

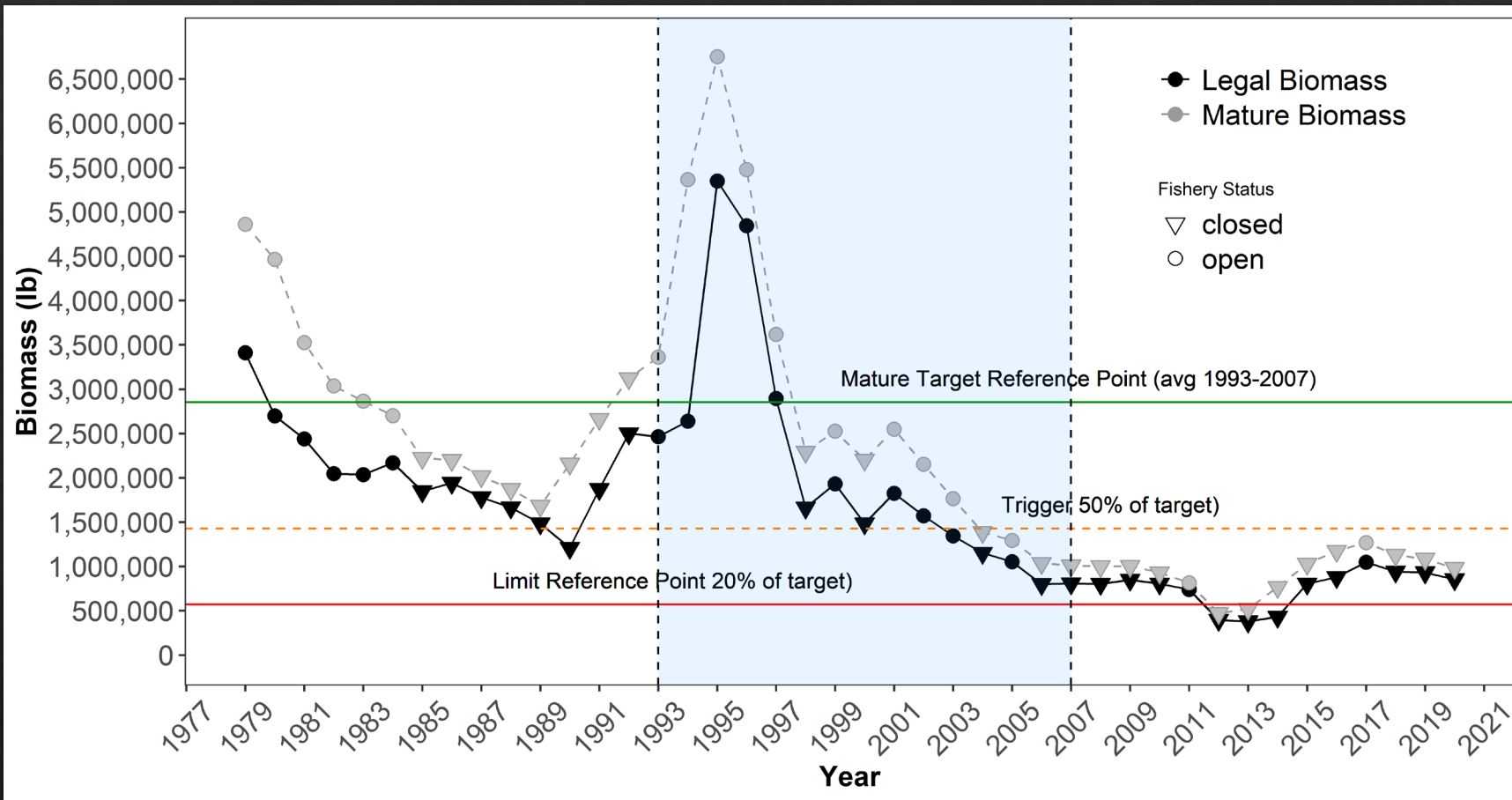
Southeast Red king crab biological threshold update

