Preliminary Evaluation of the Dungeness Crab Trap Limit Program

Dungeness Crab Task Force Meeting
October 2016
Ukiah, CA

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Dungeness crab trap limit program objectives*

- Improve the long-term sustainability of the fishery
- Cap the number of crab traps in the ocean that leads to
  - a market glut of crab early in the season
  - increased safety risks due to derby-like fishery
- Reduce the amount of lost/abandoned gear in the water
- Protect California's crab fishery from unfair competition from out-of-state boats that are limited in their own states

** excerpted from SB 369 (Evans) bill analysis, 9/2/11*

Trap limit program evaluation

DCTF Initial Report to the Legislature, January 2015:

The DCTF is required to evaluate … and provide the Legislature, Department, and Commission with feedback on the commercial Dungeness crab industry's experiences with the program.

The DCTF [felt] more time is needed to evaluate the benefits, challenges, and loopholes associated with the program. … A number of topics and potential concerns have been raised by … industry and may be addressed in the January 2017 report to the Legislature, Department, and Commission.

Purpose of this presentation

To provide preliminary analysis of available information ***and seek DCTF feedback and input*** to evaluate the trap limit program based on goals and topics identified in SB 369 and DCTF discussions* including:

1. Access to the fishery
2. Fishing capacity
3. Fishing activity
4. Direct and indirect economic impacts
5. Program operation and effectiveness

** as summarized at the October 2015 DCTF meeting*

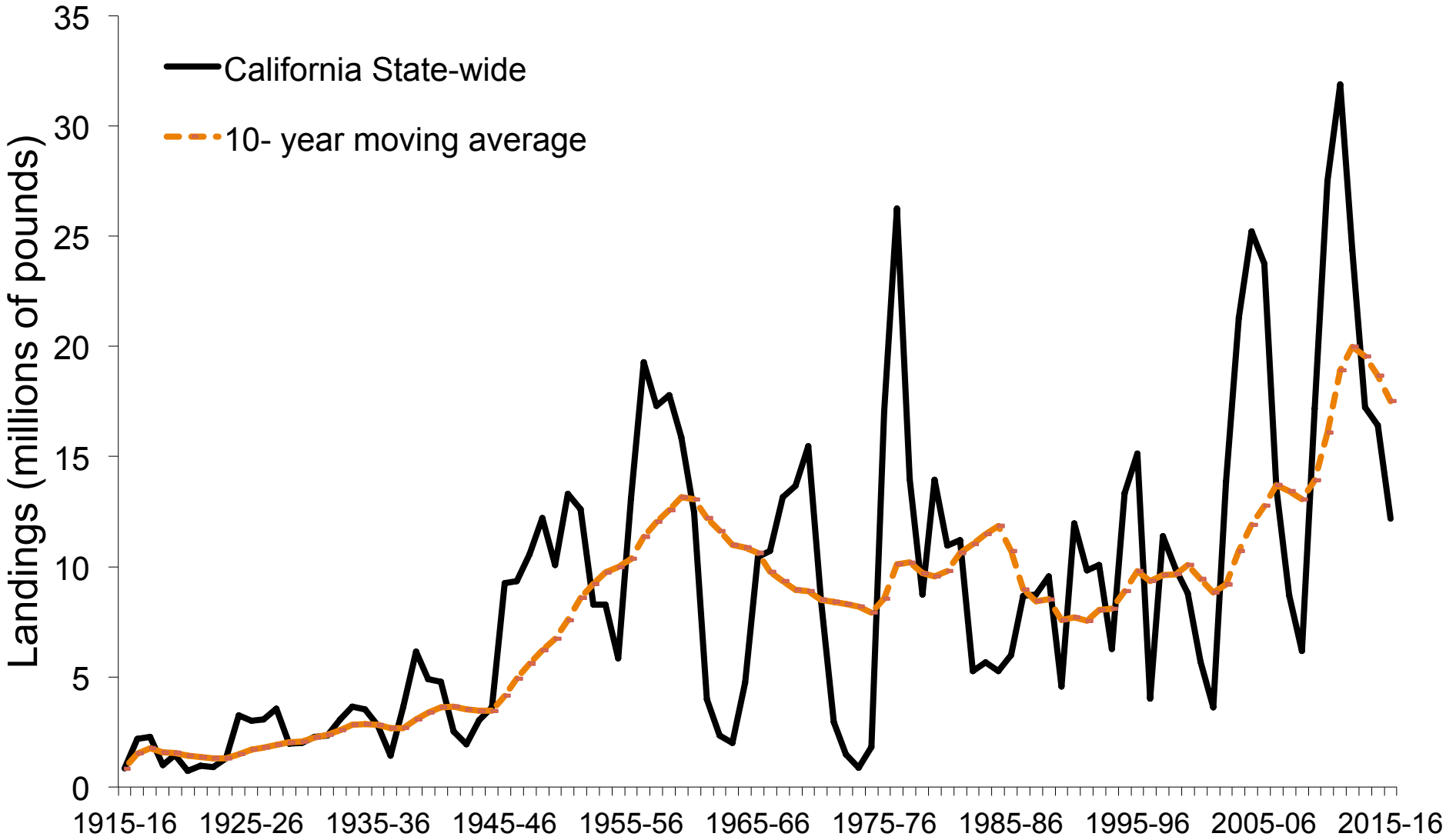
Methods and caveats

- Data and analysis
- Interpretation of results
- Caveats
  - short time frame
  - many other things affecting fishery
  - limited data

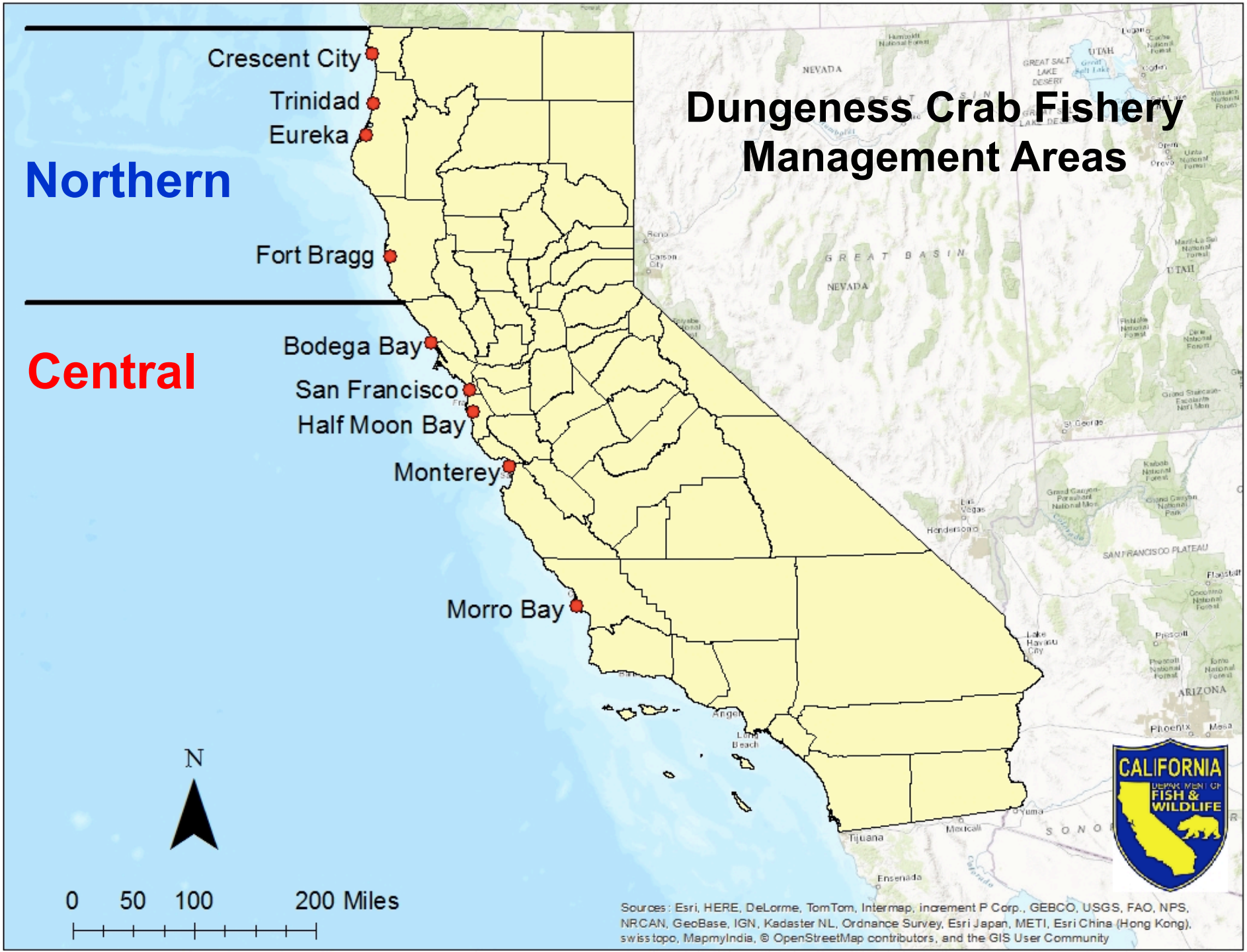
"The changes we have seen relative to fishing activity could have absolutely nothing to do with the trap program."

