.

In addition to adopting the improved sampling design, there have been other modifications to the protocol over the years. Prior to 1999, the difference between a deep pool and a shallow pool was a judgment call based on whether or not the surveyors thought it possible to effectively electrofish a particular unit. Beginning in the 1999 field season, the decision between deep or shallow pools was based solely on depth. A pool less than 1.1 meters was considered a shallow pool regardless of cover. This provided better consistency between personnel, improving the validity of comparisons of population estimates between different streams, surveyors, and organizations or agencies. Additionally, starting in 2001, run habitat was integrated into the shallow pool habitat stratum because small sample sizes for runs prohibited treating them separately. This change was adopted to improve the estimates because of the increased number of calibrated shallow pools.

Population Estimates

Estimates and confidence intervals were generated using the updated estimators of abundance and variance described by Mohr and Hankin (2005). The estimators were written in R code by Mike Mohr and Western EcoSystems Technology Inc (WEST-Inc). The primary improvements in these estimators are the addition of bias adjustments associated with diver count and electrofishing probabilities of detection, to reduce the bias of the bounded counts and jackknife estimators, respectively. This improved estimator was applied to the earlier (pre-2005) data as well. Where the application of these estimators was not possible, due to either protocol variance or small sample size, hard counts or bounded counts, were used. These were usually limited to a single habitat stratum (e.g., runs) and could not be extrapolated to the entire stream for that year.

During the diving component of the surveys, counts were recorded for coho, Chinook, cutthroat ($\geq 1+$), and steelhead ($\geq 1+$). No attempts were made to count 0+ trout, though they are enumerated during electrofishing. Estimates were generated for coho, steelhead and cutthroat only. Each stream was surveyed to the upper extent of coho anadromy. Surveyed extents are depicted in Appendix 1.

For estimates presented in this report, the shallow unit (SU) habitat stratum includes runs (1995-2000), riffles, and shallow pools (which included runs after 2000). When combined, the estimates of abundance and variances of each stratum were summed for the combined category estimate (Zar, 1999). The product of the variance for SU was then used to calculate the confidence interval (CI). In cases where the sample size for a shallow habitat type was one, an estimate could not be calculated, and thus, the hard count or bounded count for this habitat type was summed with the estimates for the other SU habitat types. Confidence intervals were then calculated as described above using the sum of available variances.

While all data have been audited for accuracy and consistency as of this report, GDRCo maintains a data quality routine that occasionally detects previously unidentified errors. Any historical estimates presented in this report that may differ from previously reported figures, should be considered the most accurate.

RESULTS

Survey Effort and Habitat Composition

Overall, the desired sampling rate for the different habitat stratum was achieved. At the stream-level, a few exceptions to the desired sampling rate occurred. Stream habitat composition and sampling rates were summarized for each stream surveyed in 2012 (Table 1). The habitat stratum "other" was not surveyed for summer juvenile salmonids. Other habitats included: dry stream sections, isolated side-channel pools obviously not holding fish, or units where LWD or SWD was abundant enough to prevent effective observation or safe electrofishing. No take of ESA listed SONCC coho salmon, CC Chinook salmon, or NC steelhead occurred during the habitat typing process.

Dive Counts

A total of 6,926 juvenile salmonids were observed in 2012. Four species were observed but coho and steelhead were the two dominant species observed, accounting for 72% and 17%, respectively, of the total salmonid observations. A summary of the fish counts from the dive portion of the stream sampling is provided for all sites monitored (Table 2). A total of 4,995 0+ coho, 1,157 1+ steelhead, 452 1+ cutthroat and 322 0+ Chinook were observed. No take of ESA listed SONCC coho salmon, CC Chinook salmon, or NC steelhead occurred during the dive component of annual monitoring.

Electrofishing

The fifteen monitoring sites were electroshocked from July 11th through September 27th 2012. A summary of sampling dates, habitat units sampled, and maximum water temperature for the electrofishing portion of the survey are provided below for each site (Table 3). Water temperature and conductivity were below the established thresholds at all sites.

A total of 5,350 fish were captured during the electrofishing portions of the surveys. The majority (52%) of captures were trout, followed by coho (41%), steelhead (4%), and cutthroat (3%). No Chinook were captured while electrofishing. No mortalities associated with electrofishing were observed for steelhead or cutthroat in 2012. Three mortalities were observed for 0+ trout with an overall proportion among all sites sampled of 0.1%. Two mortalities were observed for 0+ coho salmon with an overall proportion

among all sites of 0.1%. The total number of individuals captured and associated mortality by stream and species are provided below (Table 4).

Table 1. Summary of stream habitat composition and sampling effort at sites monitored by GDRCo in 2012.

Stream	Criteria	Habitat Type				Total
		Deep Pool	Shallow Pool	Riffle	Other	
Ah Pah Creek	# Units	12	96	105	28	241
	Surveyed Units	6	48	8	0	62
	Percent Surveyed	50.0%	50.0%	7.6%	0.0%	25.7%
Cañon Creek	# Units	44	88	93	9	234
	Surveyed Units	22	43	8	0	73
	Percent Surveyed	50.0%	48.9%	8.6%	0.0%	31.2%
EF Hunter Creek	# Units	2	53	62	13	130
	Surveyed Units	2	27	6	0	35
	Percent Surveyed	100.0%	50.9%	9.7%	0.0%	26.9%
Heightman Creek	# Units	1	63	59	21	144
	Surveyed Units	1	31	5	0	37
	Percent Surveyed	100%	49%	8%	0%	26%
Hunter Creek	# Units	28	94	113	40	275
	Surveyed Units	14	47	10	0	71
	Percent Surveyed	50.0%	50.0%	8.8%	0.0%	25.8%
Little Surpur Creek	# Units	2	48	44	8	102
	Surveyed Units	2	24	4	0	30
	Percent Surveyed	100.0%	50.0%	9.1%	0.0%	29.4%
Lower South Fork Little River	# Units	27	145	107	60	339
	Surveyed Units	13	73	9	0	95
	Percent Surveyed	48.1%	50.3%	8.4%	0.0%	28.0%
Railroad Creek	# Units	1	61	30	11	103
	Surveyed Units	1	30	3	0	34
	Percent Surveyed	100.0%	49.2%	10.0%	0.0%	33.0%
SF Ah Pah Creek	# Units	1	71	64	17	153
	Surveyed Units	1	36	5	0	42
	Percent Surveyed	100.0%	50.7%	7.8%	0.0%	27.5%
SF Rowdy and Savoy Creeks	# Units	6	117	122	19	264
	Surveyed Units	2	58	10	0	70
	Percent Surveyed	33.3%	49.6%	8.2%	0.0%	26.5%
SF Winchuck River	# Units	37	163	181	39	420
	Surveyed Units	19	82	15	0	116
	Percent Surveyed	51.4%	50.3%	8.3%	0.0%	27.6%
Sullivan Gulch	# Units	1	40	35	5	81
	Surveyed Units	1	20	3	0	24
	Percent Surveyed	100.0%	50.0%	8.6%	0.0%	29.6%
Tarup Creek	# Units	2	38	35	12	87
	Surveyed Units	1	17	3	0	21
	Percent Surveyed	50.0%	44.7%	8.6%	0.0%	24.1%
Upper South Fork Little River	# Units	19	86	99	31	235
	Surveyed Units	9	43	9	0	61
	Percent Surveyed	47.4%	50.0%	9.1%	0.0%	26.0%
Wilson Creek	# Units	43	88	108	28	267
	Surveyed Units	22	44	9	0	75
	Percent Surveyed	51.2%	50.0%	8.3%	0.0%	28.1%
Total	# Units	226	1,251	1,257	341	3,075
	Surveyed Units	116	623	107	0	846
	Percent Surveyed	51.3%	49.8%	8.5%	0.0%	27.5%

Table 2. Summary of salmonids observed during dive counts at each monitoring site sampled by GDRCo in 2012.

Creek Name	0+ Chinook	0+ Coho	1+ Cutthroat	1+ Steelhead
Ah Pah Creek	0	578	78	78
Cañon Creek	244	179	12	182
EF Hunter Creek	0	0	16	31
Heightman Creek	0	262	14	5
Hunter Creek	0	131	18	202
Little Surpur Creek	47	23	15	11
Lower South Fork Little River	0	2,858	19	54
Railroad Creek	0	0	8	16
SF Ah Pah Creek	0	29	40	12
SF Rowdy and Savoy	1	0	28	55
SF Winchuck River	22	1	122	152
Sullivan Gulch	7	2	0	3
Tarup Creek	1	134	36	7
Upper South Fork Little River	0	730	22	33
Wilson Creek	0	68	24	316
Total	322	4,995	452	1,157

Table 3. Summary of electroshocking sampling effort, maximum water temperature (MWT), maximum water conductivity (MC) and maximum voltage (MV) for each monitoring site sampled by GDRCo in 2012.

Creek Name	Start Date	End Date	Sample Days	# Units Sampled *		MWT (°C)	MC (µS/cm)	MV (v)
				Riffle	Shallow Pool			
Ah Pah Creek	6-Sep	10-Sep	2	8	4	14	83	200
Cañon Creek	15-Aug	15-Aug	1	8	0	16	215	200
EF Hunter Creek	13-Sep	13-Sep	1	6	0	13	59	200
Heightman Creek	30-Aug	30-Aug	1	5	3	13	68	200
Hunter Creek	24-Sep	27-Sep	2	10	0	14	67	200
Little Surpur Creek	11-Jul	11-Jul	1	4	0	14	67	200
Lower South Fork Little River	23-Aug	29-Aug	5	9	22	15	87	200
Railroad Creek	30-Aug	30-Aug	1	3	0	13	78	200
SF Ah Pah Creek	12-Sep	12-Sep	1	5	0	14	93	200
SF Rowdy and Savoy	20-Sep	21-Sep	2	10	0	13	104	200
SF Winchuck River	18-Sep	19-Sep	2	15	0	14	72	200
Sullivan Gulch	16-Aug	16-Aug	1	3	0	14	205	200
Tarup Creek	13-Sep	13-Sep	1	3	1	-	-	300
Upper South Fork Little River	17-Aug	22-Aug	4	9	4	13	59	200
Wilson Creek	4-Sep	5-Sep	2	9	0	14	65	200

* Units sampled by electroshocking

- measurement not collected, conductivity meter malfunction

Table 4. Summary of salmonid captures and mortalities associated with electroshocking conducted at monitoring sites sampled by GDRCo in 2012.

Creek Name	Criteria	0+ Coho	1+ Steelhead	1+ Cutthroat	0+ Trout	0+ Chinook
Ah Pah Creek	# Captured	114	35	22	210	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Cañon Creek	# Captured	0	18	0	515	0
	# of Mortalities	0	0	0	1	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.2%	0.0%
EF Hunter Creek	# Captured	0	5	2	70	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Heightman Creek	# Captured	93	0	14	29	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Hunter Creek	# Captured	0	52	4	117	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Little Surpur Creek	# Captured	0	3	4	155	0
	# of Mortalities	0	0	0	1	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.6%	0.0%
Lower South Fork Little River	# Captured	1,716	48	33	712	0
	# of Mortalities	2	0	0	1	0
	Percent Mortalities	0.1%	0.0%	0.0%	0.1%	0.0%
Railroad Creek	# Captured	0	2	2	18	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
SF Ah Pah Creek	# Captured	0	0	14	79	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
SF Rowdy and Savoy Creeks	# Captured	0	4	3	235	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
SF Winchuck River	# Captured	0	38	14	56	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Sullivan Gulch	# Captured	0	0	0	35	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Tarup Creek	# Captured	55	0	24	108	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Upper South Fork Little River	# Captured	204	15	25	338	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Wilson Creek	# Captured	0	13	0	97	0
	# of Mortalities	0	0	0	0	0
	Percent Mortalities	0.0%	0.0%	0.0%	0.0%	0.0%
Total	# Captured	2,182	233	161	2,774	0
	# of Mortalities	2	0	0	3	0
	Percent Mortalities	0.1%	0.0%	0.0%	0.1%	0.0%

Among the five mortalities associated with electrofishing in 2012, 80% were ESA listed fish. A summary of the maximum possible ESA listed salmonid mortalities resulting from the 2012 electrofishing effort are summarized in Table 5. Two were 0+ coho salmon from within the SONCC coho salmon ESU and two were 0+ trout in the NC steelhead trout DPS. The other 0+ trout mortality was from the Klamath Mountain Province Steelhead DPS which is not ESA listed. Due to the similarities between 0+ steelhead and 0+ cutthroat trout, proper identification is problematic (Baumsteiger et al., 2005 and Voight et al., 2008). Therefore, these species were categorized as “trout” and 0+ steelhead mortalities are likely inflated.

