

Appendix B

Spatial and Temporal Distribution of SWFSC Fisheries Research Effort by Gear Type in the California Current Research Area (CCRA)

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Spatial and Temporal Distribution of SWFSC Fisheries Research Effort by Gear Type in the California Current Research Area (CCRA)

This appendix provides a synopsis of SWFSC fisheries research effort by gear type and by season in the California Current Research Area. Descriptions of the research effort in the Eastern Tropical Pacific Research Area and the Antarctic Research Area are provided in Table 2.2-1. This appendix provides information about the spatio-temporal distribution of research effort in the California Current Research Area to complement the information provided in Table 2.2-1.

Table B-1 SWFSC Research Effort by Gear Type in the CCRA by Season

Gear type	Surveys	Gear Description	Sampling Events	Effort
Spring (March-May)				
Pelagic trawling	California Cooperative Oceanic Fisheries Investigations (CalCOFI)	Fine-mesh, small, towed nets designed to sample larval fish and pelagic invertebrates (Oozekei, IKMT, MOCNESS, and Tucker nets)	Selected stations (<100)	20-60 minute duration tows at 2-3 knots (kts)
	Coastal Pelagic Species (CPS) This survey is conducted either in April-May or in June-July but not both in the same year; only listed in spring season	NETS Nordic 264 two-warp rope trawl	50	30 minute tows at 2-3 kts
	Juvenile Rockfish Survey (JRS) This survey is conducted either in May to mid-June; only listed in spring season	Modified Cobb midwater trawl	150	15 minute tows at 2 kts
Bottom longline	Reproductive life history analysis of sablefish (Sablefish)	Small commercial bottom longline	6-9 sets	75 hooks per set
Plankton tows	CalCOFI, CSP, JRS Pacific Coast Ocean Observing System (PaCOOS)-North CA	Various plankton nets (Bongo, CalVET, Pairovet, and Manta)	255	10-20 minute tows at 1.5-2.5 kts or vertical deployment
CTD and rosette water sampler	CalCOFI, CSP, JRS, PaCOOS-North	Vertical deployment to various depths	305	Vertical deployment
Continuous Underway Fish Egg Sampler (CUFES)	CalCOFI CSP	Surface to 3 m depth	Continuous sampling	Continuous sampling
Multi-frequency single-beam active acoustics	CalCOFI, CSP, JRS	18, 38, 70, 120, 200, and 333 kHz	Continuous use	Continuous use
Multibeam Acoustics	CalCOFI CSP	Simrad ME-70 and MS-70	Continuous use	Continuous use

Gear type	Surveys	Gear Description	Sampling Events	Effort
Summer (June-August)				
Pelagic trawling	CalCOFI, Marine Mammal Surveys (MMS)	Oozeki, IKMT, MOCNESS, and Tucker nets	Selected stations (<100)	20-60 minute duration tows at 2-3 kts
	Juvenile Salmon Survey (JSS)	NETS Nordic 264 two-warp rope trawl	50	30 minute tows at 2-3 kts
Pelagic longline	Highly Migratory Species Survey (HMS)	2-12 mile mainline with 10-36 ft gangions, 50-100 ft apart, 9/0 J hooks for blue and mako sharks; 16/0 and 18/0 offset, stainless circle hooks for swordfish.	60 sets	200-400 hooks per set, 2-4 hr soak (12,000-24,000 hooks per survey)
Bottom longline	Sablefish	Small commercial bottom longline	6-9 sets	75 hooks per set
Deep set buoy gear	Swordfish tagging	Modified swordfish buoy gear	150-300 sets	Two hooks per set, fishing at 250-400 m depth with continual surveillance for quick retrieval
CTD and rosette water sampler	CalCOFI, JSS, PacOOS-Central, PacOOS-North, HMS, MMS	Vertical deployment to various depths	300	Vertical deployment
Continuous Underway Fish Egg Sampler (CUFES)	CalCOFI	Surface to 3 m depth	Continuous sampling	Continuous sampling
Multi-frequency single-beam active acoustics	CalCOFI, JSS, HMS, MMS	18, 38, 70, 120, 200, and 333 kHz	Continuous use	Continuous use
Multibeam Acoustics	CalCOFI	Simrad ME-70 and MS-70	Continuous use	Continuous use

