Pajaro River main stem, Santa Cruz County
CAP Workbook Threats Assessment Summary Tables
2008

Assessment of Target Viability

Double-click opens entry form					**Bold = Current** Indicator Ratings *Italics = Desired*								
	Conservation Target	Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
1	Egg	Landscape Context	Flow during incubation period	Baseflow in relation to avg. annual daily flow	**< 25% of avg. annual daily flow**	26-50% of avg. annual daily flow		> 50% of avg. annual daily flow	probably poor	Poor		Jan-06	
1	Egg	Landscape Context	Non-native species	Non-native egg predators	present throughout watershed	present in >50% of watershed	present in < 50% of watershed	absent				Aug-07	
1	Egg	Landscape Context	Water temperature	Mean weekly avg. temperature in redds	**< 5 C. and > 13 C.**	11.1-13 C.	10.1-11 C.	6-10 C.	probably poor	Poor		Jan-06	
1	Egg	Condition	Substrate quality	Avg. percent fines (<0.85mm) in potential spawning areas	**> 17% fines**	11-17% fines	5-10 % fines	< 5% fines	probably > 17%	Poor		Jan-06	
1	Egg	Condition	Substrate quality	Embeddedness	**> 75% embedded**	50-75% embedded	25-49% embedded	< 25% embedded	probably > 75%	Poor		Jan-06	
2	Fry	Landscape Context	Dispersal	Barriers between redds and rearing habitat	**complete barrier**	partial barriers common	partial barriers scarse	no barriers		Poor		Jan-06	
2	Fry	Landscape Context	Non-native species	Non-native fry predators	present throughout watershed	present > 50% watershed	present < 50% of watershed	absent				Aug-07	
2	Fry	Landscape Context	Sediment supply	Turbidity (no. days turbidity is > 25 NTUs)	**> 30 days during fry development period**	20-30 days	10-19 days	< 10 days	probably poor	Poor		Jan-06	
2	Fry	Condition	Habitat complexity/refugia	Amount of functional high velocity refuge habitat with flows < 15 cm/sec (boulders, overhanging banks, etc.)	**none; watercourse in rearing habitat is channelized**	some	common	abundant	none available in main stem	Poor		Jan-06	
3	Juvenile	Landscape Context	Dispersal	Barriers between rearing habitat and estuary	**present**			absent	present	Poor		Jan-06	
3	Juvenile	Landscape Context	Flow during rearing period	Pool habitat > 3 feet in depth	**pools scarse or absent**	low abundance of pools	high abundance of pools	high abundance of pools with muliple "refuge" pools (> 5 ft deep)	no rearing habitat in main stem	Poor		Jan-06	
3	Juvenile	Landscape Context	Non-native species	Non-native juvenile predators	present throughout watershed	present > 50% watershed	present < 50% watershed	absent				Aug-07	
3	Juvenile	Landscape Context	Summer flow	Percent of unimpaired median summer baseflow (based on long-term mean monthly discharge)	**< 70%**	70-90%	> 90%	100% over all IP-km	probably < 70%	Poor		Jan-06	

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Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
3	Juvenile	Landscape Context	Water temperature	Median weekly average temperature (MWAT) in potential rearing habitat	**> 21 C.**	18-21 C.	< 18 C.	< 17 C.	probably poor	Poor		Jan-06	
3	Juvenile	Condition	Estuarine inflows	Percentage of unimpaired freshwater inflow to estuary (necessary for maintaining brackish water < 15 ppt salinity)	< 25%	25-49%	**50-75%**	> 75%	sufficient inflows	Good		Jan-06	
3	Juvenile	Condition	Estuarine inflows	Persistence of hypoxic or anoxic saline layer (> 15 ppt) in potential rearing habitat areas between May and onset of winter rains	3 months	1 month	1 week	< 3 days				Jul-06	
3	Juvenile	Condition	Food availability	Species richness	**< 25 taxa**	25-29 taxa	30-40 taxa	> 40 taxa	unsuitable conditions in main stem	Poor		Jan-06	
3	Juvenile	Condition	Habitat complexity/refugia	Instream refugia	**absent**			present (boulders, overhanging banks, etc.)	mostly absent; lower main stem is channelized	Poor		Jan-06	
3	Juvenile	Condition	Riparian corridor species composition and structure	Mean percent native, undisturbed composition and structure in 100-foot riparian buffer	< 25%	25-50%	51-75%	historic conditions				Mar-07	
4	Smolt	Landscape Context	Dispersal	Number of days when depths are < 0.4 ft anywhere in migration corridor during outmigration period (March through June)	**> 10 days**	6-10 days	1-5 days	0 days	Murphy Crossing area	Poor		Jan-06	
4	Smolt	Landscape Context	Flow for downstream passage March through June	Maximum potential rate of diversion by pumping during April and May (expressed as percent of estimate unimpaired median flow in April)	**> 150%**	100-150%	50-99%	< 50%	probably >150%	Poor		Jan-06	
4	Smolt	Landscape Context	Passage to ocean	Number of days stream mouth is open with adequate flow during outmigration period (March through June)	< 30 days	30-60 days	60-90 days	> 90 days				Apr-07	

