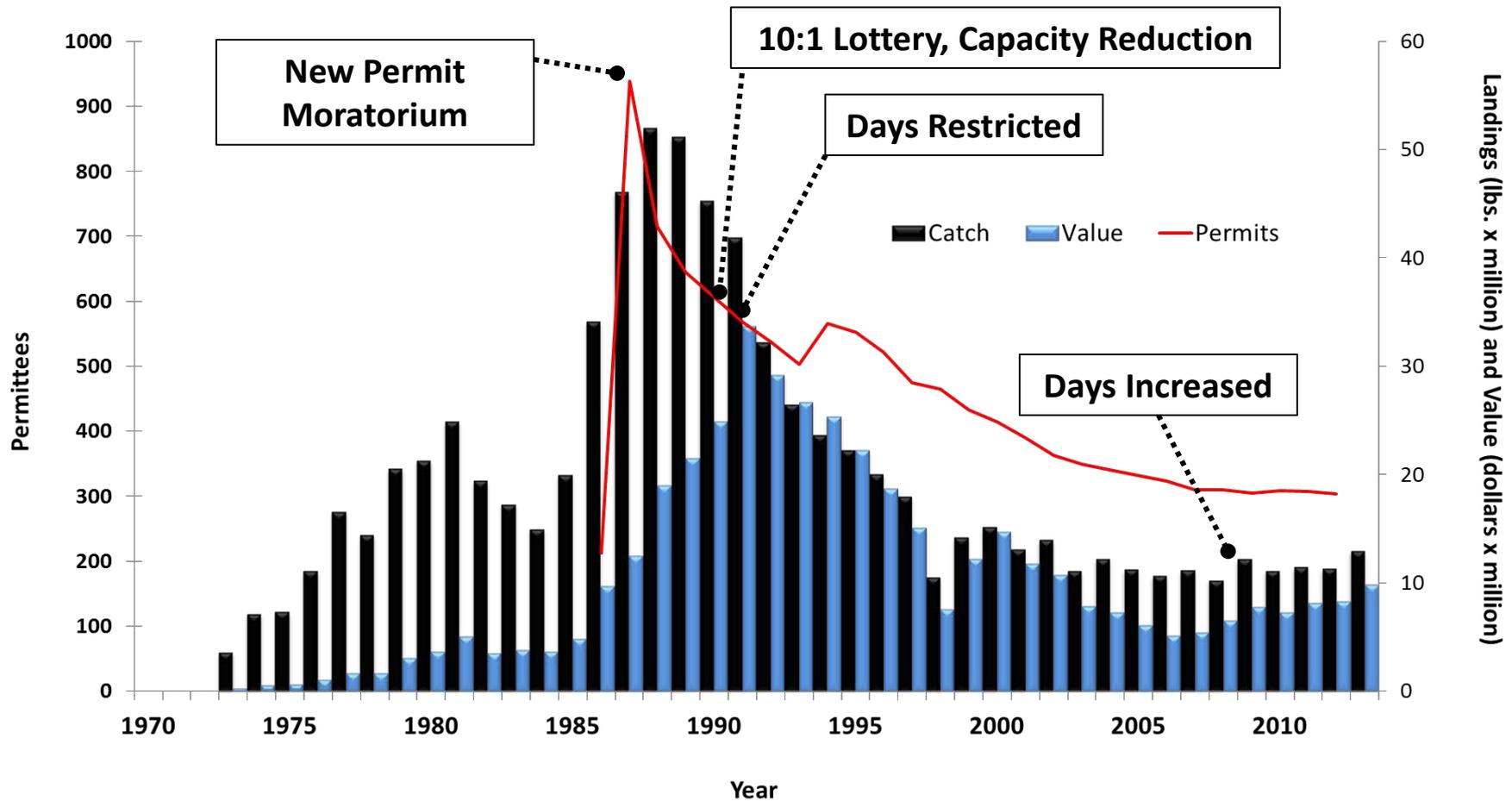


***Red Sea Urchin Status Report
Marine Resources Committee
August 5th, 2014***



***Derek Stein
Environmental Scientist
California Department of Fish and Wildlife
Marine Region, Invertebrate Project***

History of Red Sea Urchin Landings, Value, and Permits



- Currently catch/effort is limited by size (3 ¼ south, 3 ½ north); open fishing season (Nov-June: 7 days) (June-Oct: M, T, W, Th); and restricted access of 300 permits.
- From 1998-2013, statewide landings have been consistently between 10-15 million pounds
- Capacity goal of 300 instituted in 1990s, and since 2007 has been near 300

