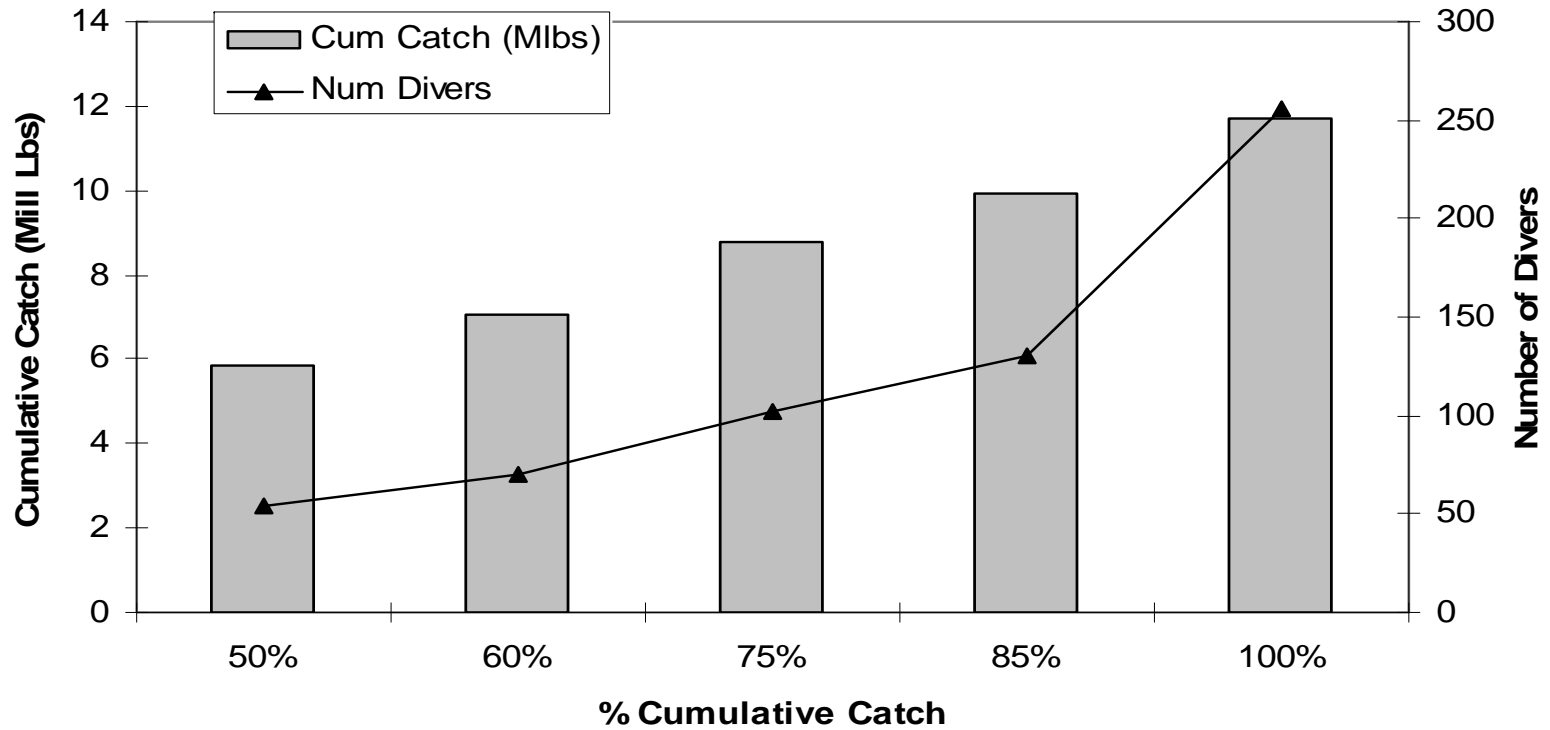


CSUC Meeting

- Draft Fishery Capacity Analysis
- DFG Los Alamitos office
- 12/10/2010

Number of Divers to Take Specific Levels of Sea Urchin Catch: 2001-2009 Average



Average: 2001 - 2009

% Cum Catch	Cum Catch (Mlbs)	Num Divers
50%	5.858	54
60%	7.030	70
75%	8.778	102
85%	9.949	130
100%	11.732	255

