Carmel Pinnacles State Marine Reserve

Baseline Population and Movement Study

California Department of Fish and Game

Fisheries Independent-SCUBA Assessment

Marine Region-Monterey 2008

Study site:

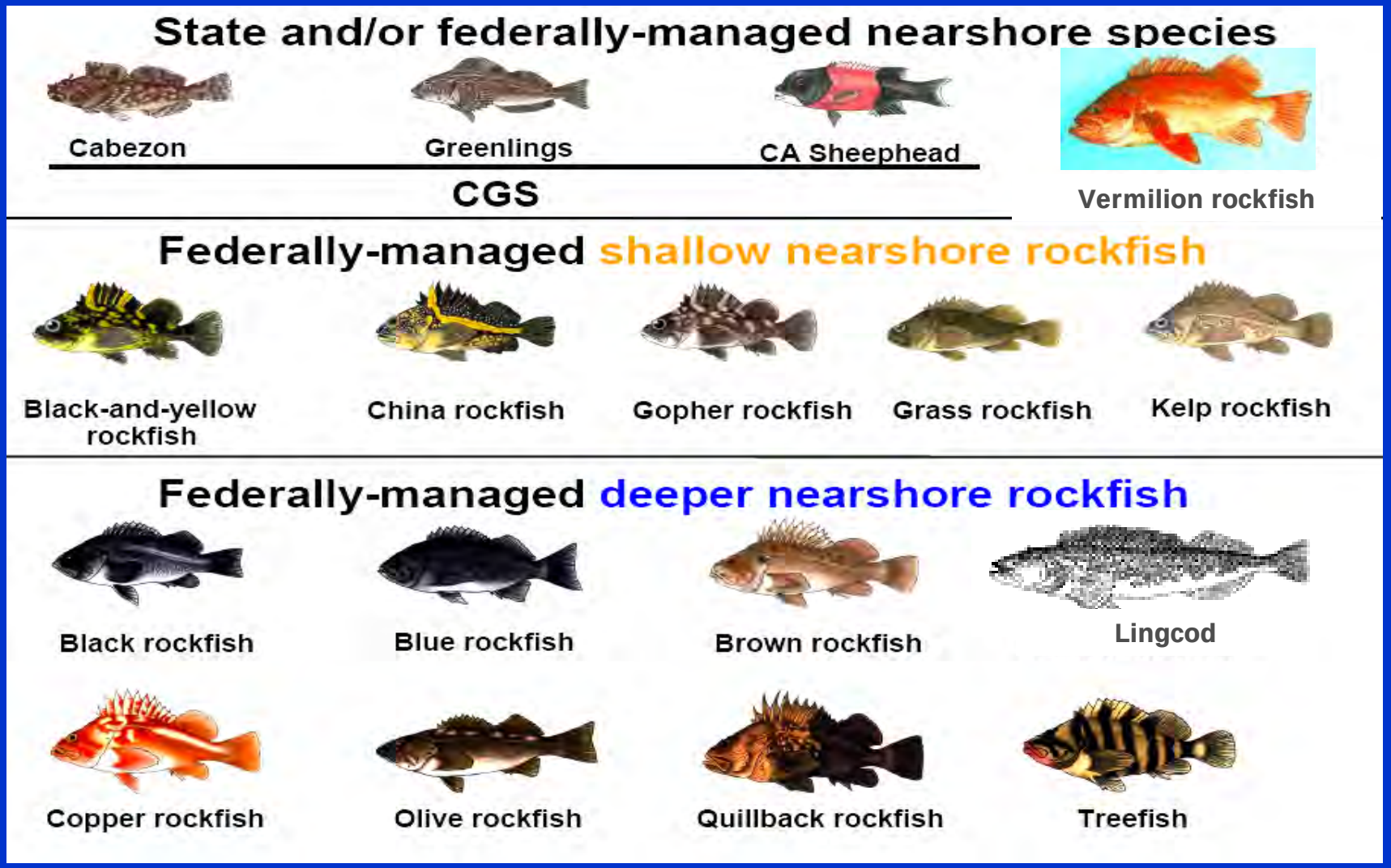
Carmel Pinnacles is a unique site characterized by high, rocky relief walls interspersed with sand channels

Purpose:

