

Evaluation of Design-Based Estimators in Federal Groundfish Fisheries off Alaska



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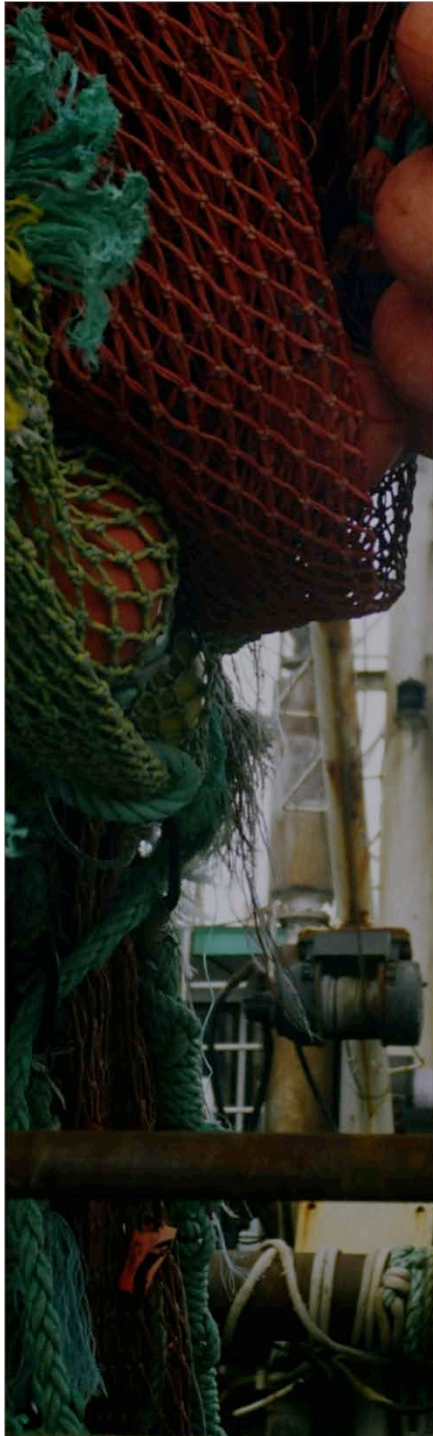
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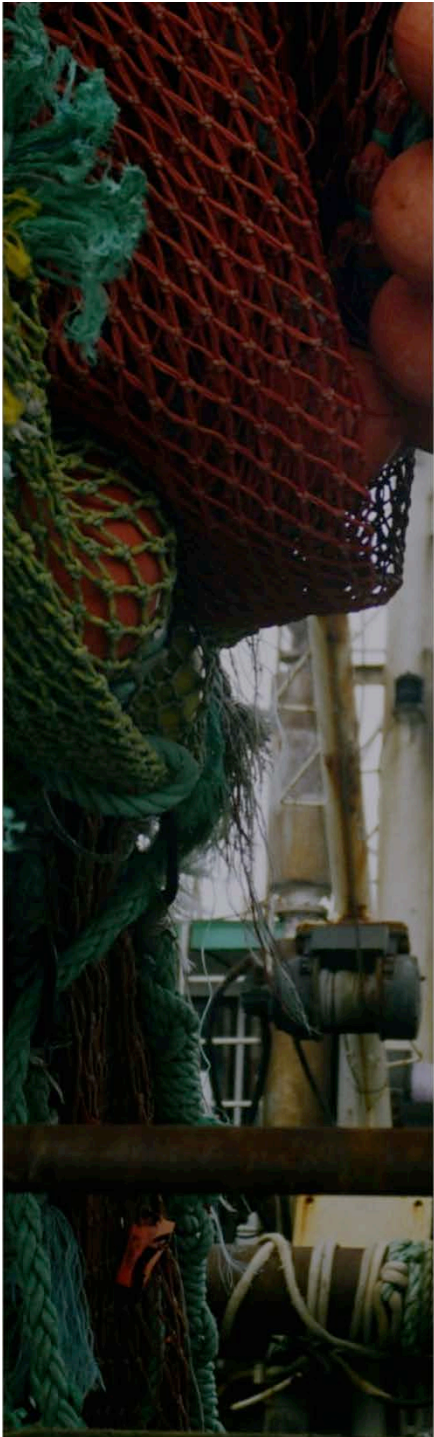
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Monitoring Catch

