

1983

HUMBOLDT - DEL NORTE  
COASTAL STREAM RESTORATION PROJECT

Final Report  
July 1983

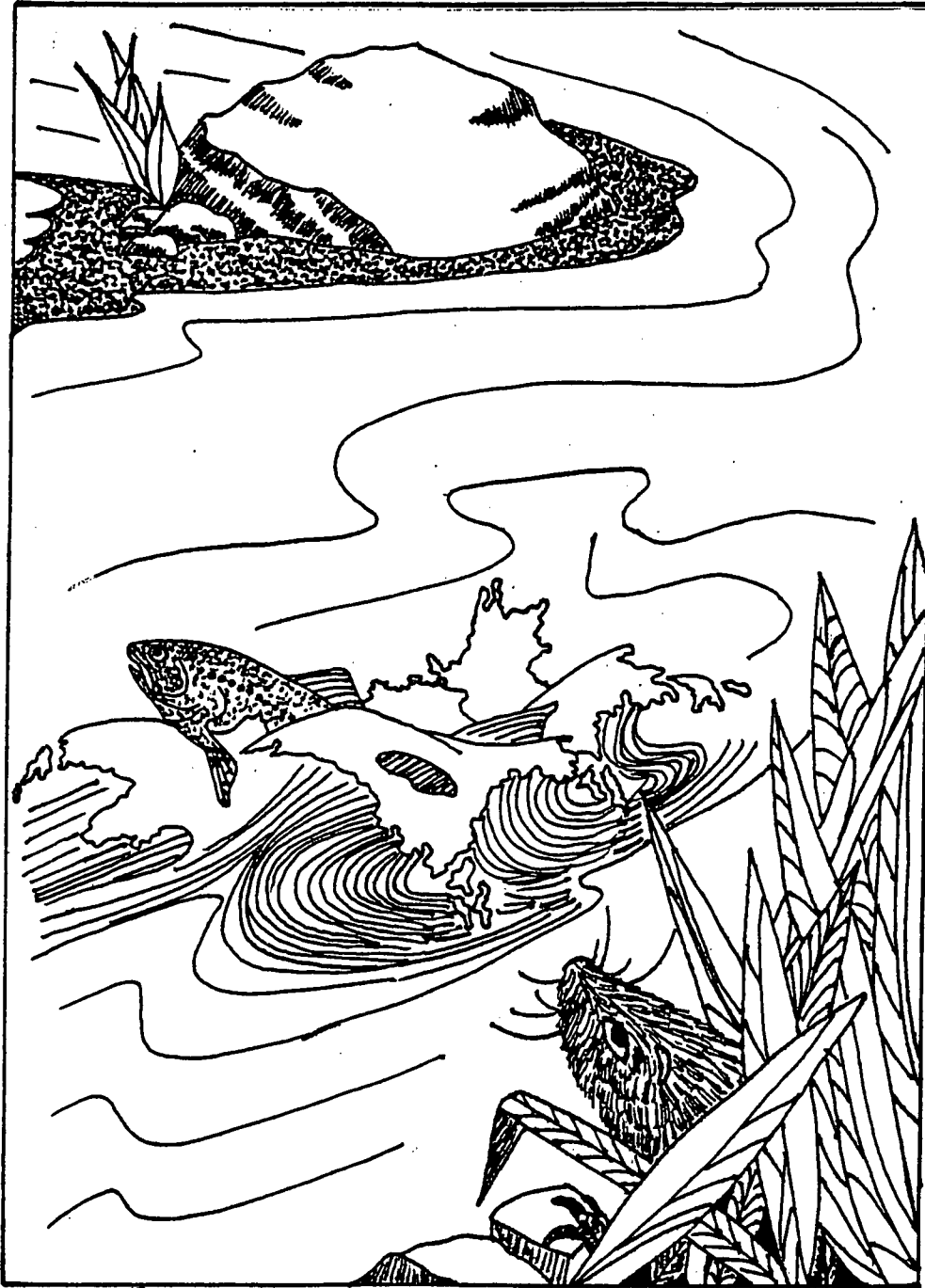
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HUMBOLDT - DEL NORTE  
COASTAL STREAMS RESTORATION PROJECT



REDWOOD COMMUNITY ACTION AGENCY

JULY 1983

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## FOREWARD

We hope that this report will be of use to others who are involved with fish and wildlife habitat restoration and help serve as a catalyst for future action. We encountered a great amount of support for much more restoration to occur, in our conversations with a wide variety of north coast residents.

Additions, corrections and comments on the information contained herein are welcomed.

## ACKNOWLEDGEMENTS

We thank the following persons for their help during this project:

George Allen, Steve Sungnome Brewer, Walt Decker, Jud Ellinwood, Don Gillespie, Linn House, Bruce Kemp, Steve Kucas, Al Merrit, Gary Peterson, Mary Rode, Chris Word, Bob Wunner, and many others who assisted us;

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City of Arcata  
Coastal Headwaters Association  
Del Norte and Humboldt Counties Planning Departments  
Jacoby Creek Canyon Community  
Redwood National Park  
Mattole Watershed Salmon Support Group  
U.C./Sea Grant Marine Advisors  
U.S. Bureau of Land Management

## Purpose

The purpose of this project was to systematically identify specific coastal streams restoration projects appropriate for California State Coastal Conservancy sponsorship, and in the process develop a comprehensive inventory of what is known and not known about stream conditions in coastal Del Norte and Humboldt Counties. Stream, for the purpose of the project, refers to both the aquatic and riparian zones.

## Procedure

The following steps were taken in the development of this project:

- Establishment of a working relationship with agencies, groups and individuals interested in stream restoration.
- Inventory and summarization of information available about the condition of coastal streams.
- Identification of potential restoration projects.
- Development of criteria, and prioritization of potential projects.
- Selection and preparation of eleven high-priority restoration project proposals.
- Preparation of Final Report.

## Background

Fish and wildlife habitat restoration in the north coast region has received unprecedented attention in the past few years. However, most of the effort has been directed at anadromous salmonid habitat, primarily barrier removal in logged-over watersheds.

The combination of the present focus on anadromous salmonids, complex land use conflicts along the coast, and the Department of Fish and Game's limited resources have 1) directed most efforts away from the coast, and 2) forestalled a comprehensive look at stream restoration and protection needs.

A reconnaissance of coastal stream conditions revealed several degraded and/or threatened areas. Agressive and creative action is needed to halt further degradation and

to restore productivity. Solutions to problems created by urban and agricultural activities involve more than just mechanical corrections. The Coastal Conservancy is in an excellent position to help work out such solutions. An inventory and assessment of stream restoration and protection opportunities was needed in order for the Conservancy to direct its efforts most effectively.

This project is the initial step in the Conservancy's riparian restoration program, a major new effort by the Conservancy to address the past degradation of coastal rivers and streams, and enhance coastal fish and wildlife populations.

Redwood Community Action Agency was determined to be an appropriate organization to take on this project, because of experienced staff in its Watershed Improvement Services division, previous demonstration of abilities in a project funded by the Conservancy (McDonald Creek Riparian Enhancement), and because of its commitment to the local community. Redwood Community Action Agency is a non-profit corporation dedicated to developing community self-sufficiency, and assisting low-income families and individuals.

## Stream Inventory

Information about the condition of 147 coastal streams in Humboldt and Del Norte Counties was compiled. The project area includes the watersheds of all streams draining directly into tidal waters or lagoons and the watersheds of streams tributary to the coastal reaches of rivers. Tributaries to the upper Mattole River were included also because restoration proposals were available which met our criteria. Information about the physical and biological conditions of these streams came from many sources: Department of Fish and Game (DFG), Coastal Commission, Department of Forestry (CDF), Humboldt State University, County and municipal planning and public works departments, College of the Redwoods, Bureau of Land Management, Redwood National Park, State Parks, landowners, newspapers, and a variety of other entities and documents. Field surveys of each stream were not feasible; however observations were made along some of the more accessible streams to supplement the data gathered indoors. Photo documentation was done at points along 26 streams. The project area is shown in Figures 1-4.

