Presentation to Casitas Municipal Water District Board of Directors on preliminary results of the 2009 monitoring and evaluation for the Robles Fish Facility.

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27 January 2010

2009 Robles Monitoring and Evaluation Progress Report

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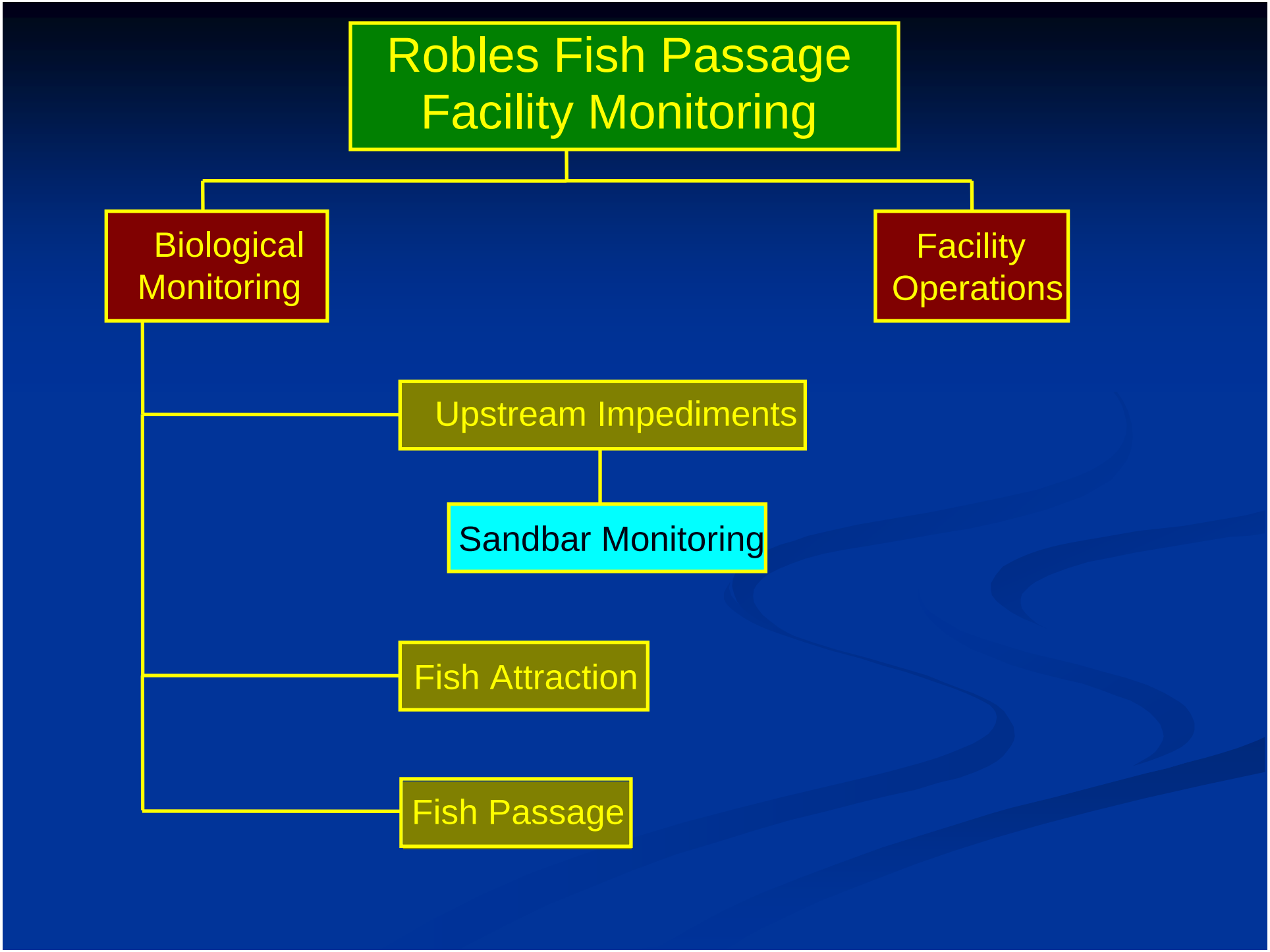

Robles Fish Passage Facility Monitoring
Biological Monitoring
Facility Operations
Upstream Impediments
Sandbar Monitoring
Fish Attraction
Fish Passage

Biological Monitoring

Upstream Migration Impediment Evaluation

Objective: Assess factors that may impede steelhead's ability to migrate to the Robles Fish Passage Facility.

2008-09: Physical stream surveys were completed (24 km), 8 sites were selected for evaluation by Biological Committee.

