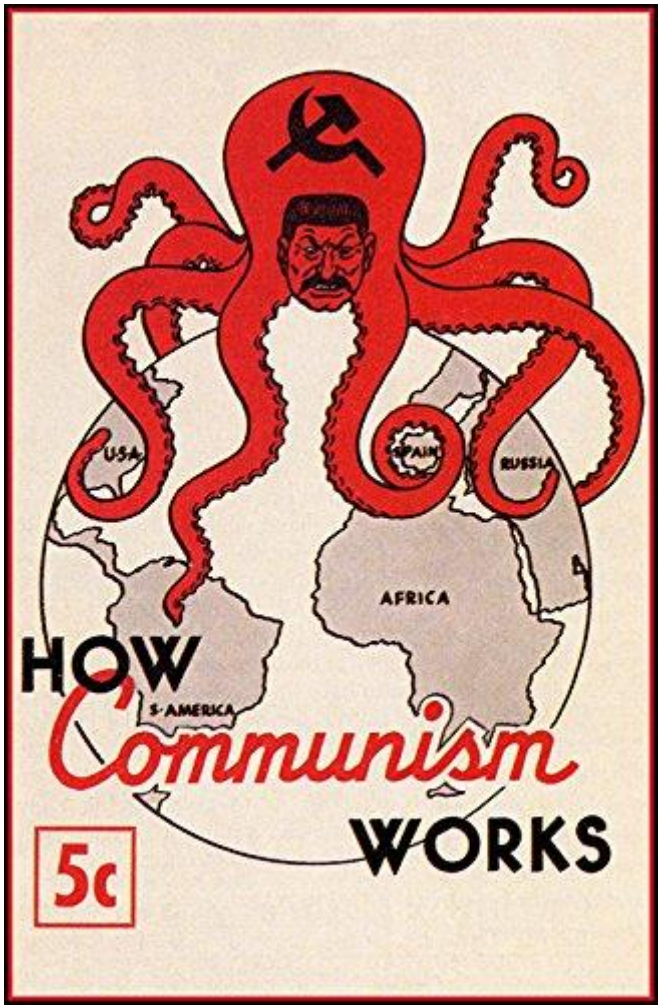
GOA octopus complex

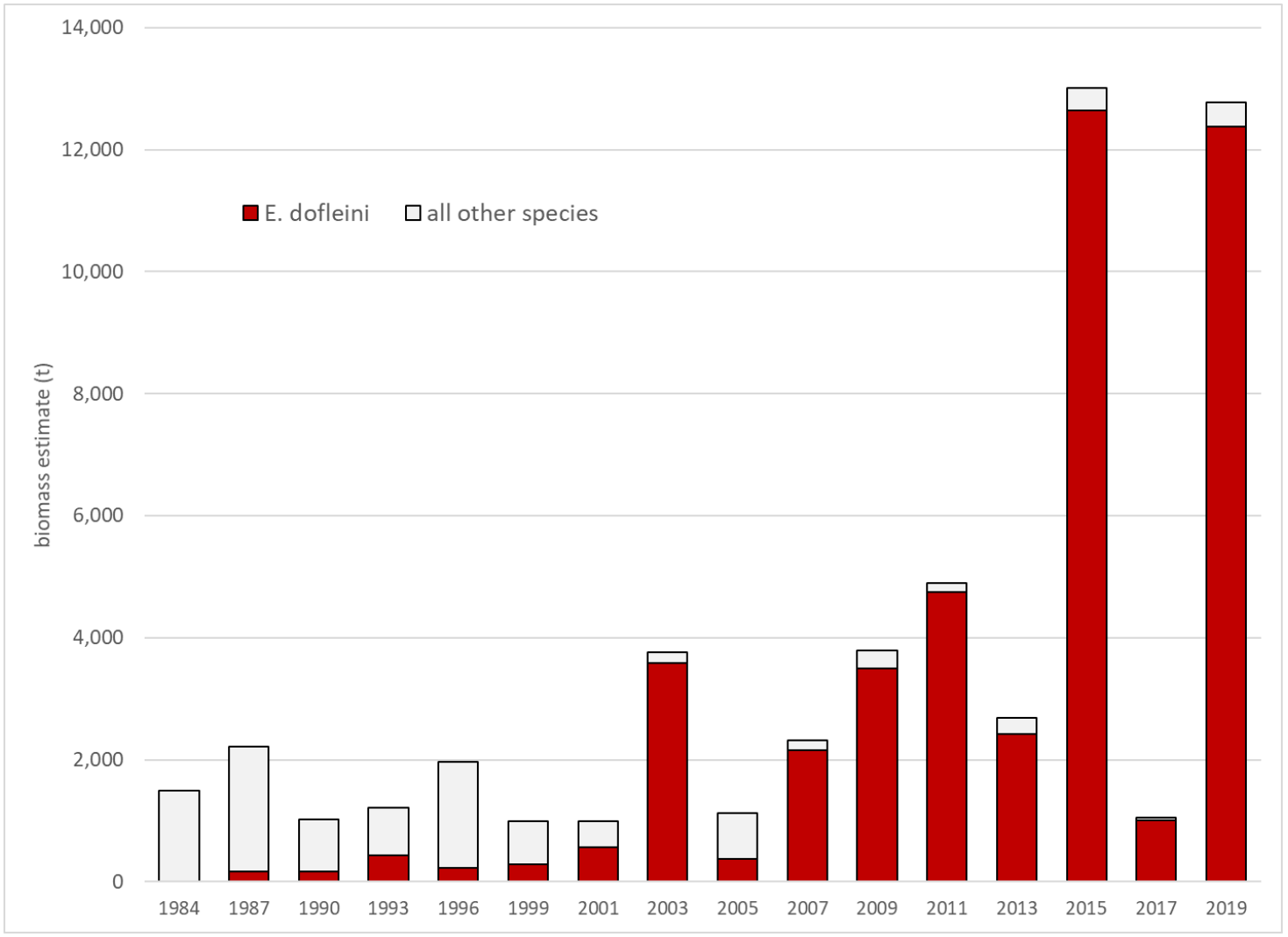


Olav A. Ormseth
Alaska Fisheries Science Center
NPFMC Groundfish Plan Team meeting, November 2017

