

Barrier Prioritization in the Five Counties Salmonid Conservation Program



Fish Passage Forum Quarterly Meeting
April 14, 2010

5C Barrier Program Objectives

Implement cost-effective conservation & habitat restoration activities utilizing:

- Watershed Based Planning
- Biological Prioritization
- Water quantity
- Water Quality
- Immediate Results & Long-Term Solutions
- Private Land Programs based on Incentive & Education, while using New Regulation as a last resort

Assessment of Barriers in 5C

- 245 Crossings Assessed from 1998 – 2002 & 2004 Additional Coastal Work



- \$30 - \$75 Million Estimated to Treat

- 10 - 50 Years To Complete

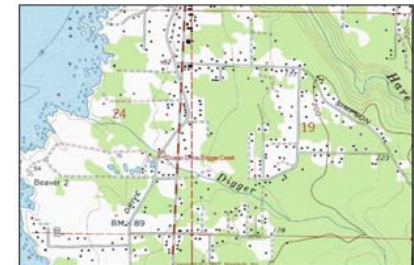
FINAL REPORT: COASTAL MENDOCINO COUNTY CULVERT INVENTORY AND FISH PASSAGE EVALUATION

By
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March 15, 2001



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Site #13: Dagger Creek/Ocean Drive, Coastal. **Ranking:** #6 - Moderate Priority
Location: County Map #00-18: T18N, R18W, Section 24. **Culvert Type:** CSP Pipe arch.
Dimensions: 6'0" W x 3'9" H. **Length:** 60'0". **Slope:** 1.20%. **Modifications:** None
Fill Estimate: 1,443 cubic yards. **Overall condition:** Poor
Notes: Extremely undersized, HWD = 1 on a storm flow with approximately a two-year recurrence interval. Ocean Drive overtopps on approximately a seven-year storm discharge.
Barriers Status: For the range of migration flows ($Q_{10} - Q_{100}$), FishTag determined culvert is a 100% barrier for adult coho salmon and steelhead and all age classes of juvenile due to primarily the perched outlet (2'9" at low flow) and lack of depth in outlet pool.
Additional Road Crossings: Downstream (550' and 2,000'), two culverts within the Mendocino Coast District. Outlets, both probable barriers scheduled for replacement with small bridges in 2001 and 2002. Upstream (600') Highway 1, concrete box culvert with perched outlet (above 2'), probable 100% barrier. USGS map indicates crossings exist on private road, 600' and 2,300' upstream of Highway 1.
Habitat: Dagger Creek up to Highway 1 (length of 2,500') last surveyed by Thomas Pope and Assoc. in 1989. Sections of same reach were walked in 9/1991. **Quantity:** approximately 12,000' of potential fish-bearing habitat above Ocean Drive. **Quality:** Fair/poor, adequate rearing habitat with numerous pools, however, spawning habitat is limited and available gravel substrate is highly embedded with fines. Lower channel through Ocean is of moderate gradient and highly constricted. Discussion with long-term resident confirmed past presence of spawning coho and steelhead, but no observations since 1990-00's. Resident trout observed during initial site survey and recent stream walk. A trout farm pond is located on private property south of Dagger Creek. Pond is supplied by diverted Dagger Creek flow.
Preferred Treatment: Replace with a properly-sized pipe arch set on concrete footings.



Appendix B: Coastal Mendocino Culvert Catalog

Biological Prioritization: 1998 & 2002

- Biologists from USFS, CDF&G, Timber Companies, NMFS, Consultants
- Prioritize sites for restoration using the biological needs of salmonids as the main driving factor
- Prioritize watersheds, taking water quality needs into consideration.
- Coordinate well to CA Coho Recovery Strategy



Biological Prioritization Factors

Habitat Access

- How much will be made available?
- What is the quality?

Position in watershed

- Are there other barriers/sites lower in watershed which would also need to be restored to make restoration effective?

Stocks at Risk?






Other Considerations?



Financial Prioritization Factors

County Financial Feasibility

Program-wide funding sources:

- General Funds  County Road (Gas Tax) Funds
- SB 271  Prop 204
- Prop 13  CWA 319 (h)
- CWA 205 (j)  PSCFP
- STIP  SHOPP



Funding Sources as a RESULT of Prioritization

Coastal Conservancy (Design & Implementation)

NOAA Open Rivers

USFWS Partners

NFWF Keystone

NACO's Coastal Counties Restoration Initiative

County Match (primarily in Engineering)

CDFG FRGP / Steelhead Card



Capacity Prioritization Factors

Within already planned capitol improvement projects?