Impediment Site Selection Process

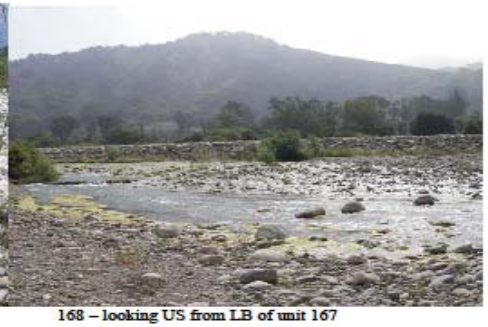
346 Looking US at head of unit

305 – Looking US – water flows from top right to bottom left

268 – Looking US from tail of unit

234 – looking US from unit 233

204 – Looking at LB from RB at head of unit



168 – looking US from LB of unit 167

Impediment Sites

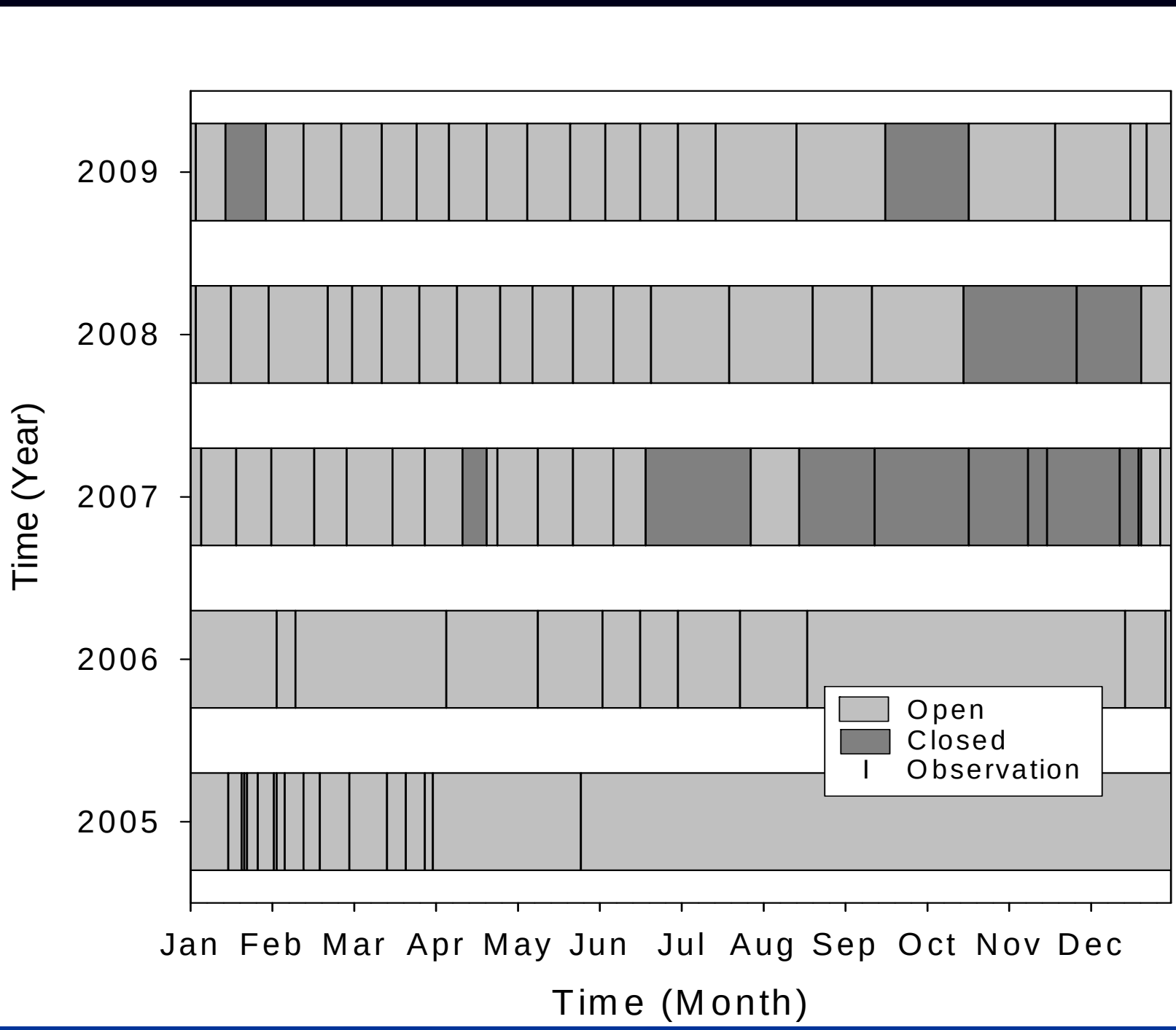
River km	Habitat Type[a]	Site Description	Length (m)	Slope (%)	Percent Substrate[b]					
					SO	SD	GR	CB	BD	BR
0		River mouth				100				
7.5	RI	Near treatment plant	16.4	2.8	10	10	15	45	20	0
11	RB	Near Casitas Springs at end of levy	22.0	3.7	10	5	10	65	10	0
13	RI	0.5 km upstream of San Antonio Cr. confluence	23.8	5.0	0	0	0	15	85	0
15	RI	0.4 km downstream of Santa Ana Blvd. bridge	8.4	7.0	0	5	5	45	45	0
17	CB	1.4 km upstream of Santa Ana Blvd. bridge	26.1	5.0	0	0	0	65	35	0
19	RB	1.1 km upstream of Hwy 150 bridge	31.6	2.0	5	0	10	40	45	0
22	CB	1.2 km downstream of Robles Fish Facility	9.2	10.0	0	0	10	45	45	0

[a] The habitat types are: RB = rapid with protruding boulders, RI = riffle, and CB = cascade over boulders.
[b] The substrate types are: SO = silt and organics, SD = sand, GR = gravel, CB = cobble, BD = boulders, and BR = bedrock.

Sandbar Monitoring

Objective: Monitor the timing and frequency of sandbar breaching to determine the initiation of the fish passage augmentation season.

2009: The sandbar was closed during mid January at low tides. The sandbar was open the remainder of the passage season.


Time (Year)
2009
2008
2007
2006
2005
Open
Closed
Observation
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Time (Month)