Table 5. Summary captures and possible mortalities for Endangered Species Act (ESA) listed salmonids associated with electroshocking conducted at monitoring sites sampled by GDRCo in 2012.

Species	ESU / DPS	ESA Status	Age Class	Captured [^]	Mortalities	
					#	%
Coho	SONCC	Threatened	0+	2,182	2	0.1%
Chinook	CC	Threatened	0+	0	0	0.0%
Steelhead	NC	Threatened	0+	1,647	2*	0.1%
Steelhead	NC	Threatened	1+	83	0	0.0%

[^] Captured by electroshocking

* these fish were “trout” and because 0+ cutthroat & steelhead are generally indistinguishable, this value is likely inflated for 0+ steelhead.

Summer Juvenile Population Estimates

The 2012 population estimates and corresponding confidence intervals are presented in Table 6 below. Bar graphs were used to summarize the full history of estimates for coho (Figures 1-4) and steelhead (Figures 5-8) by stream for 13 creeks sampled in 2012. The results for two sites, Little Surpur and Tarup Creeks, were not graphed because these sites have insufficient data to assess population trends. The data used to create these figures are presented in Appendix 3. All of the estimates were generated using the most recent estimators of abundance and variance including the bias adjustments described in Mohr and Hankin (2005).

Two sites included in the 2009 report are not presented in this section as they were not sampled beyond 2009: Moon Creek and North Fork Ah Pah Creek. The available data for these sites are included in Appendix 2. Moon Creek was dropped from the list because it has had no coho in any of the three years surveyed (2007-2009). In North Fork Ah Pah Creek the fish have been concentrated in a single pool. This confounds the estimator methods, which assume somewhat equal distribution of fish throughout the reach, and leaves the results heavily dependent on whether that pool is selected for sampling.

Table 6. Summer juvenile population estimates and confidence intervals (CI) for three salmonid species at monitoring sites sampled by GDRCo in 2012.

Creek Name	Species	Deep Pool		Shallow Pool		Riffle		Total
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate
Ah Pah Creek	Coho	447	393	970	272	13	25	1,430
	Cutthroat	64	40	148	43	144	114	356
	Steelhead	80	14	218	87	66	37	364
Cañon Creek	Coho	538	214	45	19	0	0	582
	Cutthroat	21	17	22	11	0	0	43
	Steelhead	340	67	212	85	217	204	769
EF Hunter Creek	Coho	0	0	0	0	0	0	0
	Cutthroat	0	0	56	26	21	25	76
	Steelhead	11	4	62	29	52	36	125
Heightman Creek	Coho	11 [^]	-	573	193	118	101	702
	Cutthroat	1 [^]	-	69	57	12	23	82
	Steelhead	3 [^]	-	11	10	0	0	14
Hunter Creek	Coho	243	156	67	68	0	0	310
	Cutthroat	12	7	30	18	45	48	87
	Steelhead	306	172	216	74	623	597	1,144
Little Surpur Creek	Coho	13	4	34	26	0	0	47
	Cutthroat	0	0	43	19	44	84	87
	Steelhead	0	0	27	12	33	63	60
Lower SF Little River	Coho	3,656	1,108	5,526	1,360	1,734	1,581	10,916
	Cutthroat	37	18	166	96	12	23	215
	Steelhead	101	36	173	77	36	34	310
Railroad Creek	Coho	0 [^]	-	0	0	0	0	0
	Cutthroat	1 [^]	-	28	27	20	38	48
	Steelhead	3 [^]	-	51	16	40	77	94
SF Ah Pah Creek	Coho	0 [^]	-	61	71	0	0	61
	Cutthroat	1 [^]	-	111	35	179	231	291
	Steelhead	0 [^]	-	24	11	0	0	24
SF Rowdy - Savoy Creek	Coho	0	0	0	0	0	0	0
	Cutthroat	12	10	66	32	37	50	115
	Steelhead	9	15	49	71	129	53	186
SF Winchuck River	Coho	2	3	0	0	0	0	2
	Cutthroat	189	31	152	40	162	151	503
	Steelhead	199	61	207	78	469	293	875
Sullivan Gulch	Coho	2 [^]	-	0	0	0	0	2
	Cutthroat	0 [^]	-	0	0	0	0	0
	Steelhead	0 [^]	-	6	8	0	0	6
Tarup Creek	Coho	0 [^]	-	362	265	0	0	362
	Cutthroat	8 [^]	-	158	116	35	67	200
	Steelhead	0 [^]	-	15	5	0	0	15
Upper SF Little River	Coho	748	362	1,389	346	536	497	2,673
	Cutthroat	47	23	67	51	154	55	268
	Steelhead	44	19	70	25	77	82	191
Wilson Creek	Coho	72	32	108	24	0	0	180
	Cutthroat	50	22	26	11	0	0	76
	Steelhead	678	222	202	51	156	299	1,036
Total	Coho	5,730	-	9,134	-	2,401	-	17,266
	Cutthroat	443	-	1,141	-	865	-	2,448
	Steelhead	1,774	-	1,542	-	1,897	-	5,213

[^] bounded count estimate for one sample unit, not extrapolated to other available units.

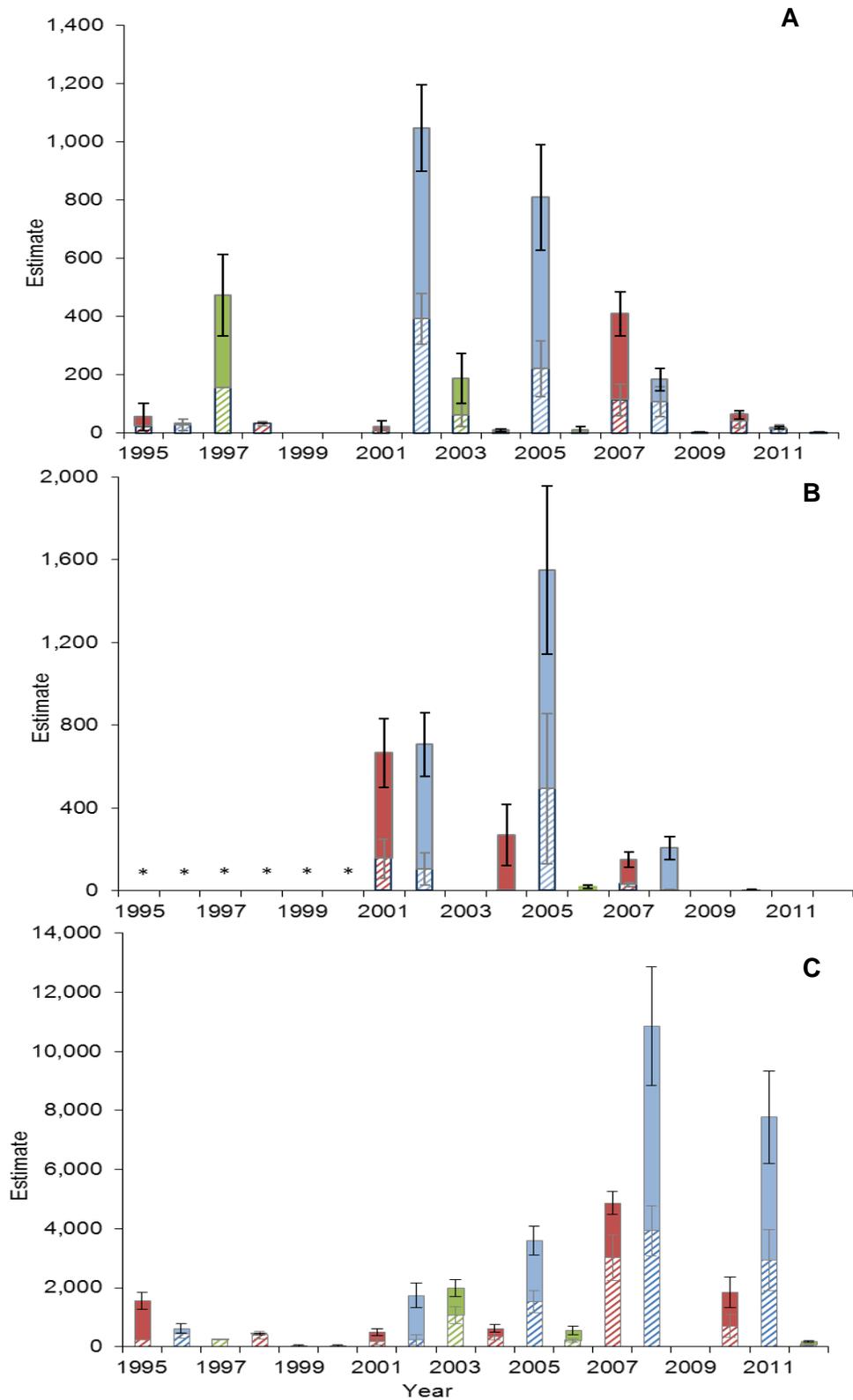


Figure 1. Histograms of Smith River HPA summer juvenile coho population estimates with confidence intervals for deep pools (diagonal striped bars) and shallow units (solid bars) at SF Winchuck River (A), SF Rowdy/Savoy Creeks (B), and Wilson Creek (C) sampled by GDRCo. Colors indicate three distinct cohorts of coho and an asterisk (*) indicates year(s) when sampling was not conducted.

