Northwest Region Fish Management Review
April 2, 1996

District	**Siuslaw**
Basin	**Siuslaw River**
Species	**Siuslaw River Coho**
Status	**Stock of concern**

Previous Assessment

- Escapement of adult coho was gradually improving from 1990- 1993. In 1993 the number of spawning coho at 9.0 per mile was higher than in the last five years. In 1994 coho escapement was the lowest on record at 2.0 coho per mile. We predicted the poor returns in 1994 from the low juvenile production in the drought of 1992. The drought conditions created lowered food production, increased crowding into small pools and greater losses to predators.
- Abundance of juvenile coho in Siuslaw tributaries were low compared to fully seeded habitat in other systems. In habitat enhanced streams juvenile coho abundance was higher than in unenhanced reaches. Juvenile rearing densities were similar in both standard and random adult spawning streams for 1991-94.
- We predicted much better returns in 1995 than 1994 from juvenile and jack abundances.

Most Recent Findings

- Adult coho escapement in 1995 increased substantially over the record low return in 1994. In 1995 coho escapement from Area-Under-the-Curve (AUC) estimates averaged 11.0 and 9.0 adults per mile in standard and random surveys respectively. Coho returns for 1990-1994 averaged 13.8 and 5.6 adults per mile in standard and random surveys respectively.
- Random sampling of juvenile coho population densities in 21 Siuslaw tributaries averaged 0.08 fish/m2 of pool in 1995 and were the lowest observed from 1990-94. We found no difference in coho rearing density comparing enhanced and unenhanced areas, however enhanced habitats have substantially greater numbers of coho because they have much greater pool areas. We believe the low density of juveniles observed in 1995 was the direct results of the lowest adult abundance on record in 1994 coupled with a late spring flood event following coho emergence in 1995.
- We also compared the summer rearing densities of juvenile coho in standard adult surveys to random adult survey streams. We found the average densities from 1990-1995 were 0.38 and 0.37 juveniles per m2 of pool in standard and random surveys, respectively. We conclude, the random adult survey streams are good indicators of juvenile abundance basin wide.
- A Humphrey trap was used to estimate the smolt population emigrating from Knowles Creek in 1992 - 1995. Knowles Creek is typical of lower Siuslaw River tributaries with a predominate sandstone geology. Smolt estimates in 1995 were 13,965, the highest recorded in the last few years.

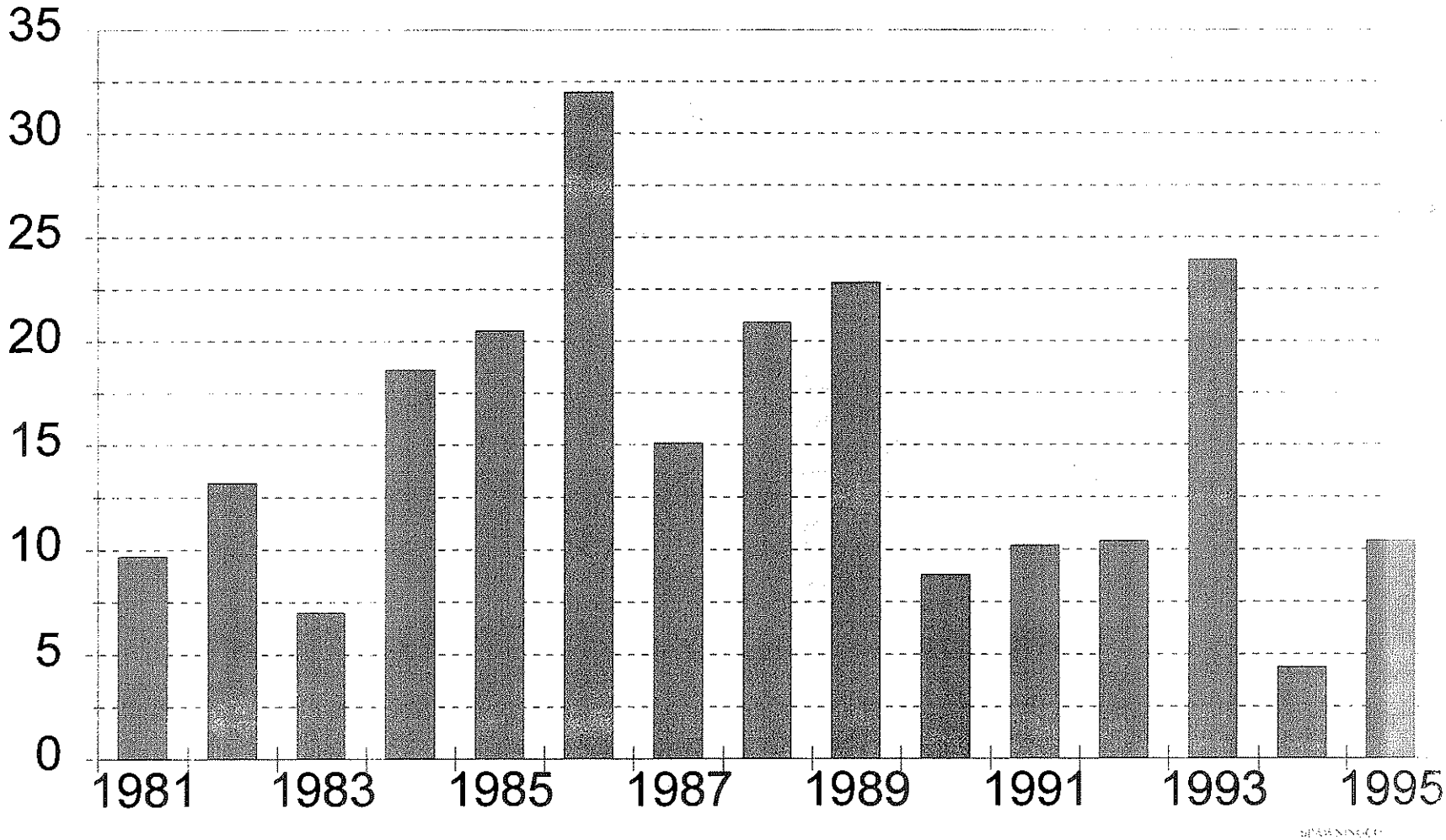
Actions

- Continue adult spawning surveys and expand the number of stream miles indexed.
- Continue to sample juvenile coho during the summer to evaluate population trends and to determine effectiveness of habitat enhancement projects. Assist USFS, BLM, and Research on their habitat enhancement projects.
- Complete the smolt stocking program above Triangle Lake to establish a natural spawning coho population, ending with the 1997 release.
- Aggressively plan and pursue funding for habitat enhancement projects for coho on private lands. Continue to work with the USFS, BLM, State Forestry, and others to enhance habitat on public and private lands.
- Use "Hire the Fishermen Program" personnel to enhance coho habitat on private lands and assess and remedy coho salmon passage problems. We anticipate enhancing approximately 20 miles of streams in 1996.
- Repair Lake Creek fish ladders with the BLM to provide a permanent fix for fish access.

