



Camp Pendleton Tidewater Goby Monitoring Project Interim Report



Prepared for:

U.S.M.C. Camp Pendleton

**U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY**

WESTERN ECOLOGICAL RESEARCH CENTER

Camp Pendleton Tidewater Goby Monitoring Project Interim Report

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U.S. GEOLOGICAL SURVEY
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Prepared for:

U.S.M.C. Camp Pendleton

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Introduction:

USGS Biological Resources Division, under contract from U.S. Marine Corps Camp Pendleton (USMCCP) has been monitoring the population of Federally Endangered Tidewater Gobies (*Eucyclogobius newberryi*) on Base property for approximately one year. During this time we have developed and implemented a protocol to survey for and monitor gobies at 8 locations, as well as carry out two rounds of sampling.

Our initial sample effort took place as part of the effort to develop a protocol that suited the unique life history of this animal and therefore differed slightly from the second round of sampling. However, effort and technique were similar enough for data to be comparable, and data for both sampling efforts will be presented below.

Methods:

We employed the methods developed during a 2002 workshop with 4 recognized experts on the Tidewater Goby. These experts were Camm Swift, Kevin Lafferty, David Jacobs and Carl Page. These methods are included as an appendix to this document. There were two alterations to the most recent survey that differ from what is described in the methods. The first is the time period. Our survey methods call for the first seasonal sampling period to take place in August/September. Because of concerns regarding the reaction of Tidewater Gobies to recent rains, U.S. Fish and Wildlife Service requested that the first sample period for the 2003 season be moved to April. Our first survey took place June 24th to June 26th of 2002, and the second survey took place April 7th to April 9th of 2003.

The second alteration was a change in effort for French Creek Lagoon. Only ten hauls were taken at French Creek because, although there was water, the lagoon had never opened to the ocean. With no opportunities for colonization, we felt that 10 hauls with no fish was more than adequate to show that gobies were functionally absent from this location.

Results:

Date/Year	San Mateo	San Onofre	Las Flores	Hidden	Aliso	French	Cockleburr	Santa Margarita
Jun-02	Detected	Detected	Detected	Detected	Detected	Not Detected	Detected	Not Detected
Apr-03	Detected	Detected	Detected	Detected	Detected	Not Detected	Detected	Not Detected
Oct-03	Detected	Detected	Detected	Detected	Detected	Not Detected	Detected	Not Detected

Discussion:

Gobies caught during the April 2003 season were all large adults in low densities, which is in line with what is known about the Tidewater gobies life history. Sampling later in the year, we would expect large numbers of young of the year gobies. After returning to French creek and the Santa Margarita river estuary in October, we confirmed that these were the only two locations where Tidewater gobies were not detected.

Appendix I

Camp Pendleton Tidewater Goby Sampling Protocol

Sampling protocol

The goal of the sampling is to determine the presence or absence of tidewater gobies at each site while minimizing effort and impact to the system.

Sampling period 1: August/September

Sampling period 2: October/November

Personnel

Sampling will typically require two persons. One monitor will possess required collecting permits for tidewater gobies and experience in identifying fishes.

Recommended Equipment

GPS, field notebook, digital camera, paper maps, refractometer, meter stick, fish guide, long handled dipnet, 3 m seine (~1/8 " mesh), 5 m seine (~1/8 " mesh), goby viewing device (e.g., small jar).

Pre-sampling checklist

Inform base contact of sampling dates in advance (base contact may accompany monitor). The driver will request vehicle pass. A four-wheel drive is recommended but not required. Check out VHF radio if recommended by the base contact. Be familiar with base regulations and access routes.

Sampling protocol

On arrival at a site, take one or more overview photos from a high vantage (the location(s) should be consistent from year to year). Note the % cover of aquatic vegetation and presence or absence of common plants. Note whether the site has standing water. Note any unusual characteristics of the environment. Take a salinity measurement with the refractometer.

If the site has sufficient water to support fishes, begin sampling with the dipnet if and where appropriate. Record the presence of each fish and invertebrate species captured or observed that can be identified. Make up to 20 sequential passes with the 3 m seine throughout the habitat. In the Santa Margarita River, if tidewater gobies are not found after 10 passes with the 3 m seine, make 10 passes with the 5 m seine. If tidewater gobies are not found after sampling, note absence of tidewater gobies during this time period. In sampling period 2, return to the sites where tidewater gobies were not found in sampling period 1. There is no need to revisit sites in sampling period 2 where gobies are present during sampling period 1 unless the monitor identifies a possible threat to tidewater gobies that could lead to extirpation between the two sampling periods.