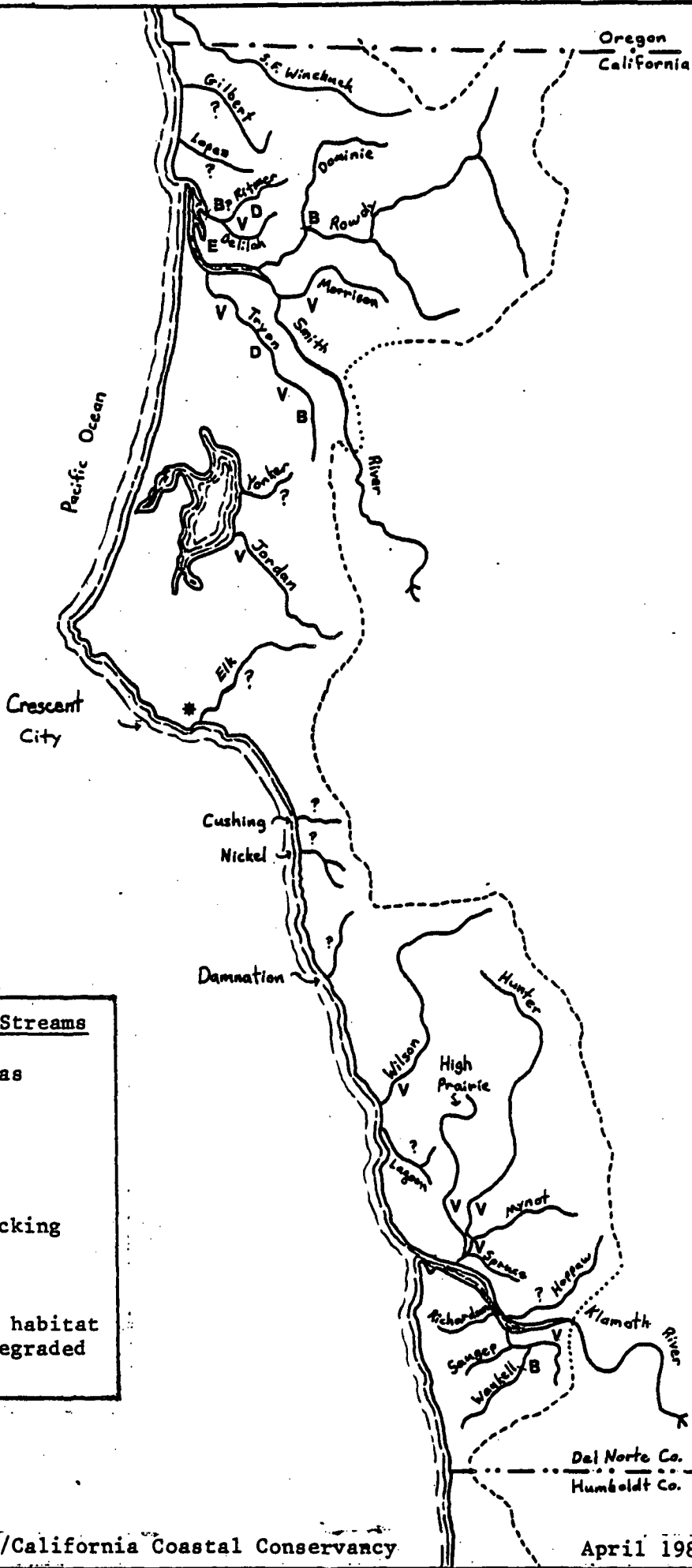
The quality and quantity of data available for each stream varied widely, with minimal data being the norm and comprehensive data being an extreme rarity. Department of Fish and Game files yielded the largest quantity of information. The Coastal Headwaters Association has developed the most comprehensive collection of data, for the Mattole River.

The information from DFG files was transferred to summary forms (See Figure 5.) Other information was added as gathered to a file on each stream. Watershed boundaries and habitat conditions were delineated on 7½" U.S.G.S. topographic maps. The maps and files are available to the public at the RCAA office. The inventory findings are summarized in Tables 1-8.

Length and area were estimated from topographic maps. Stream length includes the mainstem and any relatively large blue-line tributaries.

The year of the most recent DFG stream survey is listed. The surveys vary widely in content. The recent ones focus on location of barrier logjams on anadromous salmonid streams. Even though a recent survey may be listed, the information needed to fully assess stream restoration potential is usually lacking.

The identification of fish species observed in the streams is based on extremely limited information. Stream surveyors are often unable to distinguish which species are present, let alone estimate population size. Historical records indicate that most creeks large enough to have a name supported runs of anadromous salmonids or resident trout. The "good old days" stories from local residents provide as much information about fisheries restoration potential as more recent observations do.



**Humboldt-Del Norte Coastal Streams**  
**Some Potential**  
**Habitat Restoration Areas**

B - Barriers  
 C - Channelization  
 D - Diversion  
 E - Degraded estuary  
 V - Riparian vegetation lacking  
 ? - Not enough information  
 - - - Project area boundary

Note: Much of the instream habitat is moderately to severely degraded by sedimentation.

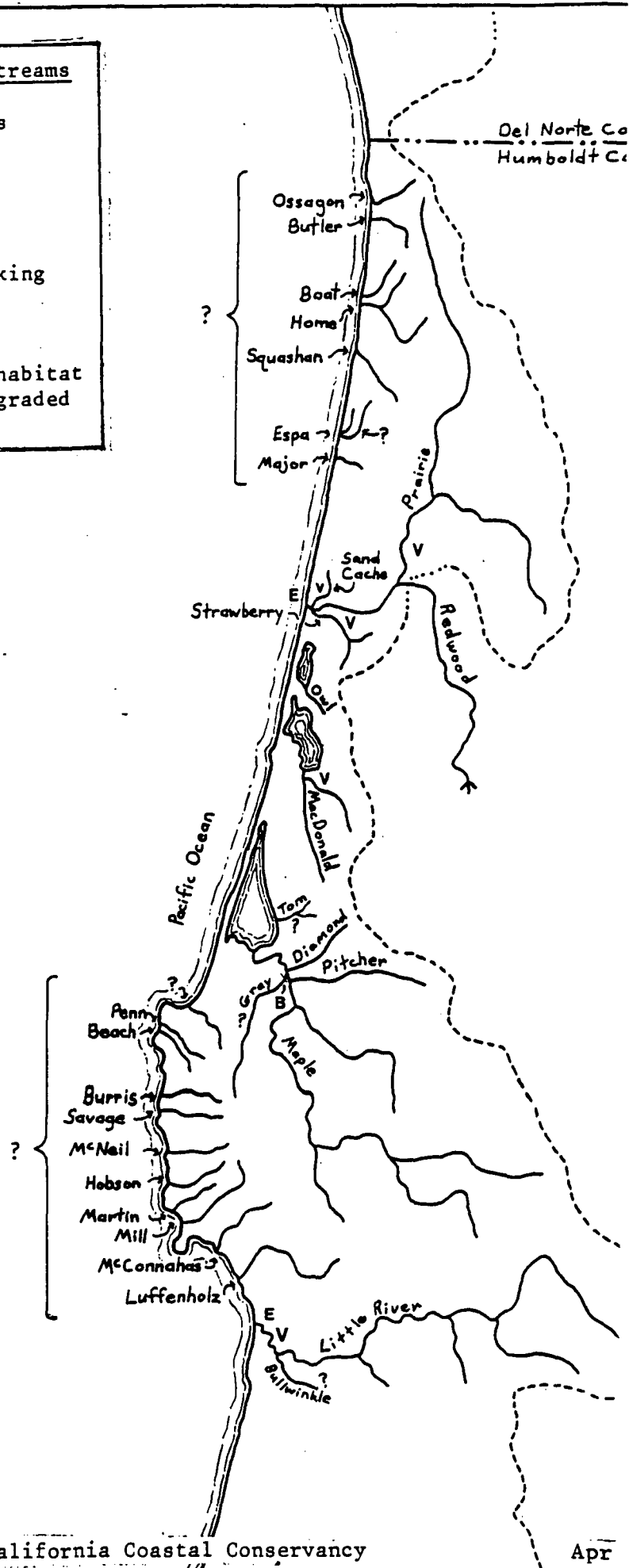
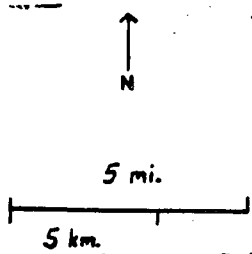
Fig. 1 - Study Area