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Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
5	Adult	Landscape Context	Dispersal	Accessibility of suitable spawning areas (based on TRT criteria)	accessible sites are clumped in one location or < 25% of all tributaries are accessible	**25-50% of all tributaries are accessible**	50-75% of all tributaries are accessible	> 75% of all tributaries are accessible	50%	Fair		Jan-06	
5	Adult	Landscape Context	Dispersal	Number of days stream mouth is open with adequate flow during entry period (1 November to 1 June)	< 30 days	30-60 days	60-90 days	> 90 days				Mar-07	
5	Adult	Landscape Context	Flow during spawning period (spawning and upstream/downstream passage)	Percent of net discharge (unimpaired flow minus total diversions) occurring between 1 December to 1 June, in all water years	> 10%	6-10%	3-5%	< 3%				Apr-07	
5	Adult	Landscape Context	Water temperature	Median weekly average temperature in migration corridor	**> 17 C.**	15-16.9 C.	13-14.9 C.	10-12.9 C.	probably > 17C	Poor		Jan-06	
5	Adult	Size	Population size	Mean annual adult spawner abundance		TRT criteria for low extinction risk (by watershed)						Mar-03	
6	Multiple Life Stages	Landscape Context	Barriers/diversions	Stream crossings/stream mile	> two/mile			< two/mile	avg 0.79 crossings/mi	Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Channel flow and morphology	Percent of total watercourse length channelized	**> 25%**	16-25%	5-15%	< 5%	about 50% of main stem	Poor		Mar-07	
6	Multiple Life Stages	Landscape Context	Fire regime/vegetation maturity	Percent of watershed affected by high intensity fire within previous 100 yrs	> 25%	10-24%	5-9%	**< 5%**	1.2%	Very Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Floodplain connectivity	Floodplain connectivity	**< 50% of response reaches in watershed have inundation of historic floodplains by bankfull flows (connectivity)**	50-65% of response reaches in watershed demonstrate floodplain connectivity	66-80% of response reaches in watershed demonstrate floodplain connectivity	> 80% of response reaches in watershed demonstrate connectivity	probably < 50% connectivity	Poor		Mar-07	

Assessment of Target Viability

Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
6	Multiple Life Stages	Landscape Context	Historic vs Current Spawning Habitat	Fraction of historic spawning tributaries currently accessible to spawners	< 15% available	**16-50% available**	51-90% available	>90% available	probably 16-50% still accessible	Fair		Jan-06	
6	Multiple Life Stages	Landscape Context	Hydrology	Dry stream reaches	> 75% dry reaches	**26-75% dry reaches**	1-25% dry reaches	no dry reaches; perennial surface flows	probably mostly perennial flow	Fair		Jan-06	
6	Multiple Life Stages	Landscape Context	Hydrology	Hydrograph	**severely modified**			natural	groundwater extraction, diversions, dams	Poor		Jan-02	
6	Multiple Life Stages	Landscape Context	Land use	Distribution of public ownership along main stem of watercourse	< 25% of land bordering main stem of drainage is publicly owned	25-50%	51-75%	> 75%				Jun-07	
6	Multiple Life Stages	Landscape Context	Land use	Miles of road per square mile of watershed within 100 meters of watercourse	> 1 mi	**0.5-1.0 mi**	0.1-0.49 mi	< 0.1 mi	0.58 mi/sq mi.	Fair		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Miles of roads per square mile of watershed	> 3.0 mi	2.6-3.0 mi	**1.6-2.5 mi**	< 1.6 mi	2.5 mi/sq mi	Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in agricultural use	> 30%	20-29%	**10-19%**	< 10%	9% to 14%	Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in agriculture within 100 meters of watercourse	> 20%	11-20%	**5-10%**	< 5%	6%	Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in public ownership	**< 25 % public ownership**	25-50%	51-75%	> 75%	6.6%	Poor		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in urban/residential use	> 25%	10-25%	5-9%	**< 5%**	2.2% to 3.6%	Very Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Water quality	General index of toxicity based on severity of adverse effects on fish	Acute lethal effects (fish kill)	**Sublethal effects (reduced growth, altered behavior, etc.)**	Toxins detected but no sublethal effects	No toxins or contaminants detected	probably fair	Fair		Jan-06	
6	Multiple Life Stages	Landscape Context	Water quality	Percent total impervious surfaces as % of watershed area	>40%	21-40%	5-20%	**< 5%**	2.2%	Very Good		Jan-08	
6	Multiple Life Stages	Condition	Estuarine habitat quality	Current lagoon area as percentage of historic total area	< 25%	**26-50%**	51-75%	> 75%	50%	Fair		Jan-08	