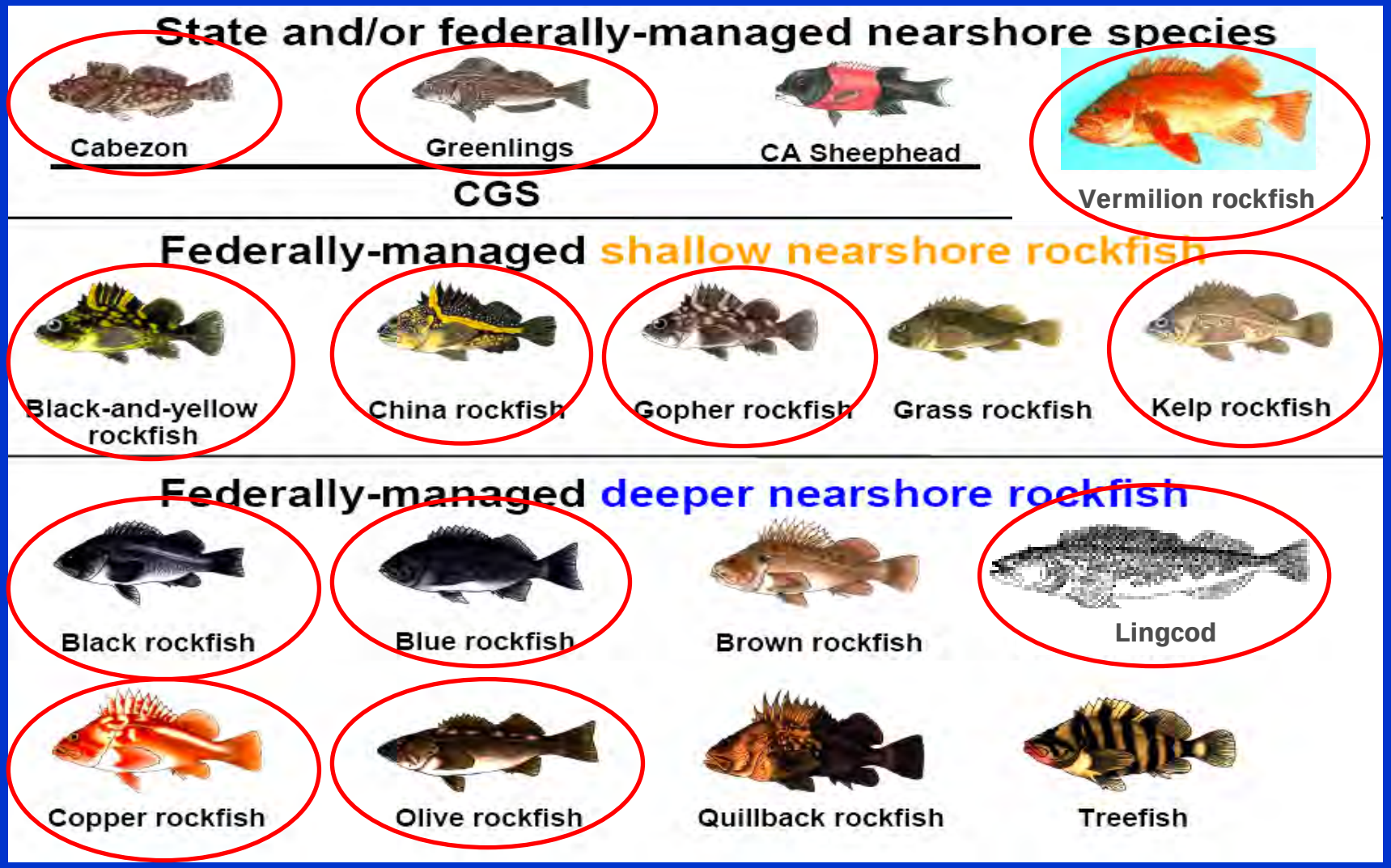
Evaluate effectiveness of newly created reserve

- Collect baseline data
- Track changes over time
  - relative to nearby reference site
  - relative to long-established reserve (Pt. Lobos)
- Evaluate fish movements and “spillover effect”

Species of interest



Species of interest



Methods:

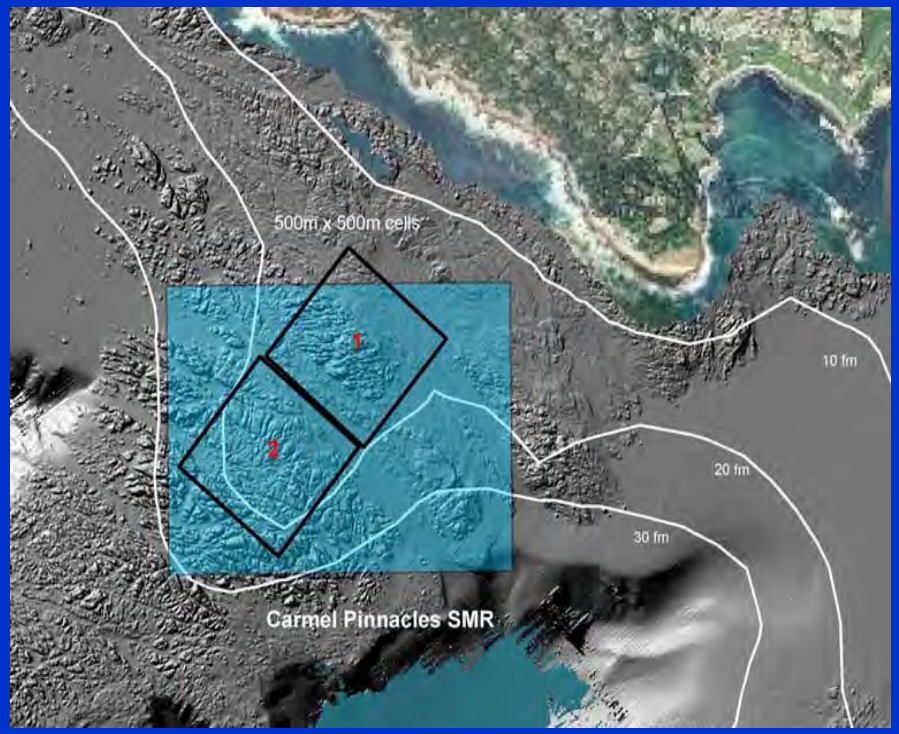
- Use hook-and-line (CPFV) and trap gear
- Standardize bait, tackle, and fishing/soak time
- Pre-select areas based on depth
- Minimize fish trauma
- Inform public about project

CPFV and Trap Methods:

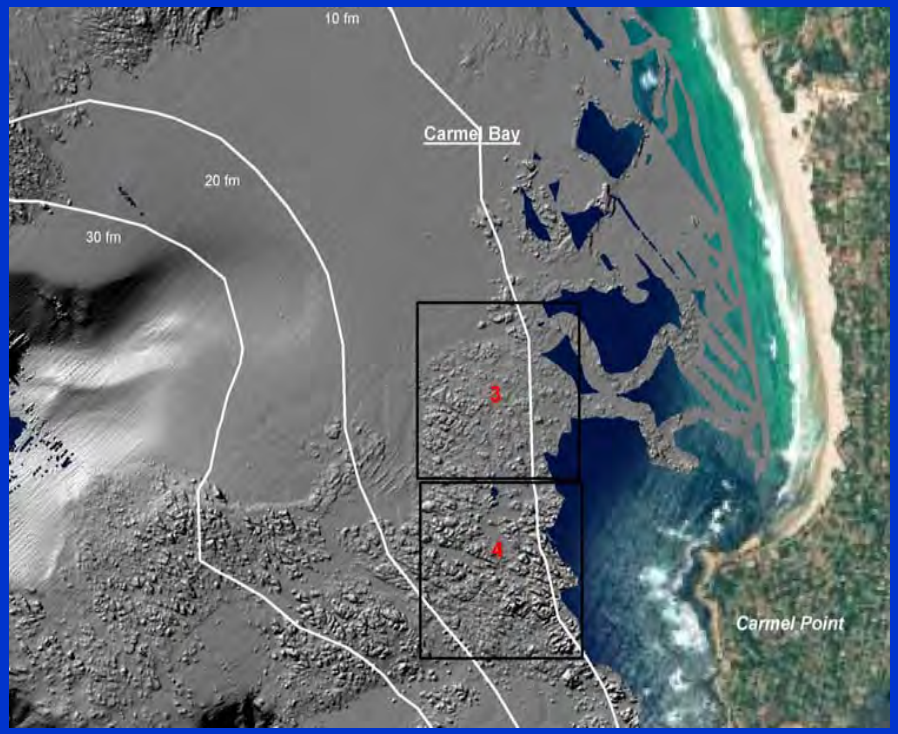
Multiple tagging/recapture events

- 3 days per month
- 3 months (Summer/Fall)
- 2 cells inside and outside SMR

MPA



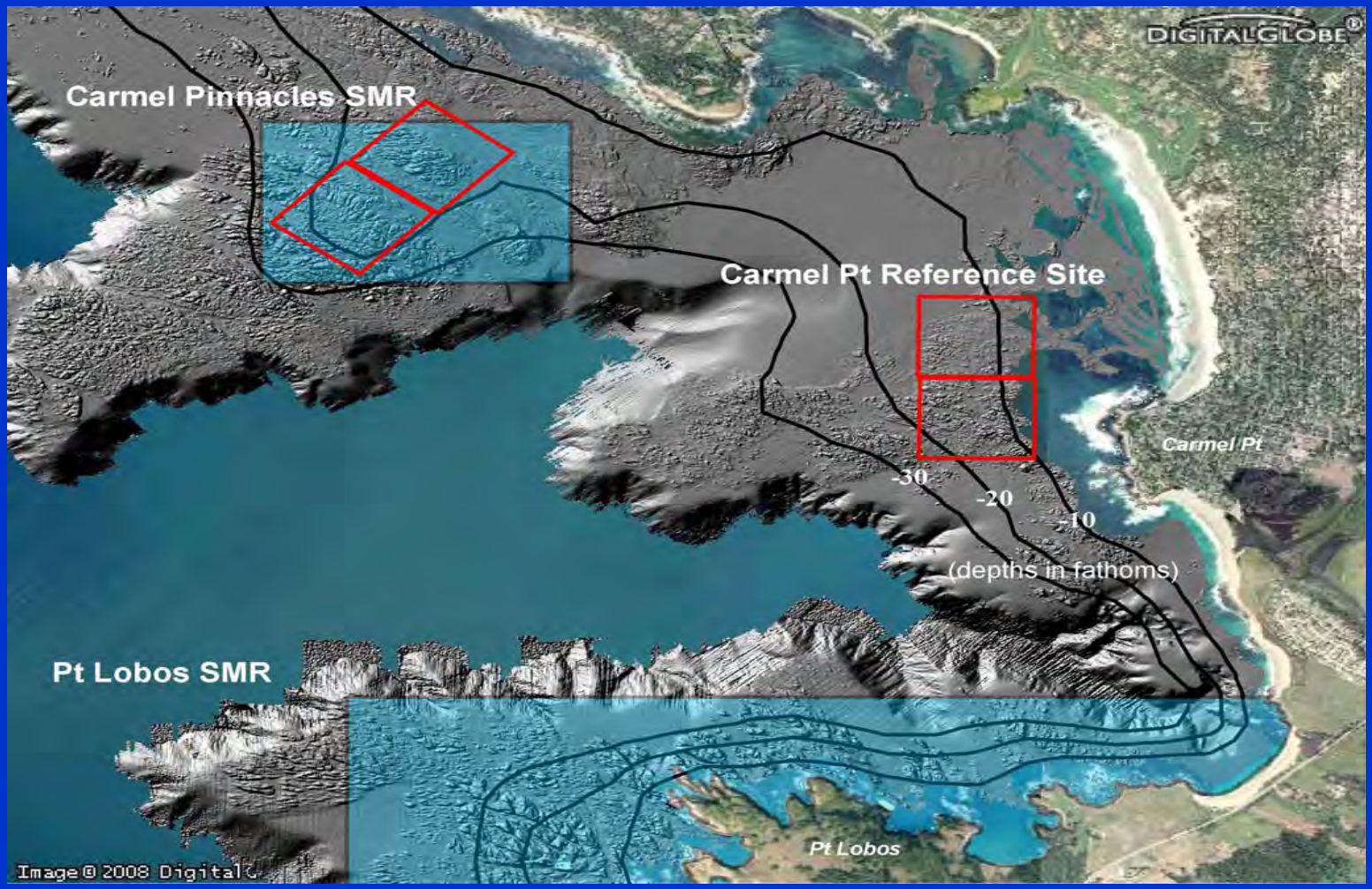
Reference site



Outlook:

Long term monitoring

- -Repeat annually, same months
- -Same methods as MLML at Pt. Lobos



Preliminary Results (July-Sept. 2008)