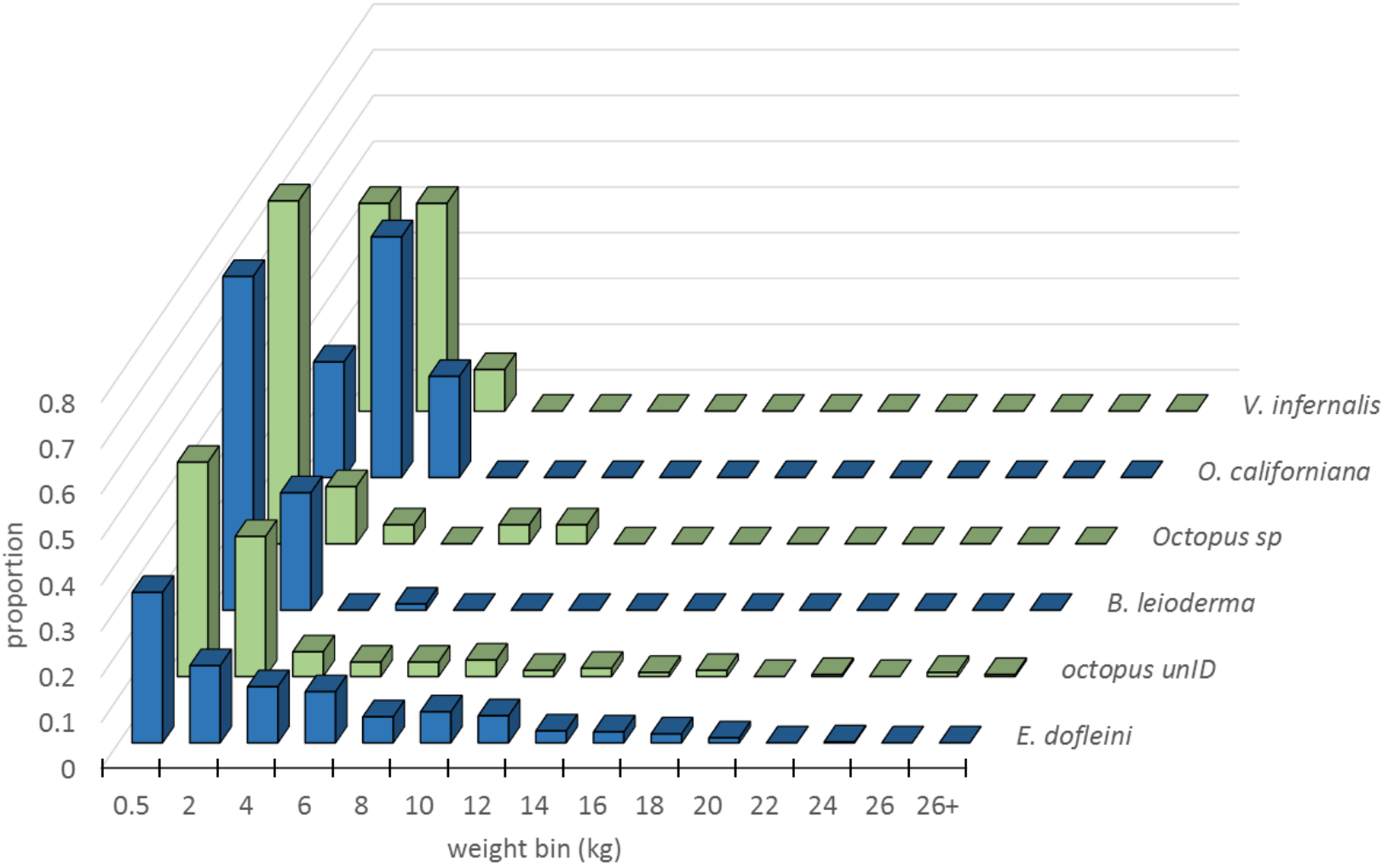
overview

- overview of the complex
- survey results (biomass & size)
- catch data
- harvest recommendations & risk table

