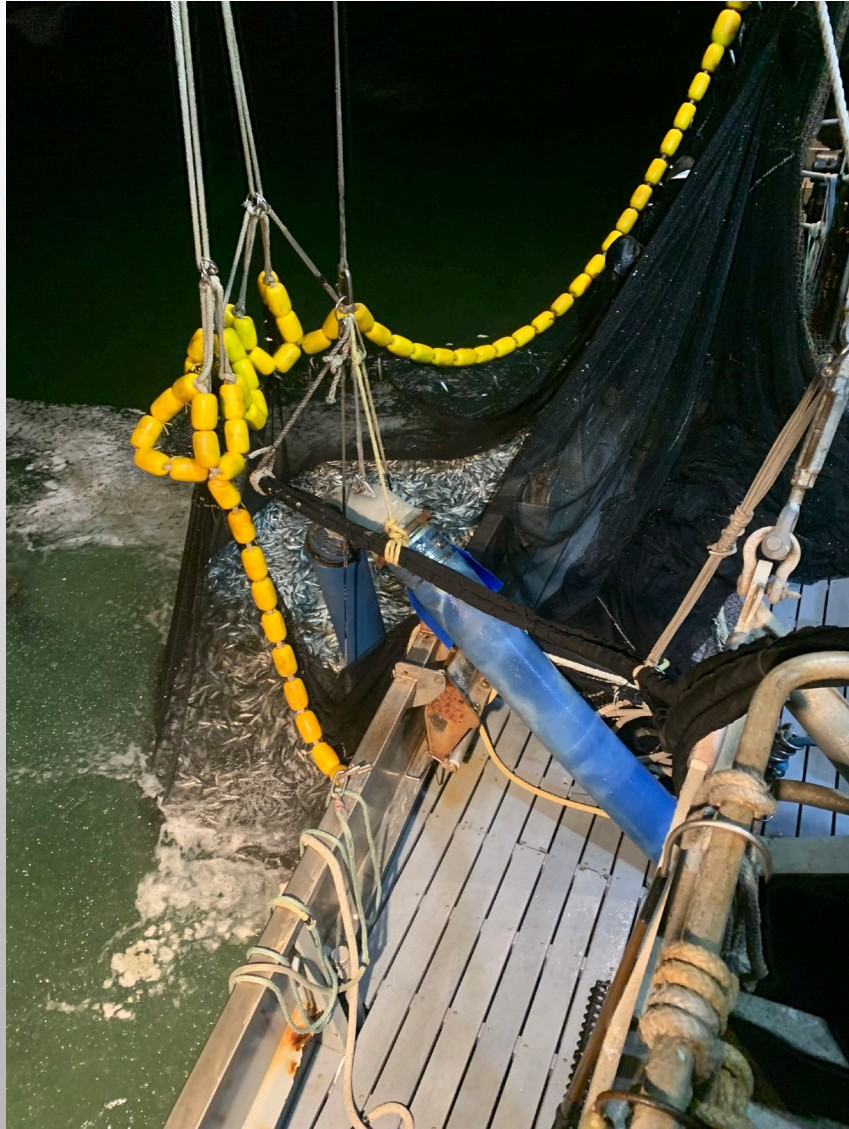


CWPA BIO SAMPLING EFP ~ UPDATE



A WORK IN PROGRESS

EFP AUTHORIZED JULY 1, 2021 – JUNE 30, 2022

AND REQUEST FOR RENEWAL

PURPOSE

- **TO REPLICATE A “DIRECTED” FISHERY TO PROVIDE CONTINUING TIME SERIES OF BIOLOGICAL DATA**

- SARDINE FISHERY CLOSED SINCE 2015 (AND LIKELY TO REMAIN CLOSED UNTIL SCIENCE RESOLVES MODELING ISSUES)

- **TIME SERIES OF ‘DIRECTED FISHERY’ AGE DATA FOR STOCK ASSESSMENTS**

- STOCK ASSESSMENT TEAM PREFERS ONLY AGES FROM DIRECTED FISHING (BEST REPRESENTATION OF FISHERY)
- STOCK ASSESSMENT AUTHOR SAYS **YES, DIRECTED FISHERY SAMPLES ARE USEFUL AND WILL CONTINUE TO BE USEFUL** UNTIL FISHERY REOPENS
- DATA COLLECTION METHOD WAS DEVELOPED IN CONSULTATION WITH STOCK ASSESSMENT SCIENTISTS
 - GUIDELINE: TRY FOR AT LEAST **6 SETS PER SEMESTER PER AREA**, SPREAD OVER THE TIME PERIOD

- **SAMPLES CAN PROVIDE BIOLOGICAL DATA FOR AERIAL SURVEYS**

- ANOTHER USE OF FISHERY BIO DATA:

