



FINAL REPORT

on the

COOPERATIVE AGREEMENT

between

U.S. FISH AND WILDLIFE SERVICE

and

WALTER LARA JR. ✓

CAPTURE AND WEIR COMPONENT

&

YUOK ACCELERATED STOCKING PROGRAM

KLAMATH RIVER LATE RUN FALL CHINOOK

FY 1996

FINAL REPORT YUOK FALL CHINOOK  
CAPTURE PROGRAM  
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INTRODUCTION

Late run fall chinook salmon endemic to the lower 40 miles of the Klamath River and its tributaries, are severely depressed due to both man-made and natural habitat degradation.

Six separate small scale stream side incubation and or rearing facilities have been developed which are operated to restore natural spawning populations of these late run salmon in select streams which are tributaries to the Yurok Reservation.

The majority of streams on the Reservation are depleted to the point that instream capture of brood stock is not possible. To answer the problem, in 1985 the Bureau of Indian Affairs initiated a program of mainstem gill net capture of late run brood stock to procure eggs for the accelerated stocking projects.

Hunter Creek, which is the largest tributary to the Klamath estuary, was chosen as a first year project for the instream rearing and release of yearling late run chinook.

The goals of the restocking of Hunter Creek are to restore a natural spawning population to that system, and to develop sufficient spawning returns so that late run brood stock returning to that system may augment or replace gill net captured brood for the restoration program.

In the Fall of 1988 the Bureau of Indian Affairs, using Yurok Tribal funds, funded the construction and operation of the Hunter Creek trap and weir to evaluate returns from the stocking program and if feasible to augment egg requirements.

In FY 96 the total Yurok accelerated stocking program, including capture, was funded by the USFWS FOA Yreka, using Klamath Restoration Act funds.

This report is on the overall lower river project and will cover the weir operations, mainstem gillnet capture operation and the rearing till release of the fish raised.

## HUNTER CREEK TRAP AND WEIR FY 1996

### DESCRIPTION OF THE STUDY AREA

Hunter Creek is the largest tributary to the Klamath estuary drainage app, 24 square miles. Its mouth is located at app. river mile 1.3, entering on the north bank.

The Hunter Creek weir and trap is placed just downstream from the Requa road bridge at app. stream mile 1. This is also the site of the instream cages which are used to rear yearling chinook salmon for the release into that system.

The number of yearlings released into that system are:

Oct. 1986 -	6,350
Oct. 1987 -	7,400
Oct. 1988 -	8,900
Oct. 1989 -	14,964
Oct. 1990 -	16,350 (all cwt)
Oct. 1991 -	10,442 (5,740 cwt)
Oct. 1992 -	18,219 (all cwt)
Oct. 1993 -	30,082 (all cwt)
Oct. 1994 -	20,945 (all cwt)
No project in	1995

The stream topography is low gradient at this location and slow flowing during dry periods with a wetted width of app. 15 ft. and a one foot depth. After initial fall rains the stream is subject to radical changes in depth and width, with increases in depth up to six feet or deeper. Temperatures remain fairly constant at app 50 degrees Fahrenheit.

### METHODS AND MATERIALS

We went back to the original "Alaska" weir design this year as in FY 94 we tried to modify the design to an easier handling weir but it was not to successful. The weir setup nicely in the creek this year just down stream from where Mynot Creek enters the flow of Hunter.

The weir and trap are in close proximity of our home, and the site is checked for fish and cleaned regularly several times a day as conditions require.

Trapped fish are placed in an instream cage or released depending on species or condition.

## RESULTS AND DISCUSSION

The weir was placed in Hunter Creek on 10/14/95 and pulled for the season on 12/29/95. On 10/15 we walked the creek and above the weir app 1/2 mile or so there was a redd spotted. It was first discussed with the Yurok Tribe Biologist to trap maybe 5 days a week and open the pickets 2 days to keep the fish from holding below the weir because of blockage.

The weir trapped from 10/14 thru 10/24 then we pulled the pickets for passage if blockage was a problem as we had only caught 1 fish(female) in this period. On 10/26 we dropped the pickets and trapped thru 11/3. We pulled the pickets again thru 11/5. On the morning of 11/6 we went down to drop the pickets and there were 3 fish(2 males & 1 female) in the trap. We dropped the pickets and trapped thru 11/23.

On 11/21 Two of the Yurok fisheries senior biologist came to the weir to confirm a "classic" redd located just below the weir. We caught 16 more fish (9 males & 7 females) between 11/6 and 11/23.