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Conservation Target		Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for Desired Rating
6	Multiple Life Stages	Condition	Estuarine habitat quality	Depth, LWD, and other habitat elements (e.g. eelgrass)	depth < 1 meter; LWD and/or overhanging banks absent		depth > 1 meter; LWD and/or overhanging banks present					Jul-06	
6	Multiple Life Stages	Condition	Riparian corridor quality	Riparian canopy cover	< 25% cover	**25-49% cover**	50-75% cover	> 75% cover	degraded riparian corridor	Fair		Jan-06	
6	Multiple Life Stages	Condition	Riparian corridor quality	Riparian corridor species composition	< 25% native composition	25-50% native composition	50-75% native composition	> 75% native composition				Mar-03	

Stresses and Threats

Threats Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	7	8	
1	Dams and surface water diversions	Very High	Very High	Very High	Very High	Very High	Very High			Very High
2	Groundwater extraction	-	Very High	Very High	Very High	Very High	Very High			Very High
3	Channel and/or estuary maintenance, dredging, and vegetation control (incl. flood control activities)	Very High	Very High	Very High	-	High	Very High			Very High
4	Levees and channelization	Very High	Very High	Very High	-	-	Very High			Very High
5	Recreational facilities and activities (ORV use, campgrounds, etc.)	Very High	Very High	Very High	-	-	High			Very High
6	Urban development	Very High	Very High	Very High	-	-	High			Very High
7	Conversion of watershed lands to row crop agriculture	-	Very High	-	-	Very High	Very High			Very High
8	Non-native species present (incl. hatchery fish)	Very High	Very High	Very High	-	-	-			Very High
9	Non-point pollution from roads	Very High	Very High	-	-	-	High			Very High
10	Roads in watershed and/or within 300 feet of watercourses	-	Very High	-	-	-	Very High			Very High
11	Agricultural effluents	-	Very High	-	-	-	High			High
12	Culverts, crossings, and bridges	-	Very High	-	-	-	High			High
13	Livestock Farming & Ranching	Very High	High	-	-	-	-			High
14	Urban wastewater effluents (incl. industrial and commercial effluents)	-	-	-	-	-	Very High			High
15	Mining & Quarrying	-	-	-	-	-	High			Medium
16	Natural barriers					-	Medium			Low
Threat Status for Targets and Project		Very High	Very High	Very High	Very High	Very High	Very High	-	-	Very High

Overall Viability Summary
Pajaro River main stem, Santa Cruz County

	Threats Across Targets	Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
	Project-specific threats	1	2	3	4	5	6	7	8	
17	Invasive non-native plants						-			-
18	Invasive, non-native plants	-	-	-	-	-				-
19	Livestock Farming & Ranching	-	-	-	-	-	-			-
20	Log jams and other removable barriers									-
21	Natural barriers					-	-			-
22	Non-native species present (incl. hatchery fish)	-	-	-	-	-	-			-
23	Oil & Gas Drilling	-	-	-	-	-	-			-
24	Public ownership in watershed									-
25	Recreational facilities and activities (ORV use, campgrounds, etc.)	-	-	-	-	-	-			-
26	Wildland fires (incl. debris flows following fires)	-	-	-	-	-	-			-
27										-

