

Report on Proposed Changes to Fishery Diversification Indices in the CCIEA Ecosystem Status Report

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Abstract

Diversification is an important risk management strategy for fishers, who tend to face very high variability in catch and income, creating substantial financial risk. Higher diversification across species groups (fishery diversification) is correlated with lower inter-annual variation in revenue, and diversification of revenue throughout the year (temporal diversification) has even greater benefits. In recognition of the demonstrated role that diversification plays in reducing vessel-level revenue variation, and presumably financial risk, the California Current Ecosystem Assessment (CCIEA) Ecosystem Status Report (ESR) reports trends in vessel-level fishery and temporal diversification. Because some fishermen earn revenue from both West Coast and Alaskan fisheries, these indices have historically combined revenue and landings data from both regions. Loss of staff at the Alaska Fisheries Science Center (AFSC) in 2025 has necessitated revisiting the CCIEA team's approach to producing the diversification indices and to consider producing indices that rely solely on revenues from West Coast fisheries. A relatively small proportion of the overall West Coast fleet fishes in Alaska, so it has been unclear how ignoring Alaska revenue would affect levels and trends in diversification when averaged over the entire fleet or the various categories of vessels that are reported in the ESR. This report presents information on the contribution of Alaska landings to West Coast fishermen's overall revenue and diversification in order to determine whether it is worth continuing to invest in this combined pipeline.

1 Introduction

Diversification is an important risk management strategy for fishers, who tend to face very high variability in catch and income, creating substantial financial risk (Sethi et al., 2012). Sethi (2010) proposed diversification as a means for fishers to reduce financial risk and demonstrated how diversification across multiple salmon fisheries could reduce interannual variability of revenue. Kasperski and Holland (2013) showed that higher diversification across species groups (fishery diversification) was correlated with lower inter-annual variation in revenue at the vessel level. Abbott et al., (2023) showed that diversification of revenues across weeks of the year (temporal diversification) is correlated with even greater reductions in variation of interannual revenue, suggesting that specialization in fisheries might not necessarily increase variability of revenues as long as fishers are able to spread landings over the year.

Over the last thirty-five years, fishery management councils and state agencies in Alaska and the West Coast have implemented input controls and catch share programs in order to sustain fish stocks and profitability. The implementation of these programs coincided with steady declines in fishery diversification over time which might have been expected to increase interannual variability of revenues on average. However, temporal diversification generally increased from the late 1980s through 2015 in part due to reductions in the number of fishery participants, which allowed remaining vessels to fish longer seasons (Holland et al., 2025). This appears to have mitigated the effects of reduced fishery diversification, as interannual variation in revenue (averaged over the fleet) generally declined through 2015. These trends saw a significant reversal in recent years. Since 2015, we have seen reductions in both temporal and fishery diversification along with increased inter-annual revenue variation, and further attrition from both Alaska and West Coast fleets (Holland et al., 2025). These trends are observed for both West Coast and Alaska fleets, but they are based on diversification measures that include revenues from both regions for vessels that fish in both areas. Trends for West Coast vessels based on diversification measures that exclude Alaska revenue may differ and average diversification levels would be lower.

In recognition of the demonstrated role that diversification plays in reducing vessel-level revenue variation, and presumably financial risk, the California Current Ecosystem Assessment (CCIEA) Ecosystem Status Report (ESR) reports trends in vessel-level fishery diversification, and also includes port-level fishery diversification indices in a supplementary appendix. The ESR began to report trends in temporal diversification in a supplementary appendix starting in 2023.

Loss of staff at the Alaska Fisheries Science Center (AFSC) in 2025 has necessitated revisiting our approach to producing the diversification indices and to consider producing indices that rely solely on revenues from West Coast fisheries. It took significant effort to reproduce the data processing pipeline for the combined AK/WC diversification indices for the 2025-2026 ESR. The new pipeline was not fully validated until July 2026. Producing indices with only West

Coast revenue would be considerably easier and reduce reliance on collaboration from AFSC and AKFIN staff; however, diversification would be underestimated for vessels with Alaska fisheries revenues. A relatively small proportion of the overall West Coast fleet fishes in Alaska, so it was unclear before this review how ignoring Alaska revenue would affect levels and trends in diversification when averaged over the entire fleet or the various categories of vessels that are reported in the ESR.

The purpose of this report is to present information on the contribution of Alaska landings to West Coast fishermen's overall revenue and diversification in order to determine whether it is worth continuing to invest in this combined pipeline, or whether the loss of information from moving to a West Coast-only index would be worth the tradeoff of saving staff capacity for other tasks (Table 1).

Table 1. List of tradeoffs involved in continuing with a combined West Coast/Alaska index versus moving to a West Coast-only index.

	West Coast only	West Coast + Alaska
Data access requirements	Can be run in-house by any NWFSC personnel with PacFIN data access	Must be run by personnel with both PacFIN and AKFIN data access. Ability to maintain AKFIN access at the NWFSC depends on external factors (specifically, diversification indices being adopted for use in AFSC products)
Pipeline complexity	5-step pipeline	20-step pipeline
Time to produce	1 week; highly automated	Highly dependent on external factors. Multiple data sources mean more potential upstream data issues, particularly potential lags in data processing from ADFG
Time lag	ESR year t-1 (e.g., final time series year 2026 for the 2026-2027 ESR)	ESR year t-2 (e.g. final time series year 2025 for the 2026-2027 ESR)
Year definition	Crab year, in line with other ESR products (doesn't change the trends or interpretations)	Calendar year
Data loss	Incomplete knowledge of West Coast fishermen's fishing activities and diversification strategies	More complete picture of West Coast fishermen's diversification across strategies
Continuity with past index	Scale and trend line of the index will change	Same scale and trend as past iterations of the index
Flexibility	Greater flexibility to adopt other changes, such as changes to species groupings	Harder to have flexibility when working across multiple regions' data

2 Methods

Following Holland & Kasperski (2016), we utilize the effective Shannon index (ESI) to measure diversification:

$$(1) \ ESI = \exp \left[\sum_{i=1}^{S_j} \sum_{j=1}^4 -(p_{ij} * \ln p_{ij}) \right]$$

where p_{ij} represents the proportion of a vessel's total gross revenues derived from species group i in region j , and S_j is the total number of species groupings in region j . We define p_{ij} as the percent of an entity's total annual gross revenue from one of 40 different species groupings in one of four regions – the Bering Sea/Aleutian Islands, Gulf of Alaska, Alaskan in-state waters, and the West Coast. Not every species group is caught in each region, so there are a total of 84 total region-specific species groupings. The ESI increases both as revenues are spread across more fisheries and as revenues are spread more evenly across fisheries. ESI also has an intuitive meaning: when revenues are spread evenly across categories (e.g., fisheries), the index equals the number of categories represented. For example, ESI takes a value of 2 if a fisher's revenue is spread evenly across 2 fisheries, a value of 3 if spread evenly across 3 fisheries, and so on. ESI declines progressively below the number of fisheries as revenue is less evenly spread across them. Our temporal diversification metric measures the spread of revenue over the 52 weeks of the year using the same formula as equation 1 with p_i representing the share of a vessel's revenue in each week of the year. Analogous to the fishery metric, a value of 10 would be calculated for a vessel with revenue spread evenly over 10 weeks, and this would decrease as the spread became less even across weeks.