2009 California Sea Urchin Catch by Diver and Region

NORTH			SOUTH			<i>Total</i>
Receipts	Pounds	Value\$	Receipts	Pounds	Value\$	Cum %
149	321,143	\$198,355				2.6%
			140	283,853	\$140,506	5.0%
180	259,704	\$259,704				7.1%
112	232,615	\$163,925				9.0%
118	227,492	\$134,880				10.9%
174	226,737	\$117,377				12.7%
122	208,650	\$129,774				14.4%
144	193,229	\$134,907				16.0%
112	189,272	\$127,915				17.6%
97	185,891	\$123,843				19.1%
			100	184,273	\$89,032	20.6%
46	183,931	\$105,371				22.1%
			130	180,109	\$118,483	23.6%
			87	178,007	\$61,481	25.0%
87	176,548	\$116,482				26.5%
			122	173,907	\$110,512	27.9%
			122	166,462	\$106,796	29.3%
			155	159,988	\$102,225	30.6%
			188	156,914	\$131,666	31.9%
			86	154,300	\$79,572	33.1%
90	154,258	\$103,135				34.4%
			159	152,205	\$131,550	35.7%
84	151,910	\$100,366				36.9%
119	146,064	\$139,505				38.1%
			117	140,225	\$88,836	39.2%
75	140,012	\$93,778				40.4%
			117	135,877	\$67,938	41.5%
			97	135,863	\$68,169	42.6%
			85	132,250	\$66,125	43.7%
			87	130,834	\$74,261	44.8%
			60	127,367	\$43,481	45.8%
88	127,023	\$115,497				46.9%
			85	118,600	\$62,333	47.8%
			99	117,018	\$54,840	48.8%
			97	116,207	\$86,191	49.7%
16:40 fishers	3,124,479	78.67%	19:160 fishers	2,944,260	35.79%	

Depletion Corrected Average Catch DCAC - Nor Cal

<u>Parameters</u>	<u>Value</u>	<u>STD Deviation</u>
Sum of Catch (Mill Lbs)88-94	= 117.5	
Natural Mortality (M)	= 0.06	0.50
F _{MSY} to M ratio(c)	= 1.00	0.2
Depletion Delta 1988 - 1994	= 0.67	0.15

