Florida's Commercial Fisheries in Transition: A Vital Industry Facing Ecological and Economic Pressures

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Introduction

Sustainable commercial fisheries are an integral part of Florida's economy and community. In 2022, Florida had the largest employment impacts in the Gulf of Mexico region, generating 121,710 full- and part-time jobs. Florida also had the largest sales impact, totaling approximately $24.6 billion, according to the National Marine Fisheries Service (National Marine Fisheries Service, 2024). However, beyond their economic contributions, Florida's commercial fisheries promote diverse human communities and foster strong connections to the natural environment. Commercial fisheries have supported Florida's coastal communities for generations, providing livelihoods to commercial fishers and those in supporting industries and preserving a working waterfront. These fisheries represent not only a source of employment and food, but a cultural heritage deeply tied to the identity of many Gulf communities. In more recent times, however, Florida's commercial fisheries have faced mounting challenges that have forced them to adjust and adapt.

Environmental and socioeconomic forces increasingly affect the resilience and sustainability of commercial fisheries, and these forces have been noticeable over the past four decades in Florida. Environmental factors such as stronger and more frequent storms, harmful algal blooms, and increasingly variable rainfall have disrupted fish populations and fishing. Changes in fisheries management, including state-level changes (e.g., restriction of gill-net fishing and changes to state license requirements) and federal (Magnuson-Stevens-based changes in fisheries management and allocation between sectors) may be increasing governance stressors facing commercial fishers. At the same time, socioeconomic pressures—such as coastal development, rising housing costs, and changing cultural attitudes toward fisheries—have reduced the number of working waterfronts and increased tensions between commercial and recreational fishing interests (Cramer et al., 2018). Given these stressors, it is critical to better understand how commercial fisheries are evolving over time, particularly in their spatial distribution across Florida's Gulf coastline. Spatial contraction—where fisheries become concentrated in fewer ports or counties—could leave the industry more vulnerable to environmental disasters and reduce the resilience of coastal economies. This project aims to investigate spatiotemporal changes in Florida's Gulf commercial fisheries and specifically to examine hypotheses regarding spatial contraction. This information will be useful to understand and quantify some potential challenges facing Florida's commercial fisheries and may be useful to inform local, state, and federal fisheries governance.

Methods

This project used publicly available commercial fisheries landings data compiled by the Florida Fish and Wildlife Conservation Commission (FWC). The commercial landings database provides annual records at the county-by-fish-species level of number of trips, pounds landed, average price, and estimated value. This dataset was selected due to its consistent collection

across Gulf coastal counties and its resolution, which is sufficient for examining regional shifts over time. The project focused on Southwest Gulf counties, including Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, and Collier.The dataset was processed to calculate the aggregate total pounds landed, total number of trips, and total estimated value for each county and year. This project focused on three response metrics—pounds landed, trips, and value[1]. These metrics were described in both their absolute and relative values. Absolute values were summed at the spatial (county), temporal (year), and species (variable) scales desired. Relative values were described as a proportion, e.g., the proportion of landed pounds in a specific county. These metrics were used to assess a suite of questions:

1. How has landed pounds and trips changed over time by county? To assess this, pounds and trips were summed and plotted by county and year, and linear models were fit to the data.
2. How has the county-specific share of the Southwest Gulf regional landings changed over time? To assess this the proportion of pounds landed for each county-by-year was calculated, plotted, and fit with linear models.
3. How as the taxa-specific catch composition changed over time? To assess this, the absolute pounds landed and the proportional value by county and year were plotted.

Colored matrices were created to visualize both raw and proportioned metrics by county and year. These visualizations provided a clear representation of spatial and temporal shifts in commercial fishing activity across Florida's Gulf Coast.

Results

The data record landings from 1986 through 2024 by county, with records of 124 unique taxa groups. In this case taxa may be specific species (e.g., cobia), higher-order taxonomic groupings (e.g., flounders or shark) or even functional groups (e.g., baitfish).

