
Pollock fishery characteristics and salmon bycatch patterns



James Ianelli
and
Diana Stram

This information is distributed solely for the purpose of pre-dissemination peer review under applicable information quality guidelines. It has not been formally disseminated by the National Marine Fisheries Service and should not be construed to represent any agency determination or policy.



Outline

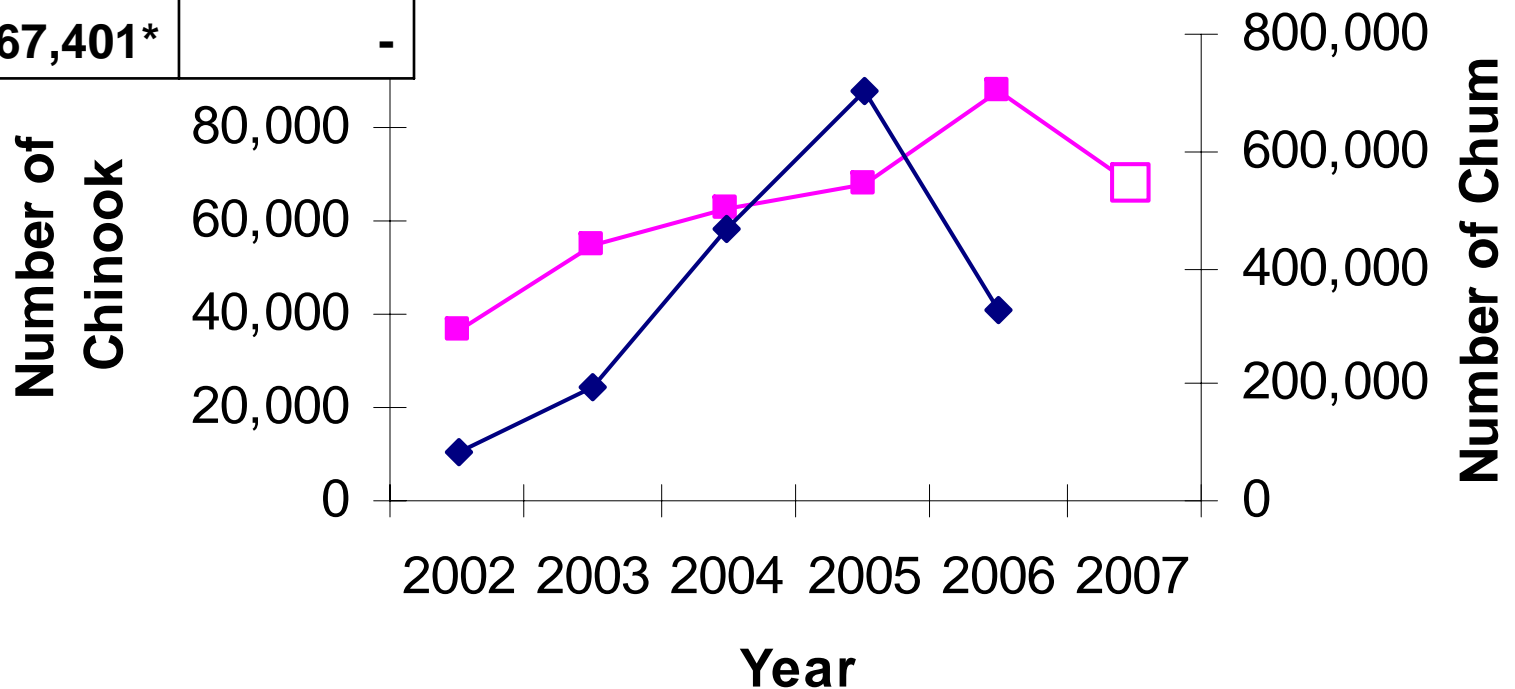
- Trends
- Seasonal patterns
- Spatial patterns
- Biological indicators



Bycatch 2002-2006

| Year | Chinook | Chum |
|-----------|---------|---------|
| 1990-2001 | 37,819 | 69,332 |
| 2002 | 36,385 | 81,470 |
| 2003 | 54,911 | 197,091 |
| 2004 | 62,493 | 465,650 |
| 2005 | 67,856 | 703,131 |
| 2006 | 87,524 | 327,690 |
| 2007* | 67,401* | - |

—■— Chinook —◆— Chum

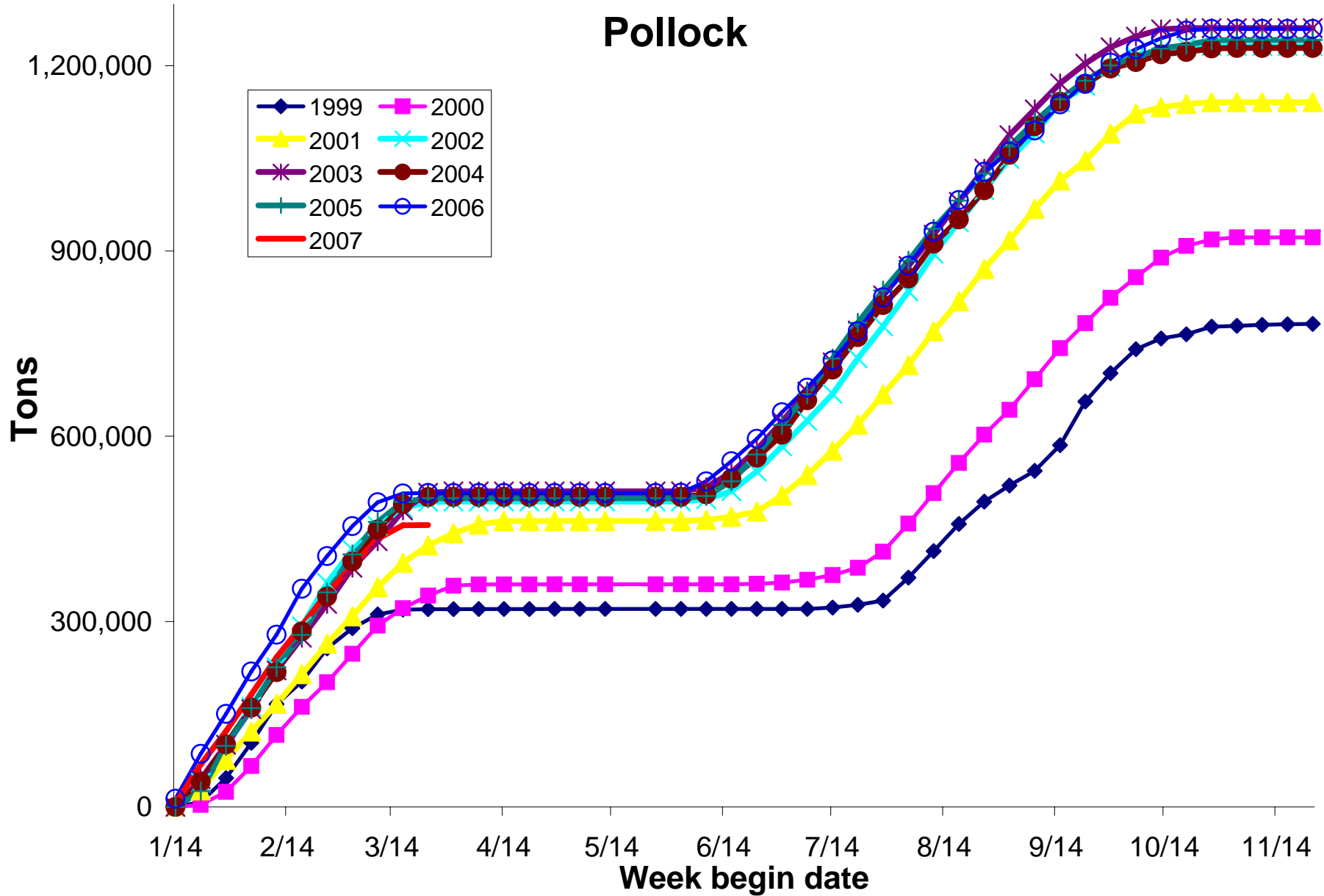


Spatial and temporal issues

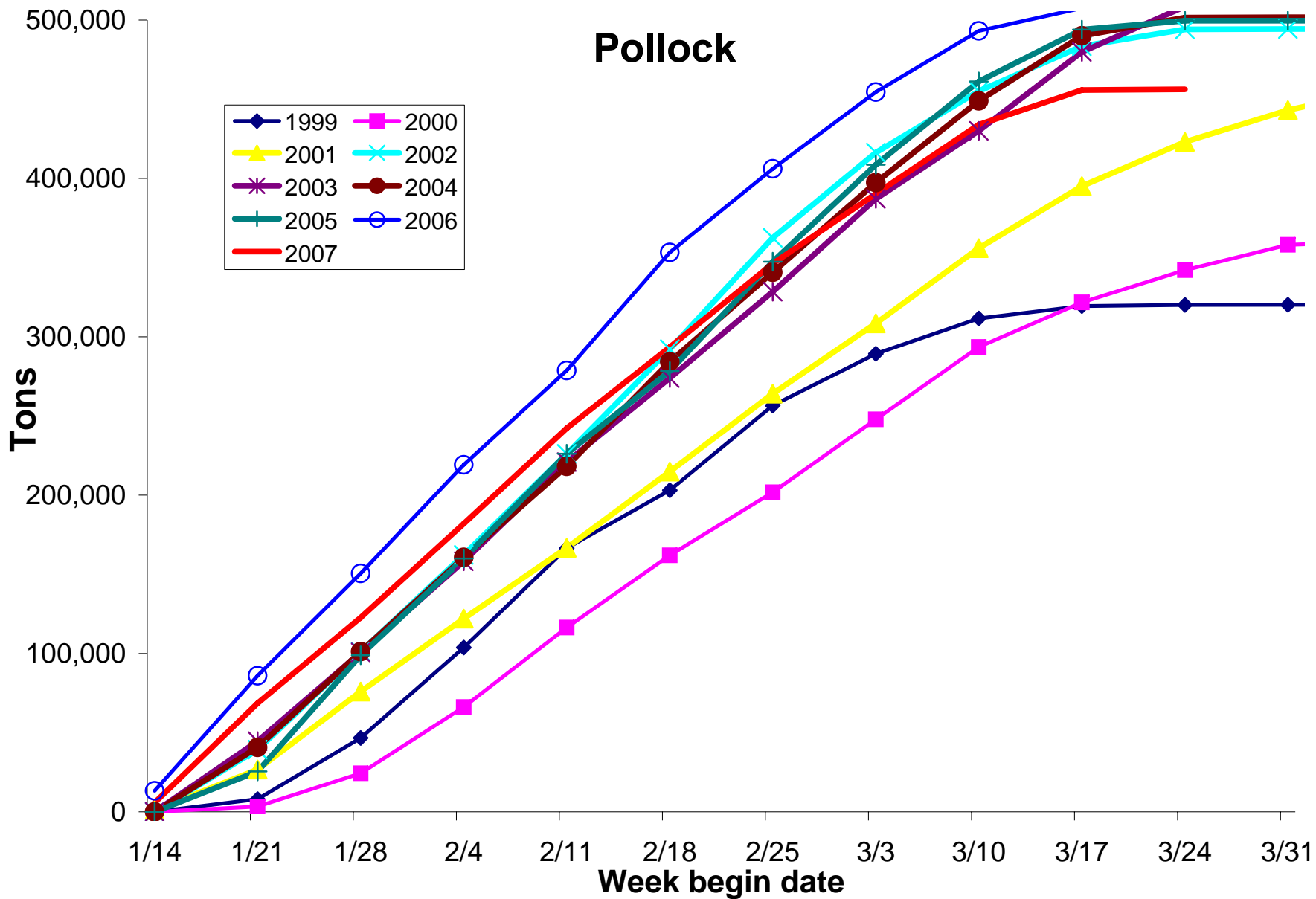
- Have there been changes which have resulted in bycatch increases?
 - Spatial and temporal fishery characteristics
- Could fishing practices be modified to decrease bycatch?