Uncorrected Avg. Catch = 16.785714

Average DCAC = 3.302720 -

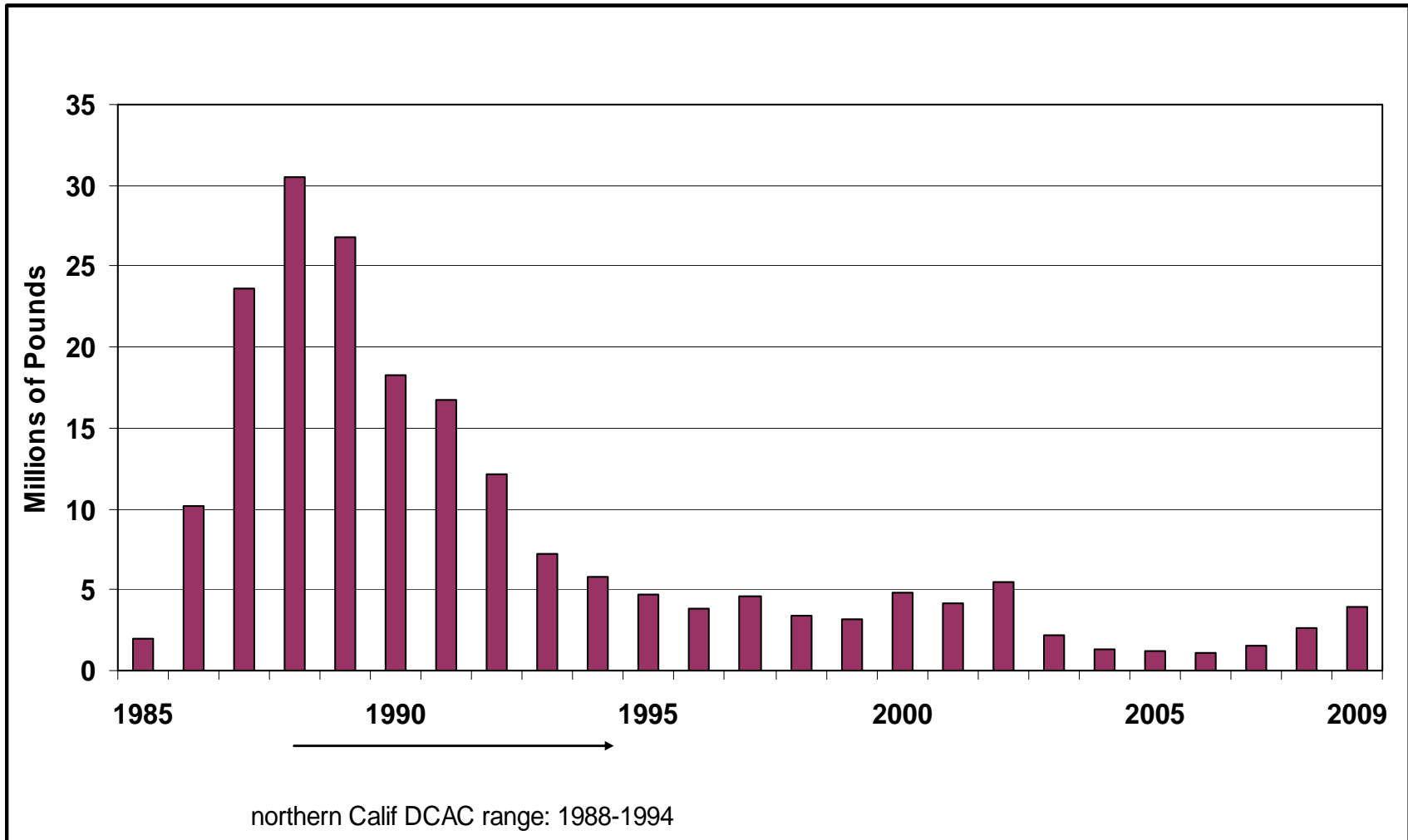
Average catch 1995-2009 = 3.2 mill lbs

1% - 99% CI =	0.898278 -	8.095587
5% - 95% CI =	1.271942 -	6.264063
10% - 90% CI =	1.568212 -	5.441646
20% - 80% CI =	1.981532 -	4.439584

