

Abundance of Juvenile Coho Salmon in Oregon Coastal Streams, 1998 and 1999

Oregon Plan for Salmon and Watersheds

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Jeffrey D. Rodgers

Western Oregon Rearing Project
Oregon Department of Fish and Wildlife
28655 Highway 34
Corvallis, OR 97333

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Introduction

In the summer of 1998, as part of the Oregon Plan for Salmon and Watersheds, the Oregon Department of Fish and Wildlife (ODFW) began a project to monitor juvenile coho in Oregon's coastal streams. Specifically, this project was designed to monitor trends in abundance of juvenile coho salmon rearing in each of the five coastal coho Gene Conservation Areas (GCA) (figure 1).

Methods

Study Design

We had a target of surveying juvenile coho rearing at 50, one-kilometer long stream reaches in each GCA. Sites were randomly selected using Environmental Mapping and Assessment Program (EMAP) protocol (Stevens and Olsen 1999). This protocol involves the use of a Geographic Information System incorporating a 1:100,000 digital stream network of coho rearing distribution to insure an unbiased and spatially balanced selection of sample sites across each GCA. To maximize the usefulness of the data, we made provisions during the EMAP site selection process to incorporate as much overlap in sample sites as possible between the Western Oregon Rearing Project, ODFW's Aquatic Inventory Project, and ODFW's Coastal Salmonid Inventory Project. The total number of candidate sites for each year is divided equally into four visitation intervals: 1) sites that are visited annually; 2) sites that are visited every three years; 3) sites that are visited every nine years; and 4) sites that are visited once. The repeat visitation sites help to provide for better trend detection, while the single visitation sites enable us to incorporate changes in known fish distribution into our sampling universe.

Once completed, the EMAP site selection process provided the geographic coordinates (i.e. latitude and longitude) of each of the candidate sites. We then produced topographic maps showing the location of each sample point. Field crews used a handheld Geographic Positioning System to find the approximate location of the EMAP selected sample point, and then established 1 km long survey reaches that encompassed the sample point.

Survey Methodology

A two-person snorkel crew counted the number of juvenile coho at each of the sample reaches. To reduce problems associated with snorkeling in shallow or fast water habitat, only pools $\geq 6 \text{ m}^2$ in surface area and $\geq 40 \text{ cm}$ deep were snorkeled. Crew members either alternated the pools that they snorkeled or one crewmember snorkeled the entire reach. We measured the maximum pool depth and estimated the length and average width of all snorkeled pools.

Snorkel methodology involved a single upstream pass through each pool. Counts of the number of juvenile coho, cutthroat, steelhead, unknown trout, chinook, blackside dace, and redbreast shiner were recorded for each pool. Trout $< 90 \text{ mm}$ were not counted. Because the primary purpose of the survey was to provide information on coho salmon, and because snorkel counts for trout species are often unreliable (Nickelson 1998), the snorkel crews were instructed to focus on obtaining counts for juvenile coho and could

approximate the number of the other species if counting them interfered with the coho counts. After snorkeling, the underwater visibility of each pool during the snorkel count was ranked on a scale of 0 to 3 where: 0 = not snorkelable due to extremely high hiding cover or zero water visibility; 1 = high amount of hiding cover or poor water clarity; 2 = moderate amount of hiding cover or moderate water clarity neither of which were thought to impede accurate fish counts; and 3 = little hiding cover and good water clarity. Only pools with a visibility rank of two or three were used in data analysis.

To provide some quality control of the snorkel data, and to provide information on temporal changes in abundance during the course of the sampling season, supervisory staff had a goal of resurveying a random sample of 10 to 20 percent of the sites surveyed in each GCA.

Data Analysis

Because of the unreliability of snorkel counts for trout, only the data collected for coho are analyzed in this report. Two basic metrics were used to analyze the juvenile coho data: 1) the percentage of pools at a site that contained at least one juvenile coho; and 2) the average density (fish/m²) of juvenile coho at each site. Because these data for all sites surveyed in any GCA were not normally distributed, and no transformation could be found to normalize the data, a Mann-Whitney test (Snedecor and Cochran 1980) was used to compare changes in these metrics between years for the same GCA or between GCAs in the same year. To compare changes in these metrics between years in the same GCA at annual survey sites, a paired *t*-test (Zar 1996) was used when the annual site data were normally distributed, while a Wilcoxon Signed Rank test (Snedecor and Cochran 1980) was used when the annual site data were not normally distributed.

In the past we have used an electrofishing estimate of juvenile coho densities ≥ 1.0 fish/m² in the summer as a benchmark for considering a stream seeded to full rearing capacity (Nickelson et al. 1992). Based on data from eight streams, snorkel surveys conducted in the summer observe approximately 70% of the number of juvenile coho estimated by electrofishing (Figure 4 *in* Rodgers et al. 1992). Thus, densities of ≥ 0.7 fish/m² observed by snorkeling are a reasonable benchmark of whether or not a stream is fully seeded for rearing juvenile coho.

Results

Site Visitation

In 1998, lack of funding for field crew supervision and the resignation of one field crew member forced the termination of the Umpqua GCA field crew early in the sampling season. As a result, no reliable data was collected from the Umpqua GCA. Of the remaining four GCAs, the most sites were sampled in the South Coast, and the fewest in the North Coast. In 1999, snorkel surveys were conducted in all five coastal GCAs. The most surveys were again conducted in the South Coast, while the fewest were in the Mid-South Coast (table 1). The location of the sites in each GCA is shown in figures 2-10.

Table 1. Status of random juvenile rearing sites in each coastal GCA, 1998 and 1999.

GCA	Snorkeled	Not Sampled			
		Not Snorkelable	Above Barrier	Denied Access	Not Visited
North Coast 1998	26	8	3	4	16
Mid-Coast 1998	36	11	3	5	2
Mid-South Coast 1998	33	13	0	8	3
South Coast 1998	41	3	0	9	10
North Coast 1999	31	19	0	0	3
Mid-Coast 1999	34	5	1	6	4
Mid-South Coast 1999	27	14	2	6	4
Umpqua 1999	28	20	2	2	1
South Coast 1999	41	4	0	5	3

Juvenile Coho Frequency of Occurrence

The percentage of pools at each sample site that contained at least one juvenile coho is shown for each of the GCAs in figures 11-19. In the summer of 1998, juvenile coho were observed more frequently in the Mid-South Coast and the least in the South Coast (table 2). In 1999, juvenile coho were again observed most frequently in the Mid-South Coast and were least observed in the North Coast. Table 3 shows the significant results ($P \leq 0.2$) of the Mann-Whitney test for median juvenile coho frequency of occurrence between GCAs in the same year. In 1998, the median frequency of juvenile coho occurrence in the Mid-South Coast was significantly higher than any of the other GCAs sampled that year. In 1999, the North Coast was significantly different from the Mid-South, and Umpqua GCAs; the Mid-Coast was significantly different from the Mid-South Coast and Umpqua GCAs; and the South Coast was significantly different from the Mid-South Coast GCA. No significant difference was found between the median frequency in a GCA in 1998 and that in the same GCA in 1999.

Table 2. The occurrence of juvenile coho as observed by snorkelers in coastal GCAs, 1998 and 1999.

GCA	Percentage of sites with at least one pool containing juvenile coho	Mean percent of pools per site containing juvenile coho	Median percent of pools per site containing juvenile coho
North Coast 1998	62	38	22
Mid-Coast 1998	61	37	33
Mid-South Coast 1998	76	56	83
South Coast 1998	54	32	8
North Coast 1999	48	24	4
Mid-Coast 1999	56	30	15
Mid-South Coast 1999	70	59	80
Umpqua 1999	61	48	58
South Coast 1999	63	34	20

Table 3. Results of Mann-Whitney test comparing the median frequency pools per site containing juvenile coho. Only those comparisons with a P level ≤ 0.2 are shown.

Comparison	P level
North Coast 98 vs Mid-South Coast 98	0.05
Mid-Coast 98 vs Mid-South Coast 98	0.05
South Coast 98 vs Mid-South Coast 98	0.02
North Coast 99 vs Mid-South Coast 99	0.01
North Coast 99 vs Umpqua 99	0.11
Mid-Coast 99 vs Mid-South Coast 99	0.01
Mid-Coast 99 vs Umpqua 99	0.12
Mid-South Coast 99 vs South Coast 99	0.04

Figure 20 shows the changes at the annual sites in four of the five GCAs from 1998 to 1999. North Coast GCA coho populations were lower in 1999 than in 1998 based on the annual survey sites ($P=0.14$). The significance of this decline may actually be greater because the power of the test was low (0.22).

Juvenile Coho Density

The average density of juvenile coho in pools at each sample site is shown for each GCA in figures 21-29¹. In the summer of 1998, the percentage of sites that had juvenile coho densities ≥ 0.7 fish/m² ranged from a high of 24% in the Mid-South Coast to a low of 0% in the North Coast (Table 4). In the summer of 1999, the percentage of sites in that had juvenile coho densities ≥ 0.7 fish/m² ranged from a high of 22% in the Mid-South Coast to a low of 0% in the Mid-Coast. . Table 5 shows the significant results ($P \leq 0.2$) of the Mann-Whitney test for median juvenile coho density between years for the same GCA or between GCAs in the same year. In 1998, the median density of juvenile coho in the Mid-South Coast was significantly higher than any of the other GCAs sampled that year. In 1999, the North Coast was significantly different from the Mid-South Coast, South Coast, and Umpqua GCAs; and the Mid-South was again significantly different from the all other GCAs. Between year differences in median density were only significant for the North Coast GCA.

Table 4. The density of juvenile coho as observed by snorkelers in coast GCAs in 1998 and 1999.

GCA	% of sites with an average juvenile coho density ≥ 0.7	Mean density of juvenile coho	Median density of juvenile coho
North Coast 1998	0	0.11	0.01
Mid-Coast 1998	11	0.17	0.01
Mid-South Coast 1998	24	0.37	0.18
South Coast 1998	5	0.12	0.01
North Coast 1999	3	0.07	<0.01
Mid-Coast 1999	0	0.07	<0.01
Mid-South Coast 1999	22	0.40	0.26
Umpqua 1999	4	0.14	0.03
South Coast 1999	15	0.28	0.03

¹Note: The number of pools used for density estimates may differ from those shown in frequency figures because snorkelers did not always obtain hard counts of coho in all pools, but instead sometimes listed coho as simply being "present".

Table 5. Results of Mann-Whitney test comparing the median density of juvenile coho. Only those comparisons with a P level ≤ 0.2 are shown.

Comparison	P value
North Coast 98 vs Mid-South Coast 98	0.03
Mid-Coast 98 vs Mid-South Coast 98	0.02
South Coast 98 vs Mid-South Coast 98	0.01
North Coast 99 vs Mid-South Coast 99	0.01
North Coast 99 vs South Coast 99	0.07
North Coast 99 vs Umpqua 99	0.10
Mid-Coast 99 vs Mid-South Coast 99	0.01
Mid-South Coast 99 vs South Coast 99	0.18
Mid-South Coast 99 vs Umpqua 99	0.05
North Coast 98 vs North Coast 99	0.19

Figure 30 shows the 1998 to 1999 changes in density at the annual sites in four of the five GCAs. None of the changes in annual sites were statistically significant.

Resurveys

Figures 31-35 show the correlation between the number of juvenile coho observed during original surveys and those observed during resurveys. In all cases r^2 values were greater than or equal to 0.77. Table 6 shows the total number of fish observed between the two surveys. In all cases there was less than 20% difference between the original surveys and the resurveys.

Table 6. Comparison of the total number of juvenile coho observed during original snorkel surveys to those observed during resurveys.

GCA	Year	Original Survey	Resurvey	Percent Difference	Days Between Surveys (min - max)
North Coast	1999	518	516	-0.4	1 - 9
Mid-Coast	1998	218	215	-1.4	2 - 43
Mid-Coast	1999	531	487	-8.8	2 - 13
Mid-South Coast	1999	1,301	1,260	-3.2	3 - 8
Umpqua	1999	72	86	+19.4	3

Summary and Conclusions

In both 1998 and 1999, the Mid-South Coast had the highest density and occurrence of juvenile coho. Overall, juvenile densities were low, with 50% or more of the sites in a GCA having densities less than 0.3 fish/m². With the exception of the Mid-South Coast in both years and the Umpqua in 1999, fewer than 50% of the pools in a GCA had any juvenile coho at all. Except for difference in the percent occurrence of juvenile coho at the annual sites in the North Coast, none of the differences in either density or percent occurrence were significantly different from 1998 to 1999.

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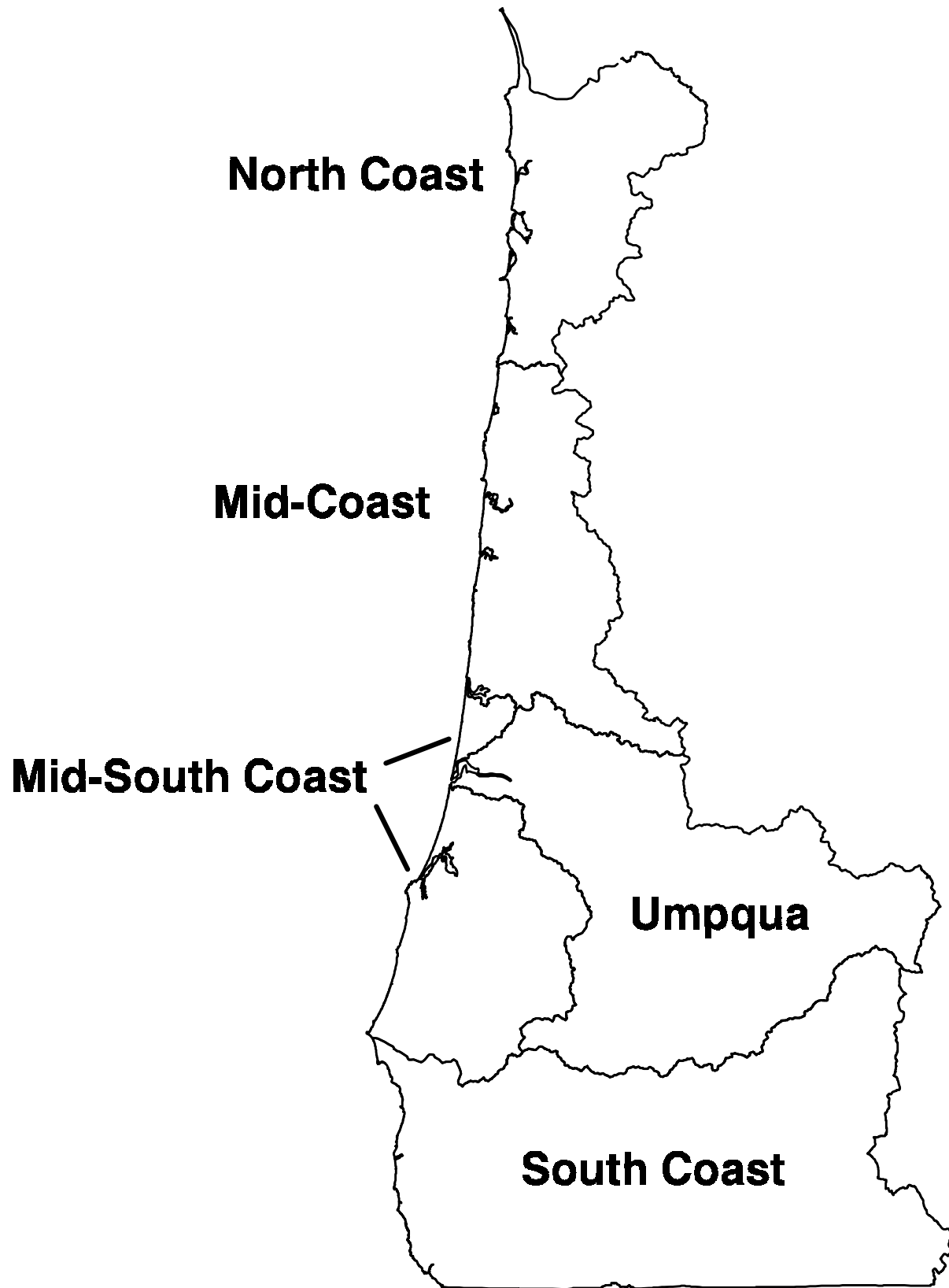


Figure 1. Location of five coho Gene Conservation Areas along the Oregon Coast.

SITE	BASIN NAME	SUBBASIN NAME	REACH
12	TRASK RIVER	SOUTH FORK	BOUNDRY CR
55	TRASK RIVER	SOUTH FORK	TRASK R, S FK, E FK
225	NESTUCCA RIVER	MAIN STEM AND BAY	CLEAR CR
309	NESTUCCA RIVER	LITTLE NESTUCCA	SOURGRASS CR
331	NESTUCCA RIVER	THREE RIVERS	CRAZY CR
842	TILLAMOOK RIVER	MAIN STEM	KILLAM CR
896	NESTUCCA RIVER	BEAVER CREEK	BEAR CR
949	NESKOWIN CREEK	MAIN STEM	SLOAN CR
1167	NEHALEM RIVER	MAINSTEM	COOK CR
1248	NEHALEM RIVER	ROCK CREEK	ROCK CR, S FK
1681	NEHALEM RIVER	NORTH FORK	NEHALEM R, N FK
1866	KILCHIS RIVER	MAIN STEM	KILCHIS R
1904	MIAMI RIVER	MAIN STEM	MIAMI R
1954	MIAMI RIVER	MAIN STEM	MIAMI R
1986	KILCHIS RIVER	MAIN STEM	KILCHIS R, S FK
2004	KILCHIS RIVER	MAIN STEM	KILCHIS R, N FK
2050	NEHALEM RIVER	MAIN STEM	FOLEY CR
2255	NEHALEM RIVER	MAIN STEM	BULL HEIFER CR
2265	NEHALEM RIVER	MAIN STEM	HAMILTON CR
2293	NEHALEM RIVER	MAIN STEM	FORD CR
2687	NEHALEM RIVER	MAIN STEM	OAK RANCH CR
2939	WILSON RIVER	MAIN STEM	BEN SMITH CR
3075	WILSON RIVER	MAIN STEM	JORDAN CR
3079	WILSON RIVER	MAIN STEM	JORDAN CR
3112	WILSON RIVER	MAIN STEM	JORDAN CR, S FK
3177	NEHALEM RIVER	MAIN STEM	LOUSIGNONT CR

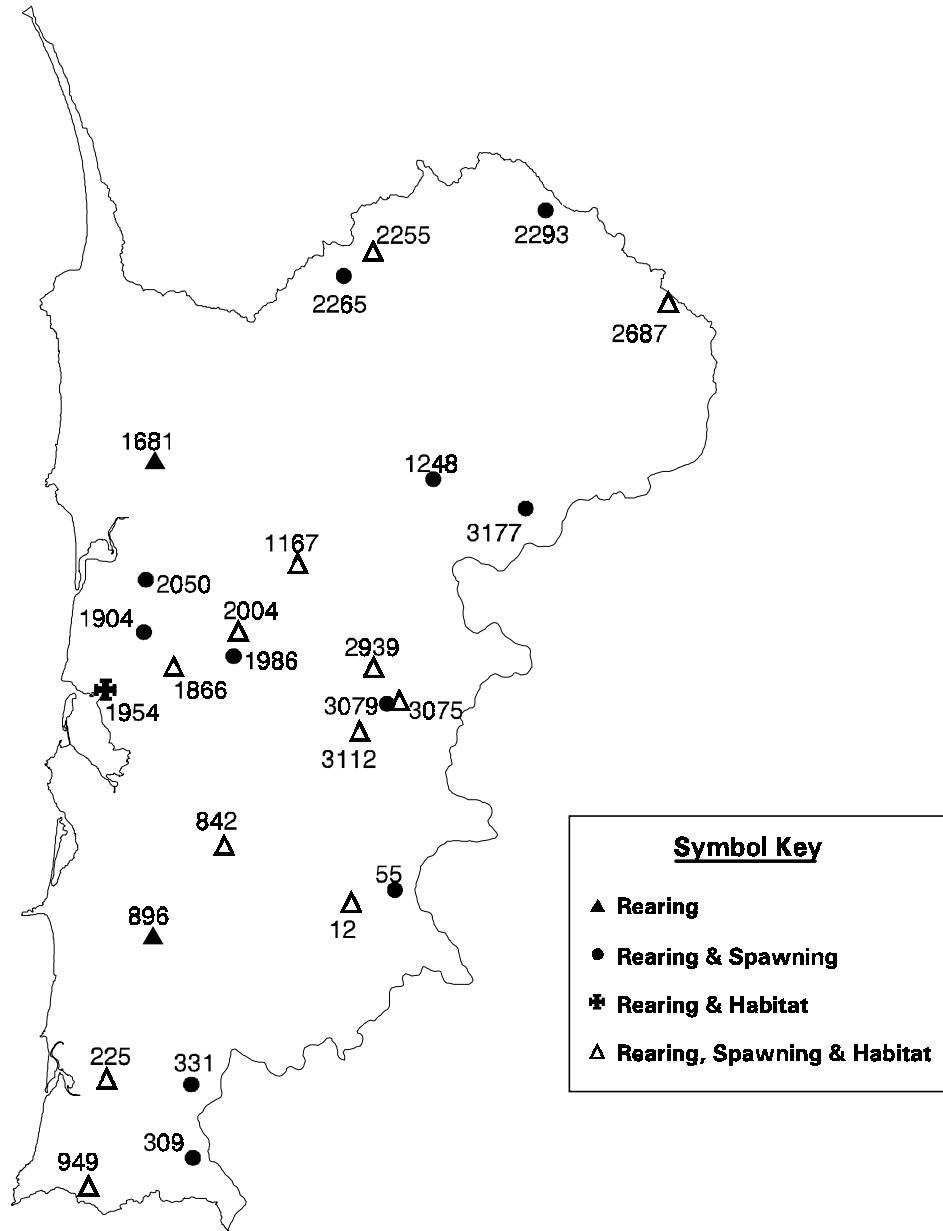


Figure 2. Location of sites snorkeled in 1998 in the North Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH
12	TRASK RIVER	SOUTH FORK	BOUNDRY CR
90	NESTUCCA RIVER	MAIN STEM AND BAY	NESTUCCA R
222	NESTUCCA RIVER	MAIN STEM AND BAY	CLEAR CR
377	NESTUCCA RIVER	MAIN STEM AND BAY	POWDER CR
479	NESTUCCA RIVER	LITTLE NESTUCCA	FALL CR
772	TRASK RIVER	SOUTH FORK	SUMMIT CR, S FK
783	TRASK RIVER	SOUTH FORK	E FK OF S FK TRASK R
940	NESTUCCA RIVER	BEAVER CREEK	BEAVER CR
1066	NEHALEM RIVER	NORTH FORK	LOST CR
1118	NEHALEM RIVER	MAIN STEM	HUMBUG CR
1248	NEHALEM RIVER	ROCK CREEK	ROCK CR, S FK
1362	NEHALEM RIVER	SALMONBERRY	SALMONBERRY R
1501	NECANICUM RIVER	MAIN STEM	NECANICUM R
1625	NEHALEM RIVER	NORTH FORK	NEHALEM R, N FK
1676	NEHALEM RIVER	NORTH FORK	GRAVEL CR
1787	WILSON RIVER	LITTLE NORTH FORK	WILSON R, N FK,
1817	KILCHIS RIVER	MAIN STEM	SHARP CREEK
1888	KILCHIS RIVER	MAIN STEM	KILCHIS R, N FK
1896	MIAMI RIVER	MAIN STEM	MINICH CR
1945	TILLAMOOK BAY	MAIN STEM AND BAY	VAUGHN CR
2011	WILSON RIVER	MAIN STEM	CEDAR CR, N FK
2140	NEHALEM RIVER	MAIN STEM	BUSTER CR
2177	NEHALEM RIVER	MAIN STEM	FISHHAWK CR
2265	NEHALEM RIVER	MAIN STEM	HAMILTON CR
2442	NEHALEM RIVER	MAIN STEM	CLEAR CR
2570	NEHALEM RIVER	MAIN STEM	DELL CR
2939	WILSON RIVER	MAIN STEM	BEN SMITH CR
3039	WILSON RIVER	MAIN STEM	ELK CR
3076	WILSON RIVER	MAIN STEM	JORDAN CR
3079	WILSON RIVER	MAIN STEM	JORDAN CR
3183	NEHALEM RIVER	MAIN STEM	NEHALEM R