The information presented here is intended as a conversation starter.

Statewide commercial Dungeness crab fishery landings, by season, 1915-16 through 2015-16



Source: CDFW Data


Dungeness Crab Fishery Management Areas
Northern
Central
Crescent City
Trinidad
Eureka
Fort Bragg
Bodega Bay
San Francisco
Half Moon Bay
Monterey
Morro Bay
N
0 50 100 200 Miles
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
CALIFORNIA
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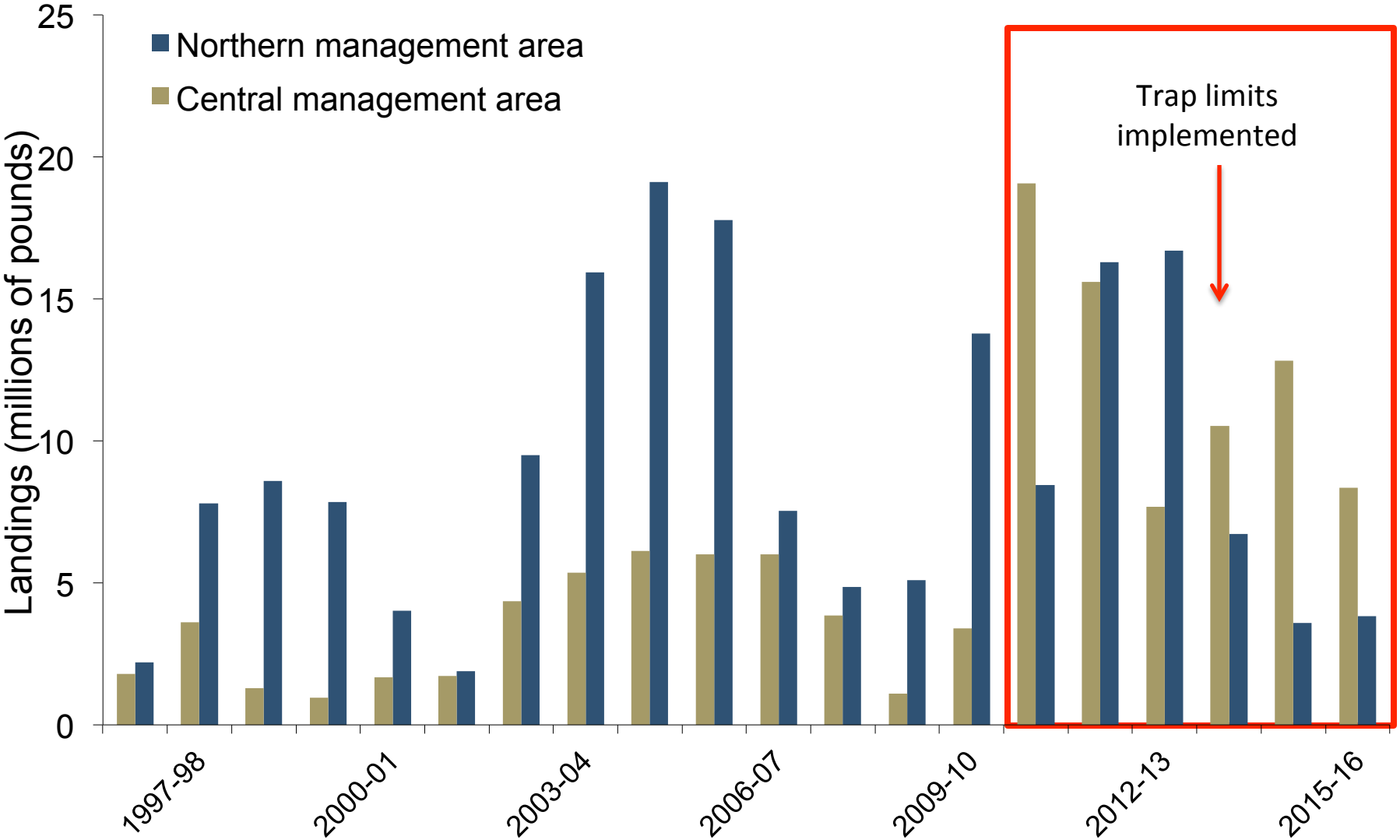
Seasonal landings by management area, 1996-97 through 2015-16



1. Has ***access to the fishery*** changed since the program was implemented?

- Access = feasibility of entering/participating in the fishery
  - affected by
    - availability of permits
    - costs of fishing operation, license and permit
    - other (social, economic) factors enabling/limiting access
- Financial costs
  - license, permit (*paid to CDFW*)

    + biennial trap tag fees $1,875 (Tier 7) - $3,500 (Tier 1)
  - permitted vessel, gear (*paid to previous owner*)

    + tier-based trap tags
- Available data indicate:
  - number of permits declined from 578 in 2010-11 to 561 in 2015-16

1. Has ***access to the fishery*** changed since the program was implemented?

If so, *how? why?*

2. Has ***fishing capacity*** changed since the program was implemented?

- Available indicators
  - permits
  - gear: trap tags
  - vessels: length, age
- Permits
  - 17 lost to attrition since 2010-11 season
- Gear
  - Tier upgrades: net gain of <1% of total maximum potential traps (1,325 of 174,050 in 2015-16)
  - Trap tag replacements
    - Within-season: 1% or less of maximum potential traps
    - Biennial: 3-8% of maximum potential traps

- Vessels
  - No significant differences in average vessel length pre v. post
  - Vessel length ranges widely within tiers
  - Average vessel length decreases from Tier 1 through Tier 7

Vessel length (feet) by tier, last 6 seasons

Tier	Average	Range
1	53	30 - 92
2	47	30 - 78
3	41	24 - 70
4	40	22 - 70
5❖	37	12 - 58
6	35	14 - 76
7❖	34	16 - 71

2. Has ***fishing capacity*** changed since the program was implemented?

If so, *how? why?*

3. Has ***fishing activity*** changed since the program was implemented?

- Participation, effort and catch, over time and space
  - Proportion of permits active in the fishery
  - Landings and ex-vessel value
  - Location
  - Timing