➤ Catch

- Composed of retained and discarded fish
 - Includes:
 - Groundfish species (defined in FMPs-e.g., target species)
 - Prohibited species (defined in FMPs- e.g.crab, salmon, halibut, and herring)
 - Non-FMP species- e.g., jellyfish, snails, coral, etc.
- ## ➤ For this talk “total catch” includes all of the above



Hierarchical Sampling

At-sea Discard for Fishery

Random sample of hauls

Post-stratified bycatch rate applied to landings

At-sea Discard for trip

Random sample of hauls

Imputation Methods (Groundfish only)

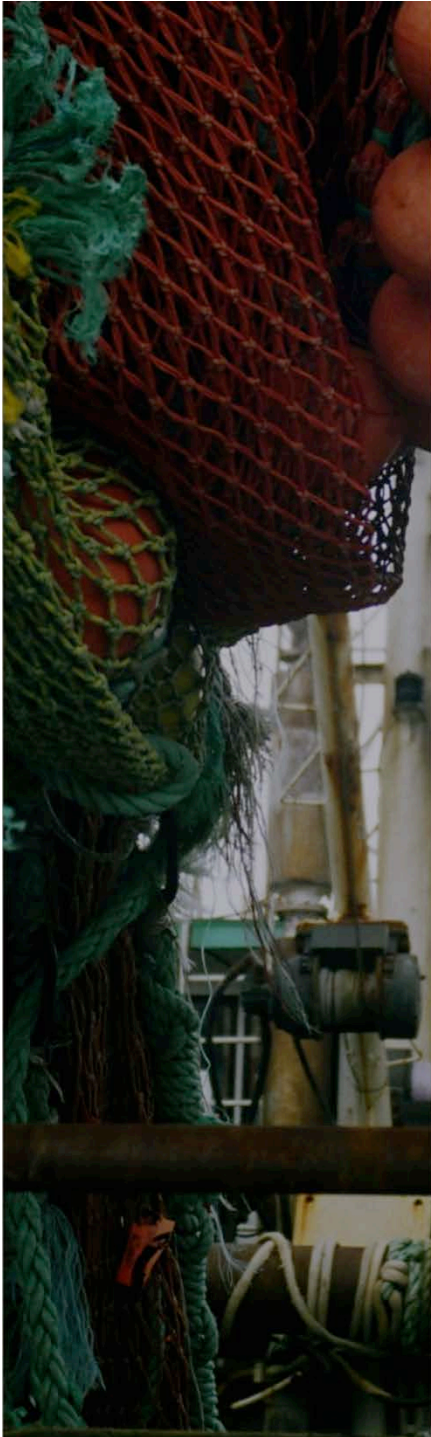
At-sea Discard for haul

Percent Retained

Total Catch for haul

Random sample of the catch

Sample Data



Monitoring and Improvements

- Catch Share Programs increased monitoring
- Monitoring and Reporting
- Sampling design
- Database architecture and estimation routines
- Observer Program Restructure
- Estimation Research Results (Imputation)



