Proposed 2027 Methodology Review: CO-OP Sampling Design and CALCOM Expansion Methodology

California Department of Fish and Wildlife

Agenda Item G.3.a, CDFW Report 1 | Pacific Fishery Management Council | November 2026

What is CO-OP?

The California Cooperative Groundfish Survey: a state-federal port sampling partnership that has sampled commercial groundfish landings since 1978

CDFW

Logistical support, landing receipts (fish tickets), state management

PSMFC

Port samplers in the field; CALCOM database and data flow to PacFIN

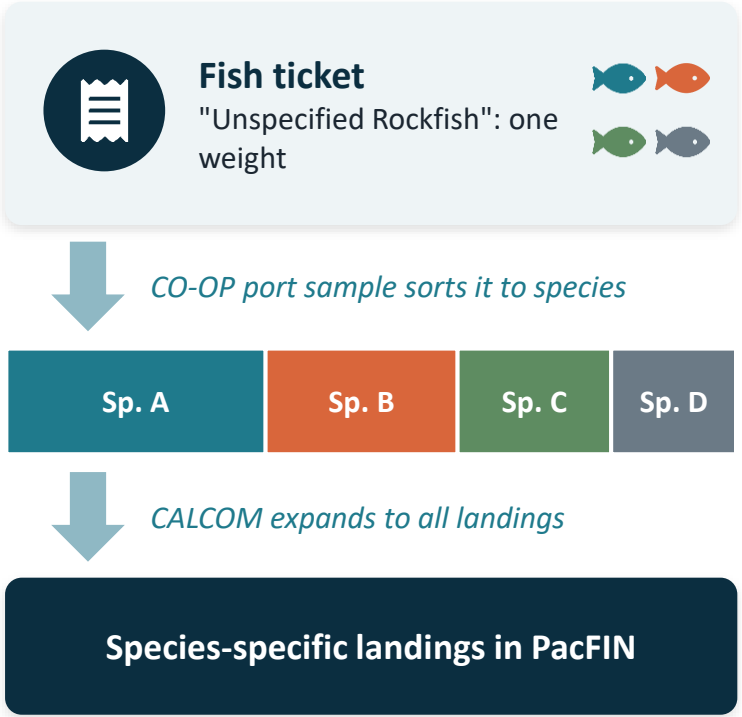
NMFS SWFSC

Statistical design, expansion methods and science support

In the field: samplers select landings, identify and weigh fish by species, and collect lengths, sex and age structures. Data are stratified by year, quarter, market category, gear group, condition (live/dead) and port complex.

Why we have it: market categories mix species

- Rockfish and other groundfish are landed and recorded on fish tickets in dealer market categories that often mix many species
- Stock assessments and management need species-specific catch, length and age data
- CO-OP samples tell us what “should” be inside each market category
- CALCOM expansions are California's final commercial groundfish landings in PacFIN, used by every assessment with California catch



Sources: [1] [4]

What is CALCOM? Fish ticket to assessment



Fish tickets

Landings by market category, port and gear



Port samples

Species composition and biological data



Stratified expansion

Sample %species applied to landings in each stratum



Borrowing

Unsampled strata filled from nearby ports or quarters



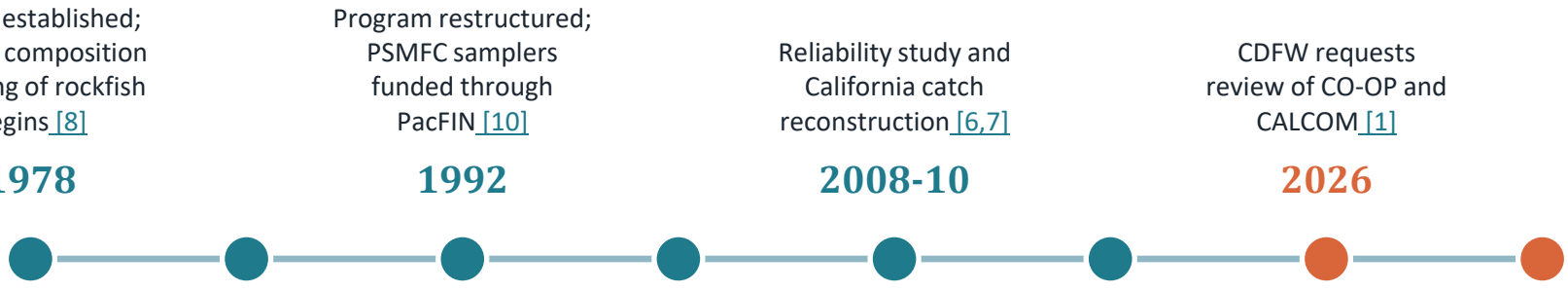
PacFIN

Species-level landings to stock assessments

CALCOM is the database and expansion system, maintained by PSMFC, that turns raw fish ticket data and port samples into species-specific catch. The method is based on Sen (1984), with programs documented by Pearson and Erwin (1997). Borrowing rules date to 1978 and were set by expert judgment.

