

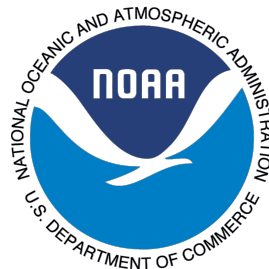
Red drum tagging research: implications for assessment & management

Nate Bacheler, Lee Paramore, Jeff Buckel, Joe Hightower, and Ken Pollock

*North Carolina State University &
North Carolina Division of Marine Fisheries*



April 16, 2014



Relevancy: red drum stock assessment

- Stock assessment in 2000
- Rec, com catches, survey data
- External estimate of natural mortality
- Spawning potential ratio:
 - 1980s: ~1%
 - 1990s: 18%
 - < 30% = overfishing

Reasons for uncertainty

1. Presence of slot limit
 - Selectivity?
 2. Catch and release fishing
 3. No landings information on adults
- 4. External estimate of natural mortality



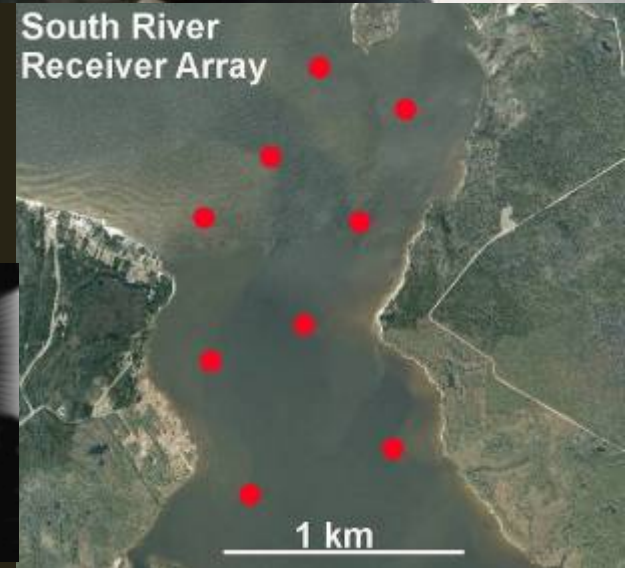
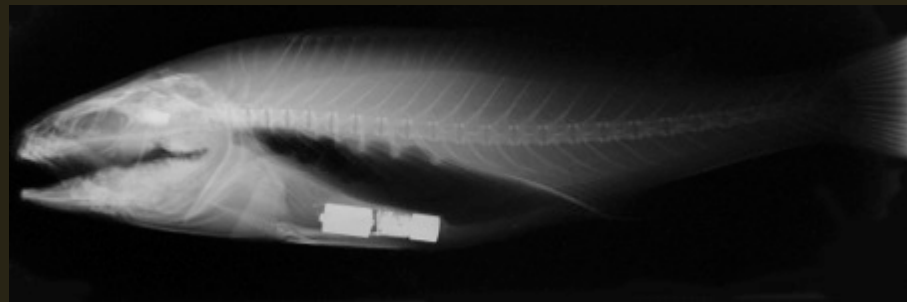
Methods

Conventional tags

- Long term (NCDMF: 1983-2006)
- Short term (NCSU: 2005-2007)
- Instantaneous rates model