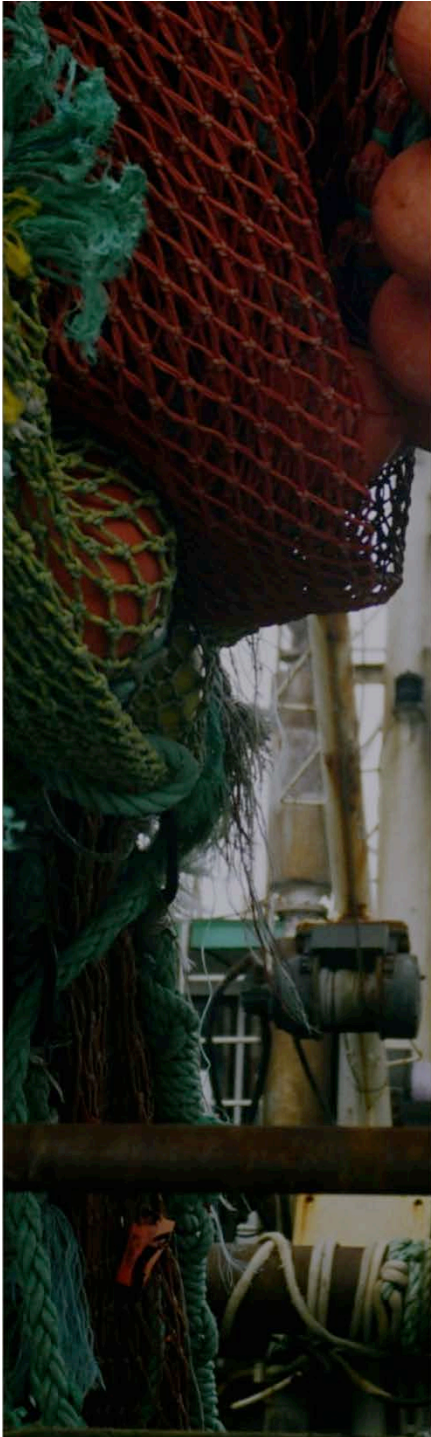
Study Focus

- Generated estimates using design-based approach
- Generated variance estimates
 - Incorporating changes
 - Design based
- Four Management Programs
 - AFA BSAI pollock (CPs & CVs)
 - Amendment 80 Vessels (CPs)
 - BSAI P. cod “Cooperative” (CVs)
 - GOA Rockfish Program (CVs)
- Why did we focus on these programs?

Study Management Programs

- GOA Rockfish: target rockfish
 - CVs using pelagic and non-pelagic nets
 - Sampling on-deck, few sampling tools, little space
 - Less diversity
- Amendment 80: target BSAI flatfish, P. cod, Atka
 - CPs using non-pelagic nets
 - Sampling in factory, flow scales, space
 - More diversity
- BSAI P.cod Coop: target P. cod
 - CVs using non-pelagic nets
 - Sampling on-deck, few sampling tools, little space
 - More diversity
- AFA: target BSAI pollock
 - CPs and CVs using pelagic nets
 - Sampling both in factory and on-deck
 - Less diversity