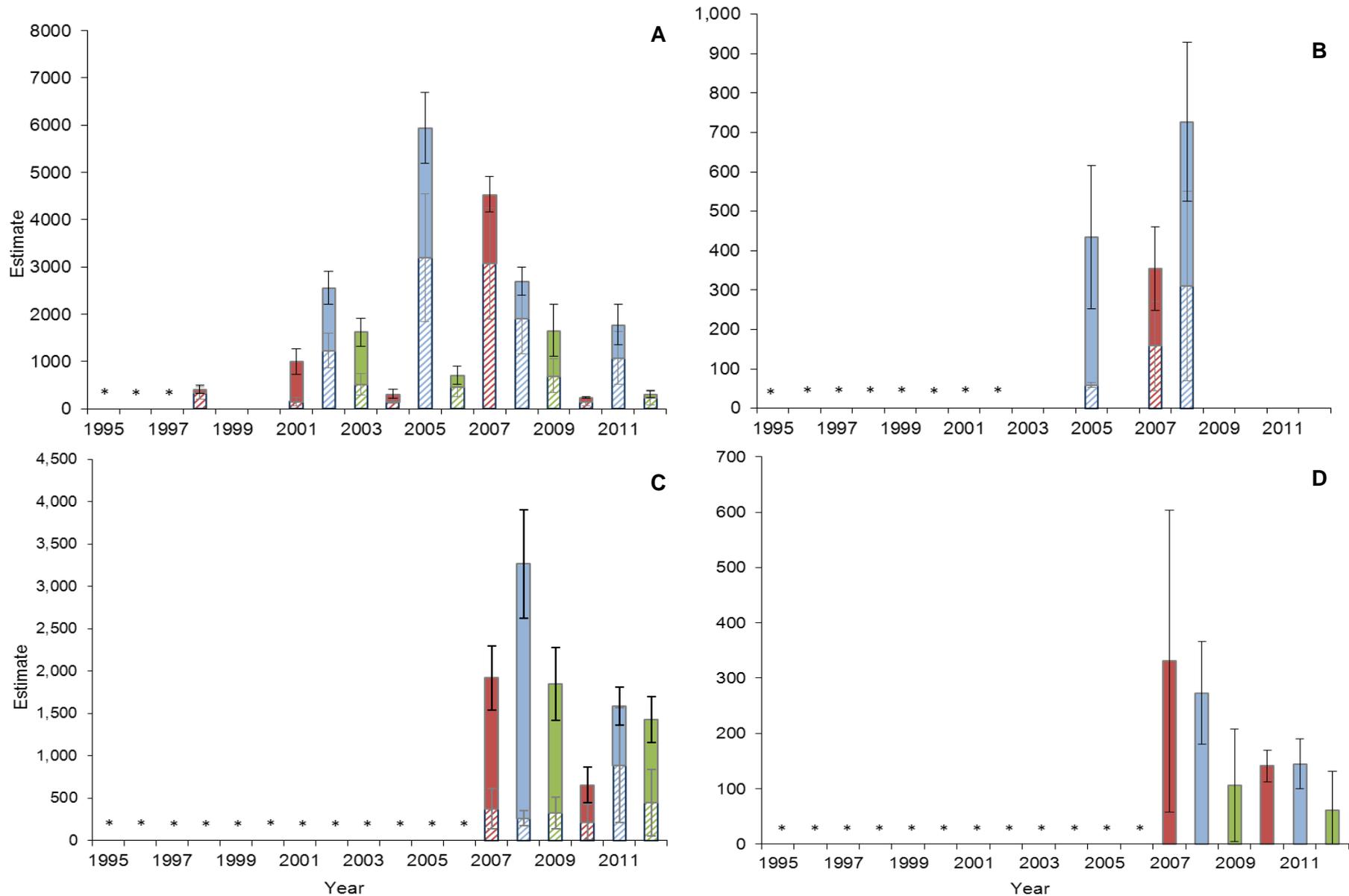


Figure 2. Histograms of Coastal Klamath HPA summer juvenile coho population estimates with confidence intervals for deep pools (diagonal striped bars) and shallow units (solid bars) at Hunter Creek (A), EF Hunter Creek (B), Ah Pah Creek (C), and SF Ah Pah Creek (D) sampled by GDRCo. Colors indicate three distinct cohorts of coho and an asterisk (*) indicates year(s) when sampling was not conducted.

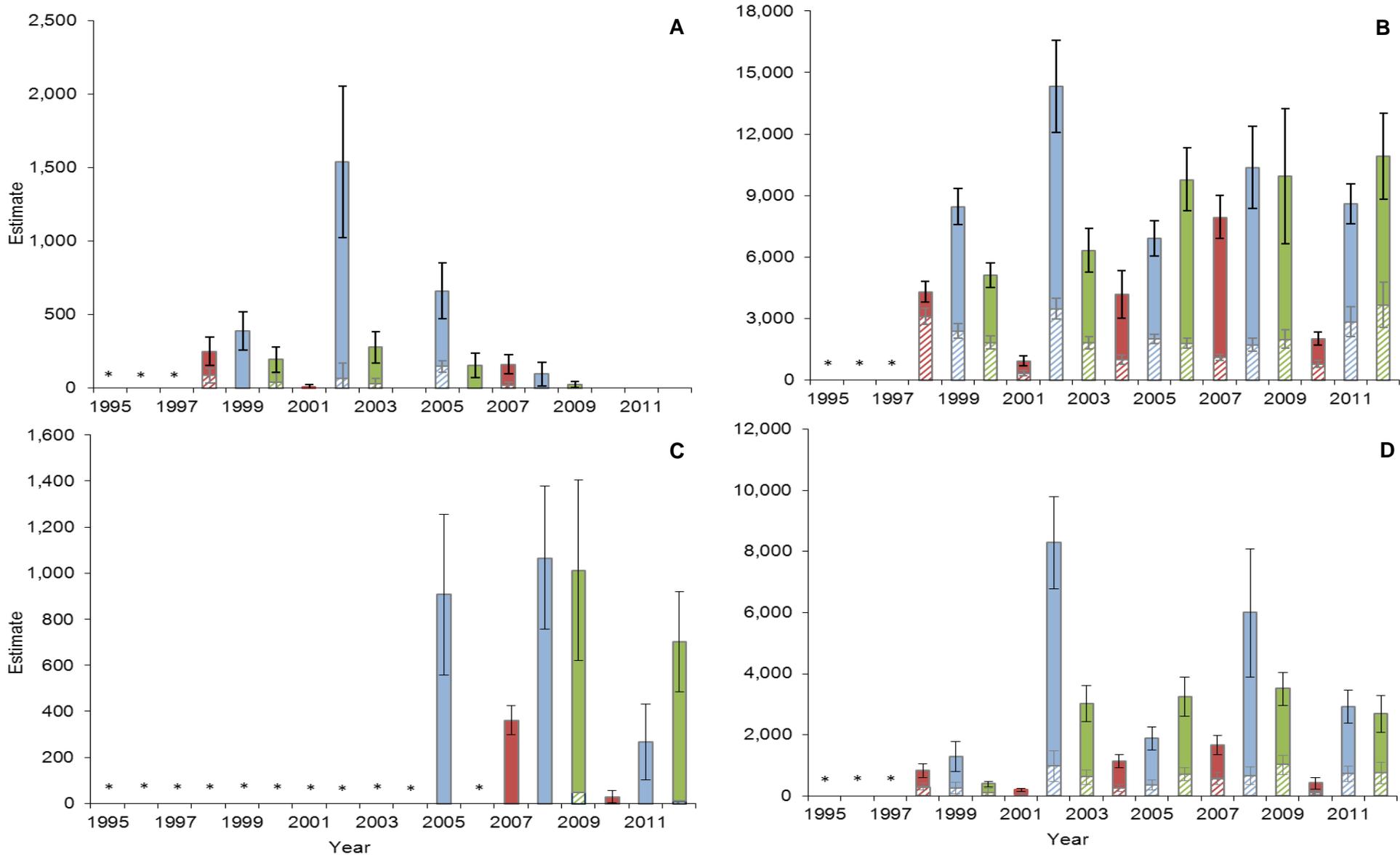


Figure 3. Histograms of Little River HPA summer juvenile coho population estimates with confidence intervals for deep pools (diagonal striped bars) and shallow units (solid bars) at Railroad Creek (A), Lower SF Little River (B), Heightman Creek (C), and Upper SF Little River (D) sampled by GDRCo. Colors indicate three distinct cohorts of coho and an asteric (*) indicates year(s) when sampling was not conducted.

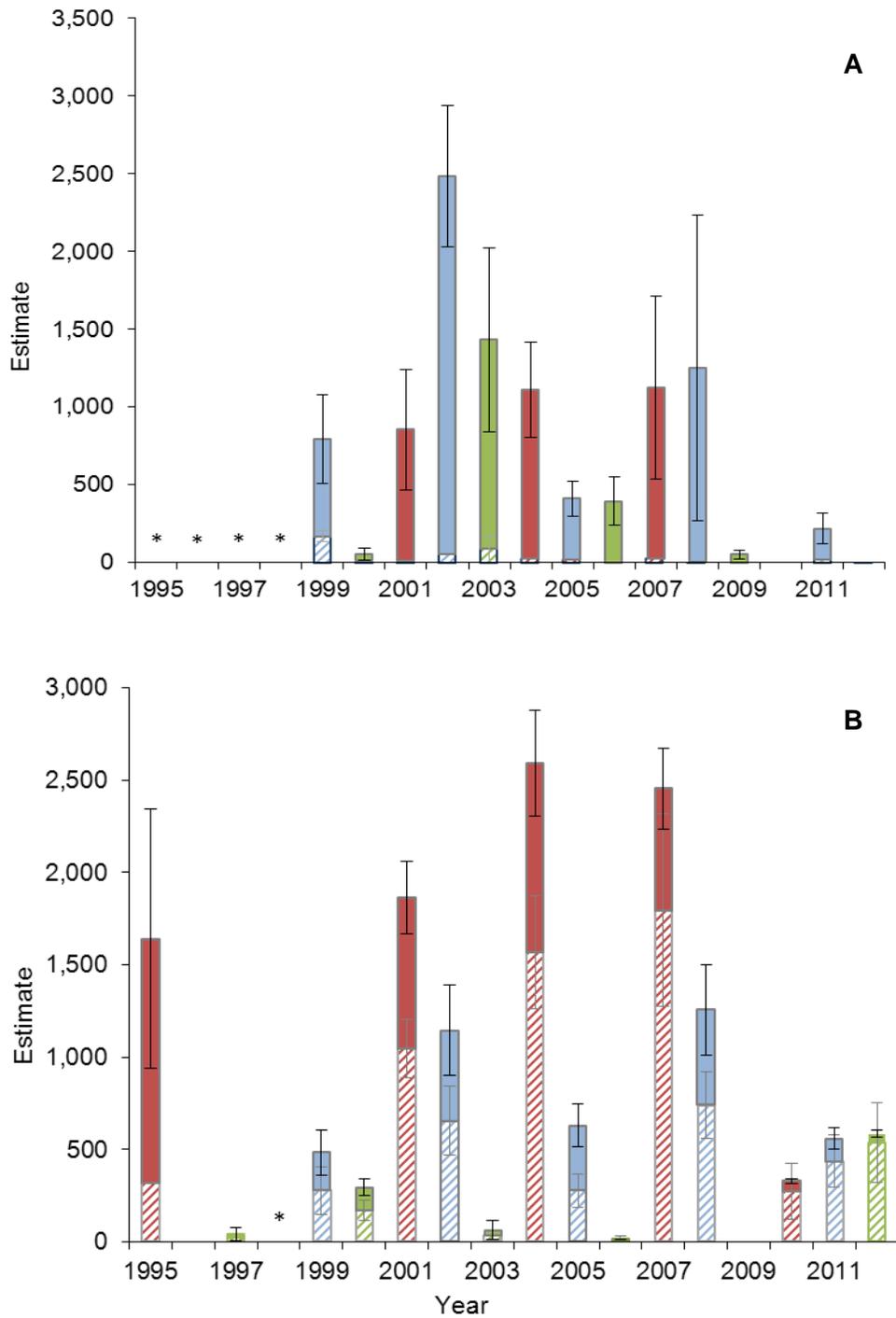


Figure 4. Histograms of Mad River and North Fork Mad River HPAs summer juvenile coho population estimates with confidence intervals for deep pools (diagonal striped bars) and shallow units (solid bars) at Sullivan Gulch (A) and Cañon Creek (B) sampled by GDRCo. Colors indicate three distinct cohorts of coho and an asterisk (*) indicates year(s) when sampling was not conducted.