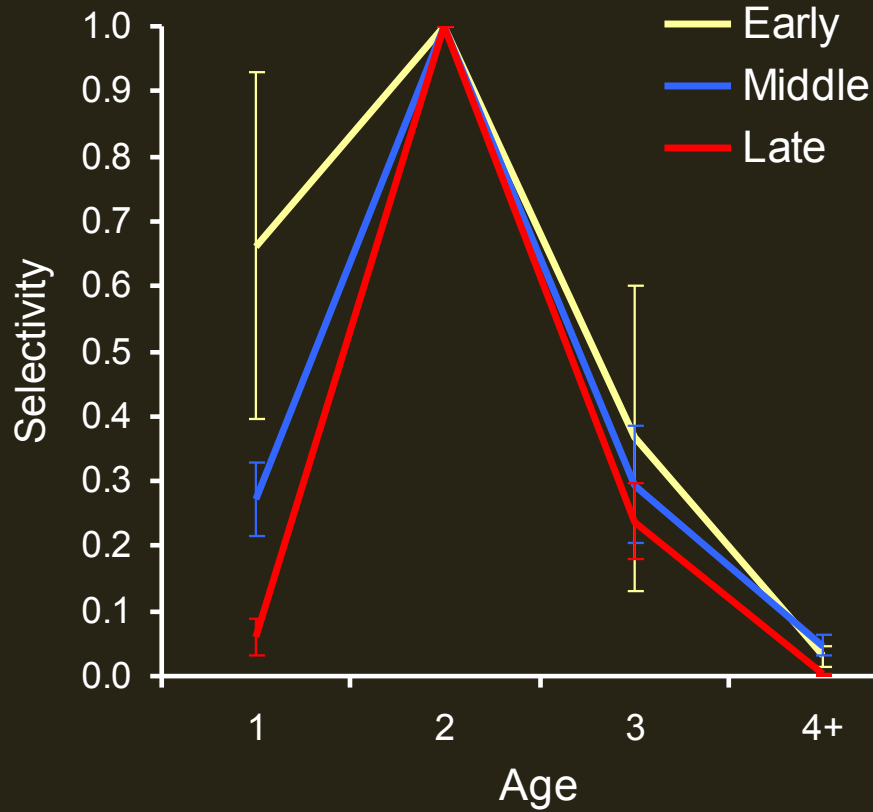
Telemetry tags

- 180 age-2 red drum released
- 5 creeks in Neuse River
- Monthly relocations
- receivers detect emigrations
- data combined with conventional tag returns