Humboldt-Del Norte Coastal Streams  
Some Potential  
Habitat Restoration Areas

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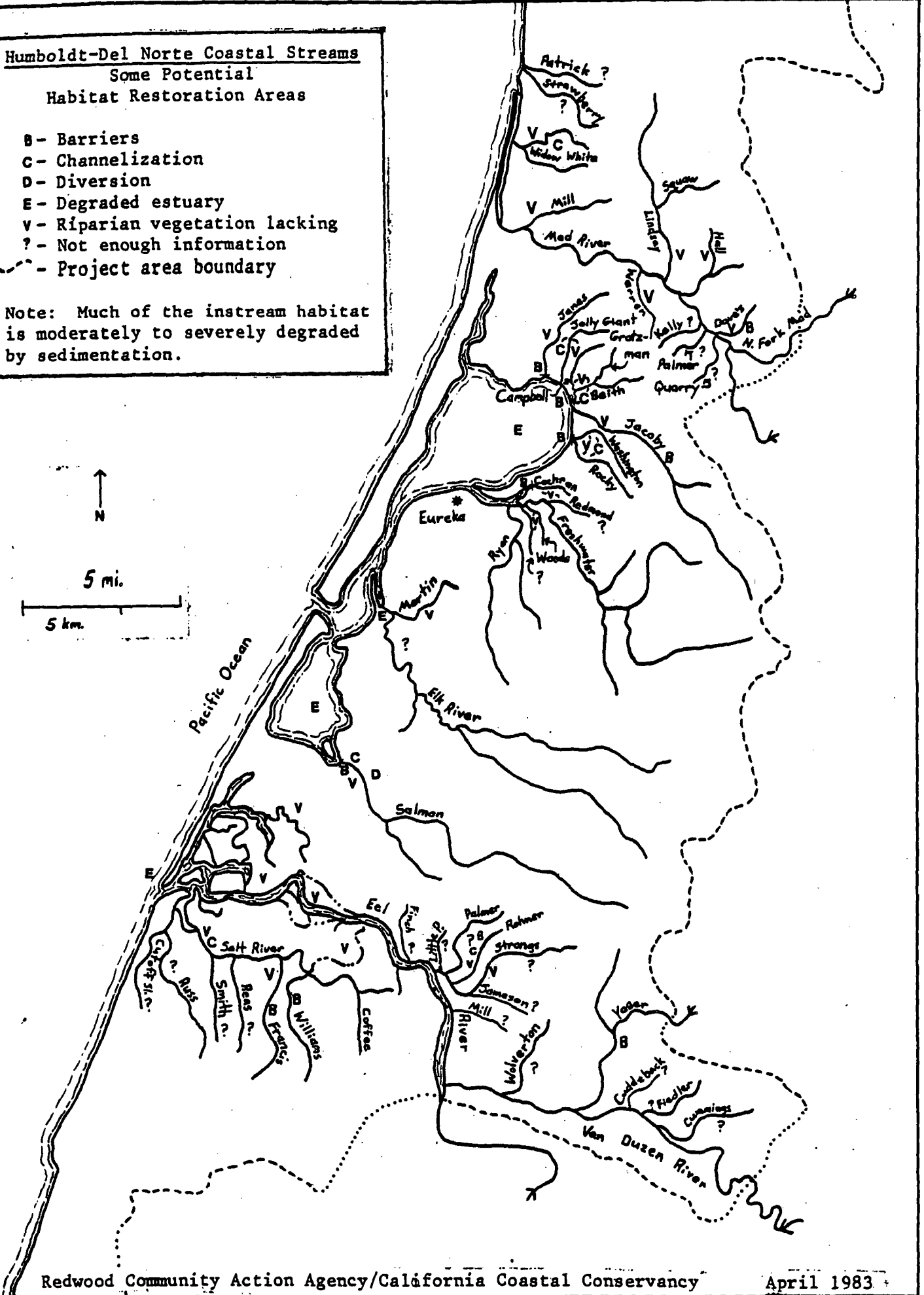
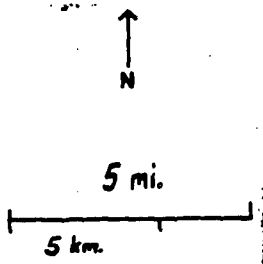


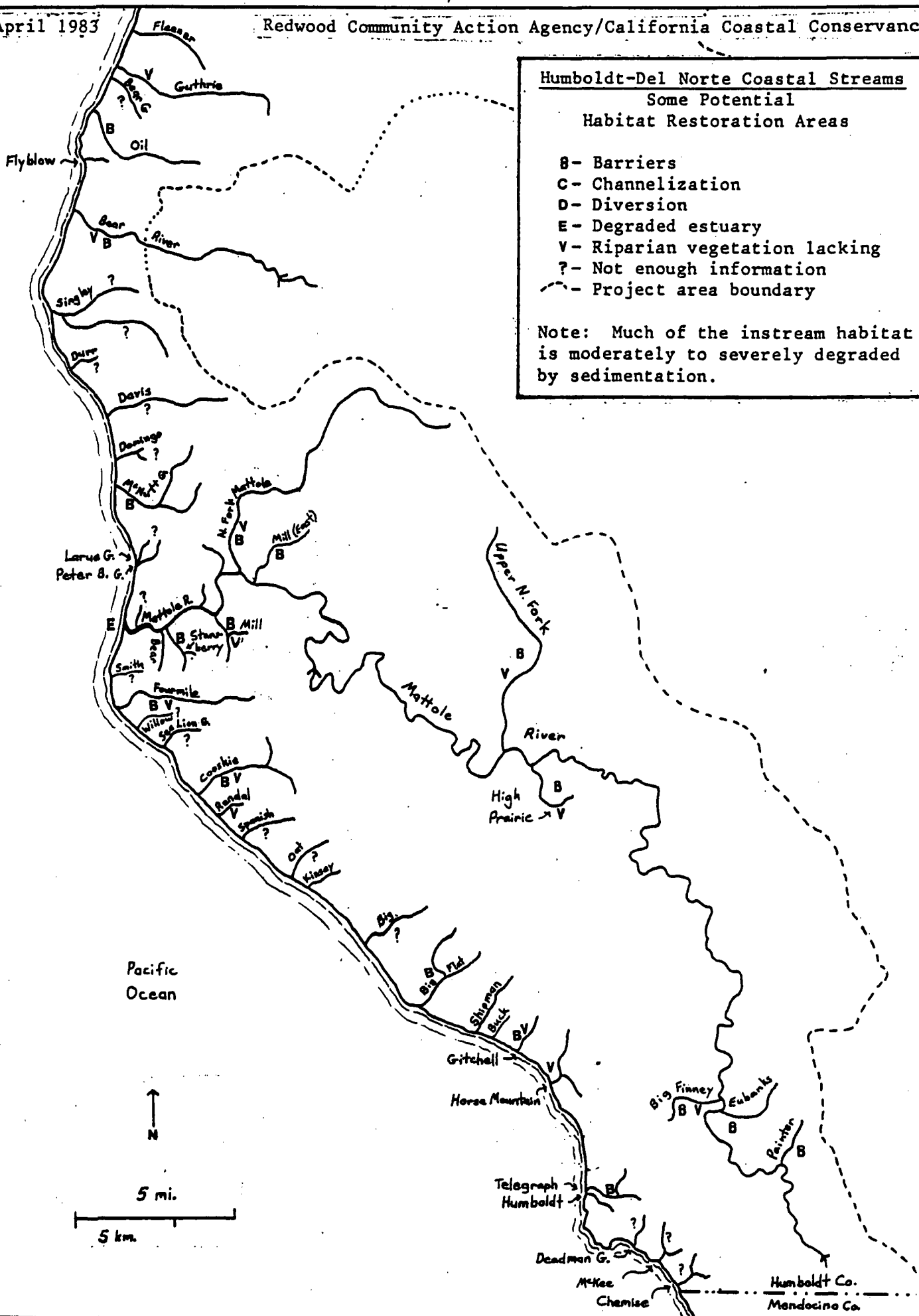
Fig. 3 - Study Area

April 1983

Humboldt-Del Norte Coastal Streams  
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Habitat Restoration Areas

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- E - Degraded estuary
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- ? - Not enough information
- - Project area boundary

Note: Much of the instream habitat is moderately to severely degraded by sedimentation.



SUMMARY - DFG File Information  
Coastal Conservancy Project  
Winter 1982-83

Unit Mill Creek  
Location T GN R E S 7

Watershed Area ~4 mi  
Stream Length Total ~3 mi + trib  
Anad. \_\_\_\_\_  
Res. \_\_\_\_\_

Ownership

Public

- RNP
- SP
- BLM
- USFS
- County
- Other \_\_\_\_\_

Private

- Individual(s)
- ?  Timber Co.
- Other \_\_\_\_\_

Public Access

- None
- Limited+
- Much

Survey access, notes  
\_\_\_\_\_  
\_\_\_\_\_

Alluvial Plain Area ~ 1/4 mi at mouth?

ASSESSMENT

- Talk to DFG
- Complete survey needed
- Partial survey needed
- Present condition & mang't OK
- Restoration underway (who)
- Prior restoration activity
- Protection(s) needed

Comments - \_\_\_\_\_  
\_\_\_\_\_

Fish species noted

- Rainbow Trout 72
- Coastal Cutthroat 72, 75
- Steelhead 30's, 68;
- Silver Salmon
- King Salmon 68
- Other sculpins, sticklebacks, lamprey 68
- Salmonids, unspecified

Adjacent Land Use

- Grazing
- Timber
- Farming
- Urban
- Park
- Other \_\_\_\_\_

Riparian vegetation noted

marshy areas

bank erosion, lower end

Blap - little veg below 101, marsh above, forest, pasture, cutover land

Wildlife noted

Beaver 61

Degradation identified (date)

- Livestock impacts '51
- Barrier(s)
- Vegetation removal 75
- Pollution
- Modification '75
- Diversion(s)
- Filling
- Aggradation
- Excessive fines
- Other \_\_\_\_\_

Potential threats

- Livestock
- Timber harvest
- Urban development
- Other \_\_\_\_\_

Other Comments:

15' fall 1/2 mi above mouth

Creek area above 101 = "Wetland" on Area Plan maps

Date      Type of information

1930's      Survey - brief

7/30/41      FN - brief survey

1930-36 + 65      Stocking records SH, CT in '65

4/19/61      Survey - 3 ss observed spanning between marsh + falls (above beaver dam)

4/17/68      FN - 101 culvert shocking - SH, SS, CT yearlings, KS fry

4/29/69      "      "      " - SH, CT, lamprey, sculpin, stickles

11/28/72      FN - old 101 shocking - RT & CT

9/6/73      Qw meas. = .42 cfs

11/5/75      Memo - THarvest observation (above Azalea Rd)  
CT present. Marsh area messed up by heavy equipment.