Gear type	Surveys	Gear Description	Sampling Events	Effort
Fall (September-November)				
Pelagic Trawling	CalCOFI, Habitat Surveys (HS) This survey only conducted opportunistically as ship time is available; listed only in the fall.	Oozeki, IKMT, MOCNESS, and Tucker nets	Selected stations (<150)	20-60 minute duration tows at 2-3 kts
	HS	NETS Nordic 264 two-warp rope trawl	10	30 minute tows at 2-3 kts
Pelagic longline	Thresher Shark Survey (TSS), HS	1-2 mile mainline set at 12 ft deep with 10-15 ft gangions, 50-100 ft apart, 13/0 offset circle hooks	60 sets	200-400 hooks per set, 2-4 hr soak (8,000-16,000 hooks per survey) + 4,000-8,000 hooks for HS
Bottom longline	Sablefish	Small commercial bottom longline	6-9 sets	75 hooks per set
Deep set buoy gear	Swordfish tagging	Modified swordfish buoy gear	150-300 sets	Two hooks per set, fishing at 250-400 m depth with continual surveillance for quick retrieval
Plankton tows	CalCOFI, JSS, PacOOS-Central, PacOOS-North, HS	Various plankton nets	300	10-20 minute tows at 1.5-2.5 kts or vertical deployment
CTD and rosette water sampler	CalCOFI, JSS, PacOOS-Central, PacOOS-North, HS	Vertical deployment to various depths	300	Vertical deployment
Continuous Underway Fish Egg Sampler (CUFES)	CalCOFI	Surface to 3 m depth	Continuous sampling	Continuous sampling
Multi-frequency single-beam active acoustics	CalCOFI, TSS	18, 38, 70, 120, 200, and 333 kHz	Continuous use	Continuous use
Multibeam Acoustics	CalCOFI	Simrad ME-70 and MS-70	Continuous use	Continuous use
Submersibles	HS	Manned and Remotely Operated Vessels with video cameras	10	60-240 minute deployment each

Gear type	Surveys	Gear Description	Sampling Events	Effort
Winter (December-February)				
Pelagic trawling	CalCOFI	Oozeki, IKMT, MOCNESS, and Tucker nets	Selected stations (<100)	20-60 minute duration tows at 2-3 kts
Bottom longline	Sablefish	Small commercial bottom longline	6-9 sets	75 hooks per set
Plankton tows	CalCOFI, PacOOS-North	Various plankton nets	130	10-20 minute tows at 1.5-2.5 kts or vertical deployment
CTD and rosette water sampler	CalCOFI, PacOOS-North	Vertical deployment to various depths	130	Vertical deployment
Continuous Underway Fish Egg Sampler (CUFES)	CalCOFI	Surface to 3 m depth	Continuous sampling	Continuous sampling
Multi-frequency single-beam active acoustics	CalCOFI	18, 38, 70, 120, 200, and 333 kHz	Continuous use	Continuous use
Multibeam Acoustics	CalCOFI	Simrad ME-70 and MS-70	Continuous use	Continuous use