- **“DIRECTED CATCH” BIO DATA NEEDED TO TEST TEMPERATURE ASSUMPTIONS** DIVIDING ‘NORTHERN’ FROM ‘SOUTHERN’ SARDINES
- SK GRANT PROPOSAL IN COLLABORATION WITH DR. JUAN ZWOLINSKI, SWFSC ACOUSTIC TEAM
“INVESTIGATING SEASONAL NEARSHORE DYNAMICS OF PACIFIC SARDINE IN CALIFORNIA” CALLS FOR MONTHLY CATCHES TO COMPARE MORPHOMETRICS (LENGTH, WEIGHT, VERTEBRAL COUNT) VS. OCEAN CONDITIONS (SST)

PROGRESS (TO DATE)

FY 2020-21 Model Year 2020 Semester 2 Jan – Jun 2021 ~ all landings considered 'northern stock' and used in 2022 stock assessment

July 1 '20 - June 30 '21 – 740 metric tons
Monterey 370 mt

	Set #	Landing Date	Vessel	Port	Processor	Capture Latitude	Capture Longitude	SST	Total Sardine Lbs	Sardine MT
SEMESTER 1 Jul-Dec '20	1	9/14/20	Trionfo	HMB	SoCal Sfd	N 37.08.13	W 122.25.50	58	52,852.0	23.97
	2	9/21/20	Trionfo	Monterey	SoCal Sfd	N 36.38.027	W 121.51.34	58	68,976.0	31.29
	3	9/21/20	Sea Wave	Moss Landing	Mnty Fish	N 36.54.13	W 121.51.27	58	57,221.0	25.96
	4	9/23/20	Trionfo	Monterey	SoCal Sfd	N 36.53.79	W 121.50.78	58	81,067.0	36.77
	5	9/23/20	Sea Wave	Moss Landing	Mnty Fish	N 36.54.65	W 121.51.59	60	88,101.0	39.96
	6	10/28/20	Sea Wave	Moss Landing	Mnty Fish	N 36.41.35	W 121.49.49	57	68,392.0	31.02
	7	11/17/20	Sea Wave	Moss Landing	Mnty Fish	N 36.41.57	W 121.49.15	55	69,509.0	31.53
SEMESTER 2 Jan-Jun '21	8	2/17/21	King Philip	Moss Landing	Mnty Fish	N 36.37.77	W 121.34.38	53	28,585.0	12.97
	9	2/17/21	Sea Wave	Moss Landing	Mnty Fish	N 36.38.03	W 121.54.84	53	9,670.0	4.39
	10	2/18/21	King Philip	Moss Landing	Mnty Fish	N 36.38.35	W 121.58.54	53	15,869.0	7.20
Sub-Total Monterey									540,242.0	245.05
Balance - Monterey										121.58

	S.CA Set #	370 mt Landing Date	Vessel	Port	Processor	Capture Latitude	Capture Longitude	SST	Total Sardine Lbs	Sardine MT
SEMESTER 1 Jul-Dec '20	1	10/22/20	Provider	Term.Is.	Tri-Marine	N 33.38.91	W 118.06.60	68	48,273.0	21.90
	2	11/3/20	Provider	Term.Is.	Tri-Marine	N 32.42.89	W 118.08.46	64	39,599.0	17.96
	3	11/17/20	Provider	Term.Is.	Tri-Marine	N 33.43.14	W 118.11.39	59	43,967.0	19.94
	4	11/19/20	Provider	Term.Is.	Tri-Marine	N 33.43.05	W 118.12.25	59	48,650.0	22.07
	5	12/4/20	Provider	Term.Is.	Tri-Marine	N 33.42.90	W 118.09.85	58	48,315.0	21.92
	6	12/10/20	Provider	Term.Is.	Tri-Marine	N 33.43.04	W 118.12.52	58	47,912.0	21.73
	7	12/17/20	Provider	Term.Is.	Tri-Marine	N 33.43.61	W 118.22.06	58	47,101.0	21.36
SEMESTER 2 Jan-Jun '21	8	1/15/21	Provider	Term Is.	Tri-Marine	N 33.43.10	W 118.10.57	57	63,570.0	28.84
	9	2/12/21	Provider	Term Is.	Tri-Marine	N 33.43.80	W 118.21.98	58	25,423.0	11.53
	10	2/26/21	Provider	Term Is.	Tri-Marine	N 33.45.05	W 118.10.36	58	64,694.0	29.35
	11	3/25/21	Provider	Term Is.	Tri-Marine	N 33.36.36	W 117.56.08	56	79,363.0	36.00
	12	4/28/21	Provider	Term Is.	Tri-Marine	N 33 43 25	W 118 11 66	61	73,374.0	33.28
	13	5/18/21	Provider	Term Is.	Tri-Marine	N 33 43 20	W 118 10 25	60-63*	84,346.0	38.26
	14	6/24/21	Provider	Term Is.	Tri-Marine	N 33.45.72	W 118.11.73	61	108,550.0	49.24
Sub-Total SCA									823,137.0	373.37
TOTAL									1,363,379.0	618.42
TOTAL REMAINING										121.58