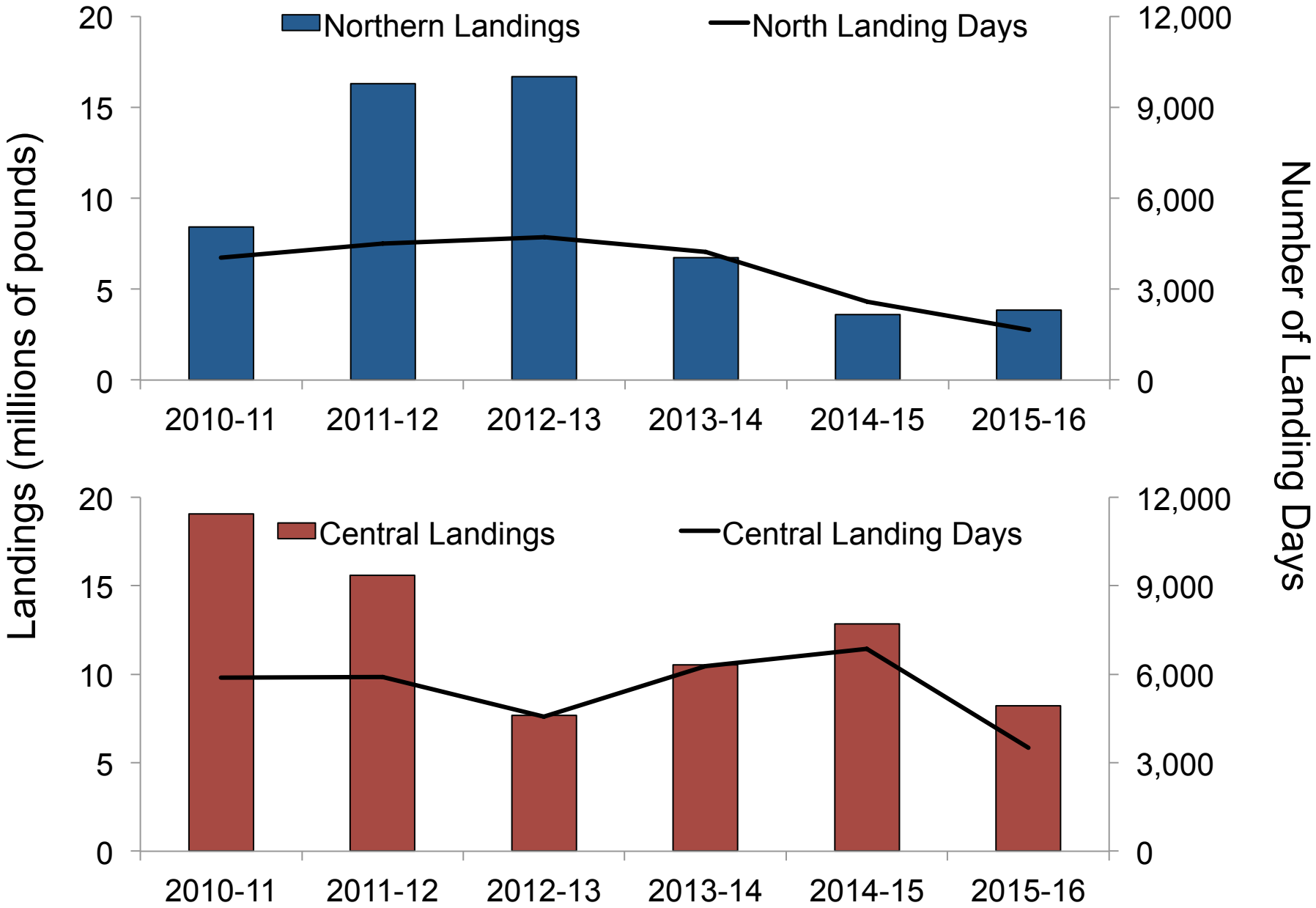
Number and proportion of permits that were active and landing days, by season, 2010-11 through 2015-16

Tier	Pre-Implementation			Post-Implementation		
	2010-11*	2011-12	2012-13	2013-14	2014-15	2015-16
Total Active Permits	412	435	447	453	461	405
Total Permits	576	570	570	568	563	561
% Active	71.5%	76.3%	78.4%	79.8%	81.9%	72.2%
Landing Days	9,936	10,417	9,292	10,497	9,445	5,159

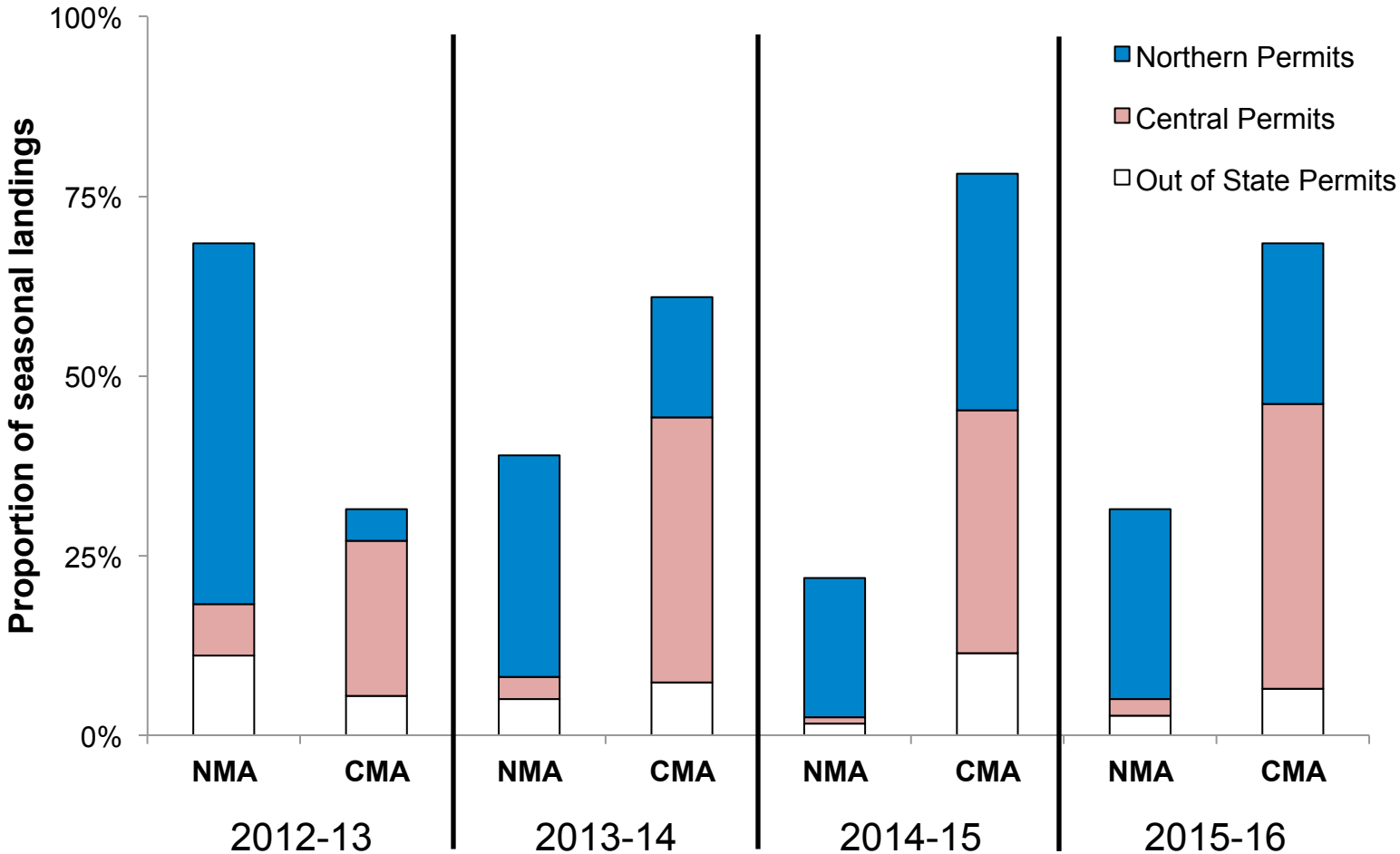
*2 permits not assigned to a tier also made landings during 2010-11 season.