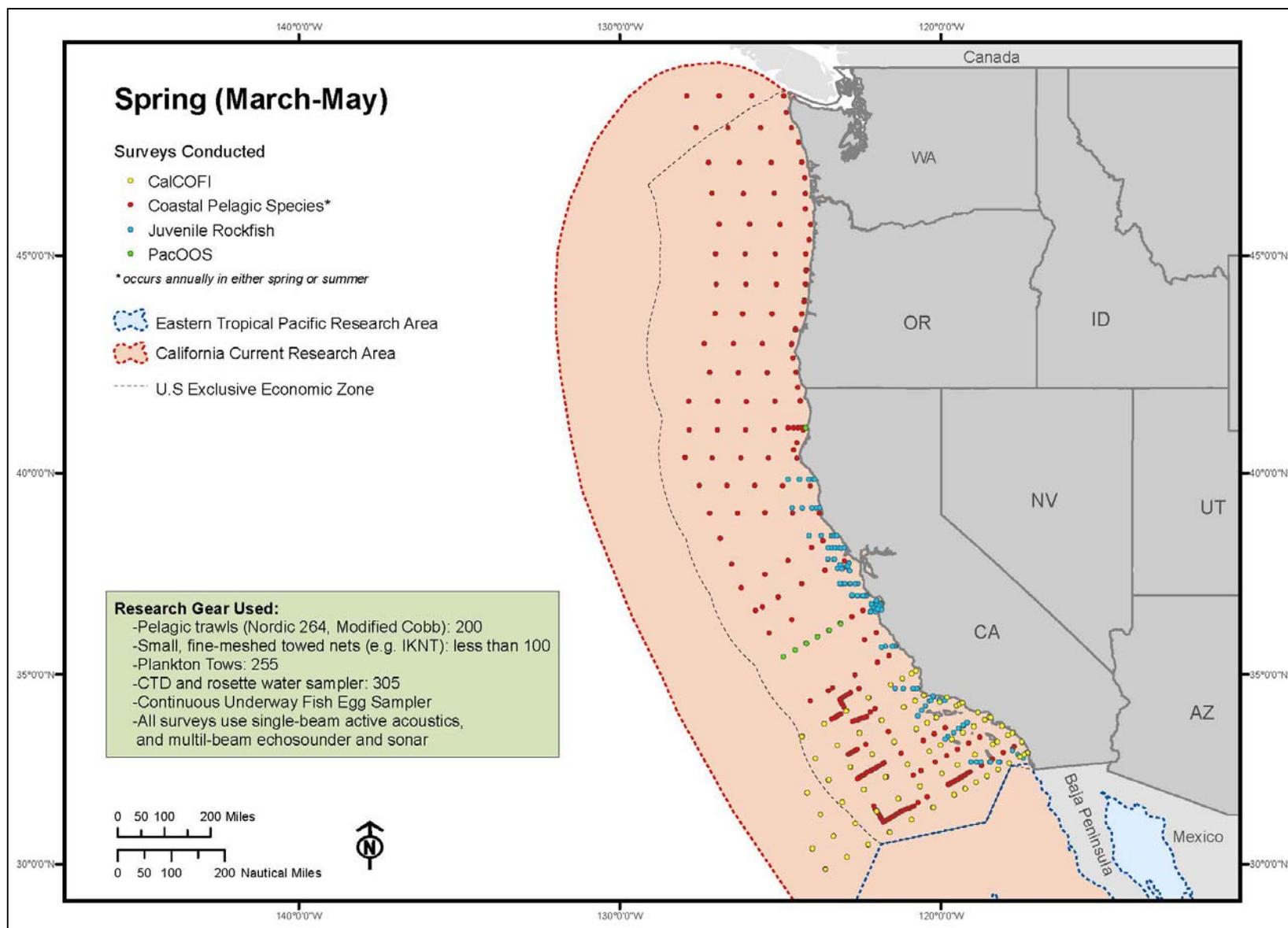


Figure B-1 Distribution of SWFSC research effort in the CCRA in spring.