Engineering, Contracting, & Construction Personnel

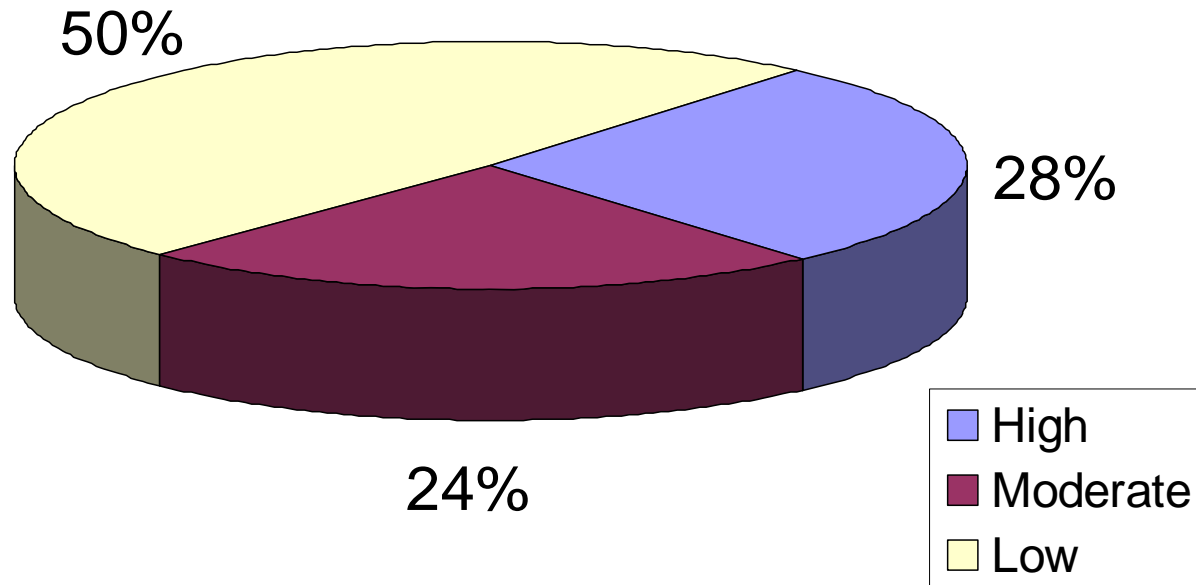
Storm & Road Damage and Maintenance Backlogs

Public Safety Demands

Other Considerations?