Current Assessment

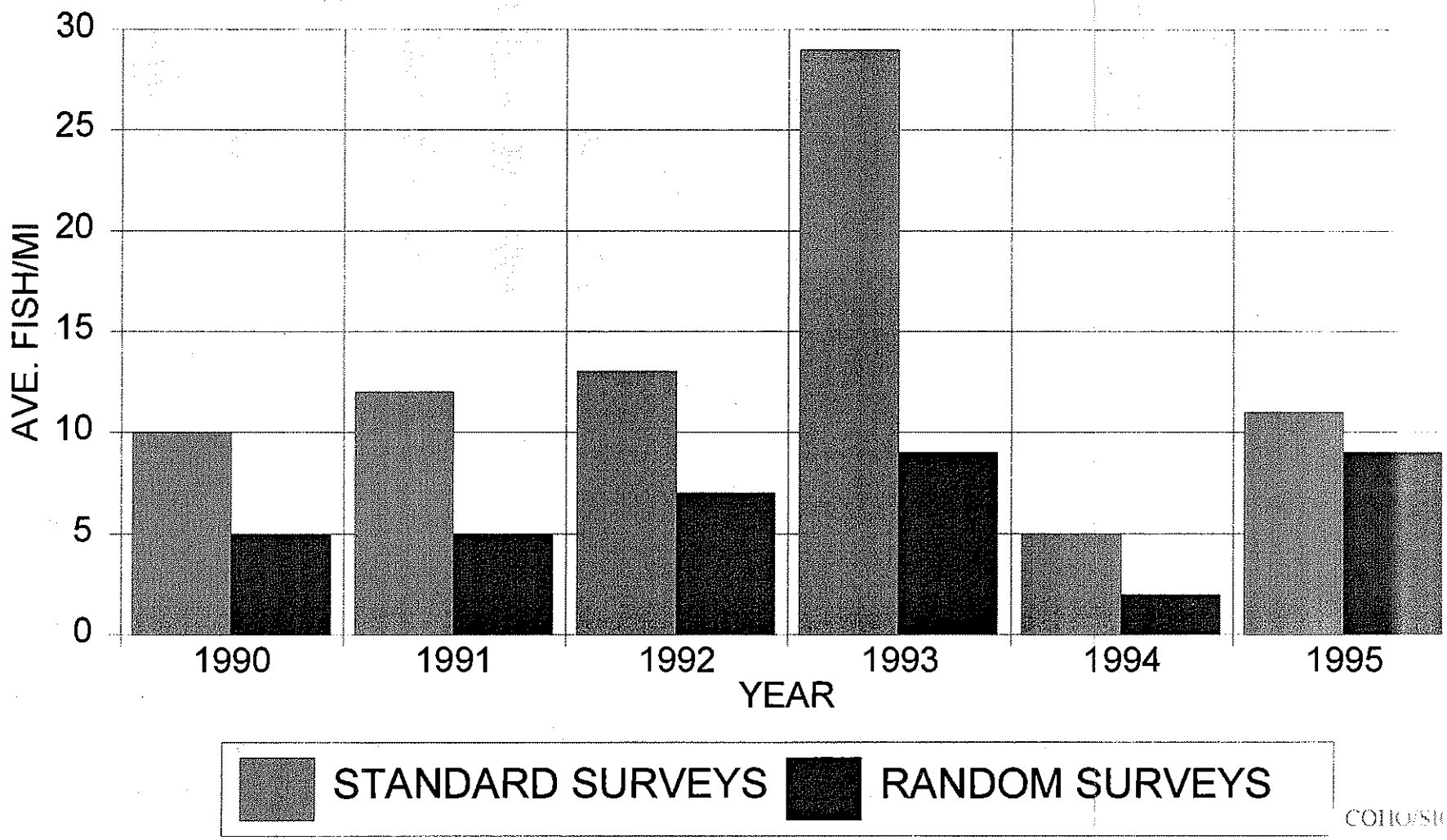
- Wild coho adult returns were at critically low levels in 1994, and as expected improved substantially in 1995.
- Coho juvenile abundance in 1994 and jack abundance in 1995 would predict good adult coho returns in 1996.
- Habitat enhancement projects should receive high priority to take advantage of prior planning efforts to rebuild wild naturally produced coho populations.
- Affects of 1996 flood a big unknown.