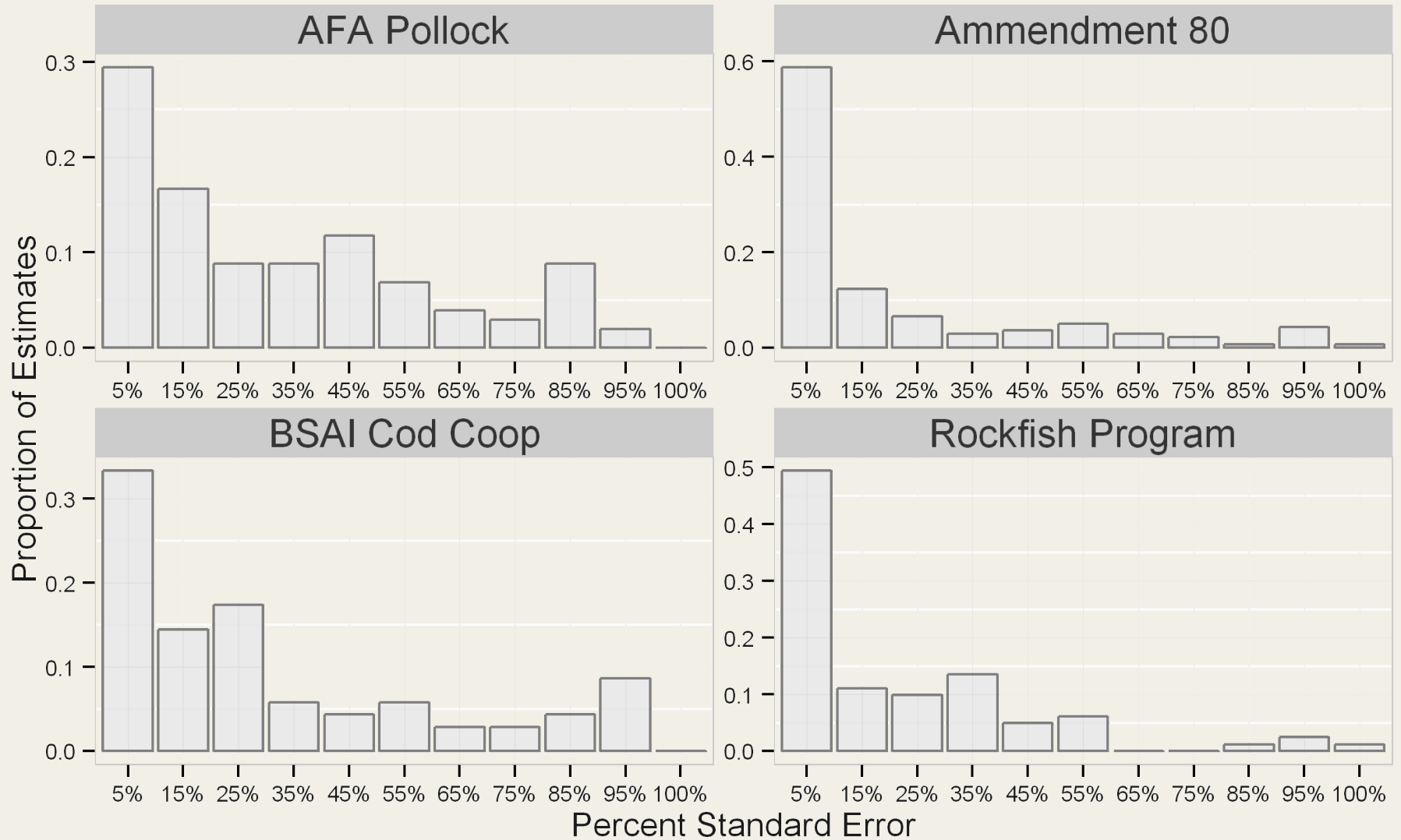




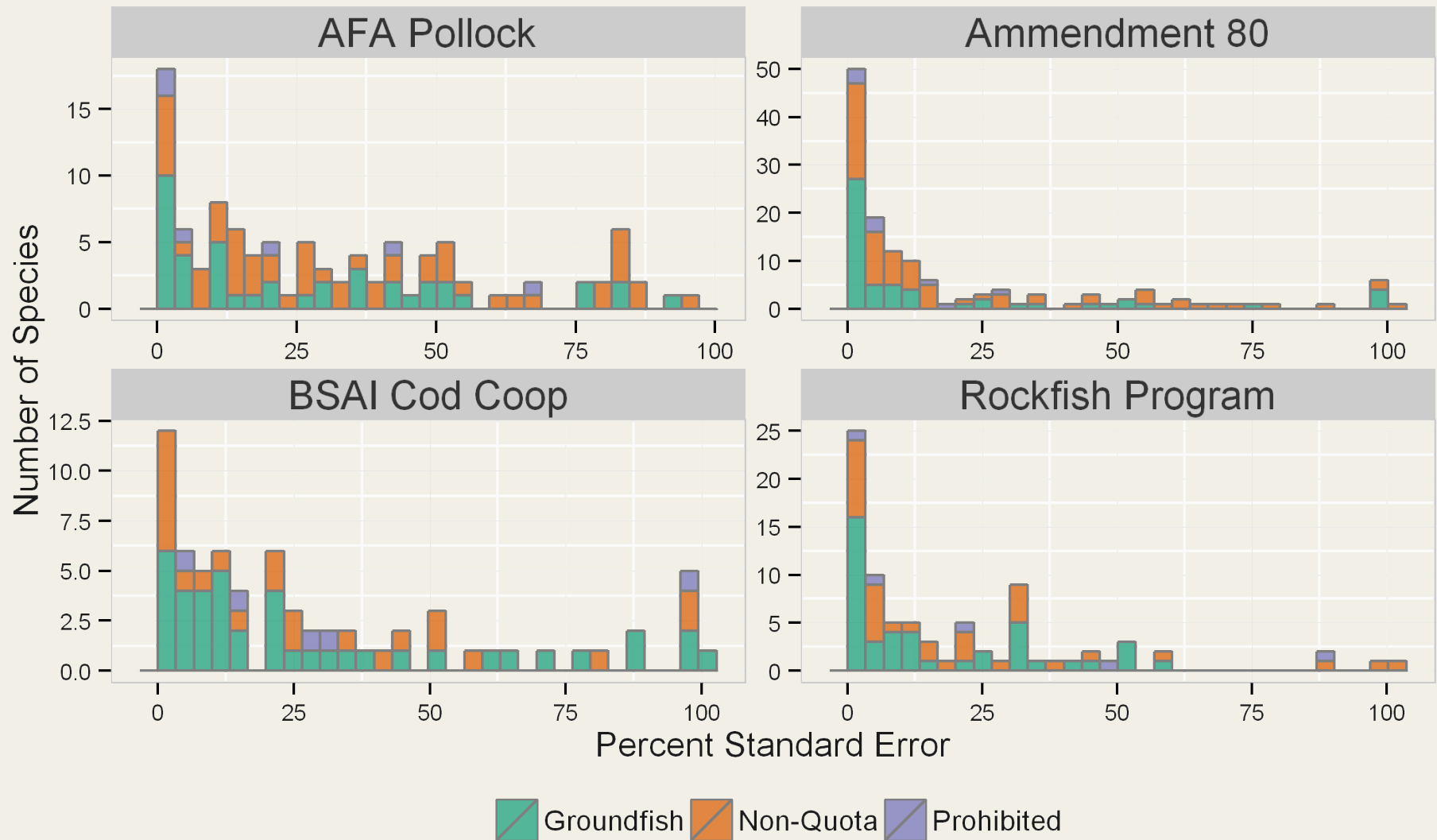
Hierarchical Estimation

- Haul-specific estimates
 - No within sample variance
 - Percent retained assumed known
 - Species groups broken into individual species
- Trip-specific estimates
 - Design based methods (simple mean)
 - No post-stratification of hauls within trips
- Management Program estimates
 - Total across all trips in program