Readily-identifiable habitat degradation included fish migration barriers, riparian vegetation suppression, diversions, pollution, and channel modification, as shown in the inventory tables. Barriers, pollution and diversions were identified primarily from DFG surveys.

Vegetation suppression and channel modification were determined from maps and aerial photography. The extent of riparian vegetation was mapped from 1980 CDF airphotos, and spot-checked in the field. It was possible to map only the presence or absence of vegetation.

Important information such as stand condition must be determined by field inspections. Along the coastal streams such observation often showed that what appears to be a dense stand in an airphoto is only a solid overstory canopy with little understory due to livestock impacts.

Therefore, our indication of impacted vegetation is a minimal one. Instream and riparian habitat degraded by excessive sedimentation is a ubiquitous problem so it is not indicated on a stream-by-stream basis. The small, low-gradient streams with their limited ability to transport sediment appear to be hardest hit by sedimentation problems.

The abbreviations described below refer to the following stream inventory summary tables.

B = Barriers	RT - Rainbow Trout
V = Riparian Vegetation lacking	CT - Cutthroat Trout
D = Diversion	SH - Steelhead Trout
P = Pollution	SS - Silver Salmon
M = Channel modification	KS - King Salmon
E = Degraded estuary	( ) - Historical observations
- = Not enough information	
∅ = No survey on file	

A more detailed description of habitat degradation features is included in Appendix 2.

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest DFG Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>COMMENTS</u>
S.F. Winchuck	8.0	9.0	75	-	RT, CT, SS	
Gilbert	3.9	2.4	75	B D	CT, SH	
Lopez	2.0	1.0	75	-	CT, SH	
Ritmer	2.3	1.2	75	B D	CT	Tidegate barrier
Delilah	2.0	1.5	63	B V D	-	Tidegate barrier
Rowdy	13.0	26.0	72	-	All	Rowdy Creek Fish Hatchery (Kiwani Club)
Morrison	2.0	3.0	72	B V P	-	
Tryon	6.0	5.0	82	B V D	CT	
Yonker	2.0	2.5	Ø	-	CT, SH, SS	Tributary to Lake Earl
Jordan	4.5	6.0	Ø	V	CT, SH, SS	Main tributary to Lake Earl
Elk	4.0	7.0	Ø	-	CT, SS	
Cushing	1.0	0.8	Ø	-	-	
Nickel	2.0	2.0	Ø	-	-	
Dammation	2.0	2.0	Ø	-	-	
Wilson	8.0	13.0	80	B V	All	
Lagoon	2.0	1.8	Ø	-	CT, SH	
High Prairie	6.0	6.0	80	B V	-	
Hunter	10.0	16.0	80	B V	RT, CT, SH	
Mynot	2.8	3.5	80	B	-	
Spruce	1.0	1.0	Ø	V	-	
Hoppaw	4.5	3.0	80	B	RT, CT, SS	
Wankell	3.5	3.0	80	B	SH	Large beaver pond near mouth. Hwy 101 construction rendered creek inaccessible to anadromous fish.
Saugep	1.5	1.0	72	-	CT, SH, SS	
Richardson	1.5	1.5	80	V	-	Old log pond on creek.

NORTHERN HUMBOLDT COUNTY STREAMS

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>COMMENTS</u>
Assagon	1.2	1.0	65	-	-	10' falls 100 yards from mouth
Butler	1.0	1.0	Ø	-	-	
Coat	1.2	0.8	77	-	-	
Come	2.5	2.0	77	-	CT	Significant aggradation after 1964
Cquashan	1.2	1.8	64	-	CT	
Capa	0.5	0.5	Ø	-	-	
unnamed	1.5	1.0	64	B	-	Prairie Creek Fish Hatchery (Humb. Co.)
Major	1.0	0.8	64	B	-	
Prairie	14.0+	35.0	64	V	All	
Sand Cache	0.5	1.0	Ø	B V	CT, KS	
Strawberry	1.0	1.5	Ø	B V	CT, KS	
Swl	0.5	1.0	67		-	Main Tributary to Freshwater Lagoon
McDonald	6.0	5.0	69	V	CT, SH, SS	Previous restoration work sponsored by CC & North Coast Fly Fishers. Main tributary to Stone Lagoon
Tom	1.5	1.5	80	-	-	Tributary to Big Lagoon
Maple	26.0+	46.0	Ø	-	All	CCC's have done logjam work
unnamed	1.0	1.5	Ø	-	-	
Penn	1.0	1.0	Ø	-	CT	
Beach	1.0	0.5	Ø	-	-	
Burris	1.5	1.0	Ø	-	CT	
Savage	1.5	1.0	Ø	-	-	
McNeil	1.0	0.5	75	B M	CT	
Hobson	0.8	0.5	Ø	-	-	
Martin	1.0	1.5	Ø	-	CT	
Mill	2.0	1.0	82	B	Ct, SH	
McConnahas			75	B	-	
Luffenholz	4.0	4.0	75	B	RT, CT	

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TABLE 5

Lower Mad River Tributaries

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>COMMENTS</u>
Widow White	3.0	4.0	82	BV M	CT, SH	
Mill	3.0	4.0	61	V M	All	
Lindsay	8.0+	6.0	81	V	All	Hum. Fisherman's Marketing Assoc. has salmon hatchboxes on Lindsay
Hall	4.0	.0	61	V M	SH, SS	
Powers	1.5	2.0	72	V M	S, SH, SS	DFG Funding project in 1983
Quarry	2.5	1.5	61	V	SH	
Palmer	2.0	1.2	61	V	-	
Kelly	2.0	1.2	Ø	-	-	
Leggit	1.5	2.0	61	-	SH, SS	
Warren	2.0	1.5	75	V P	CT, SH, SS, KS	



TABLE 4  
Humboldt Bay Tributaries

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>COMMENTS</u>
Janes	2.5	4.0	∅	V PM	CT, SH, SS	City of Arcata has various salmonid, sewage, and sedimentation projects on Janes & Jolly Giant, including two Conservancy-funded marsh projects.
Jolly Giant	3.0	2.0	76	V PM	CT	
Campbell	2.0	1.0	∅	V B M	-	Tidegate barrier
Grotzman	1.0	1.0	∅	V B M	-	Tidegate barrier
Beith	2.0	1.4	∅	V B M	CT, SS, S	Tidegate barrier
Jacoby	9.0	15.0	75	V	CT, SH, SS	Local non-profit has done restoration work
Washington	2.0	1.5	∅	V M	CT	
Rocky	2.5	2.0	62	BV M	ST, SH, SS	Tidegate barrier
Cochran	2.0	1.5	∅	BV D	CT	Tidegate barrier. HFAC has salmonid rearing ponds next to creek
Redmond	1.0	1.5	∅	V M	CT	
Freshwater	14.0+	31.0	80	BV M	All	Hum. Fish Action Council has egg-taking station on Freshwater Ck. CCC
Woods	1.0	0.5	∅	V PM	CT	
Pidgeon Point	2.0	1.0	∅	V	CT, SS	
Ryan	29.0	12.0	82	V M	CT, SS	Massive sedimentation
Martin	3.0	4.0	∅	BV PM	SS	Lower ½ flows through golf course
Elk	30.0+	50.0	72		All	CCC
Willow	1.5	1.0	∅	V	-	
Salmon	17.0	17.0	80	BV D M		Tidegate barrier. Extensive channelization for irrigation use

DEL RIVER TRIBUTARIES

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>Comments</u>
Del River Delta	136	36	74	B, E, V, C	All	Degraded estuary, bank erosion
Alt. River Trib. to S.R.) Cutoff Slough	28 4	29.5 4.5	53 -	E, V, C, B V, C	All -	Degraded estuary, drainage problems
Cass	3.5	4	38	V, C	-	
Smith	2	2	-	V, C	-	
Leas	3.5	2.5	72	B, V, C	-	Tidegate and bridge barrier Good habitat above bridge
Francis	3.5	4.5	38	B, V, C	CCT, SS, SH	Project Cr. 7' high cement check dam
Williams	6	8	73	B, V, C	CCT, SS, SH	
Coffee	1	5	-	V		
Finch	.5	1	Ø	-	-	
Little Palmer	.5	1	Ø	-	-	
Palmer	1.5	2	Ø	V, C, B		101 is barrier. See Fortuna Drainage Plan.
Rohner	4	6	82	B, V, C	-	See Fortuna Drainage Plan.
Strong's	7	10.5	81	B, V, C	-	See Fortuna Drainage Plan.
Jameson	2	4	82	V, C	-	See Fortuna Drainage Plan.
Hill	3	3	-	-	-	See Fortuna Drainage Plan.
Wolverton	7	9	78	-	SH, SS	
Yager	80	119	8-	B	SH	
Cuddeback	1	2	Ø	-	-	
Fiedler	1	1	Ø	-	-	
Cummings	6	7	Ø	-	-	