To evaluate the relative contribution of Alaska revenues to West Coast vessels and assess the consequences of moving to a West Coast-only diversification index, this report compares diversification indices produced for the years 1990-2024 using 1) an analysis pipeline that reproduces the original Kasperski and Holland method, which includes both AKFIN and PacFIN data for vessels that generate an average of \$5,000 in annual revenue from West Coast fisheries; and 2) a pipeline that only incorporates PacFIN data for the same vessels. We compare the overall time series of mean fleet-level ESI produced with both pipelines and explore how these time series differ for fleet segments defined by vessel size, revenue earned from fisheries, and geographic region. We then focus on the small subset of West Coast vessels that earn significant revenue from Alaska landings and report the fisheries they participate in and the regions where they fish in both Alaska and West Coast waters.

The two data processing pipelines that we compare in this analysis have been validated to ensure that all filtering and analytical decisions are identical and the only difference is in the underlying data. Both pipelines are written in R and version controlled in GitHub, providing a significant improvement in transparency and collaboration over the original pipeline in Stata.

Migrating these 20 legacy Stata scripts represented a substantial investment of time and resources. To ensure complete data accuracy, the transition included comprehensive QA/QC validation targeting relational merge tracking, duplicate identification, and missing data checks. While the new pipelines are fully automated and reproducible, it is worth noting that running the complete analysis with WC+AK data can still experience lags due to the volume and availability of external data. A complete list of the tradeoffs involved in making this shift are outlined in Table 1.

3 Results

3.1 Contribution of Alaska landings

Only a small proportion of the overall West Coast fleet earned revenue from Alaska landings (Figure 1). This proportion declined over time for the fleet as a whole and for all segments of the fleet. The proportion of West Coast vessels with Alaska revenue was highest for vessels that fished in Washington (16.1% in 2024; Figure 1B), vessels that earned an average of at least \$100,000 annually from fishing (10.7% in 2024; Figure 1C), and the largest size class of vessels (33.9% in 2024; Figure 1D). The proportion was lowest for vessels in California (1.5% in 2024), vessels that earned the least money from fishing (1.4% in 2024), and vessels <41 ft in length (0.6% of vessels in 2024).

Despite the fact that only a relatively small fraction of West Coast vessels fish in Alaska, excluding the Alaska revenues of West Coast vessels significantly changed both the scale of the species diversification index as a whole and its trend through time (Figure 2). This difference was strongest for the largest vessels, those that earned the most revenue, and those that fished out of Washington state and to a lesser extent, Oregon. In contrast, excluding Alaska revenue did not noticeably change the diversification levels of vessels that fished in California, those that earned under \$100K annually from fishing, and vessels that were <41 ft in length. Removing Alaska landings did not notably change the scale or trend of the temporal diversification index, with the exception of the largest size class of vessels (Figure S1).

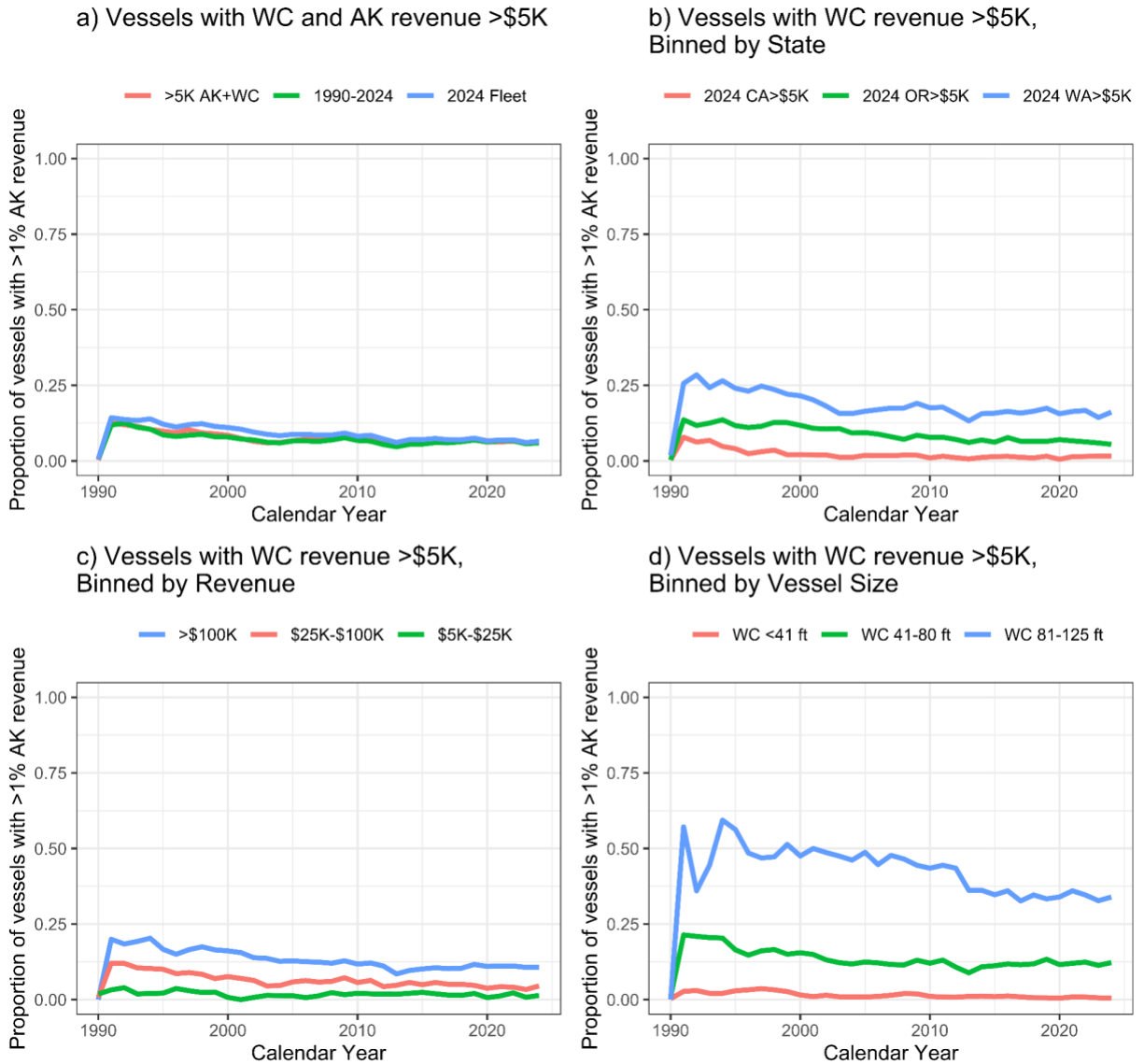


Figure 1. Proportion of West Coast vessels that earn at least 1% of their annual revenue from Alaska landings in each year 1990-2024. Panel A shows the proportion of vessels with Alaska revenue for all vessels that earn at least \$5,000 in mean annual revenue from the West Coast and Alaska (red line); all vessels that have fished consistently from 1990 to 2024 (green line); and vessels that earned at least \$5,000 in revenue in 2024 (blue line). Panel B shows vessels that earned at least \$5,000 in revenue in 2024 in California, Oregon, and Washington (red, green, and blue lines, respectively). Panel C shows vessels that earned at least \$5,000 in West Coast revenue in 2024, binned by their average annual revenue. Panel D shows vessels that earned at least \$5,000 in West Coast revenue in 2024, binned by vessel length.