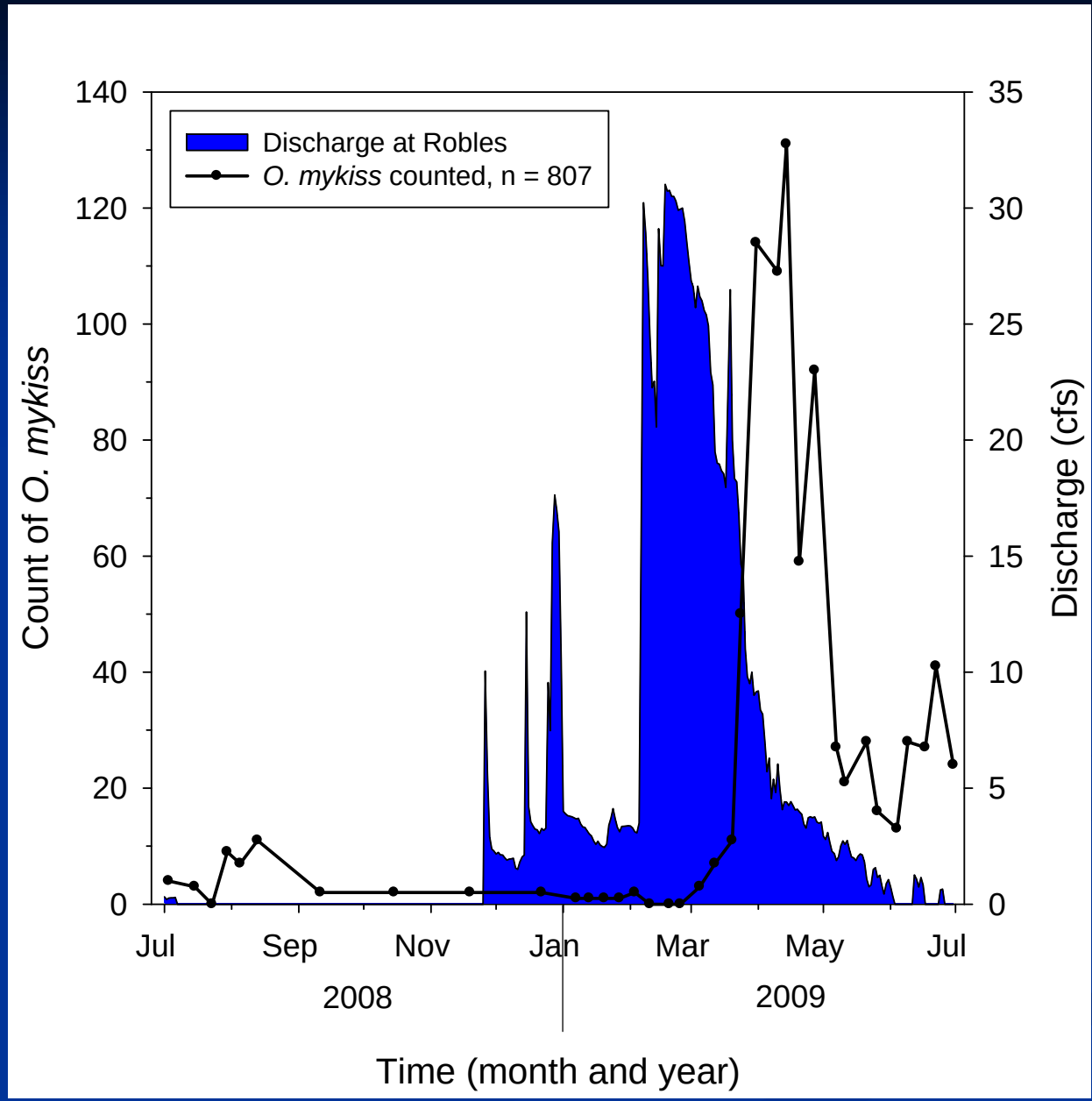
Common Name and Number of Birds Observed

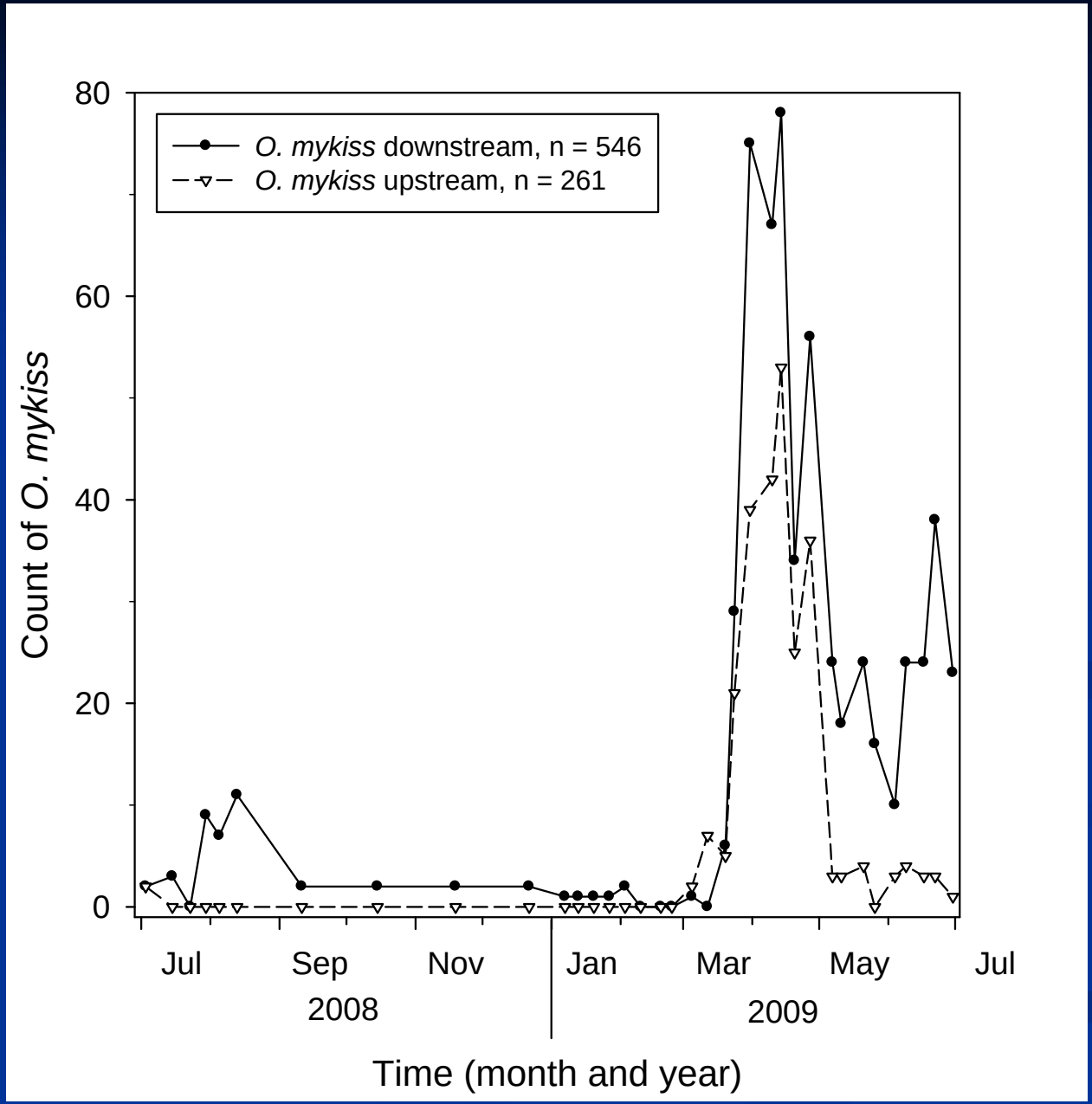
Date	Time (24h)	Gull	Cormorant	Tern	Pelican	Egret	Grebe	Heron	Merganser	Kingfisher	Total
18-Jul-08	13:08	166	7	34	7	0	0	1	0	0	215
18-Aug-08	11:30	256	9	0	1	0	0	0	0	0	266
09-Sep-08	13:40	310	10	115	0	3	0	0	0	0	438
13-Oct-08	10:25	153	9	0	0	4	0	0	0	0	166
24-Nov-08	11:40	164	33	0	2	0	0	0	0	0	199
18-Dec-08	10:50	147	19	0	2	2	1	1	0	0	172
13-Jan-09	14:25	313	0	4	17	0	0	2	0	0	336
28-Jan-09	12:40	375	23	0	35	1	4	0	0	0	438
11-Feb-09	13:15	105	18	0	0	0	0	0	0	0	123
24-Feb-09	12:35	240	17	0	2	1	0	0	1	0	261
12-Mar-09	11:10	78	53	1	2	1	0	0	0	0	135
25-Mar-09	09:00	188	16	0	67	2	0	0	2	0	275
06-Apr-09	10:52	311	30	15	16	2	0	0	0	0	374
20-Apr-09	10:47	235	45	41	10	0	0	0	0	0	331
05-May-09	14:00	349	47	31	41	1	0	0	0	0	469
21-May-09	14:04	253	50	7	18	0	0	0	1	0	329
03-Jun-09	14:01	81	42	2	7	0	0	0	0	0	132
16-Jun-09	12:43	80	30	8	3	0	0	0	0	0	121
30-Jun-09	12:52	46	13	6	5	5	0	1	0	0	76
Total		**3,850**	**471**	**264**	**235**	**22**	**5**	**5**	**4**	**0**	**4,856**