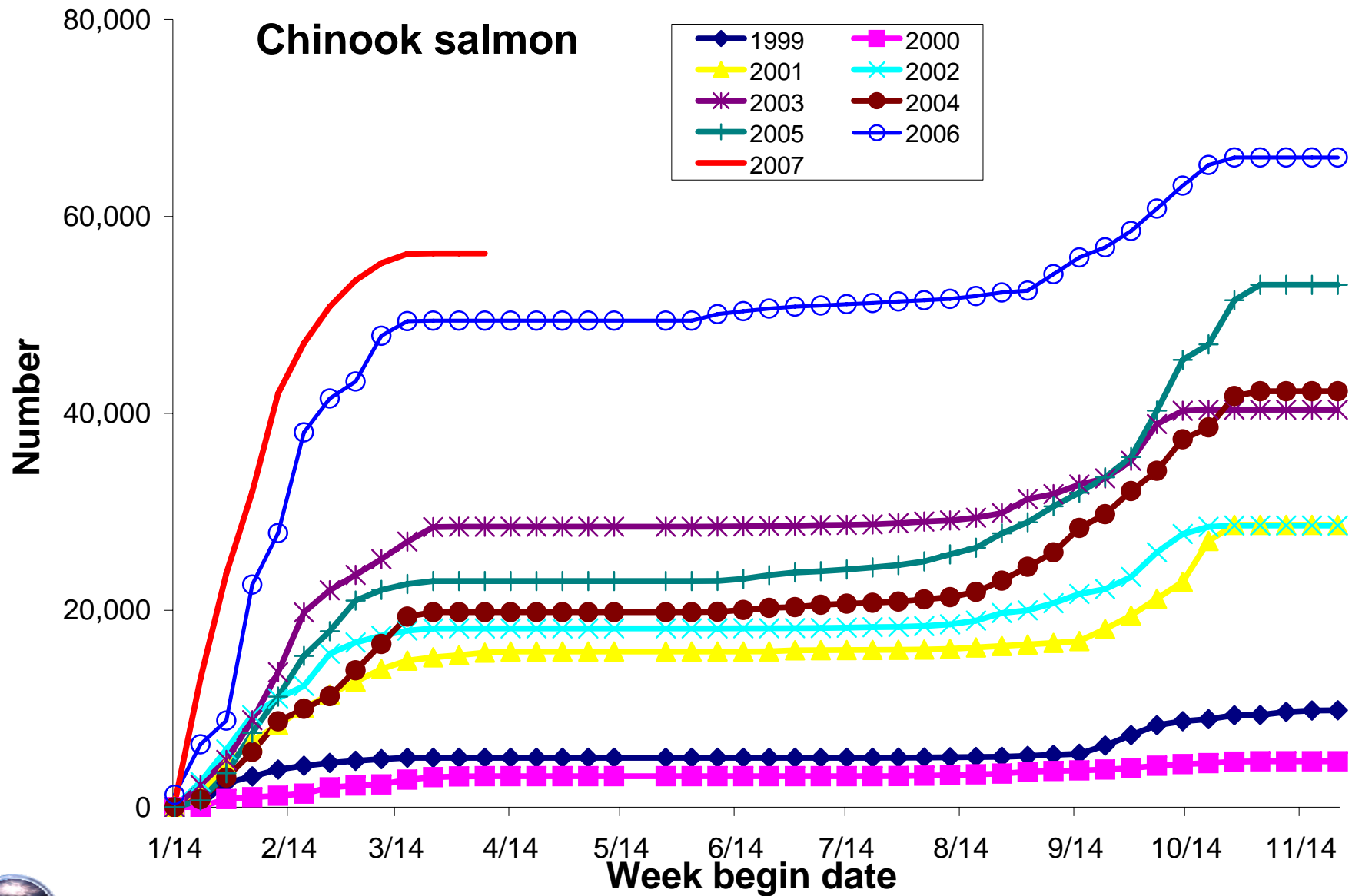
Seasonal patterns of pollock catch



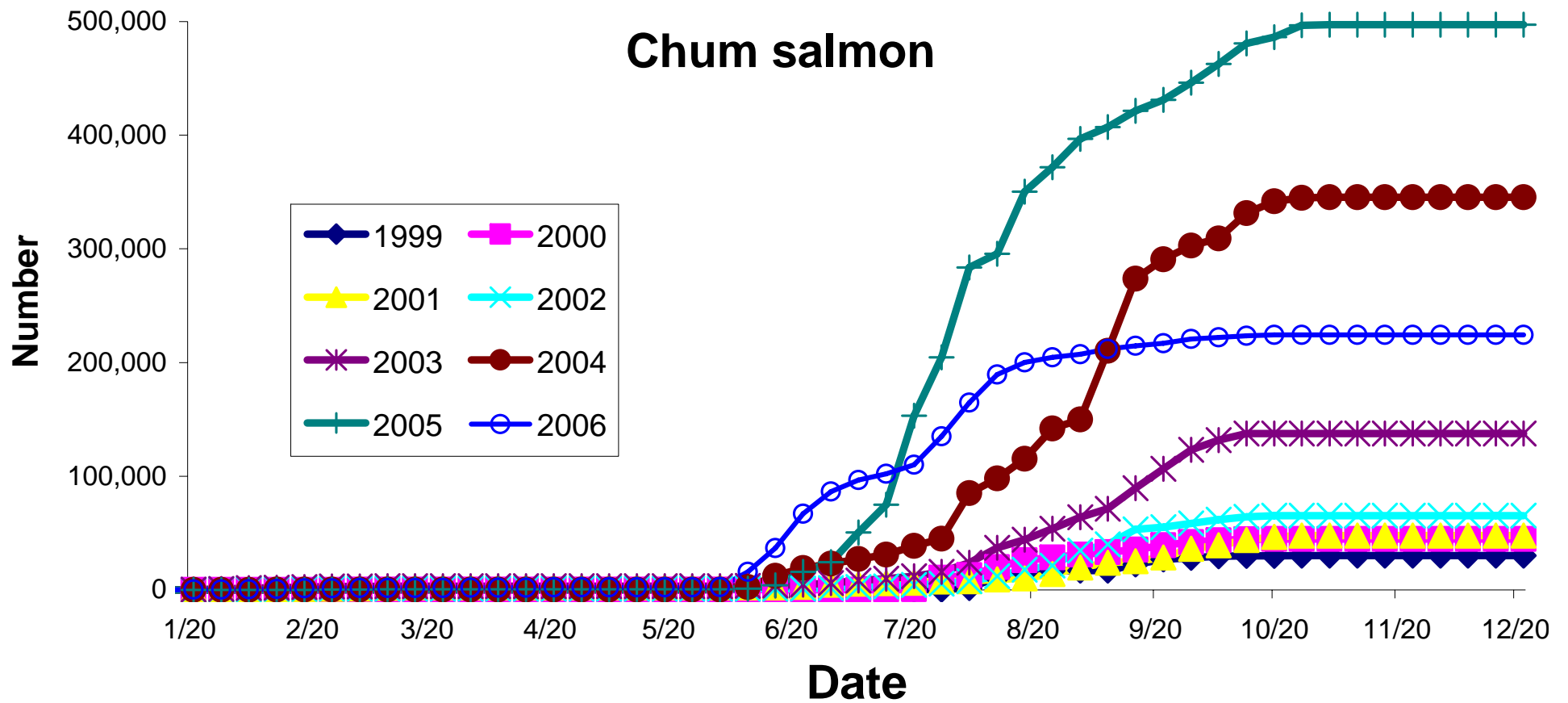
Pollock



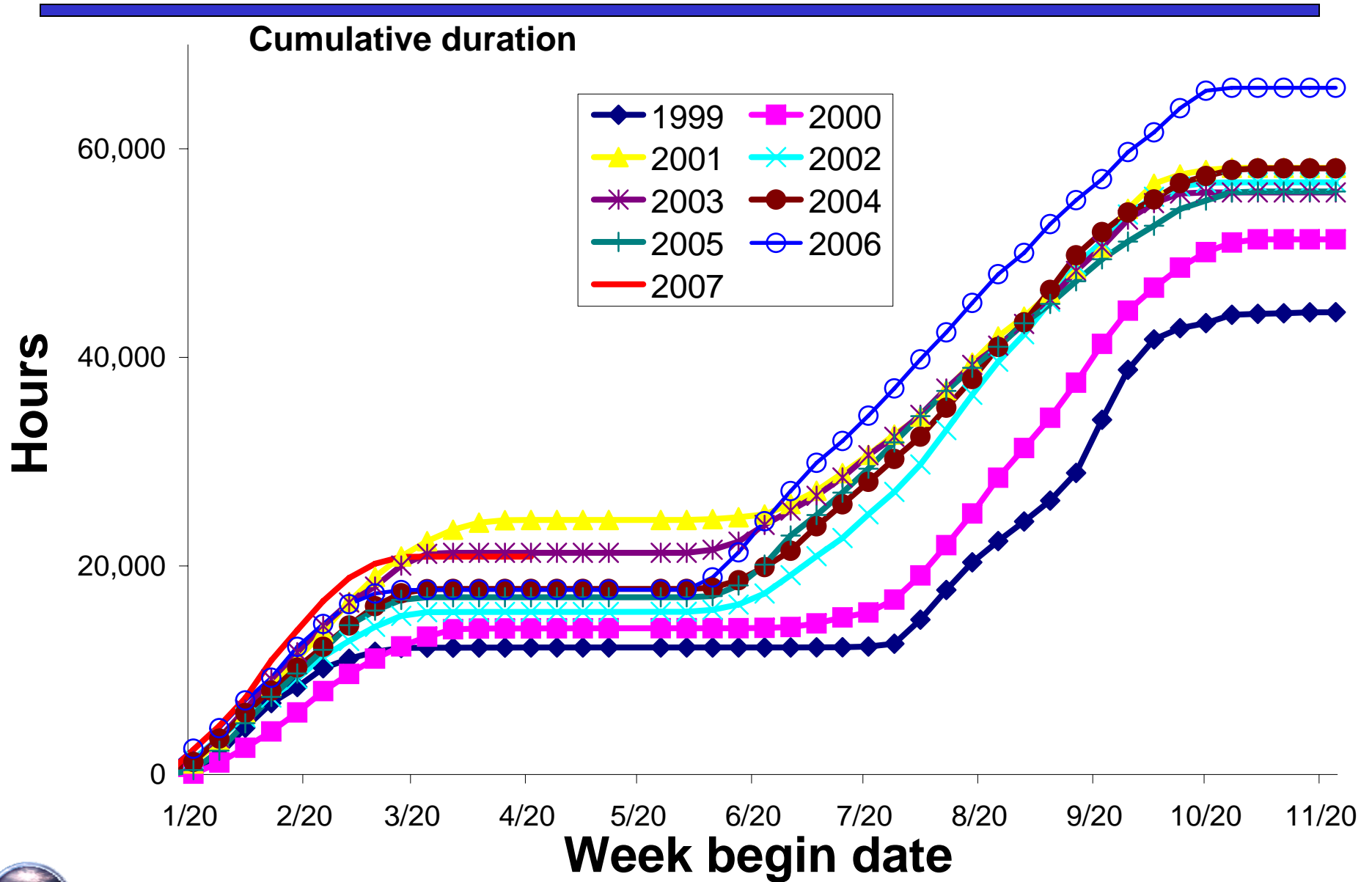
Cumulative Chinook salmon catch 1999-2007