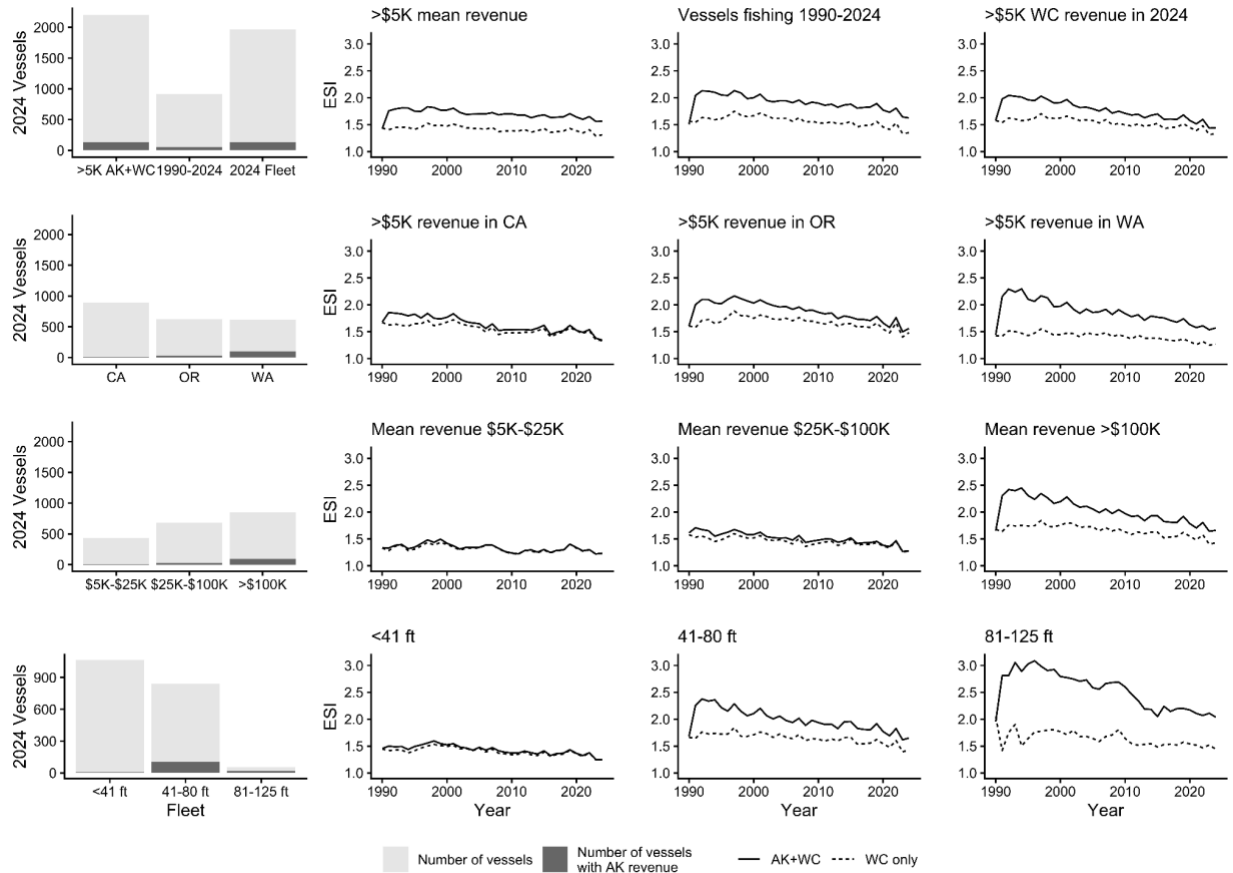


Figure 2. Difference in species diversification index values for AK+WC and WC only pipelines for the fleet as a whole (top row), West Coast vessels by state (second row), West Coast vessels by revenue (third row), and West Coast vessels by length (bottom row). The left-hand panels in each row show the number of vessels represented in the 2024 fleet for each category (gray bar) and the number of vessels within that fleet that earned >1% of their 2024 revenue from Alaska landings (black bar).

3.2 Alaska fishing strategies of West Coast vessels

For the subset of West Coast vessels that fished in Alaska, the most common diversification strategy was to fish for salmon both on the West Coast and in Alaska, followed by fishing for crab on the West Coast and salmon in Alaska (Figure 3). A smaller group targets Pacific halibut and sablefish in Alaska along with Pacific halibut and groundfish species on the West Coast. One other major group is a set of vessels that fish Pacific whiting on the West Coast and Alaskan pollock and groundfish. One group of vessels primarily fishes for Pacific halibut in Alaska and catches <1% of their annual revenue in West Coast halibut fisheries, potentially due to participation in West Coast halibut derbies.