Sources: [2] [5] [8]

Program timeline



Sources: [1] [2] [3] [5] [6] [7] [8] [10]

Building on the 2018 catch estimation review

Panel met March 2018 at SWFSC Santa Cruz to review ComX, a model-based replacement for CALCOM data borrowing (Agenda Item I.6, Attachment 2, Sept. 2018)

What the panel found

- Borrowing rules were set by expert opinion in 1978, not statistical analysis
- Model-based approach is better than ad hoc borrowing
- But not yet ready for use in stock assessments
- Many strata lack direct species composition samples

What a review might add

- 2018 reviewed an estimation model only, not the CO-OP sample design, documentation, data access or sampling priorities
- **A 2027-28 review can carry the 2018 work forward alongside the design review**

Sources: [8]

A 1980s design for a fishery that has changed

IFQ program

Trawl catch shares changed sampling needs; non-IFQ sectors rely more on port sampling

Closures and area rules

Changes in where and when fish can be caught

Gear changes

Fleet gear use differs from the strata built in the 1980s

Stock definitions

Updated stock boundaries need data that line up with them

Reporting requirements

E-tix electronic fish tickets, 24-hour reporting, and 12 group/unspecified market categories are no longer used

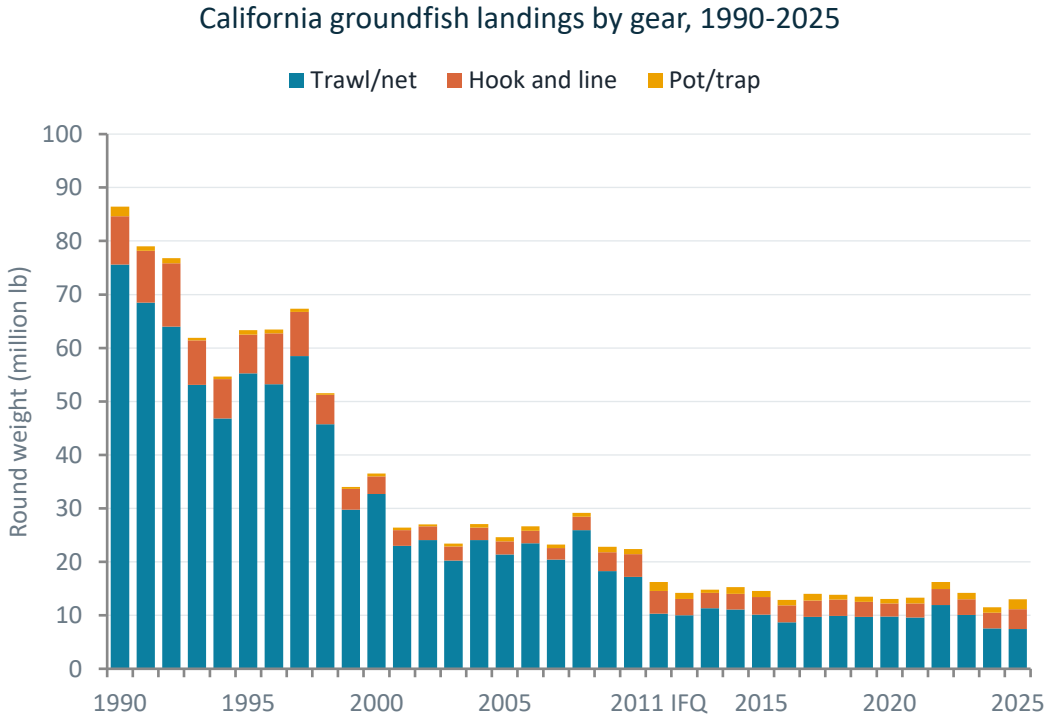
Sources: [1]

Concerns with the current system

Borrowing is poorly documented	Heavy borrowing across ports and periods; has produced anomalies such as the 1991 quillback rockfish catch
Limited reproducibility	Review of expansions has been limited and can only occur within the system
Fewer resources	Reduced funding and field staff limit sampling coverage
Outdated documentation	Methods documentation and the CALCOM website need updating
Program overlap	Other sampling programs overlap with CO-OP; its role should be clarified