Seasonal landings of Dungeness crab, 2010-11 through 2015-16

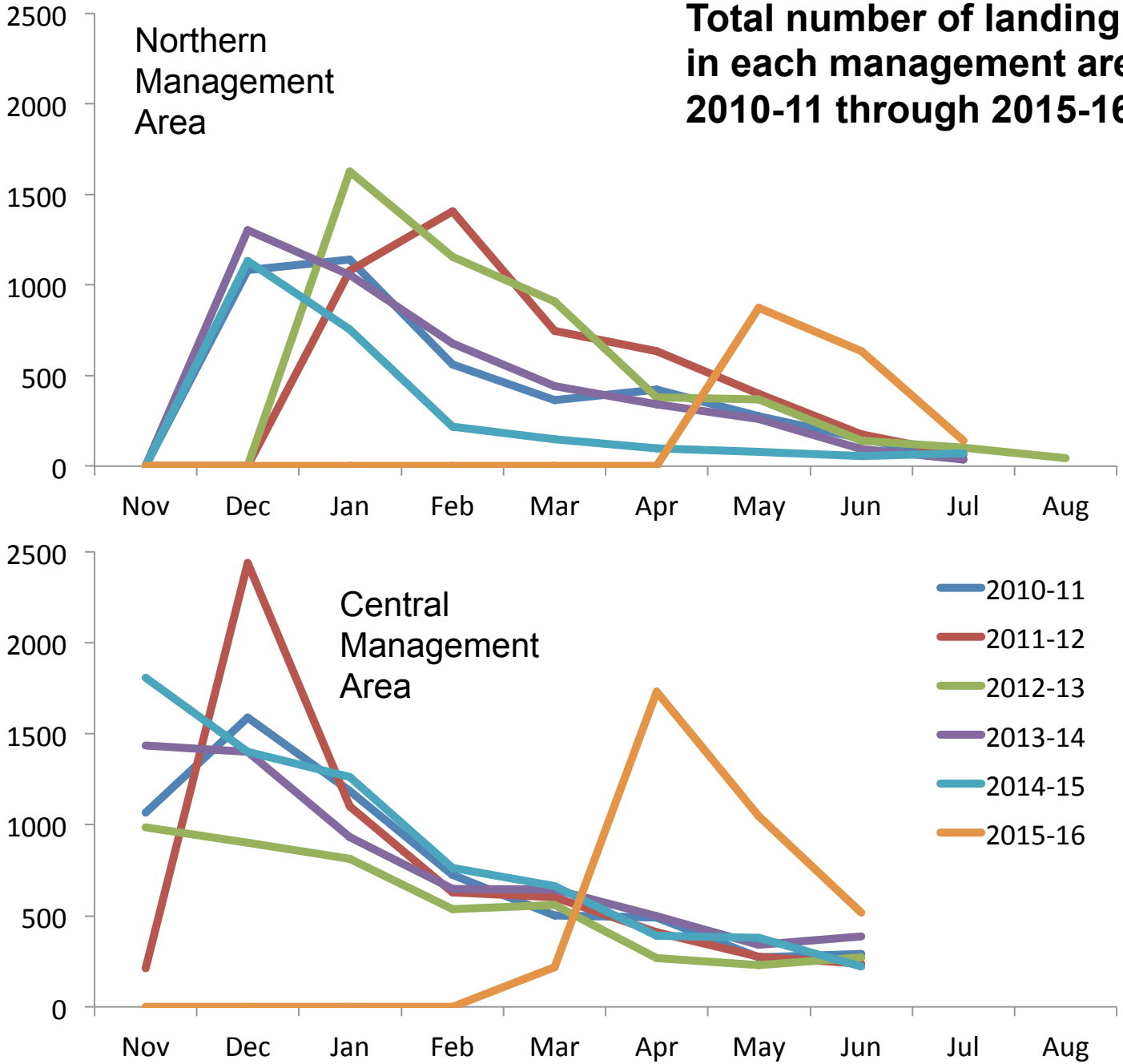
	Landings (million lbs)				
Season	**Northern**	**Central**	**Statewide**	**% North**	**% Central**
Pre implementation					
2010-11	8.4	19.1	**27.5**	30.7%	**69.3%**
2011-12	16.3	15.6	**31.9**	51.1%	48.9%
2012-13	16.7	7.7	24.4	68.5%	31.5%
Post implementation					
2013-14	6.7	10.5	17.2	39.0%	**61.0%**
2014-15	3.6	12.8	16.4	21.9%	**78.1%**
2015-16	3.8	8.3	12.2	31.5%	**68.5%**


Northern Landings
North Landing Days
Central Landings
Central Landing Days
Landings (millions of pounds)
Number of Landing Days
20
15
10
5
0
12,000
9,000
6,000
3,000
0
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16

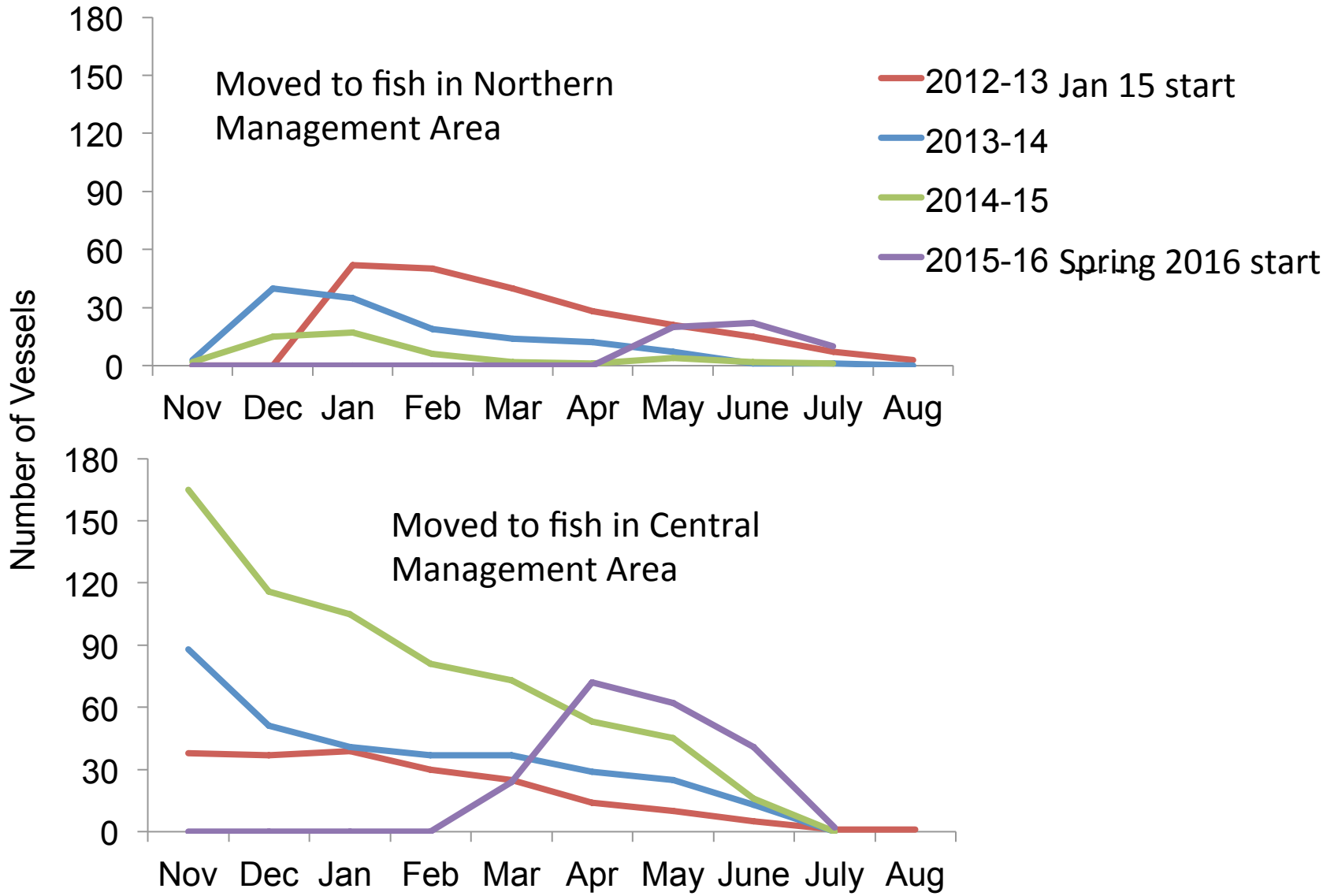
Proportion of landings (lbs) made in the Northern and Central Management Areas (NMA and CMA) by permit home port area, 2012-13 through 2015-16