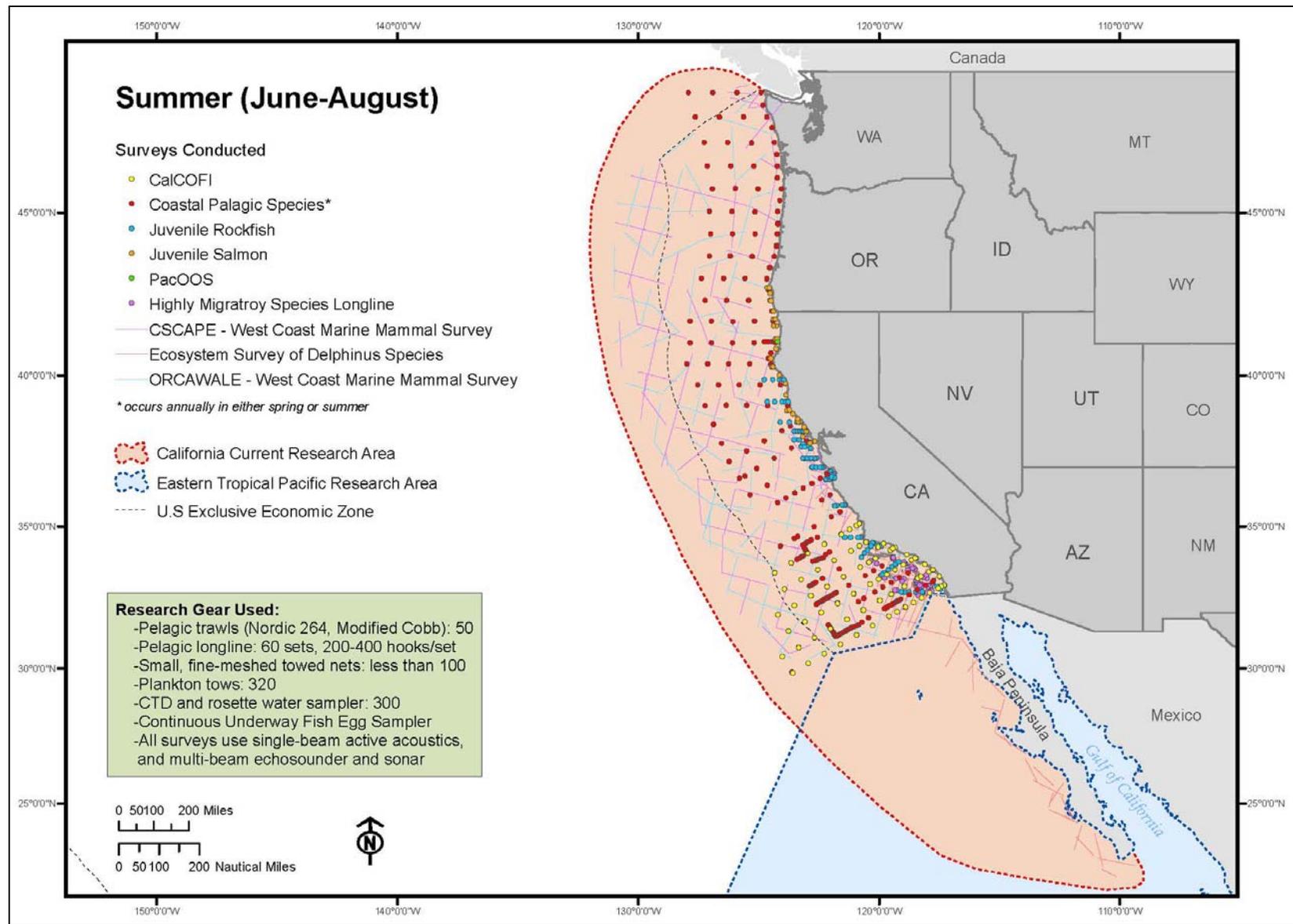


Figure B-2 Distribution of SWFSC research effort in the CCRA in summer