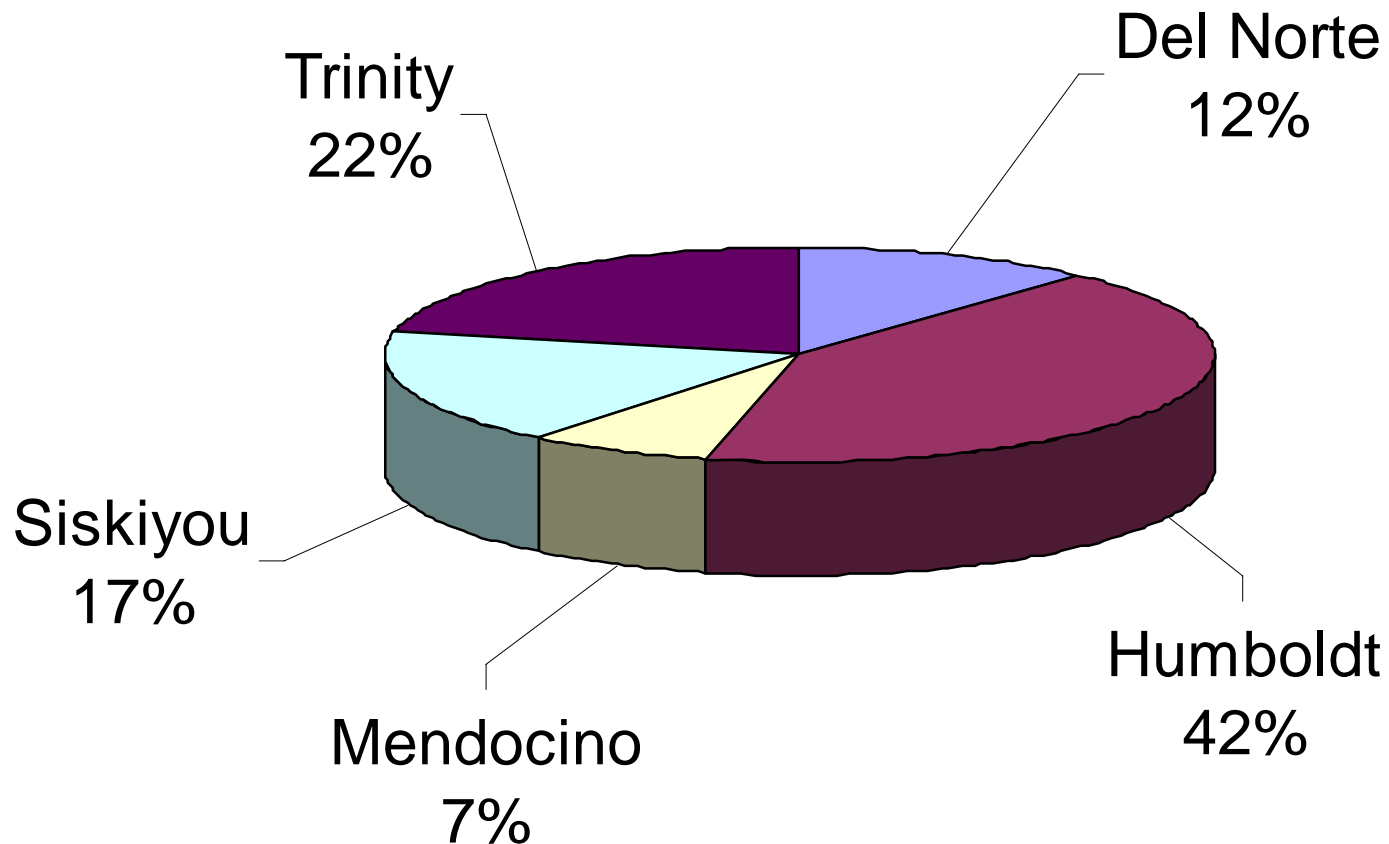
Prioritized Ranking of 245 Inventoried Migration Barriers



Based On:

- Species Diversity
- Habitat Quality & Quantity
- Culvert Condition & Risk of Failure
- Barrier Status: Complete / Temporal