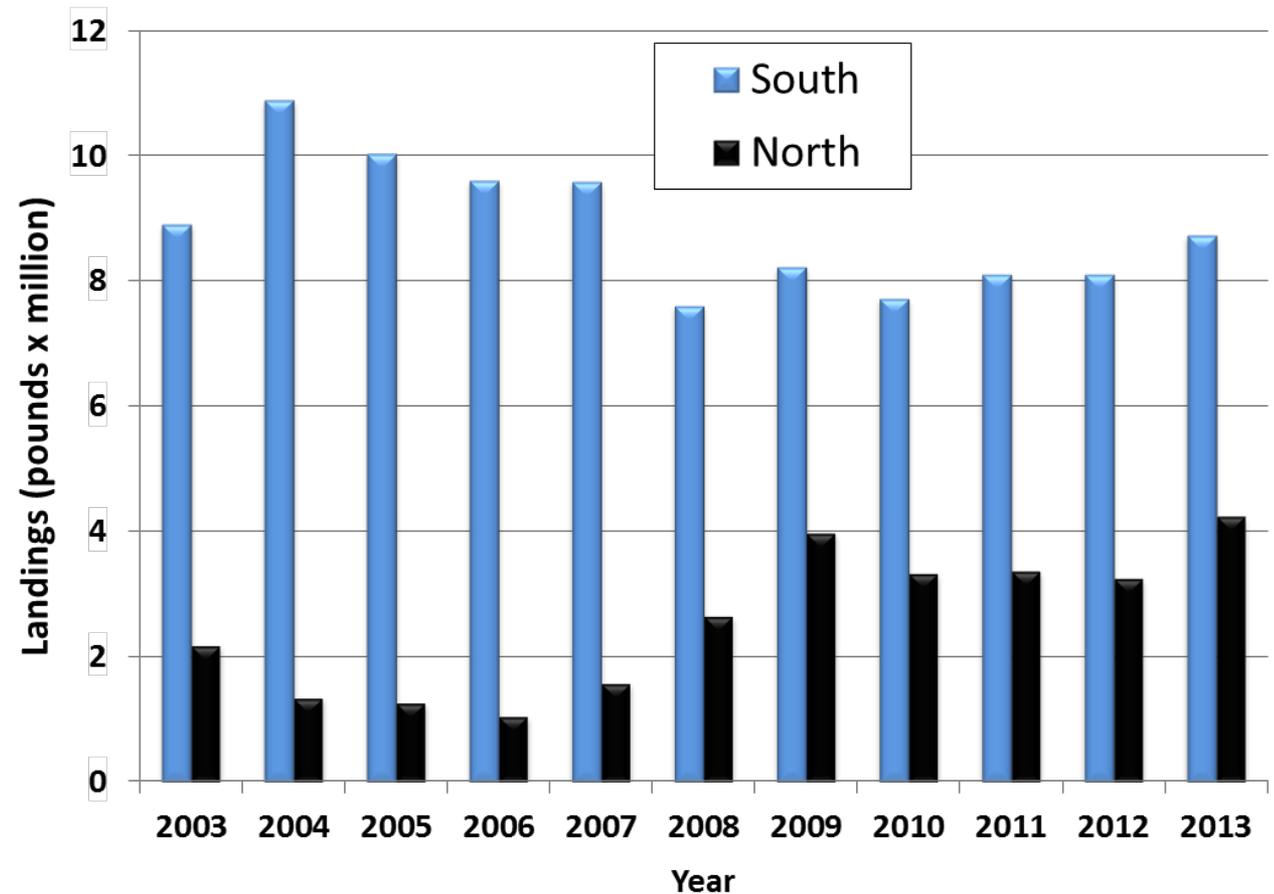
Statewide Landings 1970-2012

- Concentrated Effort Fort Bragg Vicinity and Southern California Bight
- Majority of Nor Cal Landings near Fort Bragg
- Majority of So Cal Landings at offshore islands and San Diego