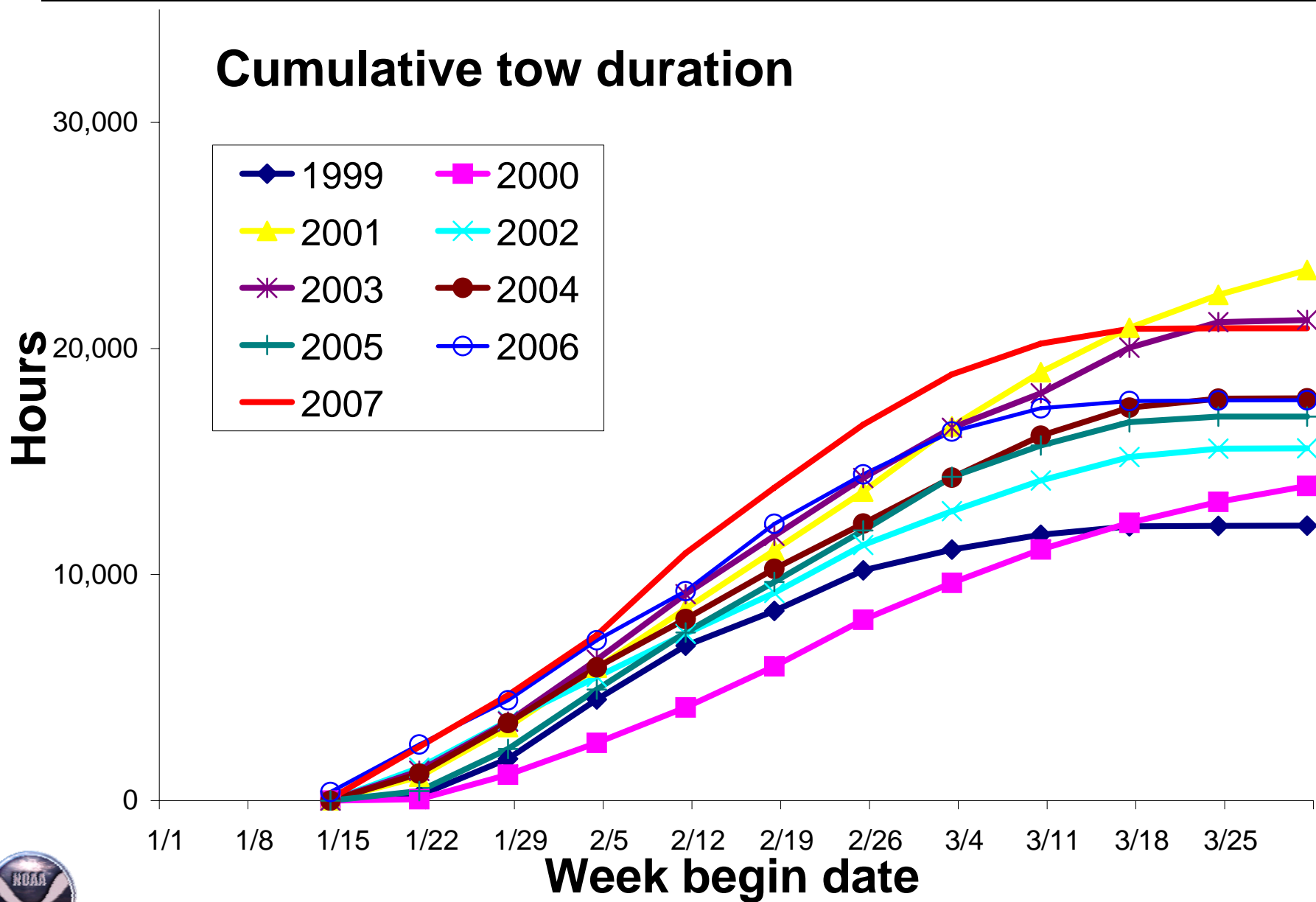
Chum salmon catch 1999-2006



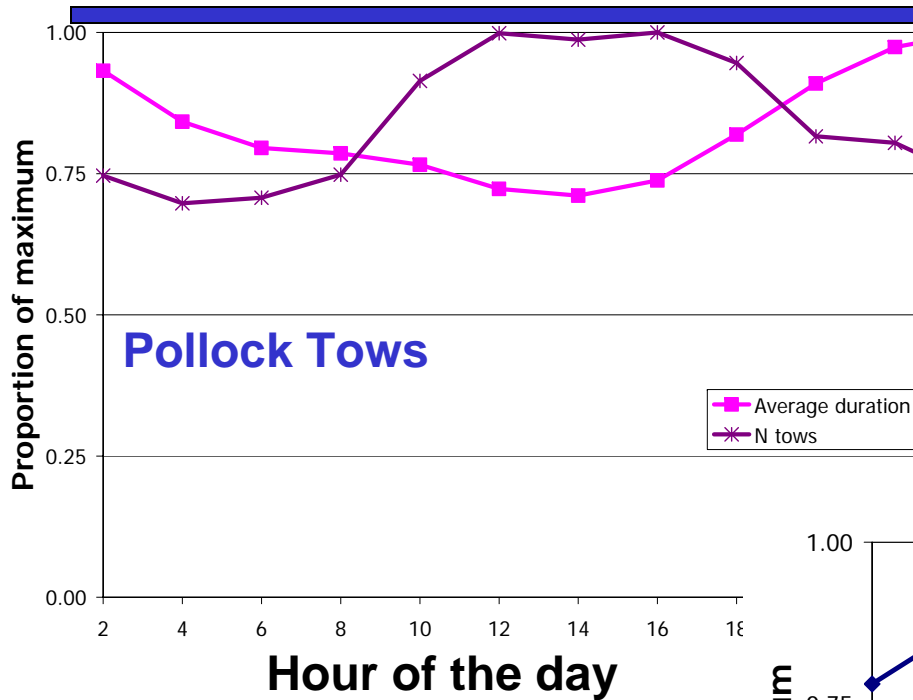
Change in fishing intensity?



Change in fishing intensity?