High Priority Barriers by County

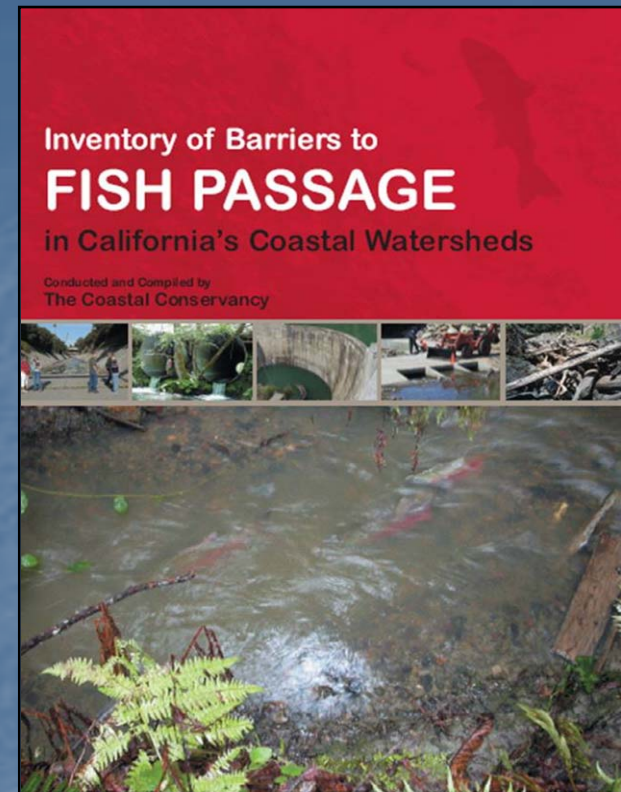
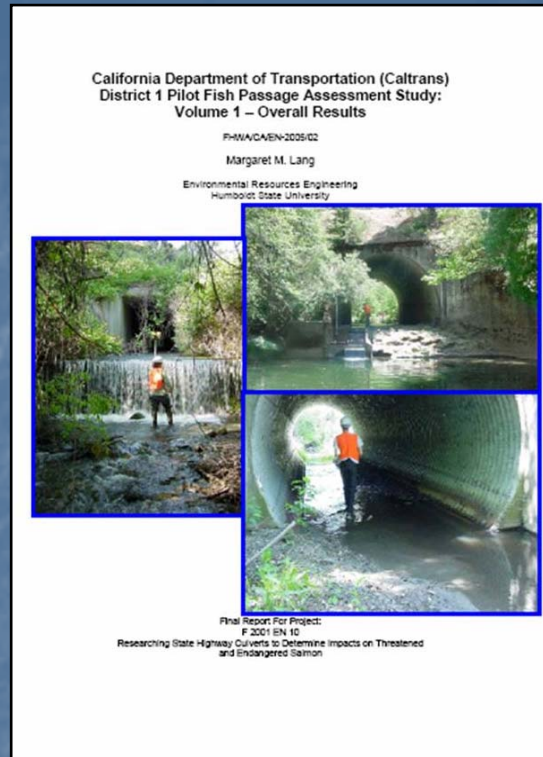
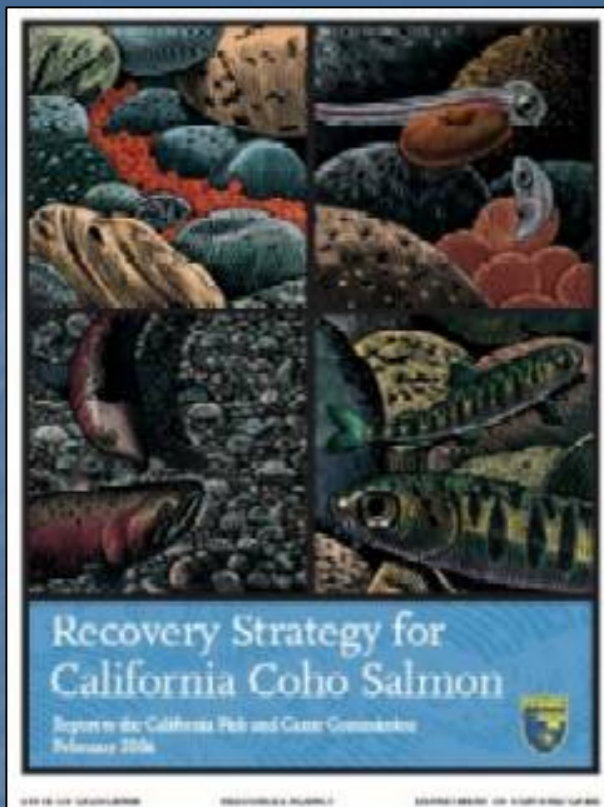


County & Program Ranking Matrices

FIVE COUNTIES - RANKING MATRIX OF 245 COUNTY-MAINTAINED STREAM CROSSINGS

Color Code: **Green** = Construction completed. **Blue** = Construction funded. **Yellow** = Construction proposal submitted. **Orange** = Design/Engineering funded or in progress. **Gray** = project funded but dropped.