AUC ESTIMATES FOR COHO IN THE SIUSLAW BASIN STANDARD SURVEY UNITS



SIUSLAW BASIN

Coho Escapement



COHO/SIC ODSCP

SIUSLAW BASIN COHO SALMON
SUMMER JUVENILE REARING DENSITY

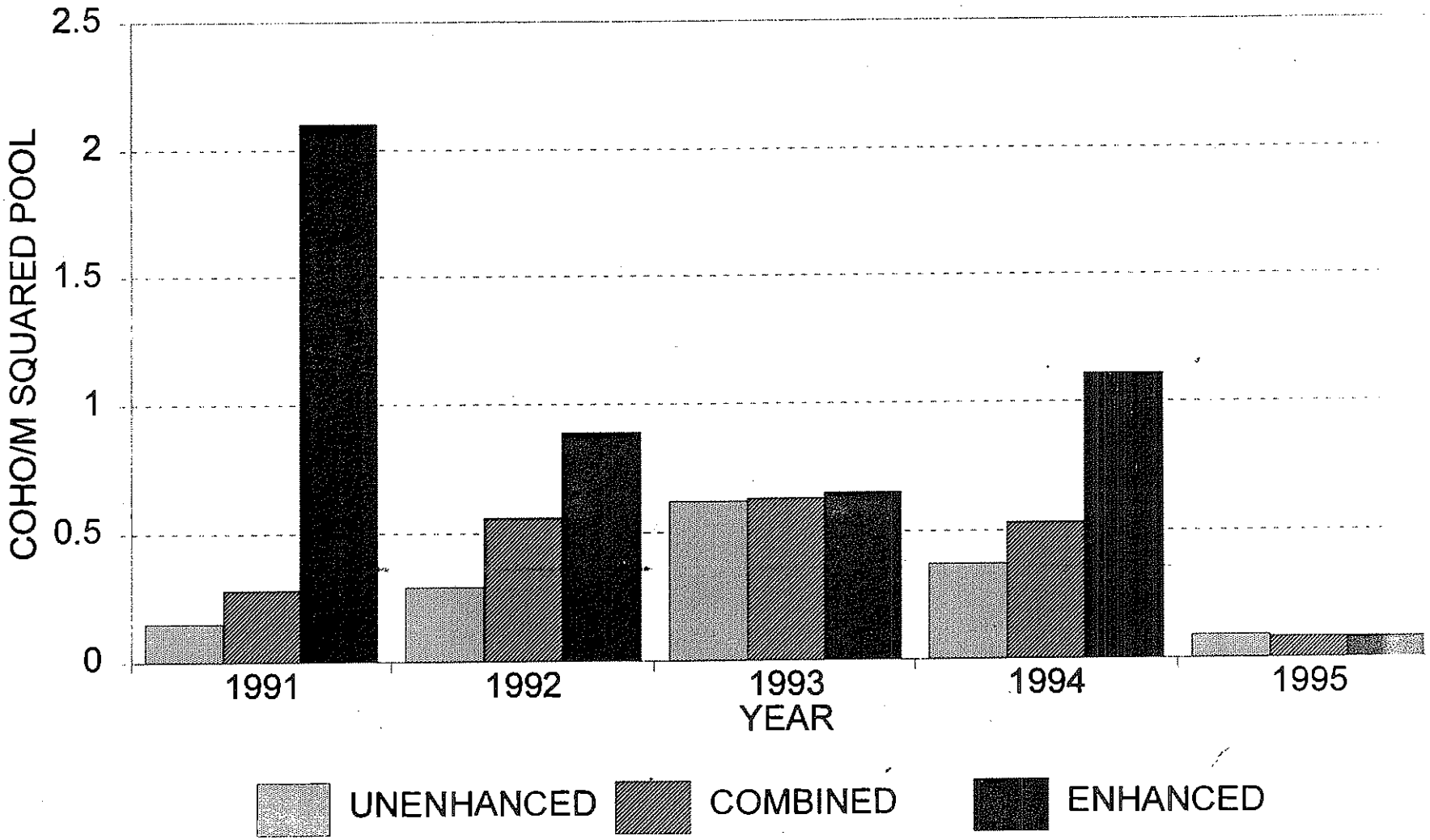
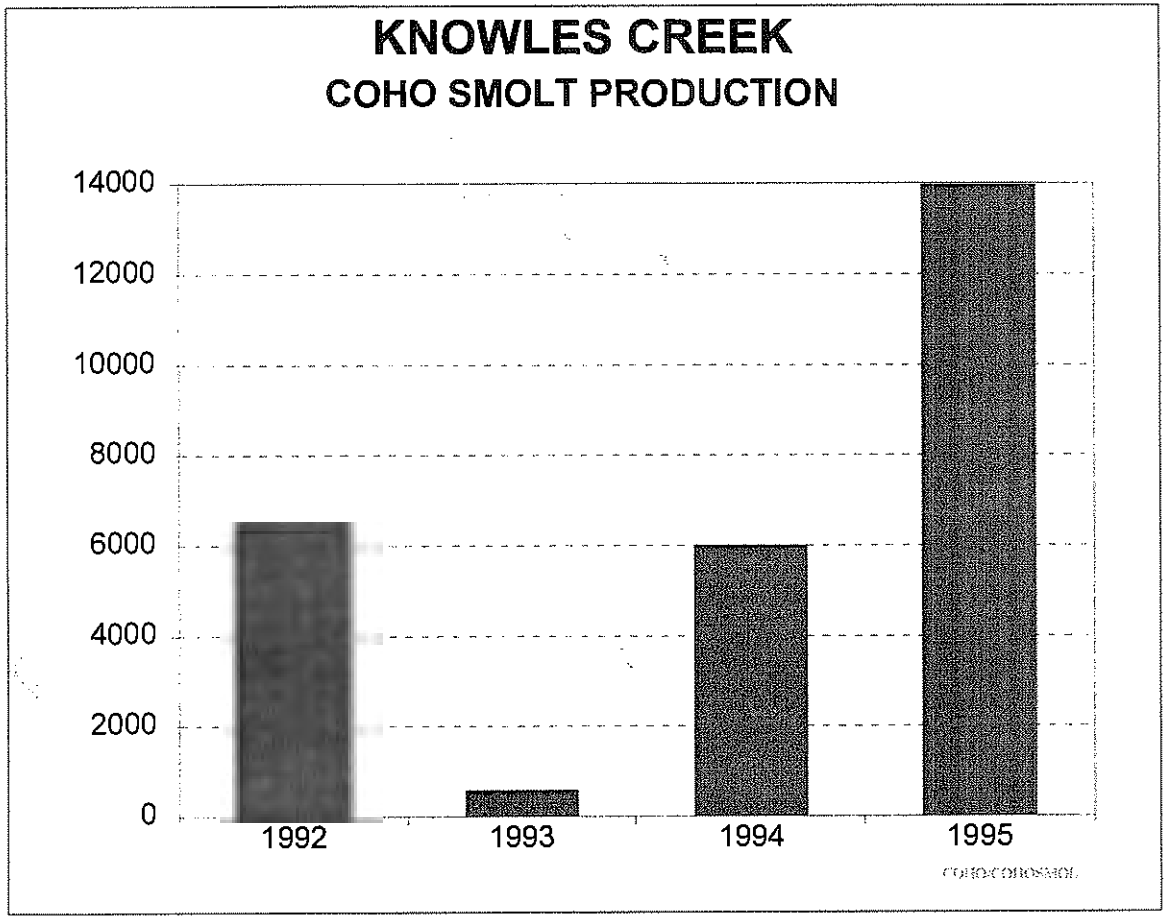


Table 1. Average juvenile coho summer rearing density per m2 of pool produced by the previous years adults per mile from AUC estimates of random spawning surveys.

