

**Bixby Creek, Monterey County
CAP Workbook Threats Assessment Summary Tables
2008**

Assessment of Target Viability
Bixby Creek, Monterey County

Double-click opens entry form

				Indicator Ratings									
				Current				Italics =					
				Desired				Desired					
				Poor	Fair	Good	Very Good	Current	Current	Desired	Date of	Date for	
								Indicator	Rating	Rating	Current	Desired	
								Status			Rating	Rating	
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	good instream flows	Very Good		Jan-08		
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.				Oct-05		
1 Egg	Condition	Substrate quality	Avg. percent fines (<0.85mm) in potential spawning areas	> 17% fines	11-17% fines	5-10 % fines	< 5% fines	some sedimentation	Fair		Apr-07		
1 Egg	Condition	Substrate quality	Embeddedness	> 75% embedded	50-75% embedded	25-49% embedded	< 25% embedded				Apr-07		
2 Fry	Landscape Context	Dispersal	Barriers between redds and rearing habitat	complete barrier	partial barriers common	partial barriers scarce	no barriers				Jul-06		
2 Fry	Landscape Context	Non-native species	Non-native fry predators	present throughout watershed	present > 50% of 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	some sedimentation from roads	Fair		Apr-07		
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	good habitat quality	Good		Apr-07		
3 Juvenile	Landscape Context	Dispersal	Barriers between rearing habitat and estuary	present			absent	probably no barriers	Very Good		Jan-08		
3 Juvenile	Landscape Context	Flow during rearing period	Pool habitat > 3 feet in depth	pools scarce or absent	low abundance of pools	high abundance of pools	high abundance of pools with multiple "refuge" pools (> 5 ft deep)	pools probably common	Good		Apr-07		
3 Juvenile	Landscape Context	Non-native species	Non-native juvenile predators	present throughout watershed	present > 50% of watershed	present < 50% of watershed	absent				Aug-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
3	Juvenile	Landscape Context	Summer flow	Percent of unimpaired median summer baseflow (based on long-term mean monthly discharge)	< 70% s	70-90%	> 90%	100% over all IP-km	perennial stream	Very Good		Apr-07	
3	Juvenile	Landscape Context	Water temperature	Median weekly average temperature (MWAT) in potential rearing habitat	> 21 C.	18-21 C.	< 18 C.	< 17 C.				Oct-05	
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%				Apr-07	
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				Mar-07	
3	Juvenile	Condition	Habitat complexity/refugia	Instream refugia	absent			present (boulders, overhanging banks, etc.)	perennial stream	Very Good		Apr-07	
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				Jul-06	
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				Apr-07	
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 little diversion of water	Very Good		Apr-07	
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				Jul-06	

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
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	very good accessibility	Very Good		Jan-08	
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				Jul-06	
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%	natural	Very Good		Jan-08	
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.				Oct-05	
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 1.15 crossings/mile	Fair		Jan-08	
6	Multiple Life Stages	Landscape Context	Channel flow and morphology	Percent of total watercourse length channelized	> 25%	16-25%	5-15%	< 5%	< 5%	Very Good		Jan-08	
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%	8%	Good		Jan-08	

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	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	> 80%	Very Good		Jan-08	
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	very good spawning habitat and accessibility	Very Good		Jan-08	
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 natural	perennial flows	Very Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Hydrology	Hydrograph	severely modified				probably mostly natural	Very Good		Jan-08	
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%	27% federal ownership	Fair		Jan-08	
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	avg 0.62 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	avg 2.34 mi/sq mile	Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Land use	Percent of watershed area in agricultural use	> 30%	20-29%	10-19%	< 10%	0%	Very 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%	0%	Very 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%	27% federal ownership	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	Landscape Context	Land use	Percent of watershed area in urban/residential use	> 25%	10-25%	5-9%	< 5%	no urban development	Very Good		Mar-03	
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 very low	Very Good		Jan-08	
6	Multiple Life Stages	Landscape Context	Water quality	Percent total impervious surfaces as % of watershed area	>40%	21-40%	5-20%	< 5%	0%	Very Good		Mar-07	
6	Multiple Life Stages	Condition	Estuarine habitat quality	Current lagoon area as percentage of historic total area	< 25%	26-50%	51-75%	> 75%	100%	Very Good		Jan-08	
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		natural	Very Good		Jan-08	
6	Multiple Life Stages	Condition	Riparian corridor quality	Riparian canopy cover	< 25% cover	25-49% cover	50-75% cover	> 75% cover	probably close to natural condition	Very Good		Mar-07	
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	

Summary of Threats

Click the page-down icon ▼ to the right to view more summary tables.