Total number of landing days (~trips) in each management area, by month, 2010-11 through 2015-16



Number of vessels with landings in non-homeport management area each month, by season, 2012-13 through 2015-16



3. Has ***fishing activity*** changed since the program was implemented?

If so, *how? why?*

4. What have been the ***direct and indirect economic impacts*** of the program?

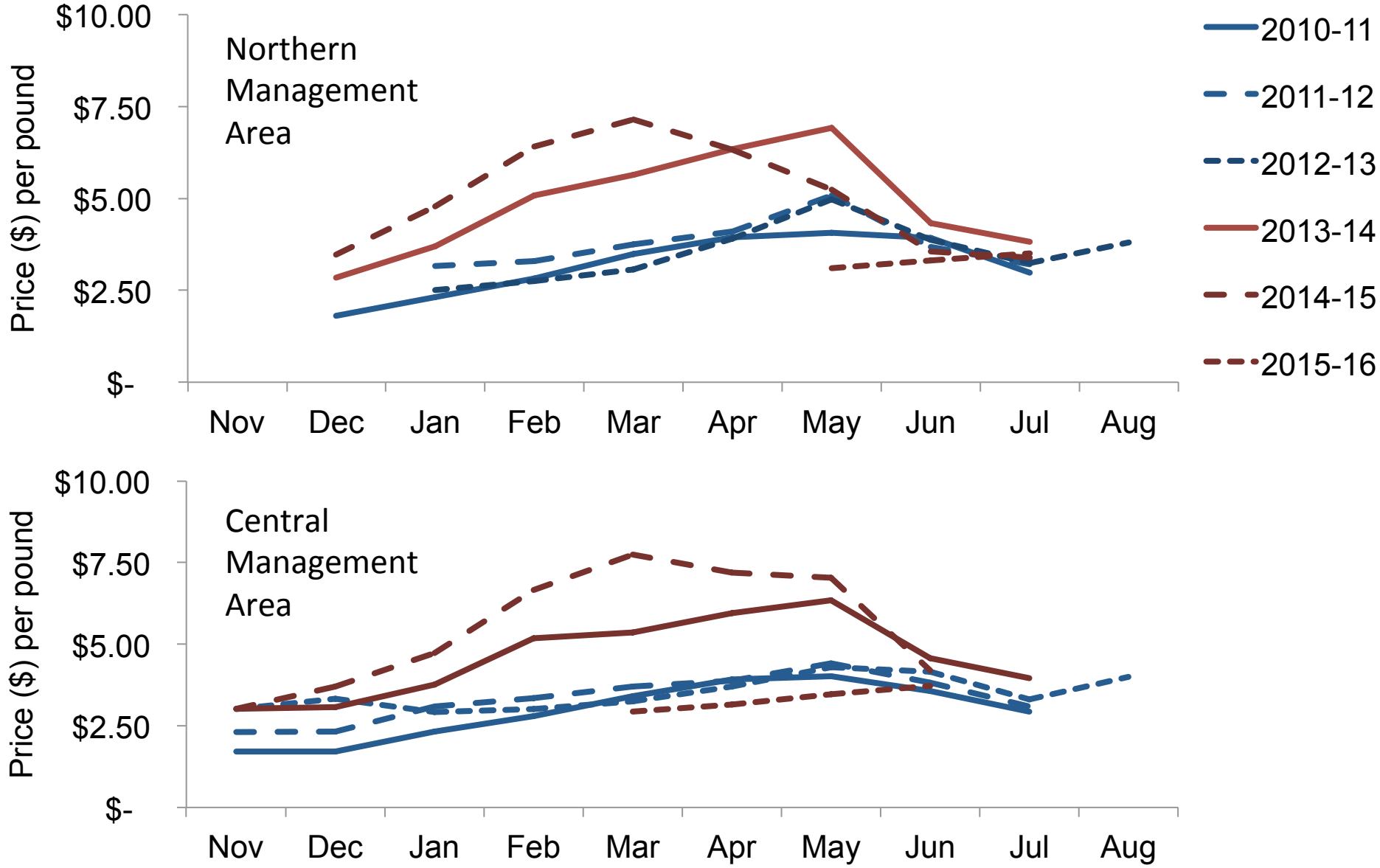
- Assessing economic impacts requires data on expenditures and revenues for fishing operations, fishermen, receivers/processors, and support businesses *before and after* an event or change
  - Direct impacts: changes in the fishery, e.g., revenue, jobs
  - Indirect impacts: resulting changes in support-businesses, e.g., revenue, jobs

- Available data
  - landings, landing days (trips), ex-vessel value
  - permits, vessels, fishermen, first receivers, ports

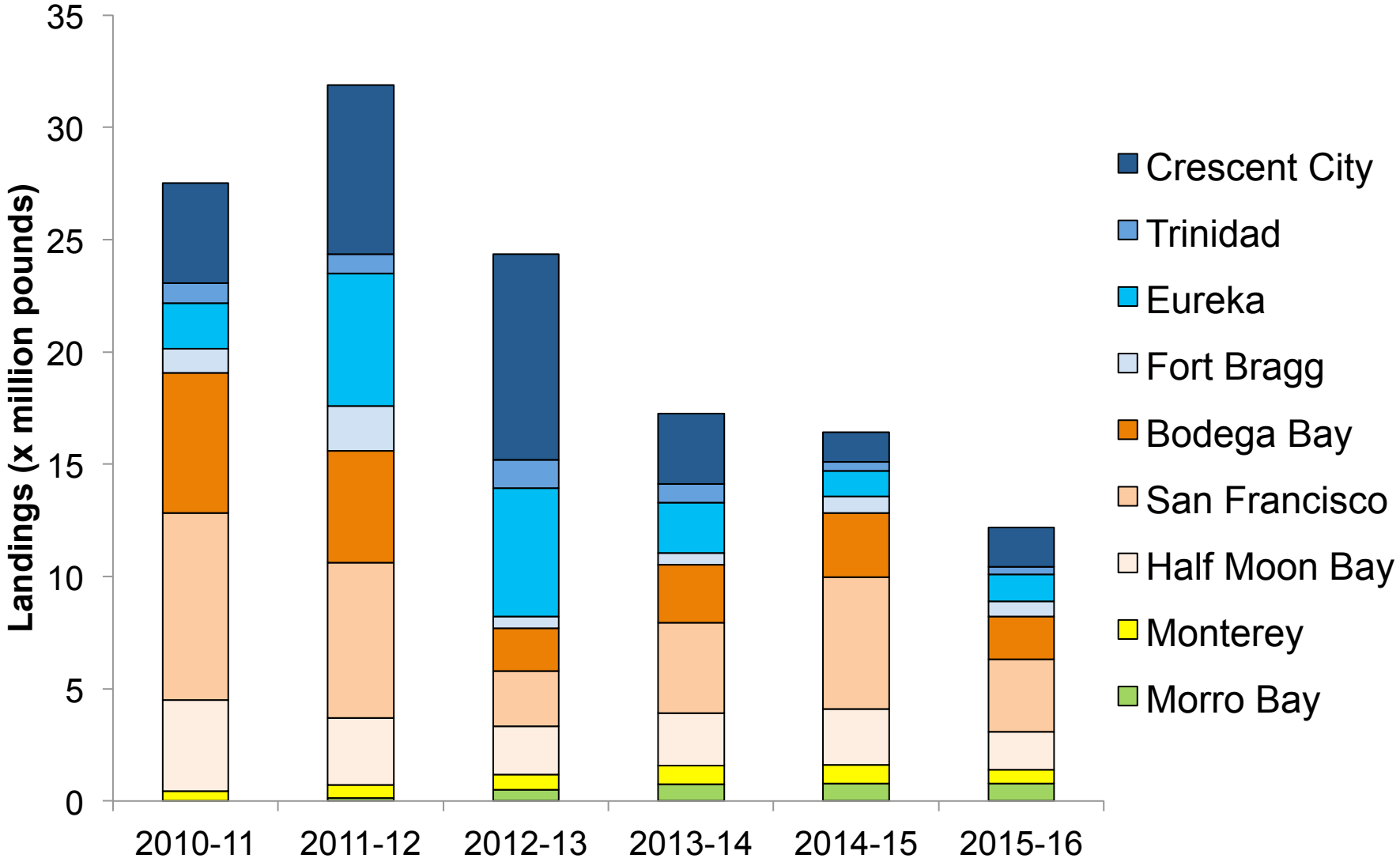
Total and average per permit seasonal Dungeness crab landings and ex-vessel revenue, 2010-11 through 2015-16