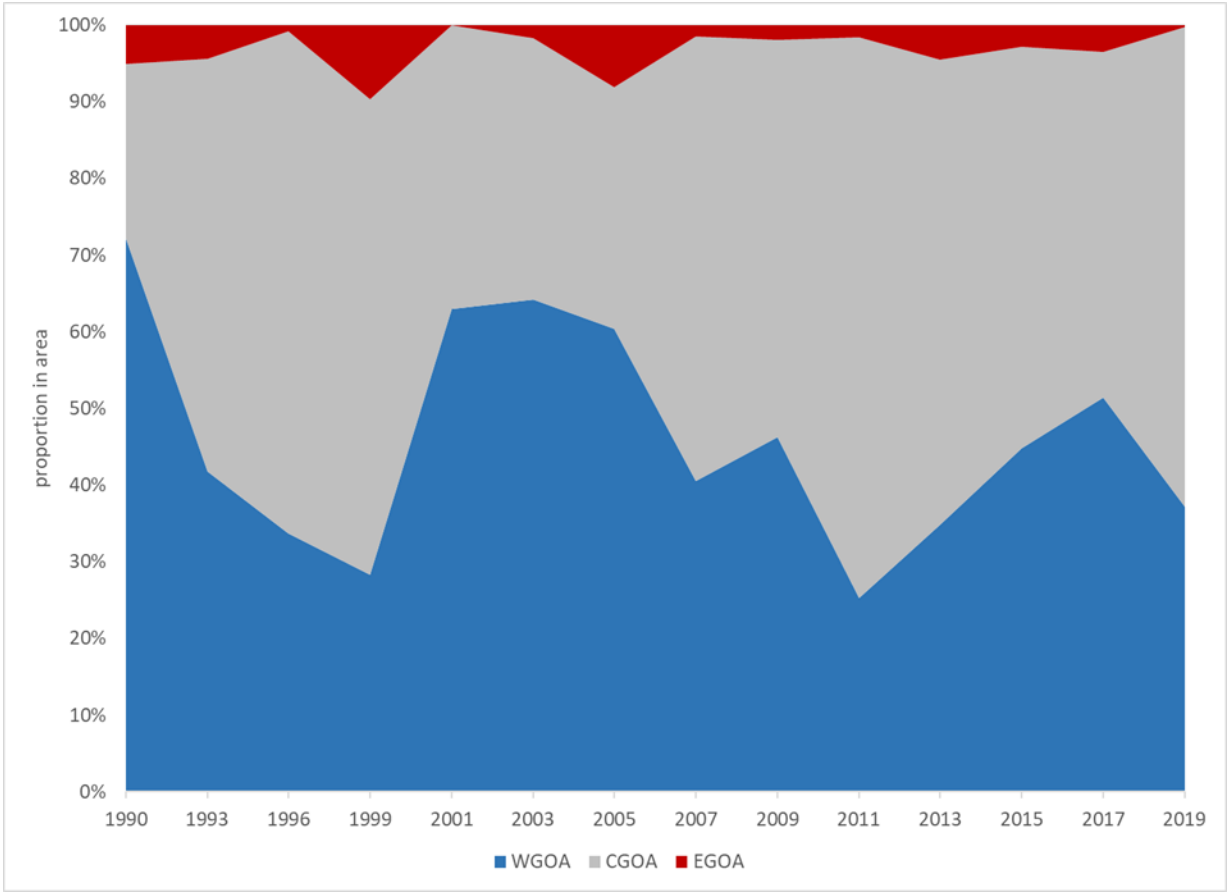
Enteroctopus dofleini are dominant



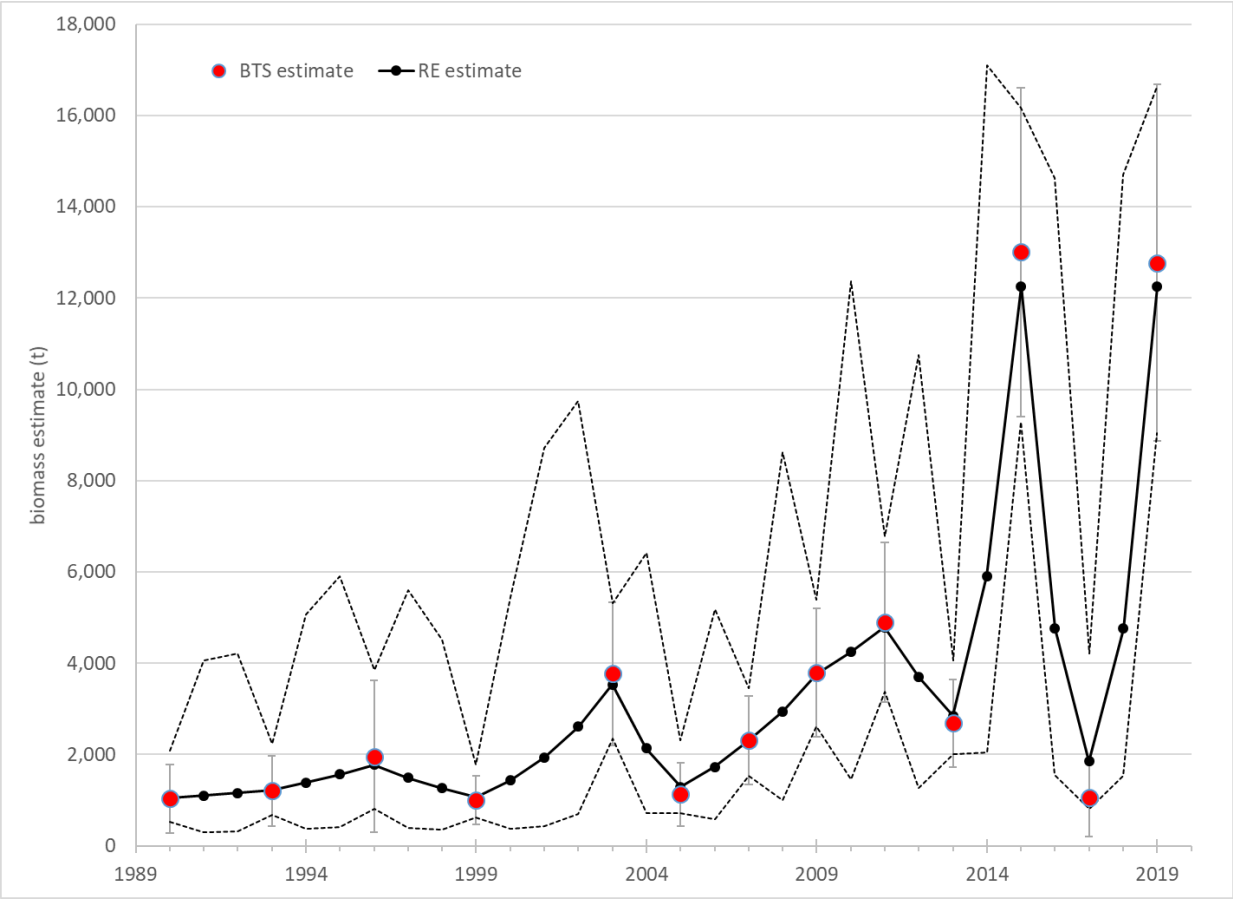