The mouth of the river started backing up on 11/22 and it started to rain so by the early AM on 11/24 the weir had to be pulled, water level was app 38 to 40 inches. It was not an easy pull but we got it. We began trapping again on 11/27 the creek was at a nice trapping level but it would not take much rain to raise it beyond. On 11/29 it started to rain and by daylight on 11/30 we were pulling it again.

The weir was out from 11/30 thru 12/18 as it stormed and rained off and on thru the whole time, never letting the creek settle down. On 12/19 the creek had gone back down. We weren't sure if it was worth putting it back in so late but the contract called till 12/30 so we did. On 12/28 we caught a small jack male. On 12/27 it started to rain. App 6 AM on the 29th(trying to make it to daylight) we were going to pull, but the trap had washed thru the weir within the last couple hours. We began pulling but it was to swift out in the middle so we had to wait till the rain stopped and the creek went down to get the three middle tripods and channels out.

It took app a week for the creek to go down as it was the worst flood of the year so far. When we went down the creek to look for the trap we seen two carcasses.

## SUMMARY

We felt this year was a good year. We had help from the Yurok Fisheries Dept. and there were fish in Hunter Creek. We had a total of 54 trapping days. There were a total of 21 fish caught (9 females and 12 males). Out of these fish 3 were clipped from coded wire tagging. The tags were turned into the tribe and read. In 1991 only app half of our fish were coded wire tagged and they would be 4 year old adults this year. At any rate we were happy to see fish coming up Hunter Creek. There were sightings of four different carcasses, one earlier in the season above the weir, one earlier in the season below the weir and two at the very last of the season below the weir. There were at least two separate sightings of redds. One was confirmed by the Yurok Fisheries Senior Biologists this one was just below the weir and one was seen above the weir on 10/16 when we walked up the creek for surveillance to see if there was any activity prior to installing weir. On 11/16 we had 5 fish ripe and ready to spawn at one time it was a great experience for us. The head forester and the assistant forester for the Yurok Tribe were both present and observed the spawns. Also a BIA officer was there.

The table below show when the fish were caught and what we did with them:

Date Caught	Sex	Comments
10/28	female	30" app 18lbs released
11/6	female	32" spawned 11/16
11/6	male	31" held and used
11/6	male	29" released for 10/28 female
11/7	female	spawned 11/7 used milt from upriver
11/8	male	34" ripe, held and used
11/8	male	28" ripe, held and used
11/8	male	28" ripe, held and used
11/9	male	30" held and used
11/9	male	31" held and used
11/12	female	spawned 11/16 with males from hunter
11/12	female	spawned 11/16 with males from hunter
11/12	female	spawned 11/16 with males from hunter
11/12	female	spawned 11/21 with males from hunter
11/14	male	29" held and used
11/14	female	spawned 11/16 with males from hunter
11/17	male	held and used
11/18	male	ripe, held and used
11/19	female	spawned 11/26 with males from hunter
11/20	male	ripe, held and used
12/28	jack male (small)	released

All five females spawned on 11/16 were 27" plus and app 13lbs plus. The female spawned on 11/26 was app 25" and app 8 to 10 lbs. The female captured on 11/12 and spawned on

11/21 was the only clipped female. On app 11/30 a clipped male died and on app 12/2 the second clipped male died I took the heads to the tribe for reading. Two males died in tubes after cage pulled loose and went down creek in high water.

Summarizing the weir capture season:

9 females caught: 8 were spawned, 1 was released

12 males caught: 4 died ( 2 cwt read also used) 7 used and released 1 small late jack male released.

2 redds were sighted 10/15 and 11/21.

4 carcasses sighted 2 earlier and 2 later in season.

No Coho Salmon were seen this year.

There were a total of 26,798 green eggs from Hunter Creek.

This table is to show how many fish we spawned, how many eggs from each, what dates they were spawned on, and where they went for incubation.

Date Spawned	Weight	Length	# of Eggs	Tray # at Spruce	Comments
11/7	11 lbs		2352	#1	milt/upriver
11/16	12 lbs	26"	3336	#6	these two fish were spawned in the same bucket
11/16	12 lbs	30"	3336	#6	
11/16	12 lbs	30"	2820	#7	wonderful
11/16	18 lbs	34"	app 3800	#8	these two fish were spawned in the same bucket
11/16	12 lbs	29"	app 3146	#8	
11/21	18 lbs	35"	4624	#10	clipped female
11/26	12 lbs	28"	3384	#11	everything fine
<b>Total green eggs from Hunter</b>			<b>26,798 eggs</b>		

## MAINSTEM GILLNET CAPTURE DOWN RIVER PROGRAM

### DESCRIPTION OF THE STUDY AREA

All gillnet capture operations are conducted in the mainstem of the Klamath River within the boundaries of the Yurok Reservation. The down river program takes place app. 16.4 mile up river from the estuary, near Blue Creek.