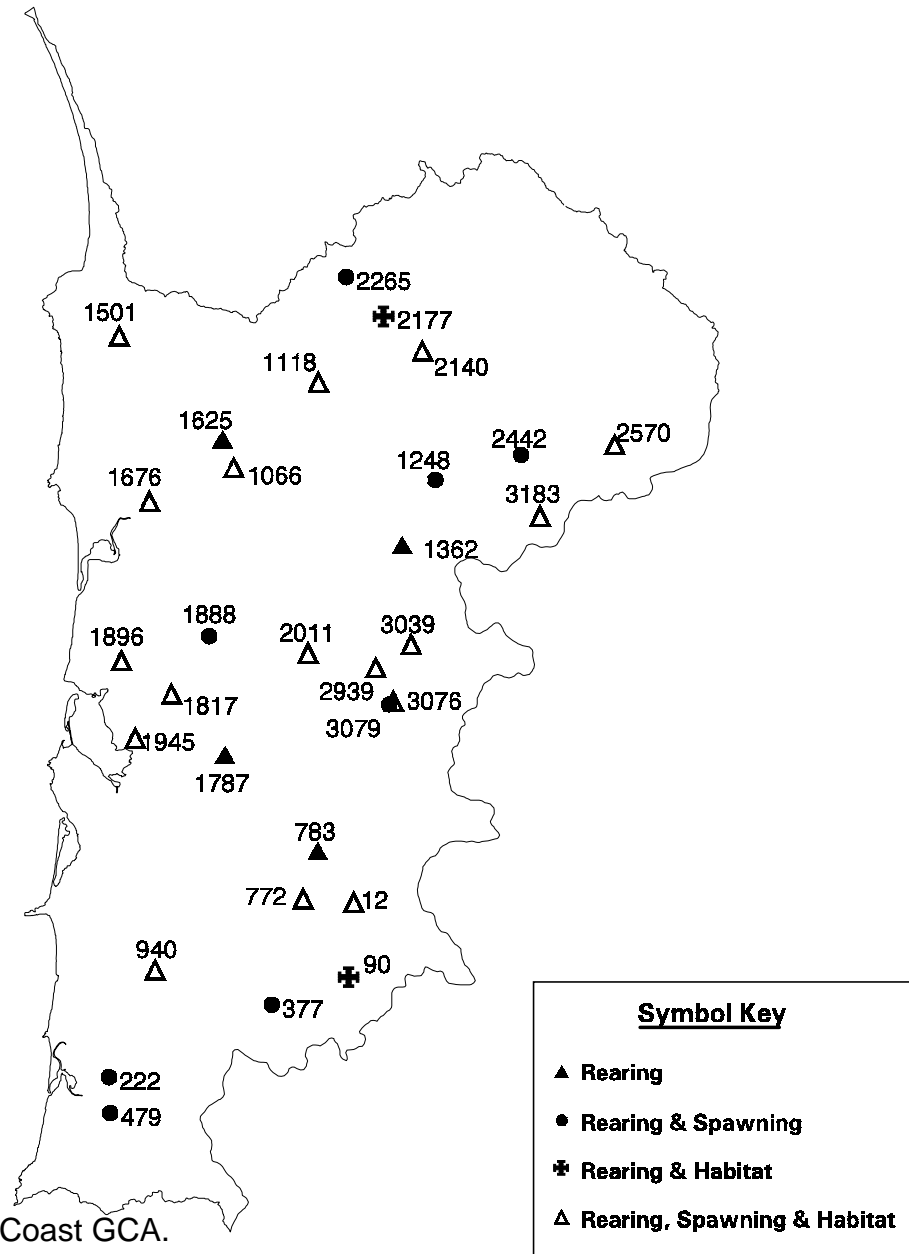


Figure 3. Location of sites snorkeled in 1999 in the North Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH
46	ALSEA RIVER	FIVE RIVERS	CASCADE CR, N FK
96	ALSEA RIVER	MAIN STEM AND BAY	BENNER CR
111	TENMILE CREEK	MAIN STEM	TENMILE CR
127	YACHATS RIVER	MAIN STEM	STUMP CR
220	SIUSLAW RIVER	LAKE CREEK	ROGERS CR
275	SIUSLAW RIVER	LAKE CREEK	FISH CR
292	ALSEA RIVER	FIVE RIVERS	LOBSTER CR, E FK
314	SIUSLAW RIVER	LAKE CREEK	RALEIGH CR
322	SIUSLAW RIVER	LAKE CREEK	LAKE CR
390	ALSEA RIVER	MAIN STEM AND BAY	ALSEA R
411	ALSEA RIVER	NORTH FORK	CROOKED CR
488	SIUSLAW RIVER	MAIN STEM	PHEASANT CR
549	SIUSLAW RIVER	MAIN STEM	HAIGHT CR
557	SIUSLAW RIVER	MAIN STEM	OXBOW CR, TRIB C
609	SIUSLAW RIVER	MAINSTEM	CLAY CR
698	SIUSLAW RIVER	MAIN STEM	HAWLEY CR
749	SIUSLAW RIVER	NORTH FORK	PORTER CR
786	SIUSLAW RIVER	NORTH FORK	CONDON CR
826	TENMILE CREEK	MAIN STEM	MILL CR
955	SIUSLAW RIVER	LAKE CREEK	HULA CR
993	SIUSLAW RIVER	MAIN STEM	WHITTAKER CR, TRIB B
1026	YAQUINA RIVER	ELK CREEK	SPOUT CR
1076	YAQUINA RIVER	LITTLE ELK CREEK	OGLESBY CR
1198	SILETZ RIVER	DRIFT CREEK	SAMPSON CR, UNNAMED TRIB
1233	SILETZ RIVER	MAIN STEM	BENTILLA CR
1247	SILETZ RIVER	MAIN STEM	MILL CR, N FK
1374	SILETZ RIVER	SCHOONER CREEK	SCHOONER CR, S FK
1463	CUMMINS CR	MAIN STEM	CUMMINS CR
1579	YAQUINA RIVER	ELK CREEK	DEER CR
1589	ALSEA RIVER	MAIN STEM AND BAY	SCOTT CR, E FK
1665	ALSEA RIVER	FIVE RIVERS	FIVE RIVERS
1797	SIUSLAW RIVER	MAIN STEM	SIUSLAW R
1830	SIUSLAW RIVER	MAIN STEM	SIUSLAW R
1837	SIUSLAW RIVER	MAIN STEM	SIUSLAW R
1876	BIG CREEK	MAIN STEM & SFK	BIG CR
2035	ALSEA RIVER	DRIFT CREEK	TROUT CR

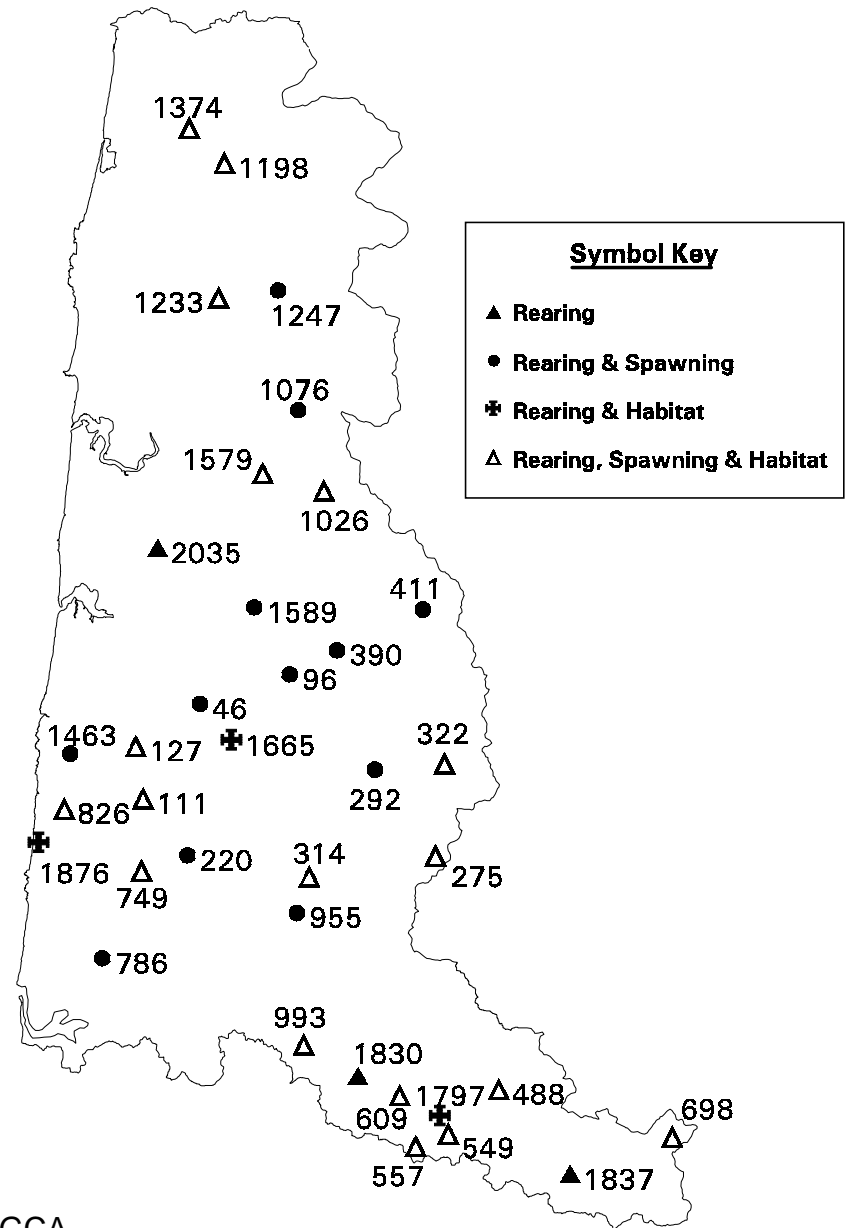


Figure 4. Location of sites snorkeled in 1998 in the Mid-Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH
79	ALSEA RIVER	MAIN STEM AND BAY	COW CR
81	ALSEA RIVER	FIVE RIVERS	LITTLE LOBSTER CR
220	SIUSLAW RIVER	LAKE CREEK	ROGERS CR
315	SIUSLAW RIVER	LAKE CREEK	BEAR CR
390	ALSEA RIVER	MAIN STEM AND BAY	ALSEA R
411	ALSEA RIVER	NORTH FORK	CROOKED CR
532	SIUSLAW RIVER	MAIN STEM	DOGWOOD CR
595	SIUSLAW RIVER	WOLF CREEK	PITTENGER CR
691	SIUSLAW RIVER	MAIN STEM	HAWLEY CR
729	CAPE CREEK	MAIN STEM	WAPITI CR
739	SIUSLAW RIVER	NORTH FORK	RUSSELL CR
776	SIUSLAW RIVER	NORTH FORK	DREW CR
826	TENMILE CREEK	MAIN STEM	MILL CR
881	SIUSLAW RIVER	MAIN STEM	HADSALL CR, TRIB D
957	SIUSLAW RIVER	LAKE CREEK	DEADWOOD CR
988	SIUSLAW RIVER	MAIN STEM	WHITTAKER CR
1026	YAQUINA RIVER	ELK CREEK	SPOUT CR
1076	YAQUINA RIVER	LITTLE ELK CREEK	OGLESBY CR
1171	SILETZ RIVER	MAIN STEM	SUNSHINE CR
1194	SILETZ RIVER	DRIFT CREEK	SAMPSON CR, UNNAMED
1229	SILETZ RIVER	MAIN STEM	SAM CR
1247	SILETZ RIVER	MAIN STEM	MILL CR, N FK
1369	SALMON RIVER	MAIN STEM AND BAY	BEAR CR
1398	SILETZ RIVER	DRIFT CREEK	NORTH CR
1403	SILETZ RIVER	MAIN STEM	FOSTER CR
1463	CUMMINS CR	MAIN STEM	CUMMINS CR
1537	BEAVER CREEK	MAINSTEM	ELKHORN CR
1587	ALSEA RIVER	MAIN STEM AND BAY	HATCHERY CR
1620	YAQUINA RIVER	ELK CREEK	GRANT CR
1637	ALSEA RIVER	DRIFT CREEK	NETTLE CR
1828	SIUSLAW RIVER	MAINSTEM	UNNAMED TRIB
1876	BIG CREEK	MAIN STEM & SFK	BIG CR
1984	SILETZ RIVER	DRIFT CREEK	DRIFT CR
2039	ALSEA RIVER	DRIFT CREEK	GOLD CR

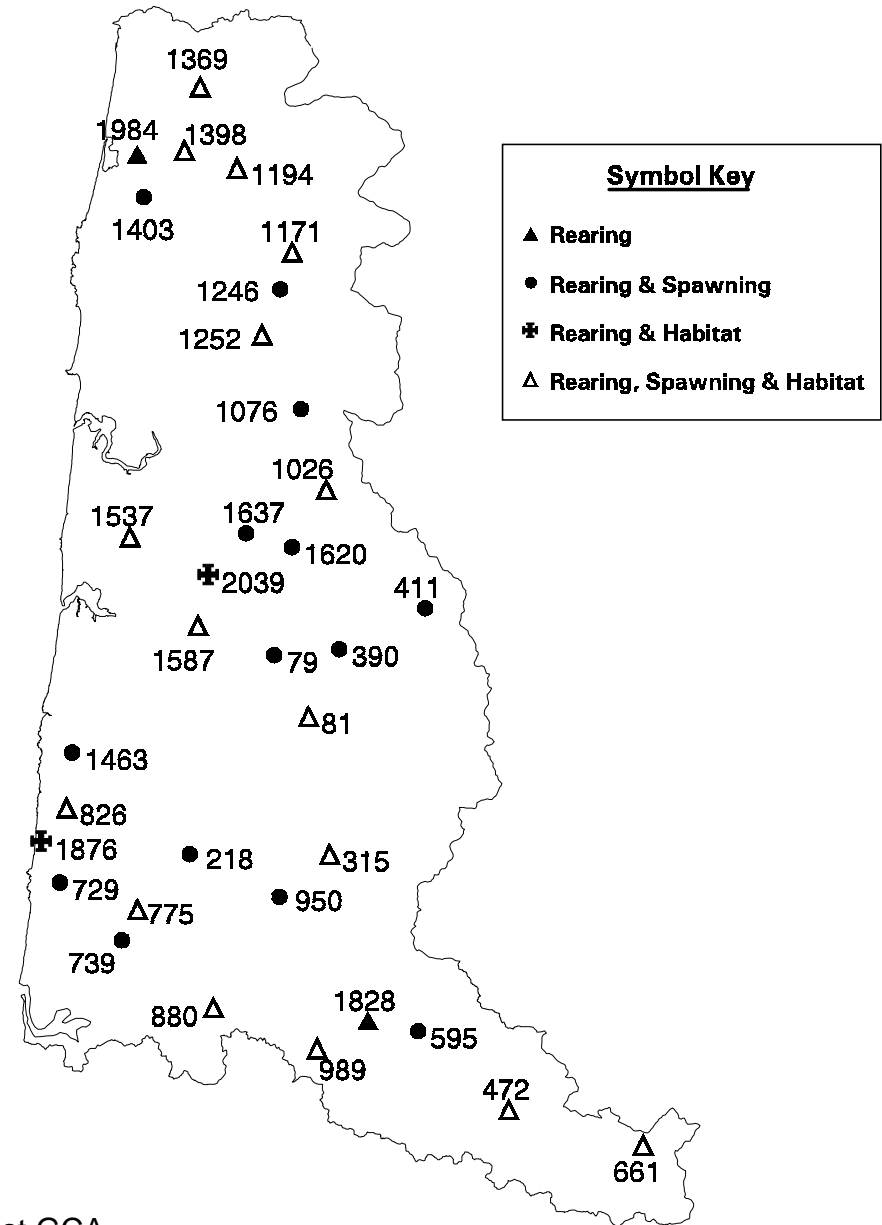


Figure 5. Location of sites snorkeled in 1999 in the Mid-Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH
68	COOS RIVER	SOUTH FORK	BOTTOM CR, N FK
191	COQUILLE RIVER	MAIN STEM AND BAY	ROLLAN CR
311	COQUILLE RIVER	SOUTH FORK	DEMENT CR
326	FOURMILE CR	MAIN STEM	FOURMILE CR
361	COQUILLE RIVER	EAST FORK	WEEKLY CR
425	COQUILLE RIVER	MIDDLE FORK	BIG CR
451	COQUILLE RIVER	NORTH FORK	MIDDLE CR
503	COOS RIVER	SOUTH FORK	EIGHT R CR
564	COQUILLE RIVER	NORTH FORK	MIDDLE CR
689	COQUILLE RIVER	NORTH FORK	JOHNS CR
781	COQUILLE RIVER	SOUTH FORK	SALMON CR
782	COQUILLE RIVER	SOUTH FORK	TWO BY FOUR CR
819	SIXES RIVER	MAIN STEM	SIXES R
858	SIXES RIVER	MAIN STEM	SIXES R
875	NEW RIVER	MAIN STEM	MORTON CR
884	FLORAS CREEK	MAIN STEM	FLORAS CR
941	COOS RIVER	MAIN STEM	SULLIVAN CR
1031	COOS RIVER	MILLICOMA RIVER	ELK CR
1210	COOS RIVER	MAIN STEM	WILLANCH CR
1297	COQUILLE RIVER	NORTH FORK	COQUILLE R, N FK
1319	COOS RIVER	SOUTH FORK	WREN SMITH CR
1342	COOS RIVER	MILLICOMA RIVER	MILLICOMA R, E FK
1385	COOS RIVER	MILLICOMA RIVER	MILLICOMA R, E FK
1396	COOS RIVER	MILLICOMA RIVER	MARLOW CR
1403	COOS RIVER	MILLICOMA RIVER	SCHUMACHER CR
1544	COQUILLE RIVER	NORTH FORK	WOODWARD CR
1899	COOS RIVER	SOUTH FORK	TIOGA CR
1905	COOS RIVER	SOUTH FORK	WILLIAMS R
2019	COQUILLE RIVER	NORTH FORK	COQUILLE R, N FK
2056	COQUILLE RIVER	MIDDLE FORK	ROCK CR
2131	COQUILLE RIVER	SOUTH FORK	JOHNSON CR
2416	COOS RIVER	MILLICOMA RIVER	MILLICOMA R, W FK
2579	TWOMILE CREEK	SOUTH FORK	S TWOMILE CR

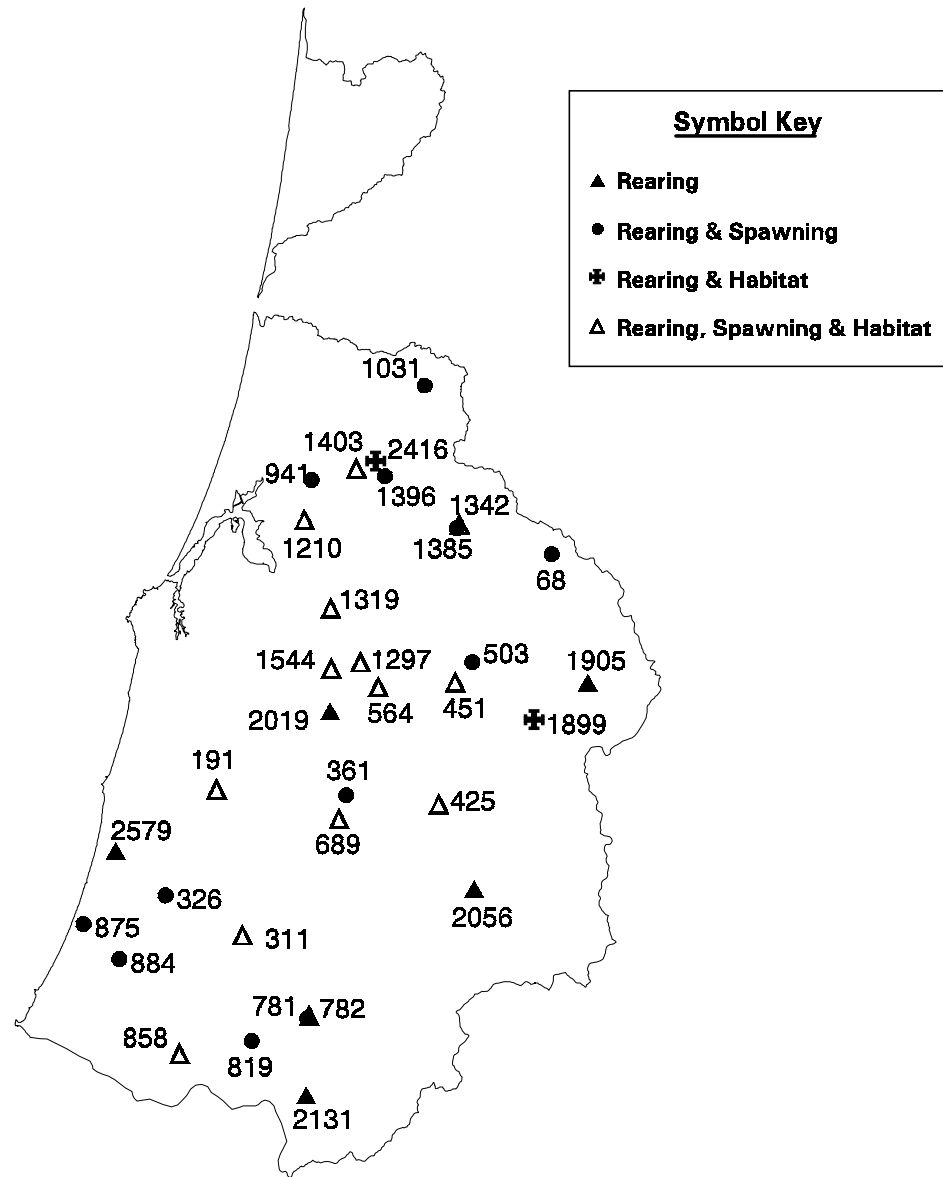


Figure 6. Location of sites snorkeled in 1998 in the Mid-South Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH
40	COOS RIVER	SOUTH FORK	WILLIAMS R
152	COQUILLE RIVER	MIDDLE FORK	BIG CR
326	FOURMILE CR	MAIN STEM	FOURMILE CR
440	COQUILLE RIVER	MIDDLE FORK	SANDY CR
446	COQUILLE RIVER	EAST FORK	BRUMMIT CR, E FK
486	COQUILLE RIVER	NORTH FORK	PARK CR, TRIB B
536	COQUILLE RIVER	NORTH FORK	CHERRY CR, N FK
600	COQUILLE RIVER	EAST FORK	ELK CR
640	COQUILLE RIVER	EAST FORK	S. FK. ELK CR
679	COQUILLE RIVER	MIDDLE FORK	BIG CR
689	COQUILLE RIVER	NORTH FORK	JOHNS CR
781	COQUILLE RIVER	SOUTH FORK	SALMON CR
931	COOS RIVER	MAIN STEM	KENTUCK CR
1023	COOS RIVER	MILLICOMA RIVER	ELK CR
1153	COOS RIVER	MILLICOMA RIVER	COUGAR CR
1199	COOS RIVER	SOUTH FORK	ROGERS CR
1319	COOS RIVER	SOUTH FORK	WREN SMITH CR
1376	COOS RIVER	SOUTH FORK	COAL CR
1385	COOS RIVER	MILLICOMA RIVER	MILLICOMA R, E FK
1452	COOS RIVER	MILLICOMA RIVER	MILLICOMA R, E FK
1542	COQUILLE RIVER	NORTH FORK	WOODWARD CR
1905	COOS RIVER	SOUTH FORK	WILLIAMS R
2002	TWOMILE CREEK	MAIN STEM	TWOMILE CR
2072	COQUILLE RIVER	SOUTH FORK	UPPER LAND CR
2103	SIXES RIVER	MAIN STEM	SIXES R
2161	COQUILLE RIVER	SOUTH FORK	HOSPOSKO CR
2220	SIXES RIVER	MAIN STEM	DRY CR

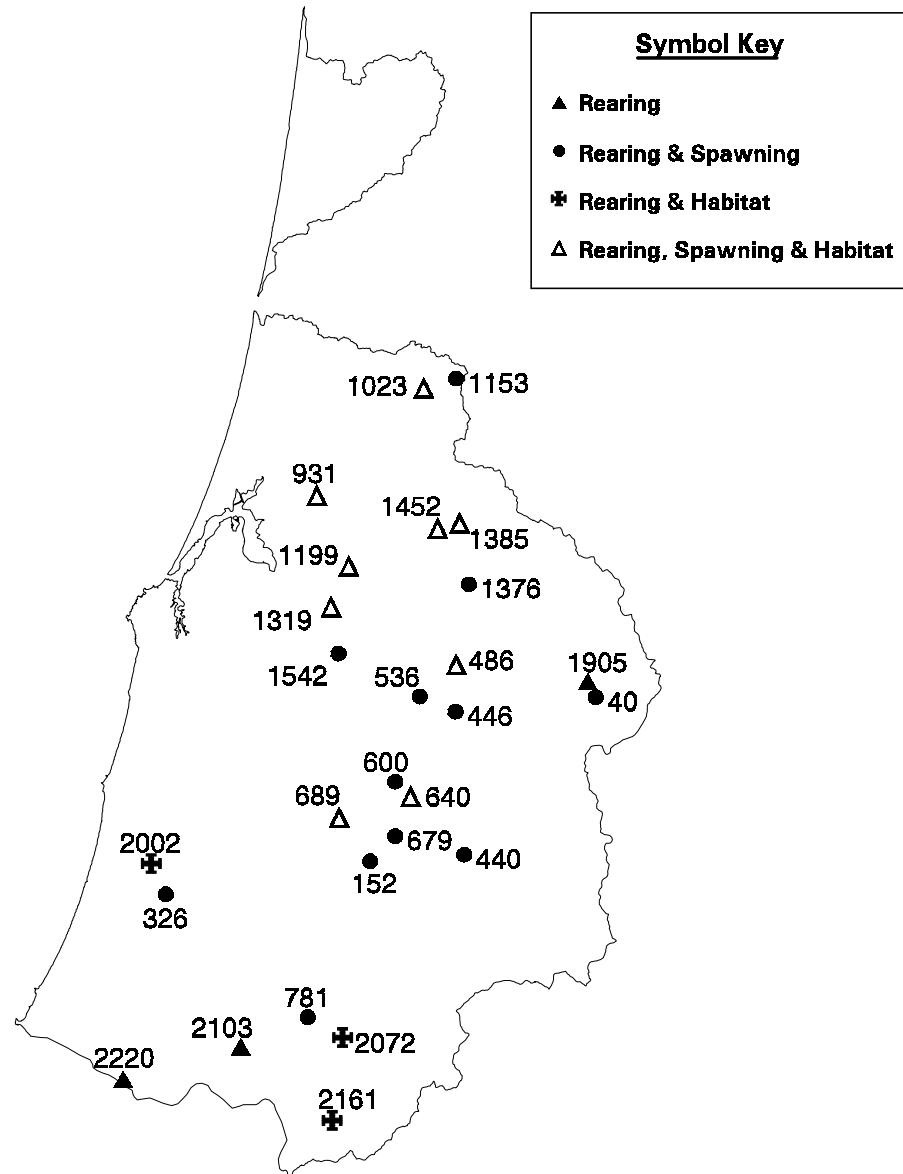
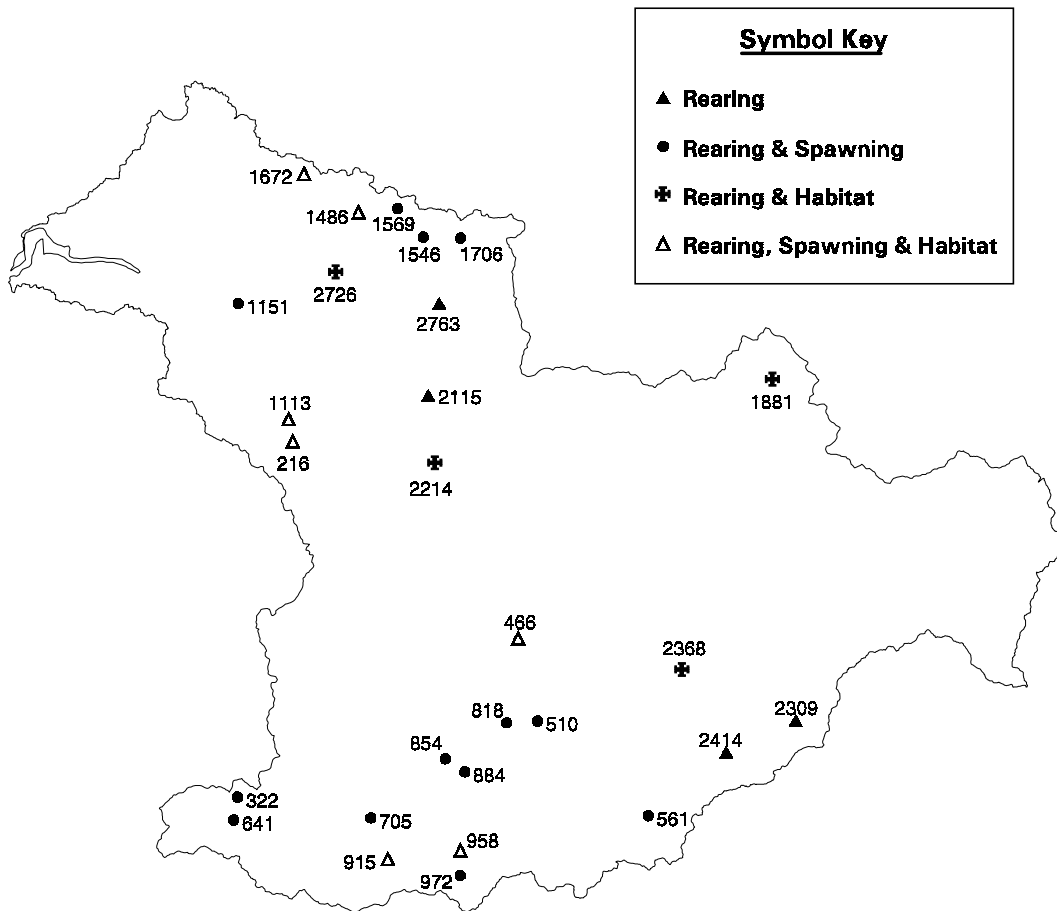


Figure 7. Location of sites snorkeled in 1999 in the Mid-South Coast GCA.