PROGRESS ~ 2

FY 2021-22 Model Year 2021 Semester 1 Jul – Dec 2021 ~ one landing considered 'northern stock' and used in 2022 stock assessment

July 1 '21- June 30 '22 – 520 metric tons

S.CA		260 mt								Total Sardine	Sardine
Set #		Landing Date	Vessel	Port	Processor	Capture Latitude	Capture Longitude	SST		Lbs	MT
SEMESTER 1 Jul-Dec '21	1	7/29/21	Provider	San Pedro	Cal Marine	N 33.36.41	W 112.57.08	66		34,972.00	15.86
	2	16-Sep	Provider	San Pedro	Cal Marine	N 33.37.36	W 117.58.80	63		64,064.00	29.06
	3	17-Sep	Provider	San Pedro	Cal Marine	N 33.43.34	W 118.06.98	63		31,539.00	14.31
	4	20-Oct	Provider	San Pedro	Cal Marine	N 33.18.73	W 118.25.53	63		53,920.00	24.46
	5	4-Nov	Provider	San Pedro	Cal Marine	N 33 42.18	W 118 09.98	63		44,568.00	20.22
	6	17-Dec	Provider	San Pedro	Cal Marine	N 33 18 73	W 118 22 28	59		73,873.00	33.51
SEMESTER 2 Jan -Jun '22	7	1-Mar	Provider	San Pedro	Cal Marine	N 33.18.61	W 118.21.98	60		73,107.00	33.16
	8	23-Mar	Provider	San Pedro	Cal Marine	N 33.20.42	W 118.29.03	60		46,777.00	21.22
SubT S.CA										422,820.00	191.79
Balance S.CA.											68.21

No sardines caught in Monterey since Feb. 2021.

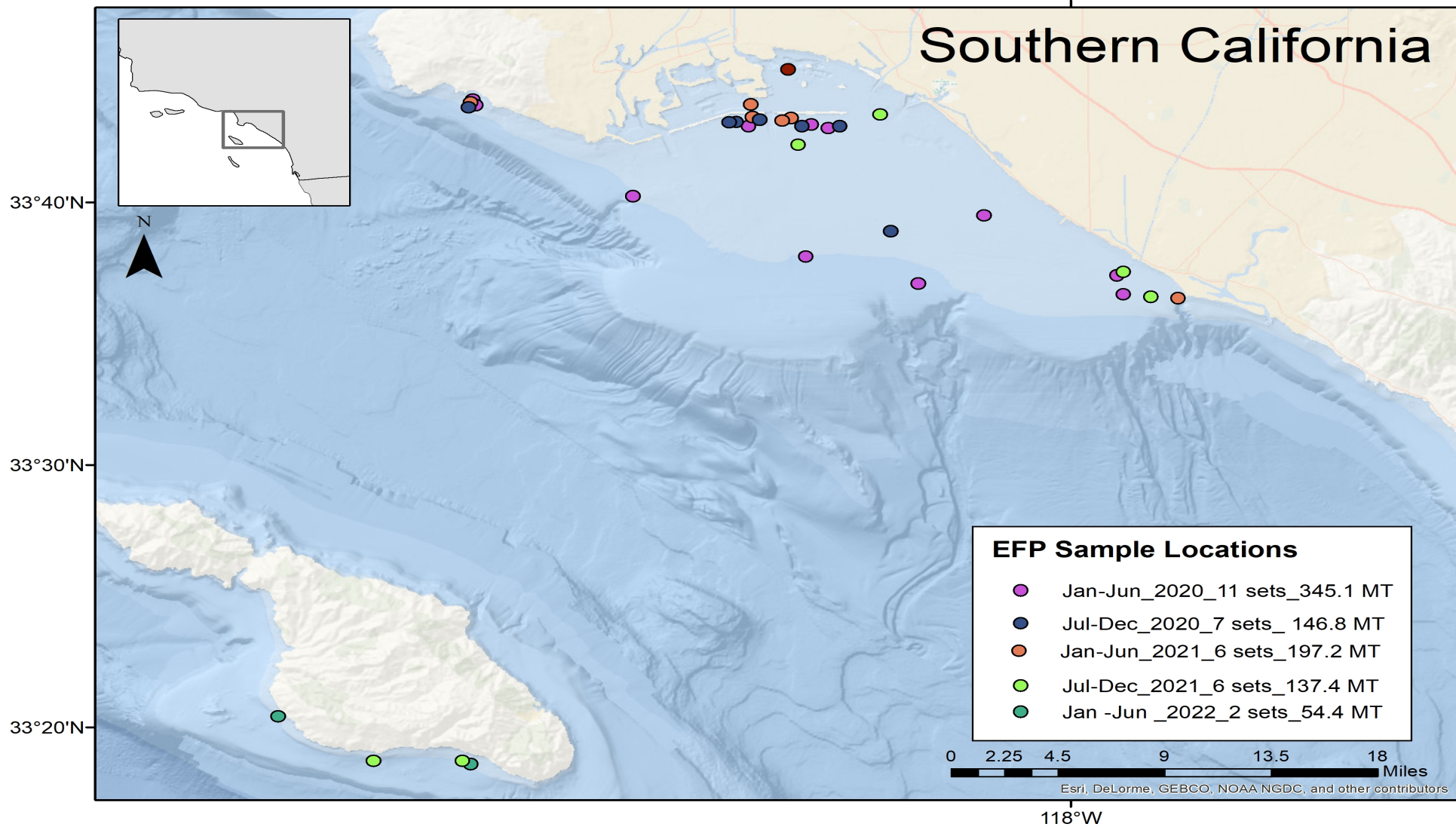
In So.CA., 4 of 6 landings were less than 1 degree above the 62.06°F threshold for NSP, so not used in the model ~ this highlights high priority need to review temp. assumptions