K. Palof

KTTF 2020

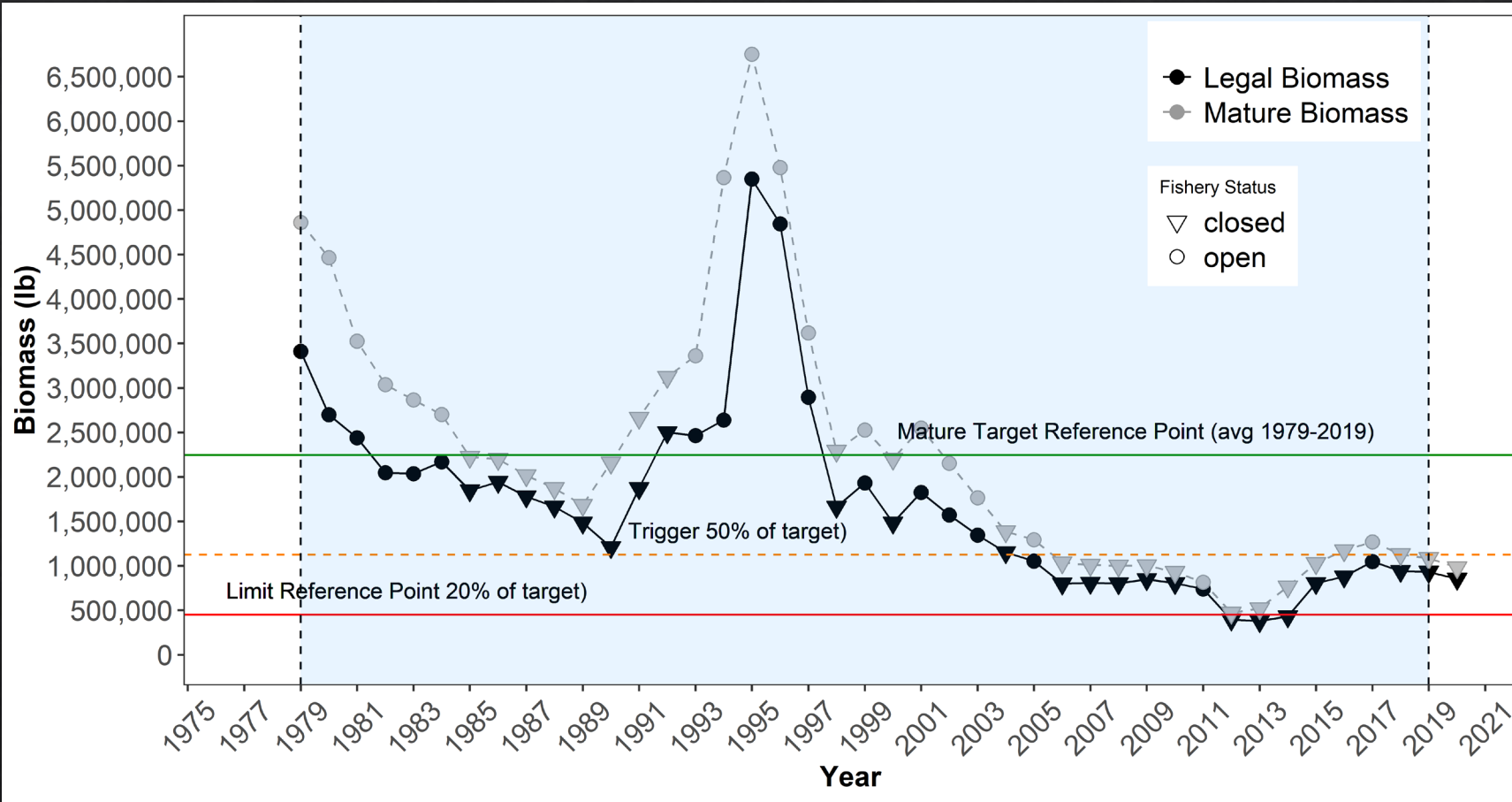
Background

- ◇ Current harvest strategy has an economic harvest limit of 200,000 lb of harvestable surplus
- ◇ Desire to move to a harvest strategy based on a biological threshold
 - ◇ May allow for a more consistent smaller harvest
 - ◇ Would be directly based on the stock health
- ◇ Biological threshold approach would rely on setting biological reference points based on the historical time series
 - ◇ Similar to GKC harvest strategies currently under development



