

The First Estimation of Steller Sea Lion Bycatch in the Western Bering Sea in 1980s

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Introduction

The Western Steller sea lion (*Eumetopias jubatus*, SSL) population dramatically declined during the last 30-40 years (Fig.1). Bycatch in the ground fish fishery is hypothesized as one of plausible causes. In 1980s pollock fisheries was dominant in the Western Bering Sea (Fig.2). We used personal interviews with fishermen to evaluate the role of bycatch in the SSL population decline. The major difficulty in our research was an absence of regular observations of bycatch in the WBS and the patchy data regarding fishing effort in the region.

Methods

Estimation of SSL bycatch per single fishing effort was calculated based on fishermen interviews and few direct measurements in the 2000s. Data on fishing effort was derived from several unrelated sources including fishery reports, archives and published literature. Due to the absence of observations data in 1980s, we used (1) observers data from 2002 and (2) best estimates based on interviews to calculate number of bycaught SSL.

Results

The median number of large trawlers in the Western Bering Sea on fishery in 1980s was 18.05 (range 0.3-52.7). The average number of hauls per month was $2,575 \pm 1,371$, with an average catch per single haul 20.5 ± 3.4 t, which made 75.2 ± 12.1 t catch per vessel day. An average monthly catch was $53,945 \pm 29,699$ t. The bycatch level varied from 1 SSL per few years of work up to ≥ 20 per single haul. Based on interviewers data all hauls were divided into 3 categories (Fig.3): with maximum bycatch-10 per single haul (<50km off shore at fall-winter), no bycatch (>50 km off shore at spring-summer) and minimum bycatch - 1 per 3-4 months voyage (all other hauls).