Trends in absolute landings and trips over time

The absolute trips and pounds have decreased across the region and over all of the Gulf southwest counties over time (Figure 1). Regional (pooling across counties) linear models for trips and pounds respectively showed a statistically significant negative slope, and most county-specific trends were also negative. As value was not yet corrected for inflation and thus would be misleading, it is not shown.

[1] Value as reported here nominal and not corrected for inflation.

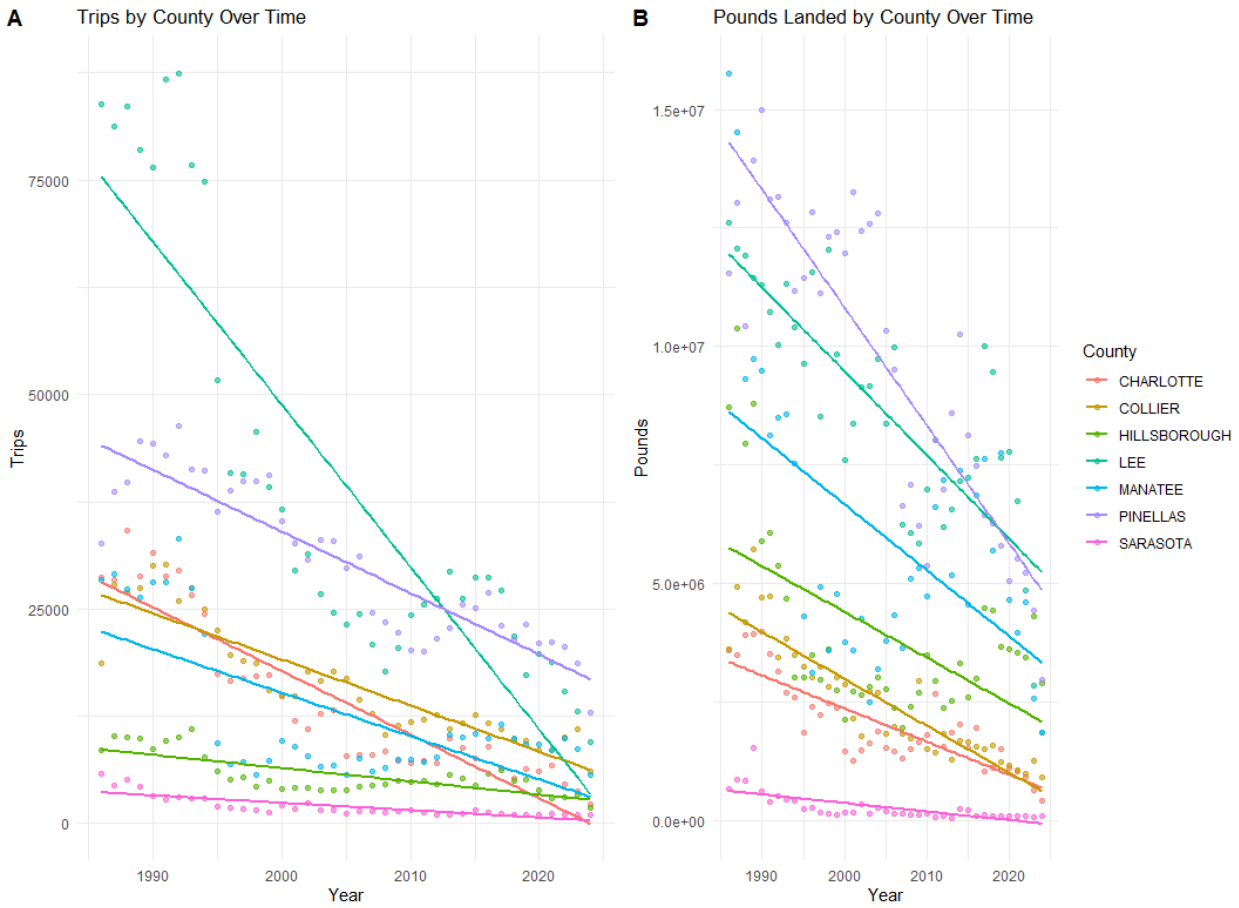

Figure 1. Absolute Trips (panel A) and pounds landed (panel B) by count and year from 1986-2024.