MONTEREY		260 mt								Total Sardine	Sardine
Set #		Landing Date	Vessel	Port	Processor	Capture Latitude	Capture Longitude	SST		Lbs	MT
SEMESTER 1 Jul-Dec '21	0										
SEMESTER 2 Jan-Jun '22											
TOTAL BALANCE											328.21

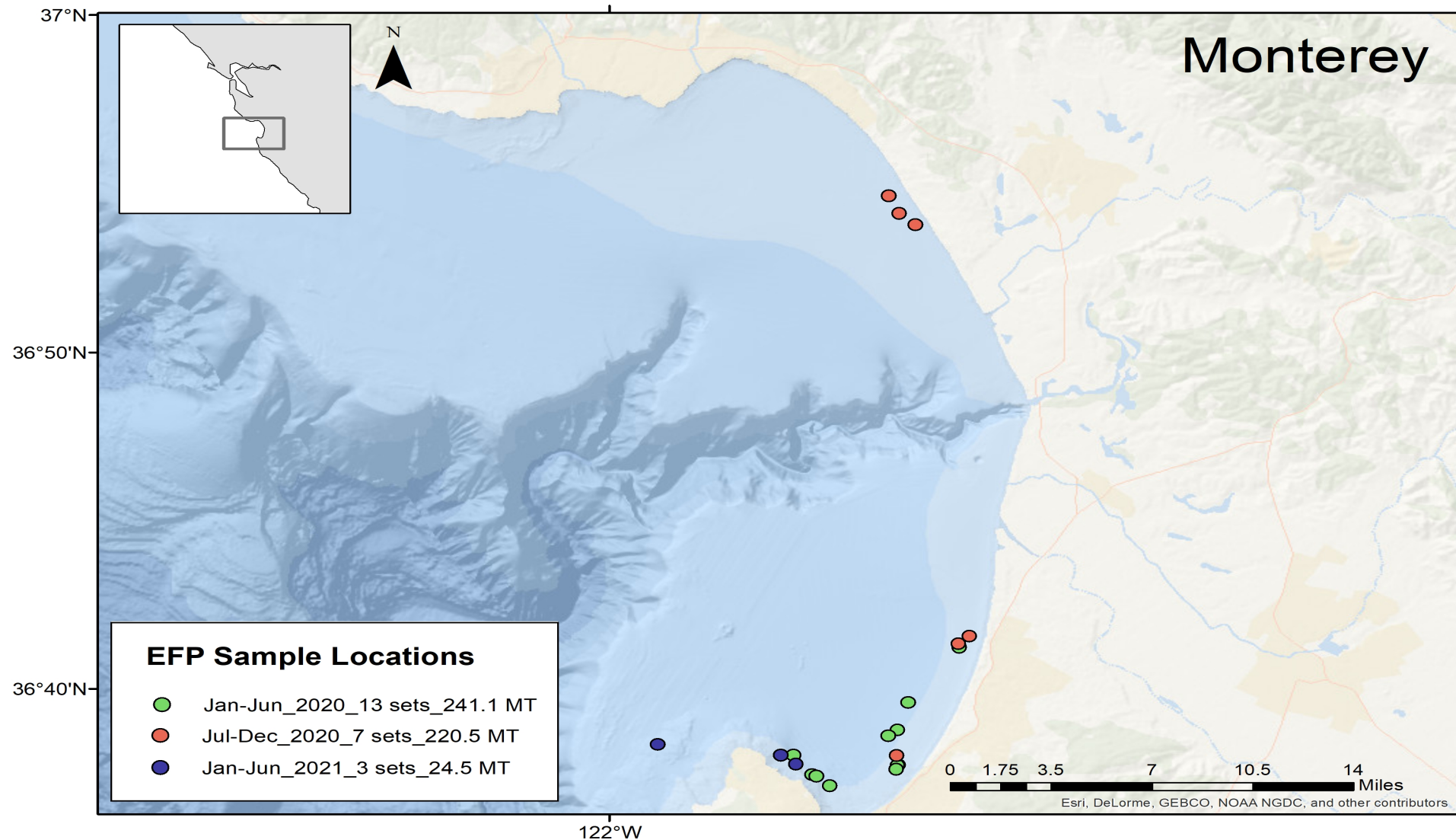
We're planning at least 4 more sets in S.CA. before Jun 30, and will attempt directed sets in Monterey too if sardines reappear in time.