Regional biomass – surveyed areas only

reference values (1993-2007)



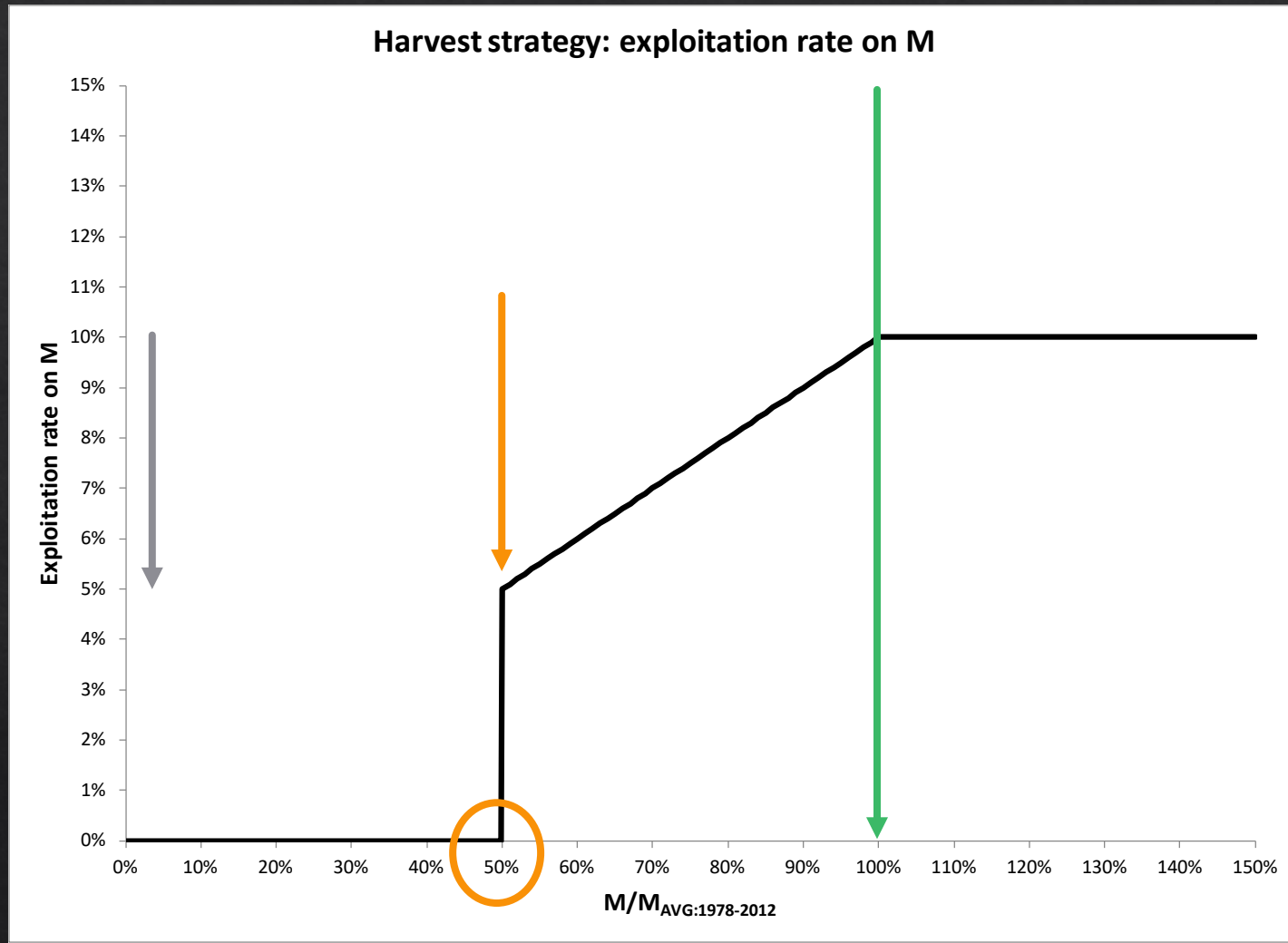
Reference points based on all years (1979-2019)