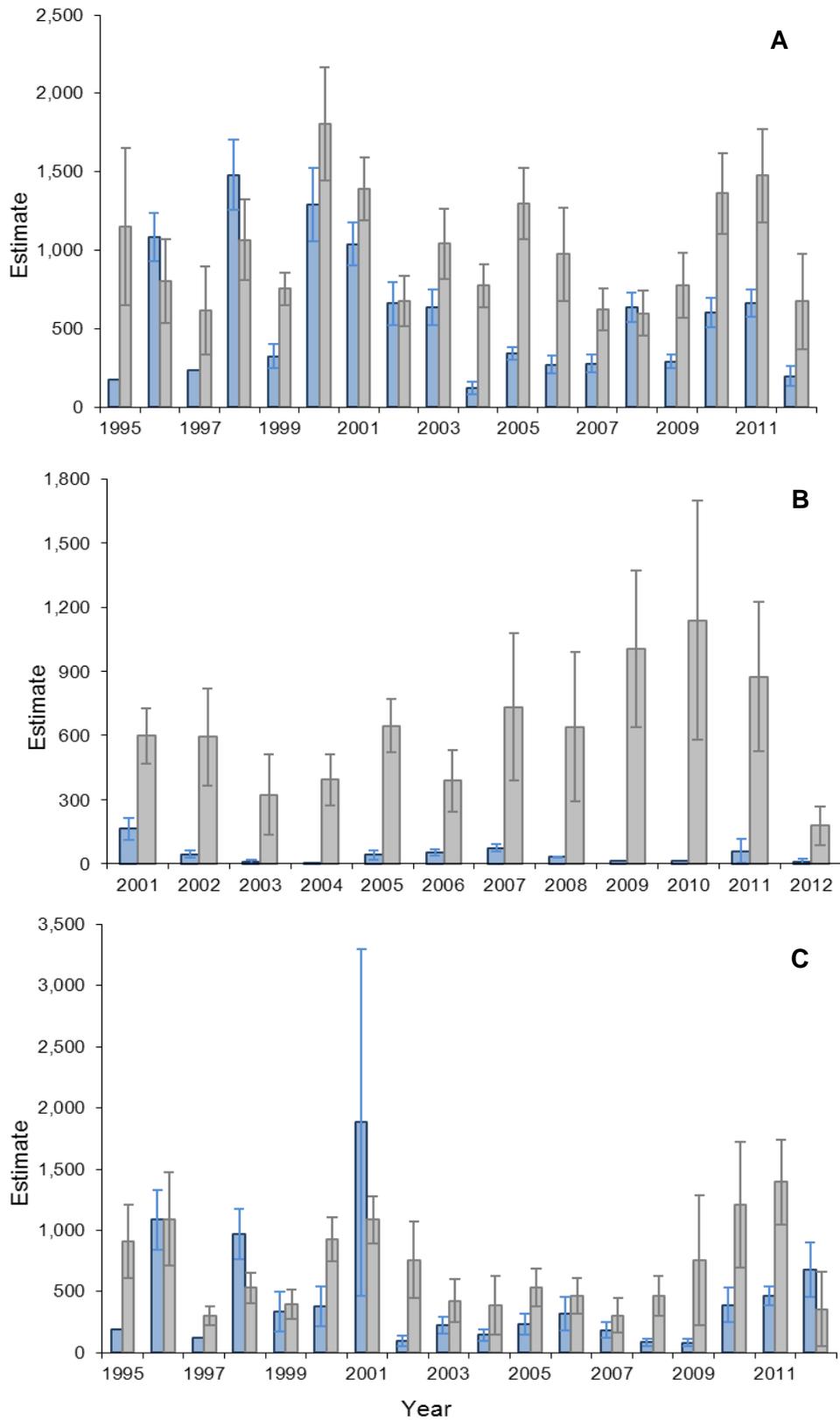


Figure 5. Histograms of Smith River HPA summer juvenile steelhead population estimates with confidence intervals for deep pools (blue) and shallow units (gray) at SF Winchuck River (A), SF Rowdy/Savoy Creeks (B), and Wilson Creek (C) sampled by GDRCo.

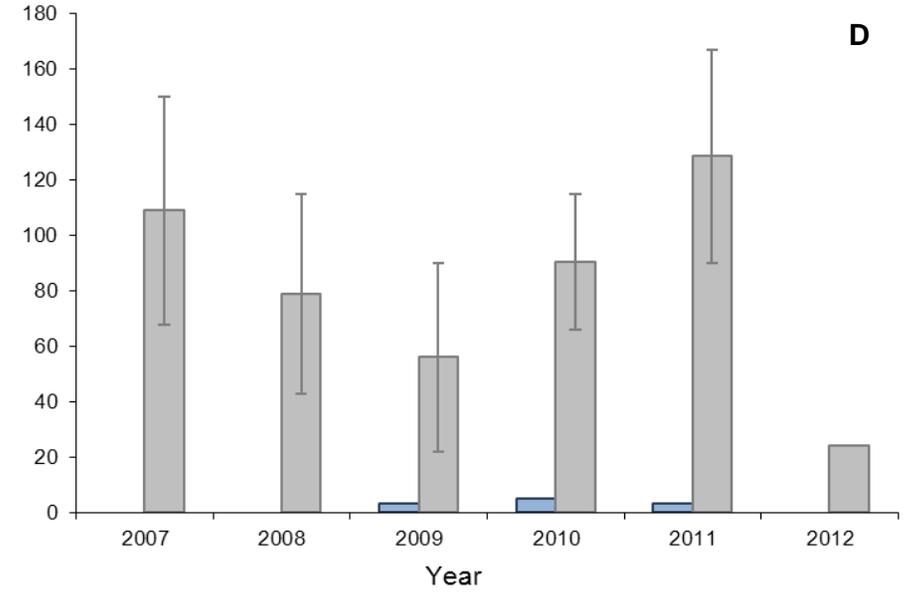
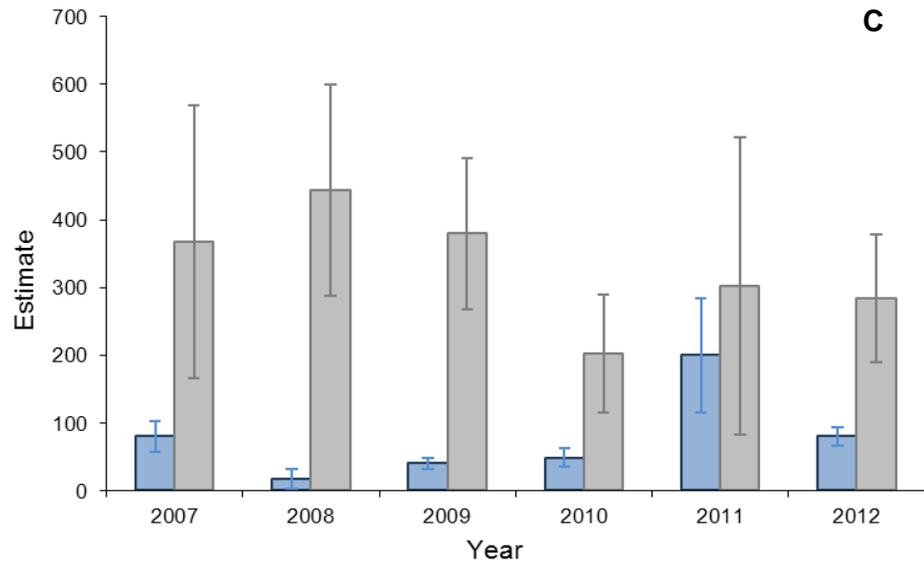
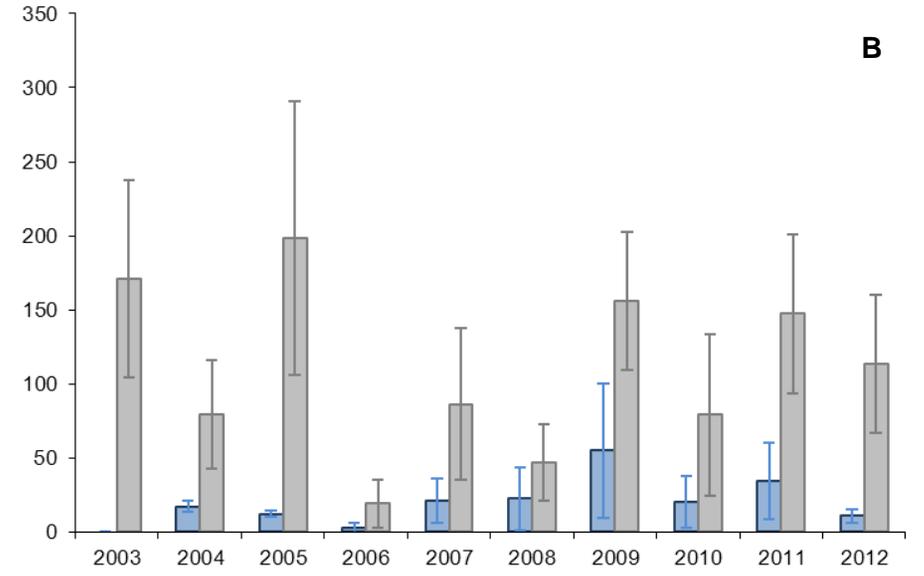
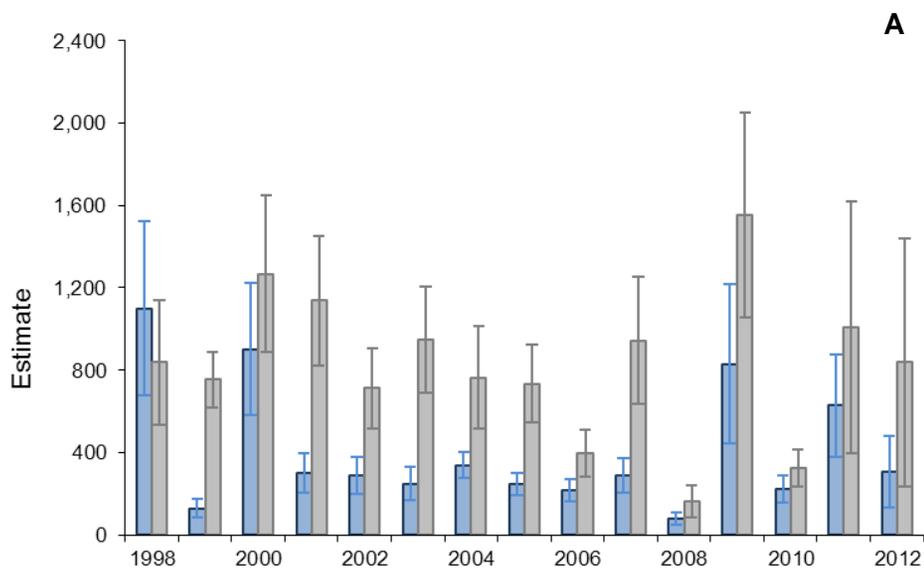


Figure 6. Histograms of Coastal Klamath HPA summer juvenile steelhead population estimates with confidence intervals for deep pool units (blue) shallow units (gray) at Hunter Creek (A), EF Hunter Creek (B), Ah Pah Creek (C), and SF Ah Pah Creek (D) sampled by GDRCo.