RANK	Cnty	Stream Name	Road Name	Presumed Species Diversity	Species Diversity Score	Extent of Barrier Score	Current Sizing Score	Current Condition Score	Crossing Score (average of sizing & condition)	Habitat Quantity (ft)	Habitat Quantity Score	Habitat Quality Modifier	Total Habitat Score	TOTAL SCORE
#1	Humboldt	Lindsay Creek	Murray Road	CO, CH, ST, CUT	7	15	4	3	3.5	13,800	10.0	0.75	7.5	33.0
#2	Coastal Mendo	Ancestor Creek	Briceland Road	CO, ST	4	15	4	1	2.5	10,800	10.0	1	10	31.5
#3	Del Norte	Clarks Creek	Walker Road	CH, CO, ST, CUT	5	15	4	3	3.5	7,400	7.4	1	7.4	30.9
Tie #4	Humboldt	Ryan Creek tributary	Mitchell Road	CO, ST, CUT	5	15	5	5	5.0	19,200	10.0	0.50	5	30.0
Tie #4	Humboldt	Cloney Gulch	Kneeland Road	CO, CH, ST, CUT	7	15	1	0	0.5	11,200	10.0	0.75	7.5	30.0
#5	Humboldt	North Anker Creek	Fieldbrook Road	CO, CH, ST, CUT	7	15	5	3	4.0	7,600	7.6	0.50	3.8	29.8
Tie #6	Humboldt	East Mill Creek #1	Conklin Creek Road	CO, ST, CH (?)	6	15	4	3	3.5	14,000	10.0	0.50	5	29.5
Tie #6	Del Norte	Jordan Creek #1	Parkway Drive	CO, ST, CUT	4	15	5	1	3.0	13,500	10.0	0.75	7.5	29.5
#7	Del Norte	Peacock Creek	Tan Oak Drive	CH (?), CO, ST, CUT	5	15	5	3	4.0	7,100	7.1	0.75	5.325	29.3
Tie #8	Trinity	West Weaver Creek	Oregon Street	ST, CO	3	15	4	3	3.5	20,000	10.0	0.75	7.5	29.0
Tie #8	Trinity	Little Browns Creek	Roundy Rd	ST, CO	3	15	4	3	3.5	16,900	10.0	0.75	7.5	29.0
Tie #8	Coastal Mendo	Ryan Creek	Ryan Creek Road	CO, CH, ST	6	15	3	3	3.0	15,100	10.0	0.5	5	29.0
Tie #8	Del Norte	Jordan Creek #2	Elk Valley Road	CO, ST, CUT	4	15	5	1	3.0	9,300	9.3	0.75	6.975	29.0
#9	Coastal Mendo	Albion River	Flynn Creek Road	CO, ST	4	15	3	1	2.0	24,100	10.0	0.75	7.5	28.5
#10	Coastal Mendo	Marsh Creek	Flynn Creek Road	CO, ST	4	15	5	3	4.0	12,900	10.0	0.5	5	28.0
#11	Humboldt	South Anker Creek #2	Anker Road	CO, CH, ST, CUT	7	15	5	3	4.0	3,600	3.6	0.50	1.8	27.8
#12	Trinity	Deadwood Creek	Hatchery Rd	ST, CO, CH	4	13	5	1	3.0	41,800	10.0	0.75	7.5	27.5
#13	Coastal Mendo	Dark Gulch	Orr Springs Road	CO, ST	4	15	5	3	4.0	5,000	5.8	0.75	4.35	27.4
Tie #14	Coastal Mendo	Digger Creek	Ocean Drive	CO, ST	4	15	5	1	3.0	11,800	10.0	0.5	5	27.0
Tie #14	Humboldt	Warren Creek	West End Road	CO, ST, CUT	5	15	3	1	2.0	14,200	10.0	0.50	5	27.0
Tie #14	Siskiyou	White's Gulch	Sawyer's Bar Road	ST, CO	3	15	3	0	1.5	25,300	10.0	0.75	7.5	27.0
Tie #14	Humboldt	Strawberry Creek #1	Central Avenue	CO, ST, CUT	5	15	4	0	2.0	18,000	10.0	0.50	5	27.0
#15	Humboldt	Painter Creek	Shelter Cove Road	CO, CH, ST	6	15	3	0	1.5	5,800	5.8	0.75	4.35	26.9
#16	Coastal Mendo	Johnson Creek	Orr Springs Road	CO, ST	4	15	2	0	1.0	8,900	8.9	0.75	6.675	26.7
#17	Humboldt	Stanley Creek	Whitethorn Road	CO, ST	4	15	1	5	3.0	9,200	9.2	0.50	4.6	26.6
#18	Humboldt	Mather Creek	Murray Road	CO, ST, CUT	5	15	5	3	4.0	15,200	10.0	0.25	2.5	26.5
#19	Humboldt	Washington Gulch	Old Arcata Highway	CO, CH, ST, CUT	7	15	3	1	2.0	8,500	8.5	0.25	2.125	26.1
Tie #20	Humboldt	Strawberry Creek #2	Dows Prairie Road	ST, CUT	3	15	5	1	3.0	13,000	10.0	0.50	5	26.0
Tie #20	Trinity	Garden Gulch	Easter Ave	ST, CO	3	15	5	1	3.0	16,000	10.0	0.5	5	26.0
Tie #20	Trinity	Oregon Gulch	Sky Ranch Rd	ST, CO	3	15	5	1	3.0	36,300	10.0	0.5	5	26.0
Tie #20	Humboldt	Graham Gulch	PALCO Camp Road	CO, ST, CUT	5	15	1	1	1.0	13,400	10.0	0.50	5	26.0
Tie #20	Siskiyou	Merrill Creek	Salmon River Road	ST, CO	3	15	0	1	0.5	12,700	10.0	0.75	7.5	26.0
Tie #20	Siskiyou	Williams Creek	Klamathon Road	ST, CO	3	15	1	0	0.5	10,500	10.0	0.75	7.5	26.0
#21	Humboldt	Widow White Creek #2	McKinleyville Ave	CO, ST, CUT	5	15	2	0	1.0	9,400	9.4	0.50	4.7	25.7
Tie #22	Humboldt	Gibson Creek	Whitethorn Road	CO, ST	4	15	3	3	3.0	7,200	7.2	0.50	3.6	25.6