TABLE 6  
South of Eel River to Mattole River

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>Comments</u>
Fleener	2	2.7	82	B, V	SH	Tide gate
Guthrie	4.5	8.5	82	V	SH	Grazing problem
Bear G.	1	1	∅	-	..	
Oil	6.5	7	82	V	SH	
Flyblow	1	2	∅	..	..	
Bear	30	70	∅	V, B	SH, SS	Needs complete survey, exten- sive erosion problems. Hollister Cr. Surveyed 1980
Singley	6	8.5	70	-	SH	H.S.U. thesis survey of SH
Durr	1	1	∅	-	..	
Davis	4	7	∅	-	SH	Erosion problems.
Domingo	.5	2	∅	-	SH	Grazing impacts.
McNutt G.	3	6.5	7	-	SH	
Larue-Peter B.G.	.5	1	∅	-	-	

Mattole River Tributaries

<u>Stream</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>Comments</u>
Mattole	-	300	82	V, E	SH, SS, KS	Major sedimentation, degraded estuary needs study.
Stansberry	1	1	82	C	SH, SS	Recovering from logging.
N. Fork Mattole	14	39	82	C, V, D, B	SH	Need complete survey.
Mill	2	2.1	81	V, B	SH, SS	Project Stream. Stream has SS Hatchbox.
Jim Goff G.	.5	1	82		SH	Drys up, erosion problems
Subanks	3.5	3.4	82	V, B	SH, SS	Project Cr.-erosion control, barrier mod.
Sainter	1	2.5	82	B	SH	Project Cr.-culvert jump pool
High Prairie	2.5	4.5	82	B	SH	Project Cr.-culvert jump pools and baffels
Big Finley	3	6	82	B, V	SH, SS, KS	Project Cr.-planting, barrier mod.
Upper North Fork	10	20	82	V, B	KS, SH	Project Cr.-planting, barrier mod.
Upper Mattole	4	12	82	V	KS, SS, SH	Project Cr.-planting, bank rip-rap
Dear	.5	.7	82	B	SS, SH	
Mill (East)	2	4	82	V	SH, SS	Grazing impacts, low gradient pasture lands.

TABLE 8  
King Range National Conservation Area Streams

<u>Streams</u>	<u>Length (mi.)</u>	<u>Area (mi<sup>2</sup>)</u>	<u>Latest Survey</u>	<u>Degra- dation</u>	<u>Fish Observed</u>	<u>Comments</u>
Smith G.	.5	.2	Ø	-	-	
Four Mile	4	6	82	B	SH	Many log jams need modification
Willow	.5	.5	Ø	-	-	
Sea Lion G.	1	1	Ø	-	-	
Woskie	5	6	-	B, V	SH	Grazing impacts.
Wandal	2	3	72	V	SH	
Spanish	2	4	73	-	SH	
Watson or Kinsey	2	2	72	B	-	Falls barrier 100 yards from mouth.
Watson or Fraser	2	2.5	72	B	SH	Old bridge needs to be removed.
Wig or Hadley	3	5	72	V	SH	Limited spawning gravels and major erosion.
Wig Flat	2	8	72	B	SH	Barriers at beginnings of 1st 3 tributaries.
Whipman	2	2.5	72	B	SH	Falls barrier ¼ mile up.
Wick	1	2	72	-	SH	Very steep, managed for resident trout.
Witchell	4	3.5	72	B, V	SH	Extensive logging damage.
Worse Mountain	3	2.5	72	-	SH	Logging erosion.
Wregegraph	3	2.5	82	B	SH	Water diversion for shelter cover is barrier, erosion problems.
Wumboldt	1	.7	82	-	-	Damaged by road construction.
Wyardman G.	.5	.7	Ø	V	-	Very steep, probably no fish.
WycKee	1	1.5	Ø	-	-	Steep, probably no salmonids.
Wymise	1	1	Ø	-	-	

## Identification of Potential Projects

Based on information collected during the inventory process, the streams were divided into preliminary categories as follows:

1. Not enough information available to determine restoration potential.
2. Streams under State, National Park or Bureau of Land Management jurisdiction.
3. Streams with more-or-less forested watersheds, where restoration work would benefit primarily instream habitat.
4. Streams with significant agricultural impacts.
5. Streams with significant impacts from many and/or other causes.

### 1. NOT ENOUGH INFORMATION

S. Fork Winchuck  
Lower Rowdy  
Morrison  
Elk  
Yonker  
Waukell  
Gray  
Maple  
Leggit  
Kelly  
Palmer  
Quarry  
North Bay  
Finch  
Little Palmer  
Rohner

Strongs  
Jameson  
Mill  
Cutoff Slough  
Russ  
Smith  
Coffee  
Bear Gulch  
Oil  
Fly Blow  
Bear  
Singley  
Durr  
Davis  
Domingo  
McNutt Gulch  
Larue & Peter B. Gulch

### 2. PUBLIC LANDS CREEKS

Nickel  
Richardson  
Damnation  
Nickel  
Ossagon  
Butler  
Boat  
Home  
Squashan  
Unnamed  
Major  
Cushing  
Smith Gulch  
Four Mile

Sea Lion  
Cooskie  
Randal  
Spanish  
Oat  
Kinsey or Fraser  
Big or Hadley  
Big Flat  
Shipman  
Buck  
Gitchell  
Horse Mountain  
McKee  
Chemise

3. FORESTED STREAMS

Gilbert  
 Lopez  
 Hoppaw  
 Saugap  
 Owl  
 Tom  
 Unnamed  
 Penn  
 Beach  
 Burris  
 Savage  
 McNeil  
 Hobson  
 Martin  
 Mill  
 McConnahas  
 Luffenholz  
 Patrick  
 Strawberry

Stansberry  
 North Fork Mattole  
 Jim Goff Gulch  
 Eubanks  
 North Fork Mattole  
 Painter  
 High Prairie  
 Big Finney  
 Upper North Fork Mattole  
 Bear  
 Deadman Gulch  
 Cuddeback  
 Fiedler  
 Cummings  
 Yager  
 Wolverton

4. SIGNIFICANT AGRICULTURAL IMPACTS. Descriptions show main reasons why restoration project development not pursued. (One overall reason is the general difficulty of negotiating restoration work on agricultural land.)

Delilah - Complex ag. impacts  
 Ritmer - Complex ag. impacts  
 Tryon - Project stream  
 Jordan - No landowner co-op.  
 Wilson - Small impacted area  
 Hunter - Complex ag. & sedimentation impacts; ideally  
 High Prairie - all four streams should be  
 Mynot - treated collectively  
 Spruce - Complex situation  
 Sand Cache - Complex situation  
 Strawberry - Complex situation  
 MacDonald - Project Stream  
 Little R. - Project Stream  
 Mill - Limited info., small  
 Hall - Limited info., small  
 Warren - Limited info., small

Beith - Limited info.  
 Jacoby - Project Stream  
 Washington - Project Stream  
 Rocky - No landowner  
 Cochran - Limited info.  
 Redmond - Limited info.  
 Freshwater - Limited info.  
 Salmon - Project Stream  
 Woods - Limited info.  
 Pidgeon Pt. - Limited info.  
 small  
 Elk R. - Limited info.  
 Willow - Limited info.  
 Salt R. - Complex situation  
 Williams - Limited info.  
 Fleener - Tidegate project  
 Guthrie - Need landowner  
 op.  
 Mill - Need landowner  
 (East)

5. SIGNIFICANT IMPACTS

Widow White - Urban, ag.  
 Janes - Project stream - logging, urban, ag.  
 Jolly Giant - Project stream - logging, urban  
 Campbell - Urban, ag.  
 Grotzman - Urban  
 Telegraph - Roads & diversion

Ryan - Major sedimentation, urban, ag.  
 Martin - Urban, golf course  
 Palmer - Urban  
 Reas - Ag. tidegate, barrier  
 Francis - Project stream, urban, ag.  
 Humboldt - Roads

Identification of high-priority potential projects was based on consideration of the following initial criteria:

- Proximity to the Coastal Zone
- Benefits to anadromous fish
- Benefits to riparian zone dependant wildlife
- Public access
- Public visibility
- Costs
- Probability of success
- Tie-in with other restoration projects
- Resolution of land use conflicts
- Located on private land

Several criteria were added to the list as we explored possible project developments - landowner cooperation and interest, geographical distribution, and precedent value. Without landowner cooperation, no project could be initiated or maintained on private land. The opportunity and the need to set good precedents for habitat restoration along the coast became apparent.

Based on those criteria, the streams listed under categories 1, 2, 3, and 5 generally received a low-priority rating. It was not feasible to obtain new information on category 1 streams. Public land creeks, besides being on public land, are almost all of the category 3 variety as well. Work on category 3 would tend to meet only a few criteria whereas restoration of category 4 streams would meet many. The severely degraded streams under category 5 would require restoration effort beyond the capabilities of this project, with the exception of Francis, Janes and Jolly Giant Creeks which are discussed later.