Trends in proportional landings by county over time

Analysis of the proportion of pounds landed by county over time reveals trends among the seven Gulf Coast counties (Figure 2.) Pinellas County consistently contributed the highest proportion of total landings throughout the study period but exhibited a slight declining trend over time. In contrast, Hillsborough, Lee, and Manatee counties showed increasing trends in their proportional contributions, indicating a growing share of landings relative to other counties. Hillsborough County, in particular, demonstrated a notable positive slope. Conversely, Charlotte, Collier, and Sarasota counties exhibited declining trends, with Sarasota maintaining the lowest proportion of landings across all years. Overall, the results suggest a geographic shift in the concentration of commercial landings over time, with an increasing relative importance of Hillsborough, Lee, and Manatee counties and a decreasing contribution from southern counties such as Collier and Charlotte. Interestingly, the proportion of trips by county over time did not show the same trends (Figure 3). The parameters describing the slope of proportions of pounds or trips over time were not statistically significant for most counties, although the assumptions of linear models are not well met using proportions and residual patterns suggested alternative approaches might be considered.

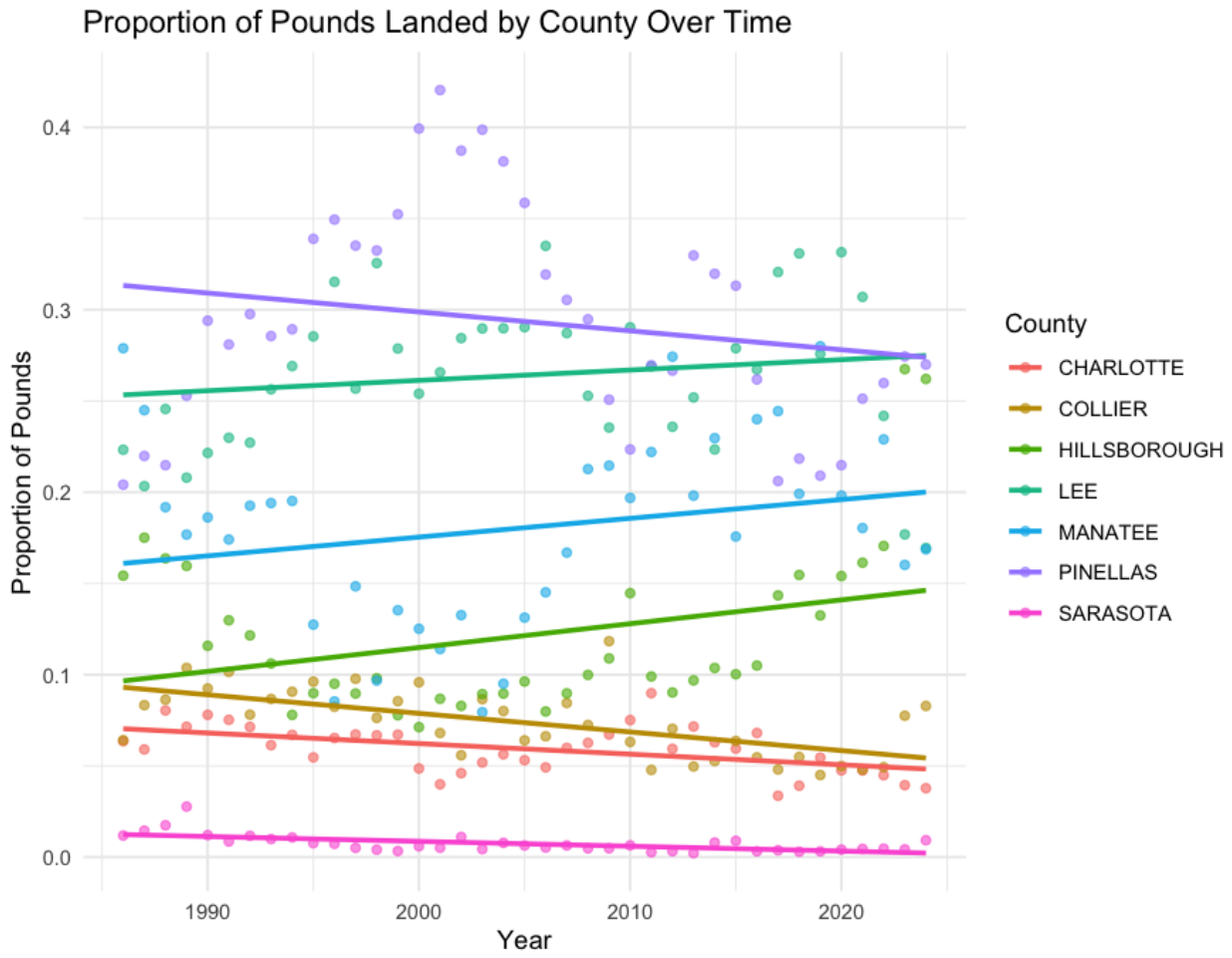

Figure 2. Proportion of total pounds landed by county from 1986 to 2024 along Florida's Gulf Coast for the following counties: Charlotte, Collier, Hillsborough, Lee, Manatee, Pinellas, Sarasota