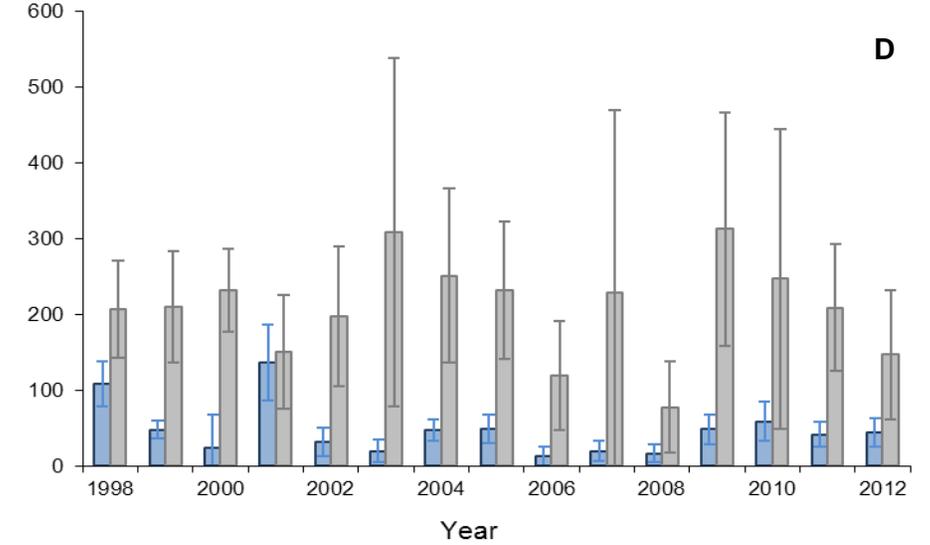
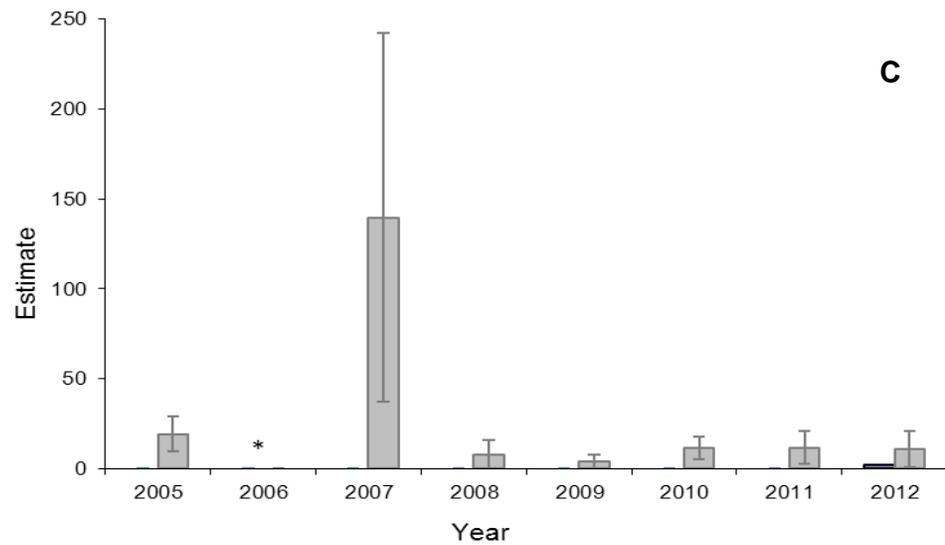
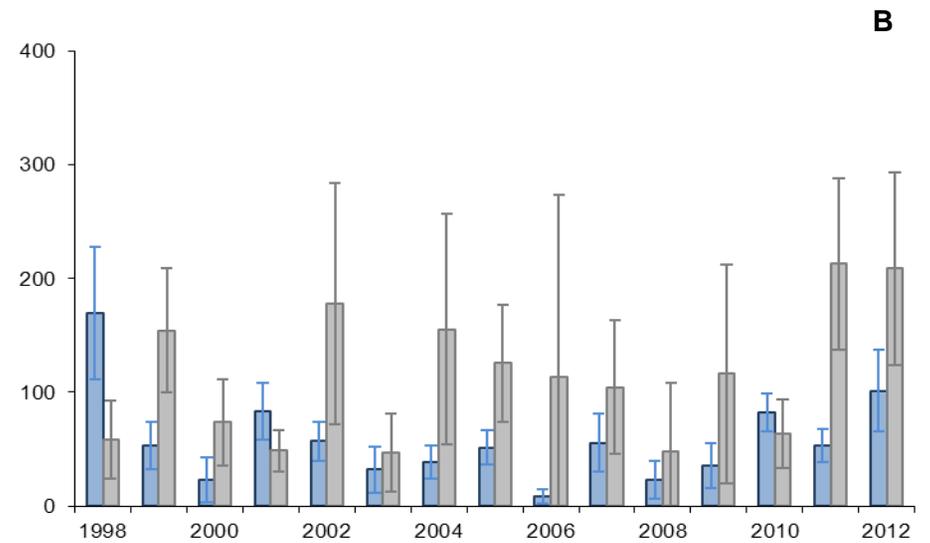
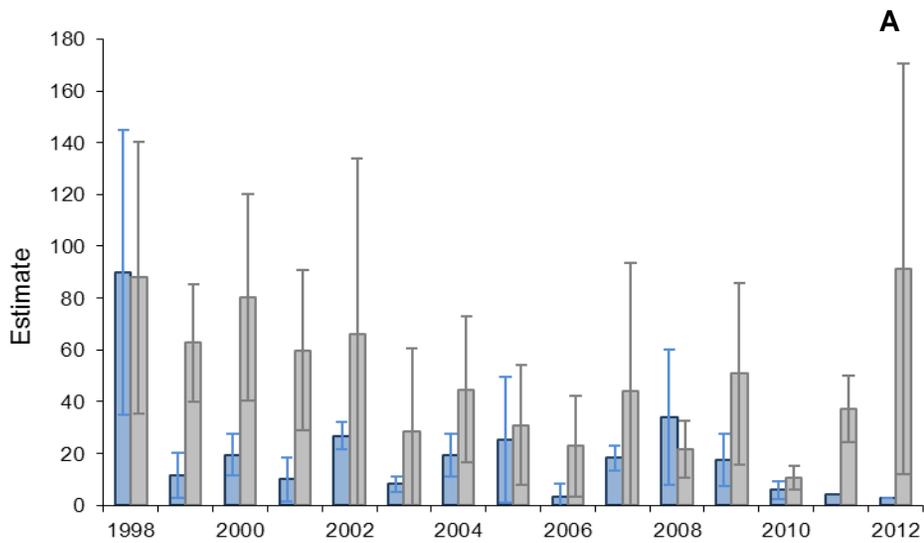


Figure 7. Histograms of Little River HPA summer juvenile steelhead population estimates with confidence intervals for deep pool units (blue) and shallow units (gray) at Railroad Creek (A), Lower SF Little River (B), Heightman Creek (C), and Upper SF Little River (D) sampled by GDRCo. An asterisk (*) indicates year(s) when sampling was not conducted.

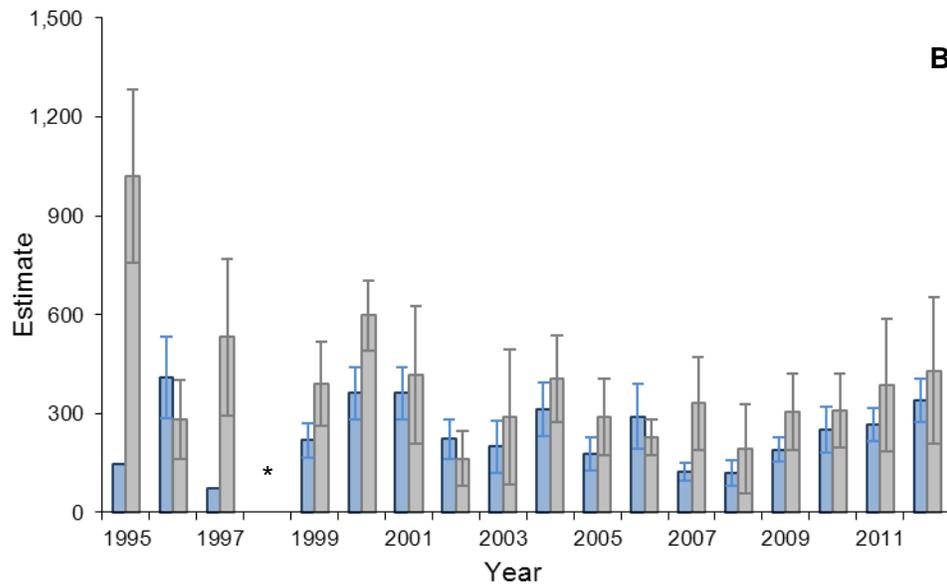
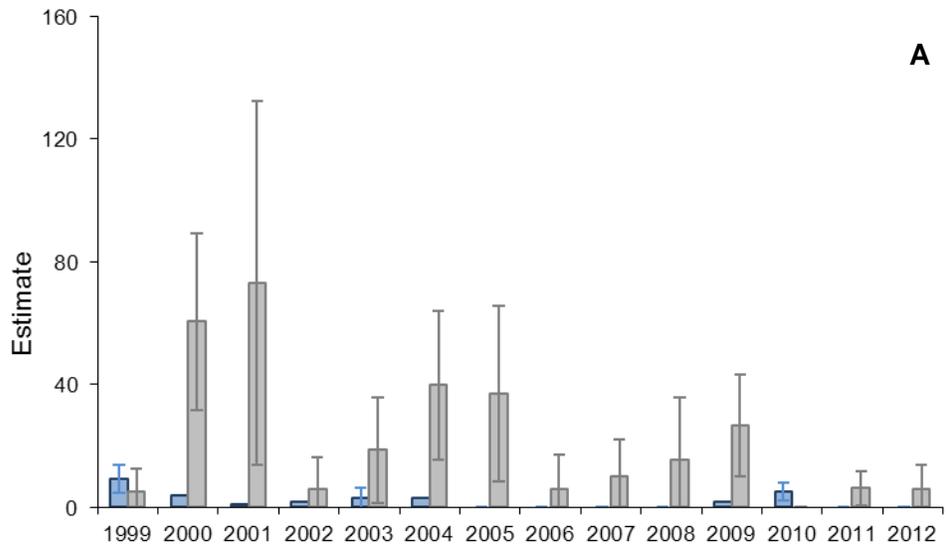


Figure 8. Histograms of Mad River and North Fork Mad River HPAs summer juvenile steelhead population estimates with confidence intervals for deep pool units (blue) and shallow units (gray) at Sullivan Gulch (A) and Cañon Creek (B) sampled by GDRCo. An asterisk (*) indicates year(s) when sampling was not conducted.

DISCUSSION

Population Estimates

There is no clear trend in the summer juvenile population estimates for coho among all sites monitored in 2012, however, some general patterns were noted within some of the HPAs. In the Smith River HPA, population estimates were consistently low among the three sites. These low estimates were not surprising given coho's three year life history cycle (Murphy and Meehan, 1991) and these juveniles are likely the progeny of the weakest adult cohort in this HPA. Considering the consistently low numbers observed for this cohort at these sites, it is questionable if this cohort is capable of producing large numbers of juveniles in the near term. Population estimates calculated in the Coastal Klamath HPA continued to decline in 2012 but high variability in the magnitude of change was observed among sites. A pattern appears to be emerging at Hunter Creek and may suggest a sinusoidal dynamic at this site with a wavelength of 12-15 years for each of the three cohorts. The general pattern in the Mad River and North Fork Mad River HPAs was similar to that observed in the Coastal Klamath. Here, population estimates in 2012 were generally lower compared to past years. This outcome was expected since the cohort measured this year has consistently been the weakest over the past seventeen years. Unlike the other HPA's, the 2012 juvenile coho populations in the Little River HPA were either steady or have increased since 2011. The cohort measured in 2012 seems to be of moderate strength in this watershed and experiences minimal fluctuations in juvenile populations among the different cohorts compared to the other HPAs.

Outmigrant smolt trapping will be conducted by GDRCo in spring of 2013, which will provide additional information about the size and strength of smolts from this cohort for Little River. The cause(s) to the observed coho juvenile population dynamics is unclear and presumably a result of multiple factors, including climate, ocean conditions, predator-prey dynamics, spawning and rearing habitat availability, and anthropogenic disturbances, acting synergistically.

Steelhead summer juvenile estimates from 2012 suggest that populations have generally remained stable or in some cases slightly decreased compared to the 2011 estimates. The decreases seemed most apparent in the Smith River HPA and at a few individual streams in the other HPA's. There is no clear explanation for the observed changes in 2012 and the dynamics in steelhead juveniles documented over the term of this monitoring project are likely the result of similar factors as mentioned above for coho salmon.