Public input was solicited throughout this project, via letters, media coverage and public meetings. A summary of public meeting input is in Appendix 1.

There was no precise way to determine the highest priority potential projects. Fifteen were chosen which would be likely to meet several criteria, then the critical component - landowner cooperation - was sought. Eleven feasible projects were identified, and a restoration proposal was prepared for each one. The proposals are included under separate cover. The following are brief descriptions:

#### HIGH PRIORITY PROJECTS

##### Tryon Creek

Work proposed for Tryon Creek will restore instream habitat in the upper reaches by clearing excess logging debris, and will restore instream and riparian habitat in the lower reach by dredging excess sediment, planting vegetation, and fencing to exclude livestock.

This project will be one of only a few habitat restoration projects on private land in Del Norte County. The lower site is adjacent to State Park lands. Public benefits should accrue from



enhanced fishing, hunting and birdwatching. Lower Tryon has a potentially high value to waterfowl as well as fish and other wildlife due to its slough-like nature.

#### Prairie Creek

Stabilization of severely-eroding streambanks, planting of riparian vegetation, and fencing to exclude livestock along a 1.1 mile section of Prairie Creek is proposed.

This work will benefit a large quantity of instream and riparian habitat and provide a practical example of co-management of agricultural and natural resources. The project site is near to Redwood National Park and has high public visibility. The Prairie Creek Fish Hatchery is located 3/4 mile above the project site. The erosion control work will complement RNP's work elsewhere in the watershed.

#### McDonald Creek

Stabilization and armoring of lower streambanks, planting of riparian vegetation, establishment of a sediment removal system, and the installation and operation of an off-stream Coastal Cutthroat Trout egg incubation box and rearing tank is proposed. Most project sites are located on the North Fork of McDonald Creek.

Riparian and instream habitat will be restored along the major tributary to Stone Lagoon, complementing Conservancy-sponsored work previously performed on other sections of the stream. The project area is adjacent to State Park lands and has high public visibility.

#### Little River

Fencing, to exclude livestock, and riparian vegetation planting are proposed for the lower 3/5 mile of Little River. Repair and erosion control at a wash-out along a dike are also proposed.

Riparian and instream habitat of the Little River estuary will be enhanced by this work. The area has high public visibility from Highway 101 and substantial public use, particularly by fisher persons. Educational signage will be used to reduce damage and increase public awareness of natural resource values. The project site is adjacent to Little River State Beach. Log-jam removal and installation of salmon hatchboxes has occurred previously in the upper watershed.

#### Old Blue Lake and Dave Powers Creek

This project would improve fish and wildlife habitats along the creek and around Old Blue Lake. Public access and education would be provided using bridges and signage. Riparian vegetati

would be planted, and the freshwater pond would be protected and enlarged.

This project rated high on our priority list of streams because of strong local support, enhancement of a freshwater pond as well as a stream, and because it would help resolve a land use conflict wherein the current landowner wants to fill the "Old Blue Lake."

### Arcata Creeks

Erosion control along upper Jolly Giant Creek, sedimentation control in Janes and Jolly Giant Creeks, and development of a long-term management strategy for Arcata's seven creeks is proposed.

Erosion control along Jolly Giant Creek will benefit downstream riparian and instream habitat, including a Conservancy-funded marsh project at the mouth of Jolly Giant Creek. Sedimentation control, using instream structures, will benefit both habitat types, primarily by reducing the need to dredge the entire stream channel. This project would provide an important working example for application to the many other small, low-gradient, heavily-sedimented coastal streams. A strategy for Arcata's creeks could be developed by the already-existing Jolly Giant Creek Task Force, which would help guide management of the streams and serve as a model for other coastal communities. A great deal of technical expertise is available in the community to enhance this process.

### Jacoby Creek

The Jacoby Creek project includes barrier modification, erosion control, bank stabilization, fencing of the riparian zone and planting of riparian vegetation and installation of instream structures to accelerate pool formation, in several locations in the Jacoby Creek watershed.

This creek rated high on our priority list because of its importance to fish and wildlife, the availability of information about watershed conditions, and the work of a local individual who had previously identified critical work sites in the basin.

### Washington Gulch

Livestock-exclusion fencing and riparian vegetation planting are proposed for 1000' of stream below Old Arcata Road. A feasibility analysis for restoration of the adjacent Washington Gulch estuary is also proposed.

Fencing and planting will restore instream and riparian habitat. Coastal Cutthroat Trout will benefit and the project will provide a model for other agricultural small streams around the Bay. Not enough information was available to develop a detailed restoration plan for the estuarine portion of Washington

Gulch, however, the amenability of the present landowners to restoration work makes this an opportune time to pursue such a project. If action is not taken soon, changes in ownership (half the land involved is up for sale) may render the area unavailable for restoration in the future except through condemnation.

### Salmon Creek

This project will remove an obstruction to fish migration presently created by a tide gate at the mouth of Salmon Creek on Humboldt Bay. A smaller "fish gate" will be installed within the tide gate, and its effectiveness will be evaluated for potential use on other streams with tide gates. Other project objectives include development of habitat improvement projects, and assistance to the Humboldt Fishermans Marketing Association (HFM) with a salmon rearing program on Salmon Creek.

Approximately twelve miles of habitat will be made available to anadromous fish by this relatively simple project. The technique could eventually be applied to several other north coast streams. Local enthusiasm for this project is strong. No other entities had been able to work-out a solution up to this time.

### Francis Creek

Modification of a cement check dam will help reduce upstream bank erosion and improve fish migration to the upper watershed. In downstream agricultural lands, stream banks will be re-contoured, cattle fenced out and streambanks planted with riparian vegetation.

The Francis Creek project rated high because of its location in the Eel River Delta Coastal Zone, instream and riparian restoration, strong local support for the project, and because it will help reduce flooding and drainage problems in the Salt River, to which Francis Creek is a tributary.

### Mattole River

The overall objective of the project is to improve the quantity and quality of spawning and rearing habitat for anadromous salmonids, and to improve in-stream and near-stream habitat by elimination of fish passage barriers, bank erosion, and restoration of riparian vegetation for an overall goal of increasing salmon and steelhead populations and wildlife in the Mattole River Watershed. Project sites are located throughout the watershed.

The Mattole River rated high on our priority list due to the abundant amount of information available on the condition of the watershed, and because the local watershed organizations had already spent much time identifying the more important enhancement projects within the basin.

## SPECIAL ISSUES

During the pursuit of information about north coast streams, and discussions with landowners, agency personnel and others, several interesting issues came to light which influenced our work, and we feel should be given serious attention soon by those interested in fish and wildlife habitat restoration.

### Army Corps of Engineers Maintenance Agreements

A) Humboldt County is responsible for maintenance of U.S. Army Corps of Engineers (ACE) project levees and streambank protection along the lower Eel and Mad Rivers, and along lower Redwood Creek. The maintenance agreement calls for suppression of riparian vegetation growth at the project sites. Semiannually, the County sprays the river banks with herbicides, and, in Redwood Creek, bulldozes vegetation out of the channel bed. A significant amount of riparian habitat along three major north coast streams is continually suppressed by this management activity.

In the Central Valley, negotiations are on-going to modify ACE maintenance agreements to allow for establishment of riparian vegetation at project sites. No attempts at agreement modification have been made yet in Humboldt County. The potential of enhancing fish, wildlife, and aesthetic values without jeopardizing structural integrity or floodway capacity needs to be explored. Valuable riparian habitat could be restored at a relatively low cost in these areas.

### Streams as Drainage Ditches

Public works operations and plans continue to utilize stream channels as drainage ditches, with little or no regard for ecological values.

The City of Arcata is beginning to incorporate multiple-resource management, however, the recently prepared McKinleyville Drainage Plan appears to represent the more common approach. The McKinleyville plan states that fish are present in the area's streams, but goes no farther in recognizing the biological value of the waterways and riparian zones.

Frequent dredging of small, low-gradient stream channels is a common activity for public works departments and some private landowners. The dredging is done to maintain flood flow capacity of the channels. Riparian vegetation is usually cleared extensively as a result because it is in the way of dredging equipment and/or is perceived to be a flood hazard. Often emergent aquatic vegetation as well as sediment chokes the stream channels, and is removed.

Erosion control work in the watershed of these streams could help reduce the need for dredging and therefore enhance restoration efforts. The use of sediment settling basins and instream structures to route sediment, such as those being tested in Arcata, would reduce the need for disturbance to that of a small section of any stream channel.

Qualitative observations indicate the existence of an overstory canopy suppresses growth of emergent aquatic vegetation in the coastal streams. It may be more cost effective and certainly more beneficial to wildlife to allow riparian vegetation to grow, with judicious occasional pruning, rather than to remove it and have to dredge the entire stream channel periodically.

It is apparent that incorporation of fish and wildlife habitat restoration and maintenance objectives into drainage plans can lead to overall more cost-effective operations as well as enhancement of biological productivity.

