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NMFS West Coast Surveys



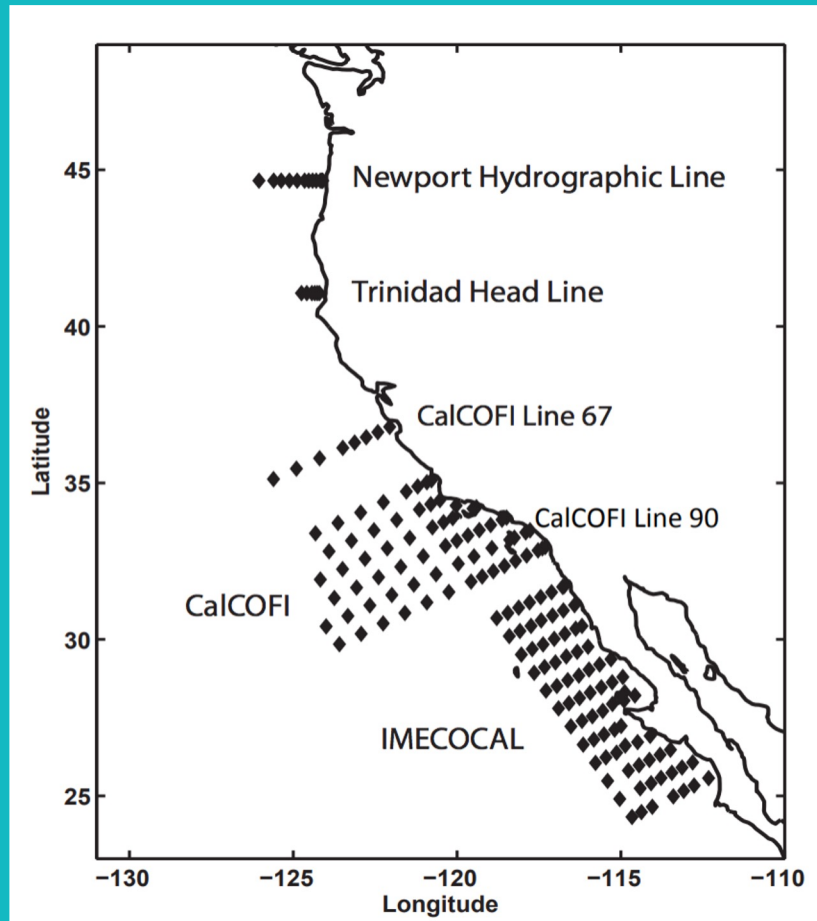
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1. Newport line - biweekly, CTD, zooplankton sampling
2. Trinidad line - biweekly to monthly, CTD zooplankton sampling
3. Calcofi grid, 2-4 times per year, CTD and multiple other sampling efforts



From Annual SOTCC report, CalCOFI.org



1. (ATS) Hake Acoustic Trawl Survey
2. (CCES) California Current Ecosystem Survey
3. (JSOES) Juvenile Salmon and Ecosystem Survey
4. (GBTS) Groundfish Bottom Trawl Survey
5. (PRS) Pre-recruit Survey
6. (RREAS) Rockfish Recruitment and Ecosystem Survey
7. (H+L) Hook and Line shelf rockfish survey