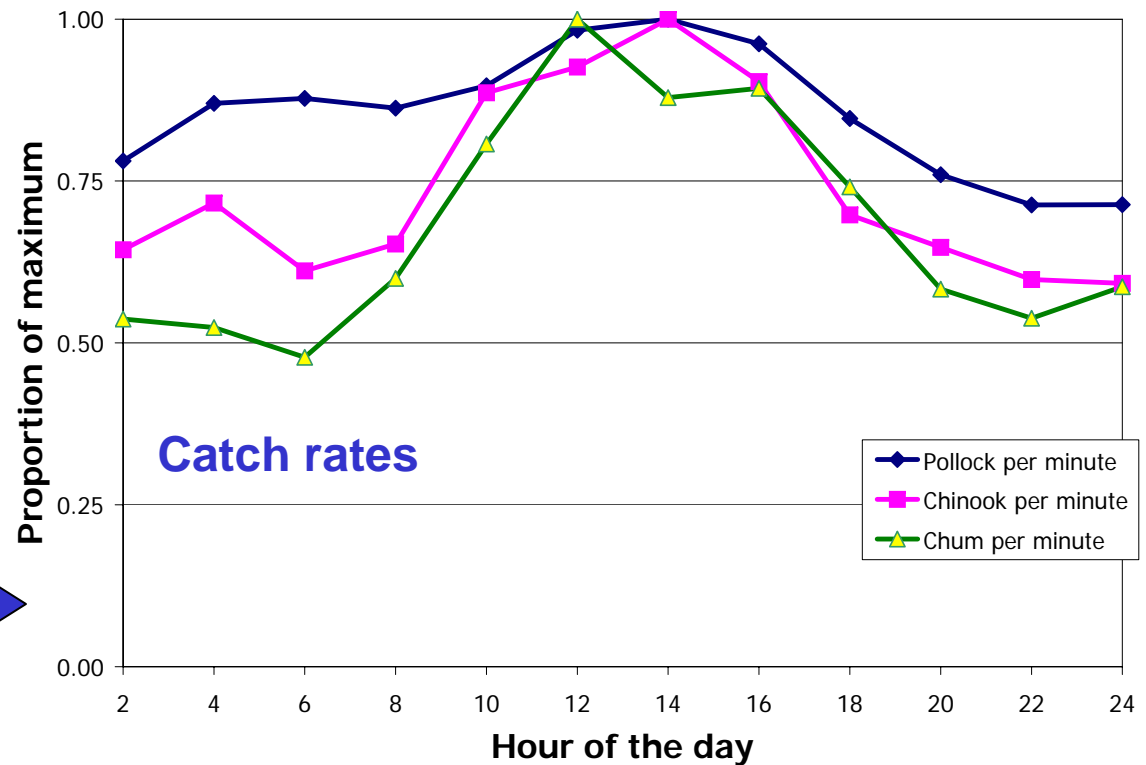
Fishing Patterns and bycatch rates

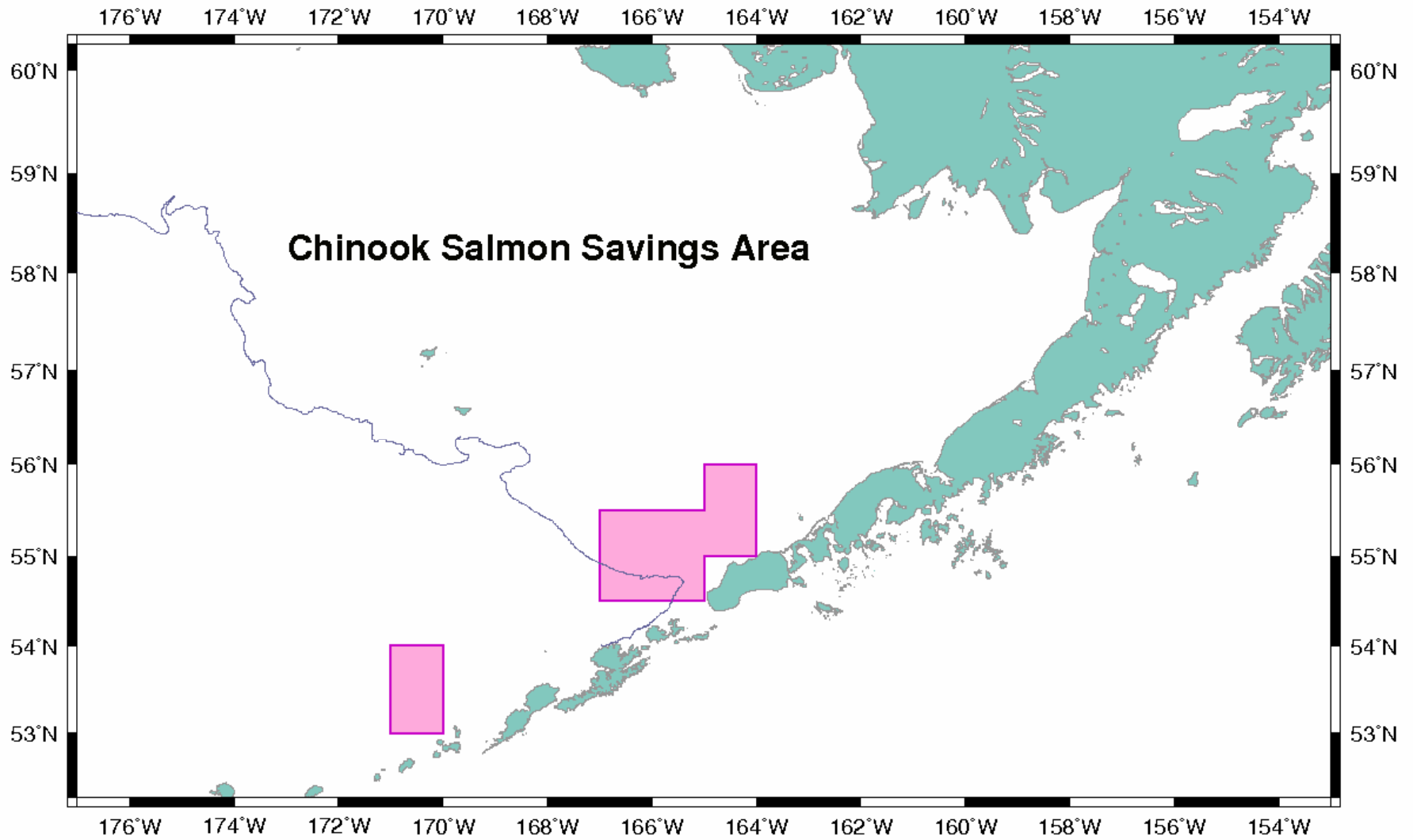


- fewer tows at night
- longer duration



- > catch at mid-day
- > relative rate decrease at night for salmon

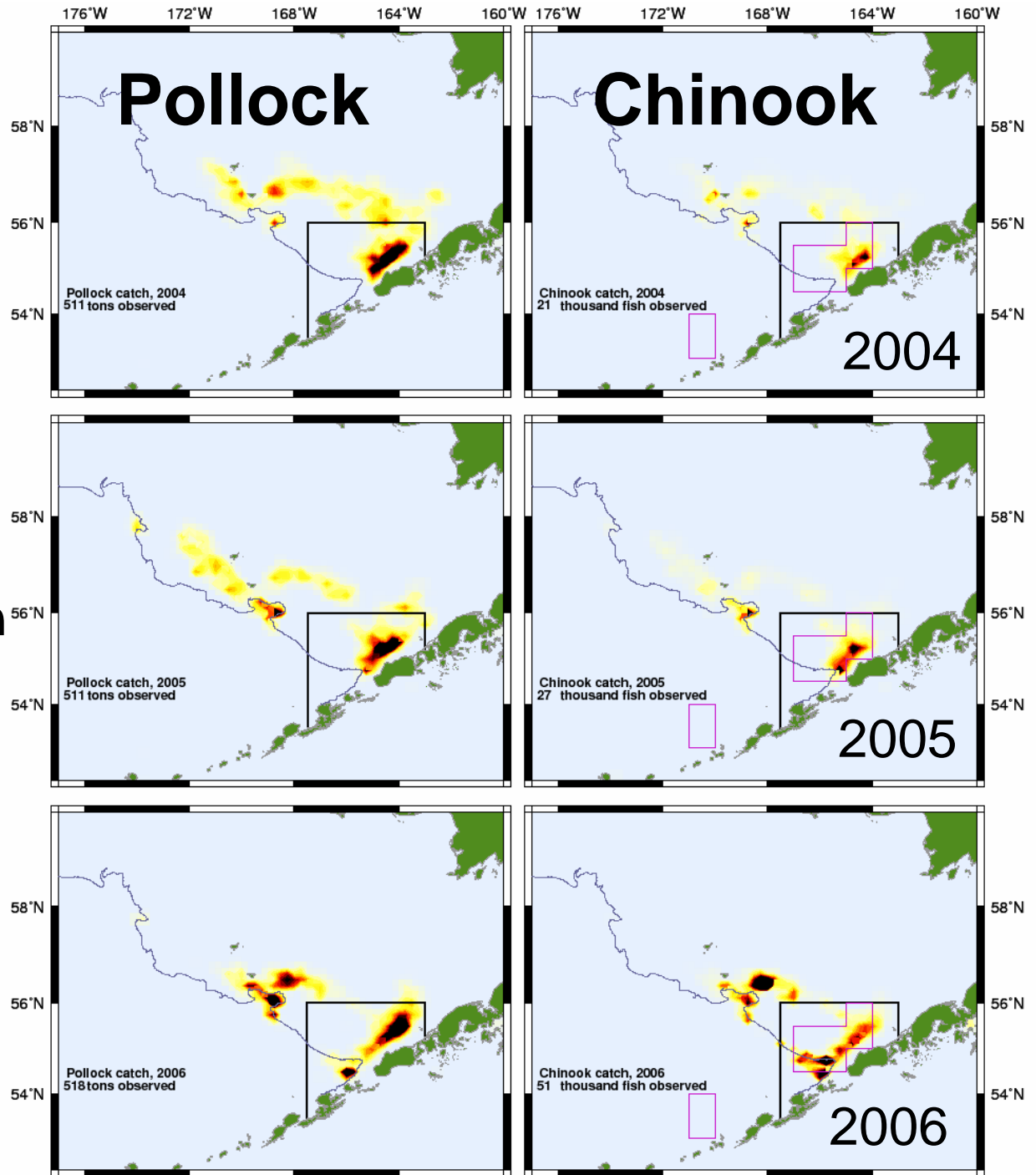




Trigger: 26,825 (non-CDQ); 2,175 (CDQ)

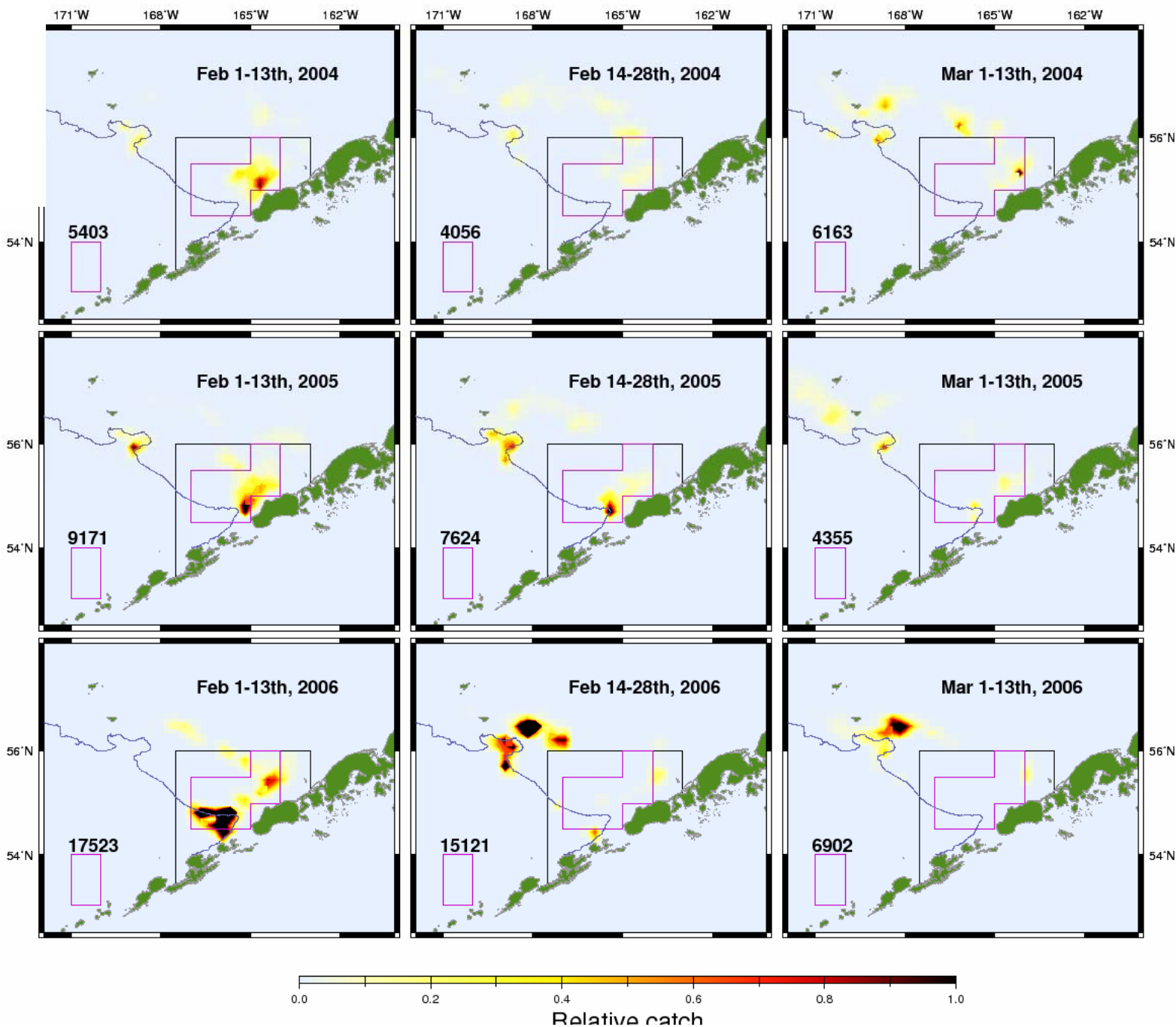
**How to
evaluate
candidate
closure
areas?**

**Aggregate A season
observed pollock
and Chinook
catch 2004-2006**



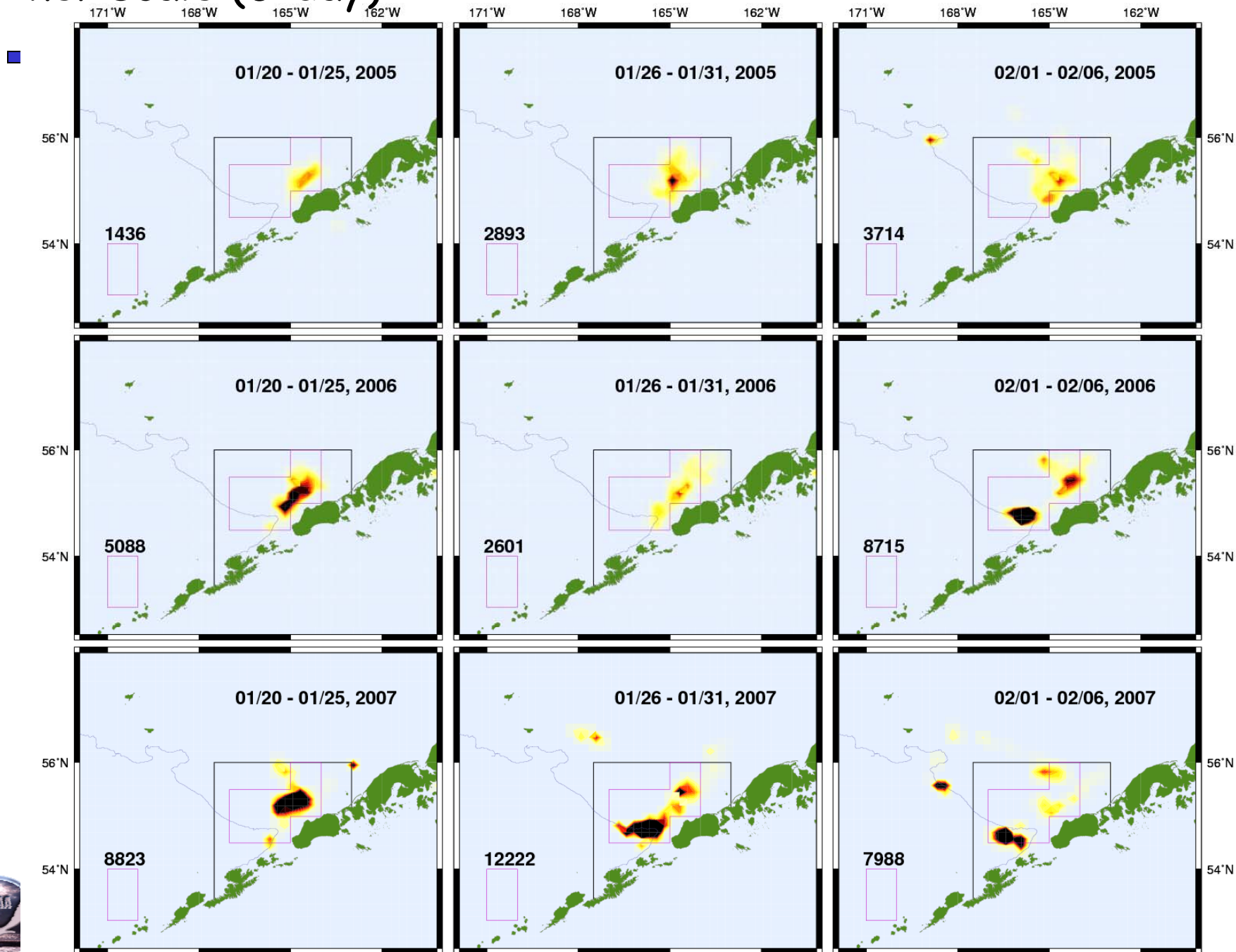
How to evaluate candidate closure areas?

