

Key Facts

Six-Year Study of Marine Habitats on Oil Platforms and Natural Outcrops in Offshore California Waters

Project Goal

- To determine the ecological role of oil and gas platforms and natural outcrops on fishes in Southern and Central California by studying patterns of fish assemblages over time and at various depths on natural as well as artificial reefs.

Study Sampling

- Observed fish assemblages over a six-year time frame from 1995-2001.
- Surveyed platforms located in depths between 95 feet to 739 feet from north of Point Arguello in Central California to off Long Beach in Southern California.
- Surveyed nine near-shore natural reefs (shallow-water rock outcrops) distributed across the Santa Barbara Channel region.
- Surveyed more than 70 deeper-water natural reefs in waters between 100 and 1,180 feet deep located throughout Southern California and off Points Conception and Arguello.
- Conducted scuba surveys at shallow depths; submersible surveys at deeper depths.
- Conducted most surveys at nine platforms in the Santa Barbara Channel and Santa Maria Basin: Irene, Hildago, Harvest, Hermosa, Holly, Gilda, Grace, Gina and Gail.

Key Findings

- Platforms provide habitat for most rockfish species that is better than or equal to natural reefs:
 - Some platforms harbor higher densities of young rockfishes than do many natural reefs.
 - Some platforms harbor higher densities of some species of adult rockfishes than do most natural reefs.
 - Some platforms harbor higher densities of some deeper-water rockfish species than do almost all natural reefs.
 - In general, natural reefs harbor higher densities of only the dwarf rockfish species.
- Platforms provide habitat for several critically depleted rockfish species:
 - Platform Gail has the highest densities of bocaccio and cowcod of any location in Central or Southern California.
 - Some platforms have higher densities of young bocaccio, cowcod and lingcod than do most natural reefs.
- Platforms act as nursery grounds for rockfishes:
 - It is probable that platforms capture pelagic stages of some rockfishes that would otherwise have perished.
 - Some rockfishes that are recruited to the platforms appear to stay there until they reach maturity. Some rockfishes may stay for life.

Specific Findings

- On platforms, there were more species of canary, copper, flag, greenblotched, greenspotted, greenstriped, halfbanded, vermilion rockfishes, bocaccio and widow rockfish, YOY, painted greenling and lingcod.
- On natural outcrops, yellowtail rockfish, dwarf species of pygmy, squarespot and swordspine rockfishes were more abundant.
- All of platforms surveyed had three distinct fish assemblages: midwater, bottom and shell mound.
- Rockfishes dominated all three fish assemblages and characterized almost all of the platform and sea floor habitats.
- Shallow waters held a greater variety in platform species assemblages compared to natural reef assemblages, most likely due to greater sensitivity of platforms habitats to changing oceanographic conditions.
- Midwater had higher fish densities and served as nursery grounds for rockfishes, cabezon and painted greenling.
- More than 90 percent of all fishes around platform bottoms were rockfishes.
- Higher rockfish settlements were reflective of colder waters and oceanographic shifts to cooler temperatures that may be occurring in southern California.
- Shell mounds supported a rich and diverse fish assemblage with rockfishes being the most abundant.