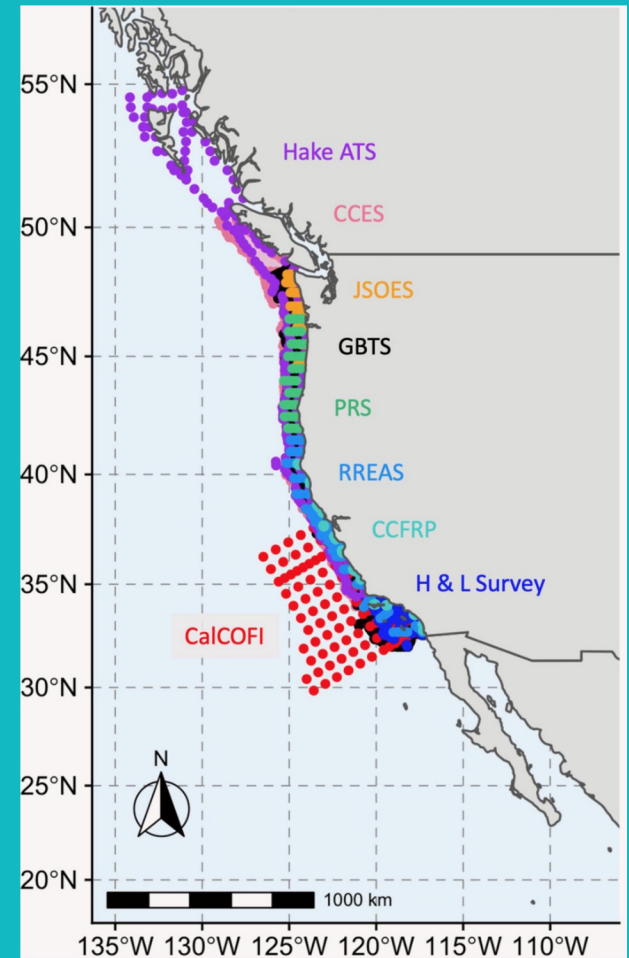
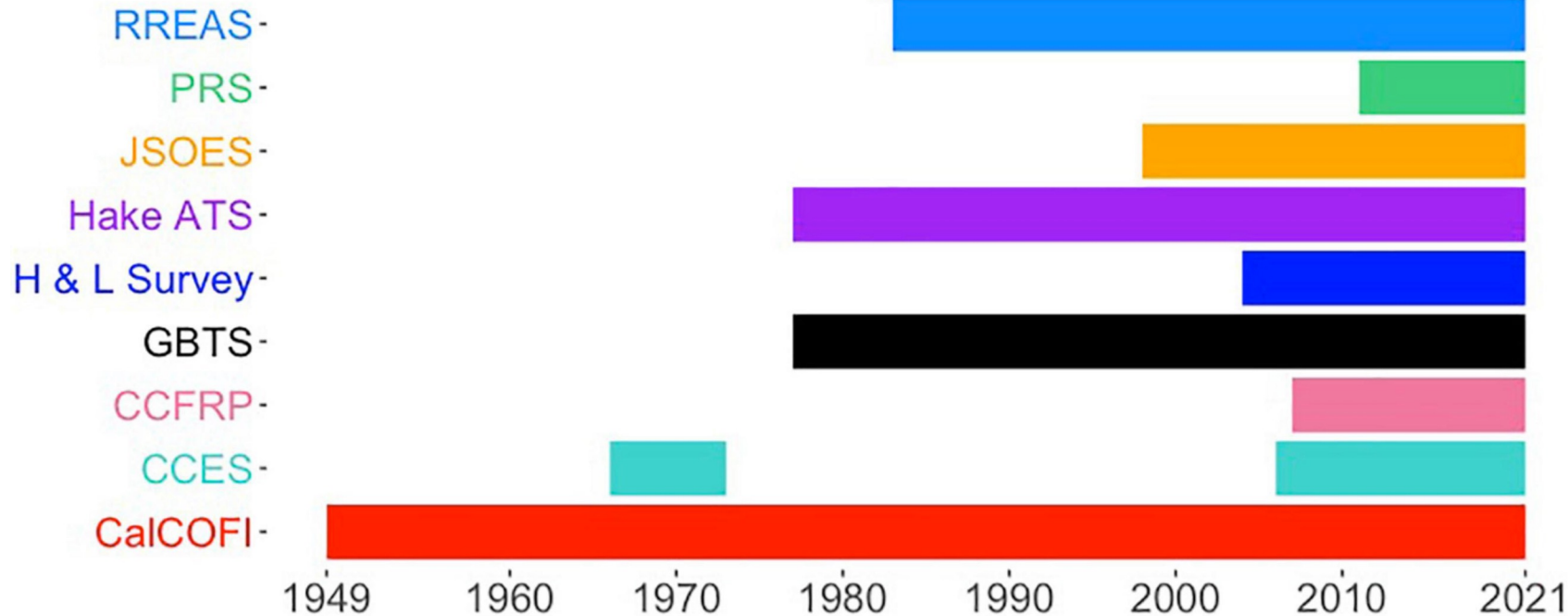


Figure from Gallo et al., Front. Mar. Sci., 02 March 2022 | <https://doi.org/10.3389/fmars.2022.757124>