1990-2024 Vessel-Year Participation & Revenue Composition

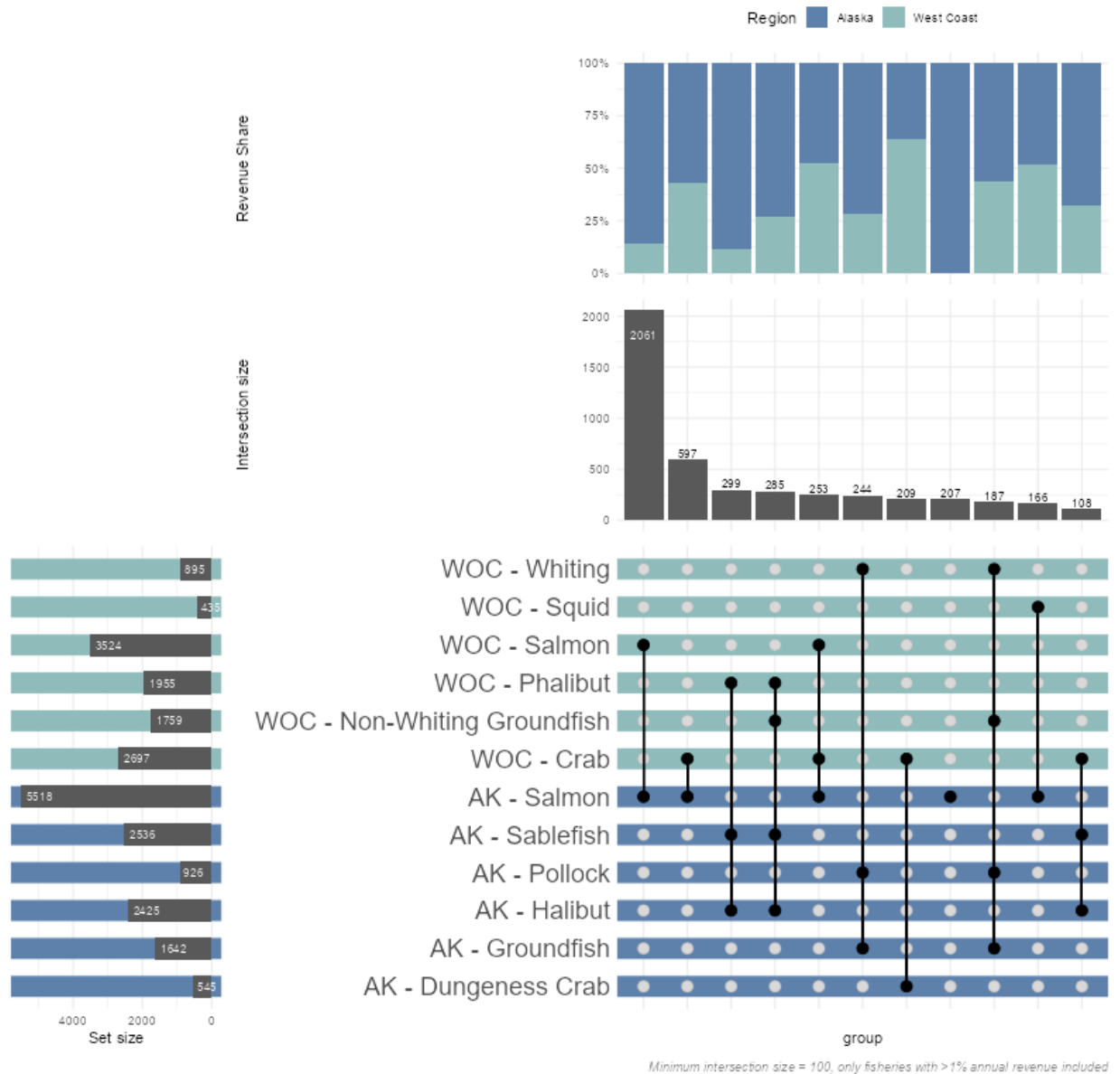


Figure 3. Fishery participation intersections and median annual revenue composition for commercial fishing vessels that fish in both Alaska and West Coast from 1990-2024. The bottom left panel displays the number of vessels for a given year that participate in an individual fishery. The bottom right panel highlights frequency and shared fishery participation across individual vessel-years, restricted to intersections with a minimum sample size of 100 vessel-years. The top panel illustrates the corresponding median proportion of annual vessel revenue derived from Alaskan and West Coast fisheries highlighted in the intersection profile. Analysis only includes fisheries contributing >1% of a vessel's total exvessel revenue.

The majority of West Coast vessels that fished in Alaska did most or all of their West Coast fishing in Washington state (Figure 4). Washington vessels fished in Alaska in-state waters, the Gulf of Alaska, and the Bering Sea/Aleutian Islands, with the most common combination being vessels that fished in both Washington state and Alaska in-state waters. A

smaller group fished in Oregon or California, and the majority of those vessels fished in Alaska in-state waters, with a smaller subset of vessels also fishing in the Gulf of Alaska. Vessels that participated in Bering Sea fisheries exclusively fished in Washington or a combination of Washington and Oregon.

1990-2024 Vessel-Year Regional Participation & Revenue Composition

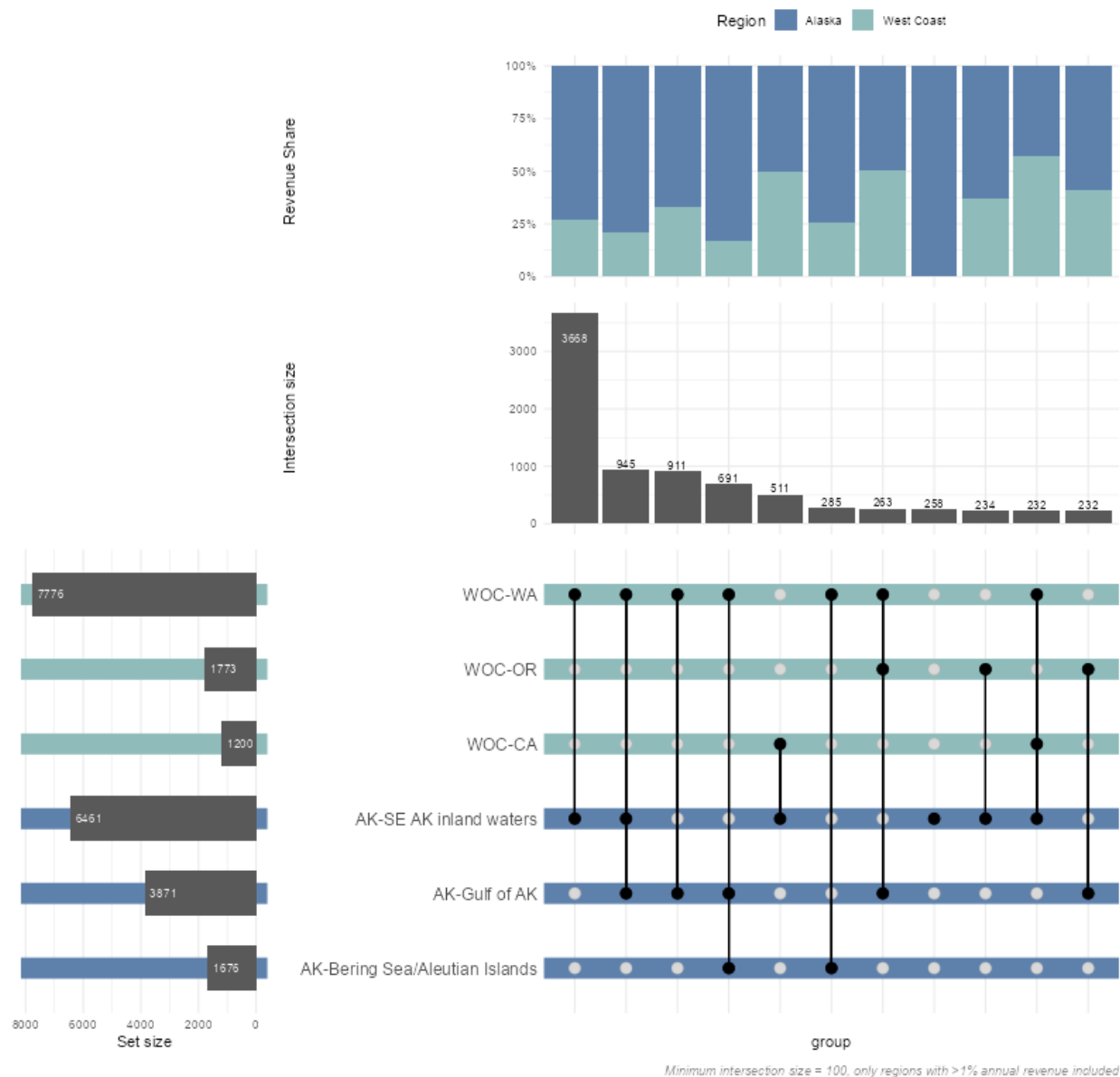


Figure 4. Regional participation intersections for commercial fishing vessels that fish in both Alaska and West Coast from 1990-2024. The bottom left panel displays the number of vessels for a given year that participate in an individual region. The bottom right panel highlights frequency and shared fishery participation across individual vessel-years, restricted to intersections with a minimum sample size of 100 vessel-years.