YEAR	RANDOM	
	Adult/mi	Juv/m2 pool
1990	5	n/a
1991	5	0.14
1992	7	0.38
1993	9	0.56
1994	2	0.41
1995	9	0.09
Average	6.2	0.37


KNOWLES CREEK
COHO SMOLT PRODUCTION
14000
12000
10000
8000
6000
4000
2000
0
1992
1993
1994
1995

Hooton

Northwest Region Fish Management Review
April 2, 1996

District **Siuslaw**

Basin **Siuslaw River**

Species **Siuslaw River Cutthroat**

Status **Stock of concern**

Previous Assessment

- Last year we reported on the final year of a three-year tidewater creel program we conducted from 1992-1994. We reported a steady decline in cutthroat fishing effort over the three years sampled, and the level of effort had declined to only a bout 10% of the effort level from 1965-70 as reported by Giger.
- Catch of hatchery sea runs was slightly better in 1994 than 1993 despite the fact that we had stocked only half as many smolts.
- We reported that the catch of wild searun cutthroat in the catch had declined to only 68 fish in 1994. (This figure has been since been found to be in error.)

Recent Findings

Sea Run Cutthroat

- We discovered an had been made in tabulating the catch data of several mark groups in the 1994 tidewater creel. The corrected spreadsheets are appended. The only significant change is the number of wild sea runs, which is 330 instead of 68.
- We did not have a creel program on searun cutthroat in 1995, however it appears from moorage catch records and anecdotal information that the catch was comparable to the previous two years. The combined catch at C&D Dock and Maple Lane Marina was down slightly compared to 1994, But Cushman Store reported much better catches compared to 1994. The early part of the fishery was concentrated in the Cushman area.

Resident Cutthroat

- The Deadwood Store held a trout derby the opening weekend of trout season last year . The winning entry was 171/2 inches long. Of 37 cutthroats checked, 20 were over 12 inches. The significance of this information is that it shows that there is a harvestable trout resource in these streams.
- Of special interest was a 15 1/2 inch rainbow trout which was brought in. To the best of our knowledge, this was the first documented record of a resident rainbow trout in the Siuslaw system. The angler would not disclose the location of the catch, but we believe it was caught in a stream rather than a pond, since it had been eating caddis fly larvae, cases and all.
- Through our culvert survey program and from presence/absence surveys in 1995 we have identified a number of streams with no cutthroat, or cutthroat only below a culvert. We believe that culverts

are having a serious impact on cutthroat trout populations. We suspect that cutthroats were extirpated from many smaller tributaries by the drought in 1992, and now are unable to recolonize these areas.

Actions

- The Siuslaw Basin Plan public steering committee agreed with the district to recommend the "No Hatchery" alternative for cutthroat trout in the Siuslaw . While there was a strong desire among the committee memebers to see a robust sea run cutthroat fishery in the Siuslaw, it was apparent that the current hatchery program was no longer feasible due to the low returns and genetic concerns with the Alsea broodstock.
- We are continuing to inventory culverts utilizing the "Hire the Fishers" program.
- Extensive habitat restoration projects are planned for this year by us and federal agencies. While the primary focus of these projects is coho, cutthroat trout should benefit also.

Current assessment

- The at-sea survival of the sea run cutthroat continued at a low level in 1995.
- We need to continue to monitor the populations closely.

SIUSLAW CREEL PROGRAM
WILD CUTTHROAT CATCH

Year	Wild Searun	Wild Resident	Total Wild
1992	830	196	1026
1993	288	190	397
1994	330	13	343