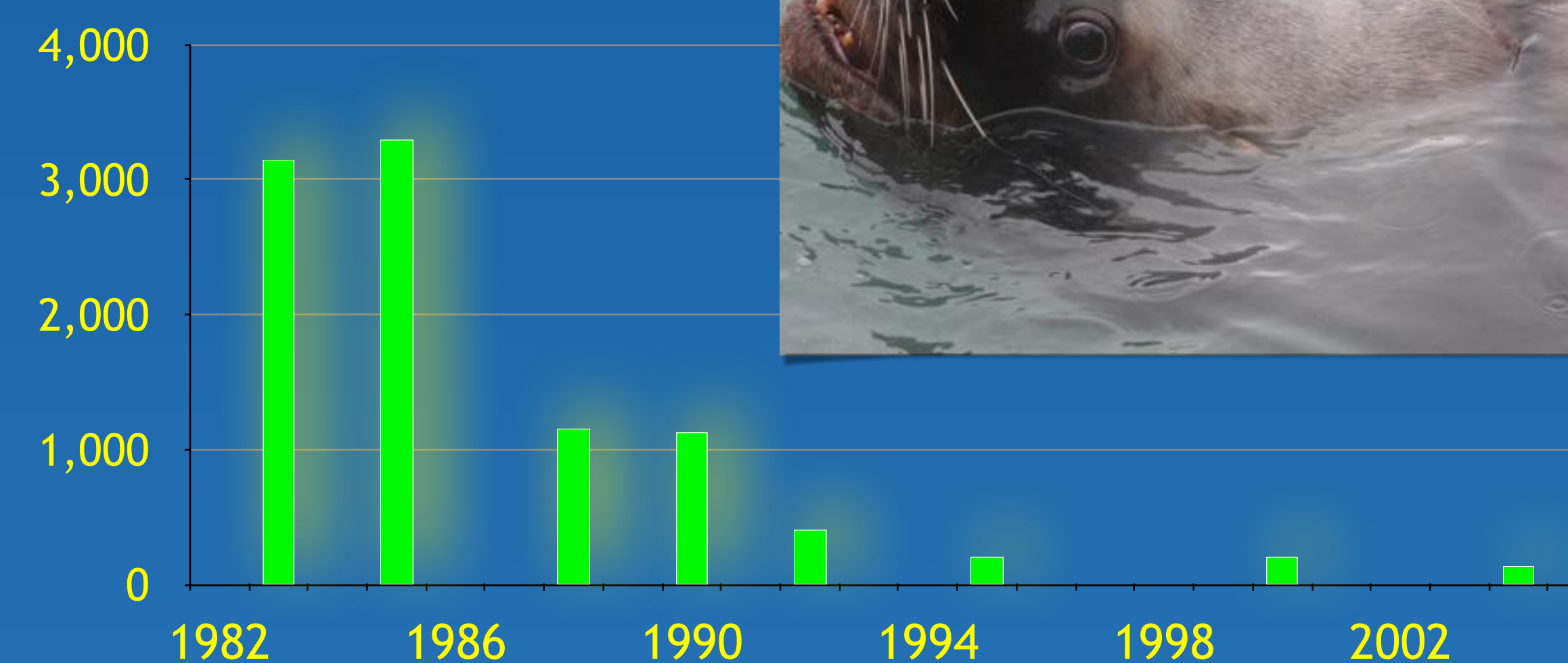


Fig.1. Steller sea lion counts on terrestrial sites of Western Bering Sea

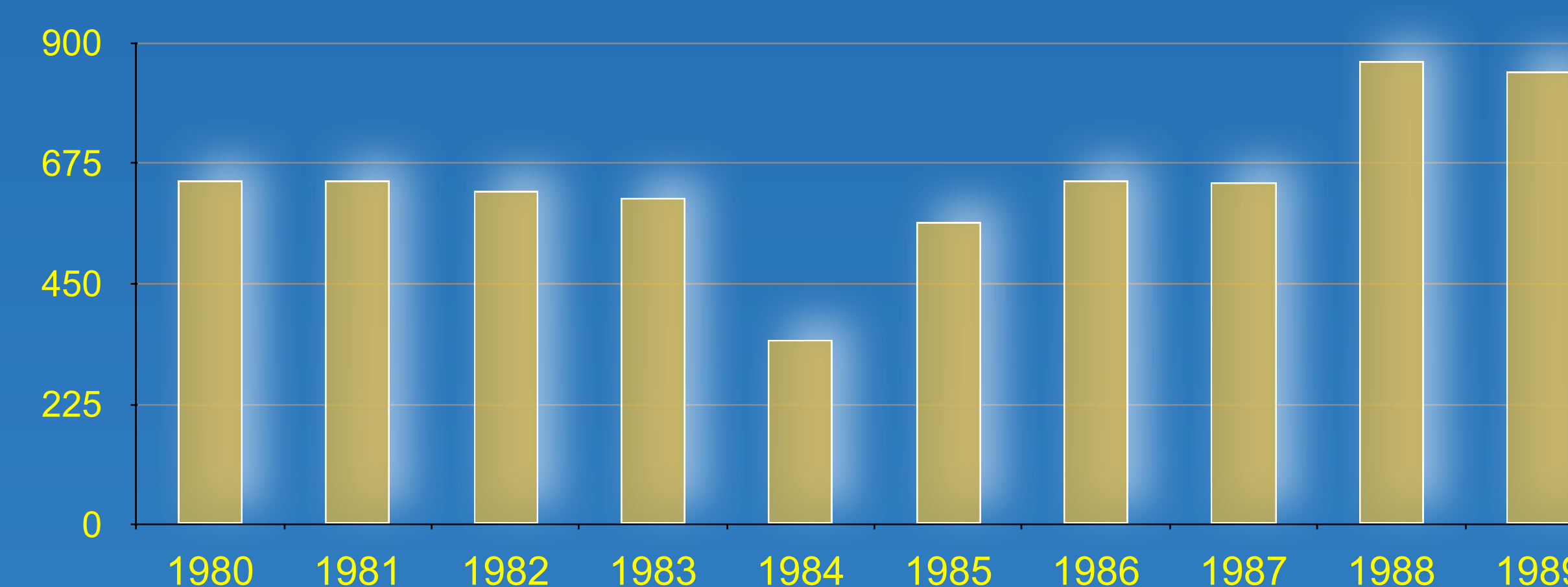


Fig.2 Pollock catch by trawlers in the Western Bering Sea (th.t)

Estimation of SSL bycatch

Observing data

came from observers on herring fishery in WBS in 2002 (Trukhin, Burkanov 2002)

- $\times 0.0113$ 0.0113 SSL per single tow get caught
- $\times 0.8$ About 80% of SSL were died per single haul
- $\times 37$ There were about 37 times more SSL in 1980s then in 2000s
- $\times 10$ Years in 1980s