North vs. South Total Landings and Percentage Statewide

Year	South	North
2003	80%	20%
2004	89%	11%
2005	89%	11%
2006	90%	10%
2007	86%	14%
2008	74%	26%
2009	67%	33%
2010	70%	30%
2011	71%	29%
2012	71%	29%
2013	67%	33%

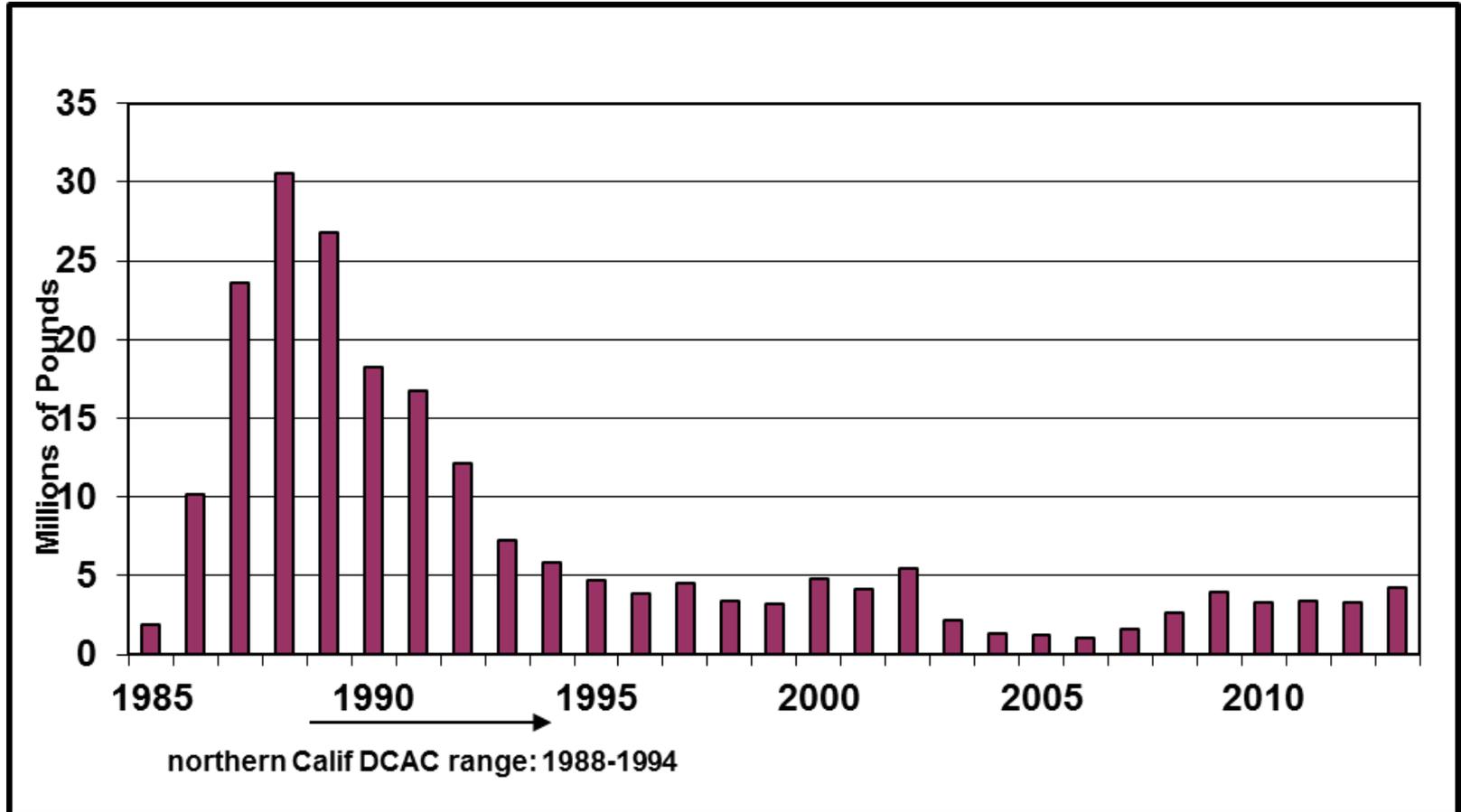


- Northern landings on steady rise from 2006 topping out at 4.2 million pounds in 2013
- As northern landings have been increasing, southern landings have been decreasing or stable
- Some decrease in southern landings can be attributed to shift in effort to warty sea cucumbers