SIUSLAW TIDEWATER CREEL

Catch data

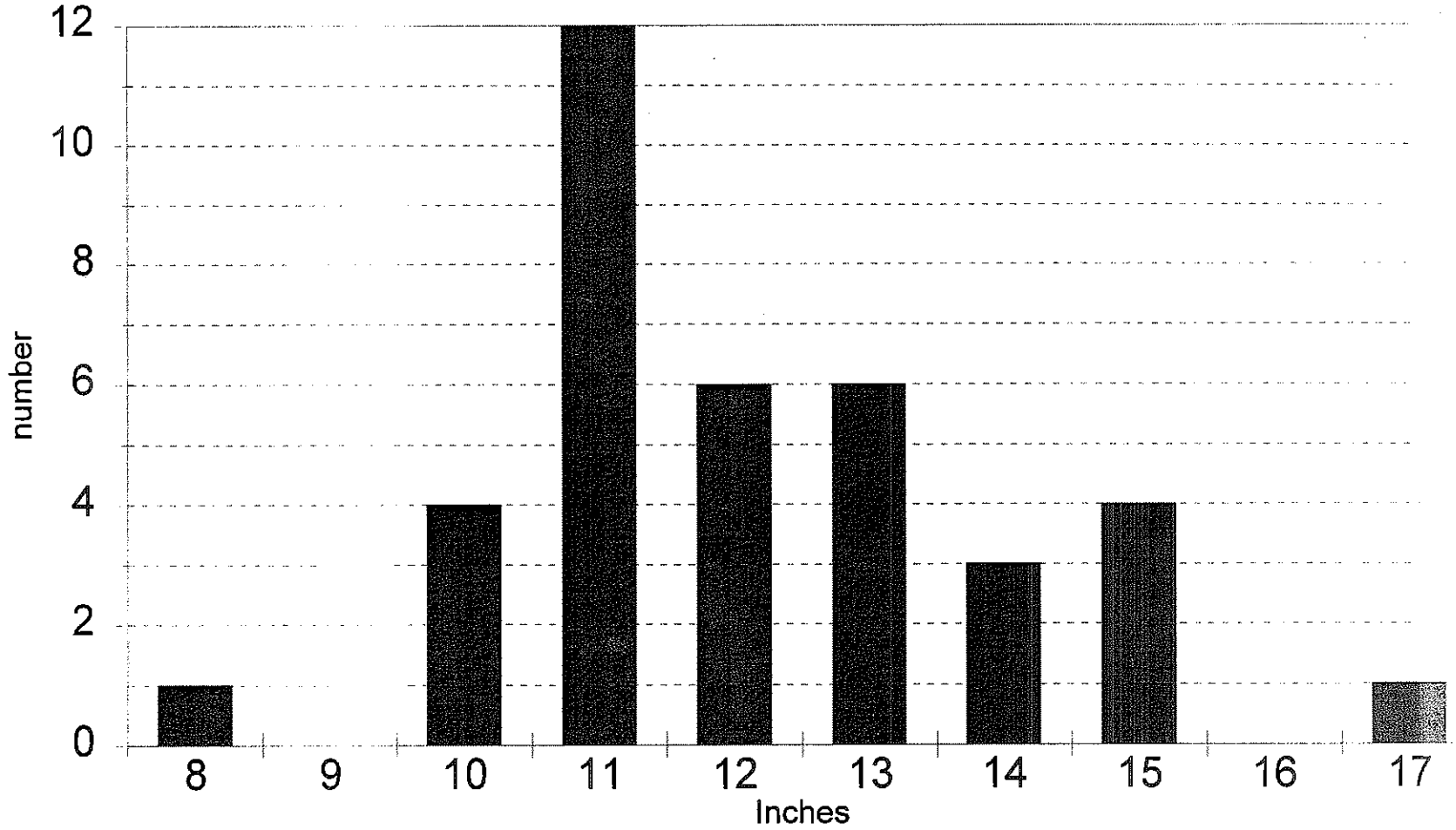
1992	CUTTHROAT CATCH				SALMON CATCH			
	HATCHERY CUTT	JULY REL.	WILD	RES. CUTT	CHIN ADULTS	CHIN JACKS	COHO ADULTS	COHO JACKS
JULY 1-15	164	*	84	0	0	0	0	0
JULY 16-31	63	*	28	13	0	0	0	0
AUG 1-15	93	*	149	27	0	0	112	0
AUG 16-31	171	*	210	120	9	2	26	0
SEPT 1-15	146	*	249	0	176	21	196	0
SEPT 16-30	145	*	110	36	385	145	27	47
OCT 1-15	--	--	--	--	--	--	--	--
OCT 16-31	--	--	--	--	--	--	--	--
TOTAL	782	0	830	196	570	168	361	47

1993	CUTTHROAT CATCH				SALMON CATCH			
	HATCHERY CUTT	JULY REL.	WILD	RES. CUTT	CHIN ADULTS	CHIN JACKS	COHO ADULTS	COHO JACKS
JULY 1-15	0	17	6	41	0	0	0	0
JULY 16-31	5	35	41	9	0	0	0	0
AUG 1-15	199	113	161	35	0	0	0	0
AUG 16-31	131	5	47	10	61	5	0	5
SEPT 1-15	42	4	13	0	194	15	0	0
SEPT 16-30	14	0	14	5	431	14	0	7
OCT 1-15	13	0	6	0	397	19	150	0
OCT 16-31	0	0	0	9	127	5	87	0
TOTAL	404	174	288	109	1210	58	237	12

1994	CUTTHROAT CATCH				SALMON CATCH			
	HATCHERY CUTT	JULY REL.	WILD	RES. CUTT	CHIN ADULTS	CHIN JACKS	COHO ADULTS	COHO JACKS
JULY 1-15	0	111	0	0	0	0	0	0
JULY 16-31	10	187	3	4	0	0	0	0
AUG 1-15	251	90	105	0	0	0	0	0
AUG 16-31	235	76	139	2	32	6	5	0
SEPT 1-15	58	12	28	0	141	66	13	0
SEPT 16-30	3	3	7	0	233	83	4	0
OCT 1-15	31	8	23	7	346	72	28	11
TOTAL	596	487	330	13	862	278	52	11