GOA octopus: major species & sizes



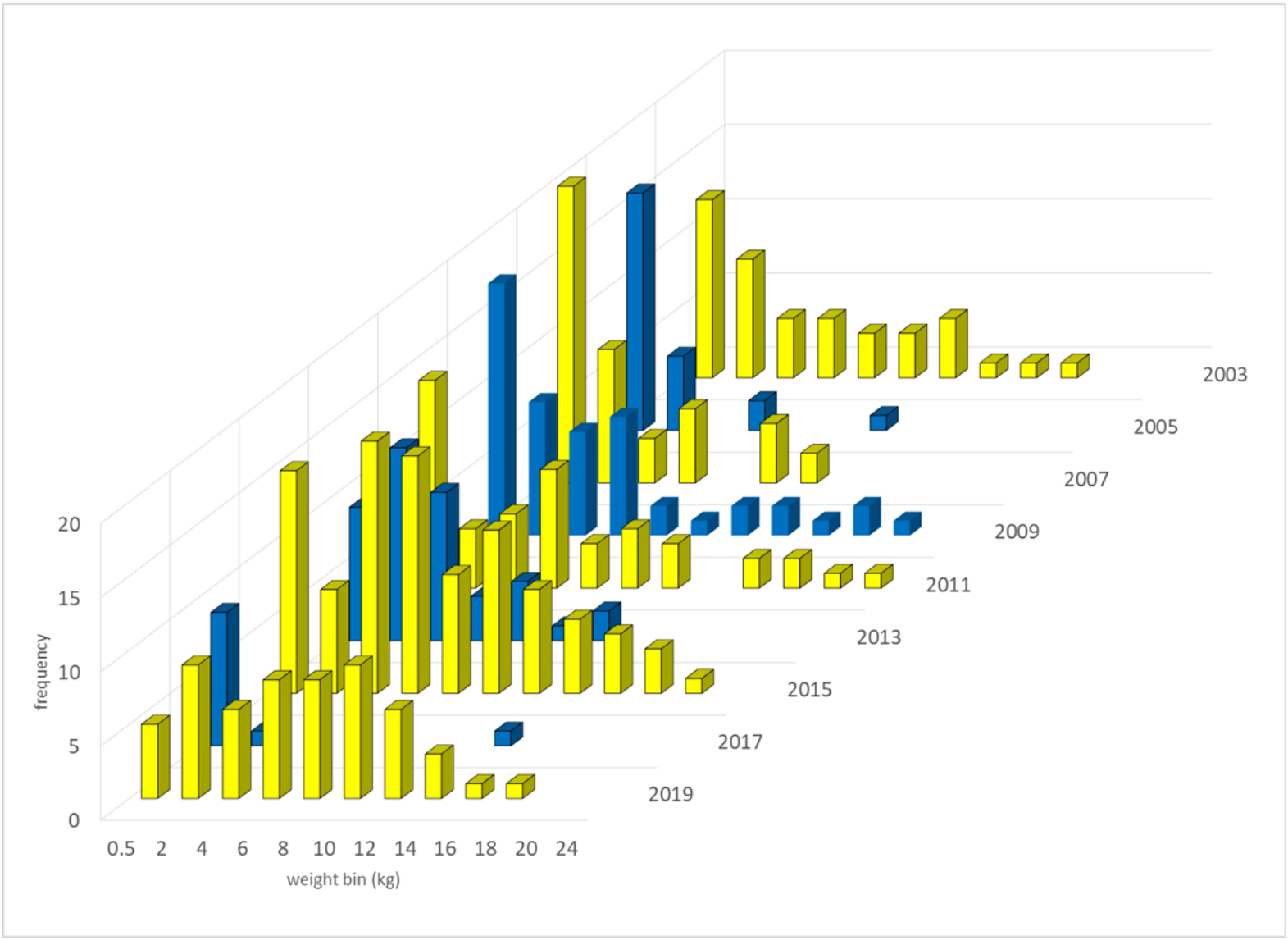