### METHODS AND MATERIALS

Capture of mainstem brood stock is accomplished by the use of monofilament gill nets. The capturing of the fish is done both by drift net and set net which both require constant attention.

Fish entangled in the net are immediately brought on board and put into a tank of water then transported back to a cage in the river near the spike camp set up for watching these fish.

Fish in these cages are sorted on following days and checked for sex and ripeness. They are double checked for species and graded accordingly. Most fishing is done at night, and the immediacy of the situation does not always allow for determining sex and species at the moment they are caught. If they are obviously not the species we're after they are released at that immediate time.

Fish that are ripe males, females or near ripe females are put in holding tubes to await spawning. Most green fish are held in cages as they seem to hold longer and better in cages.

Fish are spawned in a tent that blocks the sun rays. The eggs are water hardened and transported by truck or boat to the incubation facilities.

There is a spike camp on site and all captured brood stock are monitored on a 24 hour basis to prevent losses from unpredictable flow changes or vandalism.

### RESULTS AND DISCUSSION

We did not begin fishing till Nov 1st this year. It was discussed and decided that we would hold off till Nov. 1st to begin fishing so there would be no danger of getting fish other than lower Klamath stock. The Yurok Tribe monitored our project rather closely and obviously did not want us to get our brood stock from Blue Creek itself or much near . Camp was sit up on Nov.1. We caught 5 fish (4 males & 1 female). On the 2nd they were doing fine. On the evening of the 3rd we fished again and when we pulled the cage up the 5 fish we were holding had broke the lid on the cage and escaped. So we really started fishing on Nov 3rd. We had a very short up river capture season this year. We fished from Nov. 3rd to app Nov 13th but was holding and spawning thru

Nov 23rd. We captured a total of 13 females and 32 males throughout the season.

The table below shows the dates and # of fish caught:

Date	Females	Males
Nov 3	5	9
Nov 4	1	2
Nov 5	3	6
Nov 6	3	11
Nov.7	0	1
Nov 8	1	1
Nov 13	0	2
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Totals	13 females	32 males

The female to male ratio was still very low this year as it was in 1993.

Out of these totals the breakdown is:

13 females = 5 were spawned. 2 escaped and 6 died before ripening. (4 in cages 2 in tubes)

32 males = 15 used.( 2 died and 13 released) 2 escaped, 1 died without using and 14 were released unused and unharmed.

This table is to show how many fish we spawned, how many eggs from each, what dates they were spawned on, and where they went for incubation.

Date Spawned	Weight	Length	# of Eggs	Tray # at Spruce	Comments
11/12	12 lbs	26"	4512	#2	all good
11/15	12 lbs	28"	3500	#3	tribe present
11/15	15 lbs	35"	3250	#4	tribe present
11/15	12 lbs	28"	3582	#5	" "
11/19	13 lbs	33"	3332	#9	great fish

Total green eggs from  
up river capture season                      18,176 eggs

## SUMMARY

This was a short season in our upriver capture project. There were fish in the river but not for long period of time. We did decide that all females will be held in tubes after the first check. We seemed to have lost females that we held in cages after the first or second check. On 11/15 we had three females ripe at the same time and the Yurok Tribal biologist was able to participate in the spawn, that was exciting for us.

This table combines the mainstem capture project and the Hunter Creek weir spawners; dates, # of eggs and incubation destiny:

Location of Spawn	Date of spawn	Total # of eggs	Tray# @ Spruce Creek
Hunter Weir	11/7	2352	#1
Upriver	11/12	4512	#2
Upriver	11/15	3500	#3
Upriver	11/15	3250	#4
Upriver	11/15	3582	#5
Hunter Weir	11/16	3336	#6
Hunter Weir	11/16	3336	#6
Hunter Weir	11/16	2820	#7
Hunter Weir	11/16	app 3800	#8
Hunter Weir	11/16	app 3146	#8
Upriver	11/19	3332	#9
Hunter Weir	11/21	4624	#10
Hunter Weir	11/26	3384	#11
Total # of green eggs from the complete capture season		44,974 green eggs	

Spruce Creek Incubation  
Nov 1, 1995 thru Jan 15, 1996

Spruce Creek Incubation Facility was open on Nov. 1. We began getting the water running back into the incubators and tanks preparing for green eggs.