Fish Attraction Evaluation

Objective: Determine if migrants are holding immediately downstream of the Robles Facility during the fish passage augmentation season.

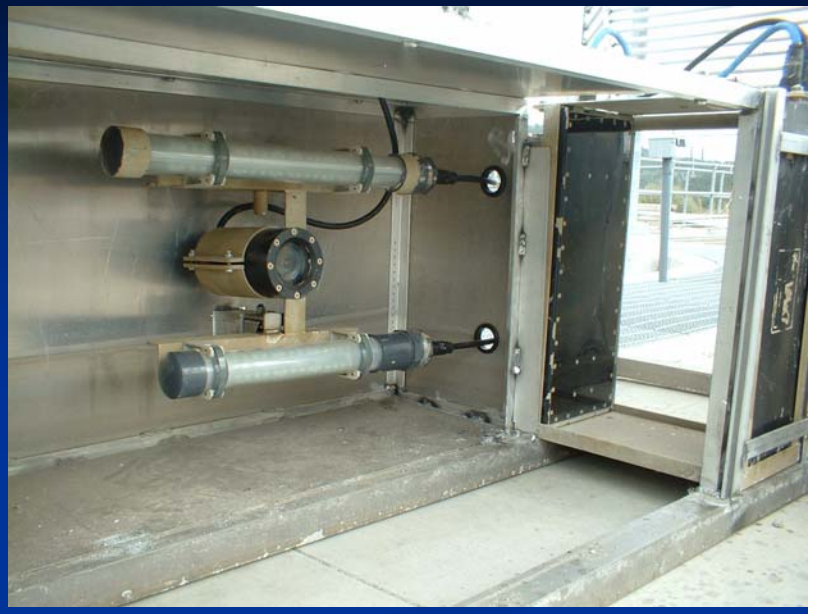
2009: A total of 807 *O. mykiss* were counted. Counts peaked in mid April at 131. No adults were observed.


Discharge at Robles
O. mykiss counted, n = 807
Count of O. mykiss
Discharge (cfs)
140
120
100
80
60
40
20
0
35
30
25
20
15
10
5
0
Jul
Sep
Nov
Jan
Mar
May
Jul
2008
2009
Time (month and year)


80
60
40
20
0
Count of O. mykiss
O. mykiss downstream, n = 546
O. mykiss upstream, n = 261
Jul
Sep
Nov
Jan
Mar
May
Jul
2008
2009
Time (month and year)