		Total		Per permit average	
Season	**Active permits**	**Pounds landed (millions)**	**Ex-vessel revenue (millions)**	**Pounds landed**	**Ex-vessel revenue**
Pre implementation					
2010-11	412	**27.5**	$56.7	66,748	$137,621
2011-12	435	**31.9**	**$95.5**	73,333	$219,540
2012-13	447	24.4	**$69.5**	54,586	$155,481
Post implementation					
2013-14	453	17.2	$60.1	37,969	$132,671
2014-15	461	16.4	$59.9	35,575	$129,935
2015-16	405	12.2	$39.1	30,123	$96,543

Average monthly ex-vessel price per pound, by season, 2010-11 through 2015-16



Proportion of seasonal landings at ports/complexes, 2010-11 through 2015-16



4. What have been the ***direct and indirect economic*** impacts of the program?

5. Has the ***program operated effectively***?

- Is it flexible, e.g., allowing adjustment after initial allocation?
  - Of 43 appeals, 17 upgraded, 21 not upgraded, 5 withdrawn
  - Change of vessel for a given permit: 37-65 per season since 2010-11

- Are replacement tag procedures working?

Season	# of Permits	Replace-ment Tags Issued	% Traps Fished	% Fleet	# of Permittees Requesting...		
					10% Tags	5-10% Tags	<5% Tags
Within biennial periods							
2013-14	64	1,633	1%	11%	43	7	14
2014-15	44	1,424	<1%	8%	17	21	6
2015-16	24	850	<1%	4%	20	4	0
Between biennial periods							
2013-14	283	11,723	8%	50%	n/a	n/a	n/a
2015-16	172	4,192	3%	31%	n/a	n/a	n/a

Summary

Has the program achieved its goals?

- Improved the fishery's long-term sustainability?
- Capped the number of traps in the ocean?
- Reduced the market glut of crab early in the season?
- Decreased derby-related safety risks?
- Reduced the amount of lost/ abandoned gear?
- Protected California's crab fishery from unfair competition from out-of-state boats?

Preliminary evaluation

- The changes seen *may* be related to the program, but also could have little to do with it
  - still very new
  - many factors affect the fishery
  - data on some key measures not available
- Information (presented and discussed) can be used for multiple purposes

- Continue the conversation?