There was a total of 44,974 green eggs brought to the facility between the dates of Nov. 7 thru Nov. 26. The eggs began eyeing up around 12/5 and continued thru app end of Dec. They began hatching on app 12/19 and continued thru app 2nd week of Jan. After they became eyed up enough I gave them all a good picking and added them. I then picked them the second time if necessary. After second picking I recounted and measured each tray.

There was a total of 44,974 green eggs and a total of 40,659 eyed eggs after all pickings were complete. That would be app 90.4% of our eggs made it to the eyed stage. High Prairie was not used as an incubation facility this year.

The temp was an average of 52 to 54 degrees. There were some days as cold as 49 but not many this year. The eggs matured right along rather quickly this year with the warm water. The creek did come up to a pretty high and muddy stage a couple times this year. We just used the spring as the sole source when that happens as the spring is a very clear water source in high water times.

Between Jan. 15 and Feb. 10 We brought out all the swim ups and prepared them to eat. There were app 40,000 all together. I split the numbers in half best I could as to put 20,000 at Spruce Creek hatchery and 20,000 in High Prairie hatchery. We kept all fry from Hunter creek brood stock at Spruce as they will be reared in Hunter from June to Oct. We put all fry from up river plus some from Hunter creek brood stock in High Prairie. There ended up being a couple thousand more fry at Spruce Creek.

Feb. 10 thru May 24 - We fed at both Spruce Creek facility and High Prairie facility. Moving them into the big tomato tubs on Mar 10th. We fed them Bio Diet starter and grower according to size. (see attached)

May 24 thru June 22 - We tagged fish at High Prairie hatchery and at Spruce Creek hatchery. (see attached). The fish at High Prairie we released and the fish from Spruce were held in Hunter creek till Sept. 30, 1996.

## GENERAL SUMMARY:

This was over all a good year for us. There was lots of water and warm temps. The average temp was 50 to 52 degrees. The eggs hatched and the fry grew rather quickly. We had no signs of pop eye or any other low water related problems.

This Chart shows the date, the weight and the size of food:

### Spruce/Hunter Creek facility:

Date	Weight each	Weight per lb.	Size of food
1/28	.47 grams	973/lb	#2 starter
2/13	.52 grams	875/lb	#2,#3 starter mix
2/27	.75 grams	606/lb	#3 starter
3/8	.96 grams	475/lb	#3start #1 grwr mix
3/21	1.6 grams	284/lb	#1 & 1.3 grwr mix
4/3	2.4 grams	190/lb	#1.3 & 1.5 grwr mix
4/17	3.7 grams	170/lb	#1.5 & 2.5 grwr mix
4/30	5.2 grams	87/lb	#2.5 grwr
6/18	10.48 grms	43/lb	#3.0 grwr
9/9		24/lb	#3.0 grwr
10/9		21/lb	#3.0 grwr

Fish were moved to Hunter 6/11 thru 6/22

### High Prairie facility:

2/15	.53 grams	858/lb	#2 & #3 starter mix
2/29	.77 grams	595/lb	#3 starter
3/8	.98 grams	457/lb	#3strt & #1grwr mix
3/21	1.4 grams	324/lb	#1 & 1.3 grwr mix
4/3	2.5 grams	182/lb	#1.3 & 1.5 grwr mix
4/17	4.0 grams	113/lb	#1.5 & 2.5 grwr mix
4/30	5.4 grams	84/lb	# 2.5 grwr
5/17	7.5 grams	60/lb	# 2.5 grwr

Fish were released app 5/26 thru 5/29

High Prairie Tagging Summary  
 May 1996  
 Code # 41/40  
 Agency # 05

Date	total # fish tagged	# of morts	Release Site
5/24	2,173 fish tagged	0	* Salt Creek bridge
5/25	5,009 fish tagged	2	2 miles up Hunter
5/26	3,506 fish tagged	1	same spot
5/28	3,994 fish tagged	1	same spot
5/29	3,305 fish tagged	1	held for tag count released app 2,305 on 6/6 released remaining on 6/18

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17,987 total fish tagged from HP for 1996 (95 brood)

\* We released the first batch at Salt Creek bridge after accessing Salt/ High Prairie Creeks situation further it was decided that Hunter Creek was the better release site.

June 6, 1996

I am still holding app 1000 fish from High Prairie under Hunter Creek bridge for a final tag retention count on app June 18th.

I took a tag retention count at this time before releasing the remaining fish from High Prairie in case something went wrong at hunter with the fish I am holding there for my normal tag retention count on the 20th.

On June 6, 1996 I beeped 305 fish before releasing. 5 out of 305 did not have tags. This would be a percentage rate of 98.4 tag retainment.