Temporal Coverage of the Major Surveys





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Ocean Variables Sampled

Essential ocean variable (EOV)		CalCOFI	CCFRP	CCES	GBTS	H&L Survey	Hake ATS	JSOES	PRS	RREAS
Biology and ecosystems	Marine mammals	Yes	No	Partial	No	No	From 2021	Yes	Yes	Yes
	Sea birds	Yes	No	Partial	No	No	From 2021	Yes	Yes	Yes
	Fish	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Zooplankton	Yes	No	Yes - Krill	No	No	Yes	Yes	Yes	Yes
	Phytoplankton	Yes	No	No	No	No	Partners	No	No	No
	Microbes	Yes	No	No	No	No	Partners	No	No	Yes
Cross-disciplinary	Ocean sound	Partial	No	Yes	Partial	No	Yes	No	Yes	No
Biogeochemistry	Inorganic carbon	Yes	No	No	No	No	No	No	No	No
	Particulate matter	Yes	No	No	No	No	No	No	No	No
	Dissolved organic carbon	Yes	No	No	No	No	No	No	No	No
	Oxygen	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Nutrients	Yes	No	No	No	No	No	Yes	No	No
Physics and climate	Sea state	Yes	Partial	Yes	Partial	Yes	Yes	Yes	No	No
	Sea surface temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Subsurface temp	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Surface currents	Yes	No	Intermittently	No	Yes	Yes	No	No	No
	Subsurface currents	Yes	No	Intermittently	No	No	Yes	No	No	No
	Sea surface salinity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Subsurface salinity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Collection of each EOv is indicated by color and label: "Yes" (blue), "No" (orange), and "Partial" or infrequent data collection (yellow). EOvs collected by partner projects are indicated as "Partners". Coastal or tropical EOvs, such as hard coral, seagrass, and mangrove cover, are omitted. A full list of EOvs can be found on the Global Ocean Observing System website (www.goosocean.org).



Climate Variables Sampled

Essential climate variable (ECV)		CalCOFI	CCFRP	CCES	GBTS	H&L Survey	Hake ATS	JSOES	PRS	RREAS
Surface ocean physics	Sea surface temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Sea surface salinity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Sea state	Yes	Partial	Yes	Partial	Yes	Yes	Yes	No	No
	Surface current	Yes	No	Intermittently	No	Yes	Yes	No	No	No
Subsurface ocean physics	Subsurface temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Subsurface temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Subsurface currents	Yes	No	Intermittently	No	No	Yes	No	No	No
Ocean biogeochemistry	Inorganic carbon	Yes	No	No	No	No	No	No	No	No
	Oxygen	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Nutrients	Yes	No	No	No	No	No	Yes	No	No
Ocean biology/ecosystems	Plankton	Yes	No	Partial	No	No	Yes	Yes	Yes	Yes

Collection of each ECV is indicated by color and label: “Yes” (blue), “No” (red), and “Partial” or infrequent data collection (yellow). ECVs that are not collected by any of the surveys (e.g., sea ice, ocean surface heat flux, sea level) are omitted. A full list of ECVs can be found on the World Meteorological Organization website (<https://public.wmo.int/en/programmes/global-climate-observing-system/essential-climate-variables>).



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Biodiversity variables

Essential biodiversity variable (EBV)		CalCOFI	CCFRP	CCES	GBTS	H&L Survey	Hake ATS	JSOES	PRS	RREAS
Genetic composition	Intraspecific genetic diversity	No	No	No	Partial	Partial	Partial	Partial	No	No
	Genetic differentiation	No	No	No	Partial	Partial	Partial	Partial	No	No
	Effective population size	No	No	No	Partial	Partial	Partial	Partial	No	No
Species populations	Species distributions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Species abundances	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Species traits	Morphology	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes
	Physiology	Partial	Partial	Partial	Partial	Partial	Yes	Partial	Yes	Partial
	Phenology	Yes	No	Partial	Yes	No	No	Yes	Partial	Partial
	Movement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Partial
Community composition	Community abundance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Taxonomic/phylogenetic diversity	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes
	Interaction diversity	No	No	No	Partial	No	Partial	No	Partial	Partial
Ecosystem functioning	Primary productivity	Yes	No	No	No	No	No	No	No	No
	Ecosystem phenology	Partial	No	No	No	No	No	Yes	Partial	Partial
	Ecosystem disturbances	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ecosystem structure	Ecosystem distribution	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Ecosystem vertical profile	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes

Collection of each EBV is indicated by color and label: "Yes" (blue), "No" (red), and "Partial" (yellow), indicating infrequent or supporting sample collection. EBVs that are not directly collected by any of the surveys (e.g., live cover fraction) are omitted. A full list of EBVs can be found on the Group on Earth Observations Biodiversity Observation Network website (<https://geobon.org/ebvs/>).



Where is all this data?

(all over the place)

Survey Name	Data location
(ATS) Hake Acoustic Trawl Survey	FRAM data warehouse
(CCES) California Current Ecosystem Survey	?????????? Part ERDDAP, Some on BDP
(JSOES) Juvenile Salmon and Ecosystem Survey	NOAA data catalog, InPORT
(GBTS) Groundfish Bottom Trawl Survey	FRAM data warehouse
(PRS) Pre-recruit Survey	ACCESS database, Gov catalog (INPORT)
(RREAS) Rockfish Recruitment and Ecosystem Survey	Most of it is on ERDDAP, BDP
(H+L) Hook and Line shelf rockfish survey	FRAM data warehouse
CalCOFI	ERDDAP and CalCOFI data server
Trinidad Line	ERDDAP (planned in next few months)
Newport Line	Part on ERDDAP, Part custom data gateway