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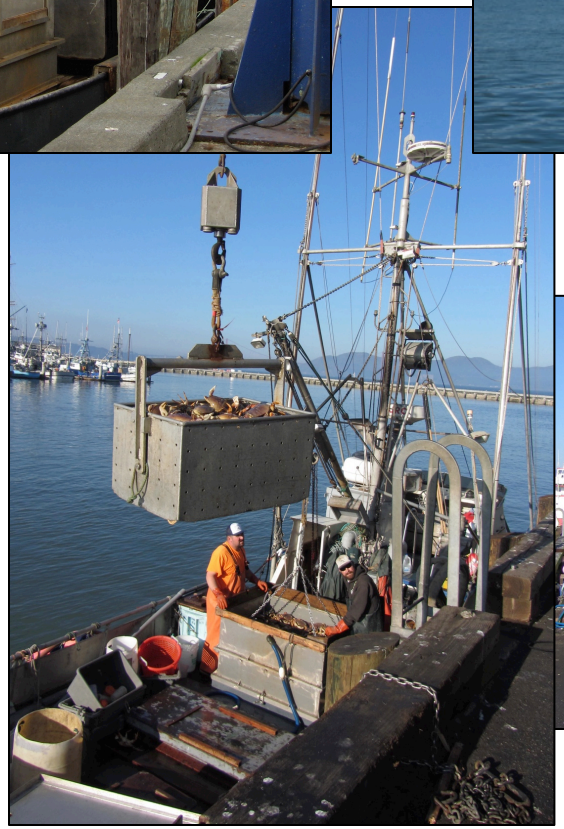
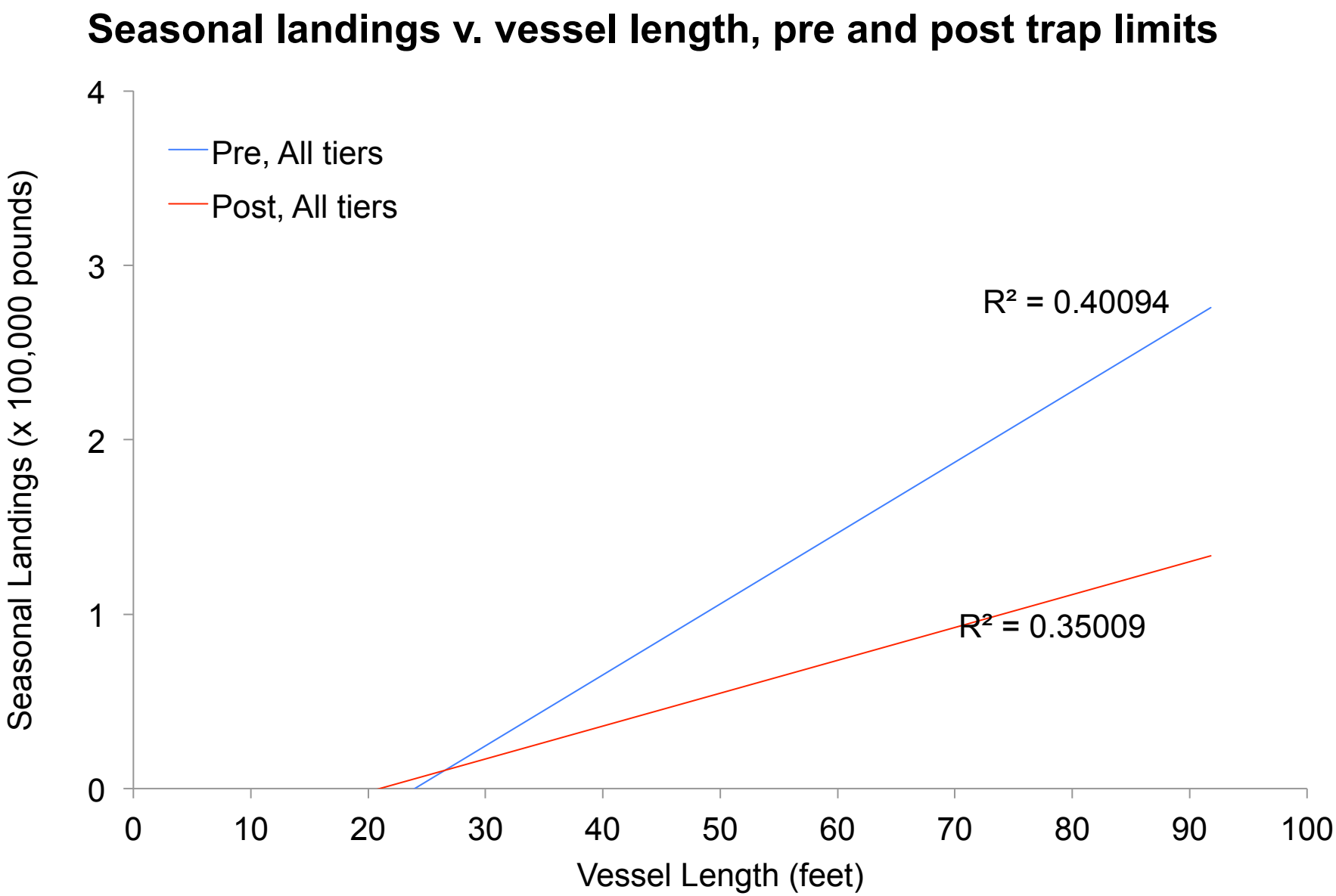
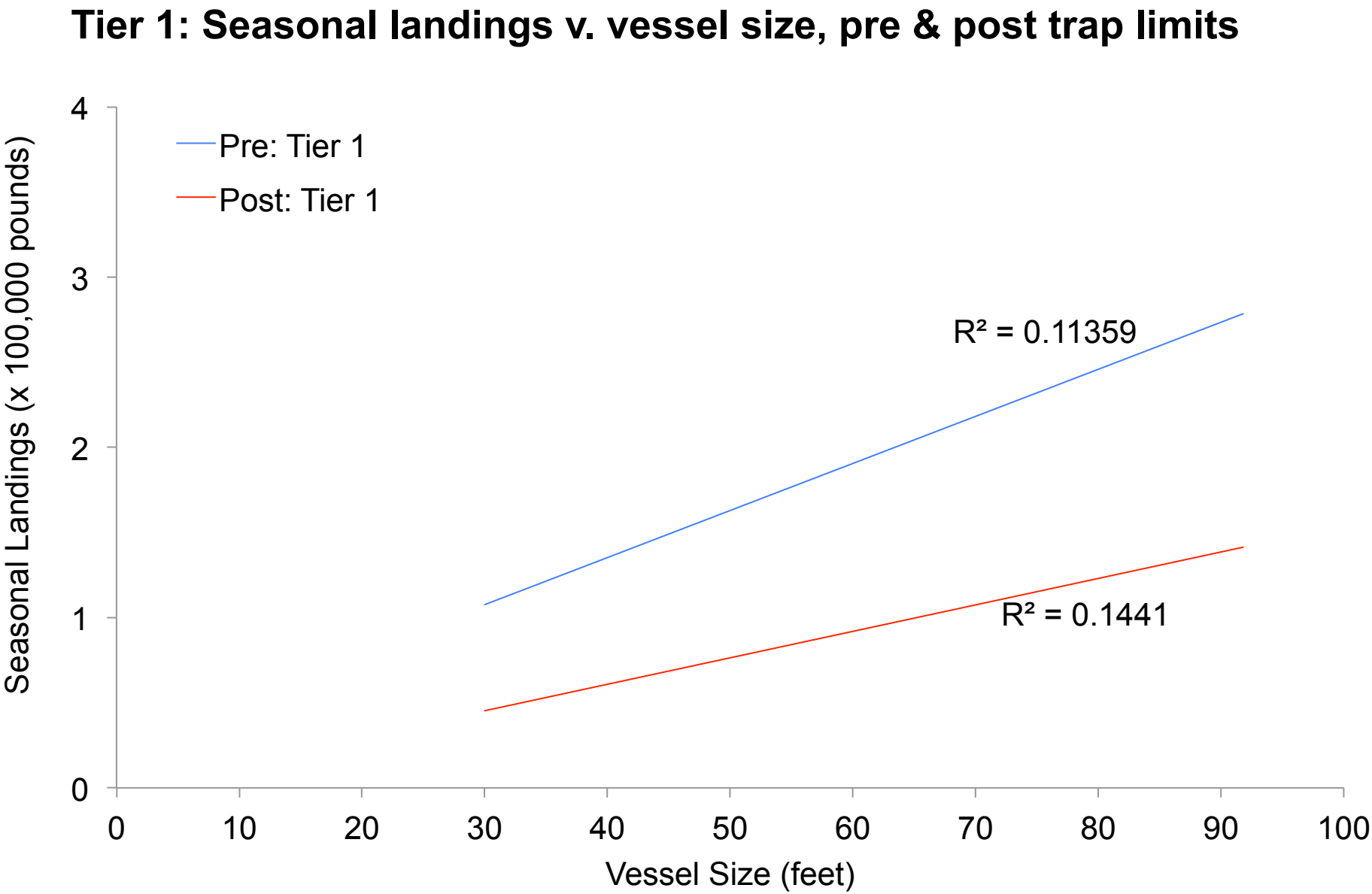
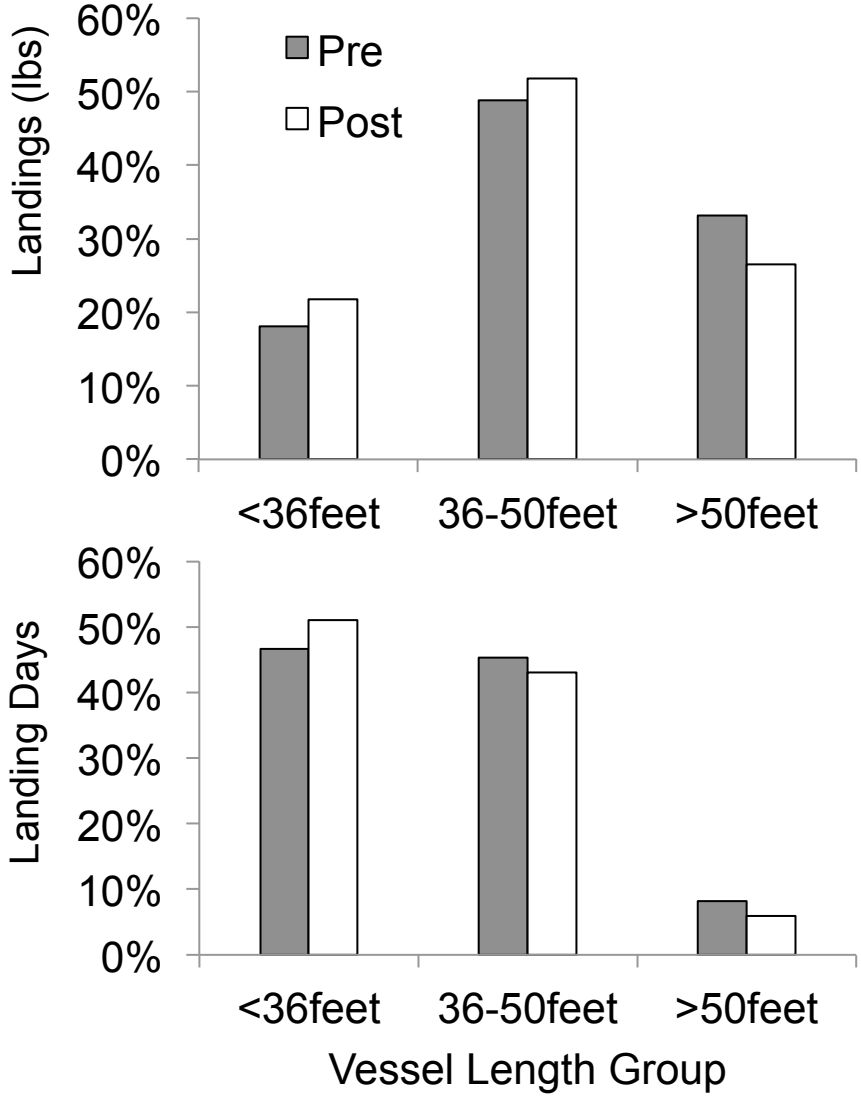