Sources: [1] [8]

The fleet has shifted toward fixed gear



86.5 → 13.0

million lb of CA groundfish landed, 1990 vs. 2025

87% → 57%

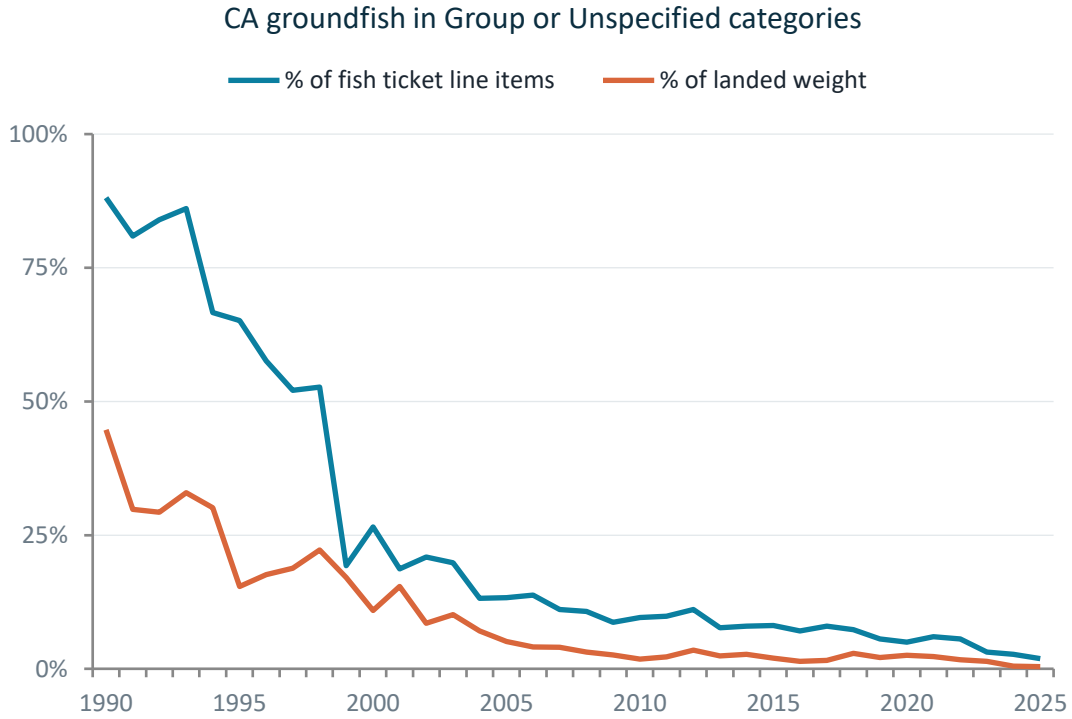
trawl/net share of landings; hook-and-line and pot rose from 13% to 43%

2011

IFQ begins: trawl share falls from 77% (2010) to 63%.

Sources: [15]

Reporting to species: mixed categories have faded



88% → 2%

of fish ticket line items in Group or Unspecified categories, 1990 vs. 2025

45% → 0.4%

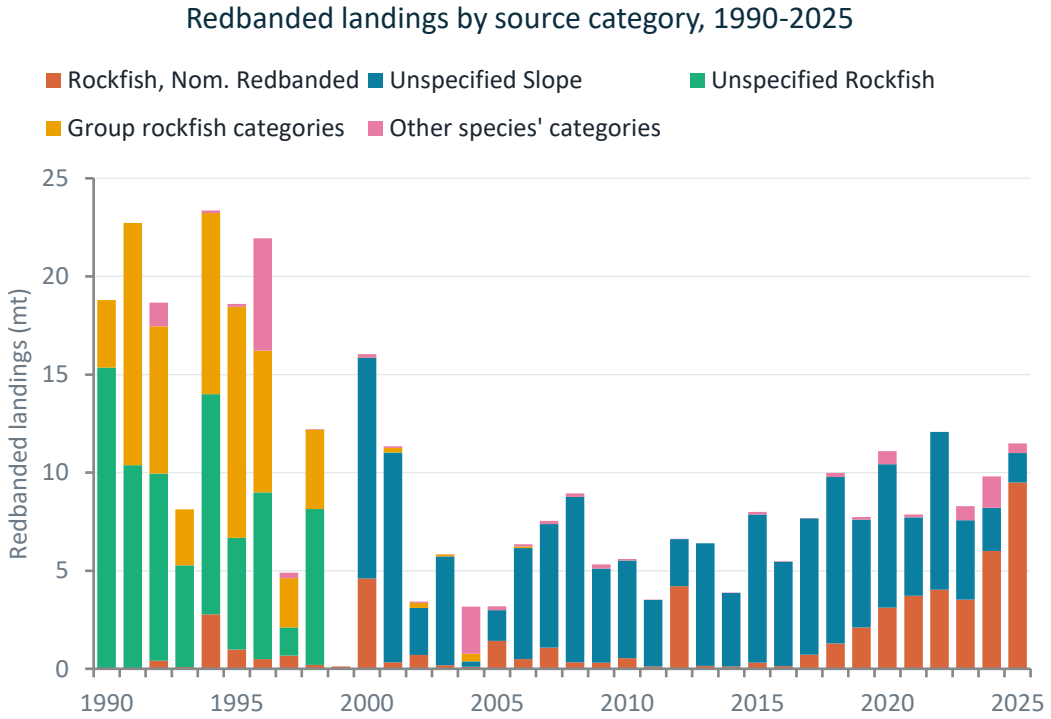
of landed weight in those categories, 1990 vs. 2025