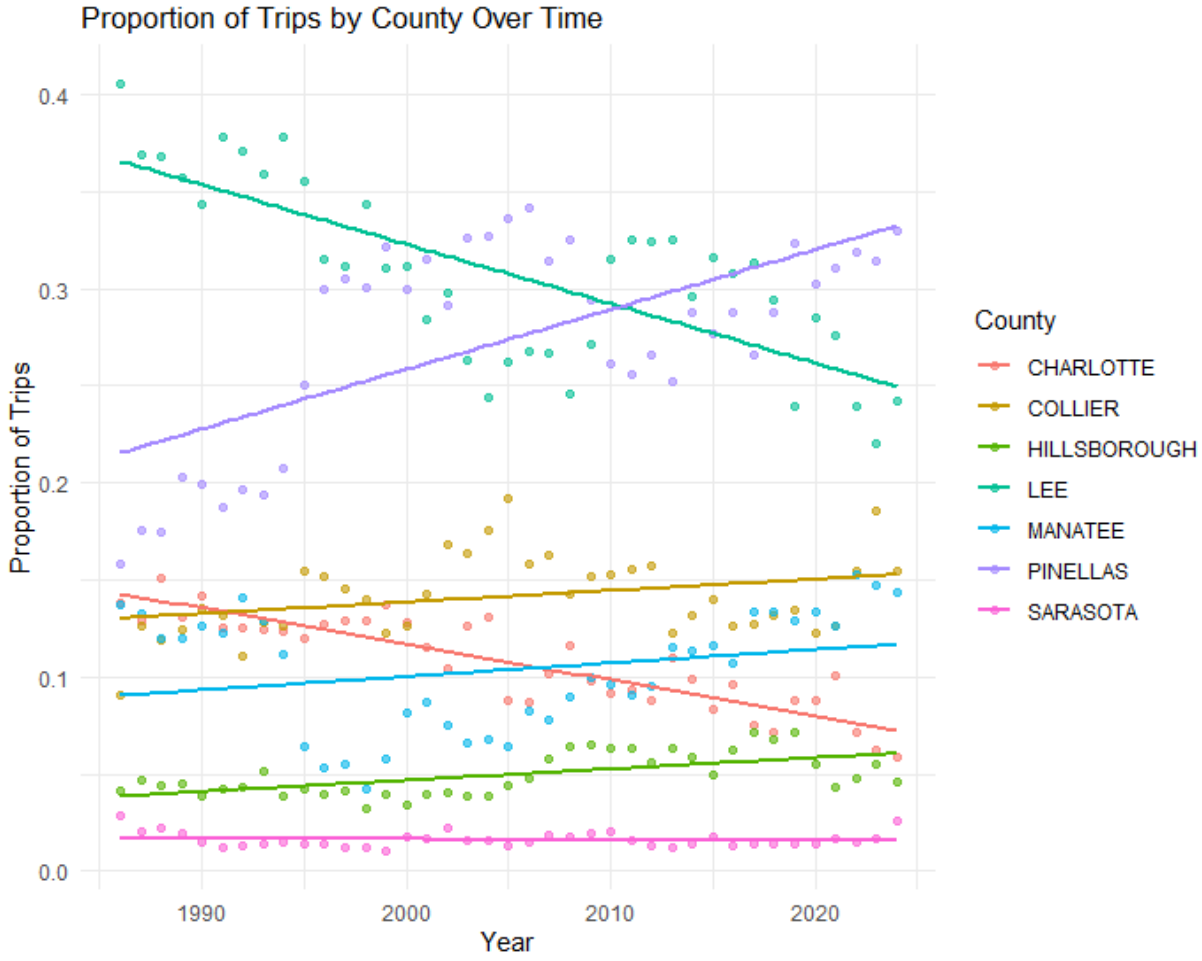

Figure 3. Proportion of total trips by county from 1986 to 2024 along Florida's Gulf Coast for the following counties: Charlotte, Collier, Hillsborough, Lee, Manatee, Pinellas, Sarasota

Regional trends in species over time

Catches were pooled across counties and examined by species over time. The results suggested that most species comprise