SITE	BASIN NAME	SUBBASIN NAME	REACH
216	UMPQUA RIVER	MAIN STEM AND BAY	LITTLE WOLF CR
322	UMPQUA RIVER	SOUTH UMPQUA	ELK VALLEY CR
466	UMPQUA RIVER	SOUTH UMPQUA	N MYRTLE CR
510	UMPQUA RIVER	SOUTH UMPQUA	DAYS CR
561	UMPQUA RIVER	SOUTH UMPQUA	ELK CR
641	UMPQUA RIVER	SOUTH UMPQUA	ELK VALLEY CR
705	UMPQUA RIVER	SOUTH UMPQUA	MIDDLE CR, S FK
818	UMPQUA RIVER	SOUTH UMPQUA	WOOD CR
854	UMPQUA RIVER	SOUTH UMPQUA	CANYON CR
884	UMPQUA RIVER	SOUTH UMPQUA	O'SHEA CR
915	UMPQUA RIVER	SOUTH UMPQUA	WOOD CR
958	UMPQUA RIVER	SOUTH UMPQUA	CLEAR CR
972	UMPQUA RIVER	SOUTH UMPQUA	BULL RUN CR
1113	UMPQUA RIVER	MAIN STEM AND BAY	WOLF CR
1151	UMPQUA RIVER	MAIN STEM AND BAY	LUTSINGER CR
1486	UMPQUA RIVER	SMITH RIVER	SMITH R, S FK
1546	UMPQUA RIVER	ELK CREEK	ELLENBURG CR
1569	UMPQUA RIVER	SMITH RIVER	SMITH R
1672	UMPQUA RIVER	SMITH RIVER	S SISTER CR
1706	UMPQUA RIVER	ELK CREEK	ROCK CR
1881	UMPQUA RIVER	NORTH UMPQUA	HORSE HEAVEN CR
2115	UMPQUA RIVER	CALAPOOYA CREEK	CABIN CR
2214	UMPQUA RIVER	NORTH UMPQUA	SUTHERLIN CR
2309	UMPQUA RIVER	SOUTH UMPQUA	FALCON CR
2368	UMPQUA RIVER	SOUTH UMPQUA	BOULDER CR
2414	UMPQUA RIVER	SOUTH UMPQUA	BLACK CANYON CR
2726	UMPQUA RIVER	ELK CREEK	BIG TOM FOLLEY CR
2763	UMPQUA RIVER	ELK CREEK	YONCALLA CR

Figure 8. Location of sites snorkeled in 1999 in the Umpqua GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH	SITE	BASIN NAME	SUBBASIN NAME	REACH
36	ROGUE	MAIN STEM	GRAVE CR	415	ROGUE	LOBSTER CREEK	LOBSTER CR, N FK
37	ROGUE	MAIN STEM	GRAVE CR	504	ROGUE	ILLINOIS RIVER	ALTHOUSE CR
40	ROGUE	MAIN STEM	EVANS CR, W FK	505	ROGUE	ILLINOIS RIVER	ALTHOUSE CR
45	ROGUE	MAIN STEM	EVANS CR, W FK	549	ROGUE	ILLINOIS RIVER	LITTLE GRAYBACK CR
53	ROGUE	MAIN STEM	SUGARPINE CR	620	ROGUE	MAIN STEM	LITTLE BUTTE CR, N
74	ROGUE	MAIN STEM	FLAT CR	629	ROGUE	MAIN STEM	SODA CR
103	ROGUE	MAIN STEM	LITTLE BUTTE CR, S	631	ROGUE	MAIN STEM	LITTLE BUTTE CR, S
122	ROGUE	BIG BUTTE CREEK	BIG BUTTE CR, N FK	668	ROGUE	APPLEGATE RIVER	APPLEGATE R
134	ROGUE	BIG BUTTE CREEK	BIG BUTTE CR, N FK1	688	ROGUE	MAIN STEM	PLEASANT CR
165	ROGUE	MAIN STEM	EVANS CR	739	ROGUE	APPLEGATE RIVER	WILLIAMS CR
219	ROGUE	MAIN STEM	SALT CR	745	ROGUE	APPLEGATE RIVER	WILLIAMS CR
226	ROGUE	MAIN STEM	EVANS CR, W FK	781	ROGUE	APPLEGATE RIVER	WILLIAMS CR, E FK
257	ROGUE	MAIN STEM	JUMPOFF JOE CR	791	ROGUE	APPLEGATE RIVER	THOMPSON CR
288	ROGUE	MAIN STEM	WOLF CR	795	ROGUE	ILLINOIS RIVER	DEER CR, S FK
307	ROGUE	MAIN STEM	JUMPOFF JOE CR	831	ROGUE	APPLEGATE RIVER	WATERS CR
309	ROGUE	MAIN STEM	JUMPOFF JOE CR	838	ROGUE	MAIN STEM	LIMPY CR
332	ROGUE	MAIN STEM	SHASTA COSTA CR	860	ROGUE	APPLEGATE RIVER	JACKSON CR
335	ROGUE	MAIN STEM	SHASTA COSTA CR	869	ROGUE	APPLEGATE RIVER	WATERS CR
370	ROGUE	LOBSTER CREEK	BOULDER CR	907	ROGUE	ILLINOIS RIVER	CROOKS CR
397	ROGUE	LOBSTER CREEK	LOBSTER CR	943	ROGUE	ILLINOIS RIVER	CROOKS CR
410	ROGUE	LOBSTER CREEK	LOBSTER CR, N FK				

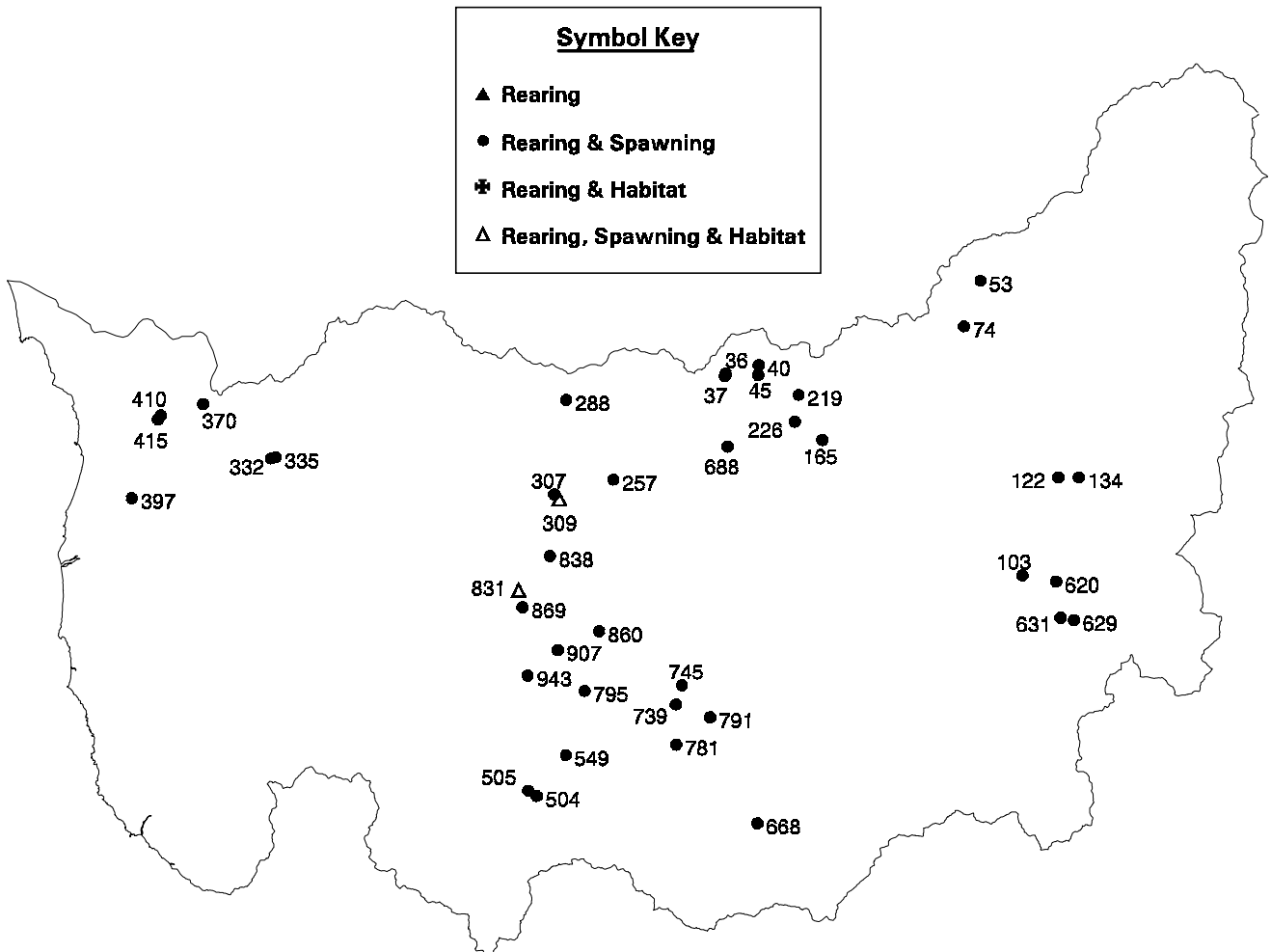


Figure 9. Location of sites snorkeled in 1998 in the South Coast GCA.

SITE	BASIN NAME	SUBBASIN NAME	REACH	SITE	BASIN NAME	SUBBASIN NAME	REACH
15	ROGUE	MAIN STEM	GRAVE CR	446	ROGUE	ILLINOIS RIVER	ROUGH AND READY
24	ROGUE	MAIN STEM	GRAVE CR	490	ROGUE	ILLINOIS RIVER	GRAYBACK CR
36	ROGUE	MAIN STEM	GRAVE CR	493	ROGUE	APPLEGATE RIVER	WILLIAMS CR, W FK,
53	ROGUE	MAIN STEM	SUGARPINE CR	539	ROGUE	ILLINOIS RIVER	BEAR CR
80	ROGUE	MAIN STEM	ELK CR, W BR	549	ROGUE	ILLINOIS RIVER	LITTLE GRAYBACK
92	ROGUE	BIG BUTTE CREEK	BIG BUTTE CR, S FK	566	ROGUE	ILLINOIS RIVER	WOOD CR
108	ROGUE	MAIN STEM	LITTLE BUTTE CR, N	576	ROGUE	ILLINOIS RIVER	ILLINOIS R, W FK
122	ROGUE	BIG BUTTE CREEK	BIG BUTTE CR, N FK	629	ROGUE	MAIN STEM	SODA CR
139	ROGUE	MAIN STEM	TRAIL CR	636	ROGUE	MAIN STEM	LAKE CR
140	ROGUE	MAIN STEM	TRAIL CR	671	ROGUE	MAIN STEM	SARDINE CR
196	ROGUE	MAIN STEM	SAMS CR	681	ROGUE	MAIN STEM	PLEASANT CR
210	ROGUE	MAIN STEM	EVANS CR, W FK	709	ROGUE	MAIN STEM	JONES CR
238	ROGUE	MAIN STEM	ROCK CR	757	ROGUE	APPLEGATE RIVER	FOREST CR
266	ROGUE	MAIN STEM	WOLF CR	781	ROGUE	APPLEGATE RIVER	WILLIAMS CR, E FK
278	ROGUE	MAIN STEM	WOLF CR	797	ROGUE	ILLINOIS RIVER	DEER CR
302	ROGUE	MAIN STEM	TAYLOR CR	803	ROGUE	ILLINOIS RIVER	DEER CR, N FK
309	ROGUE	MAIN STEM	JUMPOFF JOE CR	843	ROGUE	APPLEGATE RIVER	WATERS CR, RT FK
358	ROGUE	LOBSTER CREEK	LOBSTER CR, S FK	869	ROGUE	APPLEGATE RIVER	WATERS CR
367	ROGUE	LOBSTER CREEK	BOULDER CR	914	ROGUE	ILLINOIS RIVER	CROOKS CR
415	ROGUE	LOBSTER CREEK	LOBSTER CR, N FK	915	ROGUE	ILLINOIS RIVER	CROOKS CR
445	ROGUE	ILLINOIS RIVER	ROUGH AND READY				

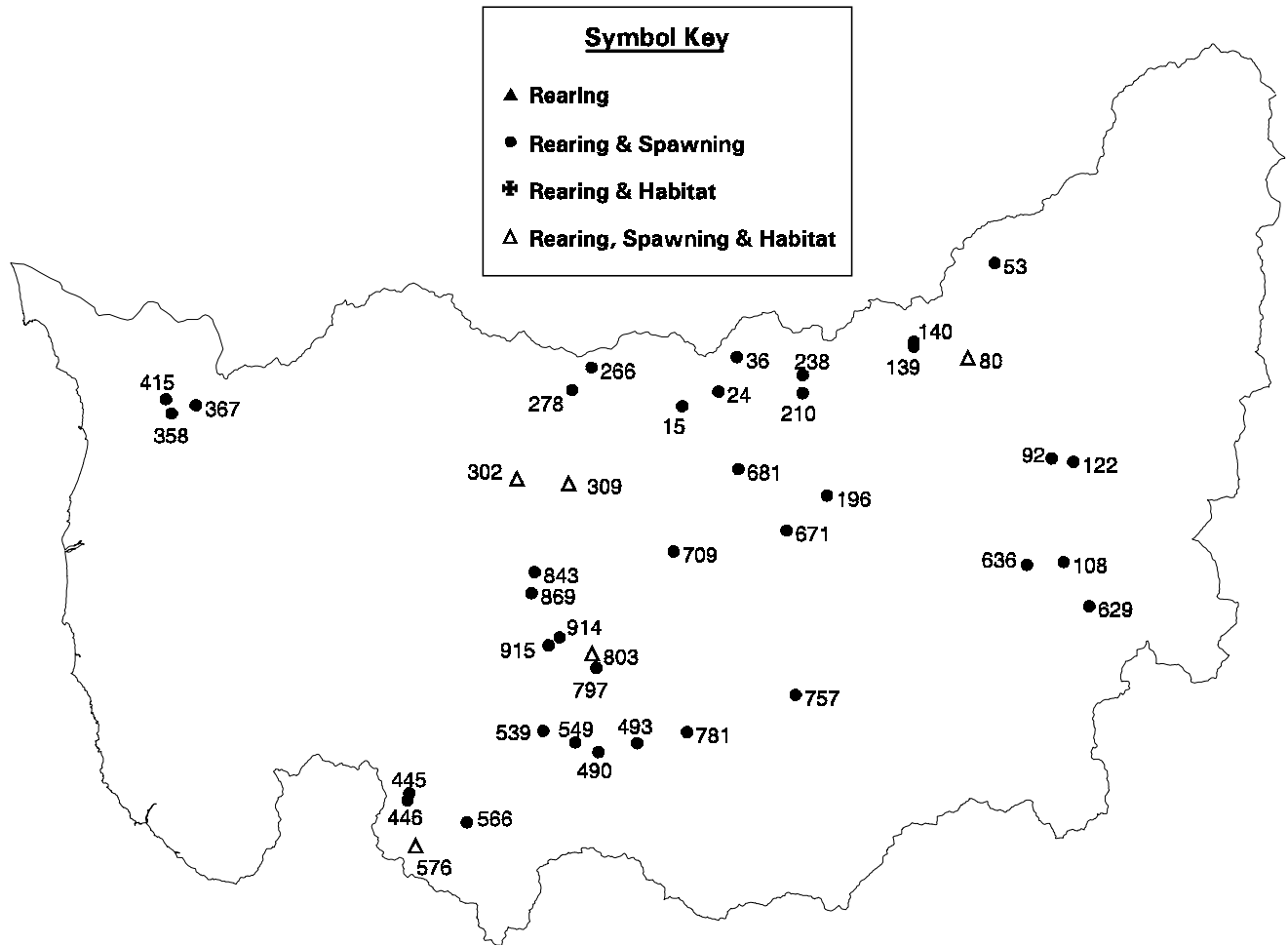


Figure 10. Location of sites snorkeled in 1999 in the South Coast GCA.

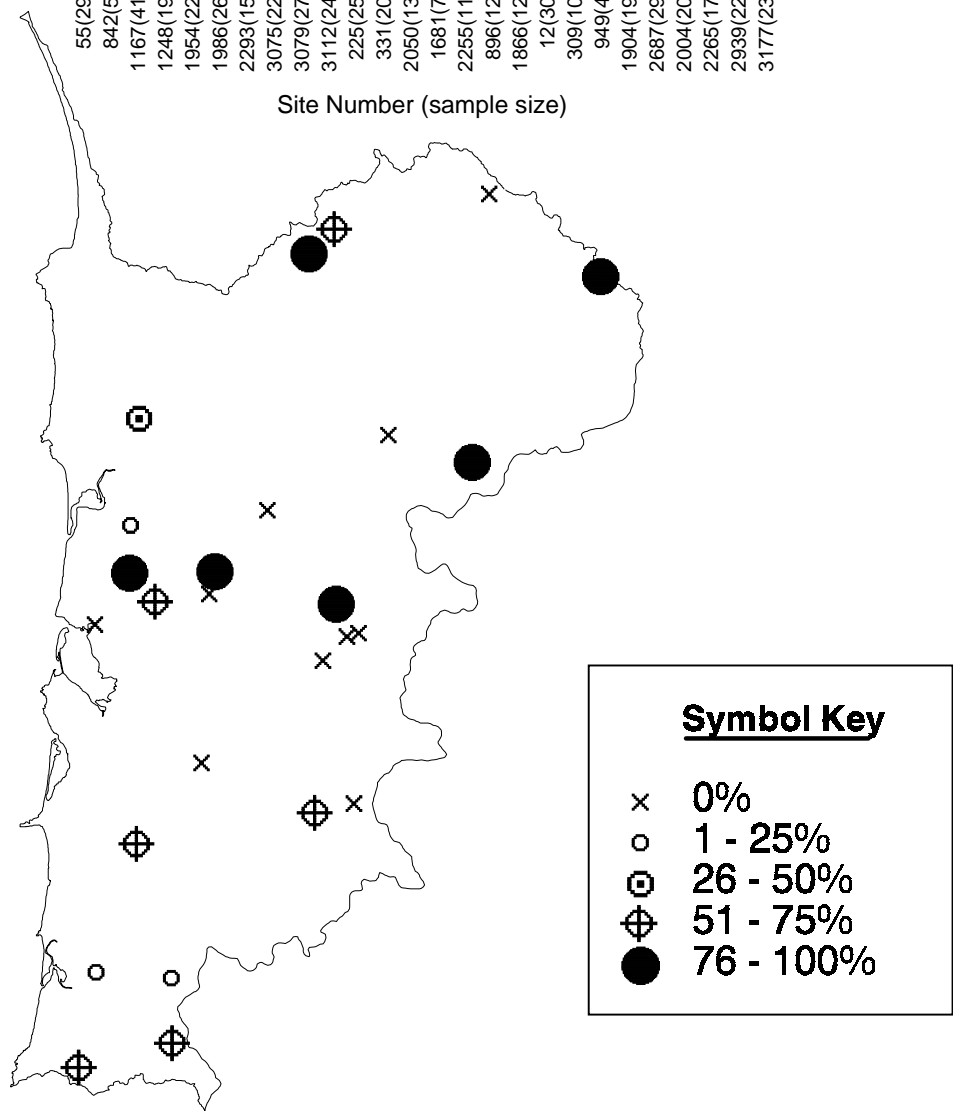
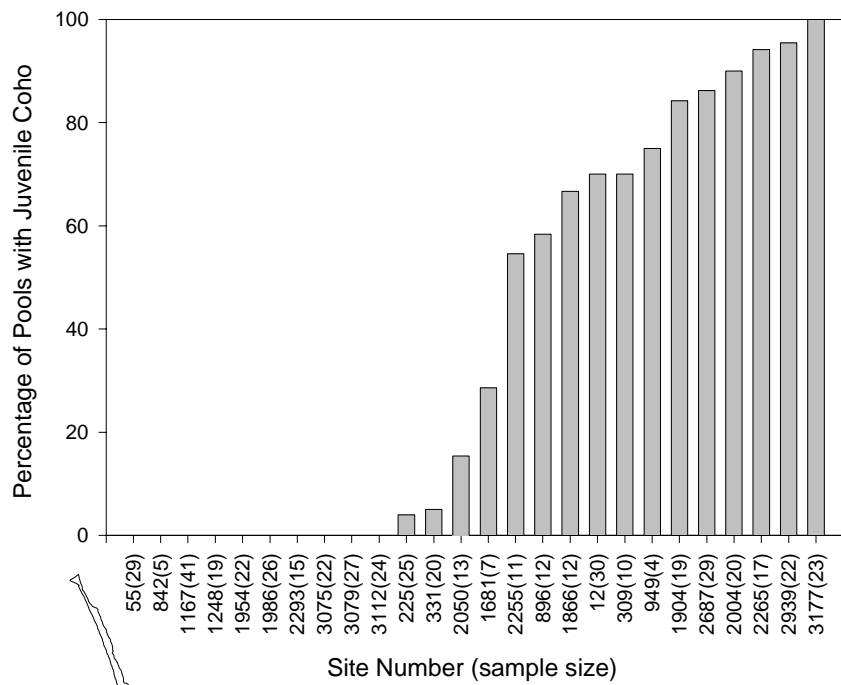


Figure 11. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1998 in the North Coast GCA.

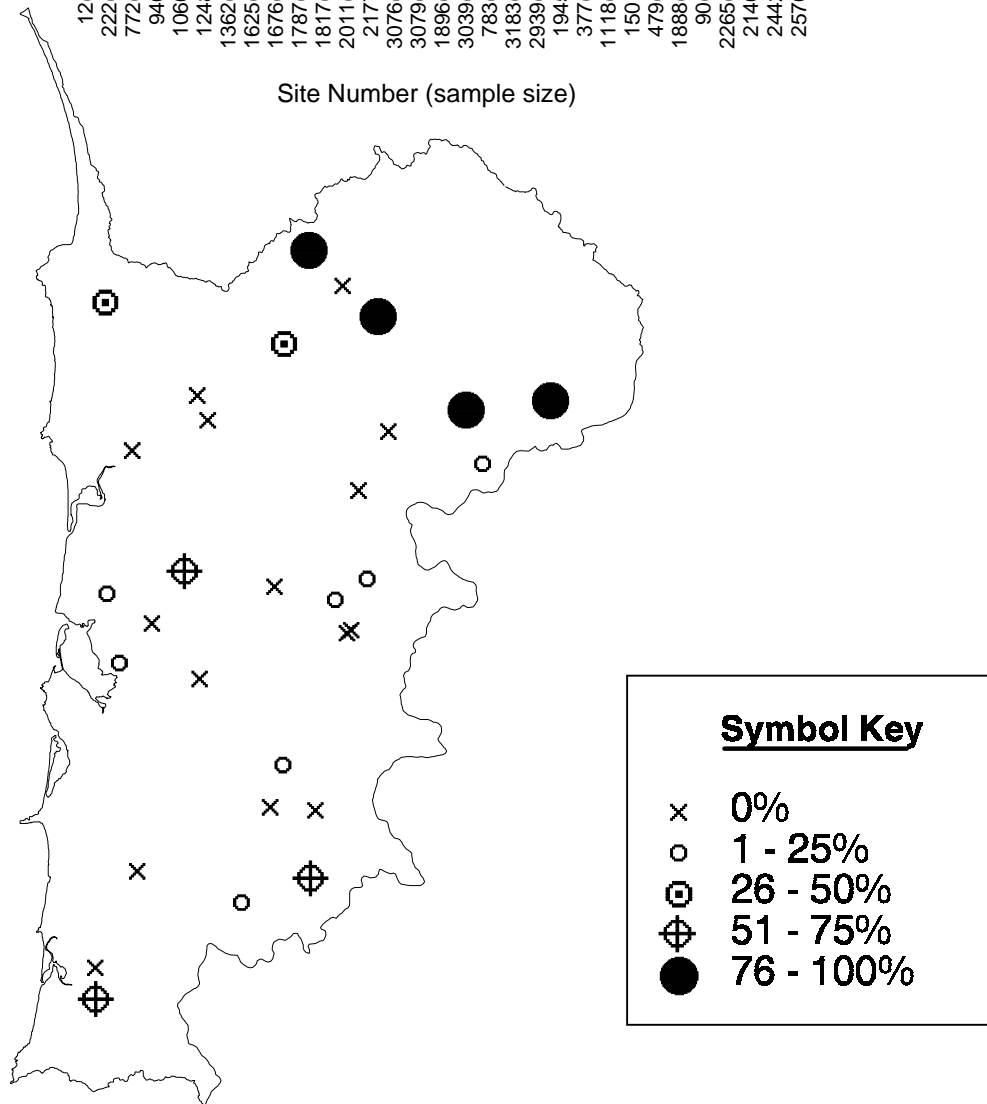
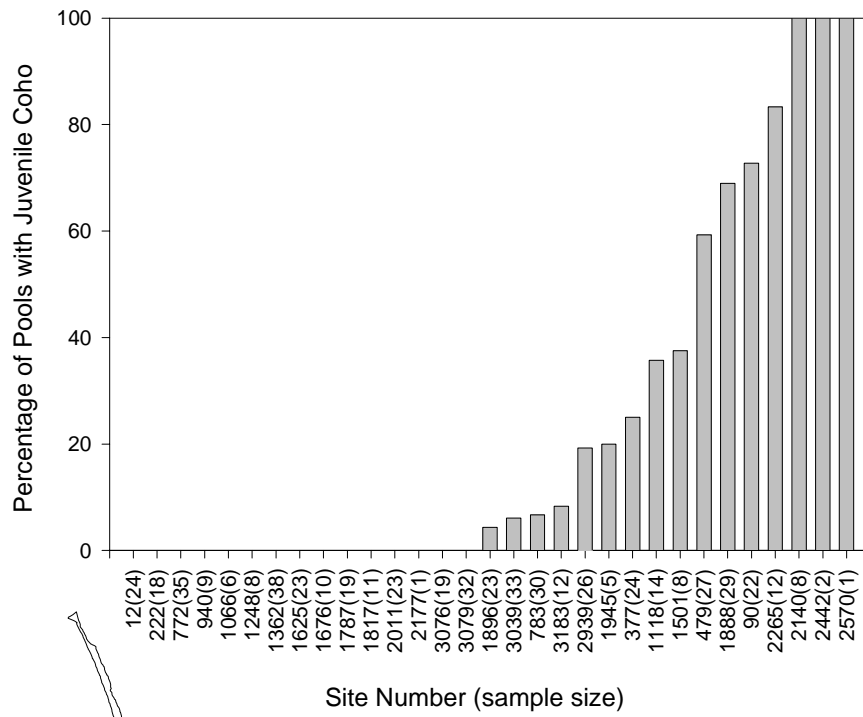


Figure 12. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1999 in the North Coast GCA.