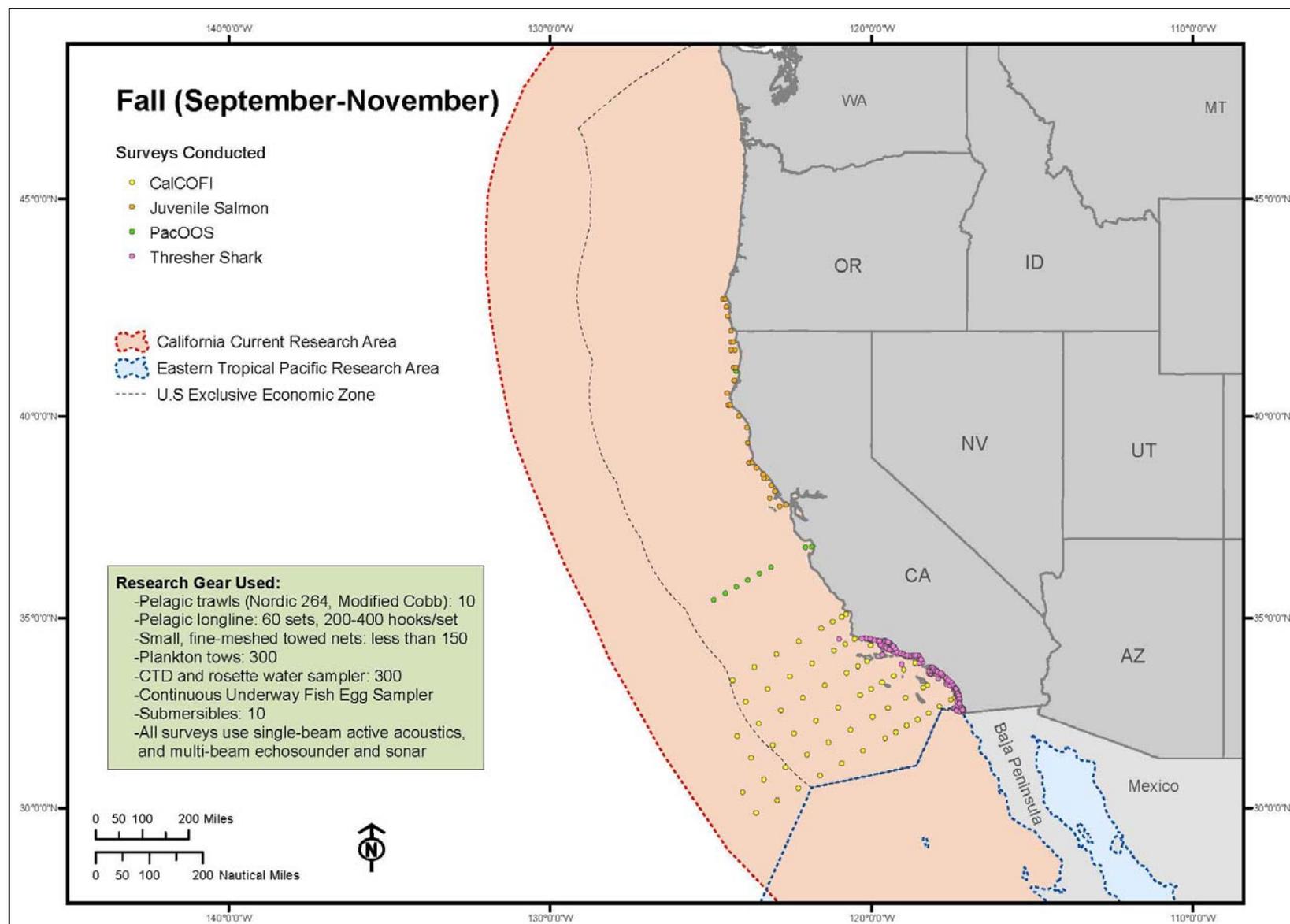


Figure B-3 Distribution of SWFSC research effort in the CCRA in fall