a very small proportion of overall pounds (Figures 4-5). Examining at the species level will require further models.

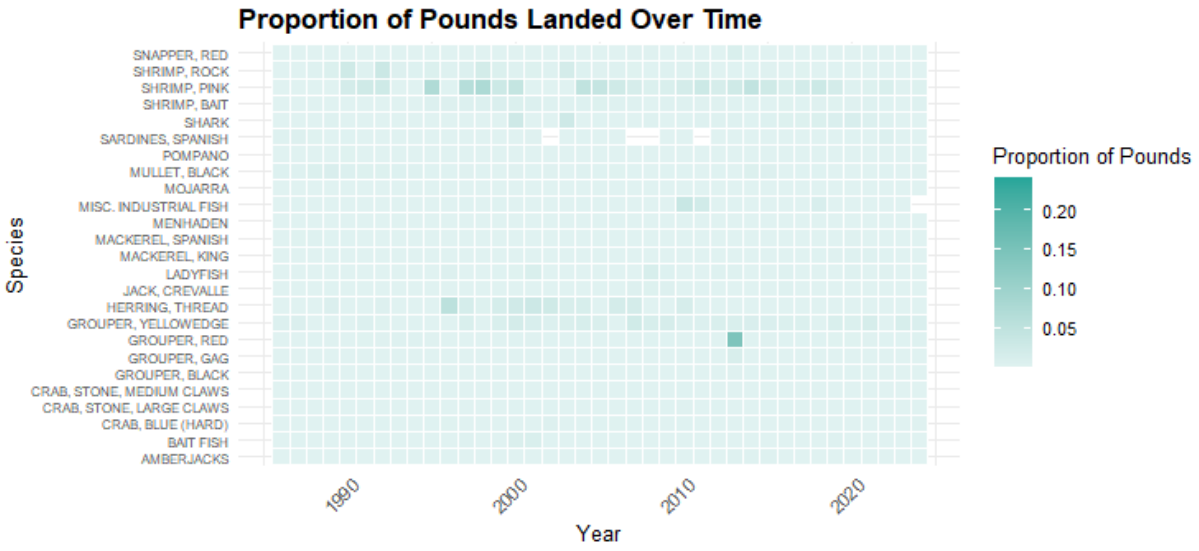

Figure 4. Total pounds landed annually for the top 25 species in Southwest Florida (1986–2024), including Charlotte, Collier, Hillsborough, Lee, Manatee, Pinellas, and Sarasota counties. Darker shades indicate higher landings.