3.2 Other potential methodological changes

3.2.1 Crab year

Moving to West Coast-only indices would enable us to align the diversification indices better with other fish ticket-derived components of the Human Wellbeing section of the ESR by calculating the indices over crab years instead of over calendar years. Crab years, which run from week 46 of one year to week 45 of the following year, better represent West Coast fisheries because they capture a full fishing season for Dungeness crab within one 12-month period. The fishery participation networks (FPNs) that are currently reported annually in the ESR are calculated over crab years, although the community social vulnerability indices (CSVI), which are derived from non-fishery Census Bureau data, are not. However, calculating the diversification indices over crab years rather than calendar years did not significantly change the scale or trends of diversification values over time (Figure S2).

3.2.2 Groundfish species groupings

Currently, West Coast fisheries are divided into 17 distinct species groups for purposes of calculating the diversification index and the fishery participation networks (Table S1). NWFSC scientists have received recent feedback that the current approach of splitting non-whiting groundfish into DTS (dover sole, thornyheads, sablefish) and non-DTS species groupings may no longer be a meaningful distinction. In response to this feedback, the Economic Data Collection Program is exploring different groundfish groupings for annual reporting, including a) aggregating the DTS and non-DTS groundfish grouping into a single non-whiting groundfish group and b) exploring gear-based groupings such as groundfish bottom trawl, groundfish midwater trawl, and groundfish fixed gear. This review represents an opportunity to align the diversification indices with this decision and explore the indices' sensitivity to these new potential species groupings. To further align the products presented in the ESR's human wellbeing section, we recommend making a coordinated change to the fishery participation networks, and we present a sensitivity analysis for this set of indicators as well.

Combining DTS and non-DTS groundfish into a single non-whiting groundfish group resulted in slightly lower ESI values but did not significantly change trends in diversification over time for most groups (Figure 5). The exception was for the largest size class of vessels, which showed a sharp decline in diversification around 2010 when using the status-quo species groupings but not the new, combined non-whiting groundfish grouping. This is because the introduction of the ITQ system in 2010 sharply limited fishing opportunity for sablefish.

Dividing non-whiting groundfish into three gear-based groups (groundfish midwater trawl, other groundfish trawl, all other gear) produced very similar values and trends to the index values produced with the single non-whiting groundfish group. This is surprising conceptually because ESI values typically increase with the granularity/number of revenue groups included in

the index (Roswell et al., 2021), but makes sense in a West Coast context because very few individual fishermen are diversified across more than one groundfish gear.

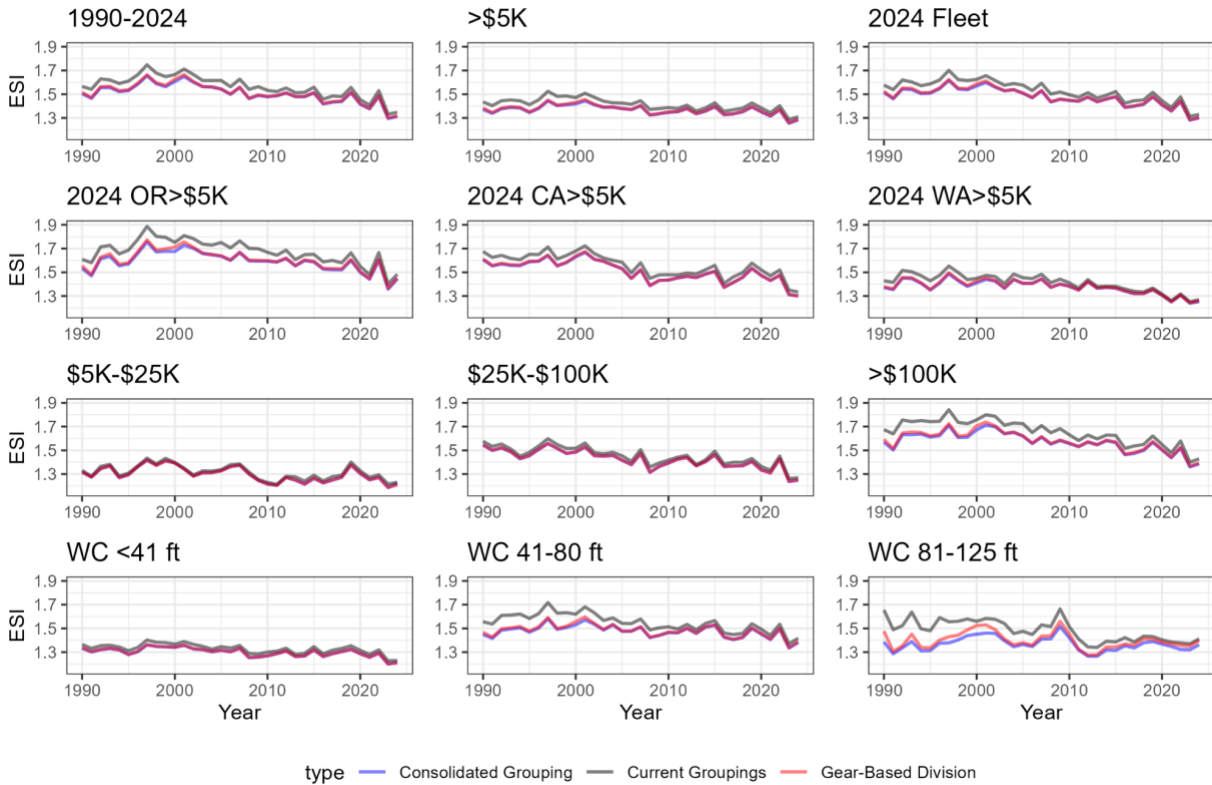


Figure 5. West Coast-only ESI values calculated using three alternative methods of grouping groundfish: a single non-whiting groundfish group (blue line); dividing groundfish into a DTS and non-DTS group, the status quo (grey line); and dividing groundfish into three groups based on gear type (red line).