If small gobies are found, place in viewing device and confirm the identification of tidewater goby (or other goby) by looking for clear tip of the first dorsal fin. Record GPS position where gobies were sampled AND the sampling effort expended to find them. Release gobies promptly at site of capture and discontinue sampling (vouching new records or collections for other scientific purposes are appropriate in accordance with the monitor's collecting permit).

Note: Sampling effort is provided as a rule of thumb. Due to the variability in the size of the systems sampled, the monitor is to use discretion in increasing or decreasing the sampling effort in a manner that seems appropriate.

Reporting. A presence absence list for the sites will be provided within one month of the second sampling period in the form of an email to the base contact. Photos, raw data and summary data will be provided before the end of the calendar year on a CD or other acceptable media.

Appendix II

2003 Raw Data

Note regarding raw data: Blank data fields listed in the raw data section of the interim report are not actual missing data but formatting issues associated with data queries of the Forms database. Raw data included in future reports will have fields not directly associated with the Camp Pendleton Tidewater goby monitoring project edited out.

TideWater Goby Sampling CPEND RAW DATA

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6 Project: P-097

Site

Site Name: Hidden Creek

Start Lat:	33.27542	EndLat:	Drainage:	Hidden
Site	Yes;Digital			
Start Long:	117.45200	EndLong:	County	
Start EPE, m:	7.6	End EPEM, m:	Land Owner:	USMCCP
Start Elevation,	8.3	End Elevation, m:	Position	

Site Note: Debris from recent rains

Water

Start Water Temp,	18.5	Transparency	Cover		
Time:	10:13 AM				
End Water Temp,		Vegetation:	Habitat		
Water Depth Av Max:					
Water Current:		Bottom:	Stream		
Water Depth Max,		Shore:	Capture		
		Capture Method:			
pH:	7.8	DOSat:	Conduct1	Salinity:	37
		DOMgL:	6.4	Conduct2	TDSolids:

Water

Haul #: 1

Site Length, m:	7	Site Width, m:	2	Site Depth, m:		Area, m2:	14	Haul Total
Area, m2:	14							
Haul Start	9:42 AM	Haul End Time:						

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	9:47 AM	1			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6 Project P-097

Site

Site Name: Las Flores Lagoon SiteID: MW-
Start Lat: 33.29058 EndLat: Drainage:
Site
Start Long: 117.46517 EndLong: County
Start EPE, mr: 4.3 End EPEM, m: Land Owner:
Start Elevation, 4.2 End Elevation, m: Position
Site

Water

Start Water Temp, 19.2 Transparency Cover
Time: 10:15 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 9.7 DOSat: Conduct1 Salinity: 8.1
DOMgL: 7.6 Conduct2 TDSolids:

Water

Haul #: 1

Site Length, m: 18 Site Width, m: 4 Site Depth, m: Area, m2: 72 Haul Total
Area, m2: 72
Haul Start 10:15 AM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	10:18	1			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Aliso Creek Lagoon SiteID: MW-
Start Lat: 33.26473 EndLat: Drainage:
Site
Start Long: 117.44229 EndLong: County
Start EPE, mr: End EPEM, m: Land Owner:
Start Elevation, End Elevation, m: Position
Site

Water

Start Water Temp, 21.4 Transparency Cover
Time: 10:32 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 9 DOSat: 7.4 Conduct1 Salinity: 21.4
DOMgL: Conduct2 TDSolids:
Water 34.2microsiemens

Haul #: 1

Site Length, m: 13 Site Width, m: 4 Site Depth, m: Area, m2: 52 Haul Total
Area, m2: 52
Haul Start 10:34 AM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	10:35	1			
FUPA	California Killifish	10:35	2			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: French Creek Lagoon SiteID: MW-
Start Lat: 33.26197 EndLat: Drainage:
Site
Start Long: 117.44100 EndLong: County
Start EPE, m: 5.3 End EPEM, m: Land Owner:
Start Elevation, -1.4 End Elevation, m: Position
Site

Water

Start Water Temp, 18.4 Transparency Cover
Time: 10:50 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 9.7 DOSat: Conduct1 Salinity: 2.5
DOMgL: 7.4 Conduct2 TDSolids:

Water 4.8

Haul #: 1

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 7.5
Haul Start Haul End Time:
Haul

Haul #: 2

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 30
Haul Start Haul End Time:
Haul

Haul #: 3

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 45
Haul Start Haul End Time:
Haul