BI-WEEKLY A-season Chinook catch 2004-2006



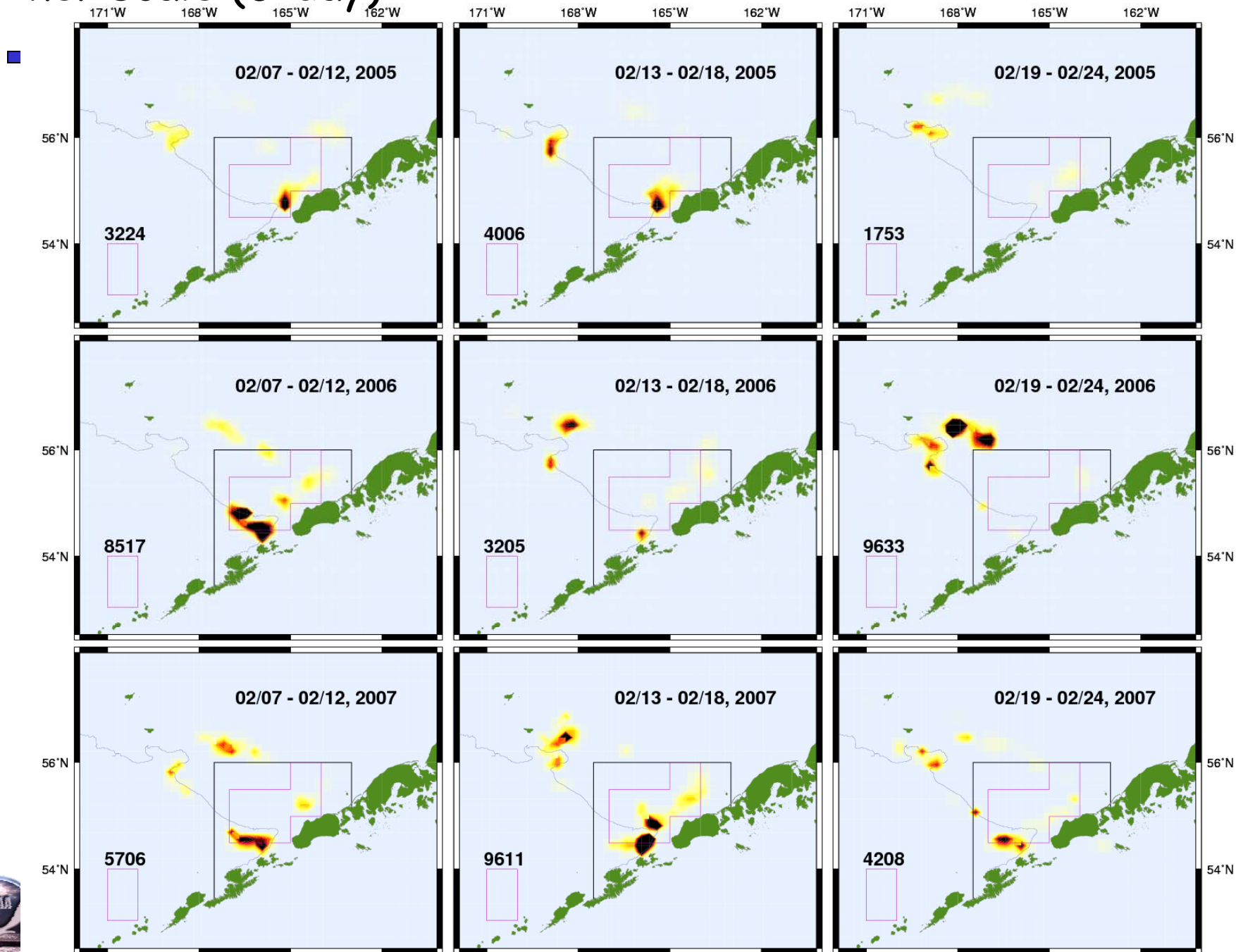
Finer scale (6-day)

Chinook



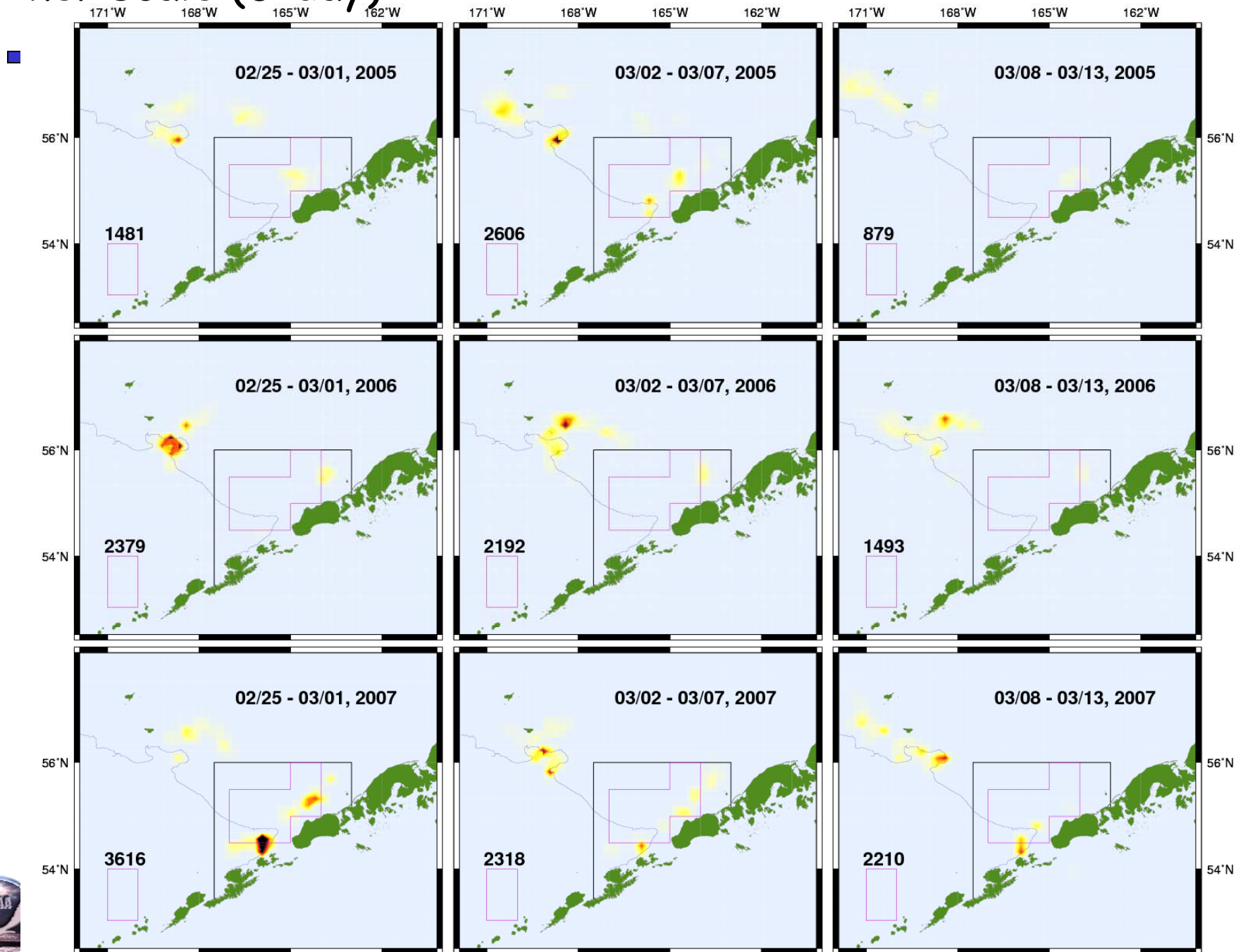
Finer scale (6-day)

Chinook



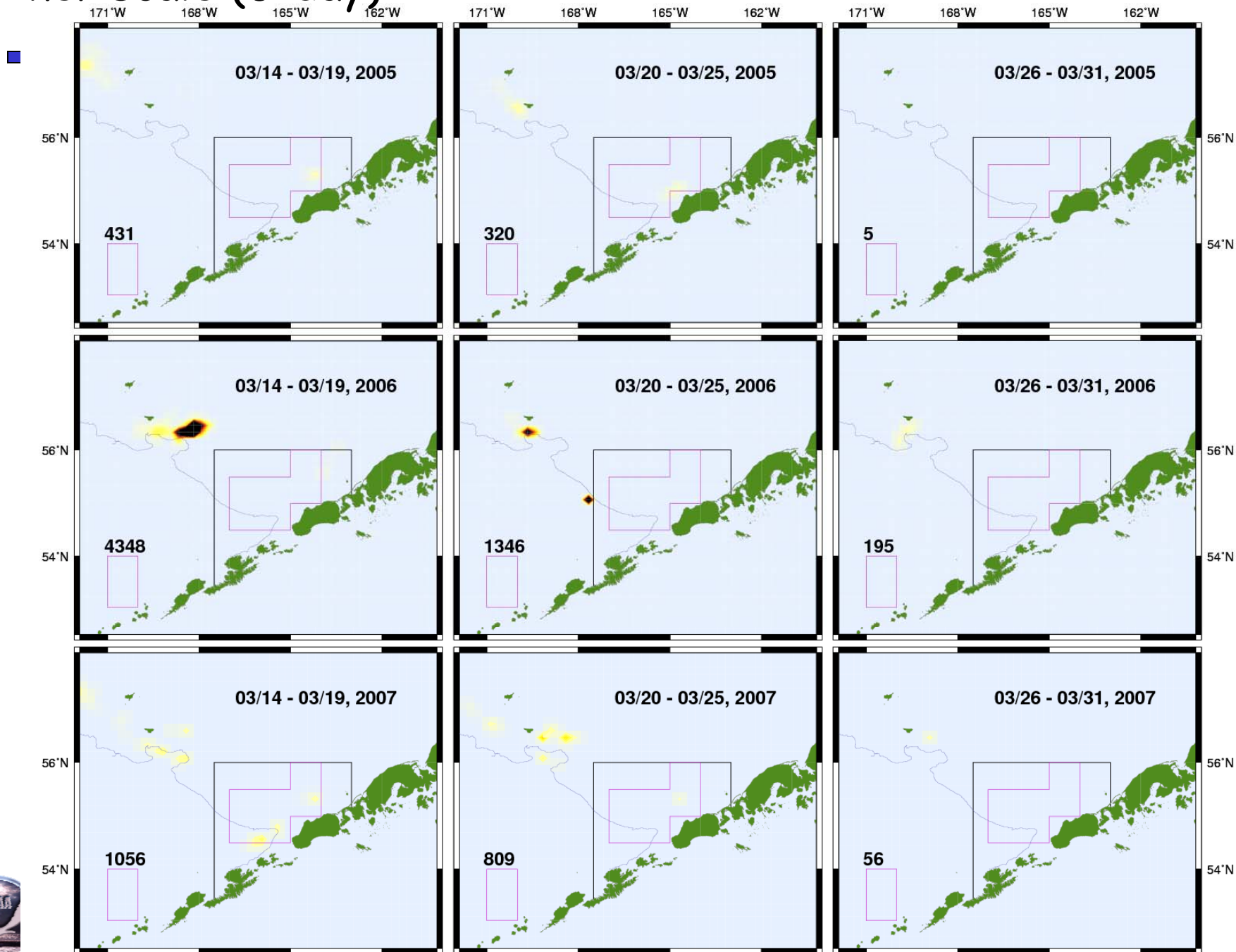
Finer scale (6-day)

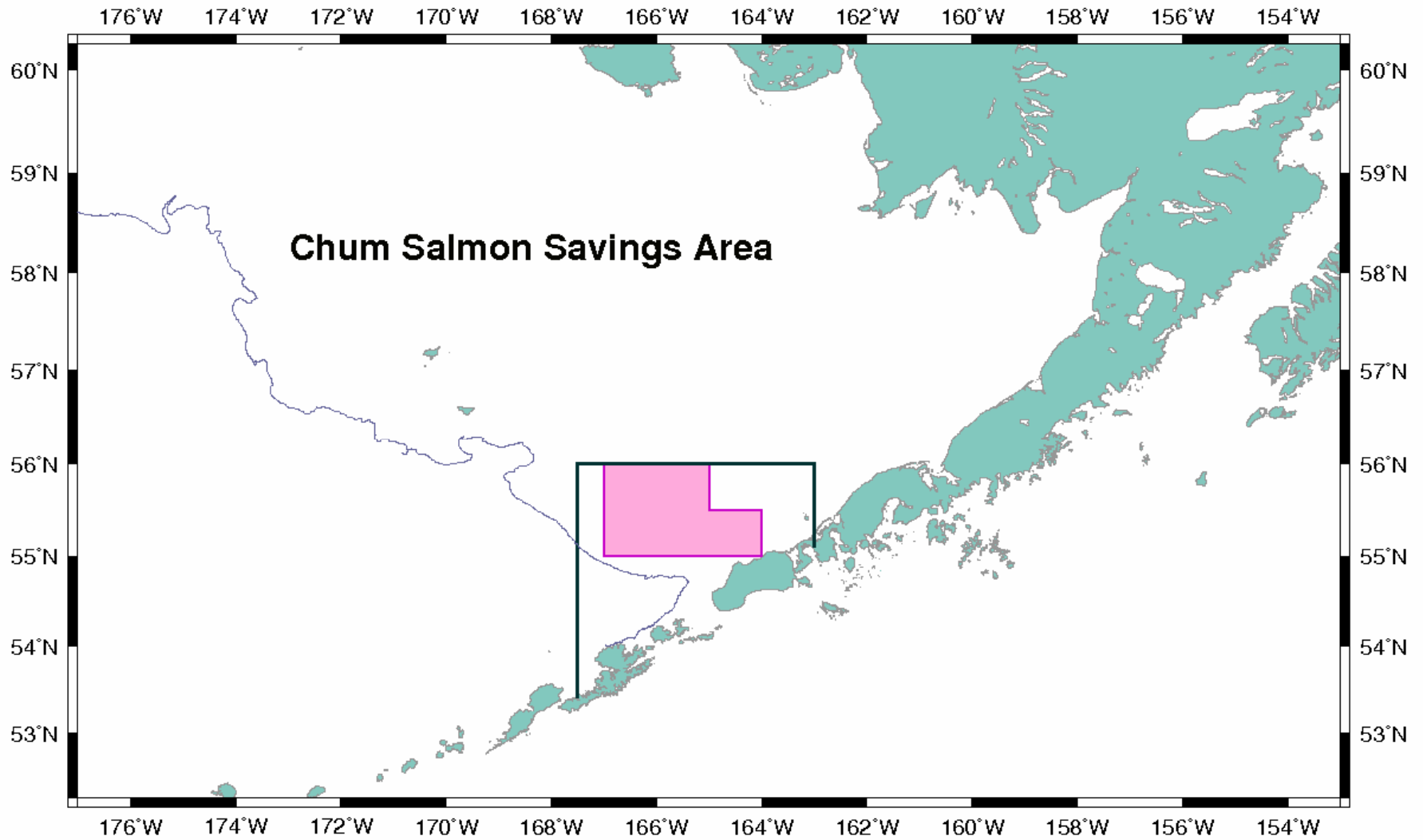
Chinook



Finer scale (6-day)

