What do we know about skinny whales?

Gray Whale's poor body condition assessment in San Ignacio Lagoon and Magdalena Bay, BCS, México

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What were our goals?

- To compare the body condition (BC) of single whales (S) (adult males and females without calves) to the condition of females with calves (Fc) during 2008-2021 in San Ignacio Lagoon (LSI) & 2018-2021 Magdalena Bay (BM)

- To monitor the trends in BC each winter considering the ongoing Unusual Mortality Event (UME)

How did we do it??

Categories	P/S/D								
Good	322	321	32X	312	31X	3X2	3X1	3XX	
Fair	311	222	221	22X	212	21X	2X2	2X1	2XX
Poor	211	122	121	12X	112	111	11X	1X2	1X1	1XX
Unknow	X22	X21	X2X	X12	X11	X1X	XX2	XX1	XXX

Fig 1. Body condition categories and numerical values system for evaluating the body condition of gray whales. P: post-cranial area, S: scapular area, Dorsal area[1]

Fig 2. Categories of BC[1] of gray whales. the red arrows refer to the specific anatomical areas to determine BC
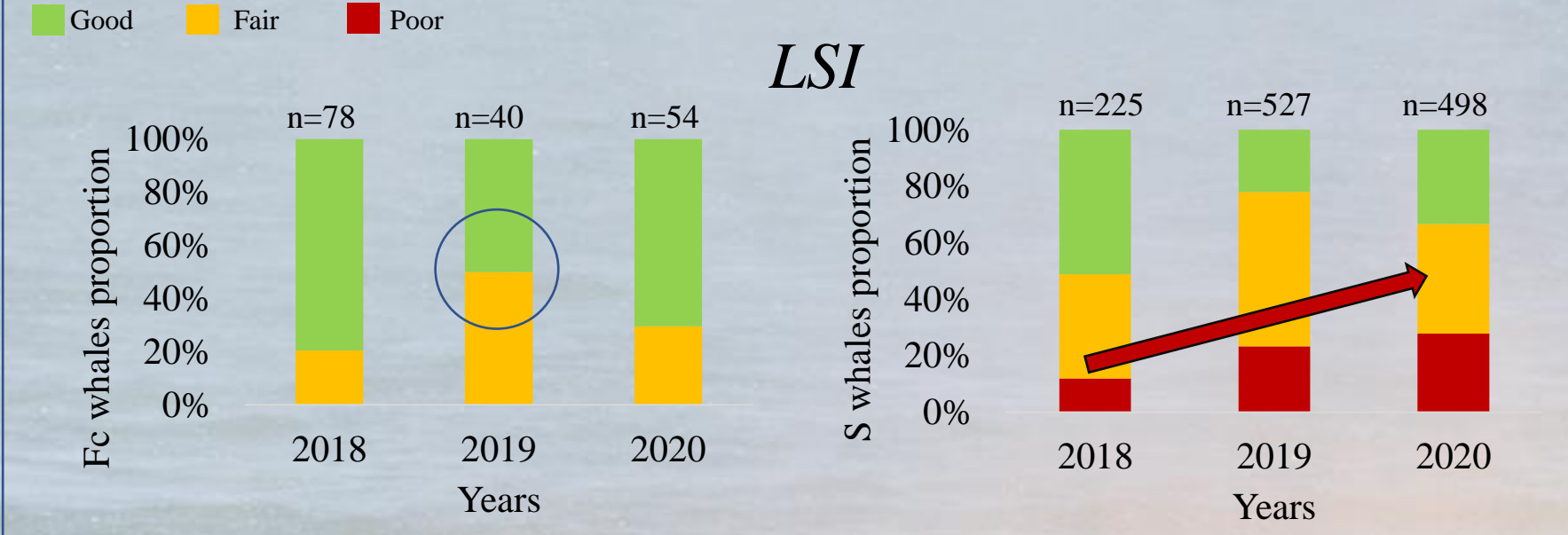
What did we get?