Haul #: 4

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 75
Haul Start Haul End Time:
Haul

Haul #: 5

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 60
Haul Start Haul End Time: Haul
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TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: French Creek Lagoon SiteID: MW-
Start Lat: 33.26197 EndLat: Drainage:
Site
Start Long: 117.44100 EndLong: County
Start EPE, m: 5.3 End EPEM, m: Land Owner:
Start Elevation, -1.4 End Elevation, m: Position

Site

Water

Start Water Temp, 18.4 Transparency Cover
Time: 10:50 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 9.7 DOSat: Conduct1 Salinity: 2.5
DOMgL: 7.4 Conduct2 TDSolids:

Water 4.8

Haul #: 6

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 67.5
Haul Start Haul End Time:
Haul

Haul #: 7

Site Length, m: Site Width, m: Site Depth, m: Area, m2: Haul Total
Area, m2: 67.5
Haul Start Haul End Time:
Haul

Haul #: 8

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 75
Haul Start Haul End Time:
Haul

Haul #: 9

Site Length, m: 5 Site Width, m: 1.5 Site Depth, m: Area, m2: 7.5 Haul Total
Area, m2: 82.5
Haul Start Haul End Time:
Haul

Haul #: 10

Site Length, m: 35 Site Width, m: 1.5 Site Depth, m: Area, m2: 52.5 Haul Total
Area, m2: 240
Haul Start 10:56 AM Haul End Time: Haul Page

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Cockleburr SiteID: MW-
Start Lat: 33.25043 EndLat: Drainage:
Site
Start Long: 117.43198 EndLong: County
Start EPE, m: 5.3 End EPEM, m: Land Owner:
Start Elevation, 6.6 End Elevation, m: Position
Site

Water

Start Water Temp, 16.7 Transparency Cover
Time: 11:12 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 9.1 DOSat: Conduct1 Salinity: 3.1
DOMgL: Conduct2 TDSolids:

Water 5.8

Haul #: 1

Site Length, m: 35 Site Width, m: 1.5 Site Depth, m: Area, m2: 52.5 Haul Total
Area, m2: 52.5
Haul Start 11:05 AM Haul End Time:

Haul

Haul #: 2

Site Length, m: 35 Site Width, m: 1.5 Site Depth, m: Area, m2: 52.5 Haul Total
Area, m2: 105
Haul Start 11:05 AM Haul End Time:

Haul

Haul #: 3

Site Length, m: 20 Site Width, m: 1.5 Site Depth, m: Area, m2: 30 Haul Total
Area, m2: 155
Haul Start Haul End Time:

Haul

Haul #: 4

Site Length, m: 35 Site Width, m: 1.5 Site Depth, m: Area, m2: 52.5 Haul Total
Area, m2: 522.5
Haul Start Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
LEAR	Staghorn Sculpin	11:09		1		

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Cockleburr	SiteID: MW-
Start Lat: 33.25043	EndLat: Drainage:
Site	
Start Long: 117.43198	EndLong: County
Start EPE, mr: 5.3	End EPEM, m: Land Owner:
Start Elevation, 6.6	End Elevation, m: Position
Site	

Water

Start Water Temp, 16.7	Transparency	Cover
Time: 11:12 AM		
End Water Temp,	Vegetation:	Habitat
Water Depth Av Max:		
Water Current:	Bottom:	Stream
Water Depth Max,		
	Shore:	Capture
	Capture Method:	
pH: 9.1	DOSat: Conduct1	Salinity: 3.1
	DOMg/L: Conduct2	TDSolids:

Water 5.8

Haul #: 5

Site Length, m: 5	Site Width, m: 1.5	Site Depth, m:	Area, m2: 7.5	Haul Total
Area, m2: 530				
Haul Start 11:14 AM	Haul End Time:			

Haul

Haul #: 6

Site Length, m: 8	Site Width, m: 4	Site Depth, m:	Area, m2: 32	Haul Total
Area, m2: 658				
Haul Start 11:27 AM	Haul End Time:			

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	11:25	1			
FUPA	California Killifish	11:26	15			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, mr: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position
Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMg/L: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 1

Site Length, m: 25 Site Width, m: 5 Site Depth, m: Area, m2: 125 Haul Total
Area, m2: 125
Haul Start 1:51 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
LEAR	Staghorn Sculpin	1:49 PM	1			

Haul #: 2

Site Length, m: 30 Site Width, m: 3 Site Depth, m: Area, m2: 90 Haul Total
Area, m2: 305
Haul Start 1:59 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
ATAF	Topsmelt	2:00 PM	43			
CLIO	Arrow Goby	2:00 PM	20			
FUPA	California Killifish	2:03 PM	1			
HYGU	Diamond Turbot	2:04 PM		1		