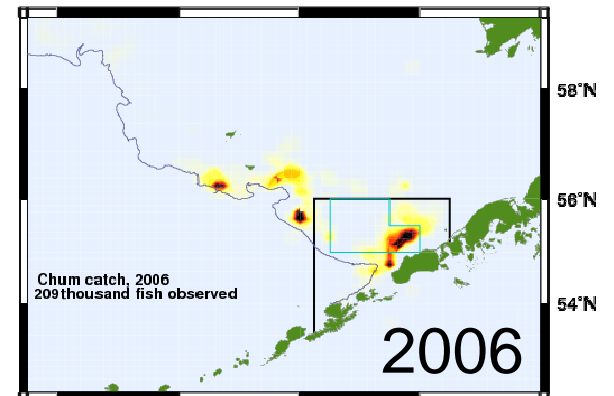
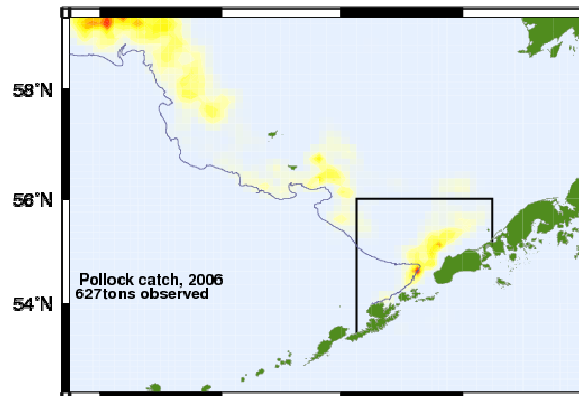
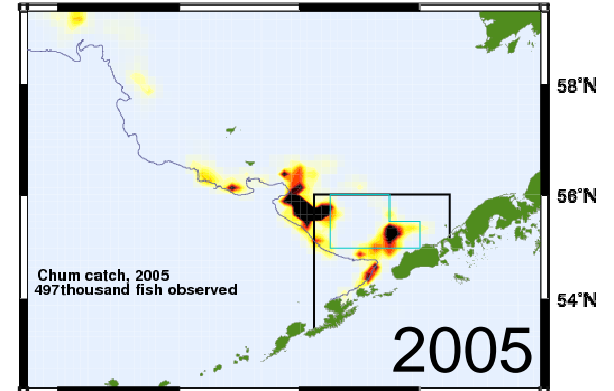
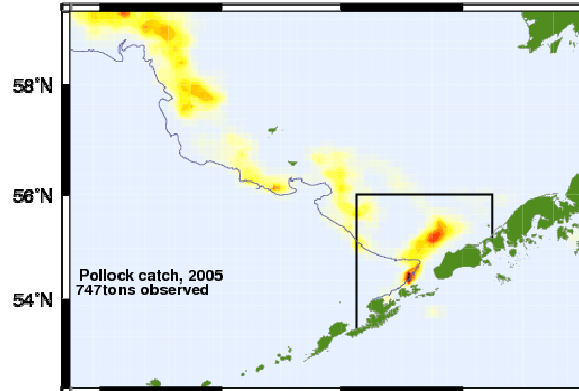
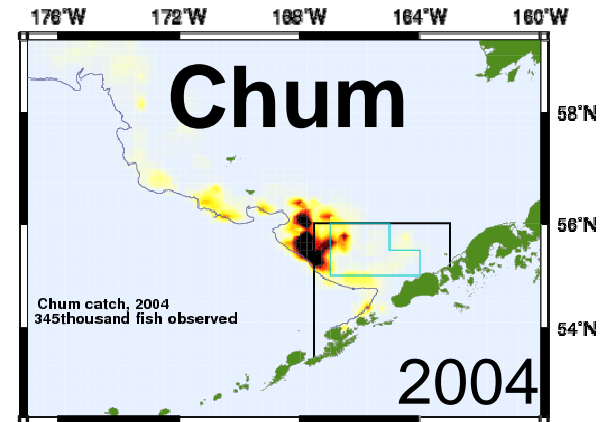
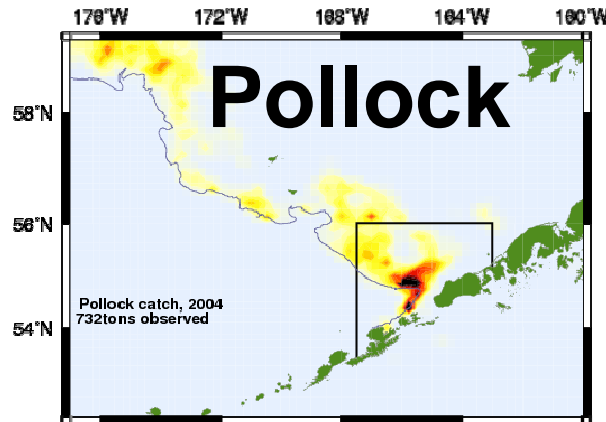
Chinook





Trigger: 38,850 (non-CDQ); 3,150 (CDQ)

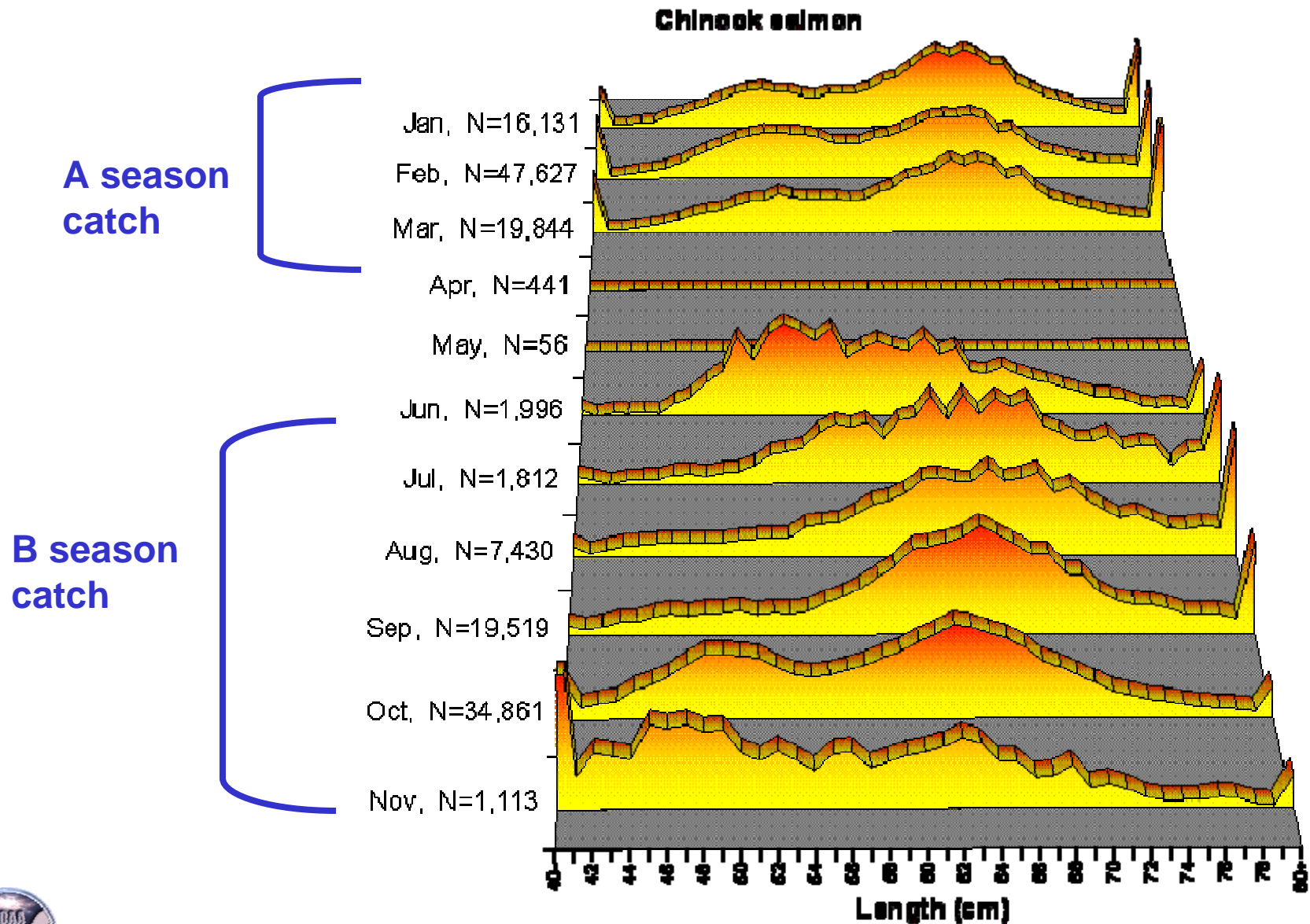
Pollock and chum B-season



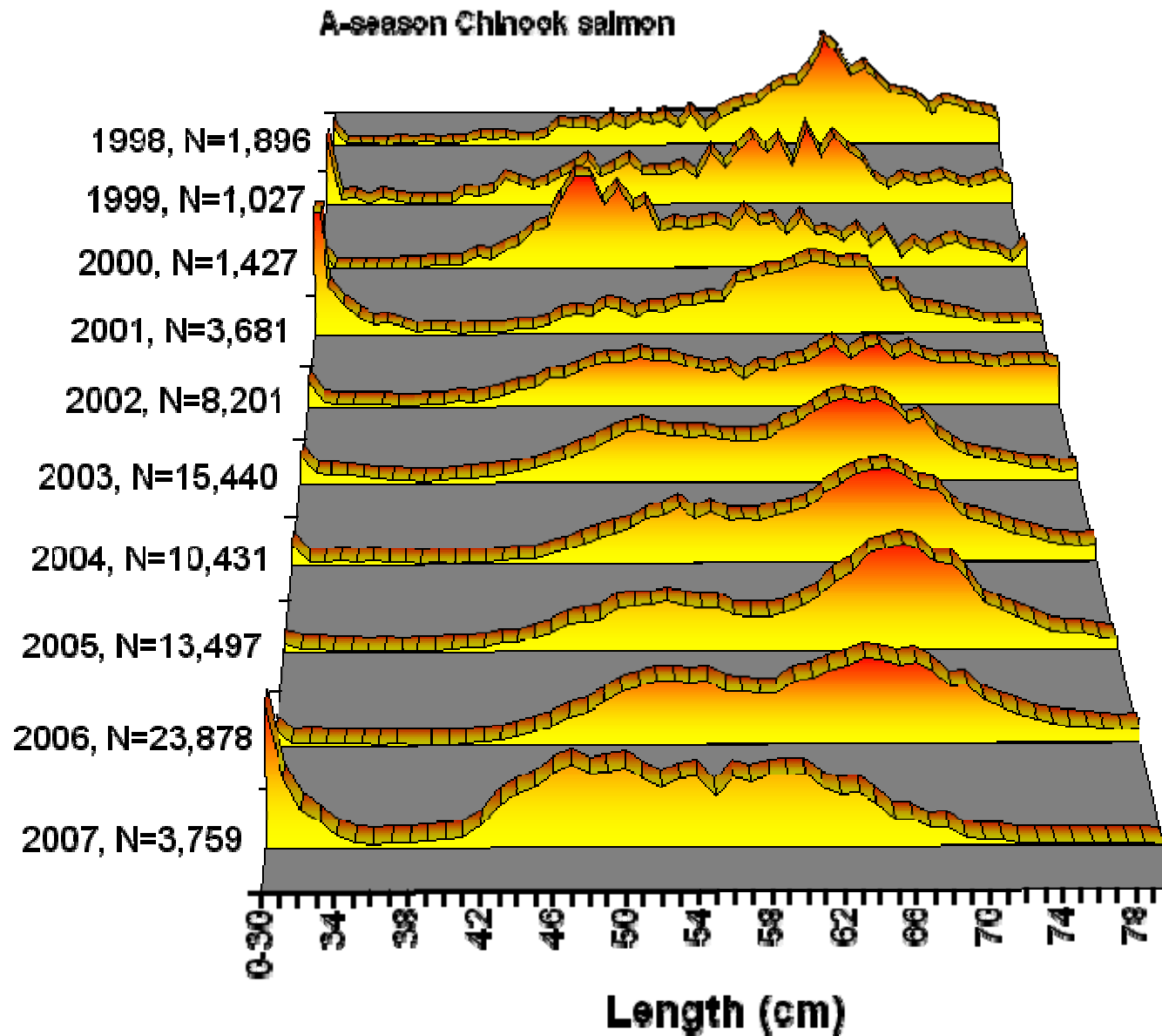
Length frequency of salmon in the bycatch