LSI

Fig 3. Left: proportion of females with calves, the circle represents the fair BC peak. Right: proportion of single whales, the arrow points to the trend in poor BC
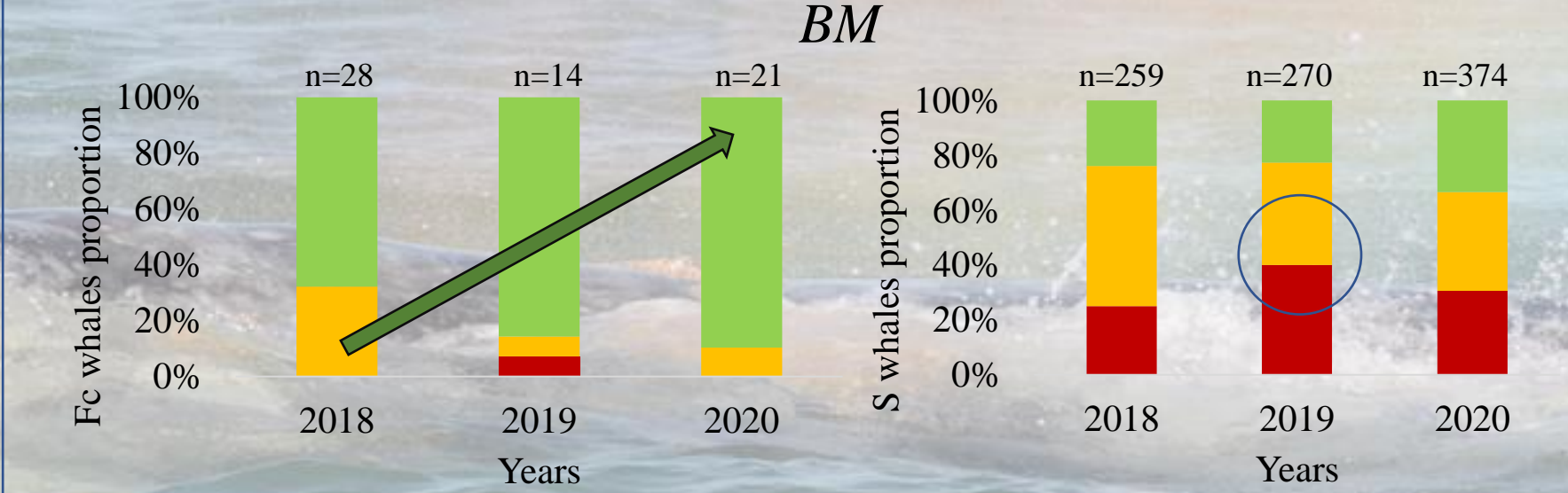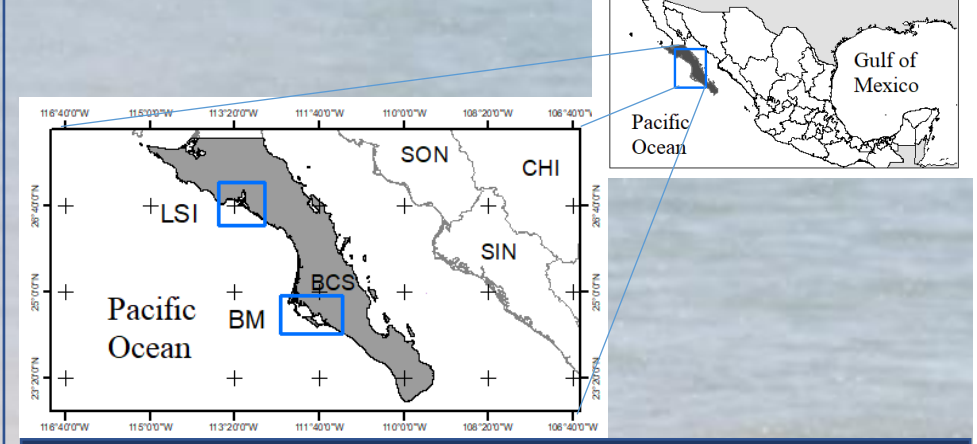
BM

