

2013 Crab Bushel Limits

Frequently asked questions

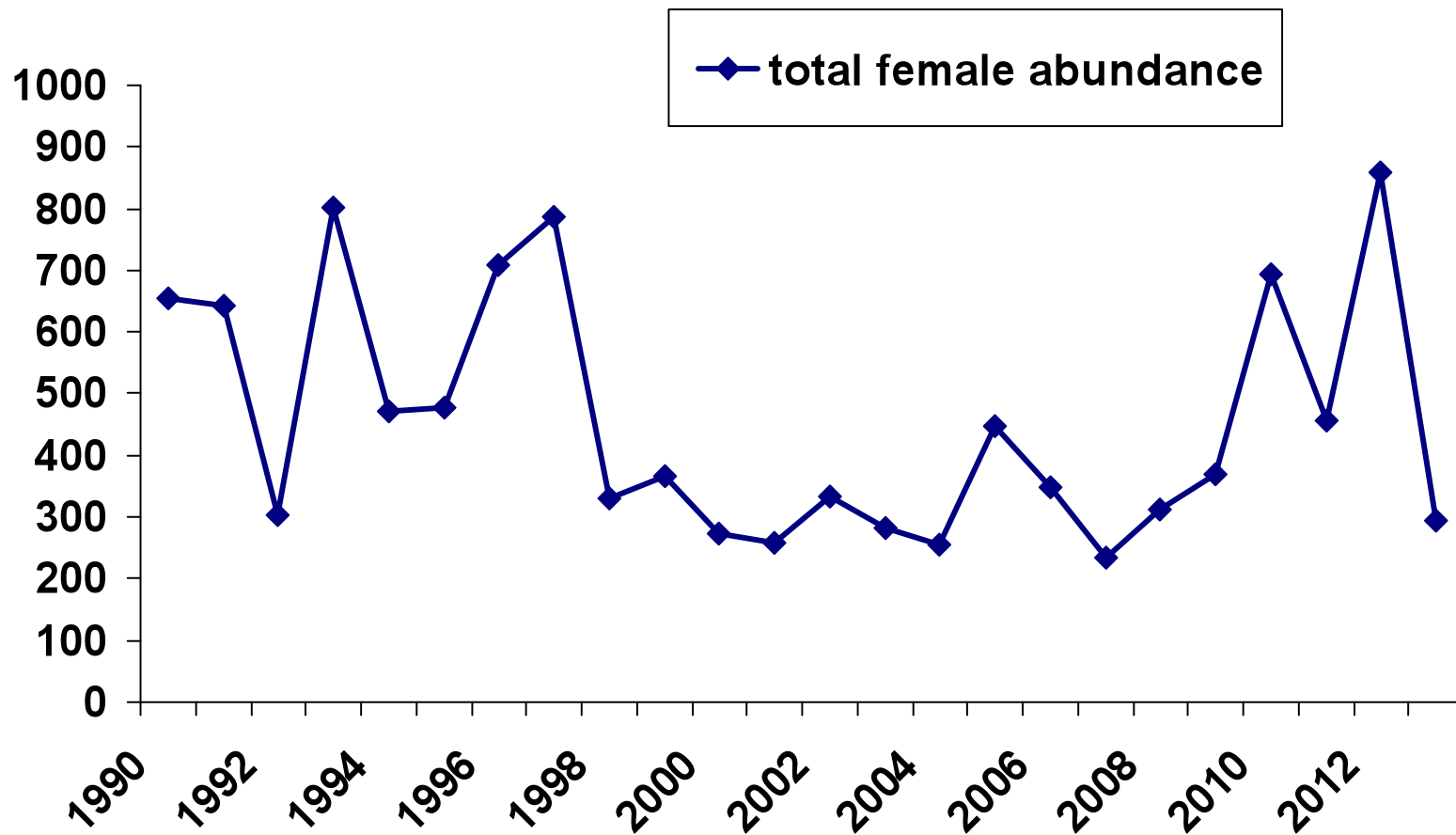
For the Tidal Fisheries Advisory Commission – May 16, 2013