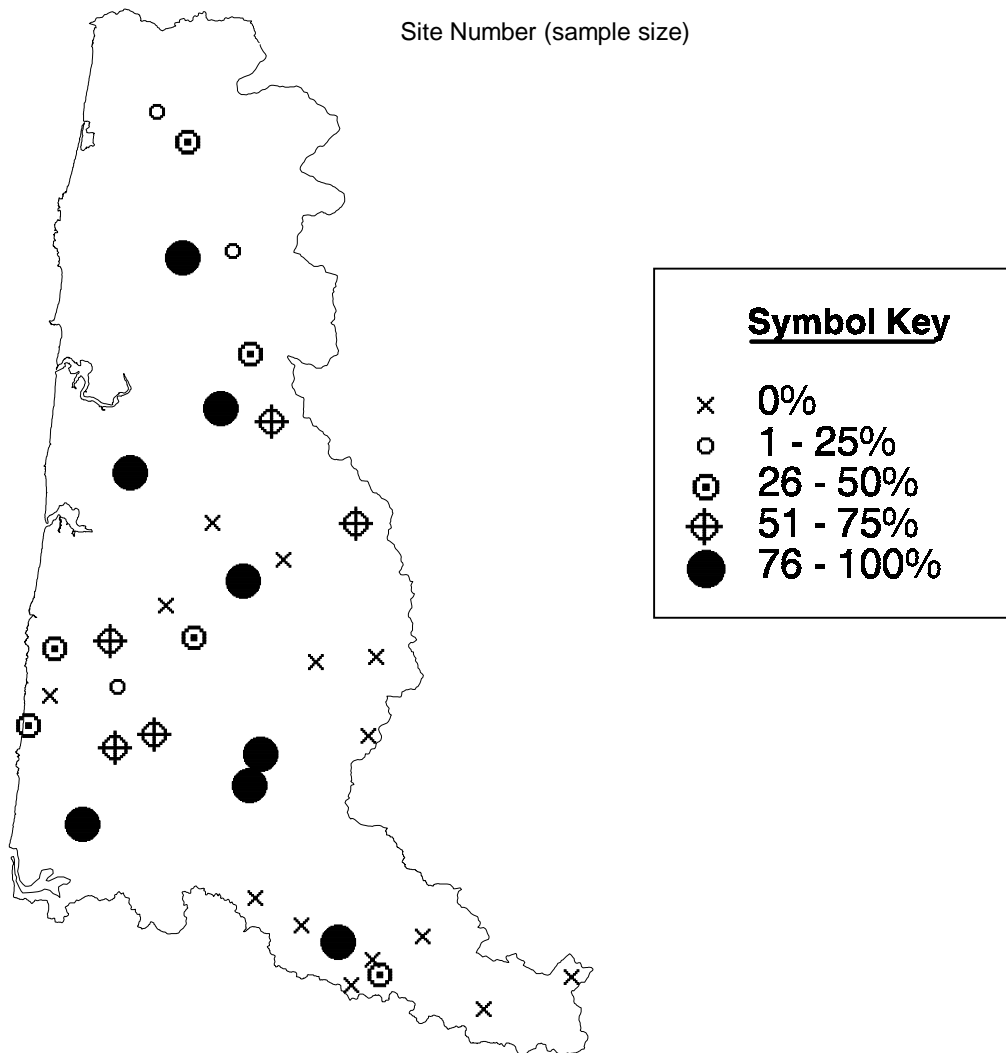
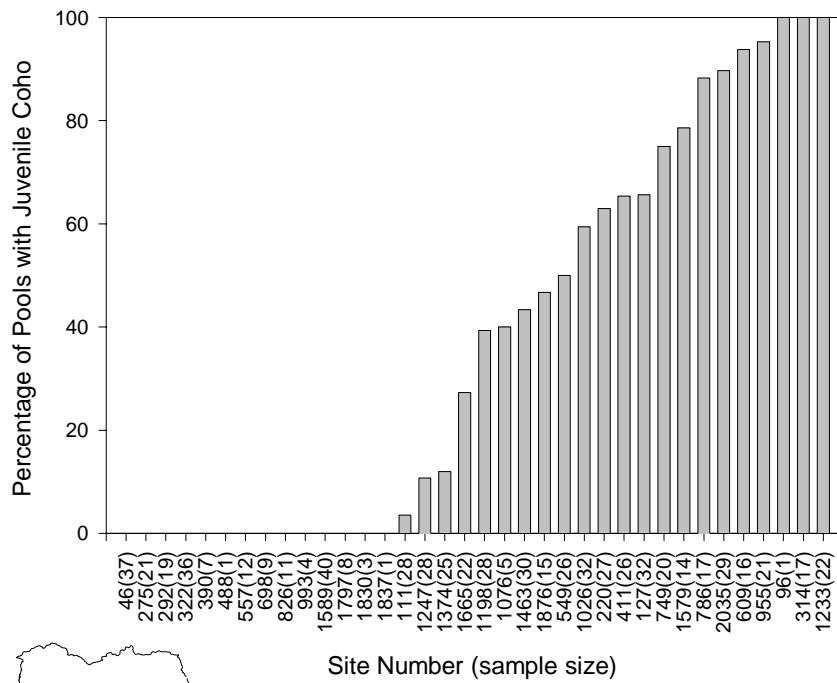


Figure 13. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1998 in the Mid-Coast GCA.

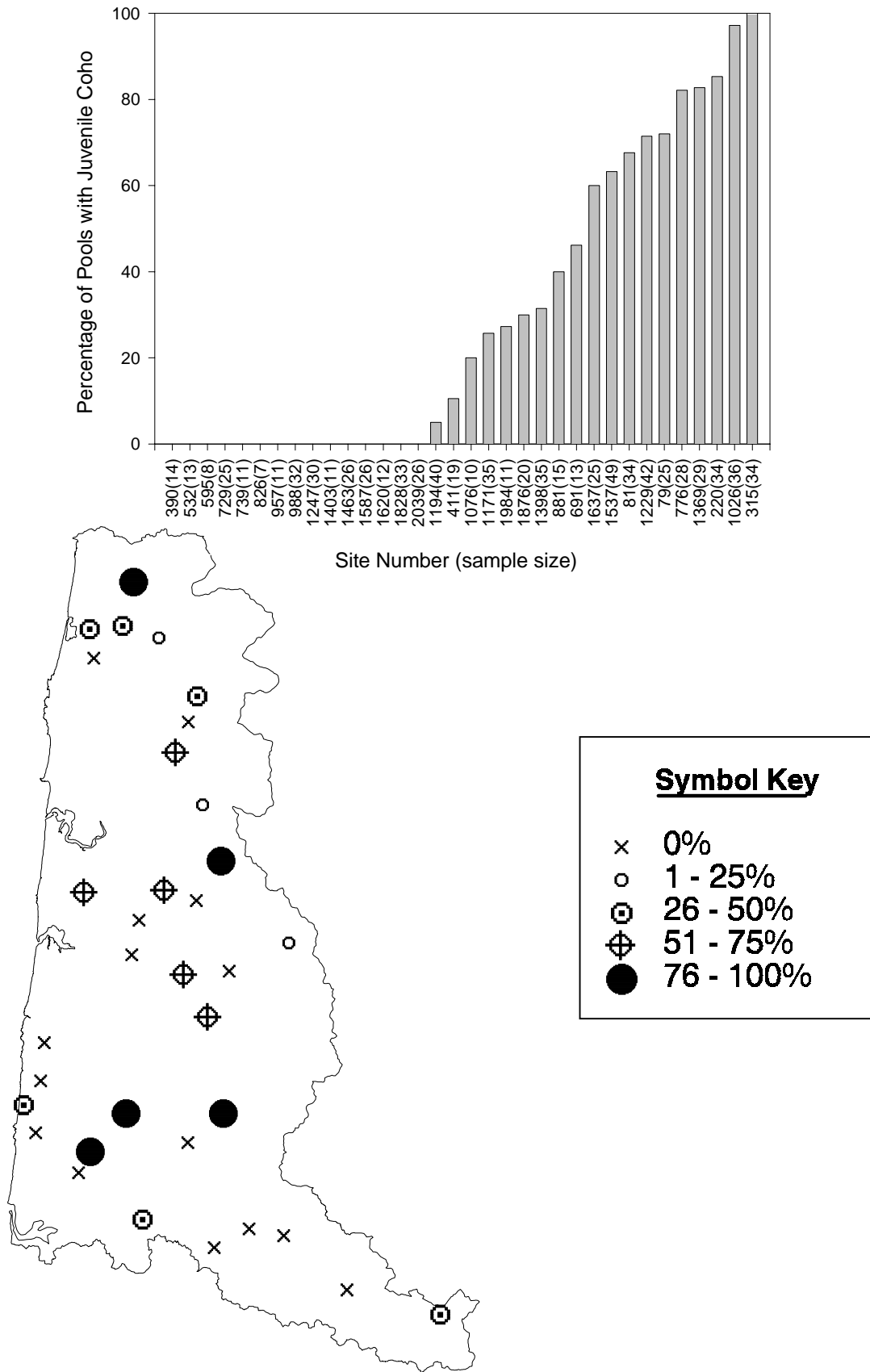


Figure 14. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1999 in the Mid-Coast GCA.

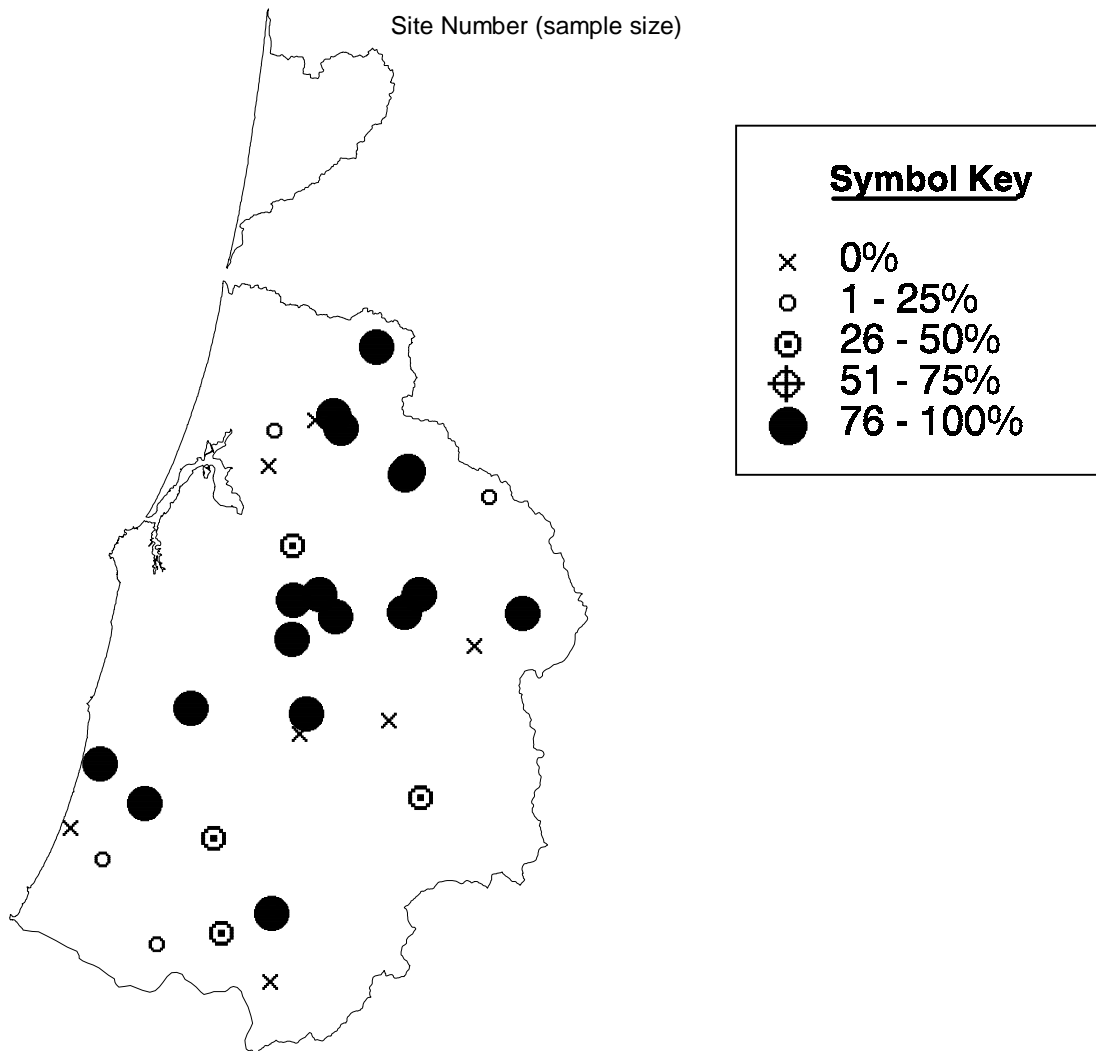
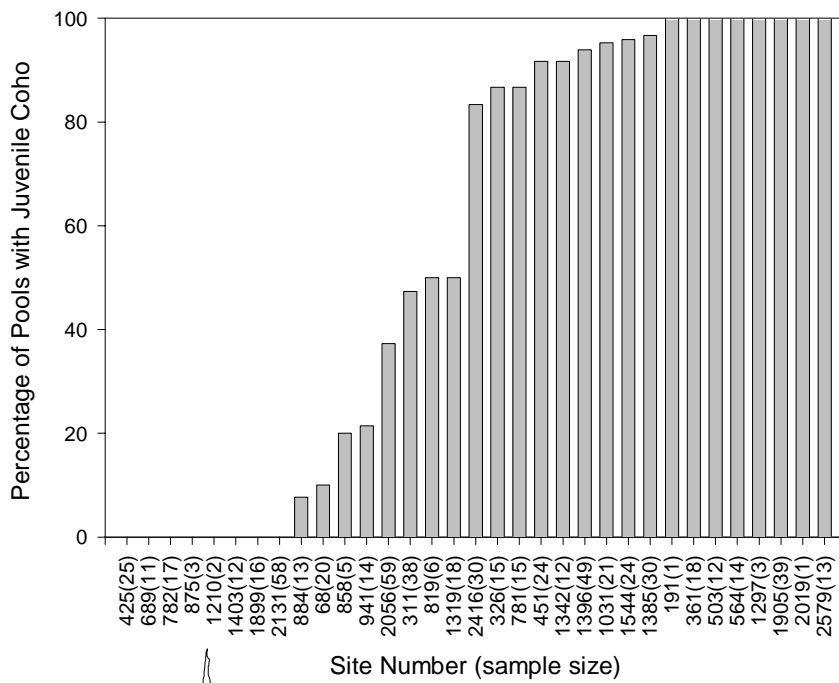


Figure 15. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1998 in the Mid-South Coast GCA.

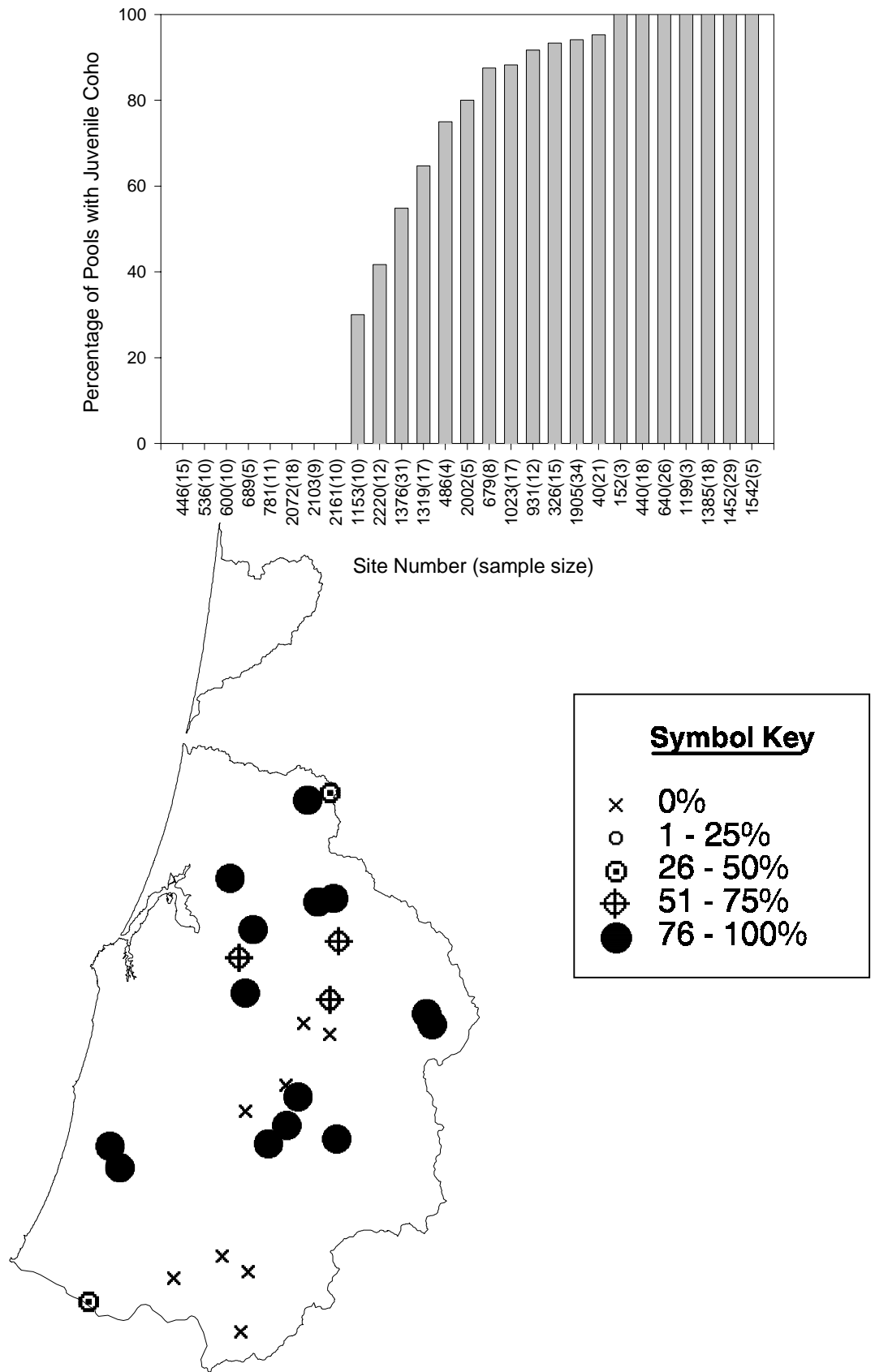


Figure 16. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1999 in the Mid-South Coast GCA.

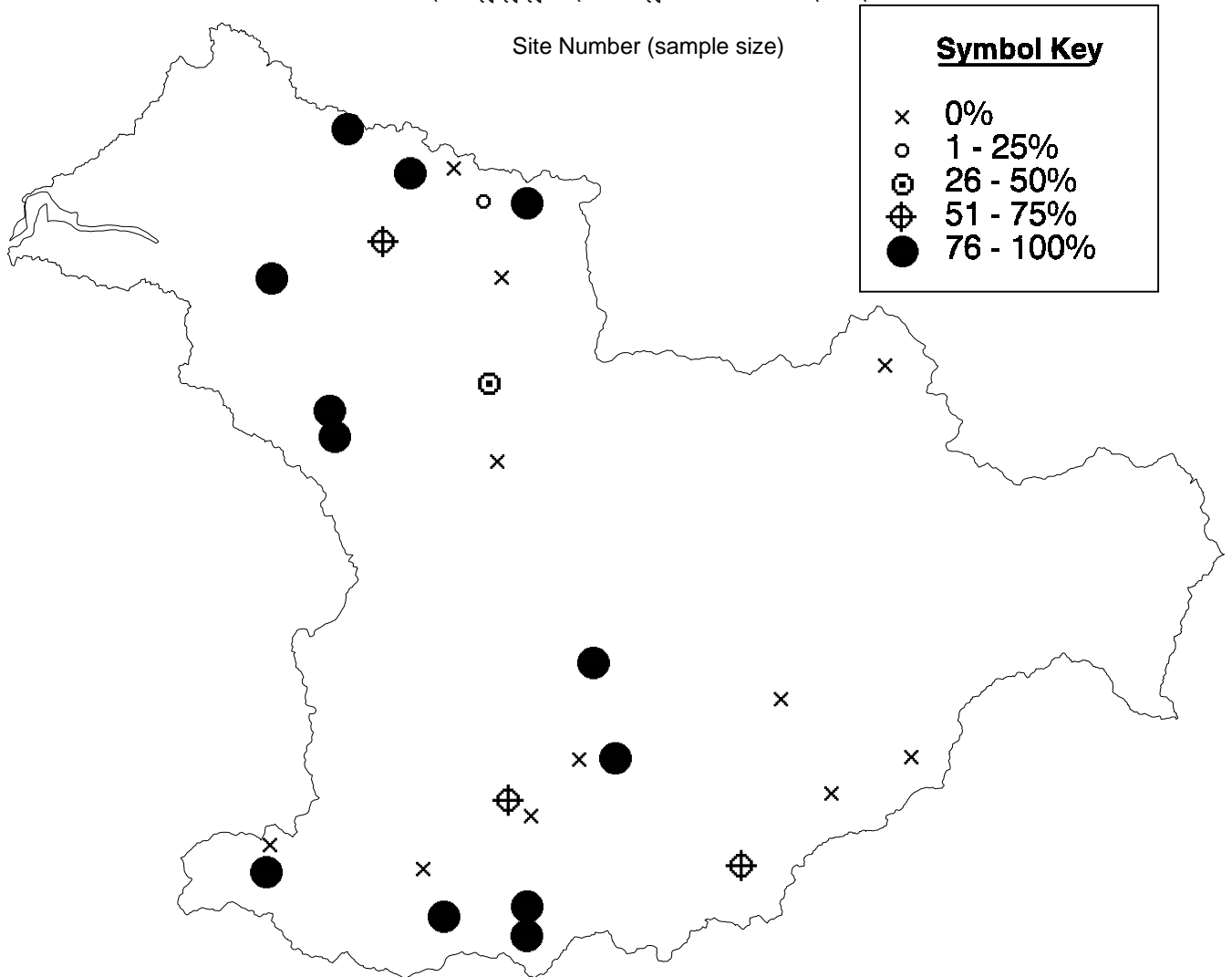
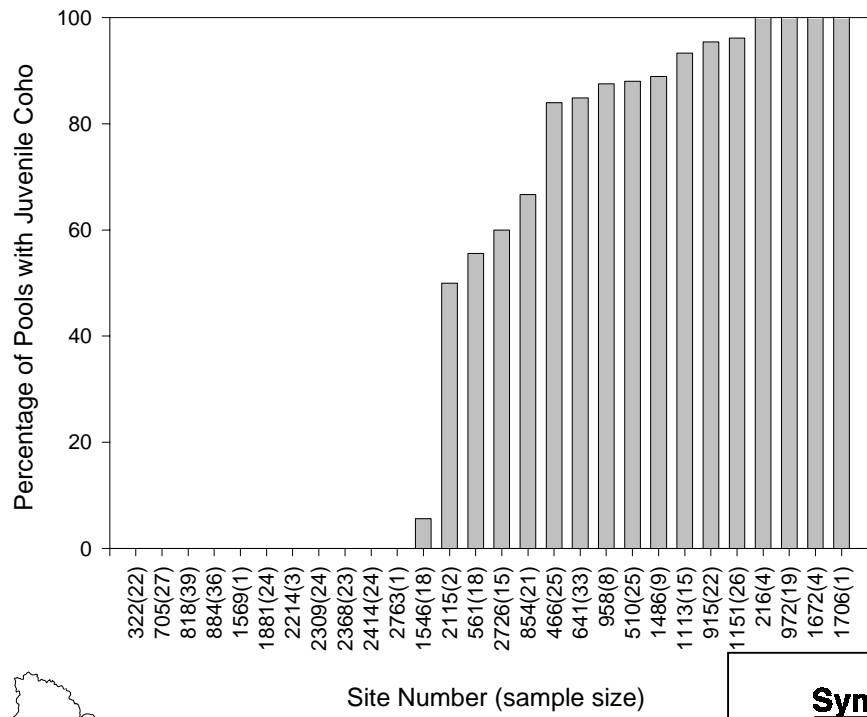


Figure 17. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1999 in the Umpqua GCA.