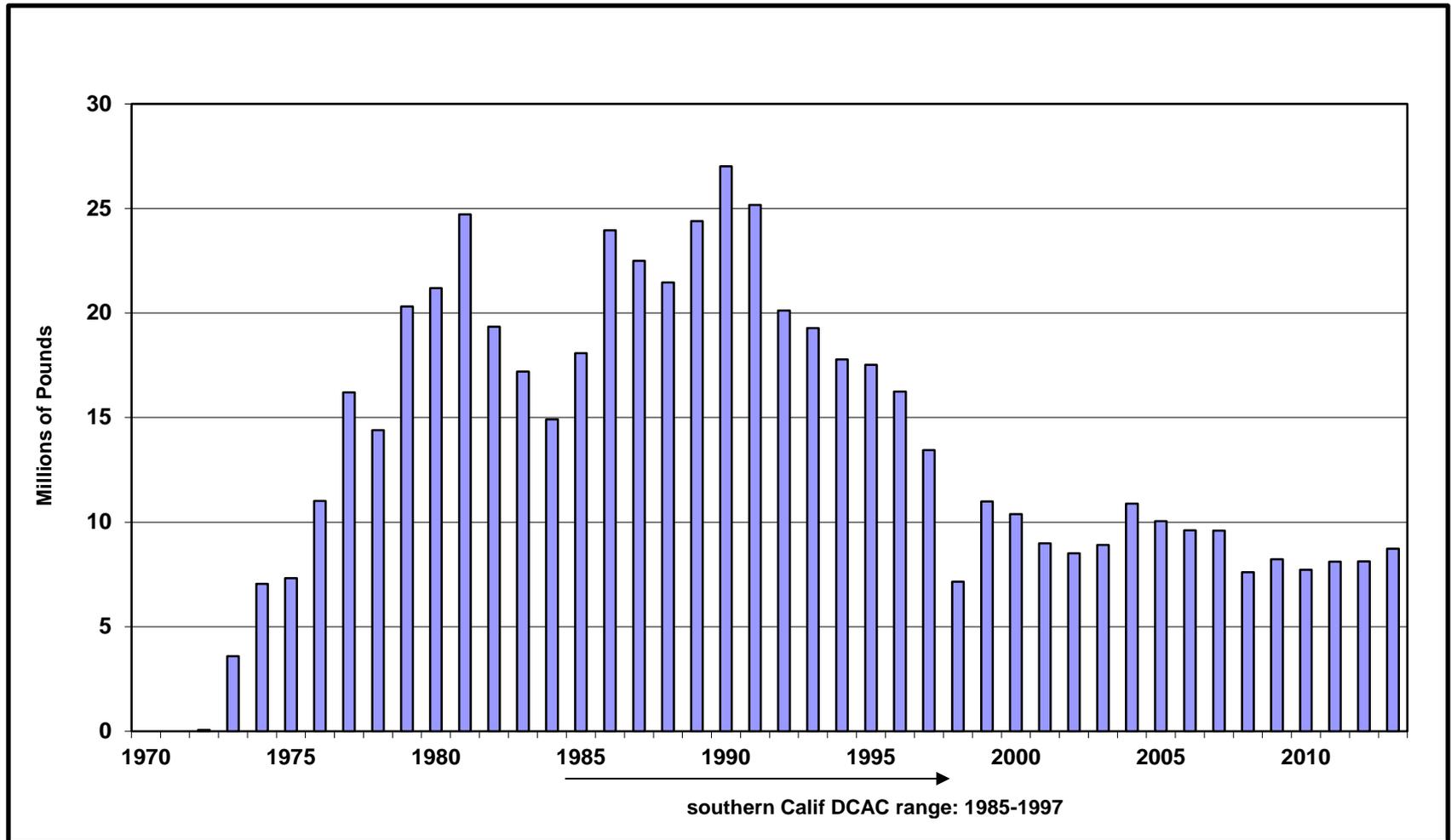
Maximum Sustainable Yield (MSY) for North and South