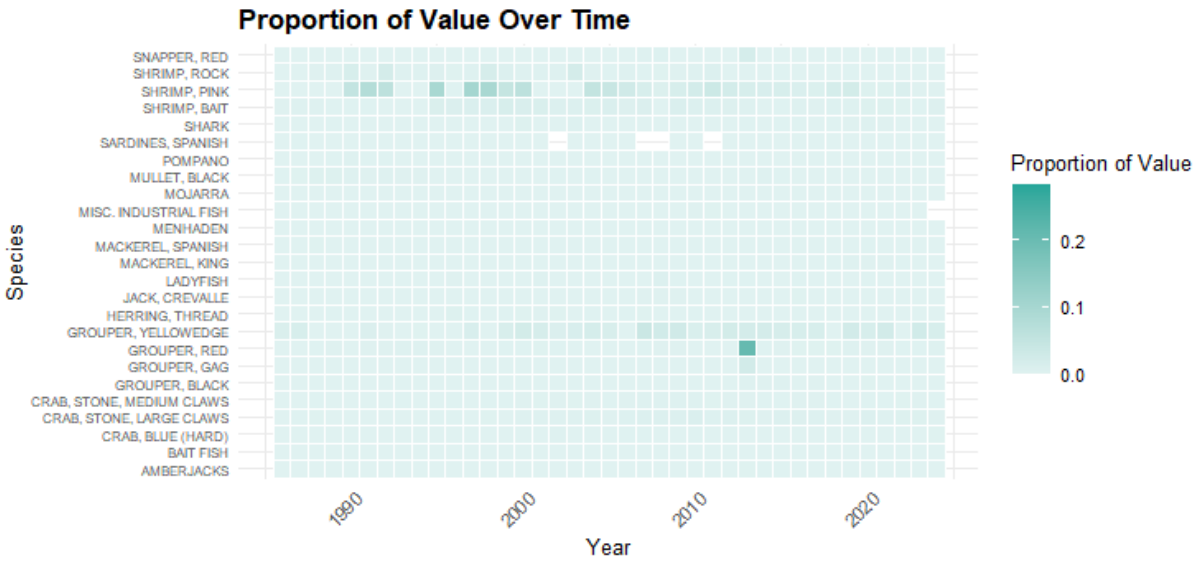

Figure 5. Proportion of total value landed annually for the top 25 species in Southwest Florida (1986–2024), including Charlotte, Collier, Hillsborough, Lee, Manatee, Pinellas, and Sarasota counties. Darker shades indicate higher proportional contributions.

Conclusion and Discussion:

Based on the observations and data analysis that were performed on the Gulf coast counties, there are shifts in the distribution of fisheries activity. These trends reflect more than just local change—they align with broader patterns in the commercial fishing industry driven by ecological, demographic, and structural forces.

Ecological factors such as declining populations of large predators and shifts in pelagic fish community composition may help explain changes in landings distribution. These biological shifts are often linked to variations in oceanographic conditions, which can influence where species are found and how accessible they are to commercial fleets (Ward & Myers, 2005). As species move or decline in abundance, fishers may be forced to adapt by changing fishing locations, targeting new species, or reducing effort altogether. At the same time, the industry is

being shaped by demographic changes. The “graying of the fleet”—the increasing average age of commercial fishers and the lack of younger entrants—reflects challenges tied to regulatory pressures, volatile global markets, and environmental unpredictability. These conditions make fishing less attractive and less viable as a long-term livelihood, particularly for younger generations (Cramer et al., 2018). Without policies that support workforce renewal, many fishing communities may continue to shrink or disappear entirely. In addition to ecological and labor pressures, the loss of Florida’s working waterfronts poses a serious threat to the future of commercial fishing. These coastal spaces—once hubs for docking vessels, processing catch, and maintaining gear—are increasingly threatened by hurricanes, sea level rise, and redevelopment into non-working uses. As working waterfronts disappear, so too does the infrastructure needed to sustain fishing as a viable industry (Vision et al., 2022).
Considering the various factors, these findings highlight the complexity of change within Florida’s commercial fishing sector. Adapting to this transformation will require integrated strategies that address ecological variability, invest in the next generation of fishers, and preserve the coastal infrastructure that supports working communities. Sustaining the economic and cultural value of Gulf Coast fisheries depends on our ability to recognize and respond to these challenges.

Citations:

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