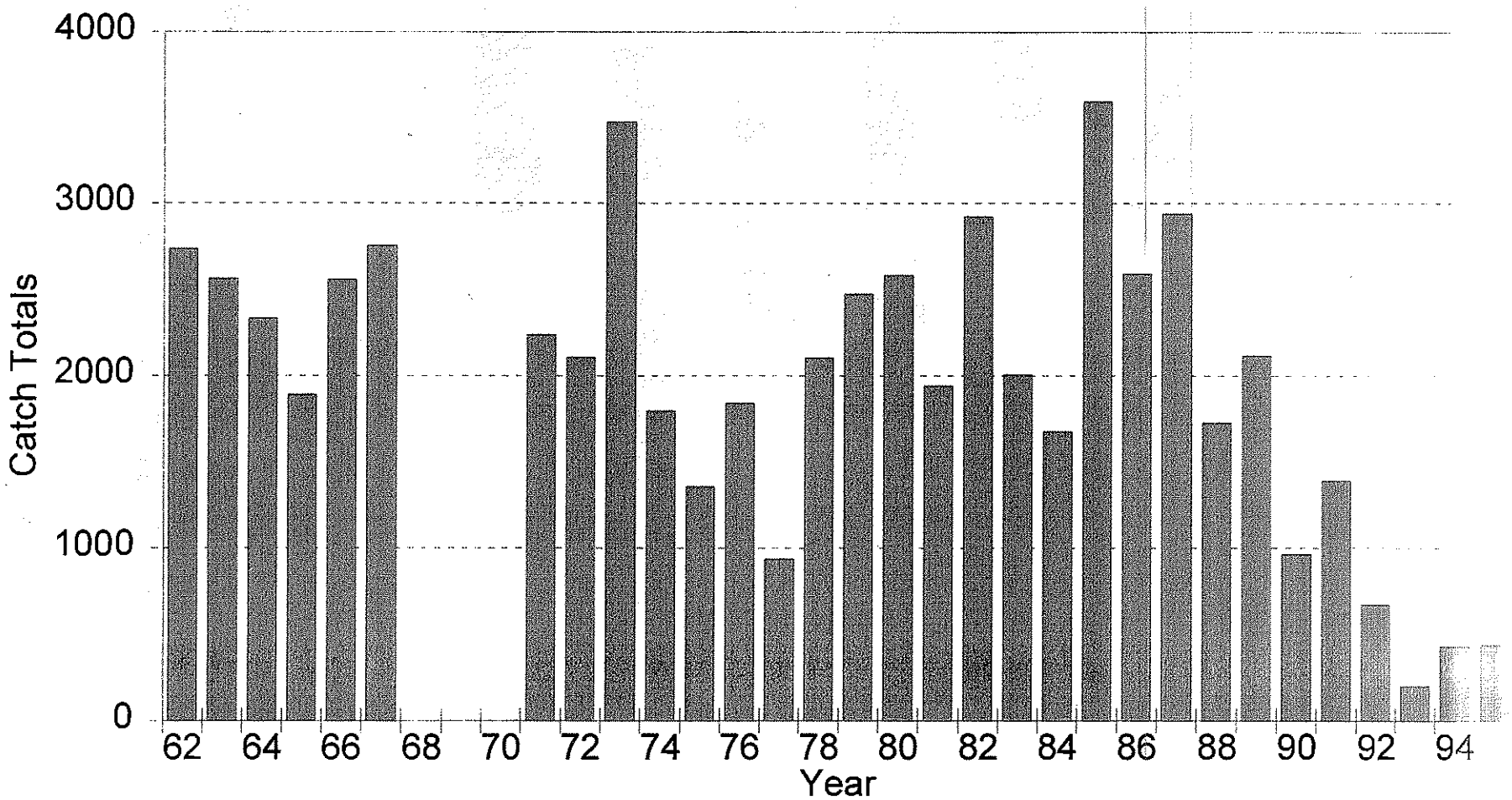
Deadwood Cutthroat Derby

May 27, 1995

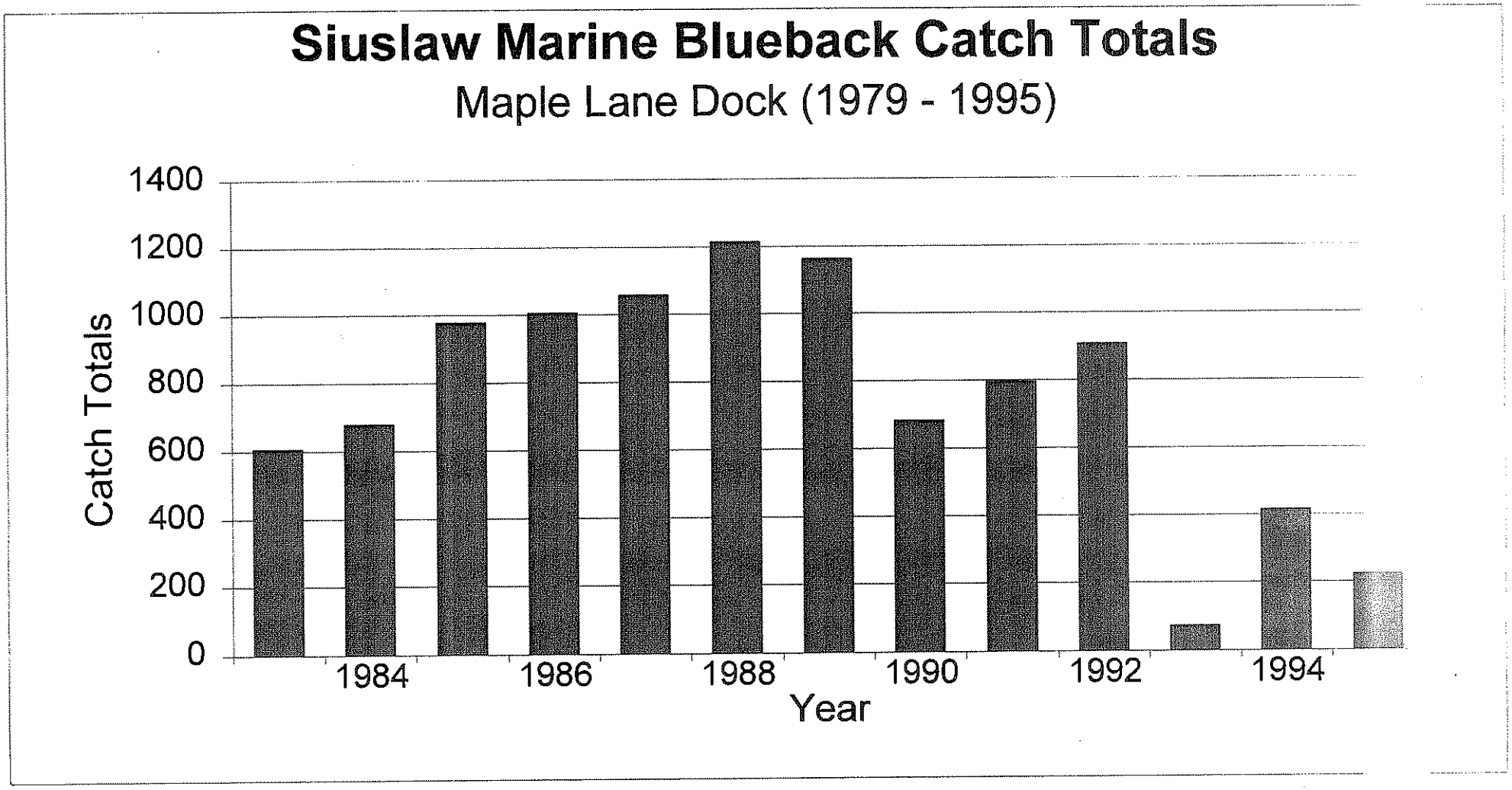


SIUSLAW SEA RUN CUTTHROAT

C&D DOCK CATCH



CATCHDAT/MORRAG


Siuslaw Marine Blueback Catch Totals
Maple Lane Dock (1979 - 1995)
Catch Totals
1400
1200
1000
800
600
400
200
0
1984
1986
1988
1990
1992
1994
Year

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District **Siuslaw**

Basin **Siuslaw River**

Species **Siuslaw River Winter Steelhead**

Status **Stock of concern**

Previous Assessment

Last year we reported that Research data showed that Siuslaw stock steelhead raised at Alsea Hatchery strayed back to the Alsea at a lesser rate than did Alsea stock steelhead also raised at Alsea Hatchery.

