Carmel River, Monterey County
CAP Workbook Threats Assessment Summary Tables
2008

Assessment of Target Viability

Carmel River, Monterey County

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	flows appear sufficient for egg stage	Good		Apr-07	
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	significant bank erosion	Poor		Apr-07	
1	Egg	Condition	Substrate quality	Embeddedness	**> 75% embedded**	50-75% embedded	25-49% embedded	< 25% embedded	significant sediment loads	Poor		Apr-07	
2	Fry	Landscape Context	Dispersal	Barriers between redds and rearing habitat	complete barrier	partial barriers common	**partial barriers scarse**	no barriers	flows appear sufficient	Good		Apr-07	
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 developme nt period**	20-30 days	10-19 days	< 10 days	significant sediment loads	Poor		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				Apr-07	
3	Juvenile	Landscape Context	Dispersal	Barriers between rearing habitat and estuary	**present**			absent	low flows	Poor		Apr-07	
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)	significant water diverions	Fair		Apr-07	
3	Juvenile	Landscape Context	Non-native species	Non-native juvenile predators	present throughout watershed	present > 50% watershed	present < 50% watershed	absent				Aug-07	

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	water diversions	Poor		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%	significant water diversions	Poor		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.)				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				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	significant water diversions	Poor		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%	significant water diversion	Poor		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	artificial breaching is necessary	Fair		Apr-07	

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	3 dams in watershed	Poor		Apr-07	
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	artificial breaching required	Fair		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%	significant water diversions	Fair		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.				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 0.71 crossings/mile	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%	significant encroachment in lower main stem	Fair		Jul-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%	10%	Good		Jan-08	

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	significant encroachment in lower main stem	Fair		Mar-07	
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	3 dams and dry reaches due to diversion wells	Poor		Apr-07	
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	significant water diversions	Poor		Apr-07	
6	Multiple Life Stages	Landscape Context	Hydrology	Hydrograph	**severely modified**			natural	significant water diversions	Poor		Apr-07	
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	0.66 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	1.93 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%**	0.2%	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%**	0.3%	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%	probably < 50% public ownership	Fair		Jan-08	

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%**	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**		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%**	0.6%	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%	67%; significant urban encroachment	Good		Mar-07	
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**	84%	Very Good		Jan-08	
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	

Overall Viability Summary
Carmel River, Monterey County

Summary of Threats

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

Carmel River, Monterey 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	
1	Dams and surface water diversions	Medium	Medium	Very High	Very High	Very High	Very High			Very High
2	Groundwater extraction	Medium	Medium	Very High	Very High	Very High	Very High			Very High
3	Urban development	Very High	Very High	-	-	-	Very High			Very High
4	Levees and channelization	Very High	Very High	-	-	-	High			Very High
5	Natural barriers					-	Very High			High
6	Recreational facilities and activities (ORV use, campgrounds, etc.)	-	-	-	-	-	Medium			Low
7	Roads in watershed and/or within 300 feet of watercourses	-	-	-	-	-	Medium			Low
8	Wildland fires (incl. debris flows following fires)	-	-	-	-	-	Low			Low
9	Agricultural effluents	-	-	-	-	-	-			-
10	Artificial lagoon breaching	-	-	-	-	-	-			-
11	Channel and/or estuary maintenance, dredging, and vegetation control (incl. flood control activities)	-	-	-	-	-	-			-
12	Conversion of watershed lands to row crop agriculture	-	-	-	-	-	-			-
13	Culverts, crossings, and bridges	-	-	-	-	-	-			-
14	Gas, water, and/or other utility pipelines	-	-	-	-	-	-			-
15	Illegal collecting, poaching, and/or unauthorized angling	-	-	-	-	-	-			-
16	Invasive non-native plants						-			-
Threat Status for Targets and Project		Very High	Very High	Very High	Very High	Very High	Very High	-	-	Very High

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	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	Livestock Farming & Ranching	-	-	-	-	-	-			-
19	Log jams and other removable barriers									-
20	Logging	-	-	-			-			-
21	Mining & Quarrying	-	-	-	-	-	-			-
22	Non-native species present (incl. hatchery fish)	-	-	-	-	-	-			-
23	Non-point pollution from roads	-	-	-	-	-	-			-
24	Oil & Gas Drilling	-	-	-	-	-	-			-
25	Public ownership in watershed									-
26	Urban wastewater effluents (incl. industrial and commercial effluents)	-	-	-	-	-	-			-
27										-
28										-
29										-
30										-
31										-
32										-
Threat Status for Targets and Project		Very High	Very High	Very High	Very High	Very High	Very High	-	-	Very High

Overall Viability Summary
Carmel River, 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 hydrograph	-	-	-	-	-	Very High	-	-
2	Impaired access to rearing and/or spawning habitat	-	-	-	-	-	Very High	-	-
3	Impaired access to spawning areas	-	-	-	-	Very High	-	-	-
4	Impaired access to ocean	-	-	-	Very High	-	-	-	-
5	Impaired estuarine inflows	-	-	Very High	-	-	-	-	-
6	Impaired substrate quality (sedimentation and embeddedness)	Very High	-	-	-	-	-	-	-
7	Impaired summer base flows	-	-	Very High	-	-	-	-	-
8	Impaired flows during rearing period	-	-	Very High	-	-	-	-	-
9	Altered sediment supply	-	Very High	-	-	-	-	-	-
10	Impaired access to estuary	-	-	Very High	-	-	-	-	-
11	Impaired floodplain connectivity	-	-	-	-	-	High	-	-
12	Impaired access to stream from ocean (stream mouth closed)	-	-	-	-	High	-	-	-
13	Impaired estuarine habitat quality	-	-	-	-	-	Medium	-	-
14	Altered land use from natural condition	-	-	-	-	-	Medium	-	-
15	Dispersal barriers between redds and rearing habitat	-	Medium	-	-	-	-	-	-
16	Altered fire regime/recent fire in watershed	-	-	-	-	-	Medium	-	-

Overall Viability Summary
Carmel River, 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	Altered base flows during incubation	Medium	-	-	-	-	-	-	-
18	Altered riparian habitat quality	-	-	-	-	-	Low	-	-
19	Impaired water quality	-	-	-	-	-	Low	-	-
20	Impaired riparian habitat quality	-	-	-	-	-	-	-	-
21	Impaired water temperatures in migration corridor	-	-	-	-	-	-	-	-
22	Low adult population size	-	-	-	-	-	-	-	-
23	Impaired water temperature in spawning areas	-	-	-	-	-	-	-	-
24	Impaired habitat complexity/refugia	-	-	-	-	-	-	-	-
25	Impaired instream habitat complexity/refugia	-	-	-	-	-	-	-	-
26	Non-native egg predators	-	-	-	-	-	-	-	-
27	Impaired food availability	-	-	-	-	-	-	-	-
28	Impaired water temperature	-	-	-	-	-	-	-	-
29	Non-native predators	-	-	-	-	-	-	-	-
30		-	-	-	-	-	-	-	-
31		-	-	-	-	-	-	-	-
32		-	-	-	-	-	-	-	-

Overall Viability Summary
Carmel River, Monterey County

Overall Viability Summary

Carmel River, Monterey County

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

Overall Viability Summary
Carmel River, Monterey County

Detailed Viability Summary
Carmel River, Monterey County

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