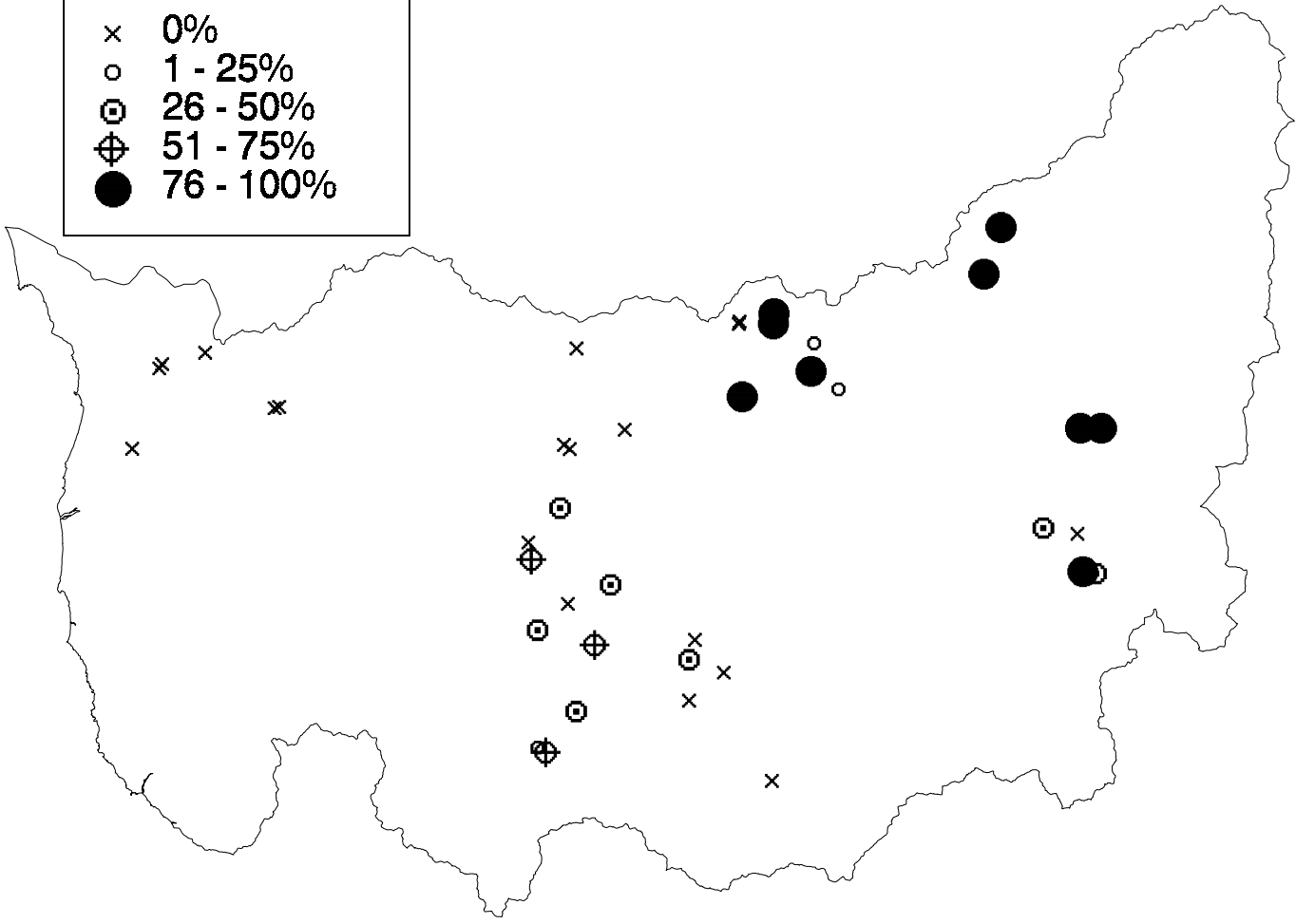
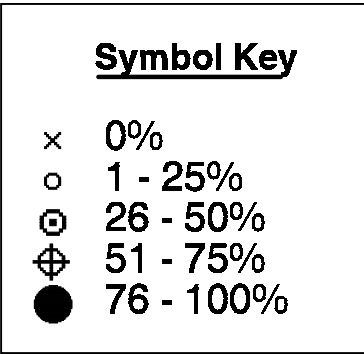
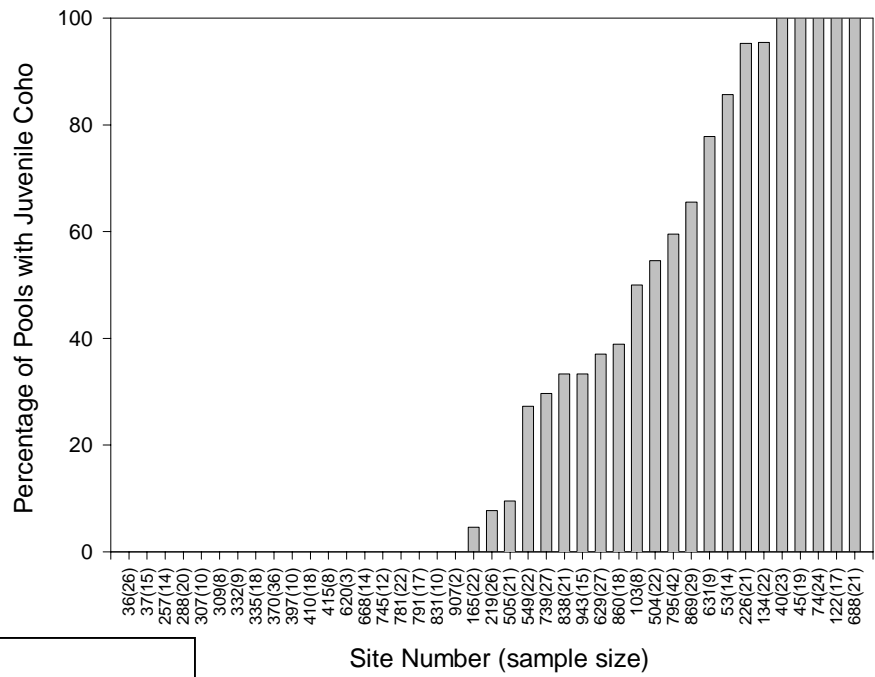


Figure 18. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1998 in the South Coast GCA.

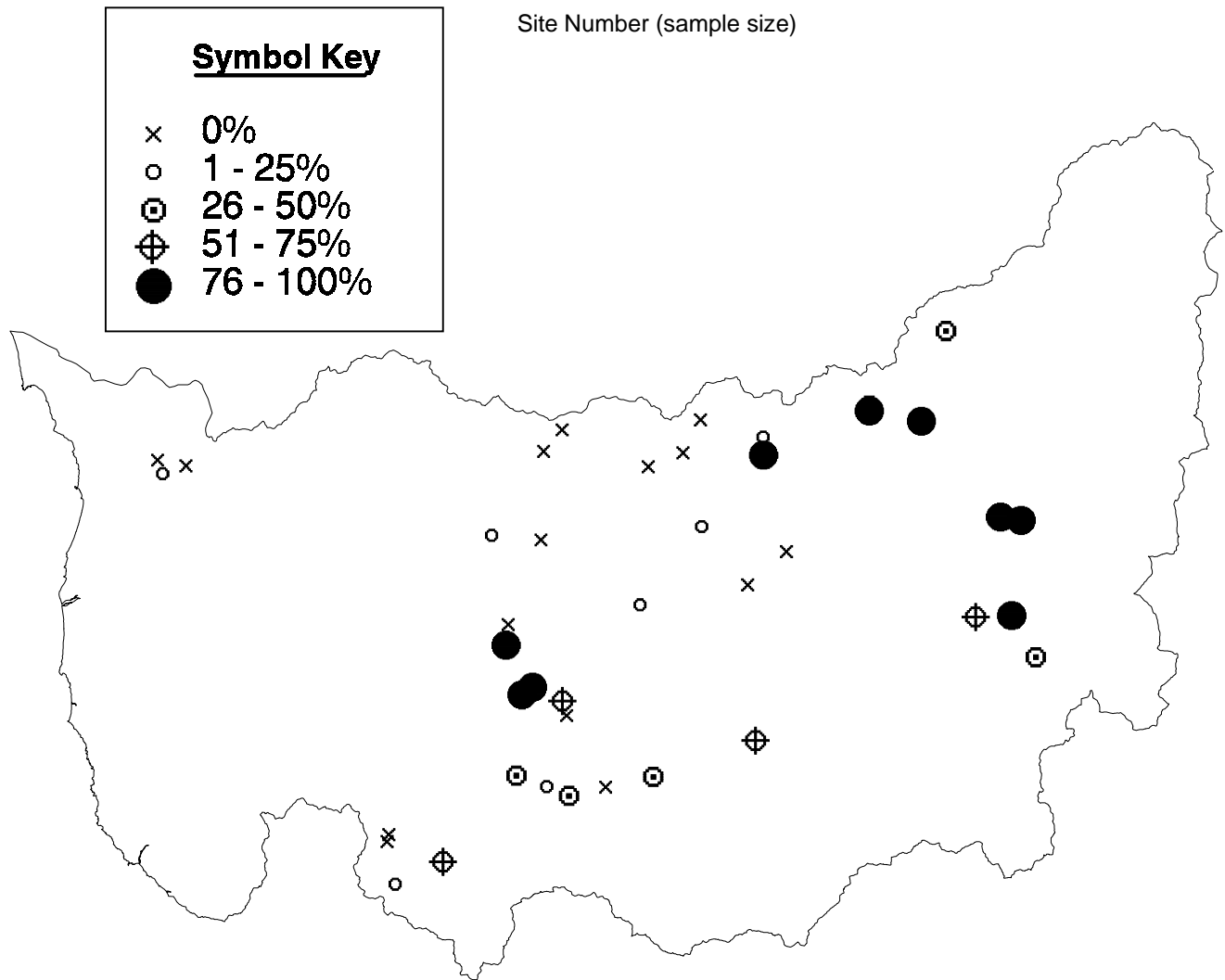
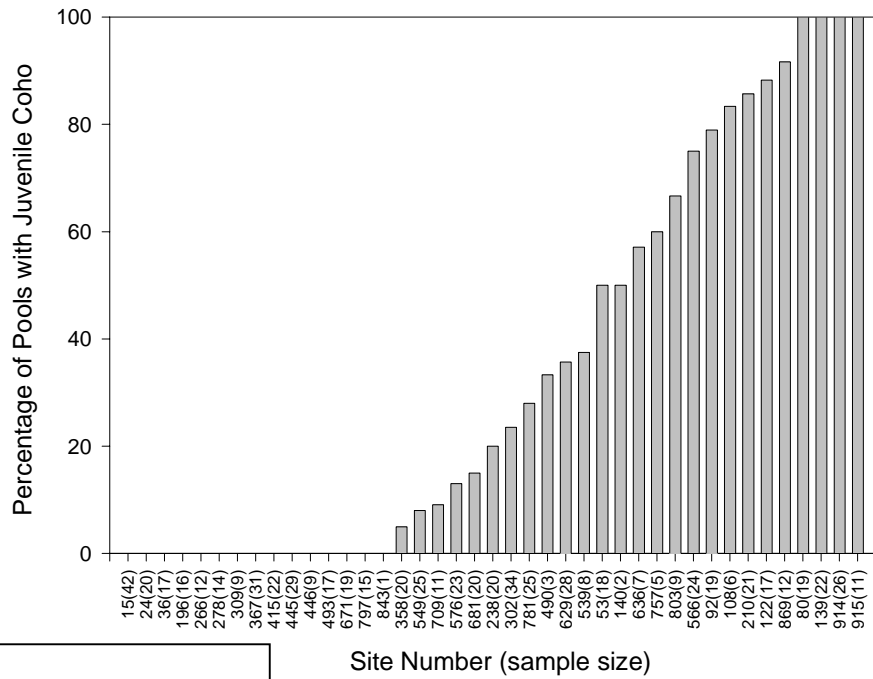


Figure 19. Percentage of pools that contained juvenile coho at each site snorkeled in the summer of 1999 in the South Coast GCA.

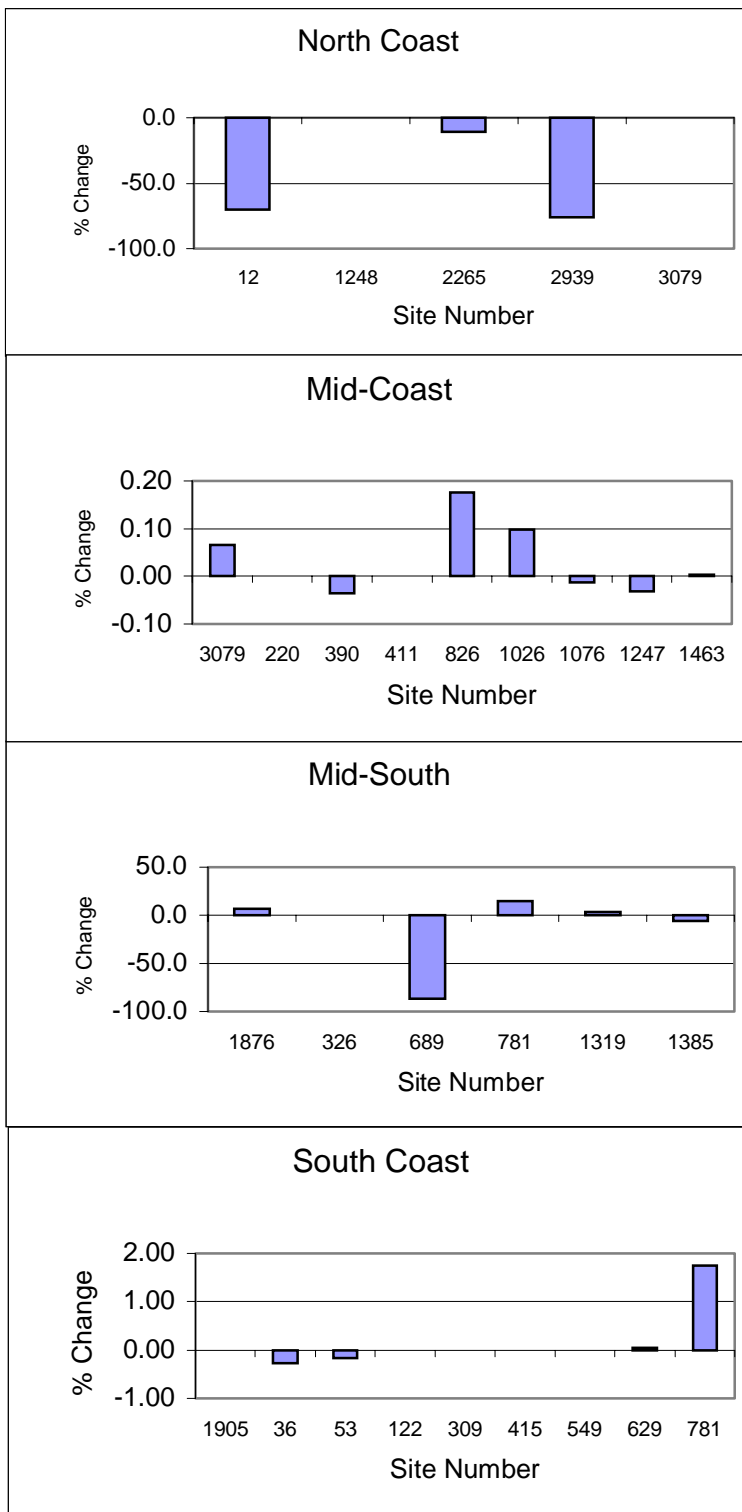


Figure 20. Changes in the percentage of pools that contained juvenile coho from 1998 to 1999 at annual sites in four coastal GCAs.

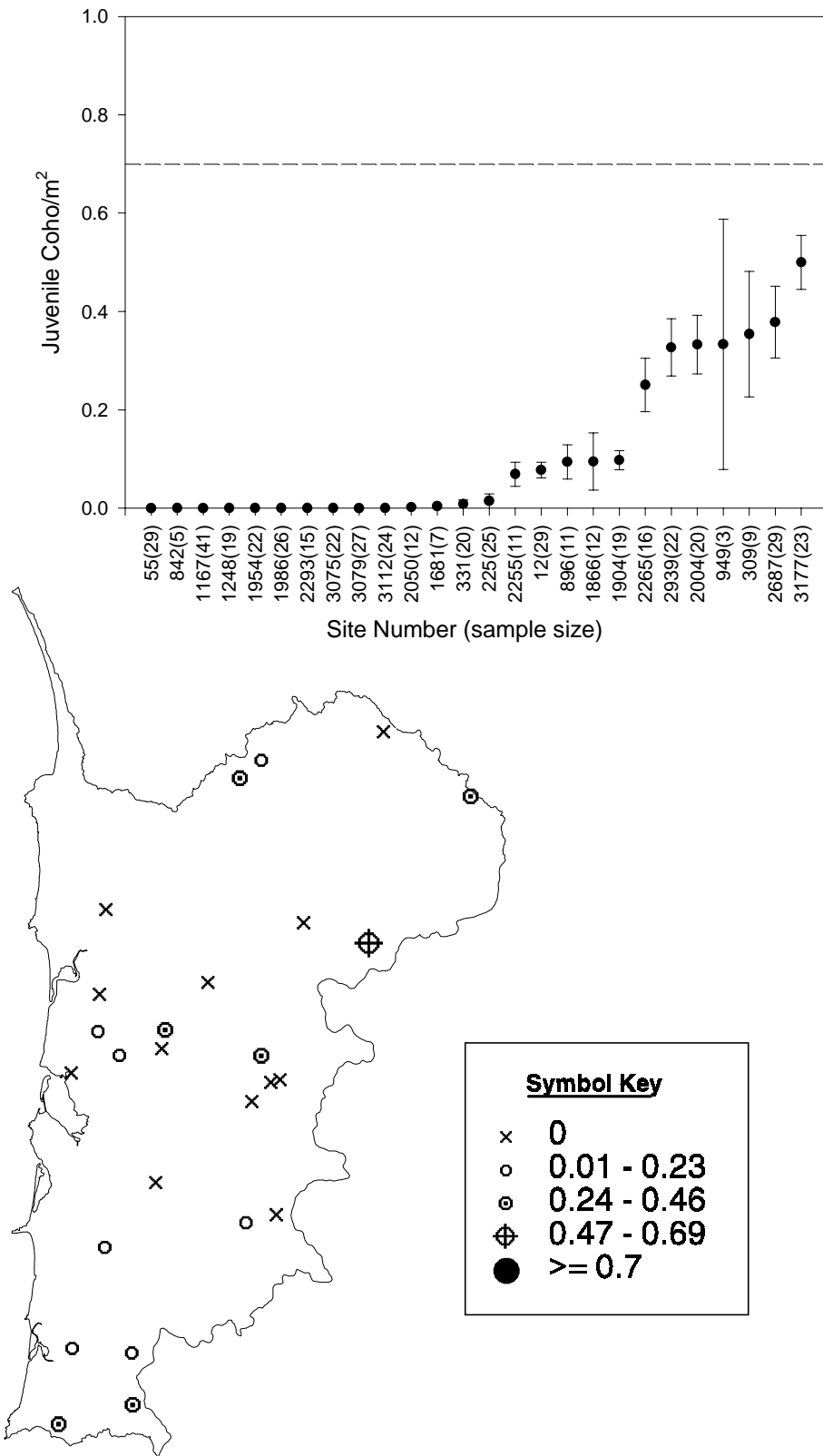


Figure 21. Density (mean and standard error) of juvenile coho salmon at North Coast GCA random survey sites in 1998. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

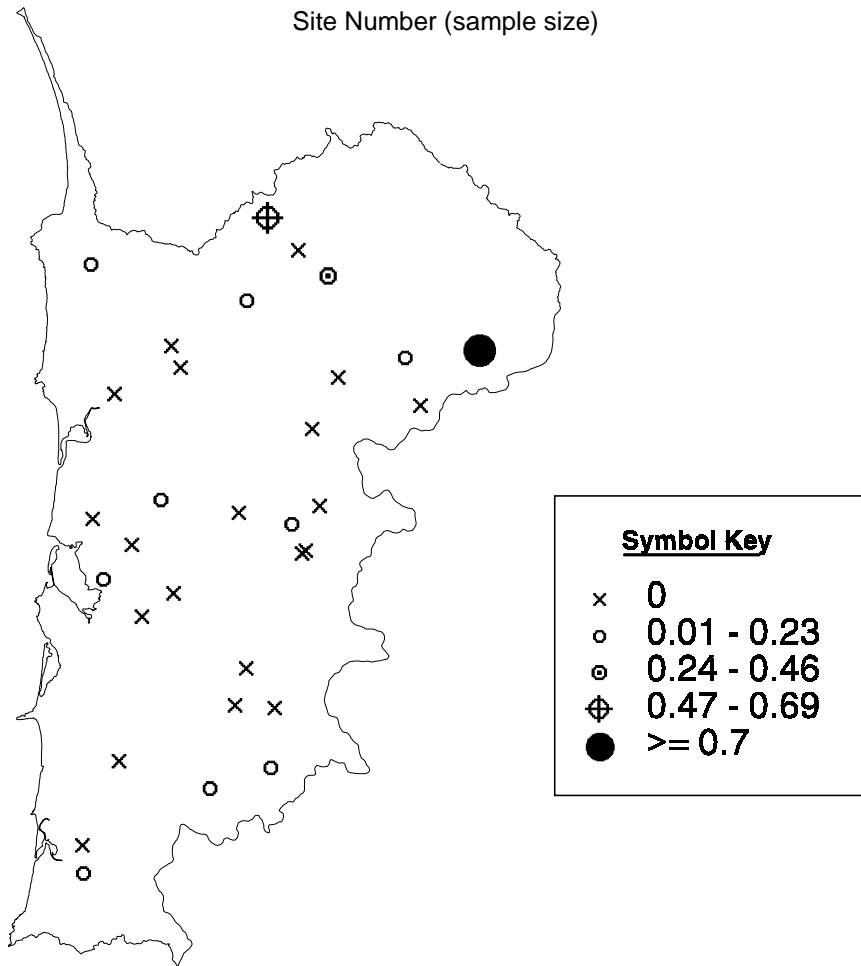
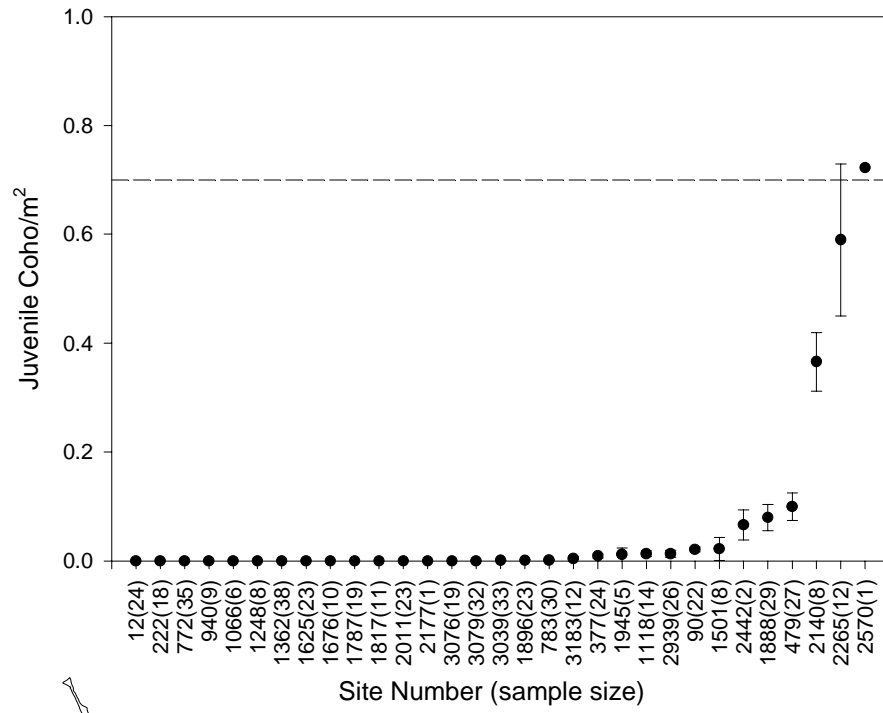


Figure 22. Density (mean and standard error) of juvenile coho salmon at North Coast GCA random survey sites in 1999. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

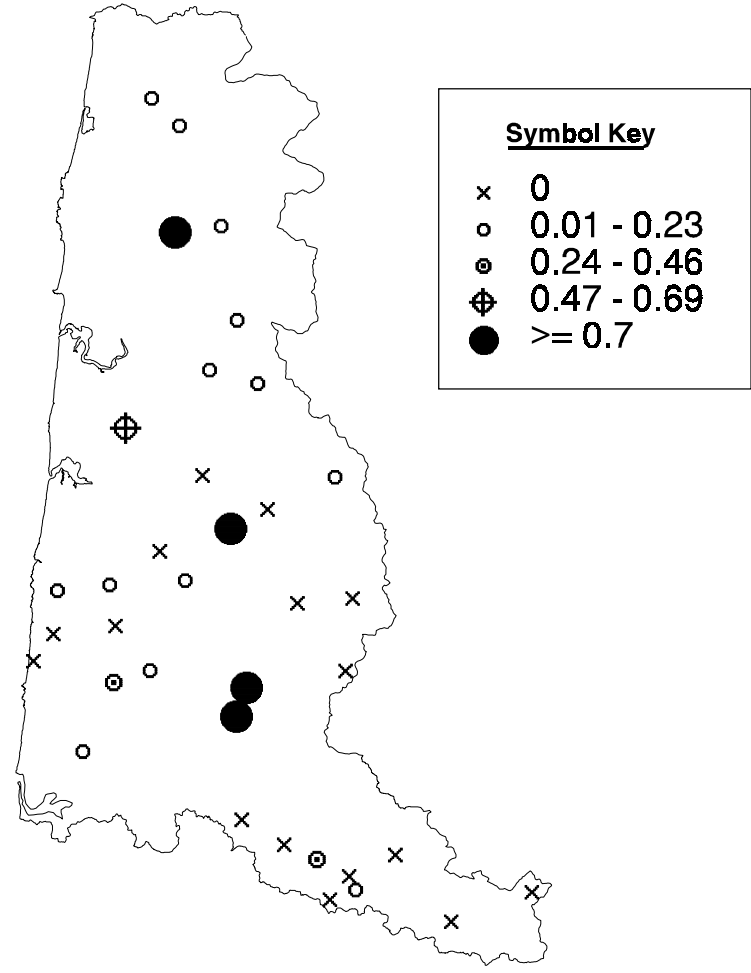
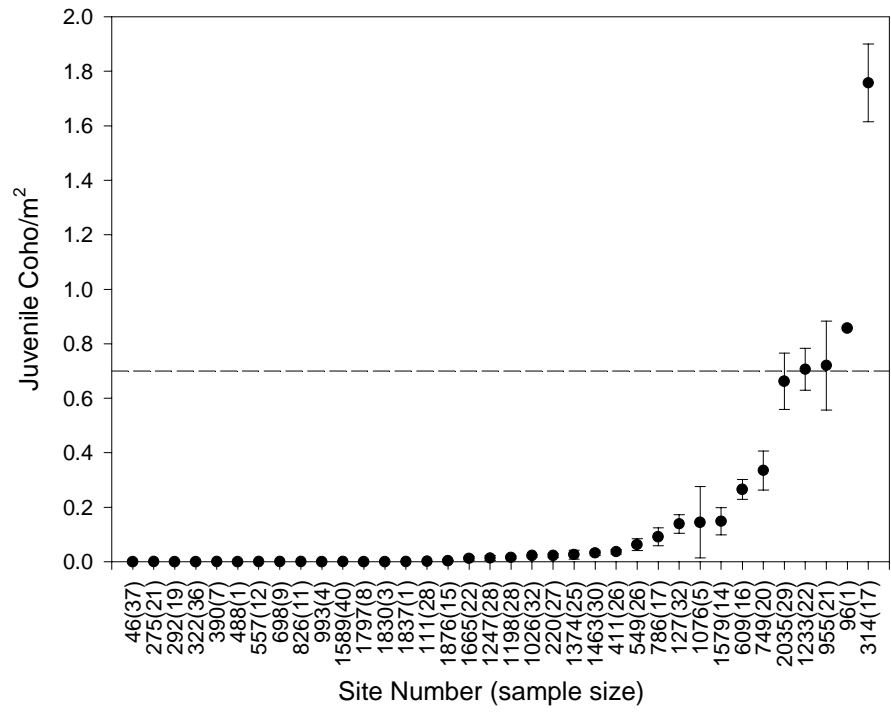


Figure 23. Density (mean and standard error) of juvenile coho salmon at Mid-Coast GCA random survey sites in 1998. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