On June 18, 1996 I beeped 614 fish out of these 14 did not have tags. This would be a percentage rate of 97.8 tag retainment.

Spruce Creek Tagging  
 June 1996  
 Code # 41/39  
 Agency # 05

Date	total # fish tagged	# of morts	Holding Site
6/11	2,778 fish tagged	3	Hunter Creek
6/13	3,715 fish tagged	2	Hunter Creek
6/15	2,002 fish tagged	0	Hunter Creek
6/17	3,125 fish tagged	1	Hunter Creek
6/19	3,675 fish tagged	0	Hunter Creek
6/20	1,543 fish tagged	1	Hunter Creek
6/22	3,166 fish tagged	9	Hunter Creek
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<b>20,004 total fish tagged from Spruce for 1996 (95 brood)</b>			

There were a total of 20,004 fish tagged from Spruce Creek hatchery and moved to holding cages in Hunter Creek. There were a total of 16 morts during this process, 12 were found all together in the cages after moving. Thats a total of 28 morts. There is between 6500 to 6700 fish in each cage.

6/22 thru 9/8 - The fish thrived well in Hunter creek. Eating 2.5 and 3.0 grwr food. Everything was fine till app Sept. 4th or 5th I started seeing the cage lids moved and a rake in one cage. I started feeding at different times of the day and driving by very frequent to no avail of seeing anyone around.

On Sept. 8 I went down to feed the fish and discovered that someone had cut holes in two out of the three cages that the fish were in. One cage had a hole app 8" by 12" and the other had a hole app 4" square. All the fish expect maybe 100 or 200 escaped out of the cage with the larger hole, and more than half escaped from the cage with the smaller hole. There were no signs that the fish had been killed. I believe it must of been someone just wanting to release the fish or trying to get at us.

On Sept. 9 I weighed and took a tag retention count at this time in case there was any other vandilism. The fish weighed app 24 fish per lb. The tag retention was 400 fish beeped and 15 did not have tags that would be a 96.25% retainment.

On 10/9 I weighed the fish again before releasing and they were an average of 21 fish/lb. and app 5.8" long. I started releasing fish and released thru 10/13.

10/9 I released 1260 fish

10/10 I released 3412 fish

10/11 I released 3622 fish

10/13 I released 1071 fish

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9,365 fish were released

CODED WIRE TAG REPORT  
YUROK ACCELERATED STOCKING PROGRAM  
YUROK RESERVATION

1. Tag Code: Data number #41/40 , Agency number 5
2. Species: Chinook Salmon
3. Run: Lower Klamath River: Late Fall / Natural
4. Brood Year: 1995
5. Release Site: Hunter Creek, Confluence with Klamath  
(2,173 fish released at Salt Creek Bridge)
6. Release Dates: 5/24 thru 5/29, 1996
7. Rearing Type: Hatchery / 90/1b release
8. Number Tagged: 17,987
9. Number Adipose Only: 0
10. Number Unmarked: 0
11. Counting Method: QCD Tagging Machine
12. Tag Loss Days: app 21 days
13. Weight of Fish: 60 fish per pound
14. Stock: Klamath Mainstem Gillnet Captured Late Run
15. Location of Rearing Facility: Yurok Experimental Forest  
behind Yurok Tribal Office, Klamath Ca.
16. Tag retention count was 97.8 %

CODED WIRE TAG REPORT  
YUROK ACCELERATED STOCKING PROGRAM  
YUROK RESERVATION

1. Tag Code: Data number #41/39 , Agency number 5
2. Species: Chinook Salmon
3. Run: Lower Klamath River: Late Fall / Natural
4. Brood Year: 1995
5. Release Site: Hunter Creek, Confluence with Klamath
6. Release Dates: 10/9 thru 10/13, 1996
7. Rearing Type: Hatchery / instream cage
8. Number Tagged: 20,004  
(9365 released in week of 10 /9/96)\*\*
9. Number Adipose Only: 0
10. Number Unmarked: 0
11. Counting Method: QCD Tagging Machine
12. Tag Loss Days: app 120 days
13. Weight of Fish: 21 fish per pound
14. Stock: Klamath Mainstem Gillnet Captured Late Run
15. Location of Rearing Facility: Spruce Creek Facility and Hunter Creek Cages Yurok Reservation
16. Tag retention count was 96.25%
17. Average Length at release: 5.8"

\*\* 20,004 fish planted in June then holes were cut in cages by vandils app 9/8/96 and 9,365 fish were actually released by me in Oct. 96