- And se

Chinook 1998-2006 average by month

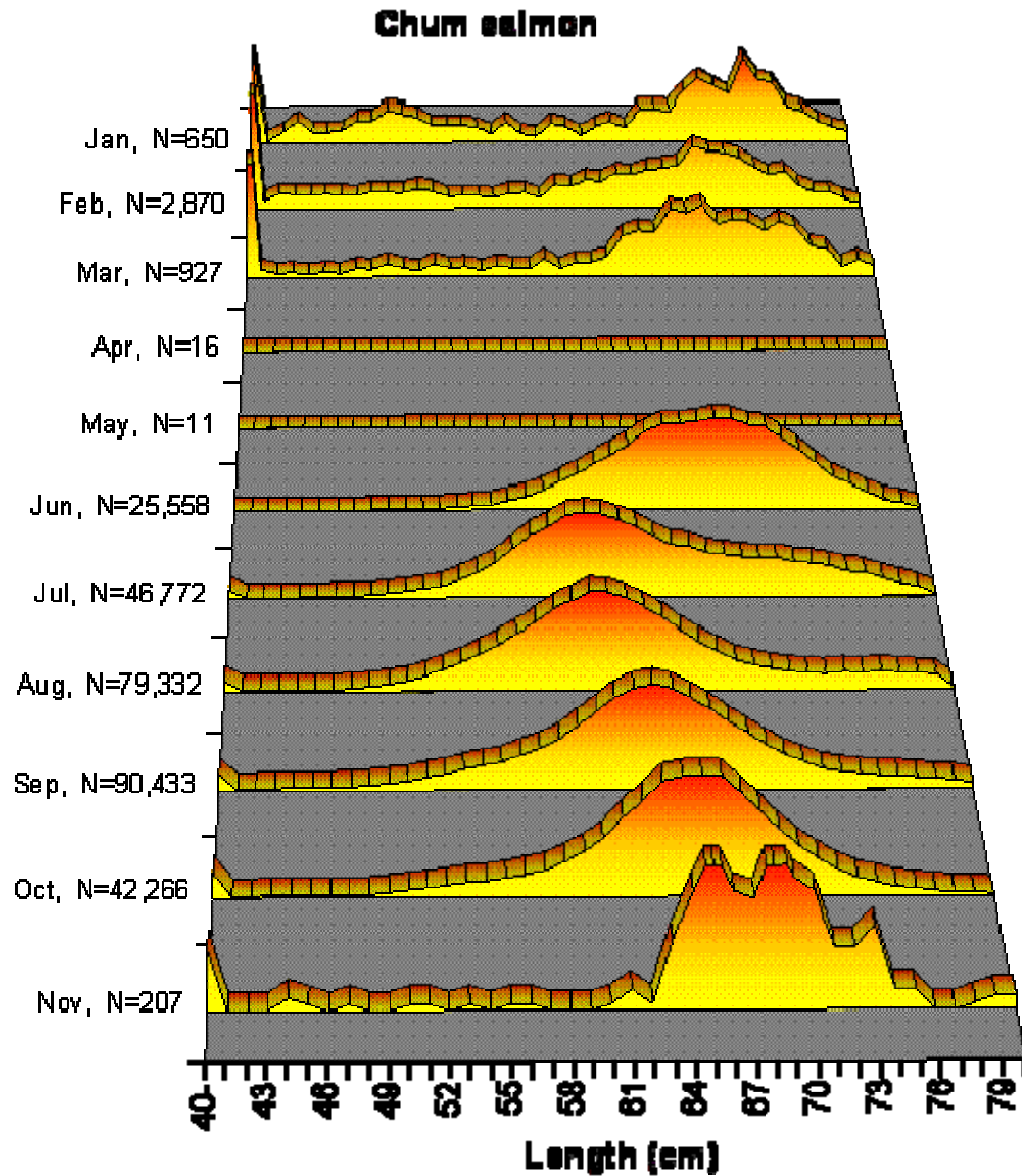


A-season Chinook catch

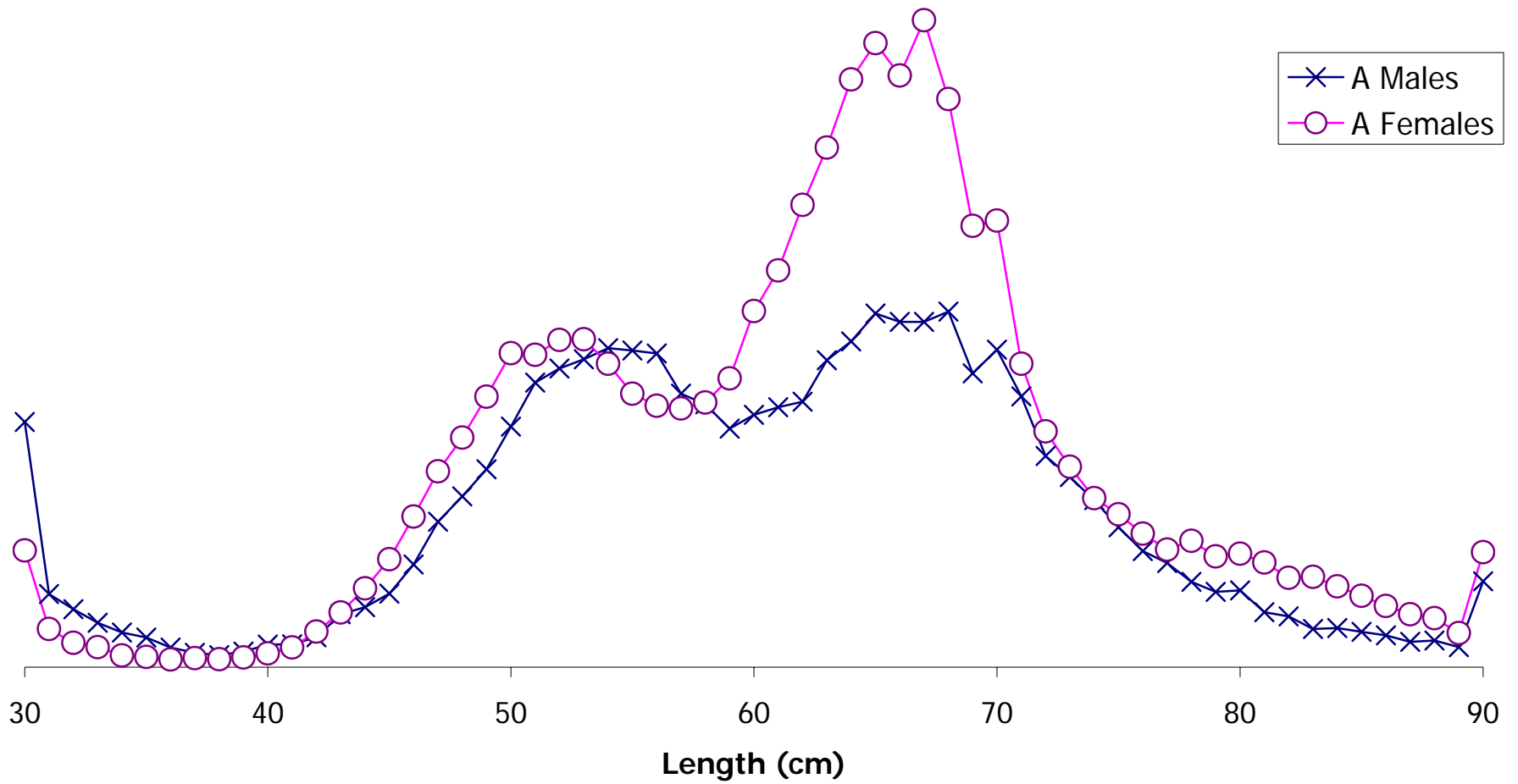


Chum 1998-2006 average by month

B season catch

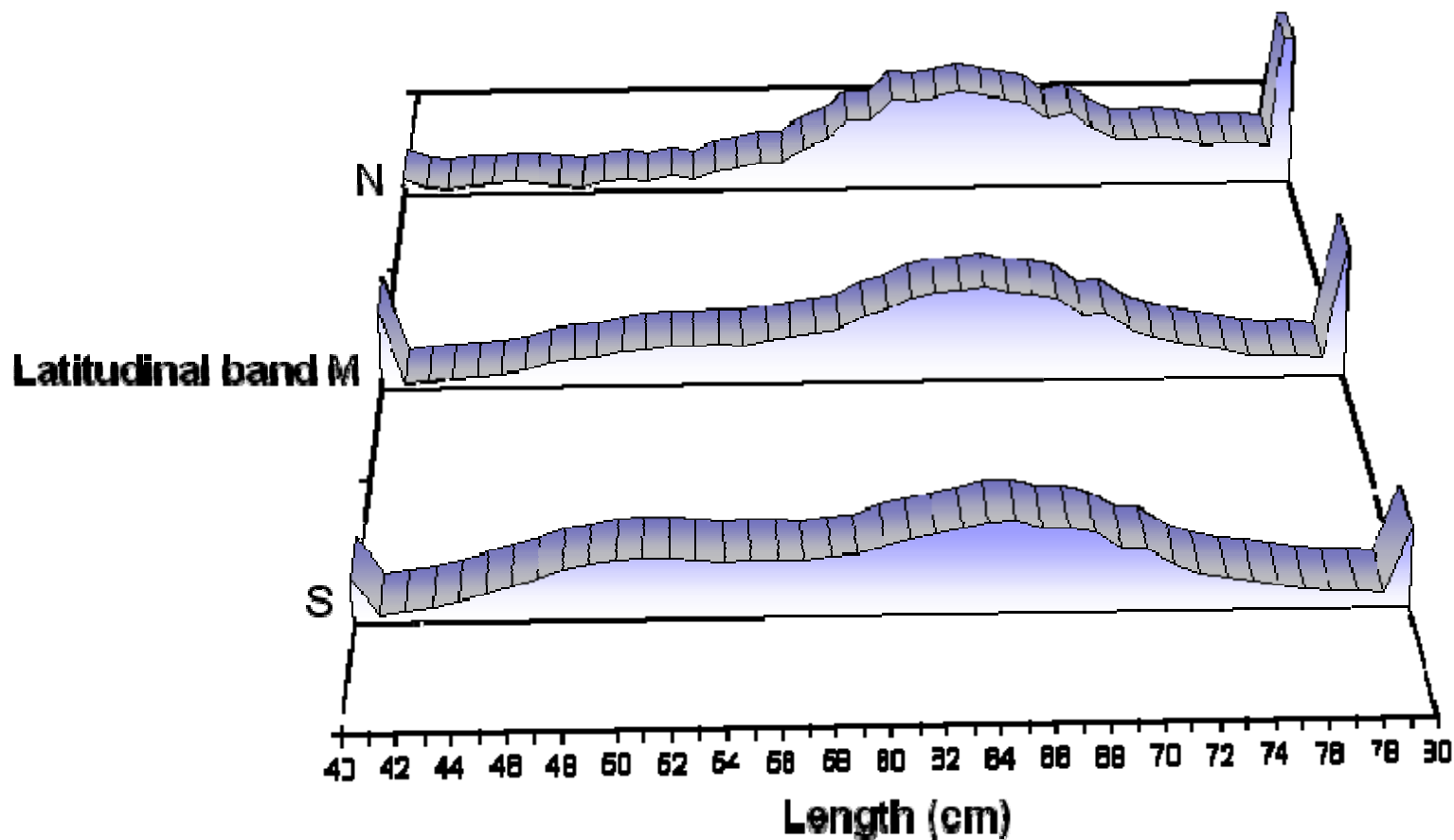


Chinook salmon



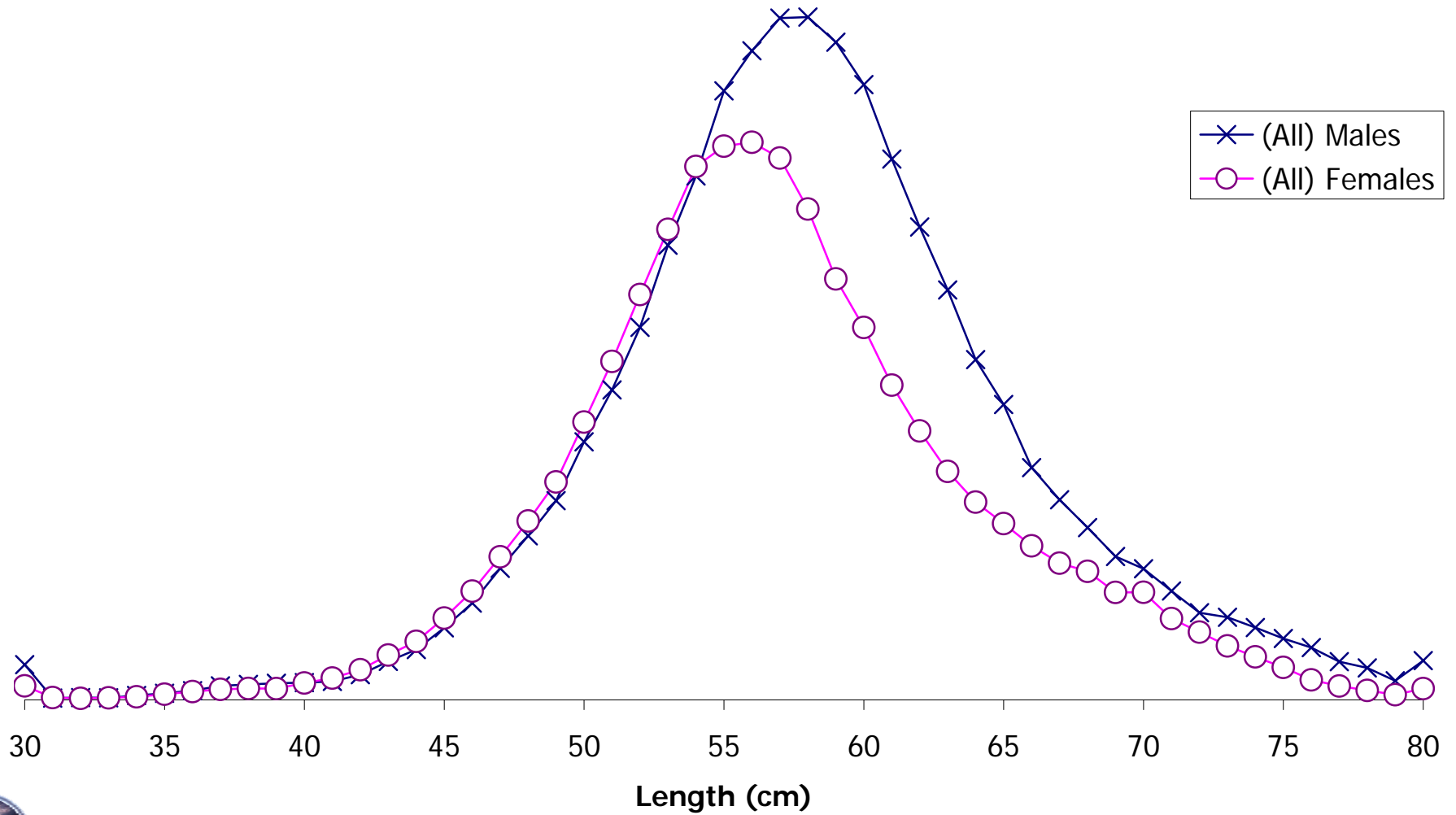
Chinook length stratified by latitudinal bands

Chinook salmon

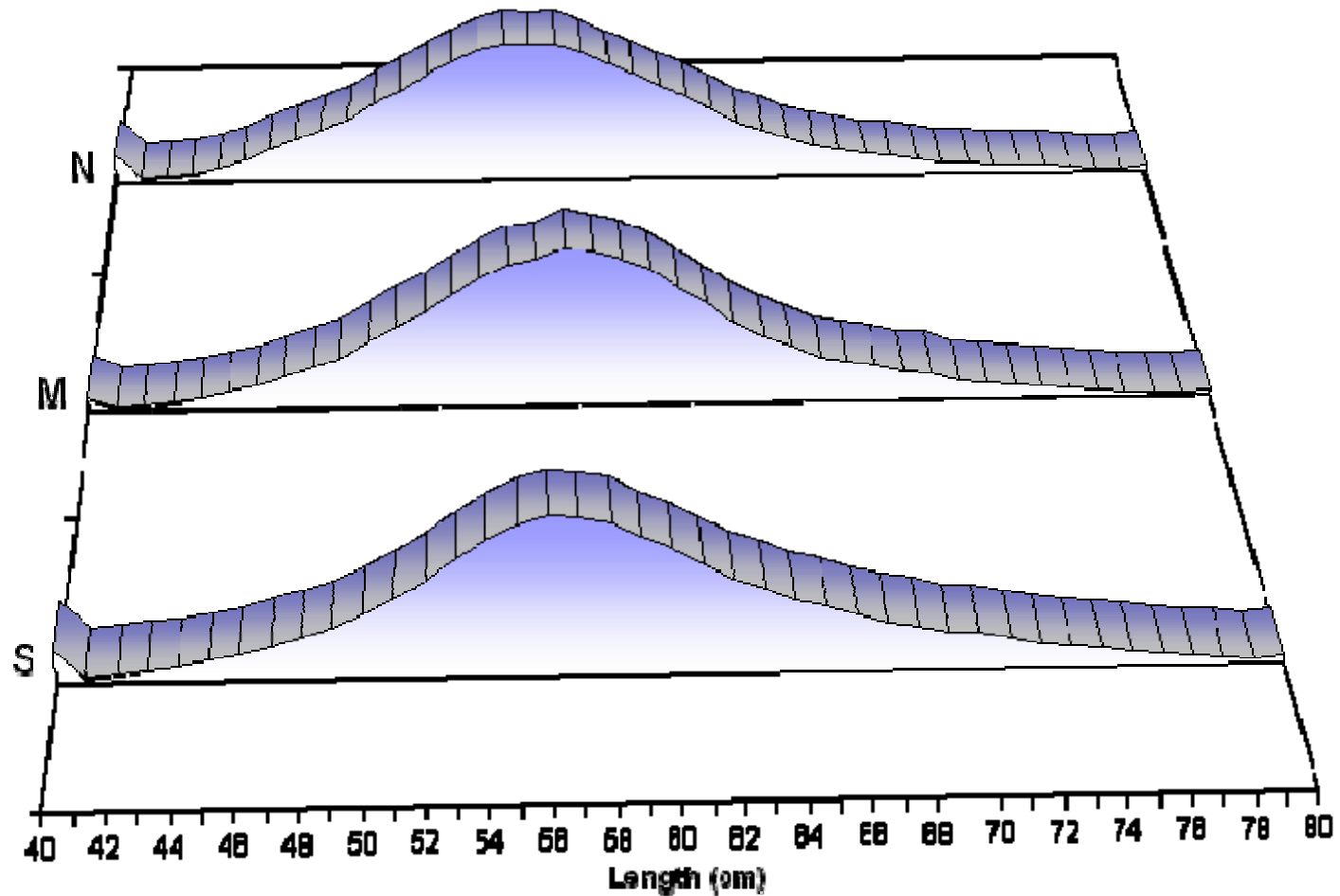


Chum salmon sex ratio

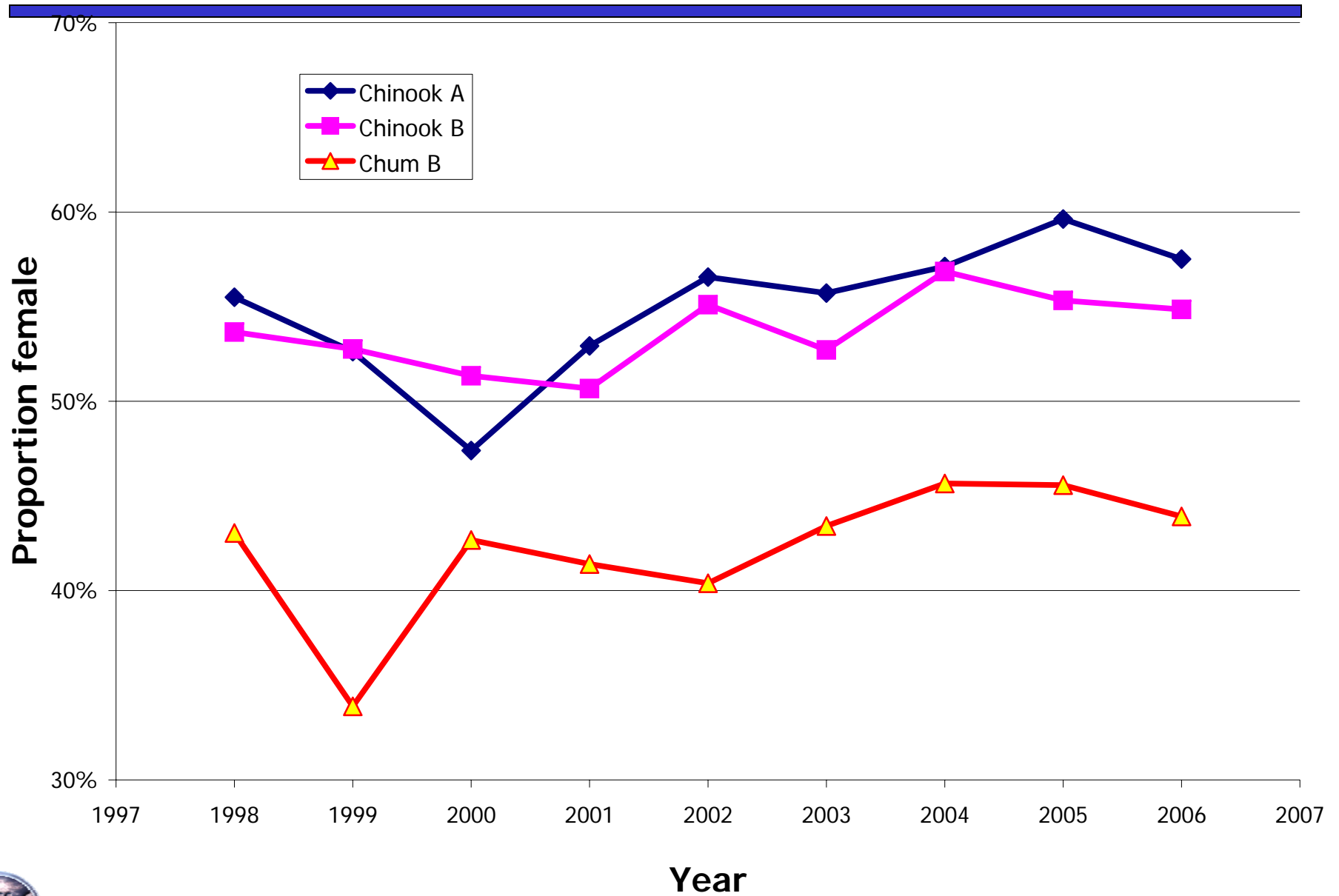
Chum salmon



Chum salmon length-frequency by latitudinal bands



Persistence of salmon sex ratios over time



Summary

- **Area closures highly variable**
 - Consistent areas for closing are lacking
- **Alternative possibilities**
 - Daily stand-downs (during problem periods)
 - During mid-day when salmon are deeper?
 - Would likely be difficult to force in regulation
- **Abundance-based caps need information**
 - Run origins (variable by year?)
 - Overall abundance
 - Permissible rates given abundance is known
- **Approaches**
 - Modeling tools—mapping utilities