1999

FGC §8043 amendment takes effect; mixed line items drop from 53% to 19%

Sources: [11] [12] [13] [14]

Redbanded: most catch comes from expansion



84%

of 1990-2025 redbanded landings (346 mt) were assigned from other market categories, not the Rockfish, Nom. Redbanded

83%

of 2025 landings came from the Rockfish, Nom. Redbanded itself

Sources: [11]

Proposed scope of the review

1

Sampling design and priorities

Align strata and effort with today's fisheries and federal species

2

Catch expansion methods

Borrowing rules, anomaly checks and diagnostics

3

Documentation and data access

Transparent, reproducible methods for all partners

4

Resource prioritization

Best use of limited sampling staff and funding

5

Data continuity

Protect consistency of the historical catch time series

Sources: [1]

A schedule that respects the 2027 workload

Nov 2026

Council adds CO-OP and CALCOM to the topic list

2027

Assessors and SSC focus on stock assessments; CDFW, PSMFC and SWFSC prepare materials

Fall 2027

Methodology review begins

2028

Review completed; results ready for the next assessment cycle



We understand the workload. This topic comes up only every two years, so we ask that it be placed on the list now, with the work held until after the 2027 assessments are complete.

Sources: [9]

References

[1] CDFW. 2026. Report on Methodology Review. Agenda Item G.3.a, CDFW Report 1. PFMC, November 2026.

[2] Sen, A.R. 1984. Sampling commercial rockfish landings in California. NOAA-TM-NMFS-SWFC-45.

[3] Sen, A.R. 1986. Methodological problems in sampling commercial rockfish landings. Fishery Bulletin 84(2):409-421.

[4] Pearson, D.E. and G. Almany. 1995. The effectiveness of California's commercial rockfish port sampling program. NOAA-TM-NMFS-SWFSC-218.

[5] Pearson, D.E. and B. Erwin. 1997. Documentation of California's commercial market sampling data entry and expansion programs. NOAA-TM-NMFS-SWFSC-240.

[6] Pearson, D.E., B. Erwin and M. Key. 2008. Reliability of California's groundfish landing estimates from 1969-2006. NOAA-TM-NMFS-SWFSC-431.

[7] Ralston, S., D.E. Pearson, J.C. Field and M. Key. 2010. Documentation of the California catch reconstruction project. NOAA-TM-NMFS-SWFSC-461.

[8] PFMC. 2018. Methodology Review Panel Report: Catch Estimation Methodology Review. Agenda Item I.6, Attachment 2, September 2018.

[9] PFMC. Council Operating Procedure 25: Groundfish Methodology Reviews.

[10] NOAA-TM-NMFS-NWFSC-31. Chapter 4, Data collection: groundfish (California).

[11] PacFIN California groundfish landings by market category and expanded species, 1990-2026 (CDFW data extract, November 2026).

[12] PacFIN California groundfish fish ticket line items by market category, 1990-2026 (CDFW data extract, November 2026).

[13] California Fish and Game Code Section 8043, landing receipt contents (amended by Stats. 1998, Ch. 185; effective January 1, 1999).

[14] CDFW. 2025. User Guide for Electronic Fish Ticket Submission.

[15] PacFIN California groundfish landings by gear and market category, 1990-2026 (CDFW data extract, November 2026).