- Passage Assessment Database
- Local Watershed Groups & Biologist Recommendations
- Federal / State Agency Data
 - TMDLs
- Scheduled Capitol Improvement Projects

Annual Updates to Matrix based on:

- Discussions with Engineers
 - County Maintenance Issues
 - Local Biologist Feedback
 - Shifting State & Federal Prioritizations / Listing
- * *Work completed by other landowners (USFS, BLM, Caltrans, State Forests/Parks, Industrial Timberlands, other Private) that has shifted the Original Program Inventory Data!



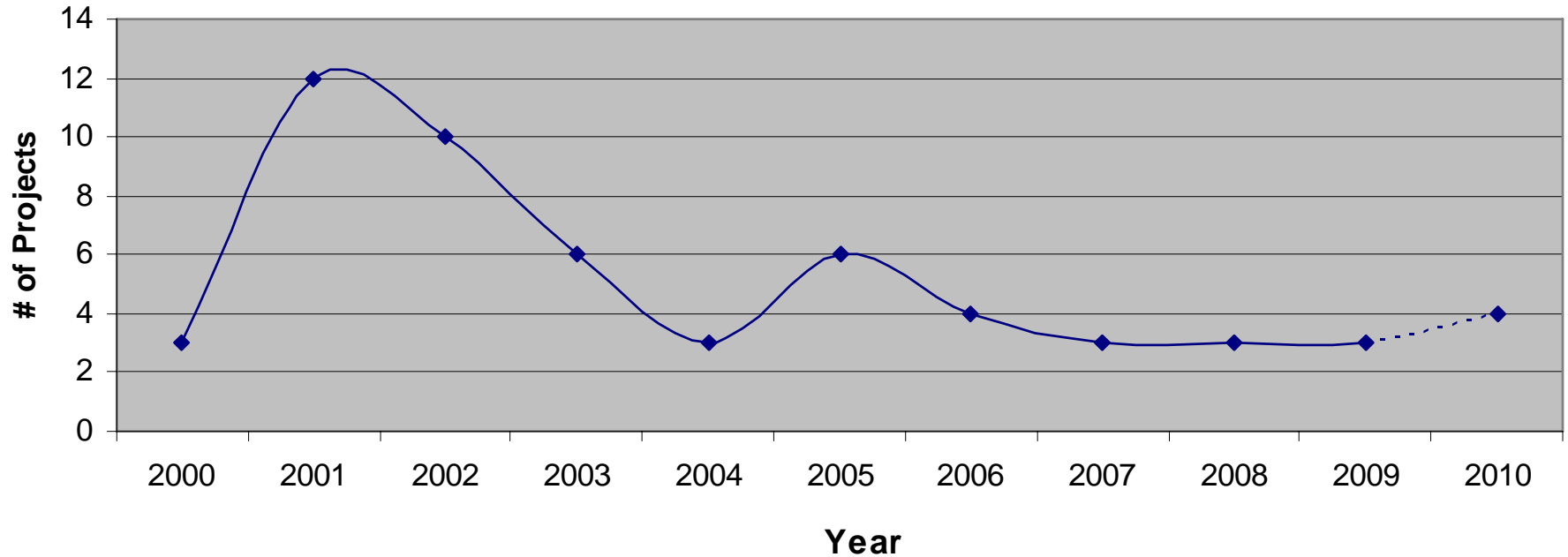
Additional Prioritization Factors

- Localized Site Constraints
- Climate / Hydrology
- Upstream / Downstream Land Use & Ownership
- Permitting / Funding
- Biological Needs ALWAYS Key

Projects Completed: 1998-2009

County	Completed Projects	Miles Accessible	Percent High Priority Completed	Remaining High Priority Sites
Del Norte	6	11	75%	2
Humboldt	22	35	66%	10
Mendocino	10	17	80%	1
Trinity	8	24	58%	5
Siskiyou	10	51	40%	9
TOTAL	56	137	61%	27