(Last report from Monterey fishermen: fishing grounds are full of anchovy and only sardines seen were on rocky habitat not accessible by purse seine nets.)

LOCATION OF SETS IN SO. CA.

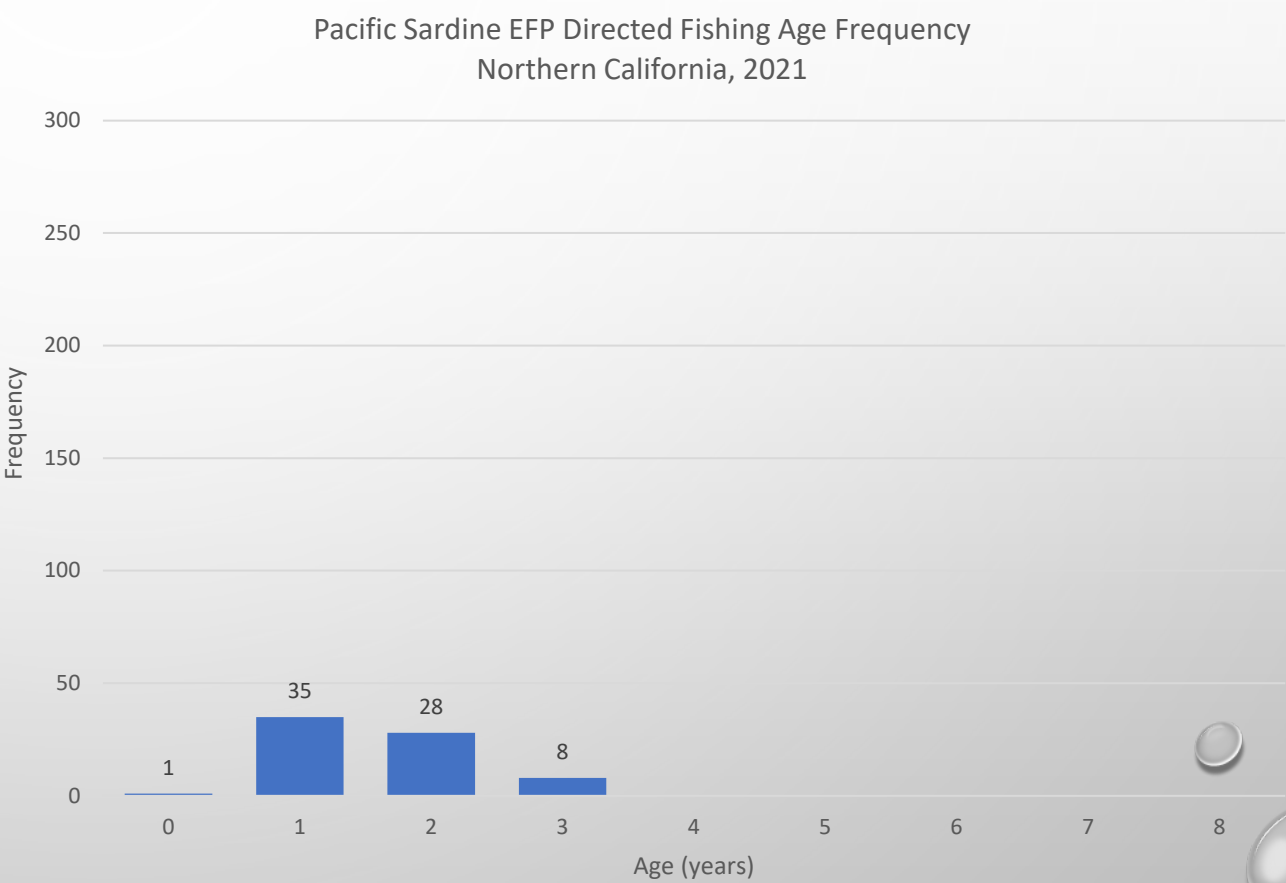
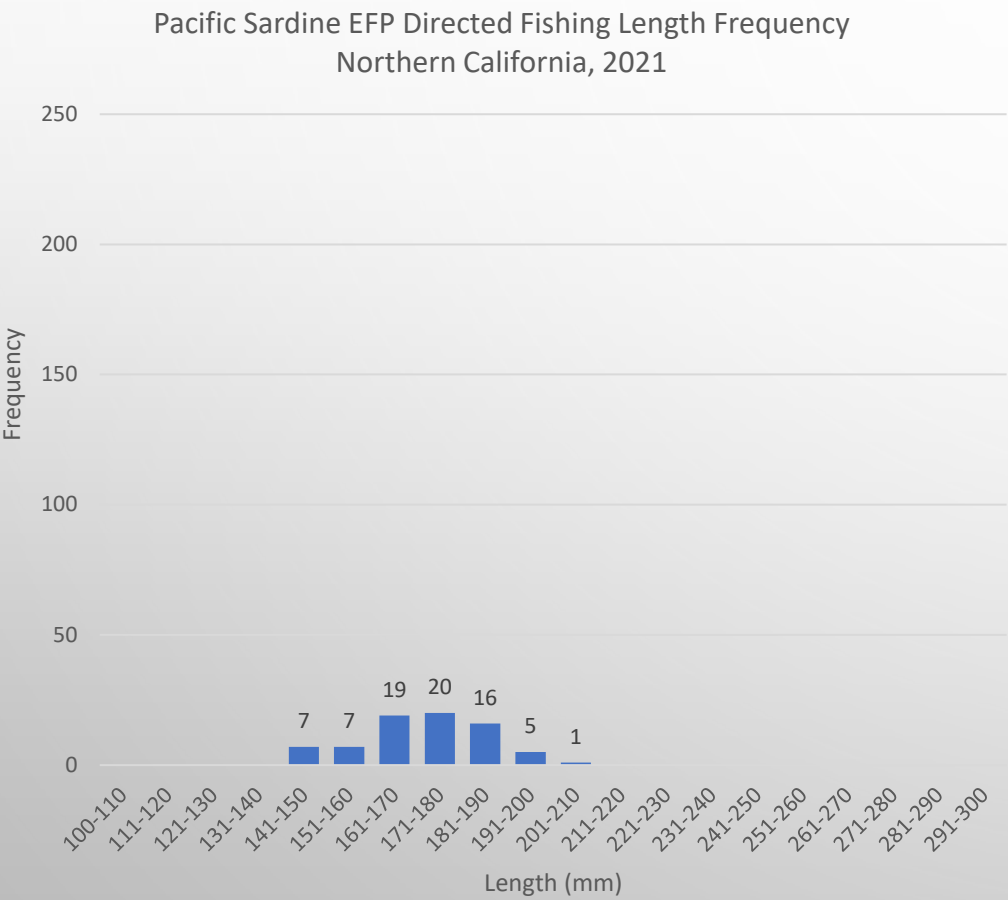