Bixby Creek, Monterey County

Threats Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
		1	2	3	4	5	6	7	8	
1	Culverts, crossings, and bridges	Medium	Medium	-	-	-	Low			Medium
2	Non-point pollution from roads	Medium	Medium	-	-	-	Low			Medium
3	Roads in watershed and/or within 300 feet of watercourses	Medium	Medium	-	-	-	Low			Medium
4	Agricultural effluents	-	-	-	-	-	-			-
5	Artificial lagoon breaching	-	-	-	-	-	-			-
6	Channel and/or estuary maintenance, dredging, and vegetation control (incl. flood control activities)	-	-	-	-	-	-			-
7	Conversion of watershed lands to row crop agriculture	-	-	-	-	-	-			-
8	Dams and surface water diversions	-	-	-	-	-	-			-
9	Gas, water, and/or other utility pipelines	-	-	-	-	-	-			-
10	Groundwater extraction	-	-	-	-	-	-			-
11	Illegal collecting, poaching, and/or unauthorized angling	-	-	-	-	-	-			-
12	Invasive non-native plants						-			-
13	Levees and channelization	-	-	-	-	-	-			-
14	Livestock Farming & Ranching	-	-	-	-	-	-			-
15	Log jams and other removable barriers									-
16	Logging	-	-	-			-			-
Threat Status for Targets and Project		Medium	Medium	-	-	-	Low	-	-	Medium

Summary of Threats

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Bixby Creek, Monterey County

Threats Across Targets		Egg	Fry	Juvenile	Smolt	Adult	Multiple Life Stages			Overall Threat Rank
		1	2	3	4	5	6	7	8	
Project-specific threats		1	2	3	4	5	6	7	8	
17	Mining & Quarrying	-	-	-	-	-	-			-
18	Natural barriers					-	-			-
19	Non-native species present (incl. hatchery fish)	-	-	-	-	-	-			-
20	Oil & Gas Drilling	-	-	-	-	-	-			-
21	Public ownership in watershed									-
22	Recreational facilities and activities (ORV use, campgrounds, etc.)	-	-	-	-	-	-			-
23	Urban development	-	-	-	-	-	-			-
24	Urban wastewater effluents (incl. industrial and commercial effluents)	-	-	-	-	-	-			-
25	Wildland fires (incl. debris flows following fires)	-	-	-	-	-	-			-
26										-
27										-
28										-
29										-
30										-
31										-
32										-
Threat Status for Targets and Project		Medium	Medium	-	-	-	Low	-	-	Medium

Stress Matrix

Bixby Creek, Monterey 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 sediment supply	-	High	-	-	-	-	-	-
2	Impaired substrate quality (sedimentation and embeddedness)	High	-	-	-	-	-	-	-
3	Altered land use from natural condition	-	-	-	-	-	Medium	-	-
4	Altered fire regime/recent fire in watershed	-	-	-	-	-	Medium	-	-
5	Impaired habitat complexity/refugia	-	Medium	-	-	-	-	-	-
6	Altered riparian habitat quality	-	-	-	-	-	Low	-	-
7	Impaired estuarine habitat quality	-	-	-	-	-	Low	-	-
8	Altered hydrograph	-	-	-	-	-	Low	-	-
9	Impaired water quality	-	-	-	-	-	Low	-	-
10	Altered base flows during incubation	Low	-	-	-	-	-	-	-
11	Impaired access to estuary	-	-	Low	-	-	-	-	-
12	Impaired flows during rearing period	-	-	Low	-	-	-	-	-
13	Impaired summer base flows	-	-	Low	-	-	-	-	-
14	Impaired floodplain connectivity	-	-	-	-	-	Low	-	-
15	Impaired access to rearing and/or spawning habitat	-	-	-	-	-	Low	-	-
16	Impaired access to spawning areas	-	-	-	-	Low	-	-	-

Stress Matrix

Bixby Creek, Monterey 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 instream habitat complexity/refugia	-	-	Low	-	-	-	-	-
18	Impaired access to ocean	-	-	-	Low	-	-	-	-
19	Impaired riparian habitat quality	-	-	-	-	-	-	-	-
20	Impaired access to stream from ocean (stream mouth closed)	-	-	-	-	-	-	-	-
21	Impaired water temperatures in migration corridor	-	-	-	-	-	-	-	-
22	Low adult population size	-	-	-	-	-	-	-	-
23	Impaired food availability	-	-	-	-	-	-	-	-
24	Impaired estuarine inflows	-	-	-	-	-	-	-	-
25	Impaired water temperature in spawning areas	-	-	-	-	-	-	-	-
26	Impaired water temperature	-	-	-	-	-	-	-	-
27	Non-native egg predators	-	-	-	-	-	-	-	-
28	Non-native predators	-	-	-	-	-	-	-	-
29	Dispersal barriers between redds and rearing habitat	-	-	-	-	-	-	-	-
30		-	-	-	-	-	-	-	-
31		-	-	-	-	-	-	-	-
32		-	-	-	-	-	-	-	-

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

Detailed Viability Summary
Bixby Creek, Monterey County

Conservation Targets		Key Ecological Attributes				Indicators				Calculated Rank	User Override
		Poor	Fair	Good	Very Good	Poor	Fair	Good	Very Good		
1	Egg									Good	
	Landscape Context				1				1	Very Good	
	Condition		1				1			Fair	
	Size									-	
2	Fry									Good	
	Landscape Context		1				1			Fair	
	Condition			1				1		Good	
	Size									-	
3	Juvenile									Very Good	
	Landscape Context			1	2			1	2	Very Good	
	Condition				1				1	Very Good	
	Size									-	
4	Smolt									Very Good	
	Landscape Context				1				1	Very Good	
	Condition									-	
	Size									-	
5	Adult									Very Good	
	Landscape Context				2				2	Very Good	
	Condition									-	
	Size									-	
6	Multiple Life Stages									Good	
	Landscape Context		1	2	5		4	2	10	Fair	
	Condition				2				3	Very Good	
	Size									-	
7										-	
	Landscape Context									-	
	Condition									-	
	Size									-	
8										-	
	Landscape Context									-	
	Condition									-	
	Size									-	