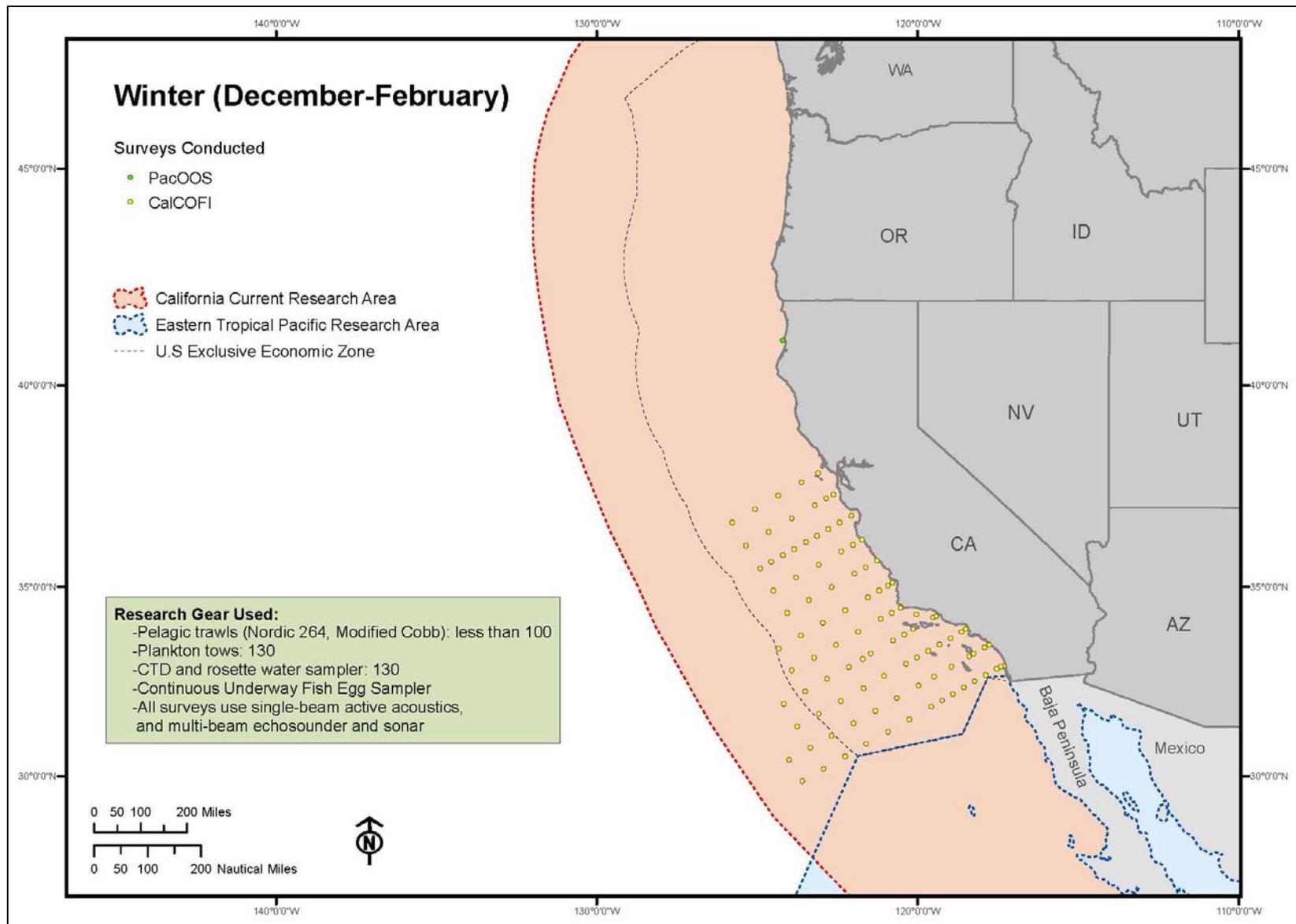


Figure B-4 Distribution of SWFSC research effort in the CCRA in winter