octopus biomass by area



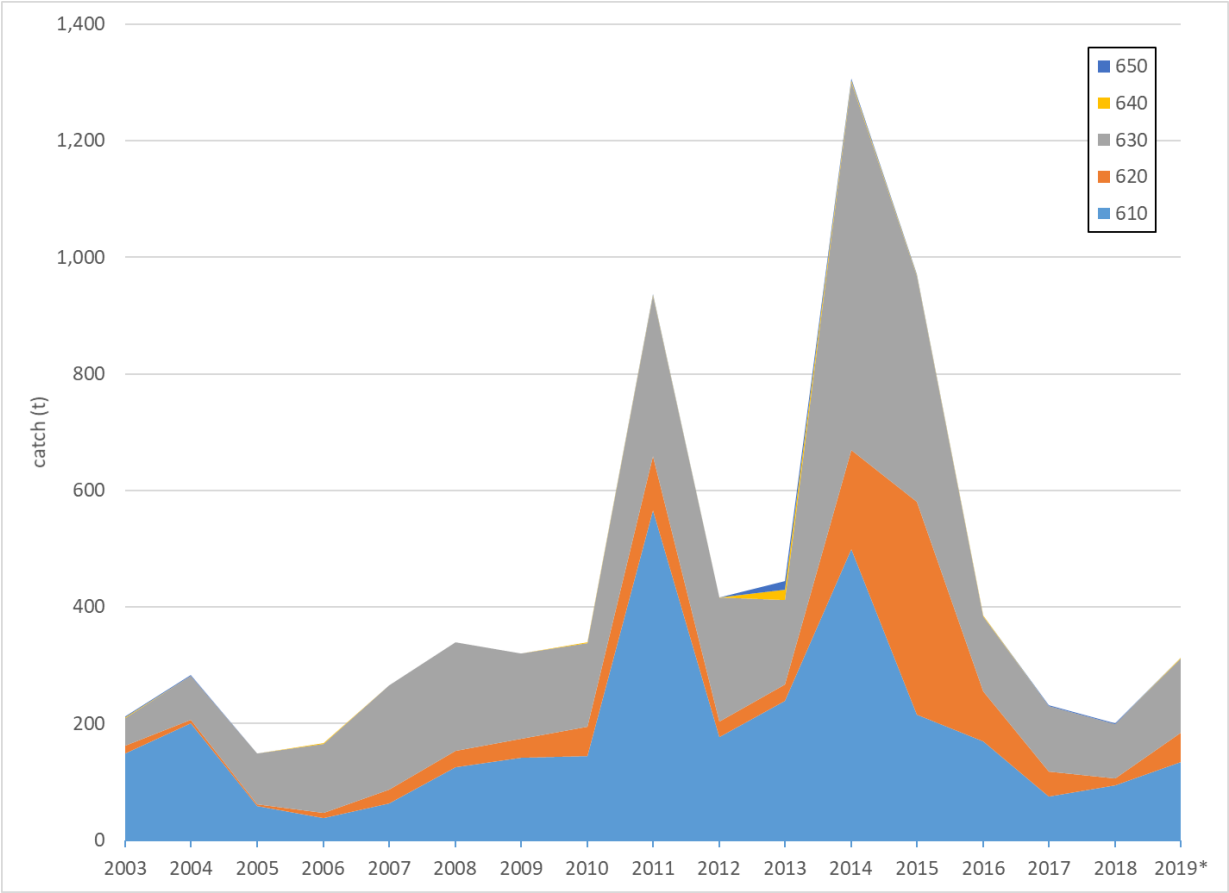
octopus biomass (all species)