Overall Viability Summary
Pajaro River main stem, Santa Cruz County

	Stresses (Altered Key Ecological Attributes) Across Targets	Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages		
		1	2	3	4	5	6	7	8
1	Altered hydrograph	-	-	-	-	-	Very High	-	-
2	Impaired floodplain connectivity	-	-	-	-	-	Very High	-	-
3	Altered base flows during incubation	Very High	-	-	-	-	-	-	-
4	Impaired water temperatures in migration corridor	-	-	-	-	Very High	-	-	-
5	Impaired water temperature in spawning areas	Very High	-	-	-	-	-	-	-
6	Impaired substrate quality (sedimentation and embeddedness)	Very High	-	-	-	-	-	-	-
7	Impaired access to ocean	-	-	-	Very High	-	-	-	-
8	Impaired instream habitat complexity/refugia	-	-	Very High	-	-	-	-	-
9	Altered sediment supply	-	Very High	-	-	-	-	-	-
10	Impaired habitat complexity/refugia	-	Very High	-	-	-	-	-	-
11	Impaired access to estuary	-	-	Very High	-	-	-	-	-
12	Impaired flows during rearing period	-	-	Very High	-	-	-	-	-
13	Impaired summer base flows	-	-	Very High	-	-	-	-	-
14	Impaired water temperature	-	-	Very High	-	-	-	-	-
15	Impaired food availability	-	-	Very High	-	-	-	-	-
16	Altered riparian habitat quality	-	-	-	-	-	High	-	-

Overall Viability Summary
Pajaro River main stem, Santa Cruz County

	Stresses (Altered Key Ecological Attributes) Across Targets	Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages		
		1	2	3	4	5	6	7	8
17	Impaired estuarine habitat quality	-	-	-	-	-	High	-	-
18	Impaired access to rearing and/or spawning habitat	-	-	-	-	-	High	-	-
19	Impaired access to spawning areas	-	-	-	-	High	-	-	-
20	Impaired estuarine inflows	-	-	Medium	-	-	-	-	-
21	Dispersal barriers between redds and rearing habitat	-	Medium	-	-	-	-	-	-
22	Altered land use from natural condition	-	-	-	-	-	Medium	-	-
23	Impaired water quality	-	-	-	-	-	Medium	-	-
24	Altered fire regime/recent fire in watershed	-	-	-	-	-	Low	-	-
25	Impaired riparian habitat quality	-	-	-	-	-	-	-	-
26	Non-native egg predators	-	-	-	-	-	-	-	-
27	Impaired access to stream from ocean (stream mouth closed)	-	-	-	-	-	-	-	-
28	Non-native predators	-	-	-	-	-	-	-	-
29	Low adult population size	-	-	-	-	-	-	-	-
30		-	-	-	-	-	-	-	-

Overall Viability Summary
Pajaro River main stem, Santa Cruz County

	Conservation Targets	Landscape Context		Condition		Size		Viability Rank
		Grade	Weight	Grade	Weight	Grade	Weight	
1	Egg	Poor	1	Poor	1	-	1	**Poor**
2	Fry	Poor	1	Poor	1	-	1	**Poor**
3	Juvenile	Poor	1	Poor	1	-	1	**Poor**
4	Smolt	Poor	1	-	1	-	1	**Poor**
5	Adult	Poor	1	-	1	-	1	**Poor**
6	Multiple Life Stages	Poor	1	Fair	1	-	1	**Fair**
7		-	1	-	1	-	1	**-**
8		-	1	-	1	-	1	**-**
Project Biodiversity Health Rank								**Poor**

Overall Viability Summary
Pajaro River main stem, Santa Cruz County

		Key Ecological Attributes				Indicators					
	Conservation Targets	Poor	Fair	Good	Very Good	Poor	Fair	Good	Very Good	Calculated Rank	User Override
1	**Egg**									**Poor**	
	Landscape Context	2				2				Poor	
	Condition	1				2				Poor	
	Size									-	
2	**Fry**									**Poor**	
	Landscape Context	2				2				Poor	
	Condition	1				1				Poor	
	Size									-	
3	**Juvenile**									**Poor**	
	Landscape Context	4				4				Poor	
	Condition	2		1		2		1		Poor	
	Size									-	
4	**Smolt**									**Poor**	
	Landscape Context	2				2				Poor	
	Condition									-	
	Size									-	
5	**Adult**									**Poor**	
	Landscape Context	1	1			1	1			Poor	
	Condition									-	
	Size									-	
6	**Multiple Life Stages**									**Fair**	
	Landscape Context	2	2	3	1	4	4	4	3	Poor	
	Condition		2				2			Fair	
	Size									-	
7										**-**	
	Landscape Context									-	
	Condition									-	
	Size									-	
8										**-**	
	Landscape Context									-	
	Condition									-	
	Size									-	