Kelp Forests Purple Sea Urchins Abalone Maps

OPTIONAL Excellent CDFW website with narrative and many resources:

<https://cdfwmarine.wordpress.com/2016/03/30/perfect-storm-decimates-kelp/>

OPTIONAL Kelp NPP and carbon sequestration <https://www.researchgate.net/publication/262093877_Do_trophic_cascades_affect_the_storage_and_flux_of_atmospheric_carbon_An_analysis_of_sea_otters_and_kelp_forests>

REQUIRED GENERAL AWARENESS:

<https://www.sfchronicle.com/food/article/No-abalone-diving-allowed-in-California-until-2021-13460882.php>

~~Kelp Forest Video “Seasonal Seas” 12-25 minutes shown in class~~

National Geographic Sunflower Sea Star short video: <https://www.youtube.com/watch?v=BnJ8preFDdA>

El Nino and La Nina brief reader: <https://www.americangeosciences.org/critical-issues/faq/what-are-el-nino-and-la-nina>

graphic of perfect storm <https://cdfwmarine.files.wordpress.com/2016/03/perfectstor-graphic.jpg>

kelp forest death maps <https://cdfwmarine.files.wordpress.com/2016/03/kelpcovermap2008-2014.png>

The Perfect Storm: Multiplier Stressors Push Kelp Forests (VIDEO), start at 5 minutes, highlights only from what we show in class: <https://www.youtube.com/watch?v=9AlDaCqloZA>

abalone death 37-42 minutes, role of temperature and food on abalone survival in above video

Blob returns in 2019: <https://www.fisheries.noaa.gov/feature-story/new-marine-heatwave-emerges-west-coast-resembles-blob>

Oregon Coast brief: <https://www.oregonlive.com/news/2019/10/sea-urchins-are-devouring-oregon-coast-kelp-uncharted-territory-for-marine-ecosystem.html>

OPTIONAL

Toward solutions:

<https://issuu.com/sonomawest/docs/deep_trouble_2019_web>