Supplementary slides


Seasonal landings v. vessel length, pre and post trap limits
Pre, All tiers
Post, All tiers
R² = 0.40094
R² = 0.35009
Seasonal Landings (x 100,000 pounds)
Vessel Length (feet)
0
1
2
3
4
0
10
20
30
40
50
60
70
80
90
100

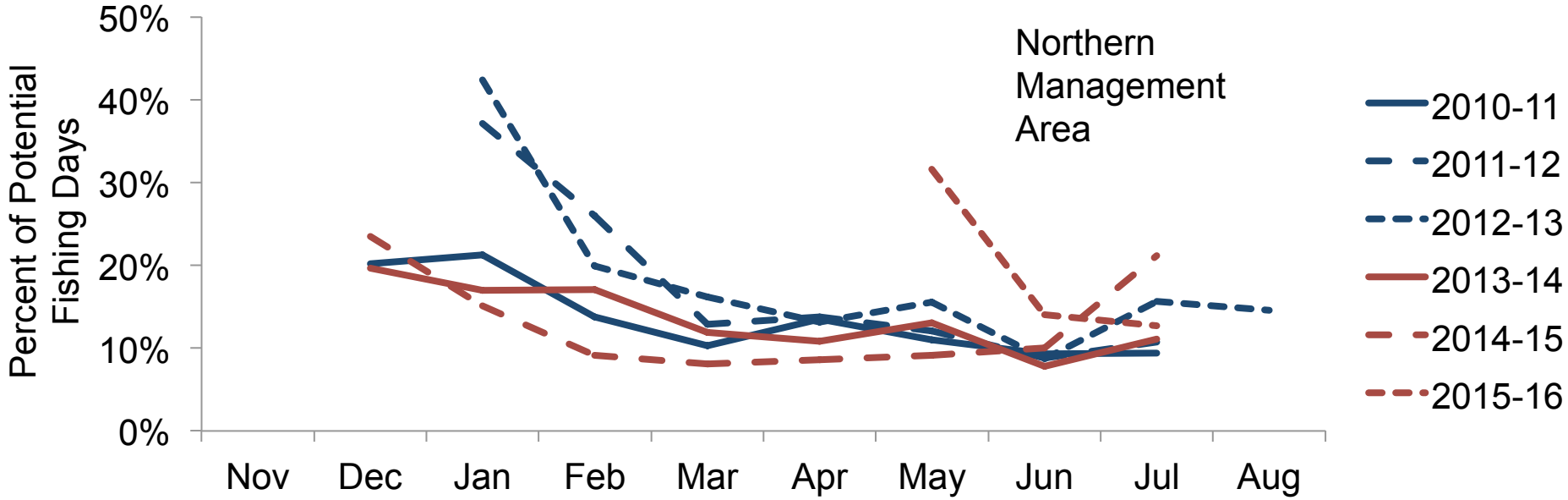

Tier 1: Seasonal landings v. vessel size, pre & post trap limits
Pre: Tier 1
Post: Tier 1
R² = 0.11359
R² = 0.1441
Seasonal Landings (x 100,000 pounds)
Vessel Size (feet)
0
1
2
3
4
0
10
20
30
40
50
60
70
80
90
100

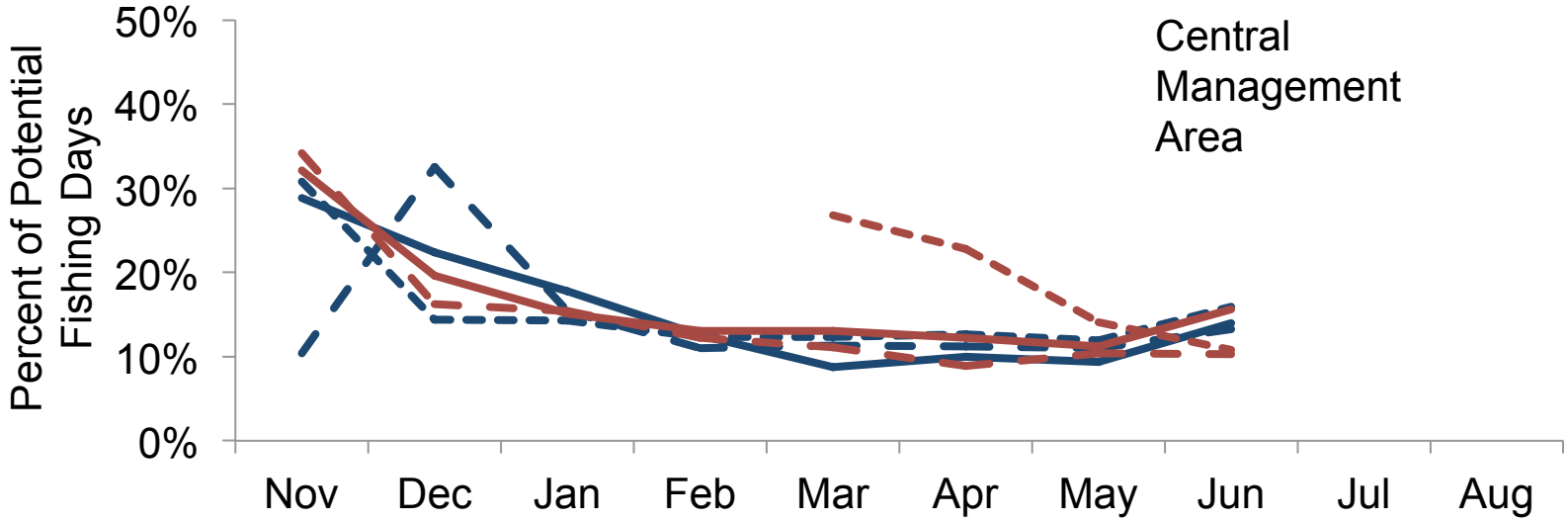
Proportion of landings (lbs) and landing days (~trips), by vessel length group, pre and post trap limits



- "Small" vessels account for greatest proportion of trips, followed closely by medium vessels
- "Medium" vessels account for the majority of landings (lbs) and just under 50% of active vessels
- "Large" vessels account for moderate landings and the smallest proportion of trips

Proportion of potential fishing days with landings in each management area, by month, 2010-11 through 2015-16





TRAP LIMIT PROGRAM
DEPARTMENT ACCOUNTING

Fiscal Year 2015-16			
	Balance As of 6/30/2016		$ 1,371 ,000
	Revenue As of 6/30/2016		$ 61,000
	PS	**OE**	**Total Exp.**
License and Revenue		$ 44 ,046	$ 44,046
Marine Staff	$ 100,330	$ 20,352	$ 120,682
Law Enforcement	$ 263,955	$ 234,082	$ 498 ,037
Total	$ **364,285**	$ **298,480**	$ **662,765**

Revenue generated by the permit, buoy tag, replacement tag and appeal fees

	FY 2012-13*	FY 2013-14	FY 2014-15	2015-16
Revenue by FY	$481,376	$1,072,849	$1,387,194	$61,143
Total Revenue Collected				$3,002,562