We also reported that steelhead released into Whittaker Creek exhibited a high degree (95+%) of homing back to the release site

Acclimation of smolts did not appear to decrease straying , but did appear to increase survival.

We reported that there was a negative correlation between the numbers of steelhead smolts stocked and the catch.

Recent Findings

Wild Fish

The numbers of wild fish observed in the Siuslaw to date by Research creel and trapping programs are extremely low. Of 1,920 fish observed for marks to date, only 124, or 6% were not marked. Scale analysis indicated that 72% of the umarked steelhead were actually hatchery fish, and only 28% of the unmarked steelhead were wild fish.

This information has serious implications: If this indication of the scarcity of wild fish is borne out, it will be virtually impossible to have any kind of a meaningful hatchery program and still maintain less than 50% hatchery fish in the population. These data also suggests that at least two out of every three steelhead that anglers release are hatchery fish and should have been retained.

The number of steelhead reported this winter as released "wild" fish in a R&D creel program on the Siuslaw River, conducted between December 1 and February 17, was 68. This is less than was reported in 1995 (115) and 1994 (109).

Although he numbers of wild fish observed to date are extremely low, it should be kept in mind that a significant portion of the Siuslaw stock fish return in March and April, and we do not know the numbers of fish that may have passed upstream on freshets and floods this winter. We also do not know how the numbers of fish returning to the tributaries that are trapped relates to the numbers of wild steelhead in the whole basin. We suspect that this may be an especially weak year class of steelhead, analogous to the '94 brood of coho adults. Most of the two salts were first year juveniles during the severe drought of the summer of 1992.

Table 1. Numbers of marked 2-salt Siuslaw steelhead observed to date adjusted to standard 30,000 smolt release.

	Whittaker Accl. (RPLM)	Whittaker Direct (RPRM)	Mainstm Control (LPLM)	Letz Creek (LPRM)	Siuslaw Stock (ADRM)	Alsea Stock (ADLM)
Whittaker trap thru 3-18-96	427	330	19	117	0	0
All other traps thru 3-18-96	3	4	73	7	31	39
Siuslaw Creel thru 2-17-96	67	57	28	17	130	100
Alsea Creel thru 3-10-96	10	10	4	4	11	8
Alsea Hatchery thru 3-11-96	127	146	98	22	38	125
Tota	634	547	196	168	210	272

Table 2. Data used to compare straying of Siuslaw winter steelhead release groups to the Alsea system.

Treatment	Total Observed	Surv. Adj. Factor	Alsea Observations	Adj. Alsea Recov.	% Reduct. Straying
In-Basin reared	168	3.26	26	85	-46%
Out-system reared	547	1	156	156	
Siuslaw Stock	210	1.30	49	64	-52%
Alsea Stock	272	1	133	133	
climated	634	1	137	137	-24%
Not-Acclimated	547	1.16	156	181	
Tributary Release	213**	1	156	156	-7%
Mainstem Release	130**	1.64	102	167	

** Siuslaw trap catches excluded

Catch Rate

The contribution of the Siuslaw stock release group appears to be significantly higher than the comparable Alsea stock release group. This year 211 (unexpanded) Siuslaw stock steelhead (2 and 3 salts) had been observed in the creel as of March 11, compared to 156 of the comparable Alsea stock group. This finding is consistent with results from 1991 and 1993 releases of Siuslaw stock smolts, and indicates that Siuslaw stock steelhead are more vulnerable to the fishery.

Analysis of out-system straying

We analyzed the Research data available to date on returns of 2-salt steelhead from the 1994 releases in the Siuslaw to determine if various management options were effective in reducing the rate of out-system straying of adult winter steelhead. The factors tested were:

1. Rearing location (in-basin vs. out of basin)
2. The stock of steelhead (Siuslaw vs. Alsea)
3. Acclimated vs. non-acclimated
4. Release location (tributary vs. mainstem)

We used the number of fin marked fish from the Siuslaw release groups observed in the Alsea system as the test of straying. Table 1 shows the numbers of marked 2-salt fish observed adjusted to a standard 30,000 smolt release and rounded to the nearest whole number. To factor out variations in survival rates each pair of release groups was further adjusted to an identical survival rate as indicated by the total number of fish observed at all locations for each of the paired groups (Table 2).

This analysis indicates a large reduction in stray rates due to in-basin rearing and differences between stocks, and lesser reductions due to acclimation and tributary releases. Previous releases of Siuslaw stock steelhead in 1991 and 1993 showed similar reductions in stray rates (Lindsay et al, 1995). However, the 1994 release smolts reared in-basin was the first opportunity to compare in-basin reared smolts with out-system reared smolts. Lindsay found no significant difference in straying rates between acclimated and non-acclimated groups and between tributary and mainstem releases.

Progress of broodstock program

Up until this point Research has been trapping tributary streams in the Siuslaw basin to collect adults from the third of three brood years of winter steelhead smolt releases as part of their research of hatchery smolt release strategies. Research crews trap the fish and hold them for the district. We then collect these fish and haul them to our holding site in Munsel Creek in Florence, where they are spawned with help from the Florence STEP Group. The eggs are incubated at the Florence STEP Group hatchhouse until eyed and then they are shipped to Willamette Hatchery.

We have encountered several problems this winter. First of all, the extremely wet winter has made it very difficult for Research to keep the traps operating.

A second problem has been a shortage of males. To date, we have collected 96 steelhead. Of these 60 were females and 36 were males. The sex ratio of males The sex ratio seems to be fairly constant from all sources (Table 1). We intended to do a 3x3 cross of all males and females to maximize genetic diversity. However we never had enough males to do this with exception of early in the spawning season.