LOCATION OF SETS IN MONTEREY



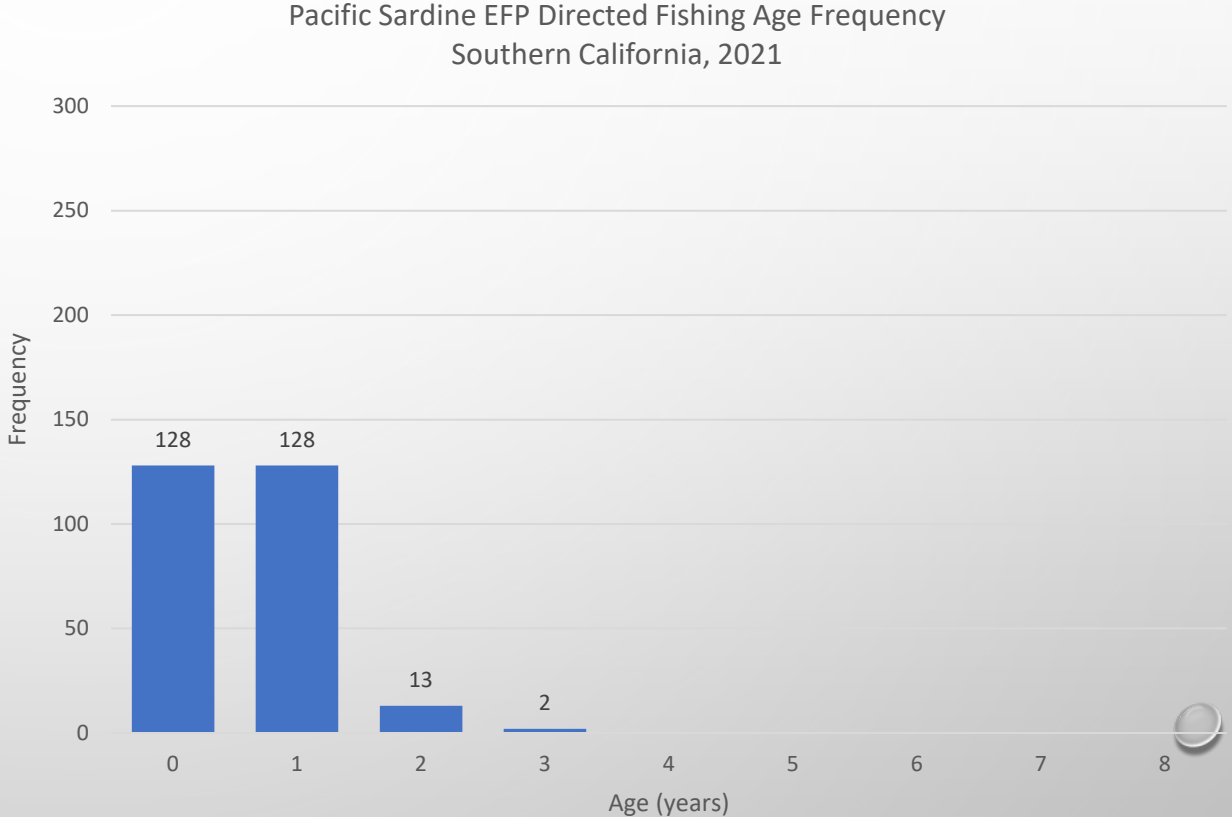
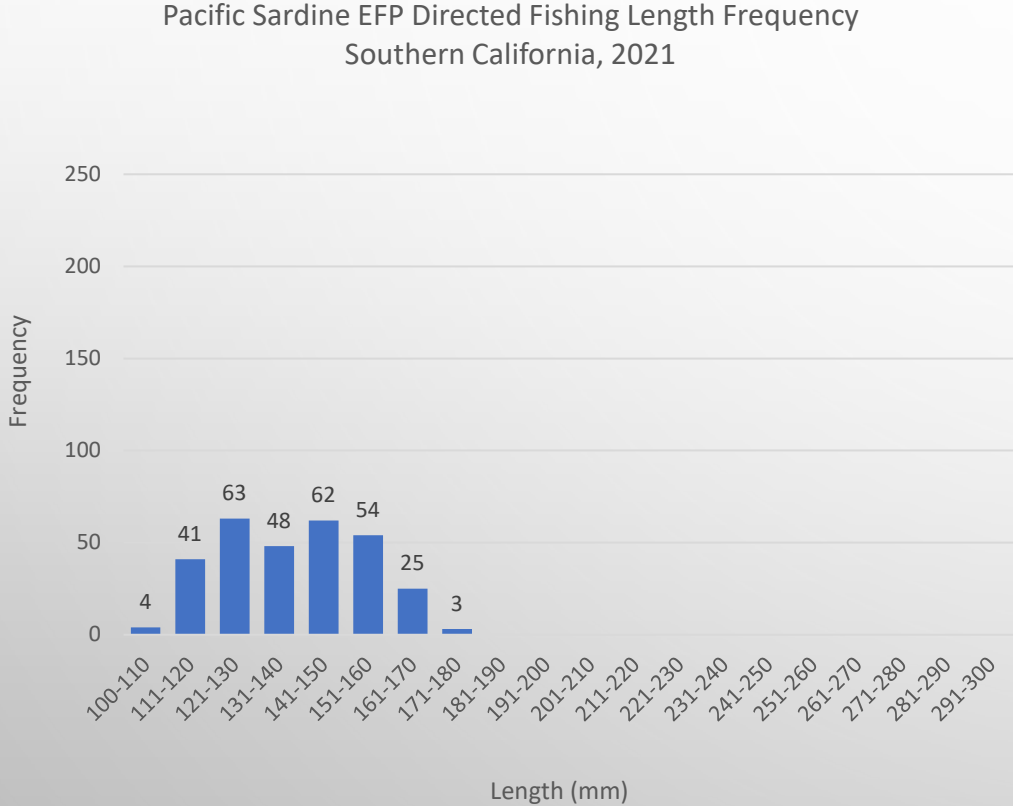
2021 BIO SAMPLES FROM CDFW