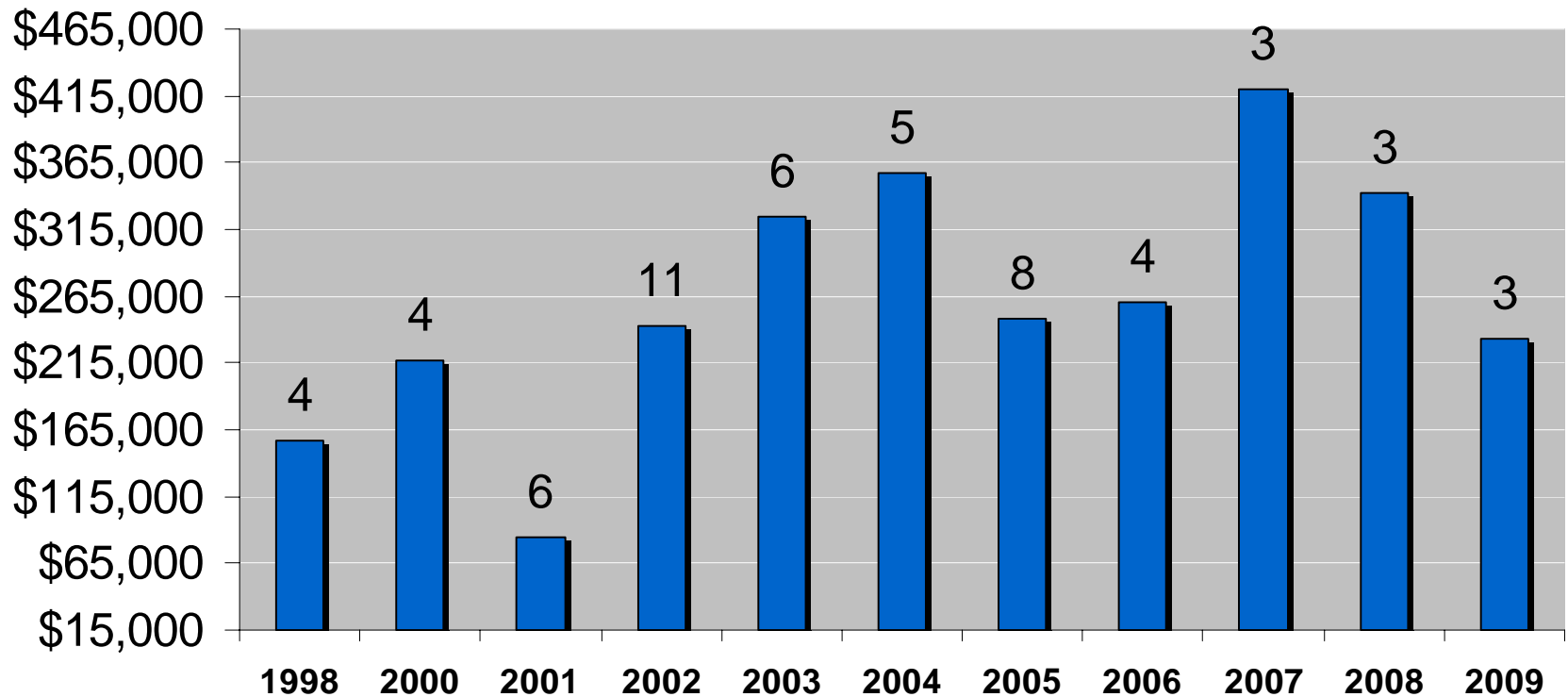
5C Program County Barrier Removal Projects: 2000-2010*



*** 3 Siskiyou County Projects were built in 1998. 5C has contributed to six additional State & Federal Projects since 2005. There are 4 Projects projected for 2010, including 1 Private Crossing.**

5C Migration Barrier Cost Data

Average Cost of 57 5C Migration Barrier Removal Projects from 1998 - 2009



Average Cost per Mile: \$105,020

5C Thanks the Following for their Continued Support & Dedication:

The Five County Boards of Supervisors & County Forces

CDFG Fisheries Restoration Grant Program

State Coastal Conservancy

NOAA Fisheries & the Restoration Center

United States Fish & Wildlife Service

Bureau of Reclamation

NACo's Coastal Counties Restoration Initiative

National Fish & Wildlife Foundation

American Rivers



Questions?



www.5counties.org