Fish Passage Monitoring

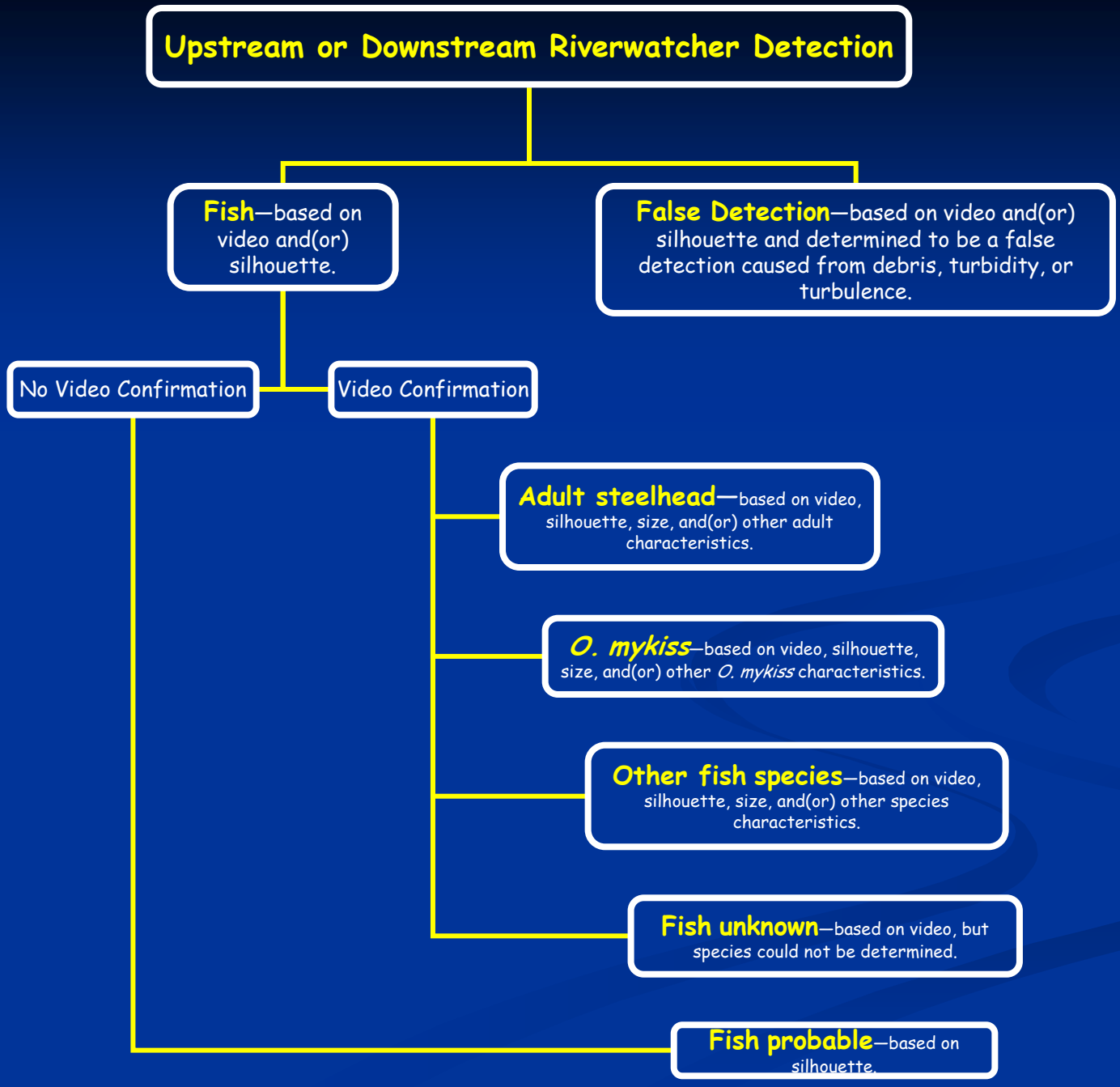
Objective: Determine the relative numbers and timing of upstream and downstream migrating fish using the Robles Facility.