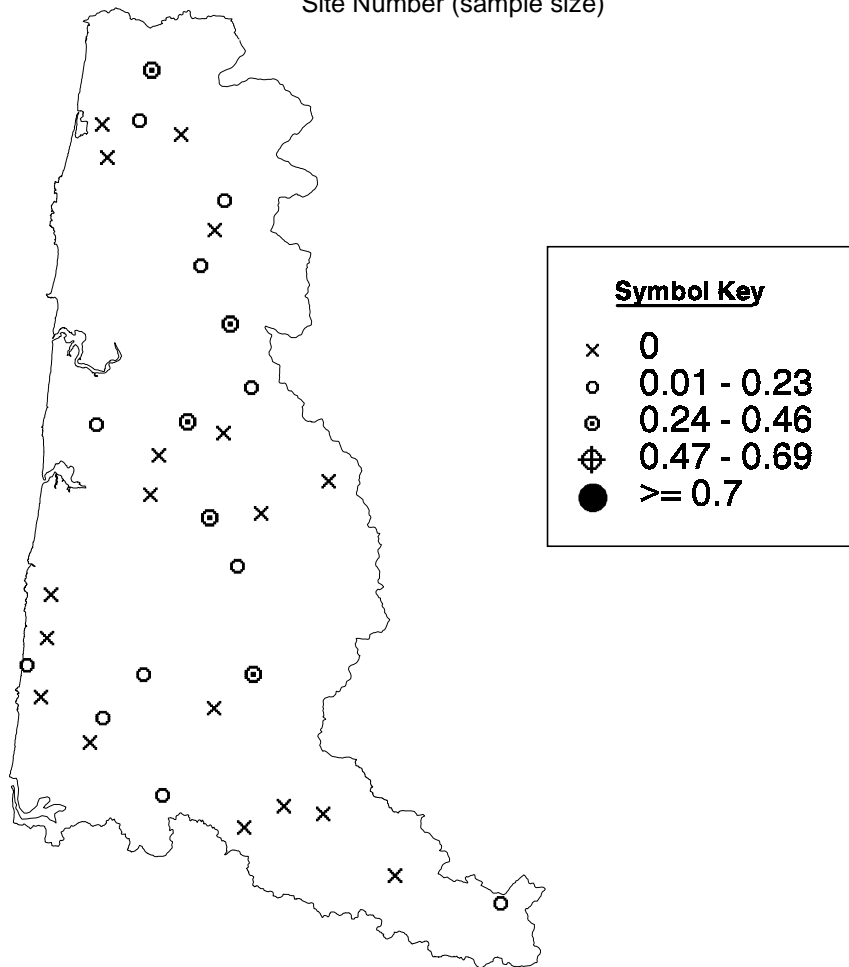
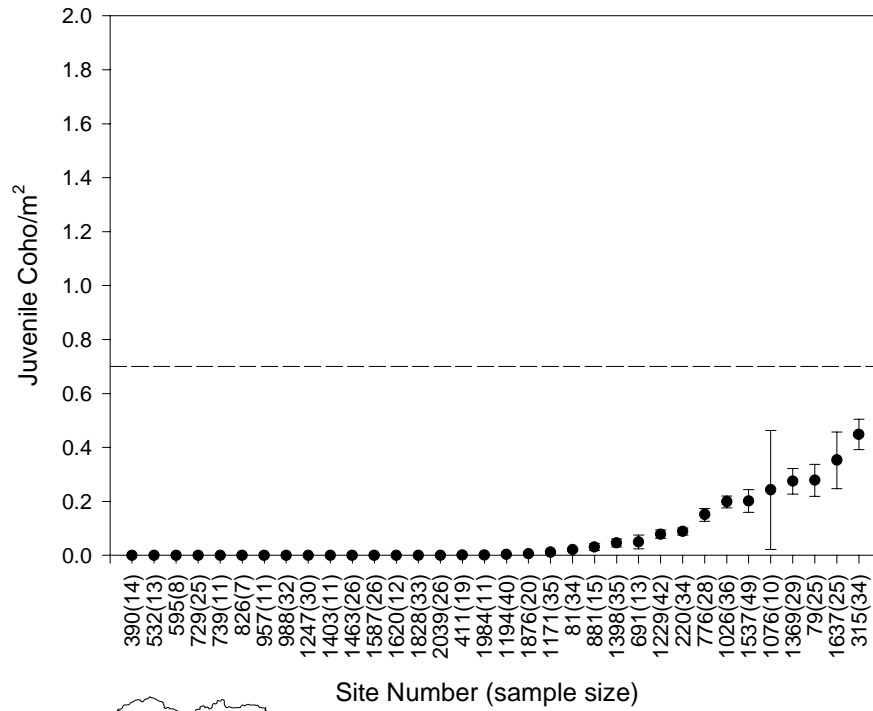


Figure 24. Density (mean and standard error) of juvenile coho salmon at Mid-Coast GCA random survey sites in 1999. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

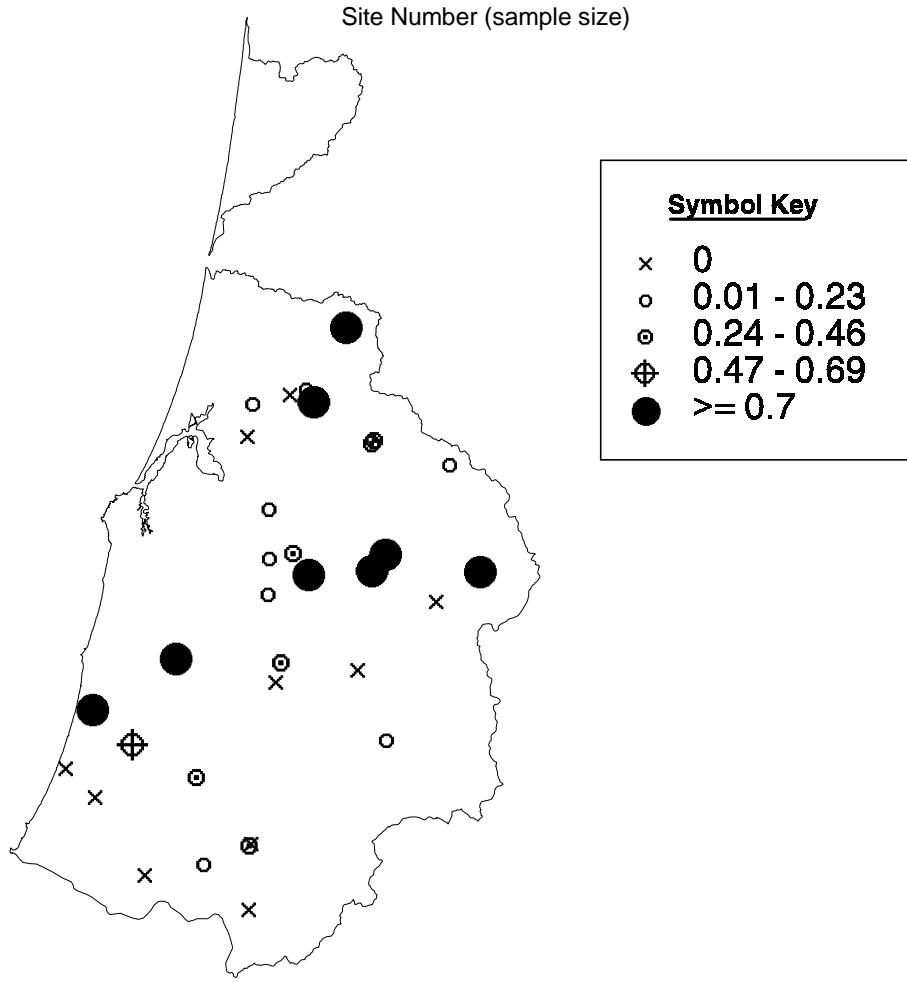
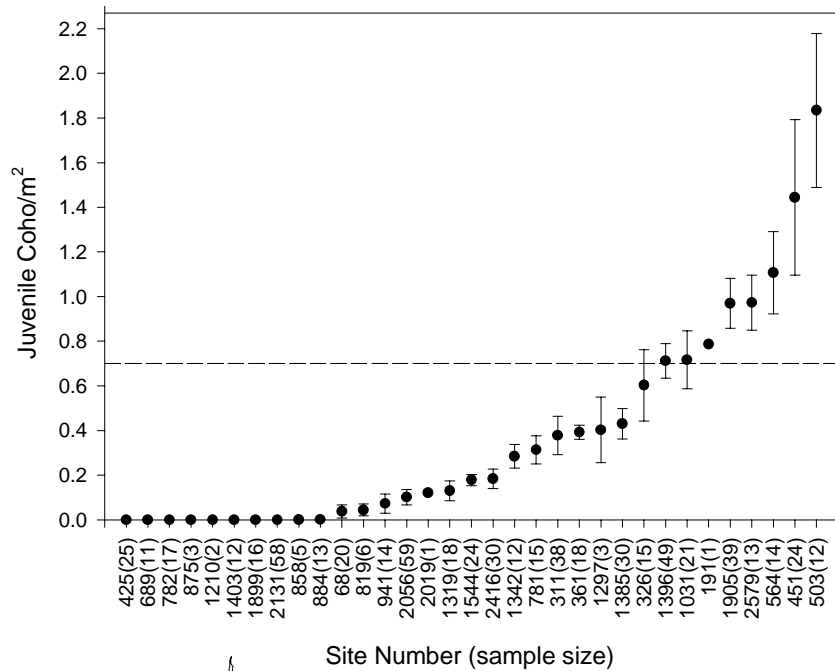


Figure 25. Density (mean and standard error) of juvenile coho salmon at Mid-South Coast GCA random survey sites in 1998. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

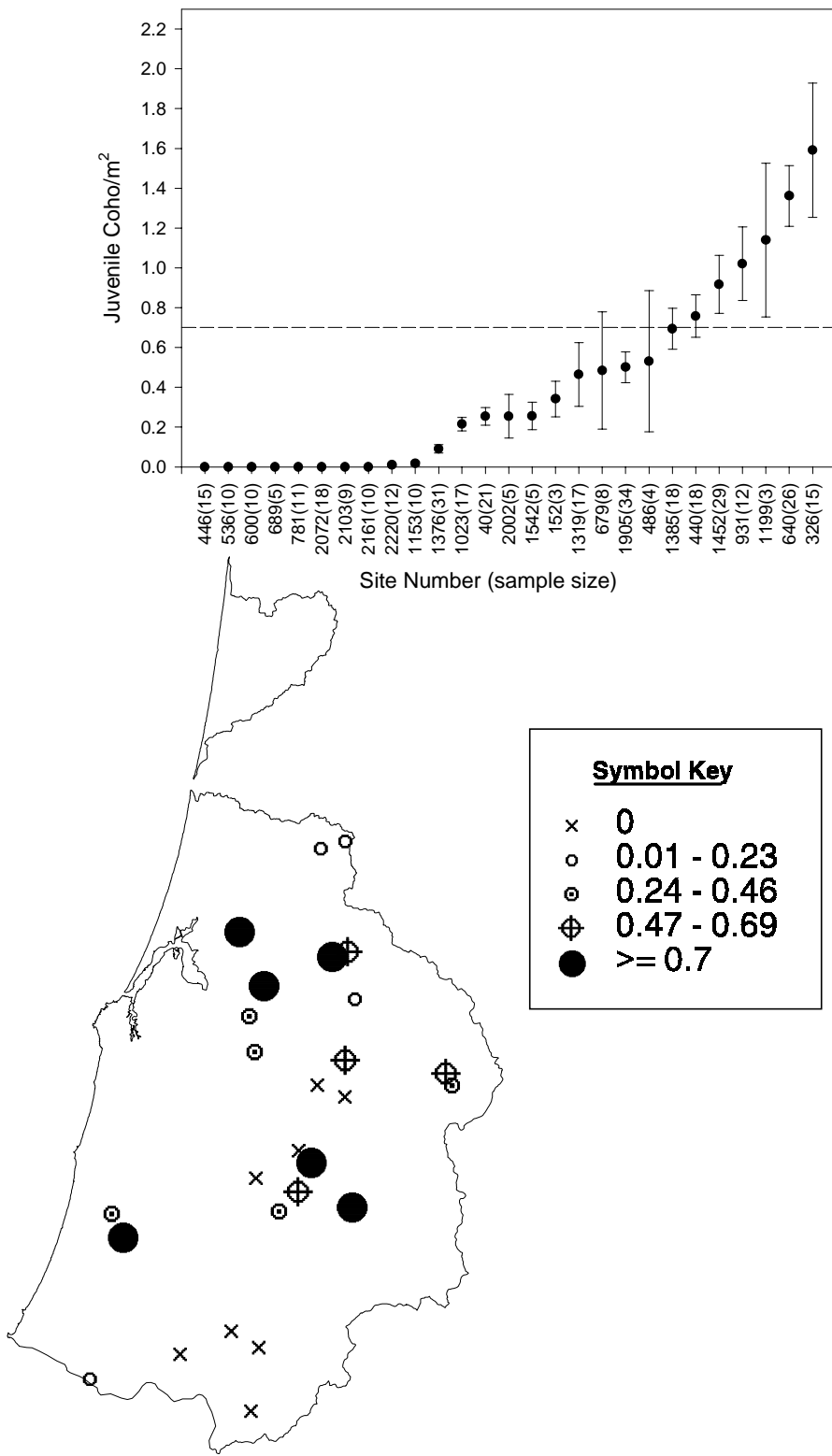


Figure 26. Density (mean and standard error) of juvenile coho salmon at Mid-South Coast GCA random survey sites in 1999. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

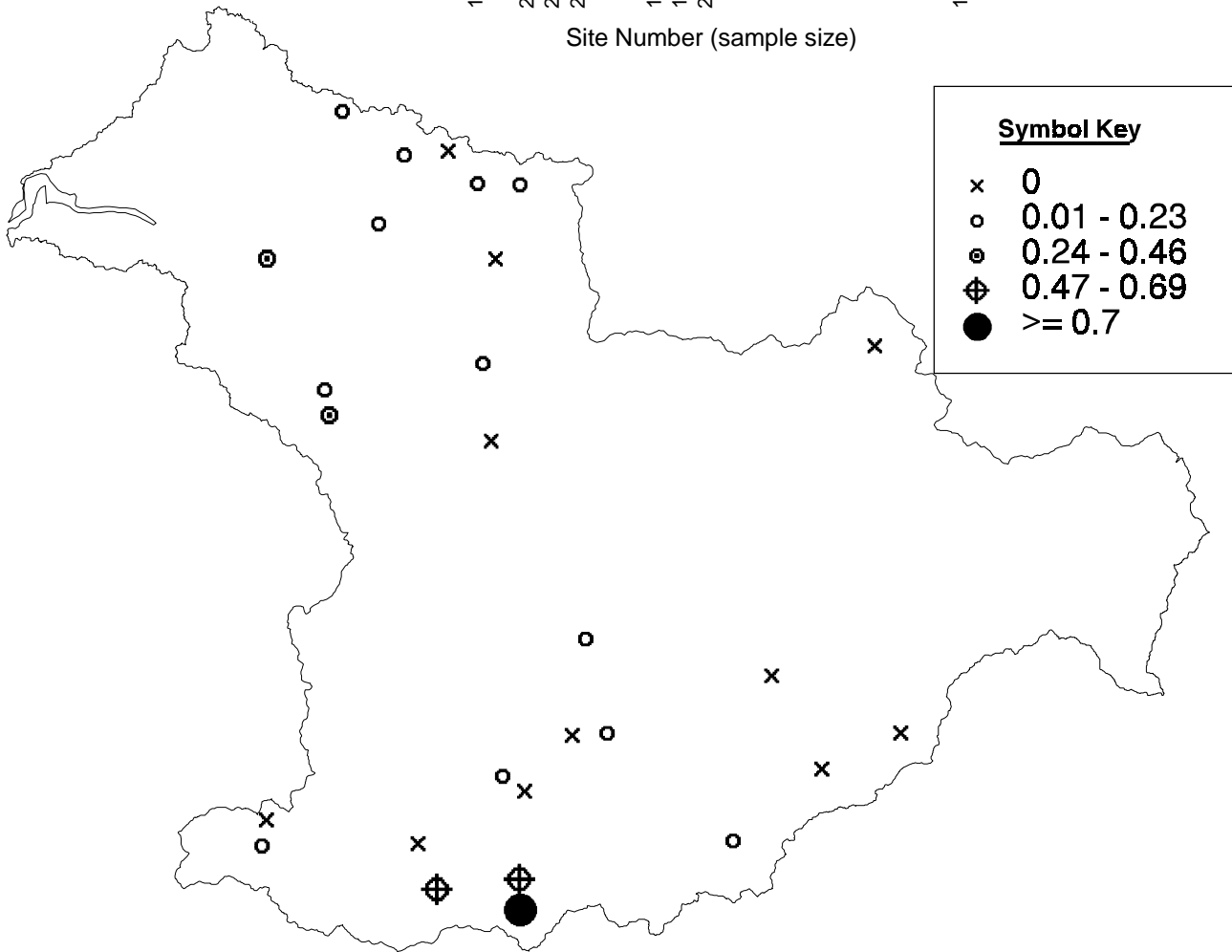
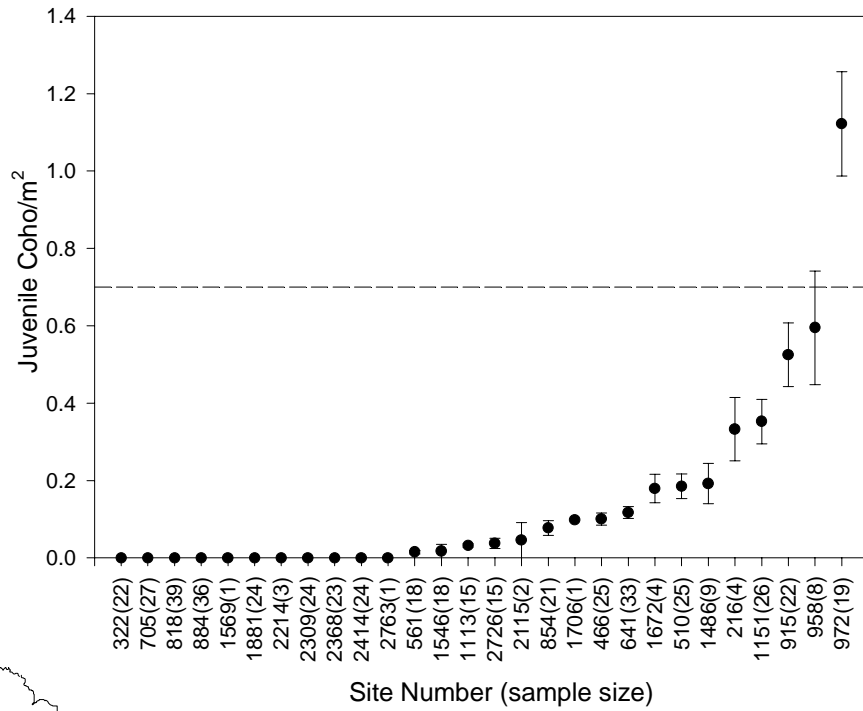


Figure 27. Density (mean and standard error) of juvenile coho salmon at Umpqua GCA random survey sites in 1999. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

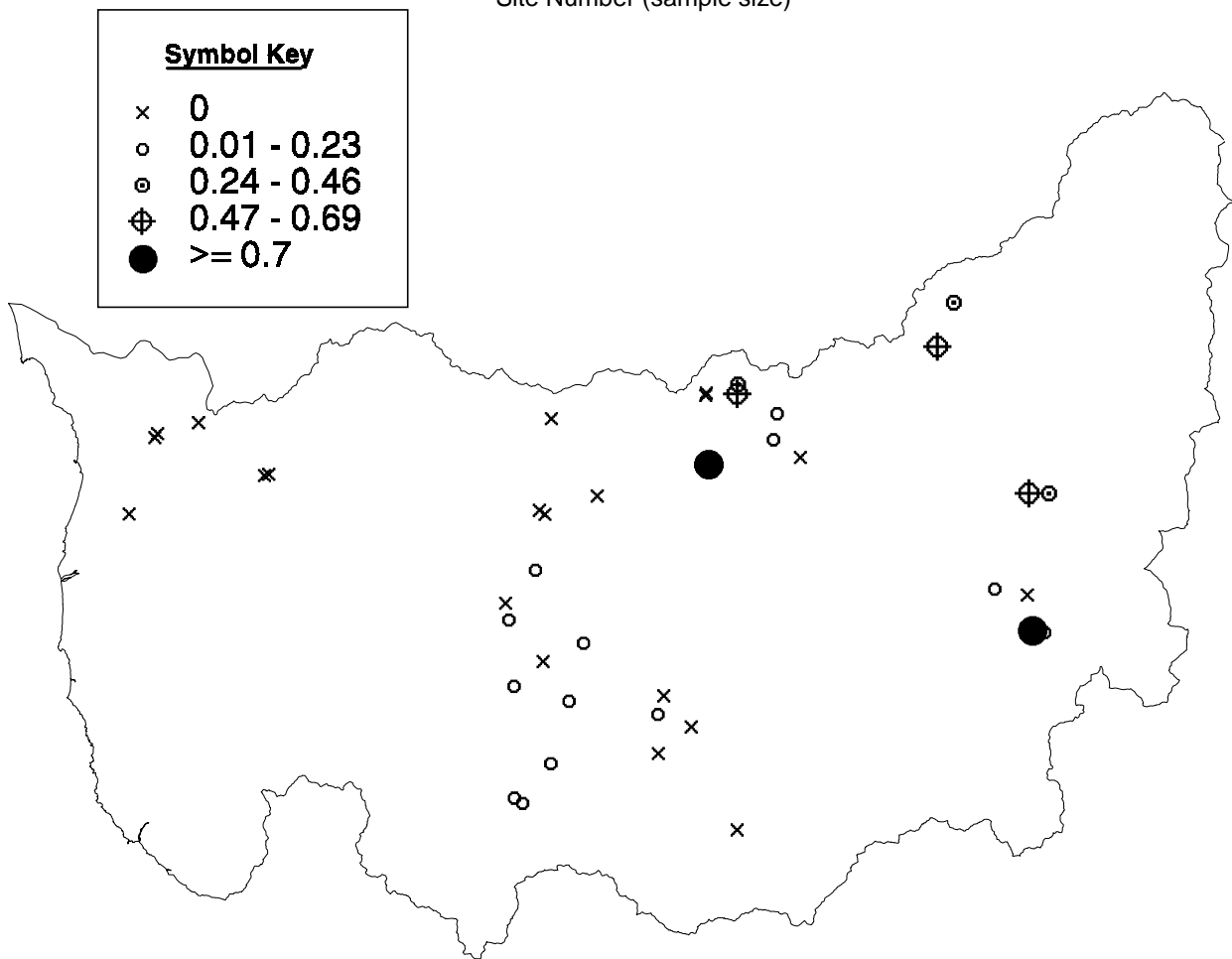
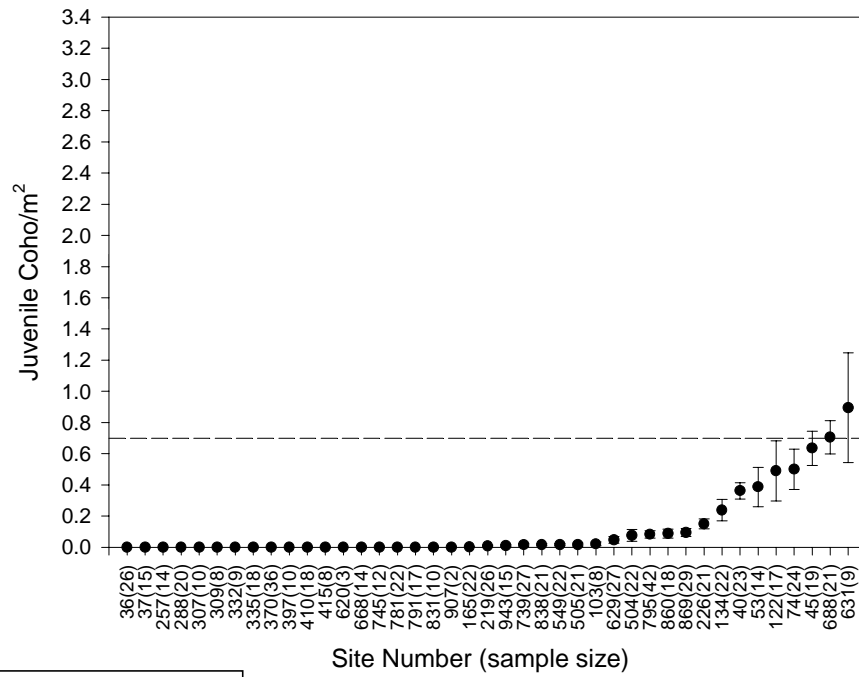


Figure 28. Density (mean and standard error) of juvenile coho salmon at South Coast GCA random survey sites in 1998. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

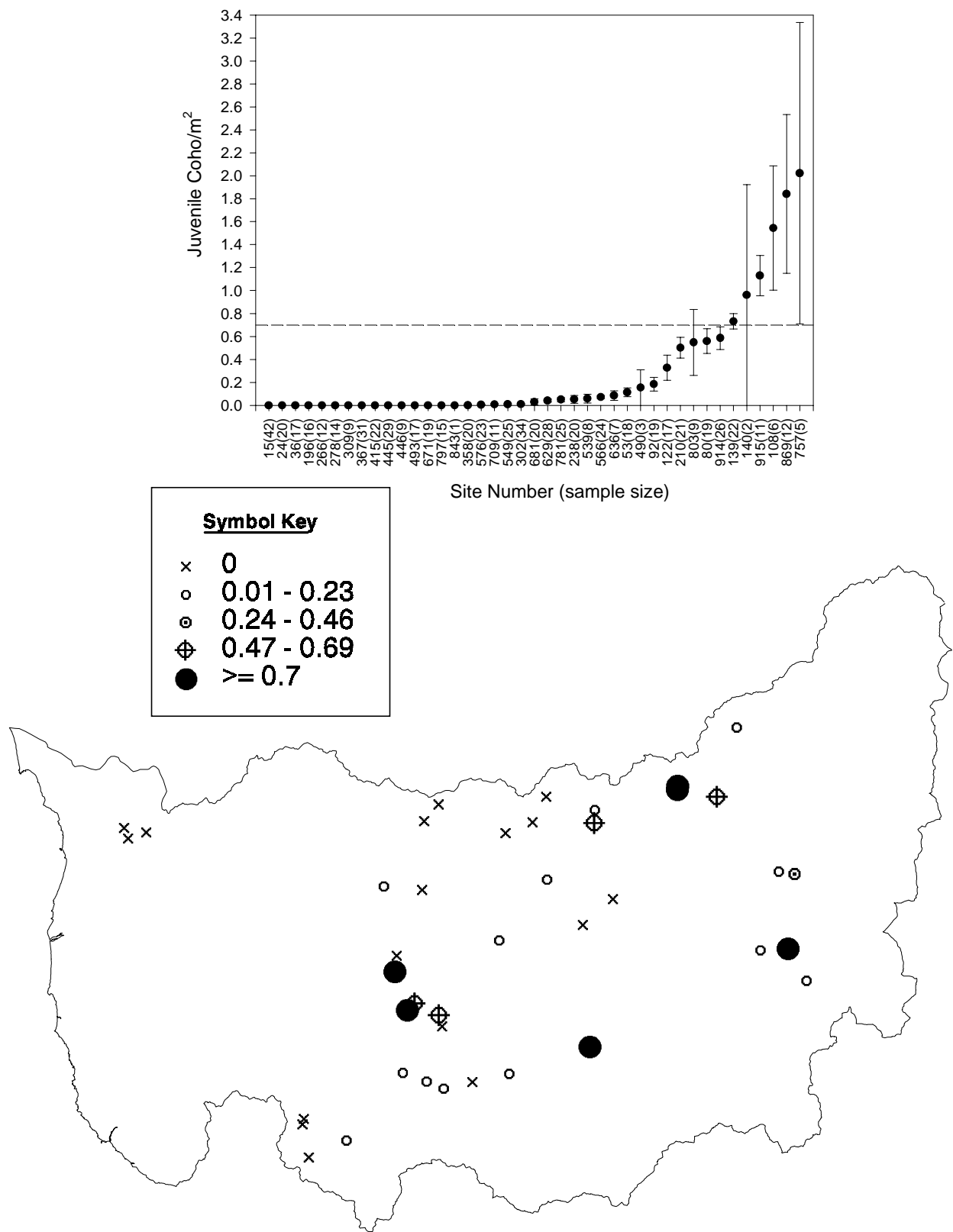


Figure 29. Density (mean and standard error) of juvenile coho salmon at South Coast GCA random survey sites in 1999. Dashed horizontal line at 0.7 fish/m² in graph indicates approximate full seeding level (see text).