Mortalities

The efforts by GDRCo fisheries staff to minimize take of ESA listed species were effective in 2012. The overall mortality rate (0.09%) for the 5,350 salmonids captured with electrofishing was well below the permitted threshold (2%). Although coho mortalities increased from 2011, trout mortalities decreased for an overall reduction in salmonid mortality.

The electrofishing portion of the survey poses the greatest risk to fish health. Green Diamond Resource Company followed strict protocol and ensured proper training of field crews to alleviate this potential risk. The crew monitored stream temperature and conductivity prior to and during electrofishing to confirm that temperatures were less

than or equal to 18°C and/or water conductivity less than or equal to 350 µS/cm. Efforts were made to keep holding time of fish to a minimum, and when necessary, in-stream mesh holding pens were used to ensure that fish were retained in cold, well-oxygenated water.

Coordinating Research Efforts

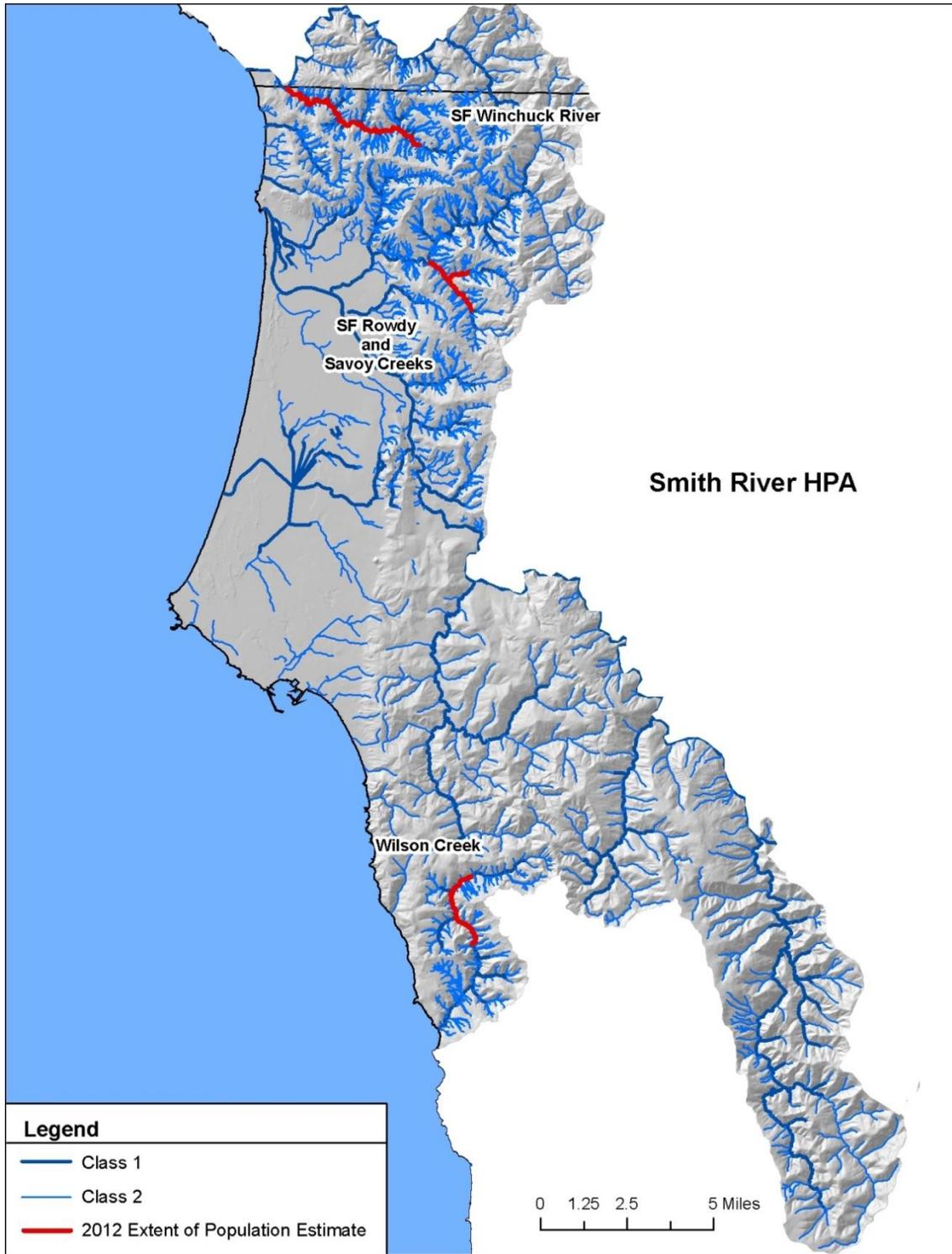
Green Diamond Resource Company maintains an open dialogue with various federal, state, and tribal agencies to avoid sampling redundancy whenever possible. In 2012, GDRCo communicated with the Yurok Tribal Fisheries Program (YTFP) to avoid exposing fish to multiple surveys and associated handling. The YTFP was planning to capture coho for PIT tagging in Ah Pah Creek and Hunter Creek. We did not select any pools to be electrofished within the areas that YTFP was interested in tagging coho. This was communicated to the tribe and they subsequently collected coho with the use of a seine net rather than an electrofisher after our surveys were completed. It is not likely that coho were handled twice during these surveys. Furthermore, since they have moved to the use of a seine net they can capture coho in deep pool habitats where our protocol utilizes dive observations rather than electrofishing. These procedures should significantly reduce the chance of coho being handled twice in the same year as it is thought that these fish are not actively moving between units during summer base flow in these small streams.

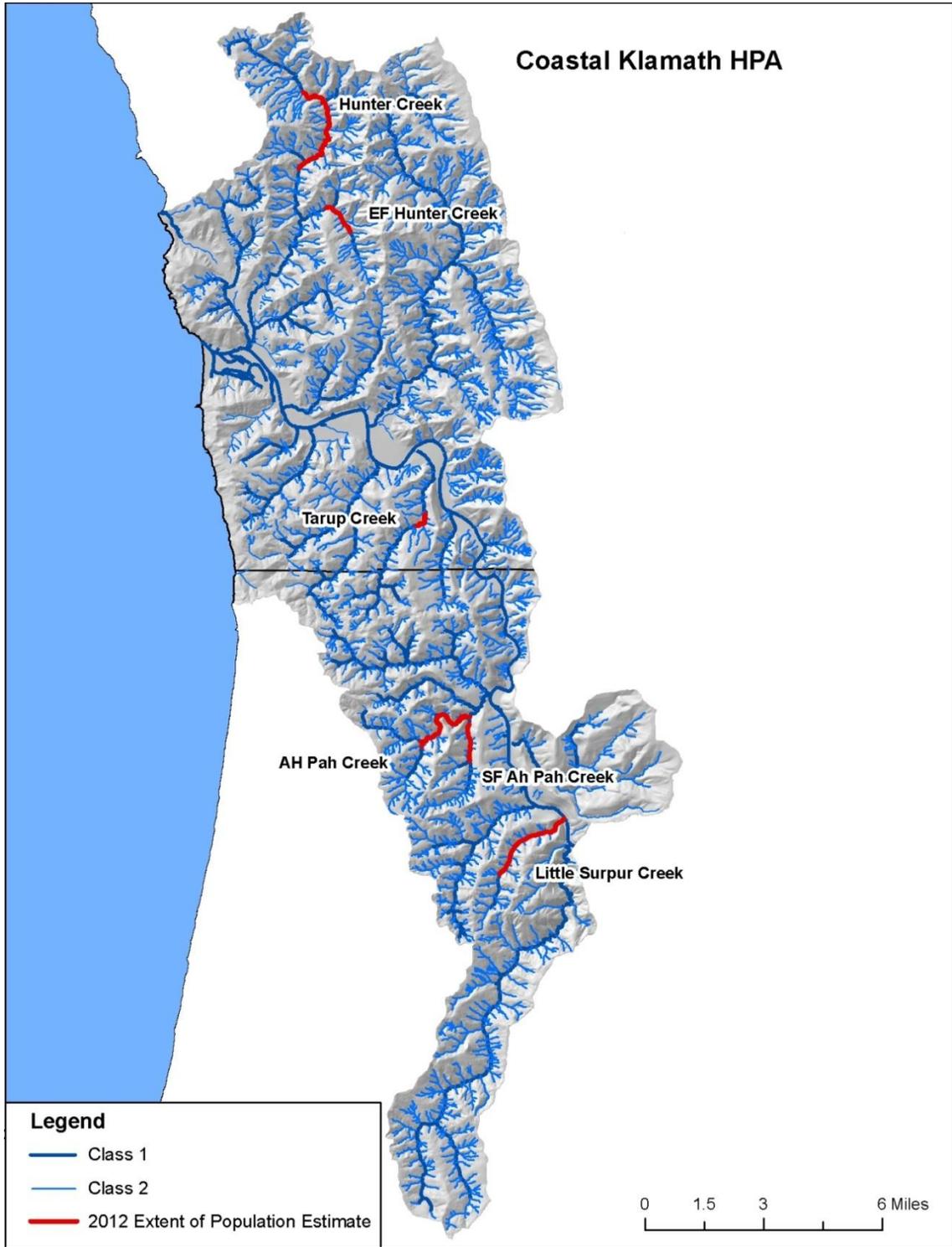
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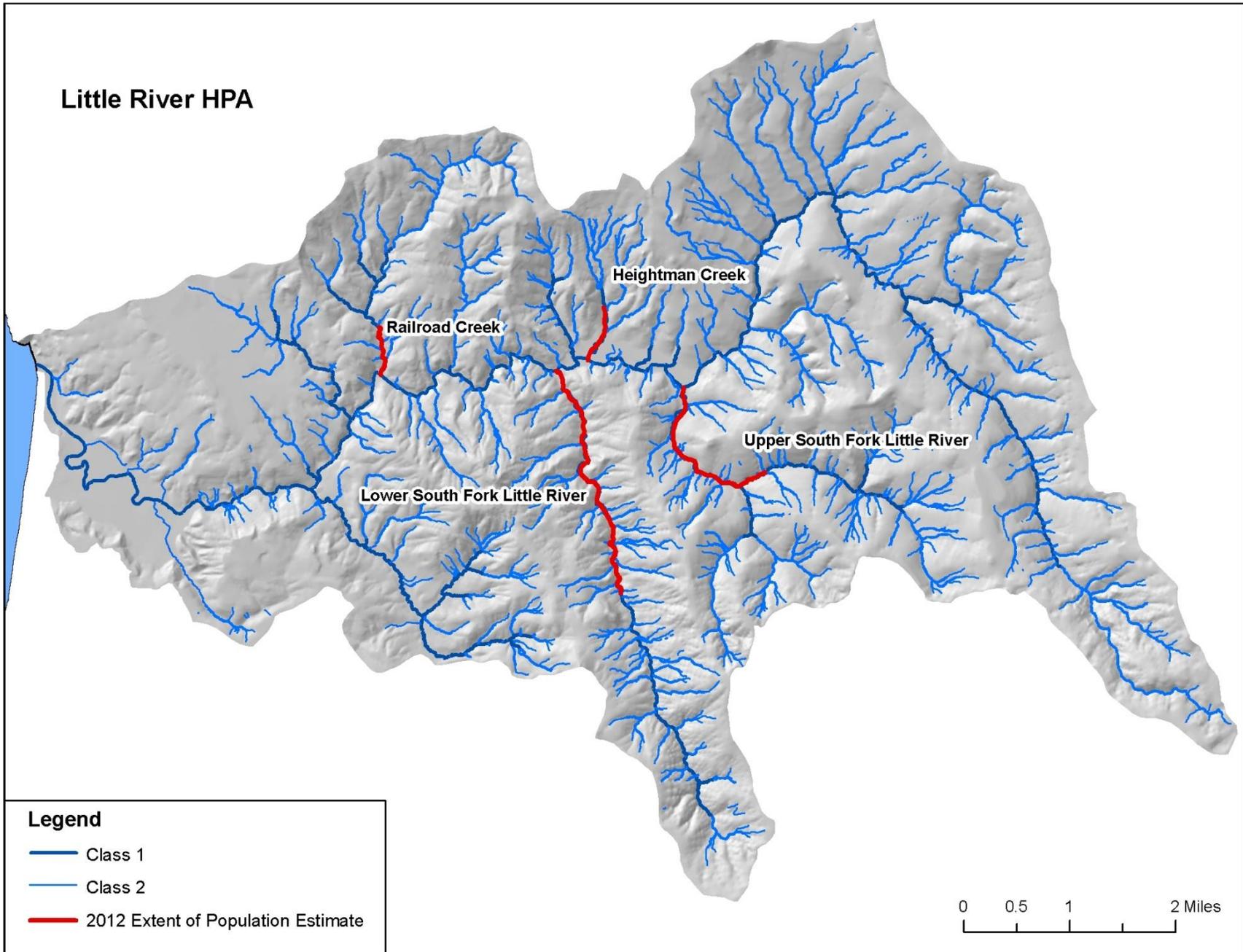
Appendices

Appendix 1. Maps showing the locations and extents of the sites monitored in 2012 to calculate summer juvenile salmonid population estimates. Sites were grouped by hydrographic planning area (HPA) and were ordered from north to south. **Note:** The extent of each site was determined by evidence of coho anadromy and can vary from year to year.