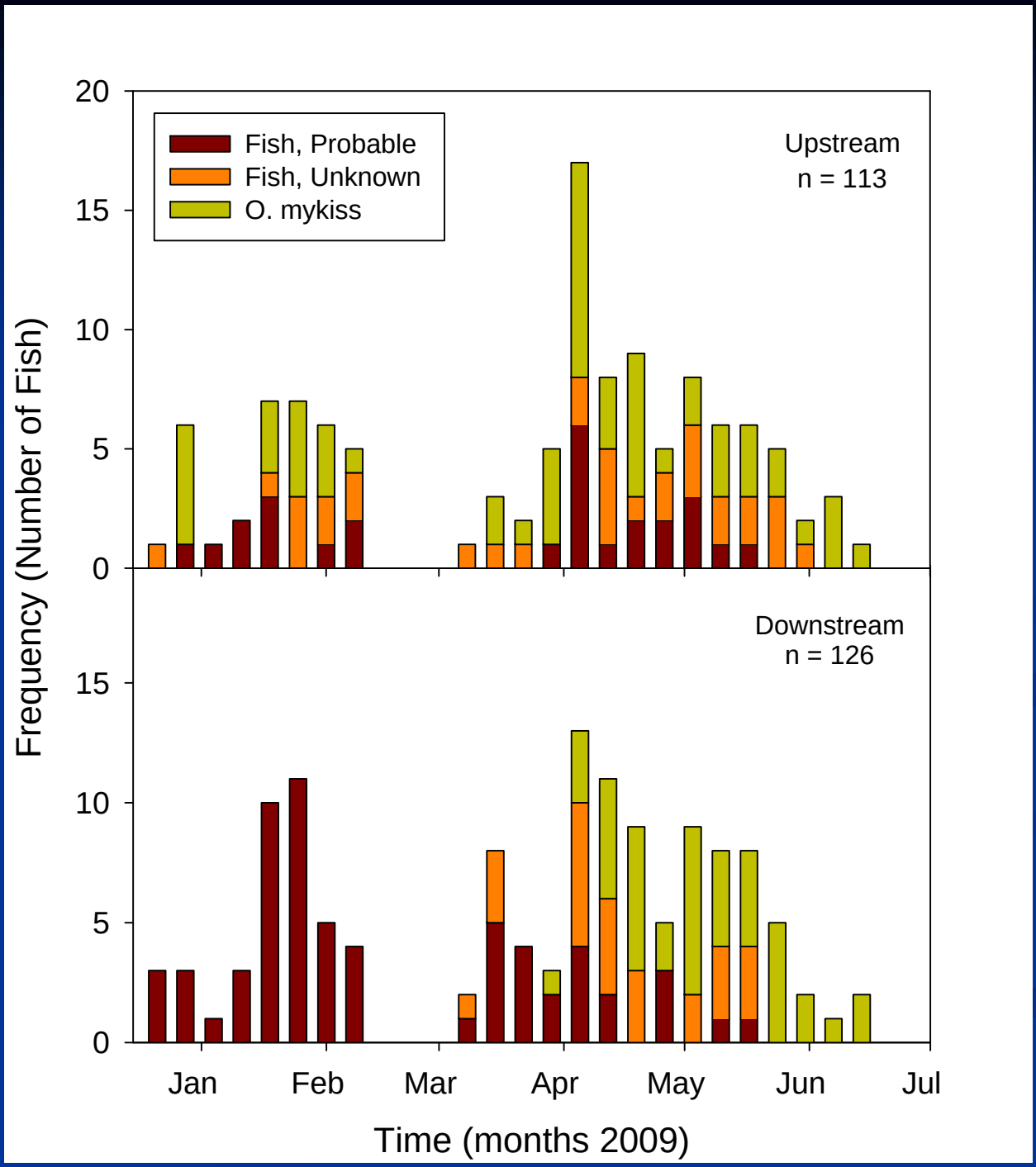


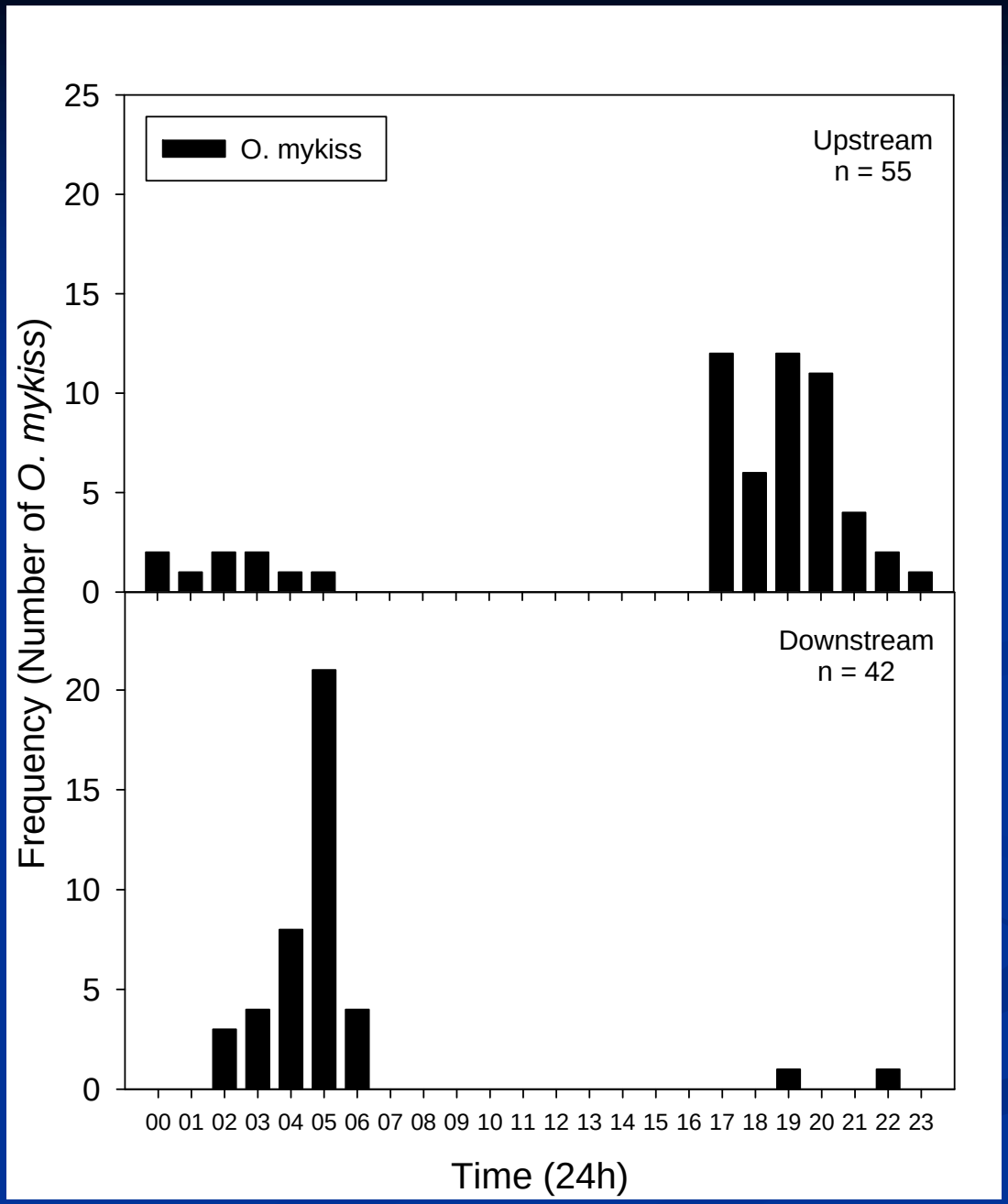
2009: No adult steelhead detected.