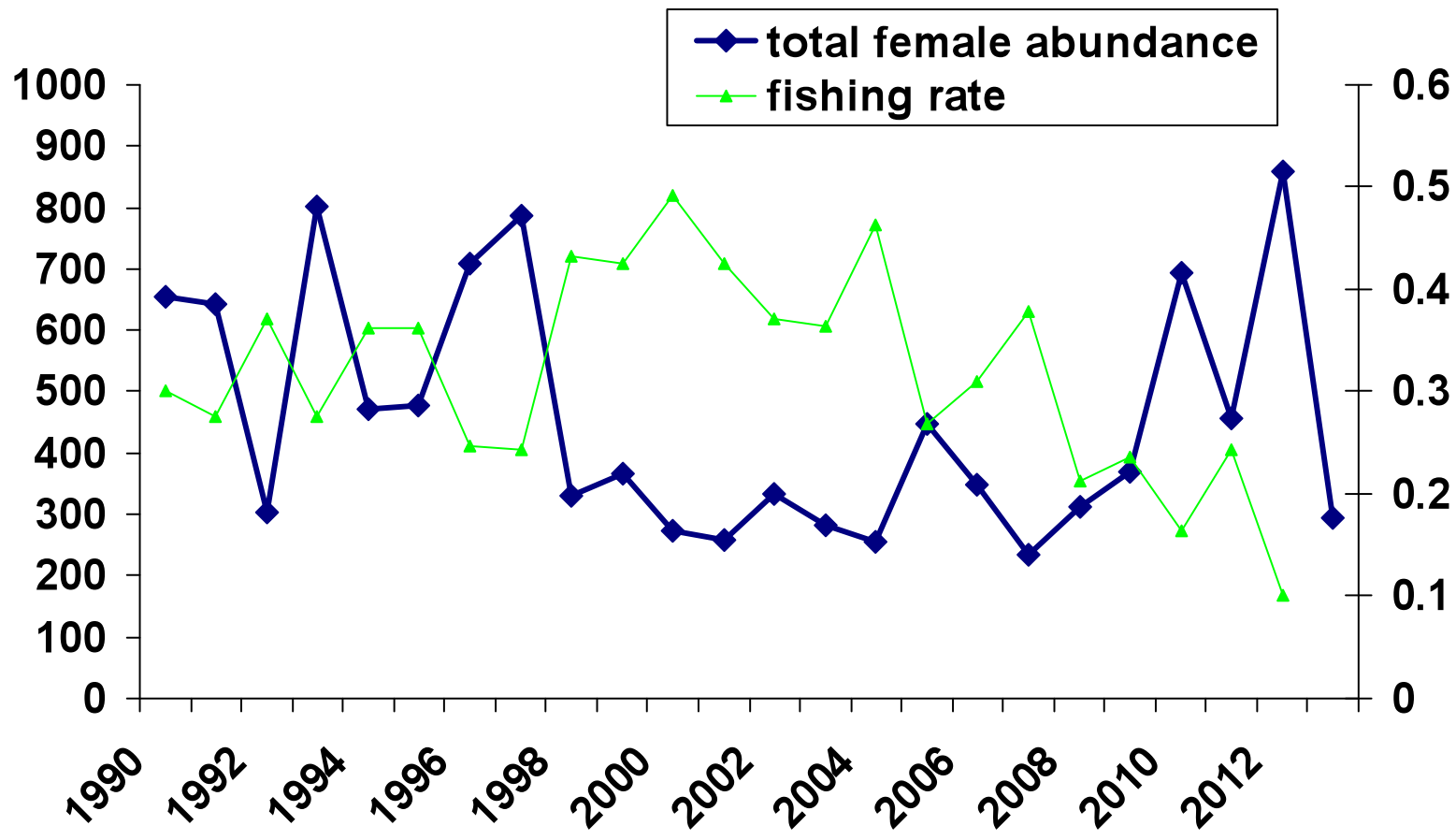
Why do we need to reduce the 2013 harvest by 10%,
We heard we were below the fishing target in 2012.

- Each year, we estimate the number of crabs in the Bay using the Dredge Survey.
- Our target harvest each year is 25.5% of the number of females estimated to be in the Bay – including the number of juveniles.
- We assume that all of the juveniles measured during the winter will become vulnerable to the following season's fishery by the fall of the year.
- In 2013, a very low number of juveniles caused the stock of females to decrease by 65% .

Total female crab abundance from the winter dredge survey. The 2013 decline is similar to the one in 1998. In 1998, the States never adjusted harvest to account for a poor juvenile year. This pushed us into year's of overfishing and low abundance.