Fig 4. Left: proportion of females with calves, the arrow points to the trend in good BC. Right: proportion of single whales, the circle represents the poor BC peak
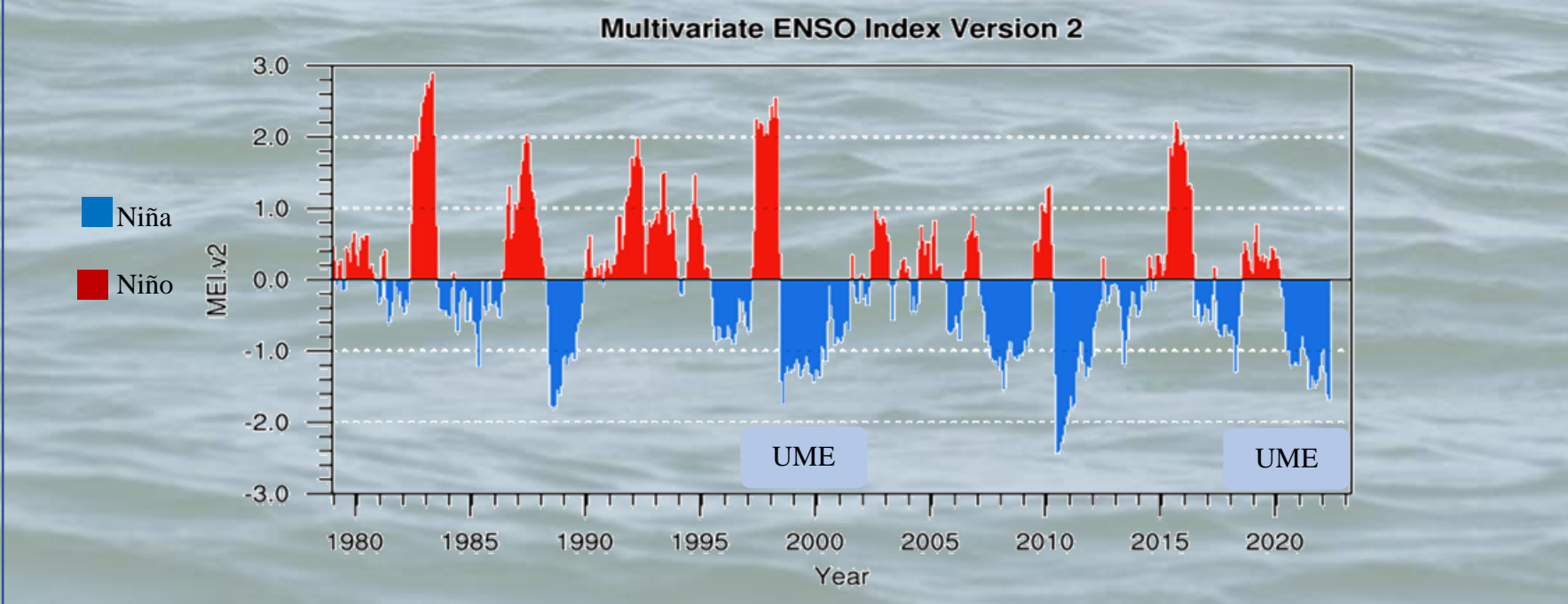
What can we discuss?

Fig 5. Unusual Mortality Event (UME) representation with multivariate ENSO index version 2 (MEI.v2) from 1979 to 2020: www.psl.noaa.gov/enso/mei/

Where?

Conclusion

- Poor BC is the highest recorded in the last ten years for S whales

- LSI poor BC has been increased each year, BM has the pick in 2019

- Fc: Good BC but abundance decreased more than 50%; 2011-2017 ($\bar{x}$ =226) to 2018-2021($\bar{x}$ =57) [2]
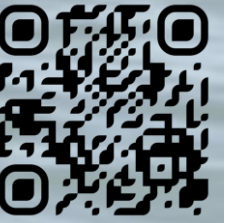
Recomendations

- To analyze the gender of S whales and correlate body condition with their age categories
- To correlate BC with food resources (quantity and quality)

Acknowledgements

[1]Bradford, A. L., Weller, D. W., Punt, A. E., Ivashchenko, Y. V., Burdin, A. M., VanBlaricom, G. R., & Brownell, R. L. 2012. Leaner leviathans: body condition variation in a critically endangered whale population. Journal of Mammalogy, 93(1), 251–266. [2]Gulland, F., Pérez-Cortés, H., Urbán, J., R., Rojas-Bracho, L., Ylitalo, G., Weir, J., Rowles, T. 2005. Eastern North Pacific gray whale (Eschrichtius robustus) unusual mortality event, 1999-2000. U.S. Department of Commerce. NOAA Technical Memorandum. NMFS-AFSC-150., (March), 33 pp.