Combining DTS and non-DTS groundfish into a single “non-whiting groundfish” node in the fishery participation networks obscures some nuance about which types of groundfish are being fished in different ports, while making overall patterns clearer (Figure 6). For instance, in the network plot for Astoria in 2020, combining DTS and non-DTS groundfish into a single node obscures that the non-DTS groundfish node is driving the connection to the whiting node (Figure 6A,B). However, this approach also visualizes cross-fishery connections more clearly. For example, in Monterey in 2023, combining groundfish into a single non-whiting groundfish node reveals strong links to both prawn/shrimp and crab, whereas the separate non-DTS and DTS groundfish each have only minimal connections to these nodes (Figure 6D,E). Combining non-whiting groundfish into a single node also means that less data are lost to revenue thresholds and confidentiality cutoffs, especially for fisheries that are fished by fewer vessels and/or make up a smaller proportion of vessels’ revenue. For instance, network plots for Newport in 2021 using the status quo groups (DTS and non-DTS groundfish) do not visually include a node for non-whiting groundfish, because neither group met revenue and/or confidentiality thresholds alone.

In contrast, a network plot using the single non-whiting groundfish node shows that node on the plot, with connections to pink shrimp, whiting, and crab (Figure 6G,H). Moving to a single groundfish node did not lead to strong changes in network or node statistics (Figure S3). The gear-based groundfish groupings offer a middle path that produce less data loss than the status quo DTS/non-DTS groundfish groupings but provide more nuance than the single non-whiting groundfish group (Figure 6C,F,I).



Figure 6. Network visualizations with status quo groundfish groupings (DTS groundfish/non-DTS groundfish; left column), the new consolidated groundfish grouping (non-whiting groundfish; middle column), and gear-based groundfish species groupings (midwater trawl, other groundfish trawl, and groundfish fixed gear; right column) for

selected ports in selected years, illustrating potential consequences of moving to the new species groupings. Port-year combinations included are Astoria in 2020 (panels A-C), Monterey in 2023 (panels D-F), and Newport in 2021 (panels G-I). Node size is proportional to the median contribution of a given fishery to annual vessel-level revenue. Values in brackets are the number of vessels participating in the fishery. The first number represents the number of vessels included in the network after revenue filters are applied, while the second number represents the total number of vessels. Thickness of lines (“edges”) is proportional to the number of vessels participating in both of the fisheries connected by the lines, and the evenness of revenue generated by each fishery in the pair.

4 Conclusions

The choice of whether to continue with the status-quo diversification index generated with Alaska and West Coast data, or move to a new West Coast-only index, involves significant tradeoffs (Table 1). This report focuses on clarifying and exploring the data loss that would occur with a move to a West Coast-only index, which is one key element of that tradeoff. We find that even though only a small proportion of West Coast vessels earn revenue from Alaska landings (only 6.5% of the 2024 West Coast fleet), Alaska revenues diversified these vessels so much that excluding the Alaska data lowered the overall scale of the index across all vessels and obscured previously observed trends through time (Figure 2). This effect was strongest for vessels that fish in Washington, the vessels that earn the most revenue from fishing, and the largest vessels. West Coast vessels with this diversification strategy fished through the North Pacific region but especially in Alaska in-state waters (Figure 4). The most common Alaskan fishery for West Coast vessels to participate in was Alaskan salmon, followed by sablefish and halibut (Figure 3).

While the bulk of this report focuses on characterizing one tradeoff – the loss of data that would result from moving to a West Coast-only index – there are other meaningful tradeoffs between the two approaches as well (Table 1). Continuing to produce a combined West Coast-Alaska index requires ongoing staffing commitments on the part of both the Northwest Fisheries Science Center and the Alaska Fisheries Science Center. Because of the state of Alaska’s data sharing policies, AKFIN data can only be made available to researchers working on products that directly inform the management of Alaskan fisheries. Therefore, either a) the AFSC must be willing to continue contributing staff and contractor time to calculate these indicators annually, or b) some NWFSC staff must be able to obtain ongoing AKFIN access, which will require collaborating with AFSC staff to generate products that are used in NPFMC processes. Additionally, the greater complexity of the combined index pipeline (20 scripts rather than 5) and the greater number of data sources it requires (Alaska federal and in-state landings along with West Coast landings) both introduce more potential for data access lags, data errors, and pipeline breakdowns that could jeopardize the timely production of the indices for the annual ESR. Finally, changing to West Coast only indices would allow for more timely reporting, eliminating the additional annual lag created by lagged availability of Alaska revenue data.

References

- Abbott, J.K., Sakai, Y., Holland, D.S., 2023. Species, space and time: A quarter century of fishers' diversification strategies on the US West Coast. *Fish Fish.* 24, 93–110. <https://doi.org/10.1111/faf.12712>
- Holland, D.S., Kasperski, S., Abbott, J.K., 2025. Contract and sustain: evaluating the results of progressive implementation of limited entry and catch shares in West Coast and Alaska Fisheries over four decades. *Can. J. Fish. Aquat. Sci.* 82, 1–16. <https://doi.org/10.1139/cjfas-2024-0271>
- Kasperski, S., Holland, D.S., 2013. Income diversification and risk for fishermen. *Proc. Natl. Acad. Sci.* 110, 2076–2081. <https://doi.org/10.1073/pnas.1212278110>
- Roswell, M., Dushoff, J., Winfree, R., 2021. A conceptual guide to measuring species diversity. *Oikos* 130, 321–338. <https://doi.org/10.1111/oik.07202>
- Sethi, S.A., 2010. Risk management for fisheries. *Fish Fish.* 11, 341–365. <https://doi.org/10.1111/j.1467-2979.2010.00363.x>
- Sethi, S.A., Dalton, M., Hilborn, R., 2012. Quantitative risk measures applied to Alaskan commercial fisheries. *Can. J. Fish. Aquat. Sci.* 69, 487–498. <https://doi.org/10.1139/f2011-170>

Supplemental Figures

Figure S1. Difference in temporal diversification index values for AK+WC and WC only pipelines for the fleet as a whole (top row), West Coast vessels by state (second row), West Coast vessels by revenue (third row), and West Coast vessels by length (bottom row). The left-hand panels in each row show the number of vessels represented in the 2024 fleet for each category (gray bar) and the number of vessels within that fleet that earned >1% of their 2024 revenue from Alaska landings (black bar).