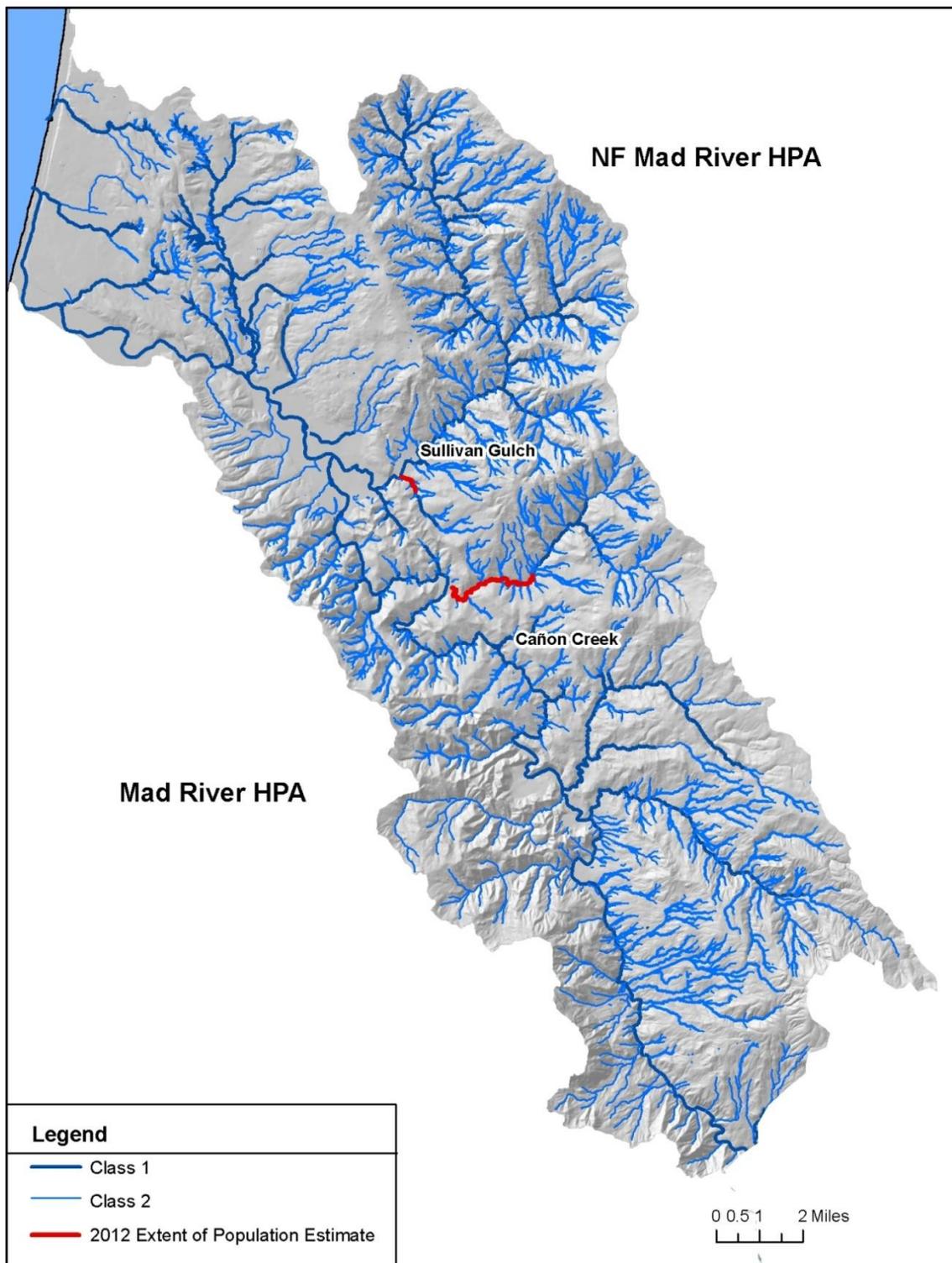
Little River HPA



Legend

- Class 1
- Class 2
- 2012 Extent of Population Estimate

0 0.5 1 2 Miles



Appendix 2. Electrofishing equipment used by GDRCo fisheries staff during the 2012 summer juvenile population monitoring surveys.

During 2012, the GDRCo fisheries staff used three different electrofishing units. All electrofishers used were Smith-Root models (Smith-Root Inc., Vancouver, WA): Model LR-20B (serial #: B24947), Model 12B (serial #: N/A), and Model 15-C POW (serial #: 58644). The electrical input and output of these units as operated by GDRCo were as follows:

The Model LR-20B is a 400 watt electrofisher. It is capable of an output voltage of 50 to 990 volts. It was operated primarily at the DC current and 200 volts. The input from the 24-volt sealed lead acid battery system at up to 5 amps is capable of an output of up to 200 watts. The machine was fished in such a manner as to keep the wattage output at approximately 100 watts or less. This was accomplished by monitoring the audible output voltage indicator (beeper). The rate of beeping is scaled to the wattage output, and if the rate increased indicating the 100-watt threshold was being broken, steps were taken to eliminate this from happening.

The Model 15-C POW was operated at the P-16 setting (straight DC current) and either 200 or 300 volts. The input from the Honda EX-350 generator at approximately 1.25 amps and 120 volts will output a little less than 150 watts. This machine was also fished in such a manner as to keep the wattage output at approximately 100 watts or less. This was accomplished by monitoring the audible output voltage indicator (beeper). If the tone changed from a steady tone to a series of beeps the 100-watt threshold was being broken and steps were taken to eliminate this from happening.

The Model 12B was operated at the P-16 setting (straight DC current) and either 100, 200 or 300 volts. The input from the 24-volt sealed lead acid battery system at up to 5 amps is capable of an output of up to 200 watts. The machine was fished in such a manner as to keep the wattage output at approximately 100 watts or less. This was accomplished by monitoring the audible output voltage indicator (beeper). The rate of beeping is scaled to the wattage output, and if the rate increased indicating the 100-watt threshold was being broken, steps were taken to eliminate this from happening.

As mentioned above, sampling occurred primarily with the use of straight DC. The switch from pulsed DC to straight DC follows the NMFS recommended "decision tree". This method of sampling coupled with our experienced fisheries staff reduced the chances of causing fish mortality. GDRCo has adopted the Hankin and Mohr (2001) salmonid population estimate sample design as a means of estimating coho populations and minimizes the use of electrofishing equipment. This protocol relies heavily on making multiple dive passes on Phase II shallow pools with low density population (≤ 20 target species) rather than electrofishing every Phase II shallow pool. Only selected riffles and Phase II shallow pools with high density population (> 20 target species) are sampled by electrofishing.

Appendix 3. Summary of summer juvenile salmonid population estimates and confidence intervals (CI) separated by habitat type for each monitoring site sampled from 1995-2012.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Ah Pah Creek	2007	378	238	1,542	380	22	6	217	106	80	22	367	201
	2008	265	90	3,001	642	5	4	212	111	17	15	443	157
	2009	323	186	1,525	433	5	5	501	310	40	8	380	112
	2010	218	210	440	212	43	27	645	409	49	14	202	87
	2011	890	675	696	223	50	28	371	275	200	85	302	220
	2012	447	393	983	274	64	40	292	122	80	14	284	94
	Cañon Creek	1995	319*	-	1,322	699	0	-	0	0	146*	-	1,019
1996		0	0	0	0	12	12	0	0	409	123	281^	119 [†]
1997		23*	0	21	35	0	-	0	0	72*	-	531^	239 [†]
1999		279	129	203	122	0	0	0	0	219	53	392	128
2000		170	55	126	45	16	12	13	21	361	79	598	106
2001		1,046	161	816	195	0	0	0	0	362	79	416	209
2002		655	187	490	246	4	6	0	0	222	58	163	84
2003		34	23	31	51	0	0	0	0	199	80	289	204
2004		1,567	308	1,025	289	0	0	0	0	312	80	405	131
2005		277	88	354	117	0	0	0	0	177	50	289	117
2006		15	16	0	0	0	0	0	0	291	97	227	54
2007		1,796	521	660	219	0	0	0	0	124	27	330	140
2008		740	180	515	245	3	3	0	0	119	40	194	135
2009		0	0	0	0	0	0	0	0	191	38	305	115
2010	271	151	58	12	0	0	0	0	252	69	309	114	
2011	436	142	121	57	0	0	0	0	265	49	387	202	
2012	538	214	45	19	21	17	22	11	340	67	430	221	

* Hard count, not estimate.

^ Combination of estimates and hard count.

- Data unavailable.

x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

† Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
EF Hunter Creek	2003	-	-	0	0	-	-	41	45	-	-	171	66
	2004	0	0	0	0	0	0	9	8	17	4	79	37
	2005	59	6	375	181	3	2	89	59	12	2	198	92
	2006	0	0	0	0	10	4	4	6	3	4	19	16
	2007	158	113	197	106	0	0	0	0	21	15	86	51
	2008	310	240	416	201	5	7	49	51	23	21	47	26
	2009	0	0	0	0	4	4	65	62	55	45	156	47
	2010	0	0	0	0	10	6	120	121	20	17	79	54
	2011	0	0	0	0	8	8	154	155	34	26	147	54
	2012	0	0	0	0	0	0	76	36	11	4	114	47
Heightman Creek	2005	-	-	908	349	-	-	4	7	-	-	19	10
	2007	-	-	361 [^]	64	-	-	0	0	-	-	140	103
	2008	-	-	1,067	310	-	-	29	33	-	-	8	8
	2009	50 ^x	-	962	392	1 ^x	-	27	28	0 ^x	-	4	4
	2010	-	-	29	26	-	-	4	4	-	-	12	6
	2011	-	-	268	165	-	-	24	41	-	-	12	9
	2012	11 ^x	-	691	218	1 ^x	-	81	61	2 ^x	-	11	10
Hunter Creek	1998	331	134	82	88	0	0	18	30	1,101	421	839	303
	1999	0	0	0	0	0	0	0	0	128	44	754	134
	2000	0	0	0	0	35	26	10	15	902	319	1,268	382
	2001	148	84	847	264	0	0	29	34	302	95	1,138	313
	2002	1,231	362	1,327	355	4	6	137	101	286	90	712	193
	2003	518	224	1,104	298	8	9	83	101	248	82	948	258
	2004	150	40	163	94	12	8	232	124	338	62	764 [^]	248 [†]
	2005	3,196	1,346	2,743	750	9	6	117	94	249	54	734	187
	2006	466	217	239	191	218	54	5	3	218	54	395	114
	2007	3,075	1,181	1,457	376	4	6	0	0	289	86	945	306
	2008	1,918	763	779	304	2	3	18	16	80	31	163	80
	2009	694	360	963	543	85	47	312	168	830	385	1,555	496
	2010	152	86	84	22	23	14	54	46	223	63	327	89
	2011	1,074	556	702	431	154	96	218	102	628	249	1,006	611
2012	243	156	67	68	12	7	75	51	306	172	839	602	

* Hard count, not estimate.