- MONTEREY



2021 BIO SAMPLES FROM CDFW

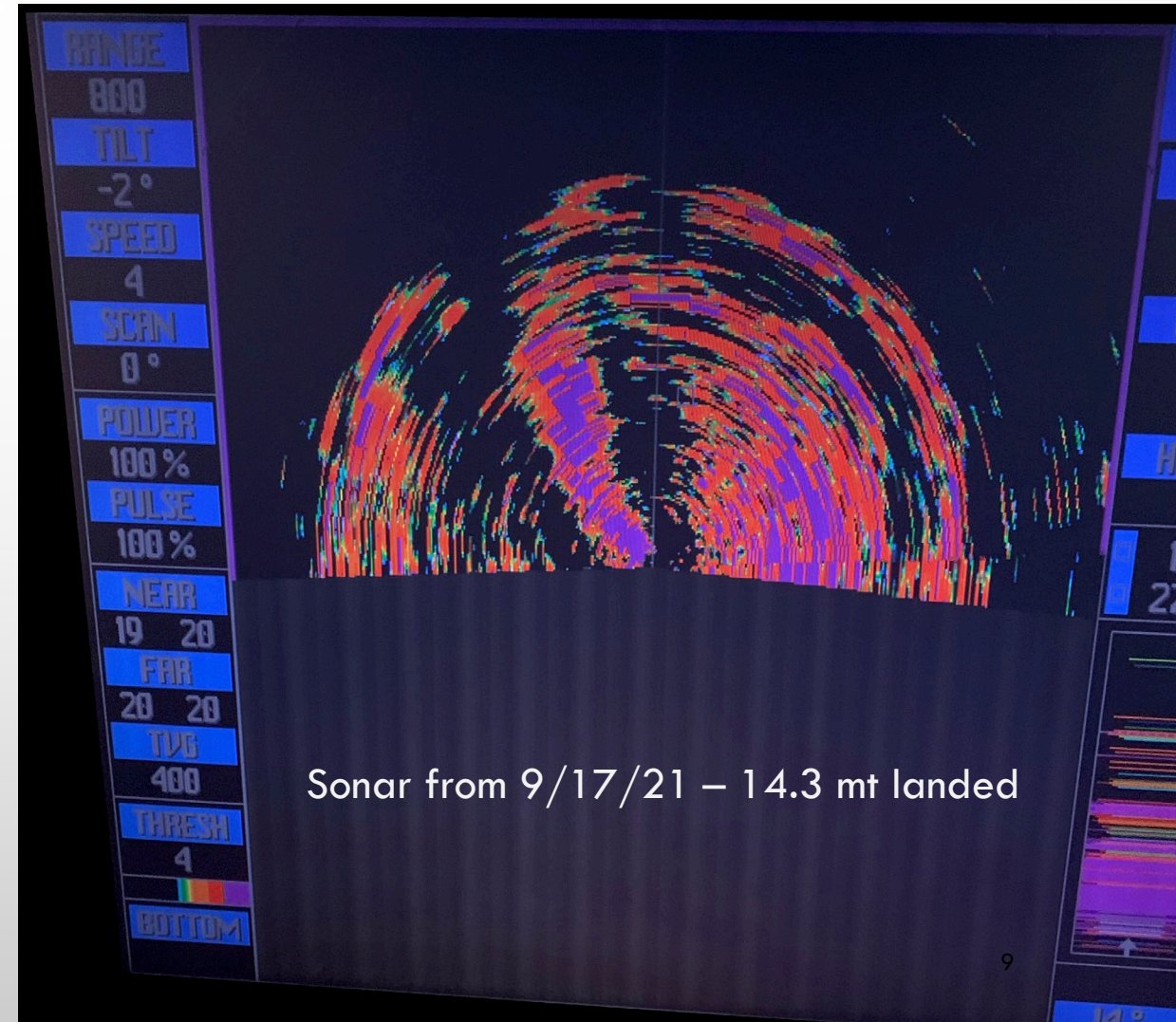
- SO. CA



LOTS OF SARDINES IN SO. CA.

- **SO. CA. FISHERMEN'S OBSERVATIONS**

- 3/25/21 – **SST 56°F** – CUT A SMALL PIECE OF LARGE SCHOOL ... ESTIMATE SCHOOL SIZE WAS 200-300 TONS. ALSO OBSERVED AT LEAST THREE OTHER SCHOOLS OF SIMILAR SIZE IN AREA
- 4/27/21 – **SST 61°F** – TREMENDOUS AMOUNT OF FISH AGAIN TONIGHT. STARTED SEEING SCHOOLS AS SOON AS WE LEFT THE HARBOR
- 9/17/21 – **SST 63°F** – OBSERVED LARGE SCHOOLS OF SARDINES IN SHALLOW ... WE TRIED TO CUT A PIECE OUT OF A 100+ TON SCHOOL



PLEASE APPROVE THIS EFP RENEWAL

- NEED TO CONTINUE A SMALL **DIRECTED FISHERY** AND COLLECT BIO SAMPLES TO **MAINTAIN A TIME SERIES OF LENGTH / AGE FROM TARGETED SARDINE LANDINGS**
 - TO AVOID MODELING CHALLENGES NOW FACING ANCHOVY STOCK ASSESSMENT DUE TO THE GAP IN FISHERY AGE DATA
- SARDINE MODEL NOW INCLUDES CURRENT FISHERY AGE DATA (USED IN 2022 SARDINE ASSESSMENT)
- **DIRECTED SARDINE LANDINGS CAN PROVIDE BIO SAMPLES FOR AERIAL SURVEY**
- **SK GRANT PROPOSAL CALLS FOR MONTHLY SAMPLES OF SARDINE LANDINGS THROUGHOUT THE YEAR TO TEST CURRENT ASSUMPTIONS SEPARATING 'NORTHERN' FROM 'SOUTHERN' SARDINES**
- SSC CPS SUBCOMMITTEE ACKNOWLEDGED 'NORTHERN' SARDINE BIOMASS IS LIKELY UNDERESTIMATED
 - UNCERTAINTY OVER STOCK STRUCTURE AND SST ASSUMPTIONS ARE HIGH PRIORITY RESEARCH NEEDS
 - **THIS 'DIRECTED' FISHING / BIO SAMPLING EFP CAN PROVIDE HELPFUL ANSWERS**
 - **STOCK ASSESSMENT AUTHOR AGREES DIRECTED FISHERY SAMPLES ARE USEFUL UNTIL FISHERY REOPENS.**
- **CWPA IS COMMITTED TO HELP IMPROVE SARDINE SCIENCE!**

THANK YOU FOR YOUR ATTENTION!
QUESTIONS?