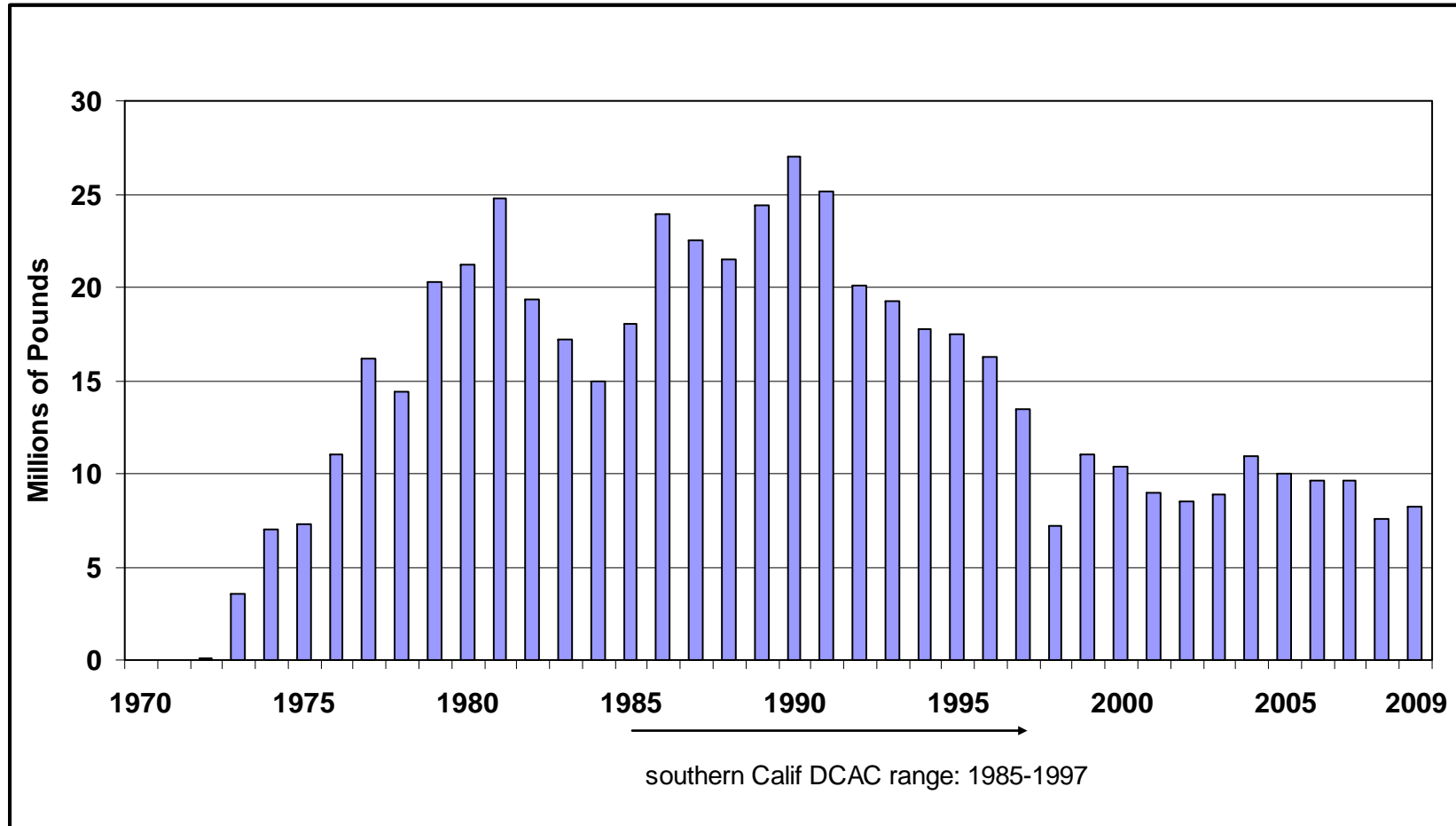
Model Reference:

MacCall, A.D. 2009. Depletion-corrected average catch: a simple formula for estimating sustainable yields in data-poor situations. ICES J. Marine Science, 66: 2267-2271.

Northern California Sea Urchin Catch 1985 - 2009



Southern California Sea Urchin Catch 1970 - 2009



Depletion Corrected Average Catch DCAC - Southern Cal

<u>Parameters</u>	<u>Value</u>	<u>STD Deviation</u> (defaults)
Sum of Catch: 1985 - 1997 (Mill Lbs)=	267.0	
Natural Mortality	= 0.21	0.50
FMSY to M (c)	= 1.0	0.2
Depletion Delta (default)	= 0.50	0.15

Uncorrected Avg. Catch = 20.538462

Average DCAC = 13.356067

-Exceeded in 1 year since 1997

1%	-	99% CI =	6.533139	-	18.765023
5%	-	95% CI =	8.443790	-	17.518877
10%	-	90% CI =	9.583456	-	16.824047
20%	-	80% CI =	10.992049	-	15.785696

Key Fishery Values

- Estimated Fishery Capacity ~ 20.3 million lbs
- Estimated MSY (DCAC) ~ 16.7 million lbs
 - NC ~ 3.3 mill lbs
 - SC ~ 13.4 mill lbs
- Recent Catch (2009) ~ 12.2 million lbs
 - NC ~ 4.0 mill lbs
 - SC ~ 8.2 mill lbs
- Active Divers (2009) ~ 198
- Divers to Catch 50% (2009) ~ 35