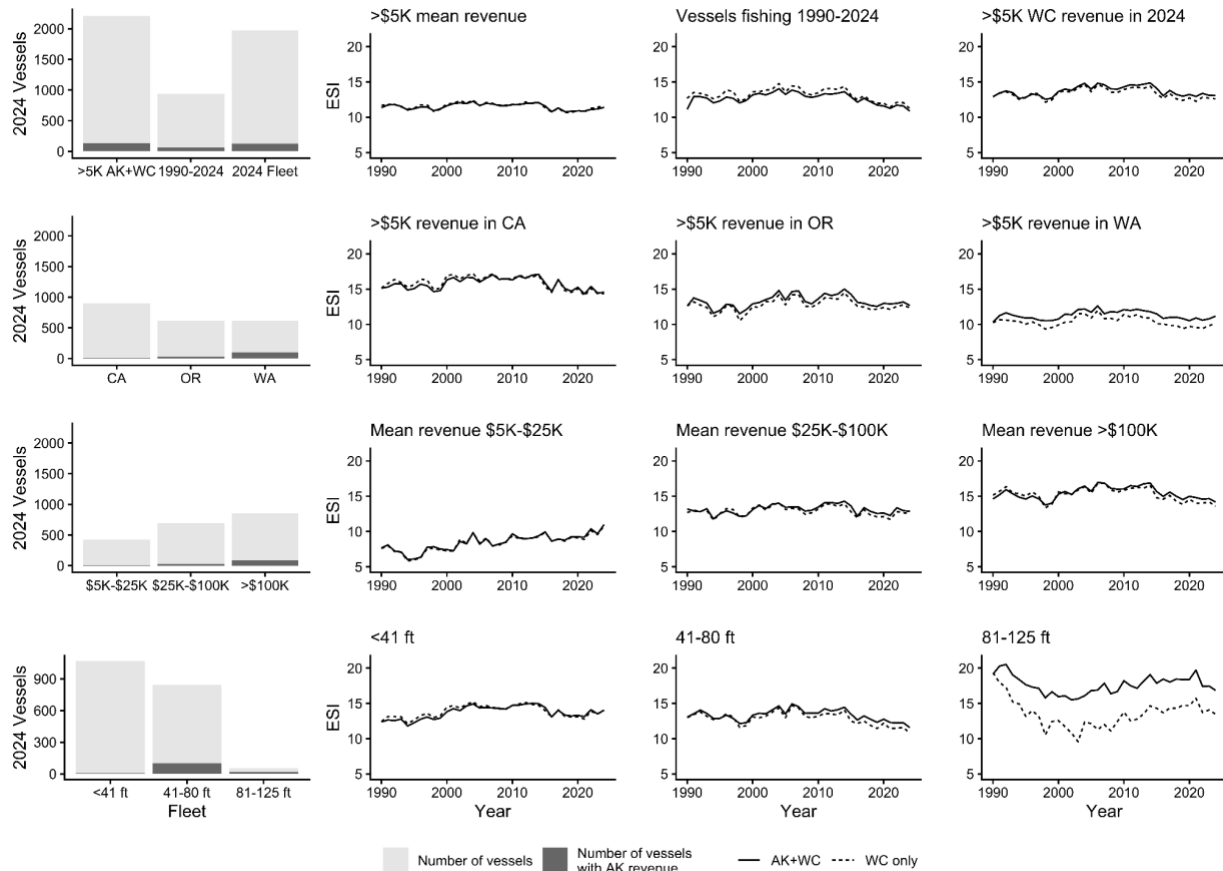


Figure S2. Mean annual ESI values calculated over calendar years (green) and crab years (red) for each fleet segment. Note that the calendar year time series begin one year earlier than crab year time series because calculating indices over crab years requires data for weeks 46-52 of the previous year.

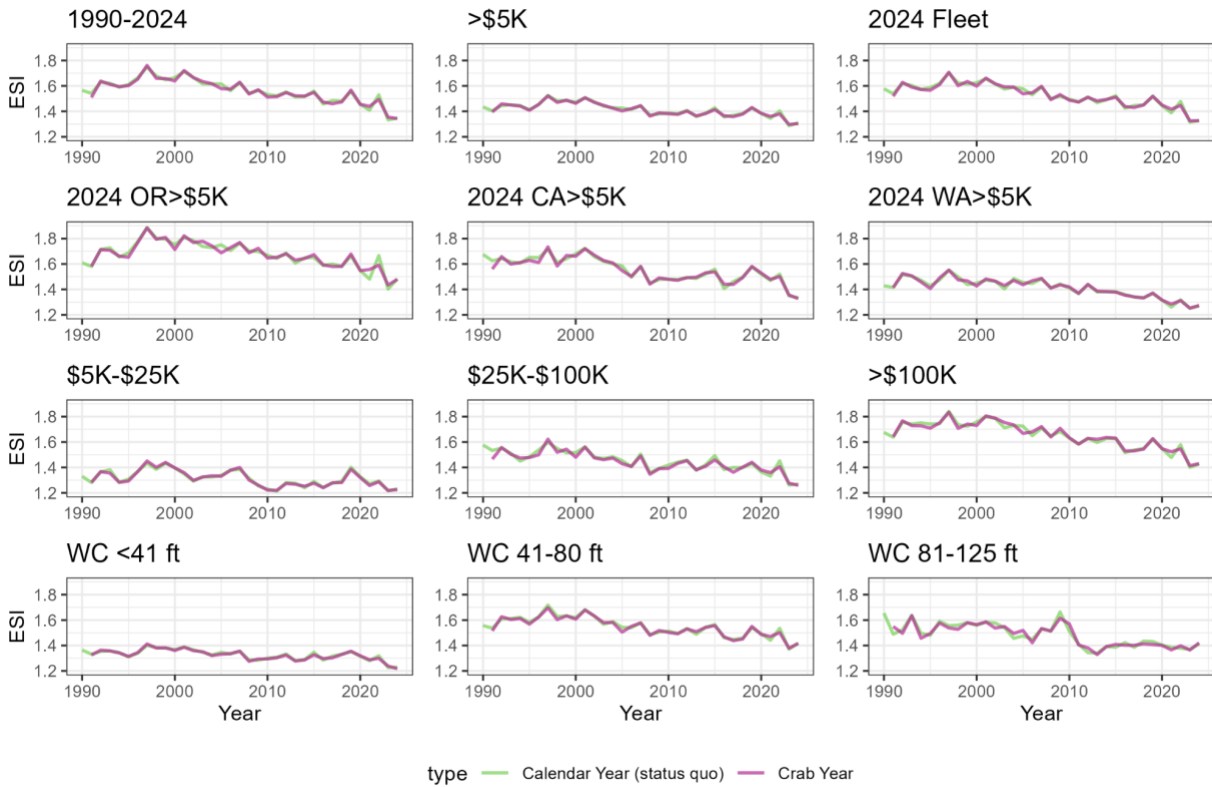
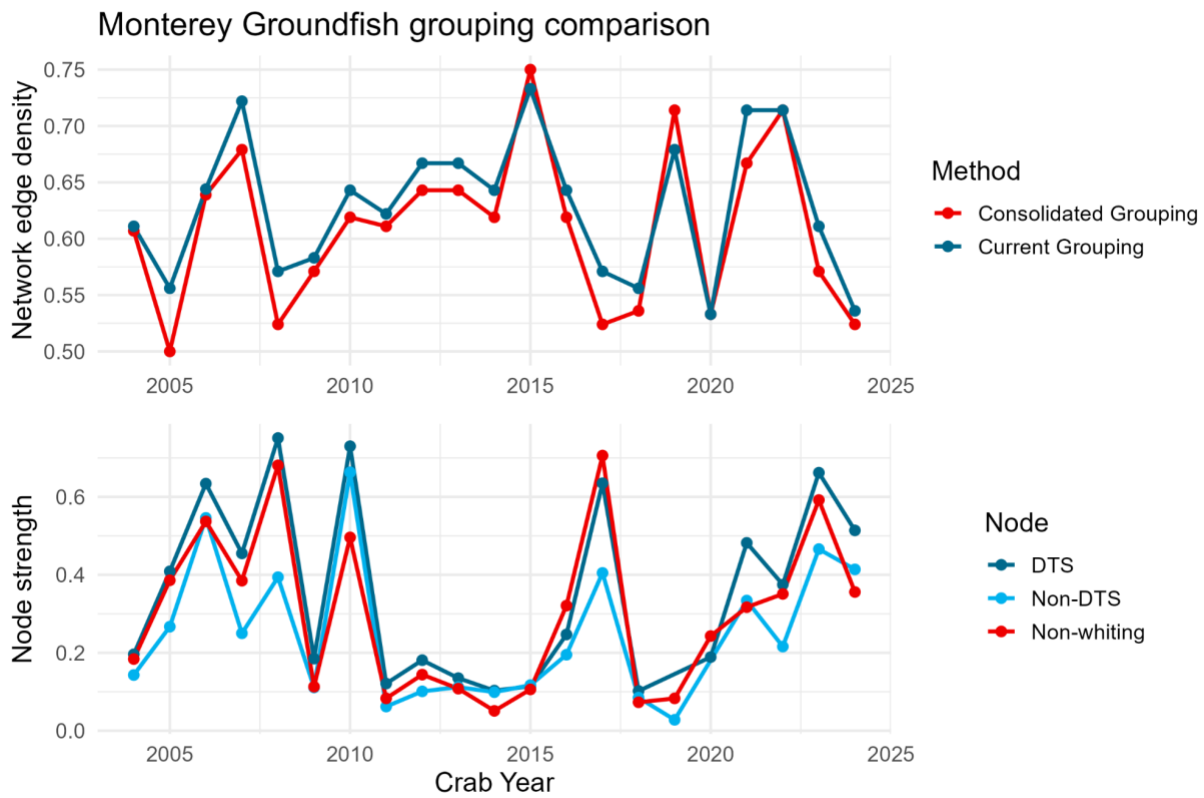