- **Based on Depletion-Corrected Average Catch (DCAC) model (MacCall 2009) which applies a correction to the long term average catch for the initial ‘windfall’ harvest of a newly exploited stock – this is especially applicable to northern California which dramatically exhibits this windfall harvest as does southern California to a lesser extent.**
 - **Southern and Northern California analyzed separately due to unique catch history and life history parameters**
 - **The data years for MSY calculations were 1988 – 1994 (northern CA)**
 - **The data years for MSY calculations were 1985-1997 (southern CA)**

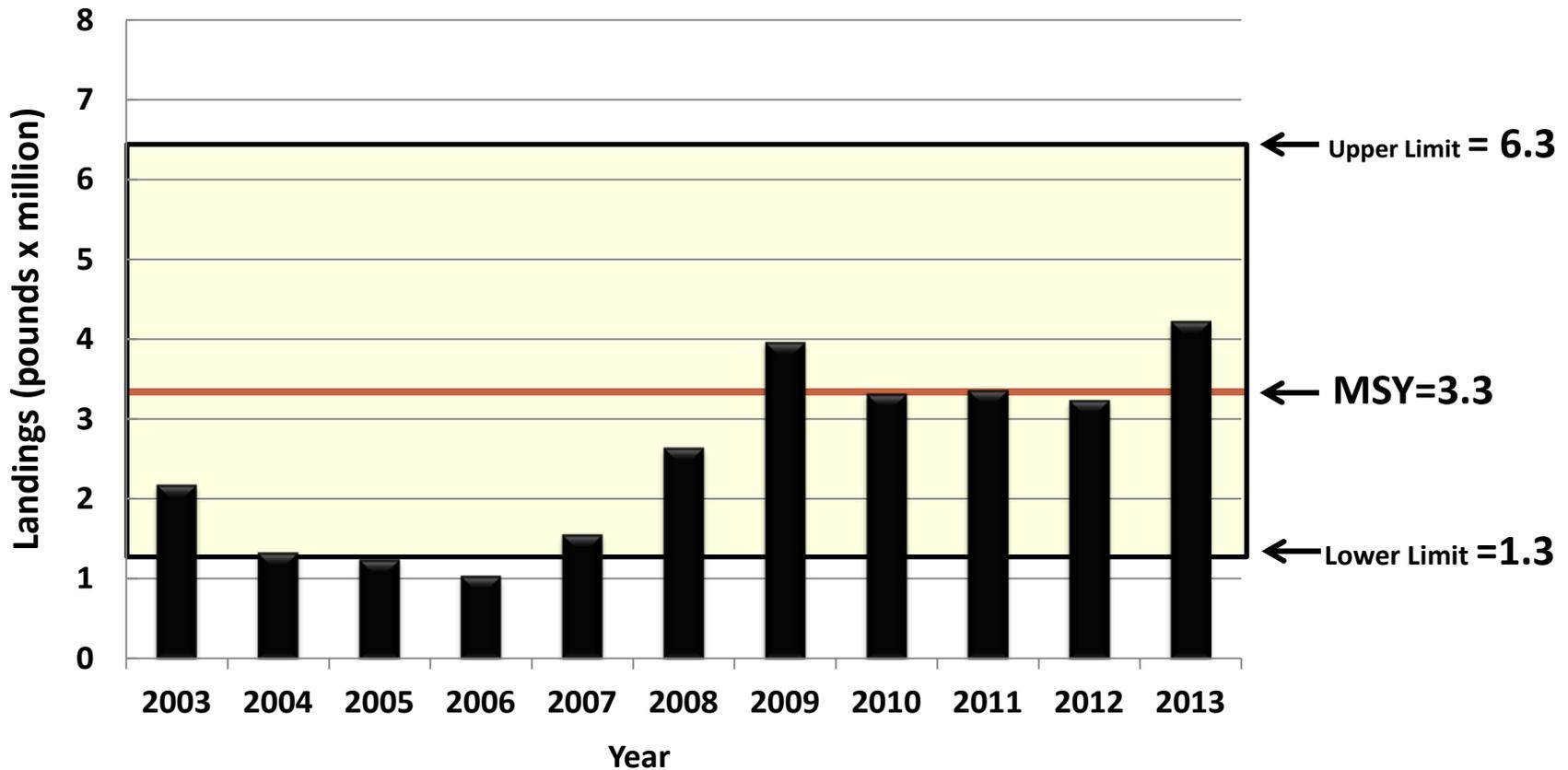
Northern California Catch History



Southern California Catch History



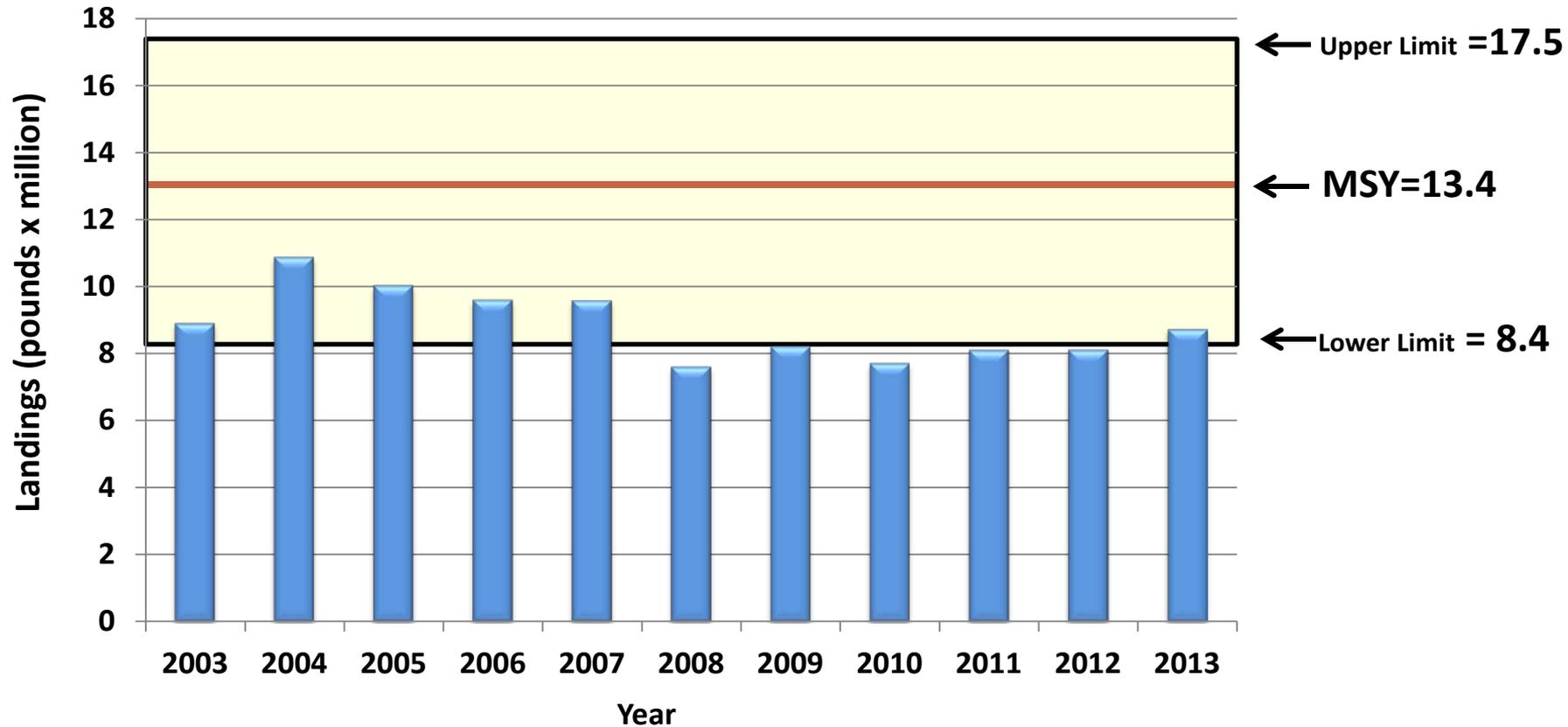
Maximum Sustainable Yield (MSY) Northern California



Northern California Recent Catch History

- MSY = 3.3 million lbs
- 95% Confidence Interval = 1.3 to 6.3 million lbs
- 2013 catch = 4.2 million lbs