### Beavers

Conversations with northcoast streamside landowners inevitably led to stories of damage caused by beavers. Complaints include drainage impediment and increased flooding caused by beaver dams, especially when built at culvert openings, a favored location. Some landowners feel it would be useless to plant woody vegetation as a habitat restoration measure because the beavers "cut it down as fast as you can put it in." On larger streams the beavers burrow into the streambanks. At least one landowner believes this tunneling leads to increased bank erosion. Overall, beavers are viewed as pests by the riparian landowners we contacted.

Beavers were introduced to the north coast region during 1930-50 by DFG and by local residents. From the introduction of a few pair in a few watersheds, beavers are now present in most low-gradient coastal drainages. Apparently the price of pelts has never been high enough to attract much trapping.

It would be useful to ascertain the impacts that beavers create, in order to determine if there is a need for an active management program, especially in the event of a trapping rush, a landowner campaign for eradication, and/or public concern over protection of beaver populations.

### Agricultural Impacts

At least one-third of the streams we inventoried are significantly impacted by agricultural activity. The most common impacts are being caused by livestock in and along the stream channels.

Conversations with farmers and ranchers yielded several often repeated themes like tales of dad or granddad wheelbarrowing salmon out of the creek, mistrust of government projects, and opinions that the creeks are best for fish if they're cleared of all vegetation.

The concerns and opinions of agricultural riparian landowners must be addressed in order for restoration of many of the north coast streams to occur. Myths about what constitutes "good" habitat need to be dispelled, information about restoration techniques needs to be disseminated, and incentives for implementation need to be developed. Incentives could range from direct financing measures to publicity about cost-effective erosion control techniques.

There is no active agricultural resource conservation program of any kind in the two-county area. An outreach and technical advisement program from a non-threatening source would go a long way towards restoration and maintenance of stream resources on agricultural lands.

#### Resource Conservation District

Humboldt and Del Norte Counties are part of the 3% of the United States that is not in a Resource Conservation District (RCD). This is unfortunate, as this means that the local counties are not fully benefiting from federal and state assistance for dealing with land use issues, such as land use planning, control of wind and water erosion, pollution abatement, flood prevention, water supply, scenic enhancement, soil surveys, and fish and wildlife enhancement.

RCD's are legal subdivisions of state government, and are controlled by a Board of Directors comprised of locally elected citizens. This board can assist in identifying and articulating community conservation projects and getting technical and financial assistance to deal with them. The problems of flooding and poor drainage being faced by ranchers in the Salt River/Eel River Delta area are an example of the kinds of projects well suited for a RCD.

RCD's help provide a direct link and increased assistance from the U.S. Soil Conservation Service. This type of assistance is especially needed in Humboldt and Del Norte Counties, which have been documented to have among the highest watershed erosion rates in the world. In our review of the local streams, virtually every stream had accelerated (human-induced, beyond natural levels) erosion rates. To address all of these problems is an immense task, and requires a concentrated and concerted effort such as could be mustered under the auspices of an RCD.

## Streamkeepers

During the course of our project we inventoried 40 streams. At best, we could only get a basic introduction to the condition of the streams and their watersheds. In the few cases where there were individuals or groups that had taken on a "streamkeepers" role, our job was much easier because they know what problems needed to be addressed. Some of the local groups and individuals that we worked with are: Mattole Salmon Support Group; Coastal Headwaters Association; Jacoby Creek Canyon Community; Humboldt Fish Action Council; Klamath-Trinity Watershed Association; Steve Sungnome Brewer (Powers Creek) and Bob Wunner (McDonald and Jacoby Creek and Jolly Giant Creek).

People who live in or near a given watershed are in an excellent position to monitor the condition of fish and wildlife habitat. The California Trout organization provides a good model with its "Streamkeepers" program which enlists individuals to keep an eye on a particular stream and its trout or steelhead populations.

Any person willing to learn a little about stream systems can act as a streamkeeper. Although environmental organizations have been the primary promoters of the concept, focusing on protection of public resources; private landowners have a vested interest in "streamkeeping" as well. What happens upstream effects what happens downstream, and sometimes vice-versa.

We found many riparian landowners who were concerned about the condition of their stream but were not quite sure what to do about it. Dissemination of information about stream restoration and protection to landowners could go a long way towards effective local management of stream resources.

With some 10,000 miles of stream courses in the north coast region, "the government alone can't be expected to take care of all of the problems." For starters, there are about 130 coastal streams waiting for local adoption.

## County Fish and Game Advisory Committees

Fish and Game Advisory Committees serve in an advisory capacity to the State Department of Fish and Game and County Board of Supervisors and are responsible for disbursement of Fish and Game fine monies collected in each County. Humboldt and Del Norte Counties do not have F&G Advisory Committees.

The Mendocino County Fish and Game Advisory Committee has shown that such a committee can play a very important role in the restoration and protection of fish and wildlife. They are presently finishing development of a county salmonid plan that will become integral to the county's general plan. The salmonid

plan will help set policy and guidelines for salmonid enhancement in the county. One important decision the Committee has made is that they will no longer import egg broodstock from other watersheds for their fishery propagation projects.

Such a committee could play a very important role in the management of Humboldt and Del Norte Counties' fish and wildlife resources.

### Landowner Incentives

Landowner incentives and assistance programs need to be developed in order for more habitat restoration to occur on private lands. As examples, Resource Conservation Districts and the Oregon Riparian Lands Program are mentioned elsewhere in this paper.

Consensus needs to be reached on several issues such as the amount of consumptive utilization (i.e. firewood) acceptable in a restored riparian zone, and the use of non-native species of vegetation. Extremely "protective" guidelines for restored areas may exclude such work from ever occurring on many private parcels because the landowners "don't want something they can't use." Landowner interests must be taken into account because restoration work cannot occur unless they are willing to have it done.

### Fieldwork

We feel that the need for fieldwork cannot be overemphasized. Baseline data is lacking on all aspects of coastal stream fish and wildlife habitat. Despite widespread recent interest in restoring salmon and steelhead populations, information has not been gathered on many habitat features important to their survival. Even less information is available regarding habitat for other fish species, and hardly any analyses are available to guide riparian habitat restoration.

The north coast has a wealth of natural resource research and management technical expertise. No one agency can be expected to know every condition in every watershed, but if public entities and interested citizens will coordinate their efforts, perhaps a more comprehensive data base can be developed.



## Prevention

"An ounce of prevention is worth a pound of cure" applies to environmental as well as human health. The costs of restoring degraded habitat usually exceeds the costs of preventive measures. We hope that the need for restoration work will be much reduced in the future. The following is a description of just a few of the measures developed recently to address riparian and water quality and quantity issues.

Critical Watershed Overlay Zone - The City of Ferndale is pursuing this designation for the Francis Creek watershed. Under this type of zoning, engineering and geologic reports, prepared by a certified Engineering Geologist, would be required for any new development in the watersheds.

Critical Water Resource Overlay Zone - Trinity County has passed an ordinance creating this zone category. Residents of a watershed experiencing problems with water quality or quantity can petition the Board of Supervisors to designate the watershed as a Critical Water Resource Zone. Under this designation, availability of adequate quantity and quality of water-supply must be demonstrated before any new development can occur.

Road Building Guide - The Mendocino County Resource Conservation District has recently published a comprehensive Road Building Guide for Small Private Roads booklet. (Mendocino RCD, 405 Orchard Avenue, Ukiah, CA. 95482. \$2.75 by mail.) Information like this is needed to supplement existing regulatory processes governing road construction, especially in light of the amount of homesteading occurring in the north coast region.

Riparian Land Tax Incentive Program - Oregon has passed legislation allowing landowners to receive property tax exemptions for lands adjoining a stream, if the land is enrolled under a management plan prepared in cooperation with the Department of Fish and Wildlife. Tax credits are available for a portion of the cost of restoration work performed on such lands.

Clean Water Ordinance - The U.S. Navigational Codes and the State Porter-Cologne Act given local governments the right to set water quality standards stricter than those set at the federal or state level. The City of Blue Lake has just recently passed an ordinance that applies to potential discharges in excess of zero parts per billion of any hazardous wastes, agricultural poisons, infectious wastes, radioactive wastes or fecal wastes. Any operation that may exceed this zero discharge level will require a permit from the city.

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APPENDICES

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## APPENDIX 1

### PUBLIC MEETINGS

Public meetings were held on June 1 in Crescent City and on June 2 in Eureka to receive input on the stream inventory and potential restoration projects. The following is a summary of comments and discussions from both meetings. Our responses are in brackets. The one written comment we received is included.