The third problem we have encountered is poor egg viability. Our estimated egg loss has been approximately 29%. We are not sure of the reasons for this. We originally thought it may have something to do with the shortage of males. However, our highest egg losses were early in the season when we spawned an equal number of males and females. On March 5th egg take we had our lowest egg loss: 15%. On this date we spawned 1 male with 9 females. The data may suggest that the extra handling of eggs when doing the crossing may have something to do with the increased egg loss (Table 3).

Table 3 . Estimated egg losses to the eyed egg stage for each spawning in 1996.

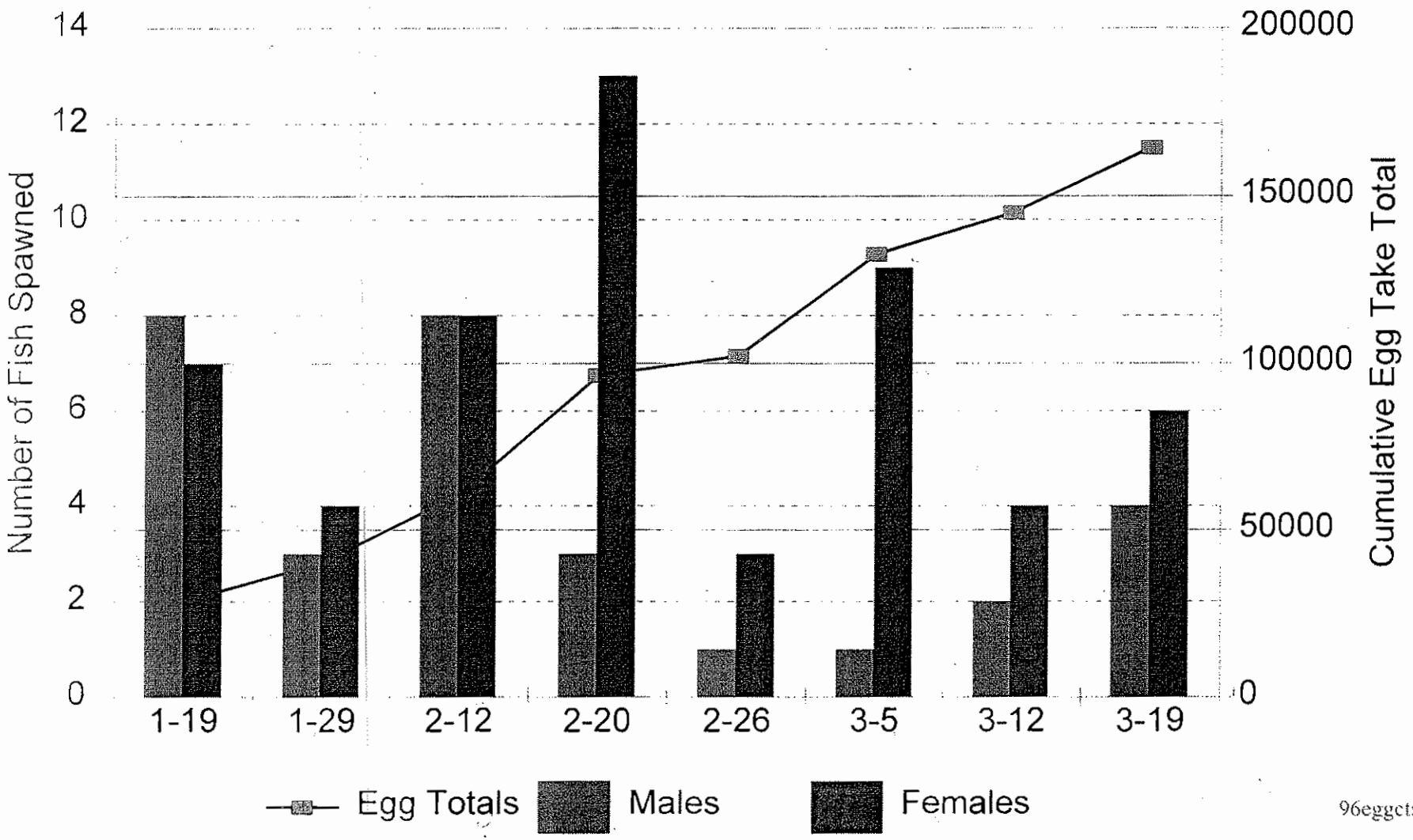
Date Spawned	No. of Males	No. of Females	Estimated % Egg Loss
1/19	8	7	24
1/29	3	4	34
2/12	8	8	54
2/20	3	13	29
2/26	1	3	23
3/5	1	9	15
3/12	2	4	--
3/19	4	6	--
	30	54	

Another reason for the poor egg quality may actually be due to poor quality of the spawners. We have had a number of partially spawned or partially water hardened females. Most of our partially spawned females occurred early in the season when we had our highest egg losses. On Feb. 12th we spawned 8 females of which five had egg counts of less than 2,000. The overall egg loss for this egg-take was 54%. The females taken later in the season seem to be of better quality. We have also noticed that some of the males appeared to be of poor quality, having watery milt and not much of it.

To summarize our broodstock collection program to date:

We have spawned 54 females for an estimated egg take of 164,000. Approximately 20,000 were transferred to Letz Creek STEP; 88,000 have been transferred to Willamette Hatchery; and 32,000 are still on hand at Munsel Creek.

STEELHEAD BROODSTOCK NUMBERS AND CUMULATIVE EGG TOTALS



96eggcts

Table 4. Numbers of two and three salt steelhead observed for marks by Research personnel to date.

Siuslaw Winter Steelhead Mark Recovery Data

	Whittaker Accl. (RPLM)	Whittaker Direct (RPRM)	Mainstm Control (LPLM)	Letz Creek (LPRM)	Siuslaw Stock (ADRM)	Alsea Stock (ADLM)	Un-marked Hatchery	Wild		Total
								Kept	Released	
Whittaker trap thru 3-18-96	487	381	33	111	0	0	74	7	2	1,095
All other traps thru 3-18-96	3	6	78	7	36	49	15	12	14	221
Siuslaw Creel thru 2-17-96	83	85	49	21	211	156				605
Alsea [illegible] 3-10-96	10	10	6	4	11	11				52
Alsea Hatchery thru 3-11-96	220	222	239	23	92	241				1,037
Totals	803	704	405	166	350	457	89	19	16	3,009