Harvest Strategies

- ◇ Used for many stocks throughout the state
- ◇ Reference points from long-term biomass trends to set harvest rates on mature male biomass (MMB)
- ◇ Can involve triggers or levels that depend on female trends or biomass
- ◇ Simple example: St. Matthew Blue king crab (SMBKC)
- ◇ Complex example: Bristol Bay red king crab (BBRKC)

St. Matthew Blue King Crab

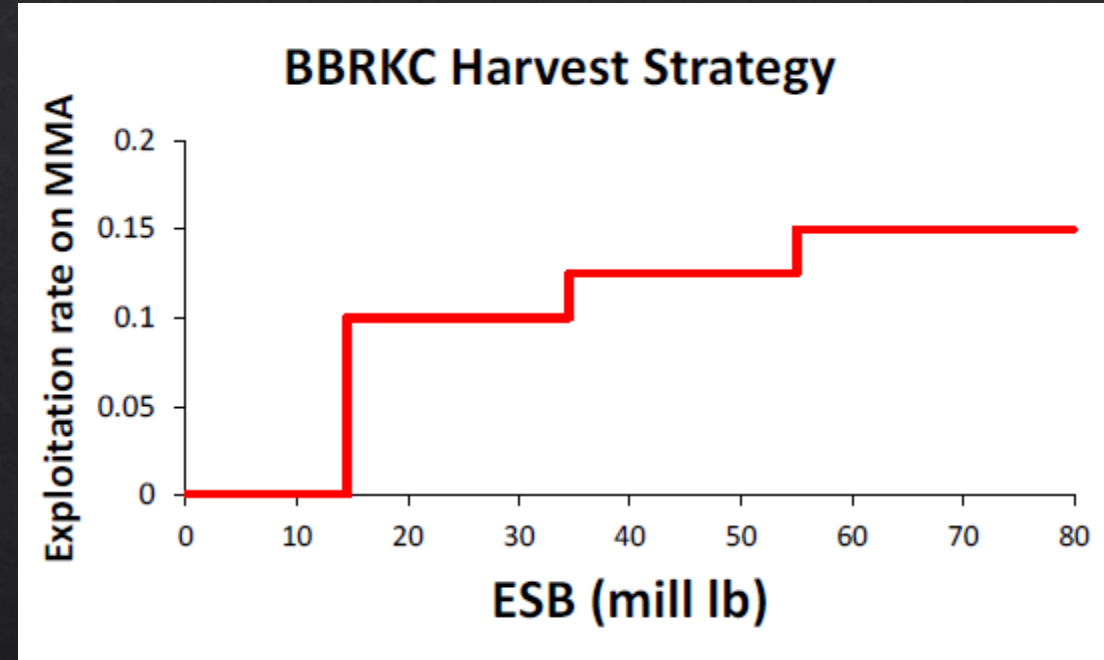
State harvest strategy (5 AAC 34.917)



M = mature-sized male (males ≥ 105 mm CL) abundance estimated at time of survey
 $M_{AVG:1978-2012}$ = average of annual M estimates for 1978-2012

Bristol Bay red king crab harvest strategy

- ◇ Stock threshold for opening fishery
 - ◇ 8.4-million mature-sized females (females ≥ 90 mm CL), and
 - ◇ 14.5-mill lb of effective spawning biomass (ESB)
- ◇ Exploitation rate on mature-sized (≥ 120 -mm CL) male abundance:
 - ◇ 10%, when ESB < 34.75 -mill lb
 - ◇ 12.5%, when ESB is between 34.75-mill lb and 55.0-mill lb
 - ◇ 15%, when ESB ≥ 55.0 -mill lb
- ◇ Harvest capped at 50% of legal male abundance



Next steps

- ◇ Set clear objectives agreed upon with all user groups for new harvest strategy
 - ◇ More consistent harvest ? Smaller harvest levels? Sustainability of the stock at what level?
- ◇ Biomass time series
 - ◇ Determine most appropriate subset of years to set threshold levels
- ◇ Review historical harvest and appropriate harvest levels
 - ◇ Max harvest rate ?
 - ◇ Min harvest rate ?
 - ◇ Shape of harvest strategy
- ◇ Develop draft harvest strategies
- ◇ Inclusion of effort limits ?
- ◇ Vital to have industry participation in this process