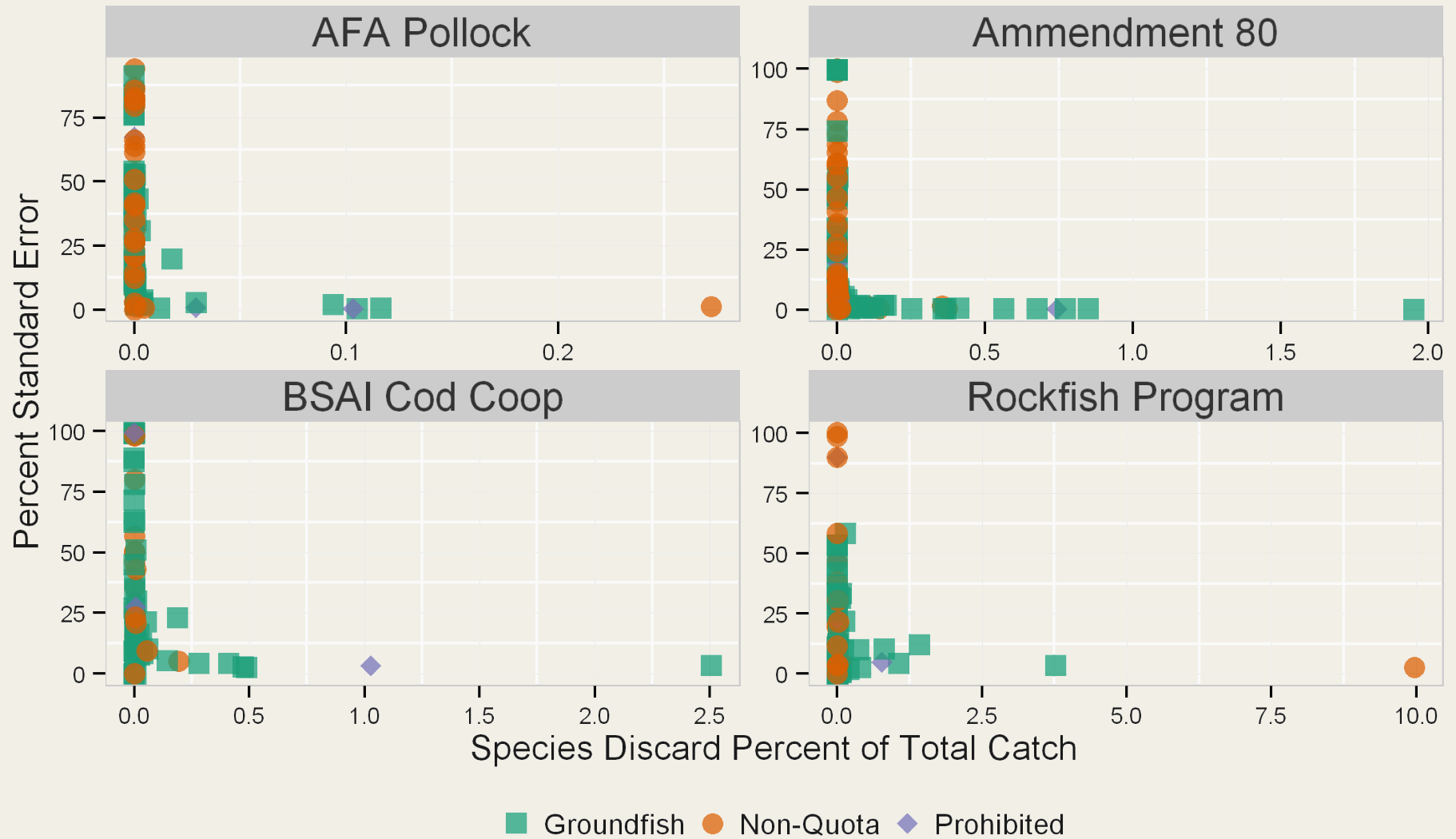
Percent Standard Errors



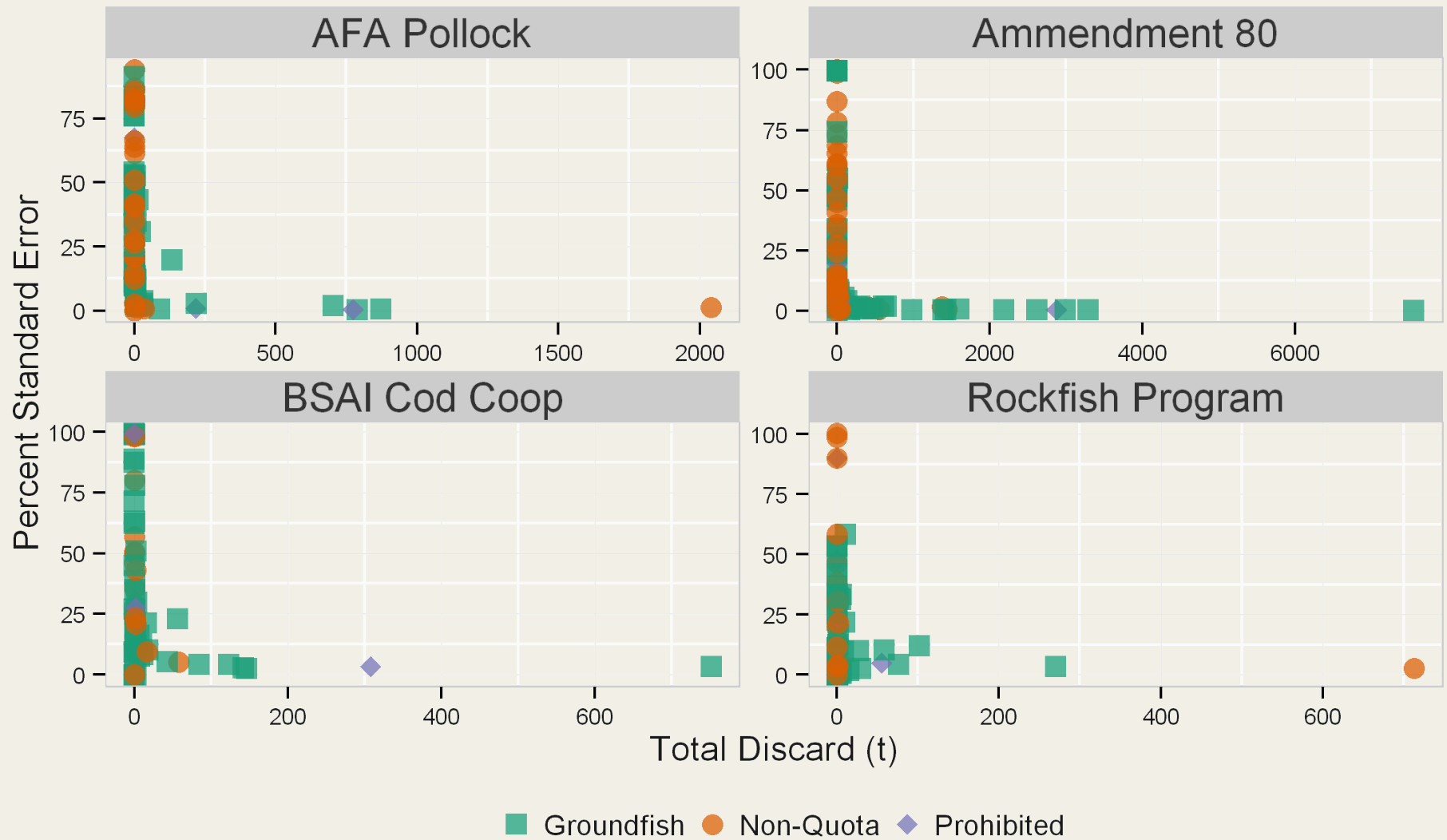
Percent Standard Errors



Percent Standard Errors



Percent Standard Errors





Summary

- Ability to assess variance due to recent improvements
- Majority of PSE are relatively small
 - Species proportion
 - Sampling situations
- Additional factors to consider
 - Post-stratification
 - Alternative estimators