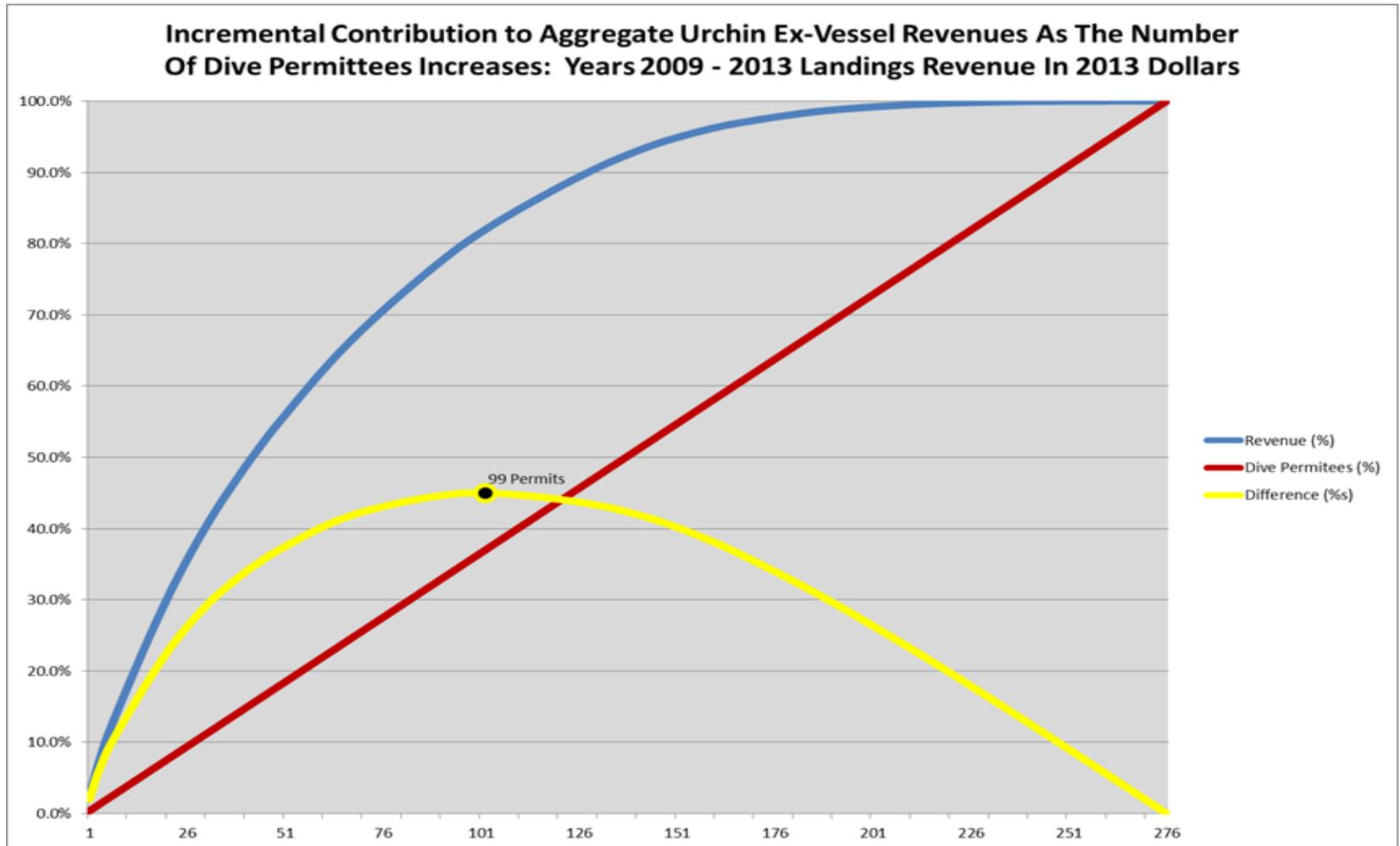
Maximum Sustainable Yield (MSY) Southern California



Southern California Recent Catch History

- MSY = 13.4 million lbs
- 95% Confidence Interval = 8.4 to 17.5 million lbs
- 2013 catch = 8.7 million lbs

Optimal Number of SU Divers Based on Ex-Vessel Revenues



Thank You



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Department of Fish and Wildlife

Marine Region

Invertebrate Management Project