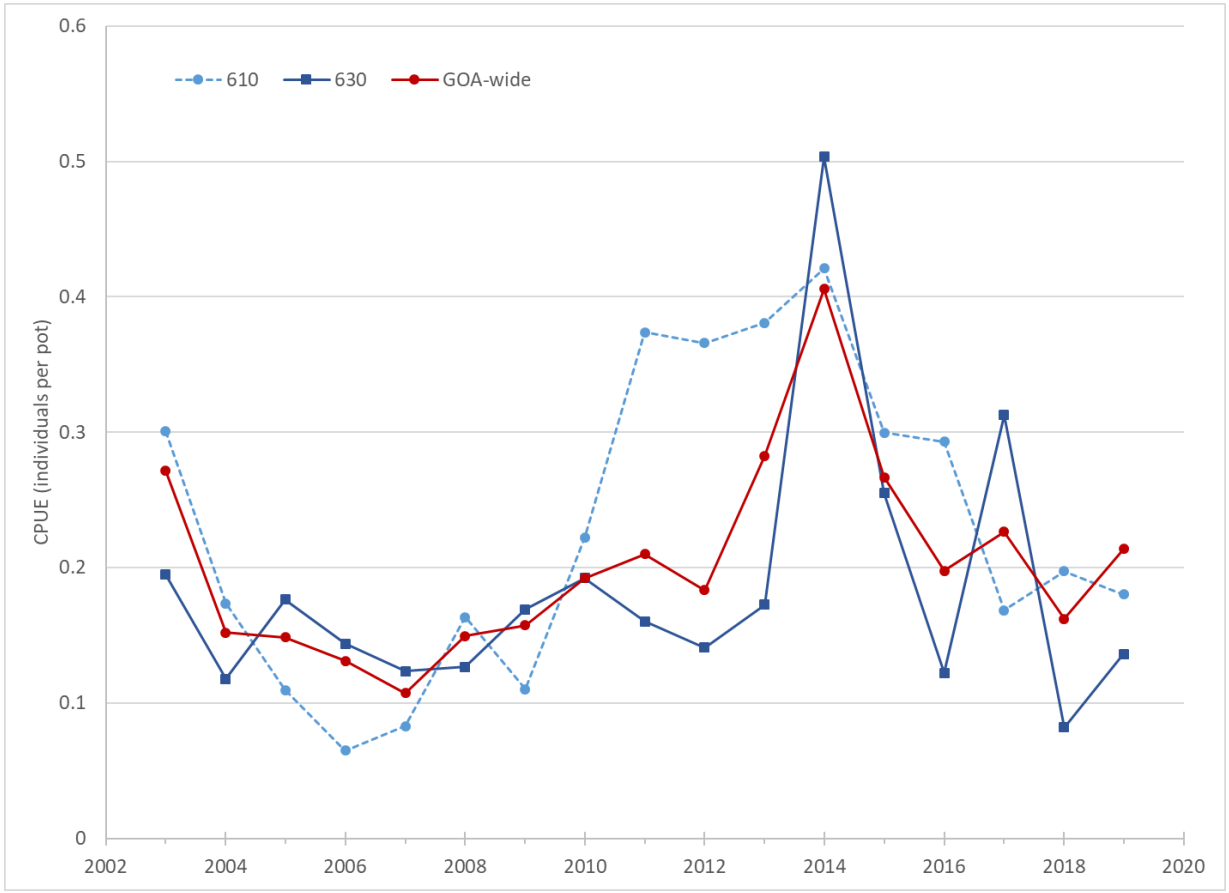
E. dofleini survey size comps



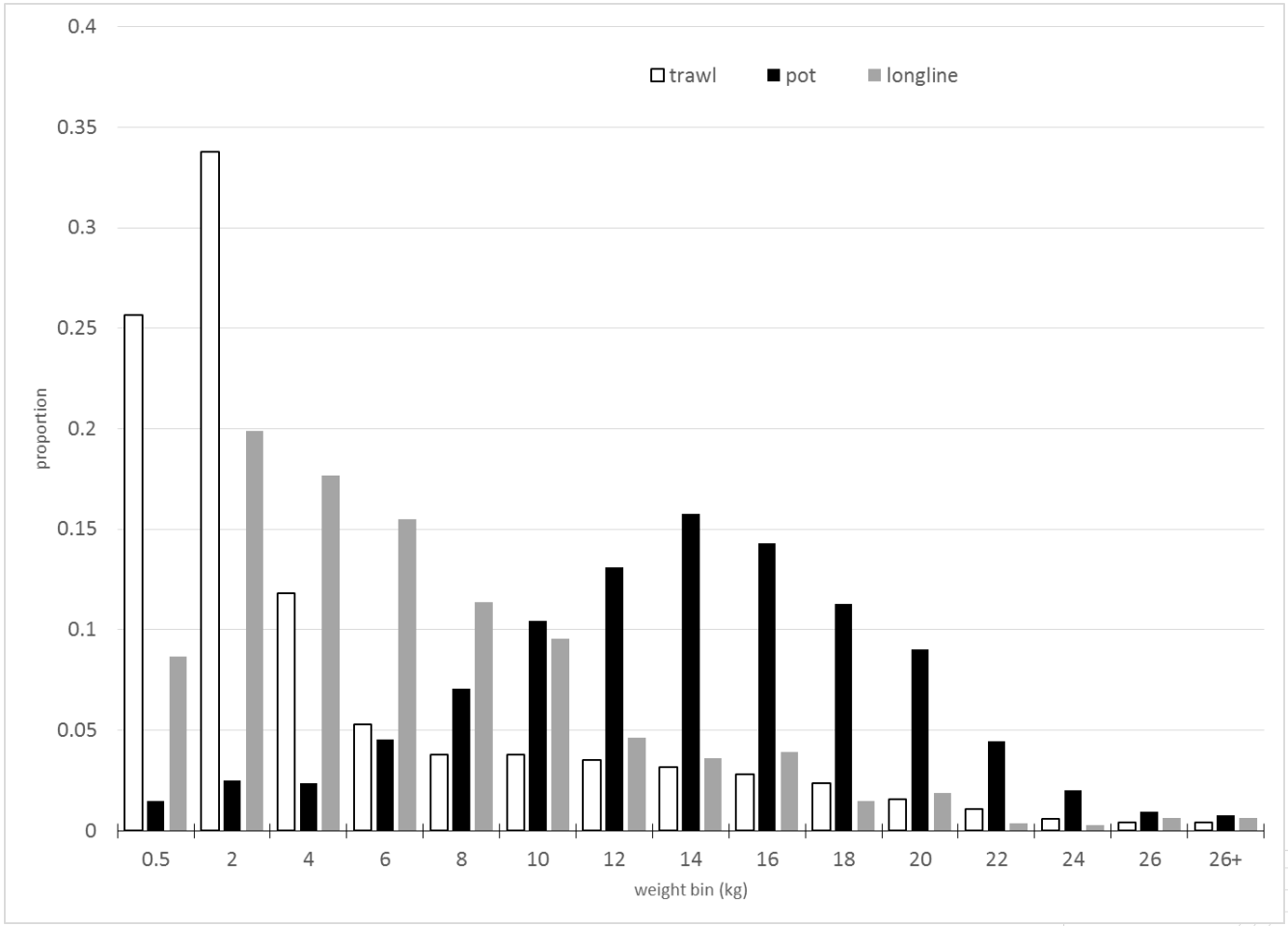
octopus catch by area

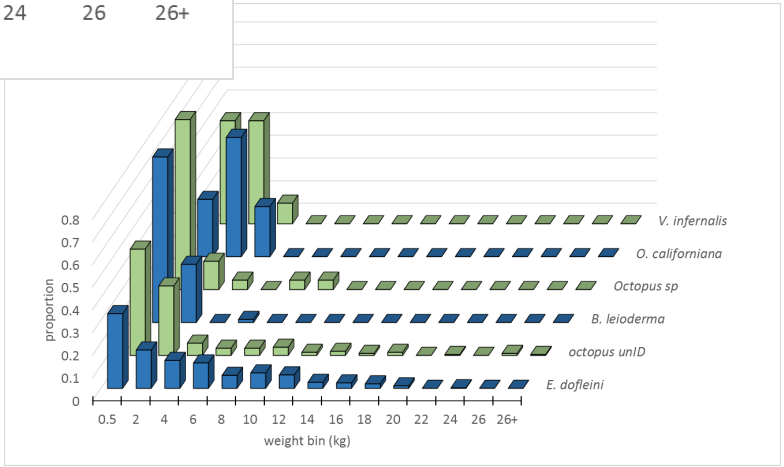


octopus: pot fishery CPUE



octopus fishery size comps





harvest recommendations

Harvest Recommendations				
	As estimated or *specified in the last assessment* for:		As estimated or *recommended this* year for:	
Quantity	2018	2019	2020	2021
Tier 6 (max. historical catch)				
maximum historical catch	1,300	1,300	**1,307**	1,307
OFL (t)	1,300	1,300	**1,307**	1,307
Maximum ABC (t)	975	975	**980**	980
ABC (t)	975	975	**980**	980
	As determined *last* year for:		As determined *this* year for:	
Status	2016	2017	2018	2019
Overfishing	no	n/a	no	n/a

risk table – short version

Assessment-related considerations	*Population dynamics considerations*	*Environmental/ ecosystem considerations*	*Fishery Performance considerations*	***Overall score (highest of the individual scores)***
Level 1: Normal	Level 1: Normal	Level 1: Normal	Level 1: Normal	**Level 1: Normal**

Summary of risk evaluation: Proper evaluation of risk is difficult for a data-limited stock. However the available data suggest no concerns that rise above Level 1. **No reduction to maximum ABC is recommended.**

risk table – long version

Evaluation for risk for GOA octopus in 2019