[^] Combination of estimates and hard count.

- Data unavailable.

^x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

[†] Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Lower SF Little River	1998	3,086	395	1,224	502	0	0	0	0	169	59	58	35
	1999	2,390	356	6,066	880	0	0	74	63	54	21	154	54
	2000	1,819	325	3,284	591	4	7	21	18	23	20	74	38
	2001	339	123	589	239	6	7	0	0	83	25	48	19
	2002	3,484	511	10,838	2,234	10	9	132	89	57	17	177	106
	2003	1,816	309	4,504	1,060	0	0	74	46	32	20	47	34
	2004	986	213	3,186	1,171	14	9	11	19	38	15	155	101
	2005	1,996	211	4,916	866	13	11	57	44	51	15	125	51
	2006	1,796	245	7,989	1,546	0	0	47	27	8	6	113	160
	2007	1,097	139	6,846	1,043	0	0	42	28	55	25	104	59
	2008	1,720	317	8,650	1,993	0	0	31	21	23	17	48	60
	2009	1,983	452	7,954	3,292	8	9	96	94	36	20	116	96
	2010	766	169	1,244	319	31	10	43	33	82	17	64	30
	2011	2,851	726	5,741	979	47	20	190	71	53	15	213	75
2012	3,656	1,108	7,260	2,086	37	18	177	99	101	36	208	85	
Little Surpur Creek	2011	-	-	105	72	-	-	136	45	-	-	24	17
	2012	13	4	34	26	0	0	87	86	0	0	60	64
Moon Creek	2007	0	0	0	0	0	0	83	81	0	0	107	44
	2008	0	0	0	0	5	2	93	51	9	8	68	36
	2009	0	0	0	0	7	0	114	51	3	0	51	20
NF Ah Pah Creek	2007	-	-	139	103	-	-	11	19	-	-	12	12
	2008	-	-	809*	-	-	-	45*	-	-	-	42	35

* Hard count, not estimate.

^ Combination of estimates and hard count.

- Data unavailable.

x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

† Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Railroad Creek	1998	85	48	165	98	0	0	9	13	90	55	88	52
	1999	0	0	391 [^]	130 [†]	0	0	2	5	12	9	63	23
	2000	40	62	155	86	3	4	0	0	19	8	80	40
	2001	0	0	7	17	2	3	0	0	10	8	60	31
	2002	67	104	1,472	517	0	0	25	47	27	5	66	68
	2003	28	40	251	106	0	0	4	7	8	3	28	32
	2004	0	0	0	0	0	0	0	0	19	8	45	28
	2005	147	37	514	189	17	13	16	19	25	24	31	23
	2006	0	0	153	83	0	0	4	6	3	5	23	20
	2007	18	25	144	63	0	0	0	0	18	5	44	50
	2008	0	0	95	79	0	0	10	19	34	26	22	11
	2009	0	0	24	20	4	4	3	5	17	10	51	35
	2010	0	0	0	0	0	0	12	23	6	3	11	4
2011	0 ^x	-	0	0	4 ^x	-	9	13	4 ^x	-	37	13	
2012	0 ^x	-	0	0	1 ^x	-	48	46	3 ^x	-	91	79	
SF Ah Pah Creek	2007	-	-	331	272	-	-	39	31	-	-	109	41
	2008	0 ^x	-	273	93	3 ^x	-	39	17	0 ^x	-	79	36
	2009	0 ^x	-	106	102	0 ^x	-	178	142	3 ^x	-	56	34
	2010	0 ^x	-	141	29	0 ^x	-	134	98	5 ^x	-	90	24
	2011	0 ^x	-	145	45	1 ^x	-	125	177	3 ^x	-	128	38
	2012	0 ^x	-	61	71	1 ^x	-	290	234	0 ^x	-	24	11

* Hard count, not estimate.

[^] Combination of estimates and hard count.

- Data unavailable.

^x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

[†] Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
SF Rowdy / Savoy Creeks	2001	156	95	510	166	13	10	110	68	163	51	598	129
	2002	105	79	603	153	12	11	245	117	43	17	593	226
	2003	0	0	0	0	0	0	52	50	7	11	323	187
	2004	2 ^x	-	267	147	2 ^x	-	143	83	4 ^x	-	393	121
	2005	492	363	1058	408	11	11	108	51	41	21	645	125
	2006	0	0	18	8	13	13	75	45	52	14	387	144
	2007	30	9	120	37	22	9	41	45	73	17	732	344
	2008	3	4	205	55	10	0	136	101	31	4	640	348
	2009	0 ^x	-	0	0	1 ^x	-	330	150	11 ^x	-	1004	365
	2010	0 ^x	-	2	4	2 ^x	-	105	75	12 ^x	-	1138	560
	2011	0	0	0	0	15	9	121	73	59	55	875	351
	2012	0	0	0	0	12	10	103	59	9	15	177	89
SF Winchuck River	1995	23 [*]	-	32	47	29 [*]	-	188	115	178 [*]	-	1149	501
	1996	28	21	4 [*]	-	276	54	184	102	1085	156	803	266
	1997	156 [*]	-	317	140	56 [*]	-	133	92	237 [*]	-	619	280
	1998	33	7	0	0	261	71	191	92	1480	224	1067	260
	1999	0	0	0	0	110	32	255	65	325	76	756	102
	2000	0	0	0	0	154	50	479	214	1291	232	1809	361
	2001	7	8	13	23	257	50	378	90	1041	135	1392	200
	2002	392	87	656	148	136	39	328	142	660	136	677	160
	2003	62	38	126	87	208	36	435	91	637	115	1042	222
	2004	2	3	8	4	62	21	309	74	121	39	777	136
	2005	220	95	589	181	123	50	597	163	344	42	1300	229
	2006	2	2	8	14	171	41	474	180	272	58	976	298
	2007	115	54	294	76	149	38	284	77	280	60	622	135
	2008	107	51	77	38	212	35	395	182	636	95	600	142
	2009	2	3	0	0	195	48	388	183	292	42	776	206
2010	41	26	22	15	251	47	624	176	603	95	1363	259	
2011	13	14	5	3	195	24	673	273	664	88	1476	298	
2012	2	3	0	0	189	31	314	156	199	61	676	303	

* Hard count, not estimate.

^ Combination of estimates and hard count.

- Data unavailable.

^x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

[†] Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Sullivan Gulch	1999	168	37	627	287	0	0	0	0	9	4	5	7
	2000	13 ^x	-	42	40	0 ^x	-	0	0	4 ^x	-	60	29
	2001	11 ^x	-	843	387	0 ^x	-	0	0	1 ^x	-	73	59
	2002	56 ^x	-	2,429	454	0 ^x	-	0	0	2 ^x	-	6	10
	2003	88	84	1,343	590	0	0	0	0	3	3	19	17
	2004	26 ^x	-	1,084	309	0 ^x	-	0	0	3 ^x	-	40	24
	2005	16 ^x	-	394	114	0 ^x	-	0	0	0 ^x	-	37	29
	2006	-	-	393	154	-	-	0	0	-	-	6	11
	2007	27 ^x	-	1,100	587	0 ^x	-	0	0	0 ^x	-	10	12
	2008	6 ^x	-	1,246	985	0 ^x	-	0	0	0 ^x	-	16	20
	2009	0 ^x	-	50	29	0 ^x	-	0	0	2 ^x	-	27	17
	2010	0	0	0	0	0	0	0	0	5	3	0	0
	2011	19 ^x	-	198	98	0 ^x	-	0	0	0 ^x	-	6	5
2012	2 ^x	-	0	0	0 ^x	-	0	0	0 ^x	-	6	8	
Tarup Creek	2012	0 ^x	-	362	265	8 ^x	-	193	134	0 ^x	-	15	5
Upper SF Little River	1998	303	117	517	230	21	29	4	5	108	30	208	64
	1999	257	193	1022 [^]	489 [†]	0	0	91	74	47	12	210 [^]	73 [†]
	2000	106	134	283	86	0	0	13	13	24	43	232	54
	2001	40	42	157	59	2	2	0	0	136	50	150	76
	2002	973	498	7,302	1,510	0	0	37	37	31	18	198	92
	2003	613	230	2,405	592	4	6	92	79	20	15	308	230
	2004	257	107	881	218	0	0	24	33	48	14	251	115
	2005	359	157	1,523	370	10	4	52	35	49	19	231	91
	2006	711	222	2,534	640	8	7	54	49	12	12	119	72
	2007	574	197	1,086	308	0	0	4	8	20	13	229	241
	2008	657	290	5,330	2,101	0	0	54	53	17	12	78	61
	2009	1,019	311	2,482	541	2	2	68	103	48	19	312	155
	2010	128	72	289	191	53	15	168	87	59	26	247	198
2011	720	241	2,194	546	20	9	185	99	42	16	209	83	
2012	748	362	1,925	605	47	23	221	75	44	19	147	86	

* Hard count, not estimate.

[^] Combination of estimates and hard count.

- Data unavailable.

^x Bounded count estimate for a single unit. Estimate not extrapolated to all available units.

[†] Calculated from the product of available variances.

Appendix 3. Continued.

Site Name	Year	Coho Salmon				Cutthroat Trout				Steelhead Trout			
		Deep Pools		Shallow Units		Deep Pools		Shallow Units		Deep Pools		Shallow Units	
		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Wilson Creek	1995	237*	-	1,310	288	0	-	0	0	187*	-	908	302
	1996	442	159	173	158	136	57	6	19	1,086	247	1,093	383
	1997	248*	-	27*	-	0	-	0	0	125*	-	300^	76 [†]
	1998	404	133	28	26	52	80	3	4	971	207	530	128
	1999	0	0	21	34	0	0	0	0	337	160	399	121
	2000	21	18	21	22	15	15	0	0	380	164	927	180
	2001	188	117	315	111	2	2	12	17	1,882	1,419	1,086	189
	2002	247	170	1,489	408	17	16	17	23	96	44	758	312
	2003	1,077	287	904	292	15	13	0	0	228	68	426	173
	2004	359	122	253	130	0	0	0	0	147	48	390	242
	2005	1,524	369	2,077	492	0	0	2*	-	230	86	535	152
	2006	204	55	347	136	4	6	0	0	318	136	465	148
	2007	3,023	783	1,836	385	5	4	0	0	184	63	306	140
	2008	3,928	851	6,918	2,008	0	0	4	7	85	27	463	163
	2009	0	0	0	0	13	7	17	19	82	30	758	533
	2010	705	389	1,138	516	11	10	0	0	390	141	1,210	512
	2011	2,938	1,035	4,835	1,565	30	15	31	16	465	75	1,397	347
	2012	72	32	108	24	50	22	26	11	678	222	358	303

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^ Combination of estimates and hard count.

- Data unavailable.

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† Calculated from the product of available variances.