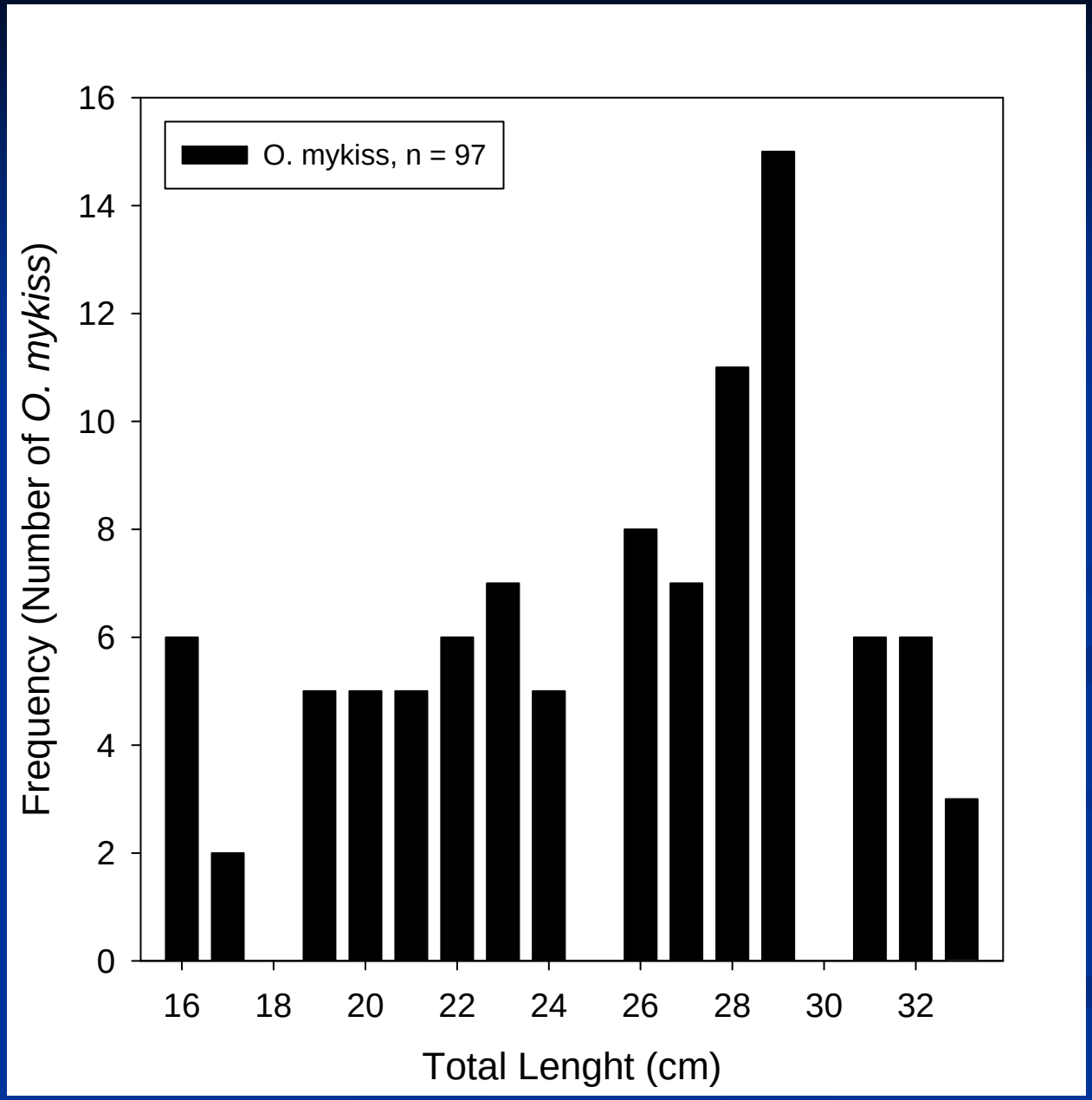
Downstream O. mykiss = 42

Upstream O. mykiss = 55


Upstream or Downstream Riverwatcher Detection
Fish—based on video and(or) silhouette.
False Detection—based on video and(or) silhouette and determined to be a false detection caused from debris, turbidity, or turbulence.
No Video Confirmation
Video Confirmation
Adult steelhead—based on video, silhouette, size, and(or) other adult characteristics.
O. mykiss—based on video, silhouette, size, and(or) other O. mykiss characteristics.
Other fish species—based on video, silhouette, size, and(or) other species characteristics.
Fish unknown—based on video, but species could not be determined.
Fish probable—based on silhouette.


Fish, Probable
Fish, Unknown
O. mykiss
Upstream
n = 113
Downstream
n = 126
Frequency (Number of Fish)
20
15
10
5
0
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Time (months 2009)


O. mykiss
Upstream
n = 55
Downstream
n = 42
Frequency (Number of O. mykiss)
Time (24h)
0
5
10
15
20
25
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23


O. mykiss, n = 97
Frequency (Number of O. mykiss)
Total Lenght (cm)
0
2
4
6
8
10
12
14
16
16
18
20
22
24
26
28
30
32

Vaki Riverwatcher Monitoring Limitations

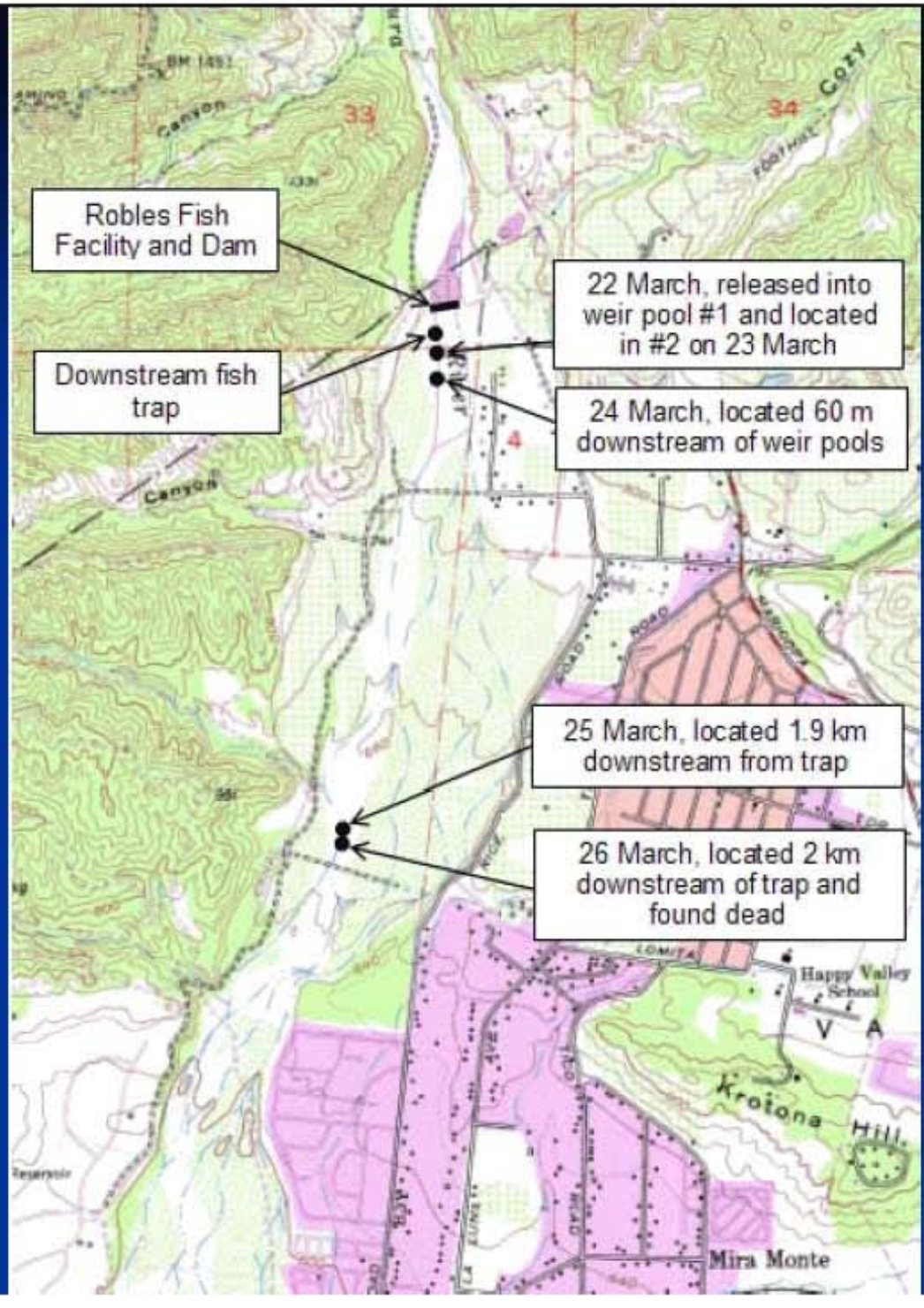
Turbidity (NTU)	Riverwatcher status
> 200	Not operational
100-200	Many false detections
30-100	Scanner operational, but unable to confirm with video
< 30	Video grid detectable
0-30	Riverwatcher fully operational