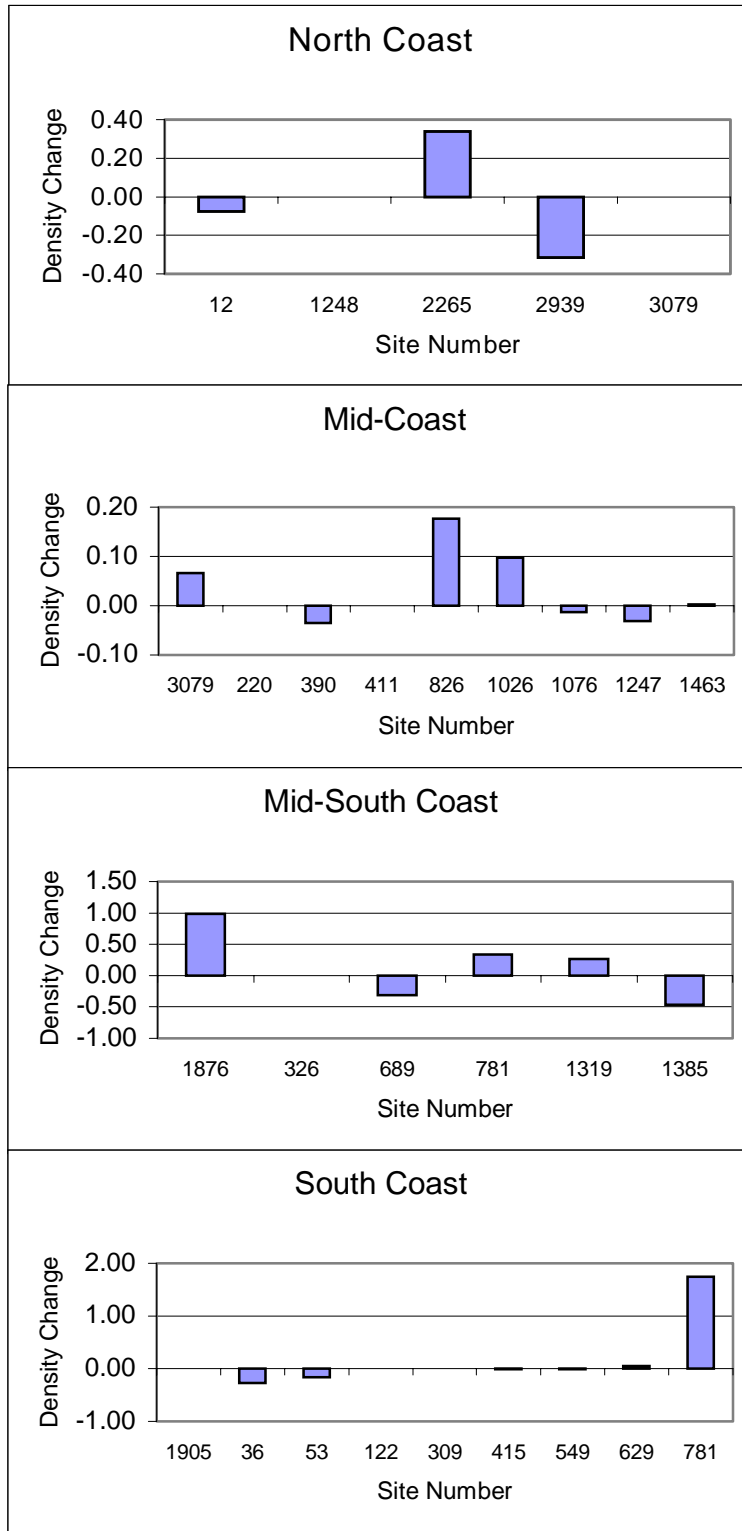


Figure 30. Changes in the density of juvenile coho from 1998-1999 at annual sites in four coastal GCAs.

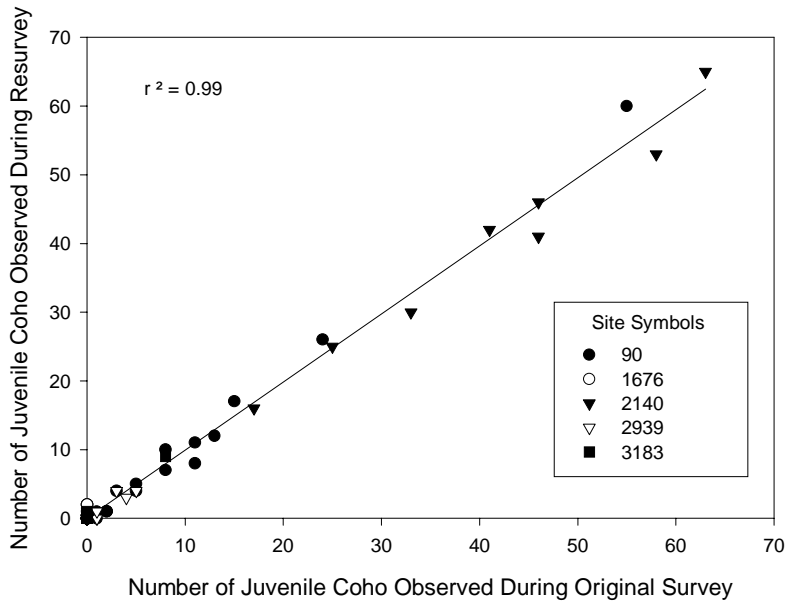


Figure 31. Correlation between number of juvenile coho observed during original snorkel survey and the number observed during a later resurvey during the summer of 1999 in the North Coast GCA. Each point represents one pool unit. Resurveys were conducted at five separate sites that are identified in the site symbol key.

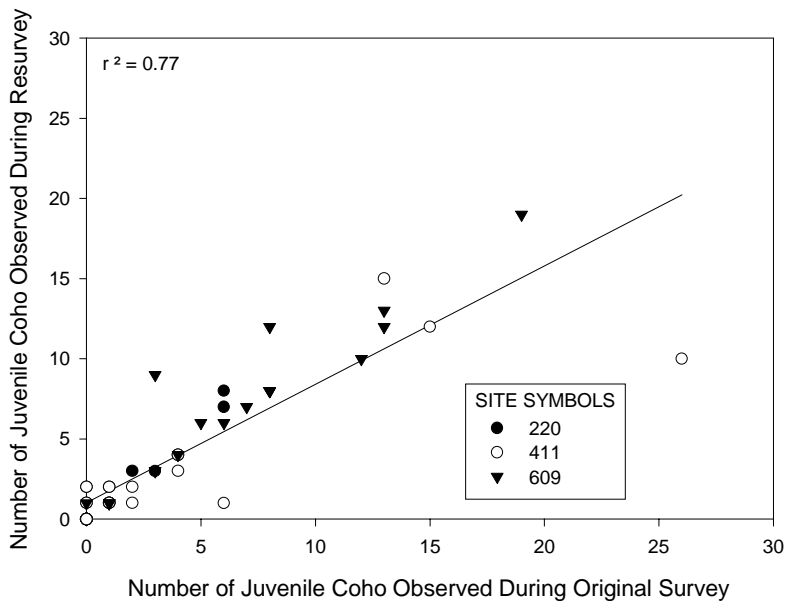


Figure 32. Correlation between number of juvenile coho observed during original snorkel survey and the number observed during a later resurvey during the summer of 1998 in the Mid-Coast GCA. Each point represents one pool unit. Resurveys were conducted at three separate sites that are identified in the site symbol key.

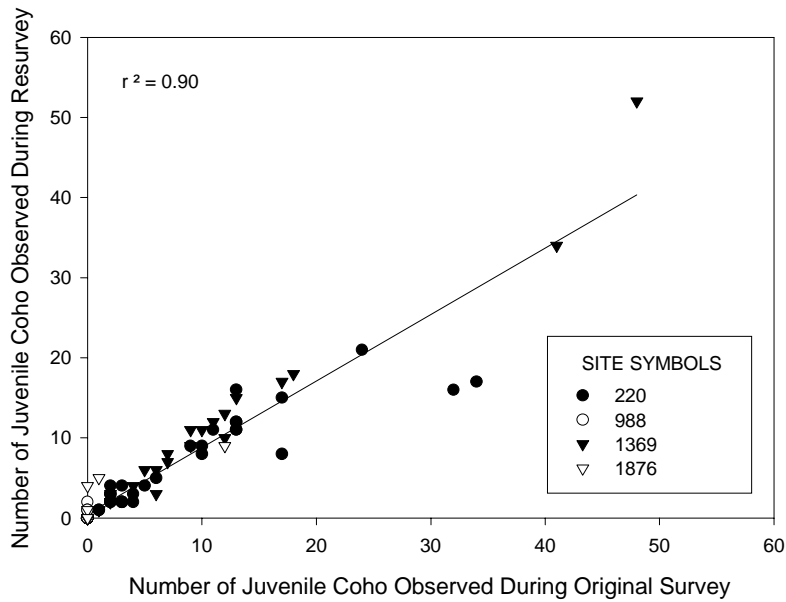


Figure 33. Correlation between number of juvenile coho observed during original snorkel survey and the number observed during a later resurvey during the summer of 1999 in the Mid-Coast GCA. Each point represents one pool unit. Resurveys were conducted at four separate sites that are identified in the site symbol key.

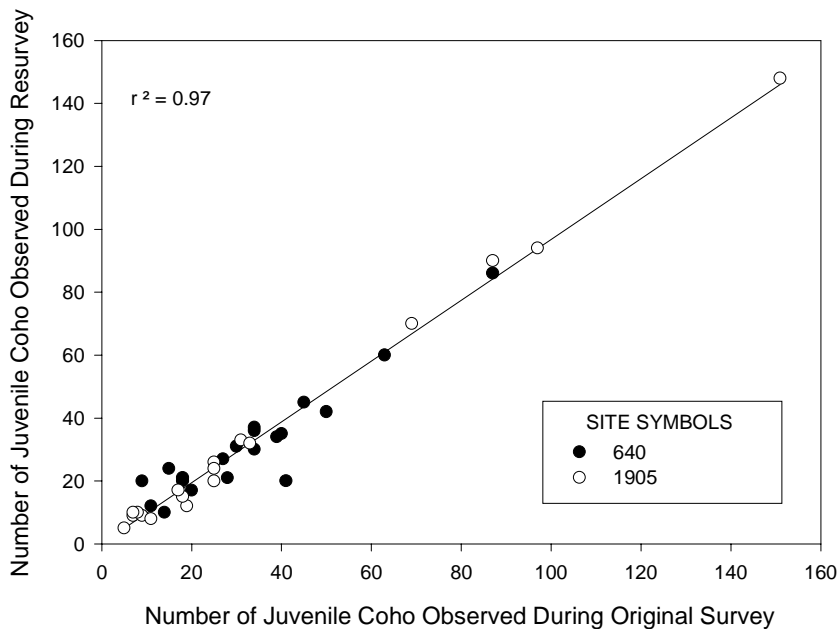


Figure 34. Correlation between number of juvenile coho observed during original snorkel survey and the number observed during a later resurvey during the summer of 1999 in the Mid-South Coast GCA. Each point represents one pool unit. Resurveys were conducted at two separate sites that are identified in the site symbol key.

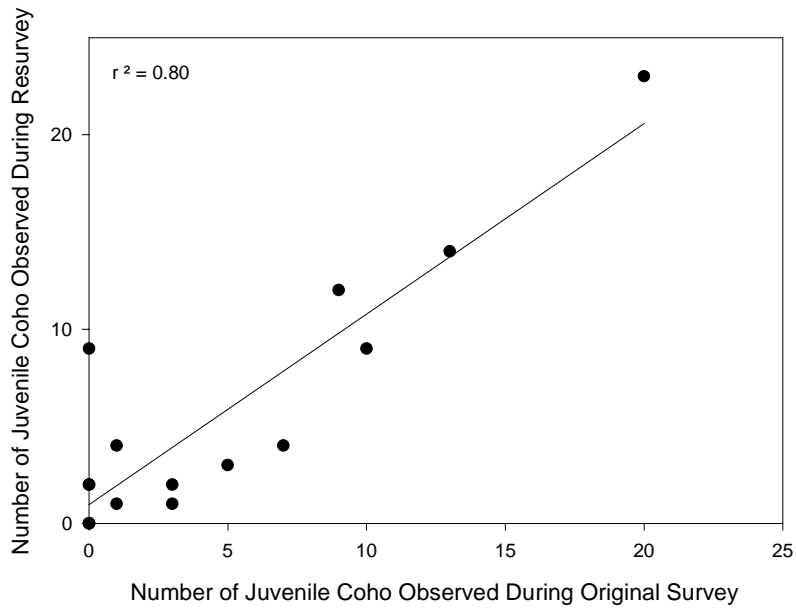


Figure 35. Correlation between number of juvenile coho observed during original snorkel survey and the number observed during a later resurvey during the summer of 1999 in the Umpqua GCA. Each point represents one pool unit. Resurveys were conducted at one site (site number 561).

Appendix A

Location, average density, and percentage of pools containing juvenile coho salmon for sites sampled in 1998 and 1999.

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
NORTH COAST	1998	12	TRASK R , SOUTH FORK	BOUNDRY CR	-123.544522	45.35359	0.08	70
NORTH COAST	1998	55	TRASK R , SOUTH FORK	TRASK R, S FK, E FK	-123.484425	45.365076	0.00	0
NORTH COAST	1998	225	NESTUCCA R , MAIN STEM	CLEAR CR	-123.884959	45.17625	0.01	4
NORTH COAST	1998	309	NESTUCCA R , LITTLE NESTUCCA	SOURGRASS CR	-123.764378	45.098164	0.35	70
NORTH COAST	1998	331	NESTUCCA R , THREE RS	CRAZY CR	-123.767335	45.170833	0.01	5
NORTH COAST	1998	842	TILLAMOOK R, MAIN STEM	KILLAM CR	-123.723405	45.408595	0.00	0
NORTH COAST	1998	896	NESTUCCA R , BEAVER CREEK	BEAR CR	-123.823094	45.317673	0.09	58
NORTH COAST	1998	949	NESKOWIN CREEK , MAIN STEM	SLOAN CR	-123.909174	45.070025	0.33	75
NORTH COAST	1998	1167	NEHALEM R , MAIN STEM	HOEVETT CR	-123.623009	45.688023	0.00	0
NORTH COAST	1998	1248	NEHALEM R , ROCK CREEK	ROCK CR, S FK	-123.433843	45.771694	0.00	0
NORTH COAST	1998	1681	NEHALEM R , NORTH FORK	NEHALEM R, N FK	-123.827341	45.787997	0.00	29
NORTH COAST	1998	1866	KILCHIS R , MAIN STEM	KILCHIS R	-123.797405	45.585137	0.09	67
NORTH COAST	1998	1904	MIAMI R , MAIN STEM	MIAMI R	-123.840516	45.618367	0.10	84
NORTH COAST	1998	1954	MIAMI R , MAIN STEM	MIAMI R	-123.892892	45.560234	0.00	0
NORTH COAST	1998	1986	KILCHIS R , MAIN STEM	KILCHIS R, S FK	-123.713919	45.595013	0.00	0
NORTH COAST	1998	2004	KILCHIS R , MAIN STEM	KILCHIS R, N FK	-123.706888	45.620815	0.33	90
NORTH COAST	1998	2050	NEHALEM R , MAIN STEM	FOLEY CR	-123.838445	45.669915	0.00	15
NORTH COAST	1998	2255	NEHALEM R , MAIN STEM	BULL HEIFER CR	-123.51997	45.997549	0.07	55
NORTH COAST	1998	2265	NEHALEM R , MAIN STEM	HAMILTON CR	-123.562139	45.972408	0.25	94
NORTH COAST	1998	2293	NEHALEM R , MAIN STEM	FORD CR	-123.275691	46.038506	0.00	0
NORTH COAST	1998	2687	NEHALEM R , MAIN STEM	OAK RANCH CR	-123.100563	45.948401	0.38	86
NORTH COAST	1998	2939	WILSON R, MAIN STEM	BEN SMITH CR	-123.515845	45.585805	0.33	95
NORTH COAST	1998	3075	WILSON R, MAIN STEM	JORDAN CR	-123.478572	45.553001	0.00	0
NORTH COAST	1998	3079	WILSON R, MAIN STEM	JORDAN CR	-123.496674	45.549233	0.00	0
NORTH COAST	1998	3112	WILSON R, MAIN STEM	JORDAN CR, S FK	-123.534472	45.522291	0.00	0
NORTH COAST	1998	3177	NEHALEM R , MAIN STEM	LOUSIGNONT CR	-123.302476	45.743124	0.50	100
NORTH COAST	1999	12	TRASK R , SOUTH FORK	BOUNDRY CR	-123.544522	45.35359	0.00	0
NORTH COAST	1999	90	NESTUCCA R , MAIN STEM	NESTUCCA R	-123.550448	45.277942	0.02	73
NORTH COAST	1999	222	NESTUCCA R , MAIN STEM	CLEAR CR	-123.886287	45.17754	0.00	0
NORTH COAST	1999	377	NESTUCCA R , MAIN STEM	POWDER CR	-123.658971	45.251166	0.01	25
NORTH COAST	1999	479	NESTUCCA R , LITTLE NESTUCCA	FALL CR	-123.883679	45.142089	0.10	59
NORTH COAST	1999	772	TRASK R , SOUTH FORK	SUMMIT CR, S FK	-123.615373	45.356478	0.00	0
NORTH COAST	1999	783	TRASK R , SOUTH FORK	E FK OF S FK TRASK R	-123.595973	45.403141	0.00	7
NORTH COAST	1999	940	NESTUCCA R , BEAVER CREEK	BEAVER CR	-123.822636	45.284823	0.00	0
NORTH COAST	1999	1066	NEHALEM R , NORTH FORK	LOST CR	-123.718325	45.782915	0.00	0
NORTH COAST	1999	1118	NEHALEM R , MAIN STEM	HUMBUG CR	-123.599448	45.868013	0.01	36
NORTH COAST	1999	1248	NEHALEM R , ROCK CREEK	ROCK CR, S FK	-123.433843	45.771694	0.00	0
NORTH COAST	1999	1362	NEHALEM R , SALMONBERRY R	SALMONBERRY R	-123.480111	45.706796	0.00	0
NORTH COAST	1999	1501	NECANICUM R, MAIN STEM	NECANICUM R	-123.88236	45.912015	0.02	38
NORTH COAST	1999	1625	NEHALEM R , NORTH FORK	NEHALEM R, N FK	-123.735277	45.810028	0.00	0

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
NORTH COAST	1999	1676	NEHALEM R , NORTH FORK	GRAVEL CR	-123.837433	45.748597	0.00	0
NORTH COAST	1999	1787	WILSON R , LITTLE NORTH FORK	WILSON R, N FK, LITTLE	-123.727801	45.497302	0.00	0
NORTH COAST	1999	1817	KILCHIS R , MAIN STEM	SHARP CREEK	-123.803488	45.558127	0.00	0
NORTH COAST	1999	1888	KILCHIS R , MAIN STEM	KILCHIS R, N FK	-123.751621	45.61549	0.08	69
NORTH COAST	1999	1896	MIAMI R , MAIN STEM	MINICH CR	-123.874305	45.590703	0.00	4
NORTH COAST	1999	1945	TILLAMOOK BAY, MAIN STEM	VAUGHN CR	-123.853985	45.51399	0.01	20
NORTH COAST	1999	2011	WILSON R, MAIN STEM	CEDAR CR, N FK	-123.611113	45.600144	0.00	0
NORTH COAST	1999	2140	NEHALEM R , MAIN STEM	BUSTER CR	-123.452374	45.899487	0.37	100
NORTH COAST	1999	2177	NEHALEM R , MAIN STEM	FISHHAWK CR	-123.506961	45.932206	0.00	0
NORTH COAST	1999	2265	NEHALEM R , MAIN STEM	HAMILTON CR	-123.562139	45.972408	0.59	83
NORTH COAST	1999	2442	NEHALEM R , MAIN STEM	CLEAR CR	-123.312453	45.797148	0.07	100
NORTH COAST	1999	2570	NEHALEM R , MAIN STEM	DELL CR	-123.179569	45.807595	0.72	100
NORTH COAST	1999	2939	WILSON R, MAIN STEM	BEN SMITH CR	-123.515845	45.585805	0.01	19
NORTH COAST	1999	3039	WILSON R, MAIN STEM	ELK CR	-123.46578	45.60914	0.00	6
NORTH COAST	1999	3076	WILSON R, MAIN STEM	JORDAN CR	-123.490043	45.552708	0.00	0
NORTH COAST	1999	3079	WILSON R, MAIN STEM	JORDAN CR	-123.496674	45.549233	0.00	0
NORTH COAST	1999	3183	NEHALEM R , MAIN STEM	NEHALEM R	-123.284575	45.736719	0.00	8
MID-COAST	1998	46	ALSEA R , FIVE RS	CASCADE CR, N FK	-123.87049	44.32183	0.00	0
MID-COAST	1998	96	ALSEA R , MAIN STEM	BENNER CR	-123.73662	44.35418	0.86	100
MID-COAST	1998	111	TENMILE CREEK, MAIN STEM	TENMILE CR	-123.95261	44.21965	0.00	4
MID-COAST	1998	127	YACHATS R , MAIN STEM	STUMP CR	-123.96455	44.27577	0.14	66
MID-COAST	1998	220	SIUSLAW R, LAKE CREEK	ROGERS CR	-123.88662	44.15918	0.02	63
MID-COAST	1998	275	SIUSLAW R, LAKE CREEK	FISH CR	-123.51636	44.161	0.00	0
MID-COAST	1998	292	ALSEA R , FIVE RS	LOBSTER CR, E FK	-123.6085	44.253	0.00	0
MID-COAST	1998	314	SIUSLAW R, LAKE CREEK	RALEIGH CR	-123.70382	44.13803	1.76	100
MID-COAST	1998	322	SIUSLAW R, LAKE CREEK	LAKE CR	-123.50363	44.26022	0.00	0
MID-COAST	1998	390	ALSEA R , MAIN STEM	ALSEA R	-123.66609	44.3807	0.00	0
MID-COAST	1998	411	ALSEA R , NORTH FORK	CROOKED CR	-123.53829	44.42546	0.04	65
MID-COAST	1998	488	SIUSLAW R, MAIN STEM	PHEASANT CR	-123.42011	43.91095	0.00	0
MID-COAST	1998	549	SIUSLAW R, MAIN STEM	HAIGHT CR	-123.49429	43.86294	0.06	50
MID-COAST	1998	557	SIUSLAW R, MAIN STEM	OXBOW CR, TRIB C	-123.54321	43.84952	0.00	0
MID-COAST	1998	609	SIUSLAW R, MAIN STEM	CLAY CREEK	-123.56717	43.90392	0.27	94
MID-COAST	1998	698	SIUSLAW R, MAIN STEM	HAWLEY CR	-123.16273	43.86085	0.00	0
MID-COAST	1998	749	SIUSLAW R, NORTH FORK	PORTER CR	-123.95405	44.14242	0.33	75
MID-COAST	1998	786	SIUSLAW R, NORTH FORK	CONDON CR	-124.0116	44.04778	0.09	88
MID-COAST	1998	826	TENMILE CREEK, MAIN STEM	MILL CR	-124.07036	44.20768	0.00	0
MID-COAST	1998	955	SIUSLAW R, LAKE CREEK	HULA CR	-123.72243	44.09883	0.72	95
MID-COAST	1998	993	SIUSLAW R, MAIN STEM	WHITTAKER CR, TRIB B	-123.70982	43.95736	0.00	0
MID-COAST	1998	1026	YAQUINA R , ELK CREEK	SPOUT CR	-123.6871	44.55188	0.02	59
MID-COAST	1998	1076	YAQUINA R , LITTLE ELK CREEK	OGLESBY CR	-123.72714	44.63793	0.14	40
MID-COAST	1998	1198	SILETZ R, DRIFT CREEK	SAMPSON CR, UNNAMED TRIB	-123.84122	44.90218	0.02	39
MID-COAST	1998	1233	SILETZ R, MAIN STEM	BENTILLA CR	-123.84819	44.75783	0.71	100
MID-COAST	1998	1247	SILETZ R, MAIN STEM	MILL CR, N FK	-123.75941	44.76618	0.01	11
MID-COAST	1998	1374	SILETZ R , SCHOONER CREEK	SCHOONER CR, S FK	-123.89512	44.93943	0.03	12