CPFV

Common Name	Inside MPA # Caught	Outside MPA # Caught	Total
Blue rockfish	522	496	1018
Gopher rockfish	141	138	279
Olive rockfish	87	172	259
Black rockfish	5	55	60
Kelp rockfish	33	24	57
Yellowtail rockfish	7	33	40
Canary rockfish	0	24	24
Lingcod	13	10	23
Vermilion rockfish	4	14	18
Copper rockfish	5	10	15
China rockfish	10	3	13
Rosy rockfish	7	6	13
Kelp greenling	2	6	8
Cabezon	3	0	3
Starry rockfish	0	1	1
Rock sole	0	1	1
Treefish	1	0	1
Grand Total	**840**	**993**	**1833**

Preliminary Results (July-Sept. 2008)

CPFV

Size Range:

Common Name	Pinnacles Min. Total Length (cm)	Pinnacles Max. Total Length (cm)	Pinnacles Avg Total Length (cm)	Carmel Point Min. Total Length (cm)	Carmel Point Max. Total Length (cm)	Carmel Point Avg Total Length (cm)
Blue rockfish	18	39	26	16	38	23
Gopher rockfish	17	31	25	16	31	26
Olive rockfish	24	44	35	22	48	32
Black rockfish	31	36	32	25	35	31
Kelp rockfish	24	43	30	21	35	29
Yellowtail rockfish	24	32	27	23	28	25
Canary rockfish	NA	NA	NA	22	40	30
Vermilion rockfish	36	40	38	23	58	38
Copper rockfish	21	39	31	29	46	36
China rockfish	25	30	28	24	31	27
Rosy rockfish	17	22	21	18	25	22
Cabezon	37	43	39	NA	NA	NA
Kelp greenling	35	35	35	30	34	32
Lingcod	29	66	55	52	75	60

Preliminary Results (Aug.-Oct. 2008)

TRAP

	Inside MPA		Outside MPA		
Common Name	**# Caught**	**# Caught/trap**	**# Caught**	**# Caught/trap**	**Total # Caught**
Gopher rockfish	240	2.03	108	0.92	348
Cabezon	22	0.19	11	0.09	33
Black-and-yellow rockfish	16	0.14	14	0.12	30
Kelp greenling	16	0.14	13	0.11	29
China rockfish	17	0.14	1	0.01	18
Kelp rockfish	0	0.00	4	0.03	4
Blue rockfish	1	0.01	1	0.01	2
Copper rockfish	0	0.00	2	0.02	2
Lingcod	1	0.01	1	0.01	2
Rosy rockfish	1	0.01	0	0.00	1
Treefish	0	0.00	1	0.01	1
Wolf eel	1	0.01	0	0.00	1
Grand Total	**315**		**156**		**471**

Preliminary Results (Aug.-Oct. 2008)

TRAP

Size Range:

Common Name	Pinnacles Min. Total Length (cm)	Pinnacles Max. Total Length (cm)	Pinnacles Avg Total Length (cm)	Carmel Point Min. Total Length (cm)	Carmel Point Max. Total Length (cm)	Carmel Point Avg Total Length (cm)
Gopher rockfish	22	33	27	22	32	26
Cabezon	34	48	39	30	44	40
Black-and-yellow rockfish	26	31	29	21	30	25
Kelp greenling	34	38	36	31	37	35
China rockfish	26	31	29	32	32	32
Kelp rockfish	NA	NA	NA	28	32	31
Blue rockfish	31	31	31	35	35	35
Copper rockfish	NA	NA	NA	29	33	31
Lingcod	61	61	61	54	54	54
Rosy rockfish	24	24	24	NA	NA	NA
Treefish	NA	NA	NA	31	31	31
Wolf eel	109	109	109	NA	NA	NA

Recaptures to date:

Species	# Recaptured Trap	# Recaptured CPFV	# Recaptured private skiff	# Recaptured Diving (visual)	Total
Gopher rockfish	5	0	3	1	9
Cabezon	3	0	1	0	4
Blue rockfish	0	1	1	2	4
Black rockfish	0	1	0	0	1
Canary rockfish	0	1	0	0	1
Olive rockfish	0	1	0	1	2
Kelp greenling	1	0	0	1	2
Copper rockfish	0	0	1	0	1
Total	**9**	**4**	**6**	**5**	**24**

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