91,490 SSL could get caught in 1980s

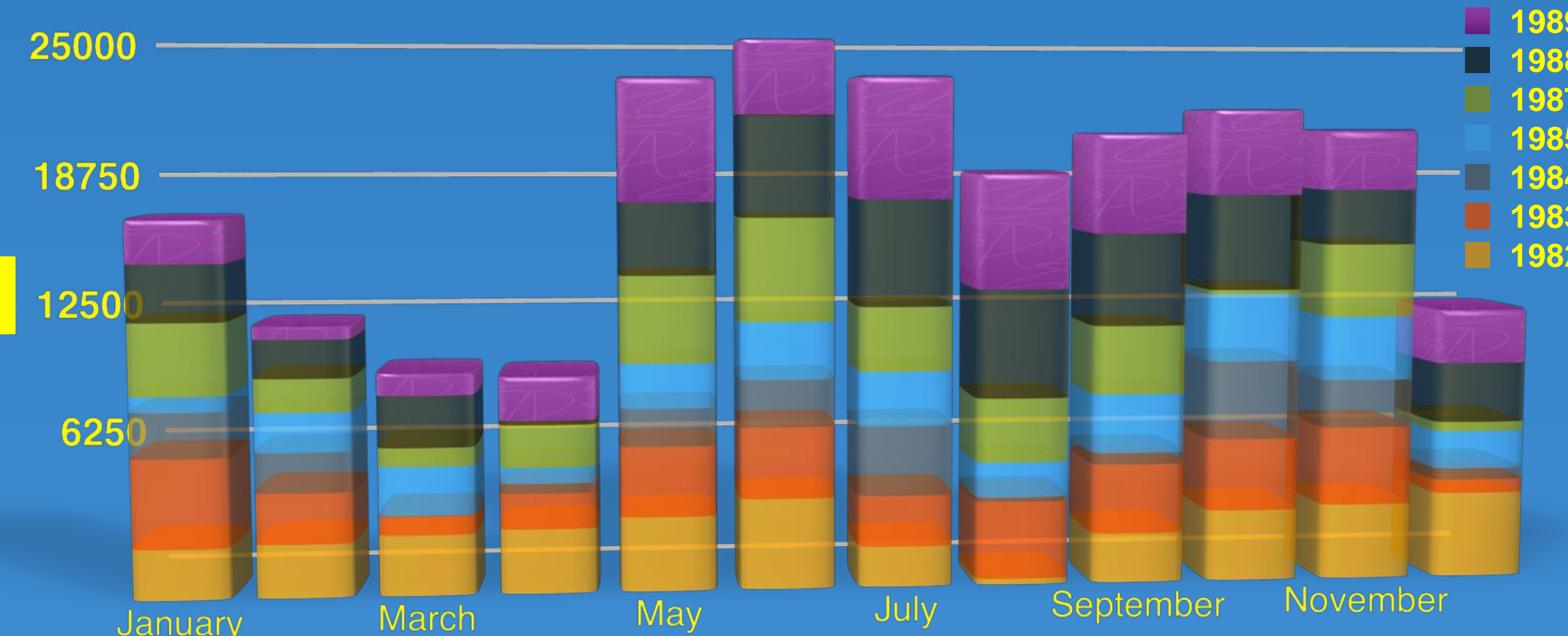


Fig.3. Average number of hauls

Interviewing data

came from interviewing of 106 fishermen

- Mostly in a nearshore area (assumed <50km)
- Number of reported bycaught SSL ranged from 1 per few years up to >22 per single haul
- Bycatch occurred mostly at fall-winter period
- = 9,683 (hauls with max SSL bycatch) \times 10 (SSL per single haul)
- + 145,117 (hauls with min SSL bycatch) / 613 (average number of hauls per 3 months voyage)