Figure S3. Time series plots of a) network edge density and b) the node strength of the relevant groundfish nodes for Monterey from 2004-2024.



Supplemental Table

Table S1. List of current species groups used to calculate the diversification index and fishery participation networks, and the species included in each group.

Species Group	Species
California halibut, croaker	California halibut, white croaker
Coastal pelagics	Chub mackerel, jack mackerel, northern anchovy, pacific bonito, Pacific sardine
DTS groundfish	Dover sole, longspine thornyhead, sablefish, shortspine thornyhead, thornyheads (mixed)
Echinoderms	Red sea urchin
Herring	Pacific herring, round herring
Non-DTS groundfish	Arrowtooth flounder, aurora rockfish, bank rockfish, bigmouth sole, black and yellow rockfish, black rockfish, black+blue rockfish, blackgill rockfish, blackspotted rockfish, blue rockfish, bocaccio, bocaccio+chilipepper rckfish, bronzespotted rockfish, brown rockfish, butter sole, C-O sole, cabezon, calico rockfish, California scorpionfish, canary rockfish, canary+vermilion rckfish, chameleon rockfish, chilipepper rockfish, china rockfish, copper rockfish, cowcod rockfish, curlfin sole, darkblotched rockfish, deacon rockfish, deepsea sole, English sole, fantail sole, flag rockfish, flathead sole, freckled rockfish, gopher rockfish, grass rockfish, greenblotched rockfish, greenspotted rockfish, greenstriped rockfish, halfbanded rockfish, harlequin rockfish, honeycomb rockfish, hornyhead turbot, kelp greenling, kelp rockfish, lingcod, longfin sanddab, Mexican rockfish, olive rockfish, Pacific cod, Pacific ocean perch, Pacific sanddab, petrale sole, pink rockfish, pinkrose rockfish, Puget Sound rockfish, pygmy rockfish, quillback rockfish, redbanded rockfish, redstripe rockfish, rex sole, rock greenling, rock sole, rosethorn rockfish, rosy rockfish, roughey rockfish, sand sole, sharpchin rockfish, shortbelly rockfish, shortraker rockfish, silvergray rockfish, slender sole, speckled rockfish, splitnose rockfish, squarespot rockfish, starry flounder, starry rockfish, stripetail rockfish, swordspine rockfish, tiger rockfish, treefish,

	vermillion rockfish, walleye pollock, widow rockfish, yelloweye rockfish, yellowmouth rockfish, yellowtail rockfish
Pacific halibut	Pacific halibut
Pink shrimp	Pacific pink shrimp
Prawns, shrimp	Blue mud shrimp, ghost shrimp, golden prawn, ridgeback prawn, spotted prawn
Salmon	Chinook salmon, chum salmon, coho salmon, pink salmon, sockeye salmon, steelhead
Shellfish	Basket cockle, black abalone, blue or bay mussel, butter clam, California jackknife clam, California mussel, California spiny lobster, eastern oyster, European oyster, gaper clam, geoduck, green abalone, horse clams, kumamoto oyster, Manila clam, mud clams, native littleneck, northern quahog clam, Olympia oyster, Pacific oyster, pink abalone, pismo clam, purple clam, razor clam, red abalone, rosy razor clam, soft-shelled clam, varnish clam, Washington clam, white abalone
Skate, dogfish, shark	Aleutian skate, big skate, black skate, brown cat shark, California skate, leopard shark, longnose skate, rougtail skate, sandpaper skate, soupfin shark, spiny dogfish, spotted ratfish, starry skate
Squid	Market squid
Tuna	Albacore, bigeye tuna, black skipjack, bluefin tuna, skipjack tuna, striped marlin, yellowfin tuna, yellowtail
Whiting	Pacific whiting
West Coast crab	Bairdi tanner crab, Dungeness crab, rock crab, scarlet king crab
Other	Bat ray, bigeye thresher shark, blue shark, bullet mackerel, California sheephead, common thresher shark, diamond turbot, dorado/dolphinfish, eulachon, giant grenadier, giant kelpfish, giant sea bass, green sturgeon, louvar, mola/ocean sunfish, monkeyface prickleback (eel), ocean whitefish, opah, Pacific angel shark, Pacific barracuda, Pacific butterflyfish, Pacific grenadier, Pacific hagfish,

Pacific saury, Pacific tomcod, pelagic thresher shark, plainfin
midshipman, prowfish, queenfish, sailfish, shortbill spearfish,
shortfin mako shark, spotted cusk-eel, spotted turbot, swordfish,
wahoo, white seabass, white sturgeon, wolf eel