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, m: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position
Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMg/L: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 3

Site Length, m: 3 Site Width, m: 3 Site Depth, m: Area, m2: 9 Haul Total
Area, m2: 323
Haul Start 2:05 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
CLIO	Arrow Goby	2:11 PM	200			
HYGU	Diamond Turbot	2:12 PM		2		
ATAF	Topsmelt	2:13 PM		10		

Haul #: 4

Site Length, m: 4 Site Width, m: 5 Site Depth, m: Area, m2: 20 Haul Total
Area, m2: 363
Haul Start Haul End Time:

Haul

Haul #: 5

Site Length, m: 4 Site Width, m: 5 Site Depth, m: Area, m2: 20 Haul Total
Area, m2: 403
Haul Start 2:47 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
CLIO	Arrow Goby	2:47 PM	10			
FUPA	California Killifish	2:48 PM	15			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
 Start Lat: 33.23058 EndLat: 33.23833 Drainage:
 Site
 Start Long: 117.41448 EndLong: 117.39372 County
 Start EPE, m: 4.4 End EPEM, m: 7.6 Land Owner:
 Start Elevation, 12.5 End Elevation, m: 11.7 Position
 Site

Water

Start Water Temp, 23.3 Transparency Cover
 Time: 12:24 PM
 End Water Temp, Vegetation: Habitat
 Water Depth Av Max:
 Water Current: Bottom: Stream
 Water Depth Max, Shore: Capture
 Capture Method:
 pH: 8.3 DOSat: Conduct1 Salinity: 4.9
 DOMgL: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 6

Site Length, m: 5 Site Width, m: 4 Site Depth, m: Area, m2: 20 Haul Total
 Area, m2: 443
 Haul Start 2:49 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
CLIO	Arrow Goby	2:50 PM		8		
FUPA	California Killifish	2:51 PM	16			

Haul #: 7

Site Length, m: 5 Site Width, m: 4 Site Depth, m: Area, m2: 20 Haul Total
 Area, m2: 483
 Haul Start 2:52 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
CLIO	Arrow Goby	2:55 PM	50			
LEAR	Staghorn Sculpin	2:56 PM		3		
FUPA	California Killifish	2:57 PM				
ATAF	Topsmelt	2:57 PM		1		

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, m: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position

Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMg/L: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 6

Site Length, m: 4 Site Width, m: 4 Site Depth, m: Area, m2: 16 Haul Total
Area, m2: 212
Haul Start 1:49 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	1:59 PM	200			
GAAF	Mosquitofish	1:59 PM	3			

Haul #: 7

Site Length, m: 10 Site Width, m: 2 Site Depth, m: Area, m2: 20 Haul Total
Area, m2: 252
Haul Start 2:00 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:03 PM	250			
GAAF	Mosquitofish	2:04 PM	2			

Haul #: 8

Site Length, m: 3 Site Width, m: 3 Site Depth, m: Area, m2: 9 Haul Total
Area, m2: 261
Haul Start 2:05 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
MUCE	Striped Mullet	2:05 PM				Mullet seen, but not caught in
netsFUPA	California Killifish	2:07 PM				100

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, mr: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position

Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMgL: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 11

Site Length, m: 4 Site Width, m: 4 Site Depth, m: Area, m2: 16 Haul Total
Area, m2: 293
Haul Start 2:11 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
LEAR	Staghorn Sculpin	2:12 PM		3		

Haul #: 12

Site Length, m: 4 Site Width, m: 2 Site Depth, m: Area, m2: 8 Haul Total
Area, m2: 317
Haul Start 2:14 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:14 PM	200			

Haul #: 13

Site Length, m: 3 Site Width, m: 3 Site Depth, m: Area, m2: 9 Haul Total
Area, m2: 326
Haul Start 2:17 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:17 PM	60			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, m: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position

Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMgL: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 14

Site Length, m: 4 Site Width, m: 2 Site Depth, m: Area, m2: 8 Haul Total
Area, m2: 342
Haul Start 2:18 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:20 PM	35			

Haul #: 15

Site Length, m: 6 Site Width, m: 3 Site Depth, m: Area, m2: 18 Haul Total
Area, m2: 378
Haul Start 2:34 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:35 PM	5			

Haul #: 16

Site Length, m: 5 Site Width, m: 4 Site Depth, m: Area, m2: 20 Haul Total
Area, m2: 418
Haul Start 2:35 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:38 PM	180			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, m: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position

Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMgL: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 17

Site Length, m: 4 Site Width, m: 2 Site Depth, m: Area, m2: 8 Haul Total
Area, m2: 434
Haul Start 2:41 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:41 PM	50			
LEAR	Staghorn Sculpin	2:42 PM		2		

Haul #: 18

Site Length, m: 3 Site Width, m: 2 Site Depth, m: Area, m2: 6 Haul Total
Area, m2: 446
Haul Start 2:42 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
LEAR	Staghorn Sculpin	2:44 PM		1		
FUPA	California Killifish	2:45 PM	50			

Haul #: 19

Site Length, m: 5 Site Width, m: 4 Site Depth, m: Area, m2: 20 Haul Total
Area, m2: 486
Haul Start 2:46 PM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
FUPA	California Killifish	2:48 PM	175			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: Santa Margarita River SiteID: MW-
Start Lat: 33.23058 EndLat: 33.23833 Drainage:
Site
Start Long: 117.41448 EndLong: 117.39372 County
Start EPE, mr: 4.4 End EPEM, m: 7.6 Land Owner:
Start Elevation, 12.5 End Elevation, m: 11.7 Position
Site

Water

Start Water Temp, 23.3 Transparency Cover
Time: 12:24 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.3 DOSat: Conduct1 Salinity: 4.9
DOMgL: 11.3 Conduct2 TDSolids:

Water 8.7

Haul #: 20

Site Length, m: 3 Site Width, m: 5 Site Depth, m: Area, m2: 15 Haul Total
Area, m2: 516
Haul Start 2:48 PM Haul End Time:
Haul No fish

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: San Mateo Lagoon SiteID: MW-
Start Lat: 33.38622 EndLat: Drainage:
Site
Start Long: 117.59517 EndLong: County
Start EPE, mr: 21 End EPEM, m: Land Owner:
Start Elevation, 39.3 End Elevation, m: Position
Site

Water

Start Water Temp, 15.9 Transparency Cover
Time: 12:23 PM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 8.2 DOSat: Conduct1 Salinity: 3.8
DOMgL: 7.7 Conduct2 TDSolids:

Water 7.0

Haul #: 1

Site Length, m: 40 Site Width, m: 5 Site Depth, m: Area, m2: 200 Haul Total
Area, m2: 200
Haul Start 8:28 AM Haul End Time:
Haul No fish

Haul #: 2

Site Length, m: 15 Site Width, m: 4 Site Depth, m: Area, m2: 60 Haul Total
Area, m2: 380
Haul Start 8:42 AM Haul End Time:
Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	8:42 AM	2			

TideWater Goby Sampling CPEND

Date: 4/8/2003 ObserverID: MW FieldRecordID: MW3-6

Site

Site Name: San Onofre SiteID: MW-
Start Lat: 33.38080 EndLat: Drainage:
Site
Start Long: 117.57848 EndLong: County
Start EPE, m: 4.5 End EPEM, m: Land Owner:
Start Elevation, 1.7 End Elevation, m: Position

Site

Water

Start Water Temp, 15 Transparency Cover
Time: 9:23 AM
End Water Temp, Vegetation: Habitat
Water Depth Av Max:
Water Current: Bottom: Stream
Water Depth Max, Shore: Capture
Capture Method:
pH: 6.5 DOSat: Conduct1 Salinity: 0.5
DOMgL: 8.3 Conduct2 TDSolids:

Water 1440

Haul #: 1

Site Length, m: 25 Site Width, m: 4 Site Depth, m: Area, m2: 100 Haul Total
Area, m2: 100
Haul Start 9:25 AM Haul End Time:

Haul

Haul #: 2

Site Length, m: 10 Site Width, m: 4 Site Depth, m: Area, m2: 40 Haul Total
Area, m2: 180
Haul Start 9:43 AM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	10:01	3			

Haul #: 3

Site Length, m: Site Width, m: Site Depth, m: Area, m2: 0 Haul Total
Area, m2: 140
Haul Start 9:58 AM Haul End Time:

Haul

Animals

SPECIES:	Common Name:	Time1:	# Of Adults:	# Of Juv:	# Of Unk:	Notes:
EUNE	Tidewater Goby	9:59 AM	3			

Haul #: 4

Site Length, m: 15 Site Width, m: 4 Site Depth, m: Area, m2: 60 Haul Total
Area, m2: 160
Haul Start 10:00 AM Haul End Time:

Haul