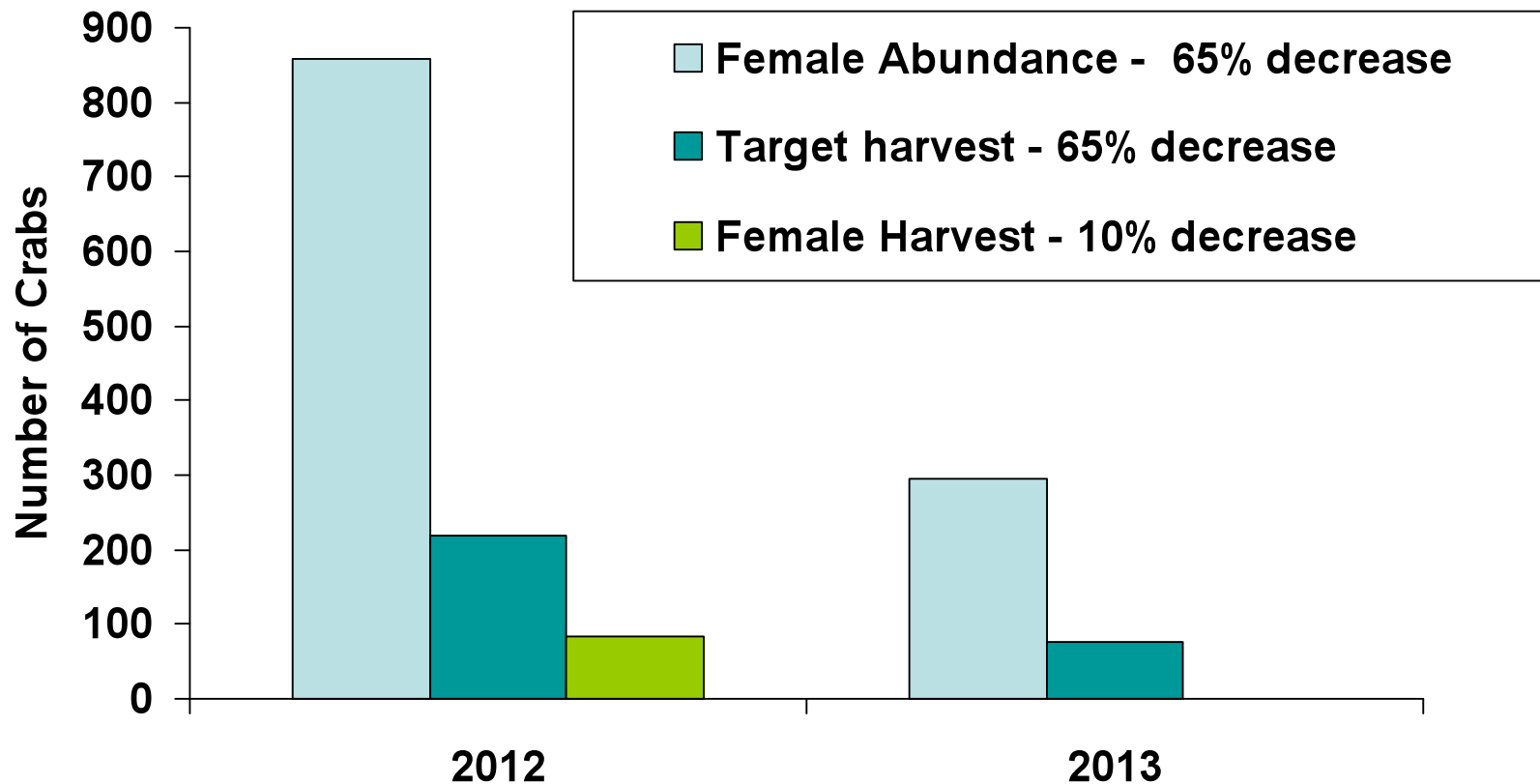
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The Baywide harvest in 2012 was approximately 84.3 million female crabs – about 10% of abundance. This was way under the target of 25.5%

In 2013, we need a Baywide harvest of approximately 76 million female crabs to maintain the harvest target of 25.5%

The 2013 Baywide harvest target of 76 million crabs is about 10% less than last year's harvest of 84.3 so Baywide harvest must go down 10%.



Why can't we simply reduce the 2012 bushel limits by 10%?

Reason #1:

Most crabbers only achieve their bushel limits part of the time.

Many crabbers never achieve the limit at all.

We treat all crabbers the same within a license category.

To Demonstrate how our calculations work, we'll walk through it with three crabbers:

Joe – highliner who catches his limit every single day.

Max – also a highliner, but catches his limit only $1/3$ of the time.