- 1) Are there any restrictions placed on the landowner who has one of these projects on his land - can I cut firewood in the riparian area? Do I have to dedicate my land, will public access be required? (You will have to sign a Landowner Agreement, which will specify any restrictions. Basically the Agreement will require long-term protection of works paid for with public money. We'll have to find out about firewood cutting. Public access is not required.)
- 2) Can I practice aquaculture in the creek? (Depends on DFG approval.)
- 3) How extensive of work can be done? Excavation of the creek? (If it is warranted, and can be justified for fish and wildlife enhancement.)
- 4) Will these projects be submitted as a package or individually? (Each project will be a sub-item of a larger package.)
- 5) Why just treat some sections of a creek, don't you need to treat the whole stream to really get benefits? (Not necessarily, it depends on the problems we are addressing. You have to start somewhere to eventually solve all of a stream's problems. In the case of a tide gate barrier to salmonid migration, modification of the gate will increase productivity of the whole creek.)
- 6) There are beaver control problems on Jordon Creek. (We realize that beavers are not native to the area, this will need further study.)
- 7) What about hatch boxes and aquaculture programs on these creeks? (In the situation where we are re-opening up a creek to salmonid migration, this would be a technique that we may use to help get salmon, steelhead, or coastal cutthroat trout re-established on that creek.)
- 8) What about planting more commercially valuable trees for more land owner incentive to participate? (We have done this in the past (McDonald Creek), but the DFG would prefer that the riparian areas be managed for fish and wildlife and water resources, but this does not exclude some

timber management of the area. It's important that a potential project landowner agree to this basic emphasis, and be prudent in any potential timber harvesting.)

- 9) Elk Creek - in Crescent City - is being considered by the Harbor District, to raise silver salmon in it. (Great, we would be interested in pursuing habitat improvement work in that creek in the future.)
- 10) What about cashflow for doing the projects? (This is difficult to answer at this time, it will depend on how the Conservancy funds RCAA, and how we in turn work out the details with the project coordinators.)
- 11) We need to start dealing more with the problems of landslides and road drainage problems. (We agree, sedimentation of the stream is by far our biggest problem, it's also one of the hardest to do something about on a large scale. We will be addressing some of these problems. But there are still many ongoing development projects that need better review to prevent erosion problems.)
- 12) Did the City of Ferndale pass an ordinance that required landowners to keep the creek clean of garbage on their land? This would be a relevant ordinance for us in Blue Lake. (We don't know, this is the first we've heard of it, we'll check into it.)
- 13) We must address the problem of vegetation on low gradient streams, falling into the stream, block sediment, and diverting flows into the banks, causing loss of pasture lands, etc. (This is true. The resources at stake (fish and wildlife) are so valuable, as well as the landowners resource value (property, grazing lands, etc.) that it warrants the cost in some areas to have some type of annual maintenance program to address these problems.)
- 14) There is a need to put more emphasis on resident trout fisheries (vs anadromous) in urban areas, because it is hard to restrict over-fishing of the few (anadromous) spawners that may return. (Good point - part of our effort on these projects is to educate the local citizens and children as to the value of their creek, and that to restore the fisheries will take a long time. This means that it will be important to let the fish (resident or anadromous) go and spawn, so that eventually we'll have a fishery that can sustain some fishing pressure.)

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We were not able to attend the public meeting in Crescent City. We had someone call from RCHA and wanted to fix our stream. The stream is called Yonkers Creek, in Crescent City. We would be interested in hearing from you about the telephone call to us. Because we have heard no more. The stream really needs some work. Sorry we couldn't attend the meeting. We would like to be kept informed.

Thank You  
Phil & Wana Garcia

wrote reply  
6/9/83 R  
(DFG will survey  
Yonker Cr. this summer.)

Phil & Wana Garcia  
700 Star Trek Dr.  
Crescent City, CA 95531

Appendix 3  
Habitat Degradation Features

There are numerous types of habitat degradation that affect the natural and aesthetic values of a stream. Various alterations to the system can have a negative effect during every stage of the life cycle of fish and wildlife. In our efforts to identify present impacts, we also kept an eye out for potential impacts to the streams. We encountered many landowners and other concerned people who weren't sure what to look for in evaluating the condition of a stream. Present or potential degradation features we looked for included:

Water Pollution

Point Source - Coming from one definable source such as a drain pipe. This includes sewage overflow from a sewage treatment plant, industrial waste, lumber mill log ponds and fungicide dip tanks for boards.

Non-point Source - This includes pollution that comes from a broad geographical area. This includes pesticides used in forestry, golf courses, urban areas and agriculture; erosion and sedimentation from logging, roads, and urban development.

Loss of Riparian Vegetation - Riparian vegetation is important as: cover for fish and wildlife; travel corridors for wildlife to upland areas; shade for streams to keep water temperatures down, a source of food for both fish and wildlife, and as a very effective streambank stabilizer.

Riparian vegetation is being lost in all aspects of development (roads, housing, logging, agriculture, channelization, dredging, etc..) It grows readily in the north coast climate, so its absence along a stream is usually an indication of some human disturbance.

Water Diversions - This includes dams, pumps, and irrigation channels. Dams can be barriers to migration for anadromous fish, and they can reduce down stream flows to the extent that the sediment carrying capacity of the stream is reduced or that summer time water flows are inadequate to support fish and wildlife. Irrigation diversions can cause all of the above, plus those that are not screened may draw fish down them to die in the fields.

Barriers to fish migration - Of concern here is both the spawning migration of adults and summer time migration of juveniles into areas with sufficient summer time rearing capacity.

Different types of barriers include: dams, irrigation diversions, bridges, culverts, logs, boulders, falls, insufficient water flows, and velocity barriers.

Erosion/deposition - Accelerated erosion causes problems to fish as mentioned under non-point sources. It is also a major cause of the loss of riparian vegetation, even down stream from the initial source or cause of the erosion, because of feedback affects.

The erosion of soil also reduces the ability of the land to revegetate itself. There are numerous types of erosion and each requires its own site-specific prescription to control it.

Drainage Alteration - These include diking and filling in wetlands, channelization or building of levees along streams and rivers, and the installation of tidegates to prevent the influence of tidal waters. The overall effect of these activities is to reduce the amount of aquaculture and/or riparian habitat area, and a loss in the diversity of habitat types. (i.e. pools, saltwater intrusion, hiding space, etc.)

Poaching and excessive harvesting - All though these variables as they effect fish and wildlife populations levels within any watershed is beyond the scope of what this project could deal with, it was still important to consider the degree to which they might affect potential enhancement efforts.

Garbage - Currently and over the years, it has been a widespread practice for people to dump their trash over the side of the roads and into stream channels. This is a major cultural problem that needs further consideration. The garbage represents a visual, toxic, and physical hazard to both man and wildlife. By cleaning up some of these sites, we can remove these hazards, and hopefully reduce the likelihood of additional trashing.

REDWOOD COMMUNITY ACTION AGENCY  
HUMBOLDT-DEL NORTE STREAM RESTORATION PROJECT  
April 1983

Information for Streamside Landowners

The Redwood Community Action Agency is working under a contract with the California Coastal Conservancy to assess the potential for fish and wildlife habitat restoration along the coastal streams of Humboldt and Del Norte Counties (about 160 streams, total.) A lot of work has been done lately to remove logjams that are barriers to fish, but we are finding that much more could be done to restore our streams to the productive condition they once were in.

In the north coast region the streams that are most beneficial to fish and wildlife are those which are bordered with riparian (streamside) vegetation and do not have excessive amounts of sediment entering the stream channel. The riparian vegetation plays many important roles. Roots bind the soil together and provide stability to the stream bank. The plants provide shade and cover to fish in the stream. The leaves and other vegetation that enters the stream are the primary source of food for stream-dwelling organisms. Riparian habitat supports the greatest diversity of wildlife of all non-wetland habitats.

Existing regulations require some protection of existing riparian vegetation. However, much of the riparian vegetation along streams on the north coastal plains was removed years ago, and there is nothing on the books which requires restoration of such habitat, except perhaps as mitigation for new development.

Therefore, whether or not habitat restoration occurs is almost entirely up to the streamside landowners. Because riparian habitat is so critical to fish and wildlife, which are public resources, there is some public funding available for various types of restoration work. The Coastal Conservancy hopes to fund 2 to 10 such projects in this area this year. We are looking for interested landowners.

Reestablishment of riparian vegetation can reduce streambank erosion. If you are willing to give permanent protection to your stream you can create a conservation easement. This can provide both property and income tax benefits because of the change in land use. And of course, depending on the stream, you will have more trout and/or salmon. Historical records indicate that virtually every coastal stream big enough to be named used to have a significant run of cutthroat trout, steelhead, or salmon.

Livestock grazing is the biggest single factor working against the reestablishment of riparian vegetation along coastal streams. Fencing and planting along the stream corridor (with crossings for livestock) is the best solution. Planting of trees individually protected from grazing is a partial solution. Stream areas not impacted by livestock can be fairly easy to restore. There are lots of factors to consider regarding any stream



project, such as whether the channel has been modified and what sedimentation rates are.

We feel that planting and protecting streamside vegetation is the most critically needed habitat restoration work in this coastal area. We are also interested in providing other forms of streambank stabilization, instream modifications which are beneficial to fish and can help move sediment down the stream channel so that dredging isn't necessary and flood hazard is reduced. Erosion control where needed is another important aspect of this work.

If you are interested, we will work with you to develop a project that meets your needs. We can provide funding for any or all of the elements of the project, including labor - yours or ours. We are presently working to develop projects to be started this summer, so please contact us as soon as possible. It takes time to develop a project proposal.

We will be happy to answer any questions you might have about our program, your stream, or other resource improvement programs.

Thanks for your consideration of this opportunity.

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