Assessment-related considerations: The octopus complex is a Tier 6 stock and thus by definition data-limited; many potential concerns such as the lack of reliable abundance data are inherent to Tier 6 stocks and harvest recommendations are made accordingly. There are no additional considerations that would warrant reducing the ABC below maximum permissible. Rated Level 1, normal.

Population dynamics considerations: For a data-limited stock such considerations are hard to evaluate. In addition octopuses are short-lived and signals like recruitment are harder to discern. Size compositions are available for *E. dofleini* from the AFSC bottom trawl survey. The 2019 composition is similar to other years when octopuses were abundant in the survey and suggest that multiple ages are present in the population (Figure 11). Rated Level 1, normal.

Environmental/ecosystem considerations: All marine organisms are influenced by water temperature, so the recent occurrences of marine heatwaves in the GOA have the potential to impact GOA octopuses. Survey estimates of octopus abundance were very high in 2015 and 2019 when temperatures were elevated, but whether and how that is related to temperature is unknown. Octopus growth is positively related to temperature, and larger individuals are present in the 2015 and 2019 surveys (Figure 11). Warmer temperatures may also increase activity levels and make octopuses more available to the survey trawl gear. The reduced productivity associated with heatwaves in the GOA also has the potential to harm octopuses through food limitation; the low estimate of abundance in the 2017 survey conceivably resulted from low survival of octopuses during the later stages of the 2014-2016 heatwave. However the data do not exist to evaluate this possibility, and (so far as the survey data can be used as an indicator of anything) the high biomass estimate in 2019 demonstrates the resiliency of octopuses to environmental variation. For these reasons this consideration is rated Level 1, normal.

Fishery performance: As a nontarget stock, catches of octopuses in the GOA are influenced by their abundance and by the behavior of target fisheries. In past years, high incidental catches have occurred when octopuses were relatively abundant in the trawl survey (Figures 5 and 9) although the relationship is not very strong (it should be reiterated that the survey estimates are highly variable and not considered adequate for determining stock status). Catches of octopuses have been low since 2016, but this may be due to greatly curtailed effort in Pacific cod fisheries where the majority of octopus bycatch occurs. Rated Level 1, normal.