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
MID-COAST	1998	1463	CUMMINS CR, MAIN STEM	CUMMINS CR	-124.06351	44.26694	0.03	43
MID-COAST	1998	1579	YAQUINA R , ELK CREEK	DEER CR	-123.77904	44.56997	0.15	79
MID-COAST	1998	1589	ALSEA R , MAIN STEM	SCOTT CR, E FK	-123.79072	44.42598	0.00	0
MID-COAST	1998	1665	ALSEA R , FIVE RS	FIVE RIVERS	-123.8217	44.28276	0.01	27
MID-COAST	1998	1797	SIUSLAW R, MAIN STEM	SIUSLAW R	-123.50671	43.88145	0.00	0
MID-COAST	1998	1830	SIUSLAW R, MAIN STEM	SIUSLAW R	-123.63003	43.92391	0.00	0
MID-COAST	1998	1837	SIUSLAW R, MAIN STEM	SIUSLAW R	-123.31402	43.81998	0.00	0
MID-COAST	1998	1876	BIG CREEK, MAIN STEM & SFK	BIG CR	-124.10704	44.17055	0.00	47
MID-COAST	1998	2035	ALSEA R , DRIFT CREEK	TROUT CR	-123.9358	44.48818	0.66	90
MID-COAST	1999	79	ALSEA R , MAIN STEM	COW CR	-123.76323	44.37358	0.28	72
MID-COAST	1999	81	ALSEA R , FIVE RS	LITTLE LOBSTER CR	-123.71043	44.30838	0.02	68
MID-COAST	1999	220	SIUSLAW R, LAKE CREEK	ROGERS CR	-123.88662	44.15918	0.09	85
MID-COAST	1999	315	SIUSLAW R, LAKE CREEK	BEAR CR	-123.67761	44.16076	0.45	100
MID-COAST	1999	390	ALSEA R , MAIN STEM	ALSEA R	-123.66609	44.3807	0.00	0
MID-COAST	1999	411	ALSEA R , NORTH FORK	CROOKED CR	-123.53829	44.42546	0.00	11
MID-COAST	1999	532	SIUSLAW R, MAIN STEM	DOGWOOD CR	-123.4087	43.88811	0.00	0
MID-COAST	1999	595	SIUSLAW R, WOLF CREEK	PITTINGER CR	-123.5445	43.97159	0.00	0
MID-COAST	1999	691	SIUSLAW R, MAIN STEM	HAWLEY CR	-123.20903	43.8507	0.05	46
MID-COAST	1999	729	CAPE CREEK, MAIN STEM	WAPITI CR	-124.07988	44.1273	0.00	0
MID-COAST	1999	739	SIUSLAW R, NORTH FORK	RUSSELL CR	-123.98602	44.06613	0.00	0
MID-COAST	1999	776	SIUSLAW R, NORTH FORK	DREW CR	-123.96263	44.09972	0.15	82
MID-COAST	1999	826	TENMILE CREEK, MAIN STEM	MILL CR	-124.07036	44.20768	0.00	0
MID-COAST	1999	881	SIUSLAW R, MAIN STEM	HADSALL CR, TRIB D	-123.84821	43.99535	0.03	40
MID-COAST	1999	957	SIUSLAW R, LAKE CREEK	DEADWOOD CR	-123.75253	44.1144	0.00	0
MID-COAST	1999	988	SIUSLAW R, MAIN STEM	WHITTAKER CR	-123.69373	43.95224	0.00	0
MID-COAST	1999	1026	YAQUINA R , ELK CREEK	SPOUT CR	-123.6871	44.55188	0.20	97
MID-COAST	1999	1076	YAQUINA R , LITTLE ELK CREEK	OGLESBY CR	-123.72714	44.63793	0.24	20
MID-COAST	1999	1171	SILETZ R, MAIN STEM	SUNSHINE CR	-123.74127	44.80656	0.01	26
MID-COAST	1999	1194	SILETZ R, DRIFT CREEK	SAMPSON CR, UNNAMED TRIB	-123.82556	44.89613	0.00	5
MID-COAST	1999	1229	SILETZ R, MAIN STEM	SAM CR	-123.78554	44.71771	0.08	71
MID-COAST	1999	1247	SILETZ R, MAIN STEM	MILL CR, N FK	-123.75941	44.76618	0.00	0
MID-COAST	1999	1369	SALMON R , MAIN STEM	BEAR CR	-123.8829	44.98286	0.27	83
MID-COAST	1999	1398	SILETZ R, DRIFT CREEK	NORTH CR	-123.90546	44.91407	0.05	31
MID-COAST	1999	1403	SILETZ R, MAIN STEM	FOSTER CR	-123.9664	44.86334	0.00	0
MID-COAST	1999	1463	CUMMINS CR, MAIN STEM	CUMMINS CR	-124.06351	44.26694	0.00	0
MID-COAST	1999	1537	BEAVER CREEK, MAINSTEM	ELKHORN CR	-123.98099	44.4995	0.20	63
MID-COAST	1999	1587	ALSEA R , MAIN STEM	HATCHERY CR	-123.87705	44.40478	0.00	0
MID-COAST	1999	1620	YAQUINA R , ELK CREEK	GRANT CR	-123.73887	44.48954	0.00	0
MID-COAST	1999	1637	ALSEA R , DRIFT CREEK	NETTLE CR	-123.80721	44.50422	0.35	60
MID-COAST	1999	1828	SIUSLAW R, MAINSTEM	UNNAMED TRIB	-123.61903	43.98173	0.00	0
MID-COAST	1999	1876	BIG CREEK, MAIN STEM & SFK	BIG CR	-124.10704	44.17055	0.01	30
MID-COAST	1999	1984	SILETZ R, DRIFT CREEK	DRIFT CR	-123.97737	44.90873	0.00	27
MID-COAST	1999	2039	ALSEA R , DRIFT CREEK	GOLD CR	-123.86209	44.45826	0.00	0
MID-SOUTH	1998	68	COOS R, SOUTH FORK	BOTTOM CR, N FK	-123.72963	43.386305	0.04	10

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
MID-SOUTH	1998	191	COQUILLE R , MAIN STEM	ROLLAN CR	-124.25351	43.110635	0.79	100
MID-SOUTH	1998	311	COQUILLE R , SOUTH FORK	DEMENT CR	-124.20899	42.942452	0.38	47
MID-SOUTH	1998	326	FOURMILE CR, MAIN STEM	FOURMILE CR	-124.33155	42.986935	0.60	87
MID-SOUTH	1998	361	COQUILLE R , EAST FORK	WEEKLY CR	-124.05001	43.105326	0.39	100
MID-SOUTH	1998	425	COQUILLE R , MIDDLE FORK	BIG CR	-123.90296	43.096655	0.00	0
MID-SOUTH	1998	451	COQUILLE R , NORTH FORK	MIDDLE CR	-123.87898	43.23776	1.44	92
MID-SOUTH	1998	503	COOS R, SOUTH FORK	EIGHT R CR	-123.85303	43.260771	1.83	100
MID-SOUTH	1998	564	COQUILLE R , NORTH FORK	MIDDLE CR	-124.00034	43.230824	1.11	100
MID-SOUTH	1998	689	COQUILLE R , NORTH FORK	JOHNS CR	-124.05989	43.07815	0.00	0
MID-SOUTH	1998	781	COQUILLE R , SOUTH FORK	SALMON CR	-124.10617	42.847014	0.31	87
MID-SOUTH	1998	782	COQUILLE R , SOUTH FORK	TWO BY FOUR CR	-124.10307	42.850275	0.00	0
MID-SOUTH	1998	819	SIXES R , MAIN STEM	SIXES R	-124.19329	42.820021	0.04	50
MID-SOUTH	1998	858	SIXES R , MAIN STEM	SIXES R	-124.30517	42.804088	0.00	20
MID-SOUTH	1998	875	NEW R, MAIN STEM	MORTON CR	-124.46027	42.952469	0.00	0
MID-SOUTH	1998	884	FLORAS CREEK, MAIN STEM	FLORAS CR	-124.40292	42.912334	0.00	8
MID-SOUTH	1998	941	COOS R, MAIN STEM	SULLIVAN CR	-124.111	43.46889	0.07	21
MID-SOUTH	1998	1031	COOS R , MILLICOMA R	ELK CR	-123.93383	43.57973	0.72	95
MID-SOUTH	1998	1210	COOS R, MAIN STEM	WILLANCH CR	-124.1205	43.423071	0.00	0
MID-SOUTH	1998	1297	COQUILLE R , NORTH FORK	COQUILLE R, N FK	-124.02895	43.259365	0.40	100
MID-SOUTH	1998	1319	COOS R, SOUTH FORK	WREN SMITH CR	-124.07698	43.321235	0.13	50
MID-SOUTH	1998	1342	COOS R , MILLICOMA R	MILLICOMA R, E FK	-123.88	43.415152	0.28	92
MID-SOUTH	1998	1385	COOS R , MILLICOMA R	MILLICOMA R, E FK	-123.87457	43.419519	0.43	97
MID-SOUTH	1998	1396	COOS R , MILLICOMA R	MARLOW CR	-123.99467	43.474468	0.71	94
MID-SOUTH	1998	1403	COOS R , MILLICOMA R	SCHUMACHER CR	-124.03911	43.482859	0.00	0
MID-SOUTH	1998	1544	COQUILLE R , NORTH FORK	WOODWARD CR	-124.07475	43.25195	0.18	96
MID-SOUTH	1998	1899	COOS R, SOUTH FORK	TIOGA CR	-123.75341	43.193719	0.00	0
MID-SOUTH	1998	1905	COOS R, SOUTH FORK	WILLIAMS R	-123.67067	43.237697	0.97	100
MID-SOUTH	1998	2019	COQUILLE R , NORTH FORK	COQUILLE R, N FK	-124.077	43.201051	0.12	100
MID-SOUTH	1998	2056	COQUILLE R , MIDDLE FORK	ROCK CR	-123.8464	42.998188	0.10	37
MID-SOUTH	1998	2131	COQUILLE R , SOUTH FORK	JOHNSON CR	-124.10608	42.757766	0.00	0
MID-SOUTH	1998	2416	COOS R , MILLICOMA R	MILLICOMA R, W FK	-124.00781	43.490442	0.18	83
MID-SOUTH	1998	2579	TWOMILE CREEK, SOUTH FORK	S TWOMILE CR	-124.41123	43.036847	0.97	100
MID-SOUTH	1999	40	COOS R, SOUTH FORK	WILLIAMS R	-123.65774	43.220344	0.25	95
MID-SOUTH	1999	152	COQUILLE R , MIDDLE FORK	BIG CR	-124.01068	43.028079	0.34	100
MID-SOUTH	1999	326	FOURMILE CR, MAIN STEM	FOURMILE CR	-124.33155	42.986935	1.59	93
MID-SOUTH	1999	440	COQUILLE R , MIDDLE FORK	SANDY CR	-123.86322	43.036976	0.76	100
MID-SOUTH	1999	446	COQUILLE R , EAST FORK	BRUMMIT CR, E FK	-123.87912	43.20223	0.00	0
MID-SOUTH	1999	486	COQUILLE R , NORTH FORK	PARK CR, TRIB B	-123.87792	43.256131	0.53	75
MID-SOUTH	1999	536	COQUILLE R , NORTH FORK	CHERRY CR, N FK	-123.93587	43.219136	0.00	0
MID-SOUTH	1999	600	COQUILLE R , EAST FORK	ELK CR	-123.97259	43.120346	0.00	0
MID-SOUTH	1999	640	COQUILLE R , EAST FORK	S. FK. ELK CR	-123.94787	43.103411	1.36	100
MID-SOUTH	1999	679	COQUILLE R , MIDDLE FORK	BIG CR	-123.97195	43.057638	0.48	88
MID-SOUTH	1999	689	COQUILLE R , NORTH FORK	JOHNS CR	-124.05989	43.07815	0.00	0
MID-SOUTH	1999	781	COQUILLE R , SOUTH FORK	SALMON CR	-124.10617	42.847014	0.00	0

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
MID-SOUTH	1999	931	COOS R, MAIN STEM	KENTUCK CR	-124.10168	43.44973	1.02	92
MID-SOUTH	1999	1023	COOS R, MILLICOMA R	ELK CR	-123.9343	43.575282	0.21	88
MID-SOUTH	1999	1153	COOS R, MILLICOMA R	COUGAR CR	-123.88366	43.586677	0.02	30
MID-SOUTH	1999	1199	COOS R, SOUTH FORK	ROGERS CR	-124.04997	43.368586	1.14	100
MID-SOUTH	1999	1319	COOS R, SOUTH FORK	WREN SMITH CR	-124.07698	43.321235	0.46	65
MID-SOUTH	1999	1376	COOS R, SOUTH FORK	COAL CR	-123.8603	43.349206	0.09	55
MID-SOUTH	1999	1385	COOS R, MILLICOMA R	MILLICOMA R, E FK	-123.87457	43.419519	0.69	100
MID-SOUTH	1999	1452	COOS R, MILLICOMA R	MILLICOMA R, E FK	-123.9094	43.413766	0.92	100
MID-SOUTH	1999	1542	COQUILLE R, NORTH FORK	WOODWARD CR	-124.06484	43.267503	0.26	100
MID-SOUTH	1999	1905	COOS R, SOUTH FORK	WILLIAMS R	-123.67067	43.237697	0.50	94
MID-SOUTH	1999	2002	TWOMILE CREEK, MAIN STEM	TWOMILE CR	-124.35389	43.020586	0.25	80
MID-SOUTH	1999	2072	COQUILLE R, SOUTH FORK	UPPER LAND CR	-124.04967	42.822887	0.00	0
MID-SOUTH	1999	2103	SIXES R, MAIN STEM	SIXES R	-124.21012	42.81133	0.00	0
MID-SOUTH	1999	2161	COQUILLE R, SOUTH FORK	HOSPOSKO CR	-124.0641	42.727245	0.00	0
MID-SOUTH	1999	2220	SIXES R, MAIN STEM	DRY CR	-124.39344	42.771724	0.01	42
UMPQUA	1999	216	UMPQUA R, MAIN STEM	LITTLE WOLF CR	-123.60083	43.4214	0.33	100
UMPQUA	1999	322	UMPQUA R, SOUTH UMPQUA	ELK VALLEY CR	-123.71174	42.87451	0.00	0
UMPQUA	1999	466	UMPQUA R, SOUTH UMPQUA	N MYRTLE CR	-123.12603	43.12135	0.10	84
UMPQUA	1999	510	UMPQUA R, SOUTH UMPQUA	DAYS CR	-123.08587	42.99392	0.18	88
UMPQUA	1999	561	UMPQUA R, SOUTH UMPQUA	ELK CR	-122.85476	42.84832	0.01	56
UMPQUA	1999	641	UMPQUA R, SOUTH UMPQUA	ELK VALLEY CR	-123.71942	42.83933	0.12	85
UMPQUA	1999	705	UMPQUA R, SOUTH UMPQUA	MIDDLE CR, S FK	-123.43303	42.84401	0.00	0
UMPQUA	1999	818	UMPQUA R, SOUTH UMPQUA	WOOD CR	-123.15031	42.99125	0.00	0
UMPQUA	1999	854	UMPQUA R, SOUTH UMPQUA	CANYON CR	-123.27848	42.93546	0.08	67
UMPQUA	1999	884	UMPQUA R, SOUTH UMPQUA	O'SHEA CR	-123.23795	42.91526	0.00	0
UMPQUA	1999	915	UMPQUA R, SOUTH UMPQUA	WOOD CR	-123.39677	42.78158	0.53	95
UMPQUA	1999	958	UMPQUA R, SOUTH UMPQUA	CLEAR CR	-123.24563	42.79555	0.59	88
UMPQUA	1999	972	UMPQUA R, SOUTH UMPQUA	BULL RUN CR	-123.24631	42.75665	1.12	100
UMPQUA	1999	1113	UMPQUA R, MAIN STEM	WOLF CR	-123.61068	43.45629	0.03	93
UMPQUA	1999	1151	UMPQUA R, MAIN STEM	LUTSINGER CR	-123.71893	43.63234	0.35	96
UMPQUA	1999	1486	UMPQUA R, SMITH R	SMITH R, S FK	-123.46512	43.77411	0.19	89
UMPQUA	1999	1546	UMPQUA R, ELK CREEK	ELLENBURG CR	-123.32846	43.73579	0.02	6
UMPQUA	1999	1569	UMPQUA R, SMITH R	SMITH R	-123.38318	43.77969	0.00	0
UMPQUA	1999	1672	UMPQUA R, SMITH R	S SISTER CR	-123.58121	43.83246	0.18	100
UMPQUA	1999	1706	UMPQUA R, ELK CREEK	ROCK CR	-123.24981	43.73443	0.10	100
UMPQUA	1999	1881	UMPQUA R, NORTH UMPQUA	HORSE HEAVEN CR	-122.59013	43.51644	0.00	0
UMPQUA	1999	2115	UMPQUA R, CALAPOOYA CREEK	CABIN CR	-123.31722	43.49299	0.05	50
UMPQUA	1999	2214	UMPQUA R, NORTH UMPQUA	SUTHERLIN CR	-123.30152	43.38869	0.00	0
UMPQUA	1999	2309	UMPQUA R, SOUTH UMPQUA	FALCON CR	-122.54632	42.9933	0.00	0
UMPQUA	1999	2368	UMPQUA R, SOUTH UMPQUA	BOULDER CR	-122.7828	43.07149	0.00	0
UMPQUA	1999	2414	UMPQUA R, SOUTH UMPQUA	BLACK CANYON CR	-122.69185	42.94518	0.00	0
UMPQUA	1999	2726	UMPQUA R, ELK CREEK	BIG TOM FOLLEY CR	-123.51219	43.68075	0.04	60
UMPQUA	1999	2763	UMPQUA R, ELK CREEK	YONCALLA CR	-123.2944	43.63406	0.00	0
SOUTH COAST	1998	36	ROGUE R, MAIN STEM	GRAVE CR	-123.16865	42.699395	0.00	0

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
SOUTH COAST	1998	37	ROGUE R , MAIN STEM	GRAVE CR	-123.16997	42.69618	0.00	0
SOUTH COAST	1998	40	ROGUE R , MAIN STEM	EVANS CR, W FK	-123.10602	42.711489	0.36	100
SOUTH COAST	1998	45	ROGUE R , MAIN STEM	EVANS CR, W FK	-123.10691	42.697382	0.63	100
SOUTH COAST	1998	53	ROGUE R , MAIN STEM	SUGARPINE CR	-122.68286	42.829469	0.39	86
SOUTH COAST	1998	74	ROGUE R , MAIN STEM	FLAT CR	-122.71448	42.765294	0.50	100
SOUTH COAST	1998	103	ROGUE R , MAIN STEM	LITTLE BUTTE CR, S FK	-122.60532	42.415325	0.02	50
SOUTH COAST	1998	122	ROGUE R, BIG BUTTE CREEK	BIG BUTTE CR, N FK	-122.5363	42.552935	0.49	100
SOUTH COAST	1998	134	ROGUE R, BIG BUTTE CREEK	BIG BUTTE CR, N FK	-122.4976	42.552773	0.24	95
SOUTH COAST	1998	165	ROGUE R , MAIN STEM	EVANS CR	-122.98414	42.606609	0.00	5
SOUTH COAST	1998	219	ROGUE R , MAIN STEM	SALT CR	-123.02966	42.669596	0.01	8
SOUTH COAST	1998	226	ROGUE R , MAIN STEM	EVANS CR, W FK	-123.03711	42.632251	0.15	95
SOUTH COAST	1998	257	ROGUE R , MAIN STEM	JUMPOFF JOE CR	-123.38143	42.549996	0.00	0
SOUTH COAST	1998	288	ROGUE R , MAIN STEM	WOLF CR	-123.47176	42.661558	0.00	0
SOUTH COAST	1998	307	ROGUE R , MAIN STEM	JUMPOFF JOE CR	-123.49396	42.528866	0.00	0
SOUTH COAST	1998	309	ROGUE R , MAIN STEM	JUMPOFF JOE CR	-123.48321	42.523518	0.00	0
SOUTH COAST	1998	332	ROGUE R , MAIN STEM	SHASTA COSTA CR	-124.03235	42.575594	0.00	0
SOUTH COAST	1998	335	ROGUE R , MAIN STEM	SHASTA COSTA CR	-124.02385	42.577497	0.00	0
SOUTH COAST	1998	370	ROGUE R, LOBSTER CREEK	BOULDER CR	-124.16266	42.650909	0.00	0
SOUTH COAST	1998	397	ROGUE R, LOBSTER CREEK	LOBSTER CR	-124.29549	42.517531	0.00	0
SOUTH COAST	1998	410	ROGUE R, LOBSTER CREEK	LOBSTER CR, N FK	-124.24763	42.628471	0.00	0
SOUTH COAST	1998	415	ROGUE R, LOBSTER CREEK	LOBSTER CR, N FK	-124.24218	42.634027	0.00	0
SOUTH COAST	1998	504	ROGUE R, ILLINOIS R	ALTHOUSE CR	-123.52336	42.105542	0.08	55
SOUTH COAST	1998	505	ROGUE R, ILLINOIS R	ALTHOUSE CR	-123.53969	42.112951	0.02	10
SOUTH COAST	1998	549	ROGUE R, ILLINOIS R	LITTLE GRAYBACK CR	-123.46962	42.16308	0.02	27
SOUTH COAST	1998	620	ROGUE R , MAIN STEM	LITTLE BUTTE CR, N FK	-122.54186	42.406665	0.00	0
SOUTH COAST	1998	629	ROGUE R , MAIN STEM	SODA CR	-122.50851	42.352597	0.05	37
SOUTH COAST	1998	631	ROGUE R , MAIN STEM	LITTLE BUTTE CR, S FK	-122.53341	42.356082	0.90	78
SOUTH COAST	1998	668	ROGUE R, APPLGATE R	APPLGATE R	-123.10744	42.068117	0.00	0
SOUTH COAST	1998	688	ROGUE R , MAIN STEM	PLEASANT CR	-123.16496	42.59705	0.71	100
SOUTH COAST	1998	739	ROGUE R, APPLGATE R	WILLIAMS CR	-123.26133	42.234897	0.01	30
SOUTH COAST	1998	745	ROGUE R, APPLGATE R	WILLIAMS CR	-123.25013	42.261996	0.00	0
SOUTH COAST	1998	781	ROGUE R, APPLGATE R	WILLIAMS CR, E FK	-123.26064	42.178475	0.00	0
SOUTH COAST	1998	791	ROGUE R, APPLGATE R	THOMPSON CR	-123.19664	42.217063	0.00	0
SOUTH COAST	1998	795	ROGUE R, ILLINOIS R	DEER CR, S FK	-123.43419	42.25339	0.08	60
SOUTH COAST	1998	831	ROGUE R, APPLGATE R	WATERS CR	-123.55942	42.394465	0.00	0
SOUTH COAST	1998	838	ROGUE R , MAIN STEM	LIMPY CR	-123.50123	42.44225	0.02	33
SOUTH COAST	1998	860	ROGUE R, APPLGATE R	JACKSON CR	-123.40713	42.337095	0.09	39
SOUTH COAST	1998	869	ROGUE R, APPLGATE R	WATERS CR	-123.55252	42.370427	0.09	66
SOUTH COAST	1998	907	ROGUE R, ILLINOIS R	CROOKS CR	-123.48525	42.310562	0.00	0
SOUTH COAST	1998	943	ROGUE R, ILLINOIS R	CROOKS CR	-123.54148	42.274686	0.01	33
SOUTH COAST	1999	15	ROGUE R , MAIN STEM	GRAVE CR	-123.27171	42.631031	0.00	0
SOUTH COAST	1999	24	ROGUE R , MAIN STEM	GRAVE CR	-123.20357	42.651514	0.00	0
SOUTH COAST	1999	36	ROGUE R , MAIN STEM	GRAVE CR	-123.16865	42.699395	0.00	0
SOUTH COAST	1999	53	ROGUE R , MAIN STEM	SUGARPINE CR	-122.68286	42.829469	0.11	50

Appendix A (continued).

GCA	YEAR	SITE	BASIN NAME, SUBBASIN NAME	REACH	LONGITUDE (DECIMAL DEGREES)	LATITUDE (DECIMAL DEGREES)	JUVENILE COHO DENSITY	PERCENTAGE OF POOLS CONTAINING JUVENILE COHO
SOUTH COAST	1999	80	ROGUE R , MAIN STEM	ELK CR, W BR	-122.73291	42.698529	0.56	100
SOUTH COAST	1999	92	ROGUE R, BIG BUTTE CREEK	BIG BUTTE CR, S FK	-122.57731	42.558167	0.18	79
SOUTH COAST	1999	108	ROGUE R , MAIN STEM	LITTLE BUTTE CR, N FK	-122.55601	42.413974	1.54	83
SOUTH COAST	1999	122	ROGUE R, BIG BUTTE CREEK	BIG BUTTE CR, N FK	-122.5363	42.552935	0.33	88
SOUTH COAST	1999	139	ROGUE R , MAIN STEM	TRAIL CR	-122.83611	42.713581	0.73	100
SOUTH COAST	1999	140	ROGUE R , MAIN STEM	TRAIL CR	-122.83552	42.72054	0.96	50
SOUTH COAST	1999	196	ROGUE R , MAIN STEM	SAMS CR	-122.99898	42.507024	0.00	0
SOUTH COAST	1999	210	ROGUE R , MAIN STEM	EVANS CR, W FK	-123.04526	42.649177	0.50	86
SOUTH COAST	1999	238	ROGUE R , MAIN STEM	ROCK CR	-123.04484	42.674631	0.05	20
SOUTH COAST	1999	266	ROGUE R , MAIN STEM	WOLF CR	-123.44271	42.68411	0.00	0
SOUTH COAST	1999	278	ROGUE R , MAIN STEM	WOLF CR	-123.47881	42.652577	0.00	0
SOUTH COAST	1999	302	ROGUE R , MAIN STEM	TAYLOR CR	-123.58102	42.529372	0.01	24
SOUTH COAST	1999	309	ROGUE R, MAIN STEM	JUMPOFF JOE CR	-123.48321	42.523518	0.00	0
SOUTH COAST	1999	358	ROGUE R, LOBSTER CREEK	LOBSTER CR, S FK	-124.23163	42.614356	0.00	5
SOUTH COAST	1999	367	ROGUE R, LOBSTER CREEK	BOULDER CR	-124.18591	42.626204	0.00	0
SOUTH COAST	1999	415	ROGUE R, LOBSTER CREEK	LOBSTER CR, N FK	-124.24218	42.634027	0.00	0
SOUTH COAST	1999	445	ROGUE R, ILLINOIS R	ROUGH AND READY CR, N FK	-123.77811	42.091067	0.00	0
SOUTH COAST	1999	446	ROGUE R, ILLINOIS R	ROUGH AND READY CR, S FK	-123.78165	42.080933	0.00	0
SOUTH COAST	1999	490	ROGUE R, ILLINOIS R	GRAYBACK CR	-123.42579	42.149925	0.16	33
SOUTH COAST	1999	493	ROGUE R, APPLGATE R	WILLIAMS CR, W FK, R FK	-123.35374	42.162482	0.00	0
SOUTH COAST	1999	539	ROGUE R, ILLINOIS R	BEAR CR	-123.52967	42.178986	0.06	38
SOUTH COAST	1999	549	ROGUE R, ILLINOIS R	LITTLE GRAYBACK CR	-123.46962	42.16308	0.01	8
SOUTH COAST	1999	566	ROGUE R, ILLINOIS R	WOOD CR	-123.67038	42.051467	0.07	75
SOUTH COAST	1999	576	ROGUE R, ILLINOIS R	ILLINOIS R, W FK	-123.76487	42.018754	0.00	13
SOUTH COAST	1999	629	ROGUE R , MAIN STEM	SODA CR	-122.50851	42.352597	0.04	36
SOUTH COAST	1999	636	ROGUE R , MAIN STEM	LAKE CR	-122.62439	42.410265	0.08	57
SOUTH COAST	1999	671	ROGUE R , MAIN STEM	SARDINE CR	-123.07533	42.458609	0.00	0
SOUTH COAST	1999	681	ROGUE R , MAIN STEM	PLEASANT CR	-123.16609	42.54369	0.03	15
SOUTH COAST	1999	709	ROGUE R , MAIN STEM	JONES CR	-123.28692	42.429027	0.01	9
SOUTH COAST	1999	743	ROGUE R, APPLGATE R	WILLIAMS CR	-123.24822	42.263065	0.00	0
SOUTH COAST	1999	757	ROGUE R, APPLGATE R	FOREST CR	-123.05794	42.230242	2.02	60
SOUTH COAST	1999	781	ROGUE R, APPLGATE R	WILLIAMS CR, E FK	-123.26064	42.178475	0.05	28
SOUTH COAST	1999	797	ROGUE R, ILLINOIS R	DEER CR	-123.43096	42.266863	0.00	0
SOUTH COAST	1999	803	ROGUE R, ILLINOIS R	DEER CR, N FK	-123.43839	42.287078	0.55	67
SOUTH COAST	1999	843	ROGUE R, APPLGATE R	WATERS CR, RT FK	-123.54694	42.39944	0.00	0
SOUTH COAST	1999	869	ROGUE R, APPLGATE R	WATERS CR	-123.55252	42.370427	1.84	92
SOUTH COAST	1999	914	ROGUE R, ILLINOIS R	CROOKS CR	-123.49957	42.309089	0.58	100
SOUTH COAST	1999	915	ROGUE R, ILLINOIS R	CROOKS CR	-123.52021	42.298145	1.13	100