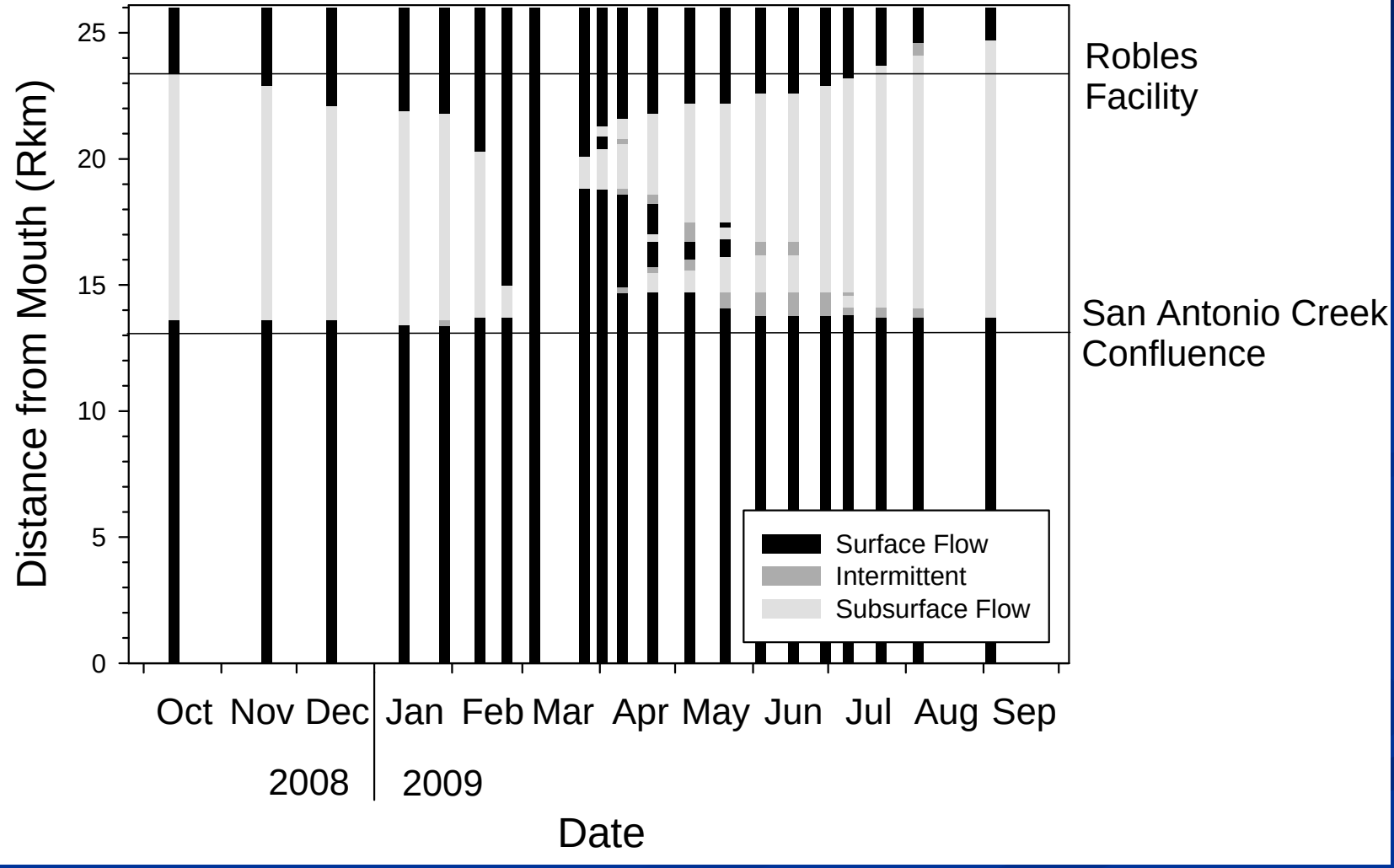
- Detection rate of 31% for smaller test fish.
- Detection rate of 100% for larger test fish.
- Underestimation of fish height by 25%.
- Additional testing needed.

Downstream Fish Passage Monitoring

Objective: Determine the relative numbers, timing, and condition of downstream migrating fish using the Robles Facility.

2009: One O. mykiss was captured, tagged, and released. Migrated downstream 2 km and found dead.


Robles Fish Facility and Dam
Downstream fish trap
22 March, released into weir pool #1 and located in #2 on 23 March
24 March, located 60 m downstream of weir pools
25 March, located 1.9 km downstream from trap
26 March, located 2 km downstream of trap and found dead
Happy Valley School
Kreiona Hill
Mira Monte


Distance from Mouth (Rkm)
25
20
15
10
5
0
Robles Facility
San Antonio Creek Confluence
Surface Flow
Intermittent
Subsurface Flow
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
2008
2009
Date