Sam – a good crabber, but never reaches the limit.

Day	crabber	catch	Reduce every day by 10%
1	Joe	36	32
2	Joe	38	34
3	Joe	35	32
1	Max	40	36
2	Max	20	18
3	Max	25	23
1	Sam	18	16
2	Sam	20	18
3	Sam	14	13
		246	221

Here is an example of daily reports for a season of crabbing.

The harvest was 256 bushels.

We need to reduce that by 10% to a target harvest of 221 bushels.

If we could ask each crabber to catch 10% less each day, that would work.

Instead, we give everyone within the license type, the same limit – regardless of their crabbing behavior.....

To achieve our target harvest of 221 bushels, we start by applying a limit of 35 bushels. That's a 13% reduction from Max's top end.

A Limit of 35 is too high to achieve our target. Joe has an average reduction of 4% and a max reduction of 8%. Max also has an average reduction of 4%, but his biggest reduction is 13%. Sam gets no reduction at all.

Day	crabber	catch	limit	harvest	Daily % redux
1	Joe	36	35	35	3
2	Joe	38	35	35	8
3	Joe	35	35	35	0
1	Max	40	35	35	13
2	Max	20	35	20	0
3	Max	25	35	25	0
1	Sam	18	35	18	0
2	Sam	20	35	20	0
3	Sam	14	35	14	0
		246		237	

A limit of 31 bushels achieves our target harvest. But these 3 crabbers are impacted very differently. Joe has an average cut of 15%, Max has an average cut of 8%, but a maximum cut of 23%! Sam still sees no cut at all.

Day	crabber	catch	limit	harvest	Daily % redux
1	Joe	36	31	31	14
2	Joe	38	31	31	18
3	Joe	35	31	31	11
1	Max	40	31	31	23
2	Max	20	31	20	0
3	Max	25	31	25	0
1	Sam	18	31	18	0
2	Sam	20	31	20	0
3	Sam	14	31	14	0
		246		221	

Crab Abundance has dropped and we need to reduce harvest by another 10%.

We were working under a target harvest of 221 bushels which we achieved with a 31 bushel limit.

Our new target harvest is 200 bushels (10% less than 221)

Can we achieve this by simply reducing our 31 bushels by 10% to 28 bushels?

A new limit of 28 bushel only gets us half way to our new target harvest. This is a full 10% reduction for Joe. For Max, he has a 10% reduction off his top end, but his average reduction is only 3%. Sam sees no reduction at all.

Day	crabber	catch	limit	harvest	Daily redux
1	Joe	31	28	28	10
2	Joe	31	28	28	10
3	Joe	31	28	28	10
1	Max	31	28	28	10
2	Max	20	28	20	0
3	Max	25	28	25	0
1	Sam	18	28	18	0
2	Sam	20	28	20	0
3	Sam	14	28	14	0
		246		209	

A new limit of 26 bushels gets us most of the way to our 10% reduction. **That is a 16% reduction in the bushel limit!** For Joe, it is a 16% reduction. For Max, this is an average 5% reduction, but a 16% reduction from his top end. For Sam, this is no reduction at all.

Day	crabber	catch	limit	harvest	Daily % redux
1	Joe	31	26	26	16
2	Joe	31	26	26	16
3	Joe	31	26	26	16
1	Max	31	26	26	16
2	Max	20	26	20	0
3	Max	25	26	25	0
1	Sam	18	26	18	0
2	Sam	20	26	20	0
3	Sam	14	26	14	0
		246		201	

Summary

- In this small example, we needed to lower limits by 16% to achieve a 10% reduction.
- Our crab fishery has no Joe's – there is not a single crabber who catches the limit every day.
- Our crab fishery is mostly Sam's and some Max's – the reduction comes off the top end of those crabbers who hit the bushel limit part of the time.
- For an example, in setting October limits, we expect that 75-80% crabbing trips will not achieve limits.

Why can't we simply reduce the 2012 bushel limits by 10%?

Reason #2:

The female crab catch is very unevenly distributed through the season.

That means that reductions earlier in the season, must be steeper, so that they can impact the entire year's harvest...

On average, 10% of the mature female harvest happens prior to July 1st. If we closed the female fishery until July 1st, we would reduce harvest by 10%. Female harvest is so low, and so sporadic during the early months of the season, we have to dig even deeper to achieve the reductions in these months. In the past, the crab committee has elected to try and keep summer limits up, because prices are better.