97,177 SSL could get caught in 1980s

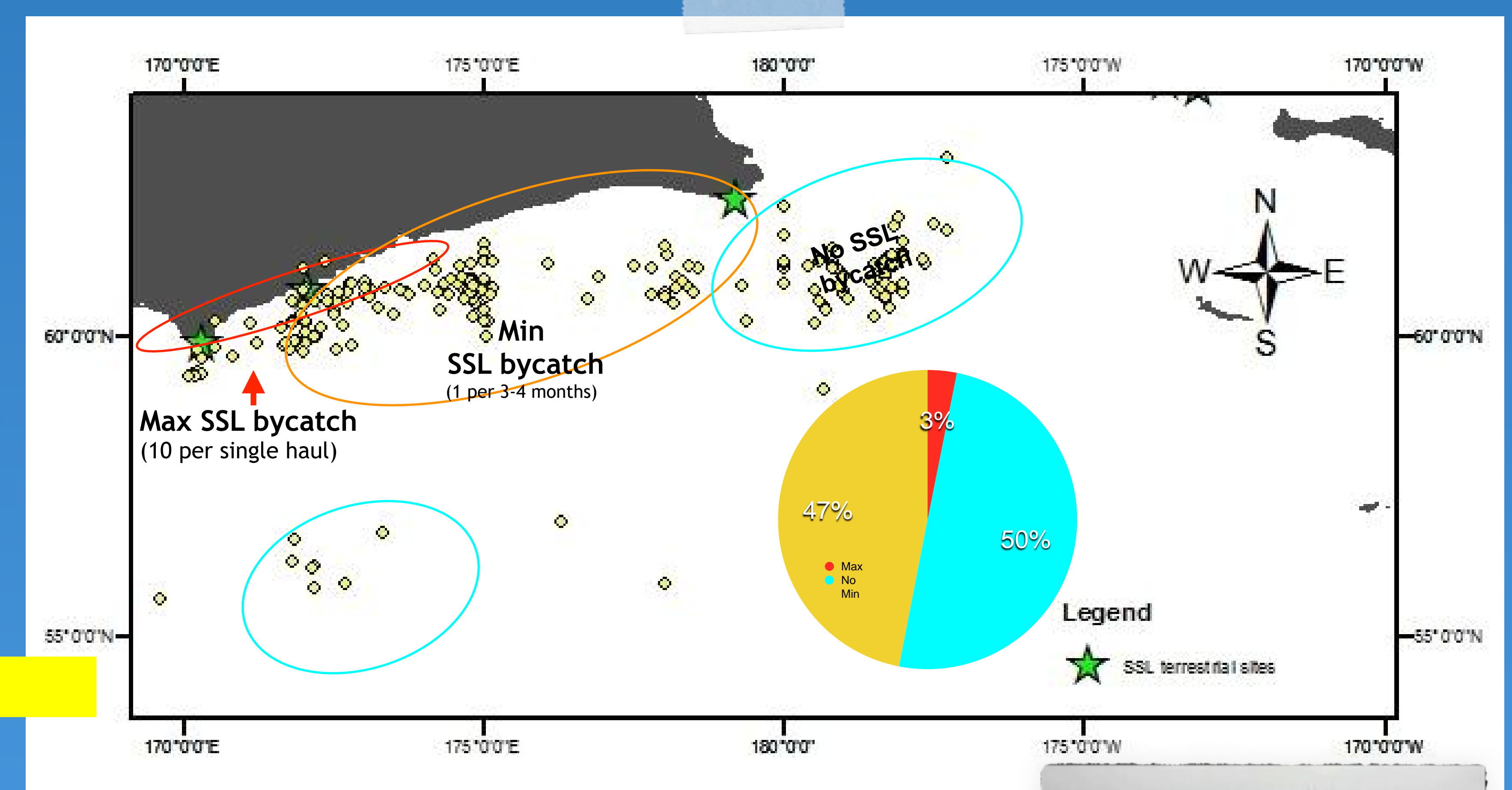


Fig.3. Locations in the Western Bering Sea where trawl gear was used during fishing operations in pollock trawl fishery in 1982-1989. Each point is an average monthly location.

Discussion

The greatest obstacle in assessing the level of bycatch and developing recommendations on reduction is the absence of independent observations from fishing vessels and the unwillingness of fishing companies to recognize this problem.

Acknowledgments

We are very grateful to many people and organizations who helped conduct this studies. Special thanks to fishermen who agreed to be interviewed.

Conclusions

About 91,000 -97,000 SSL could die in trawlers pollock fisheries bycatch in the Western Bering Sea in 1980s

Although, the population of SSL in the Russian part of WBS is about 40 times less than in 1980s, the bycatch still occurs. Considering past and present SSL bycatch, fishing effort, and SSL long distance seasonal migrations we concluded that bycatch in the WBS could contribute to the Western population decline.