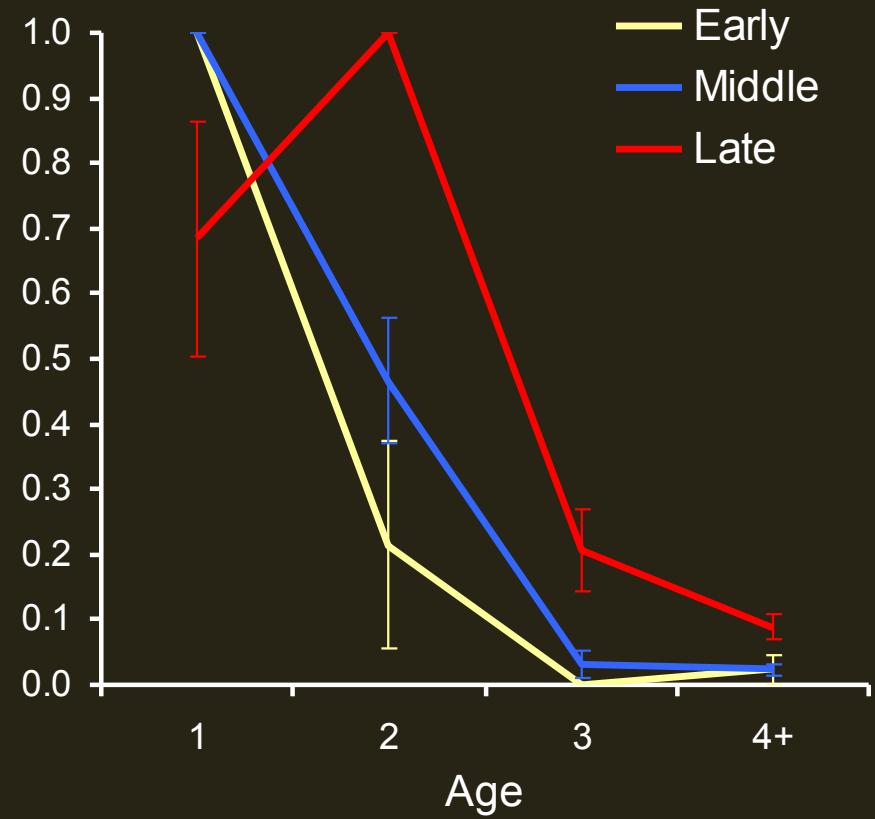


Selectivity

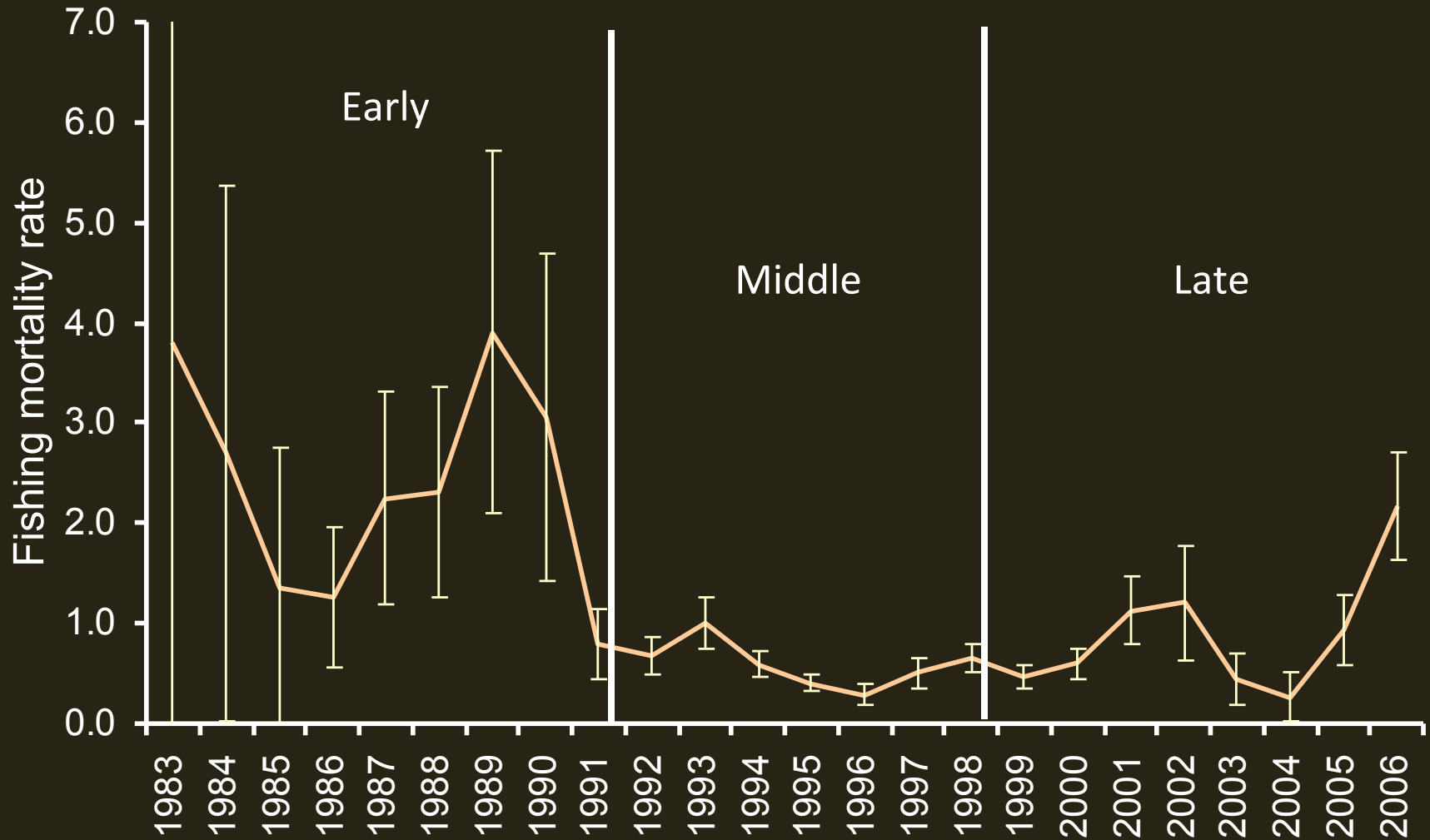
Harvested



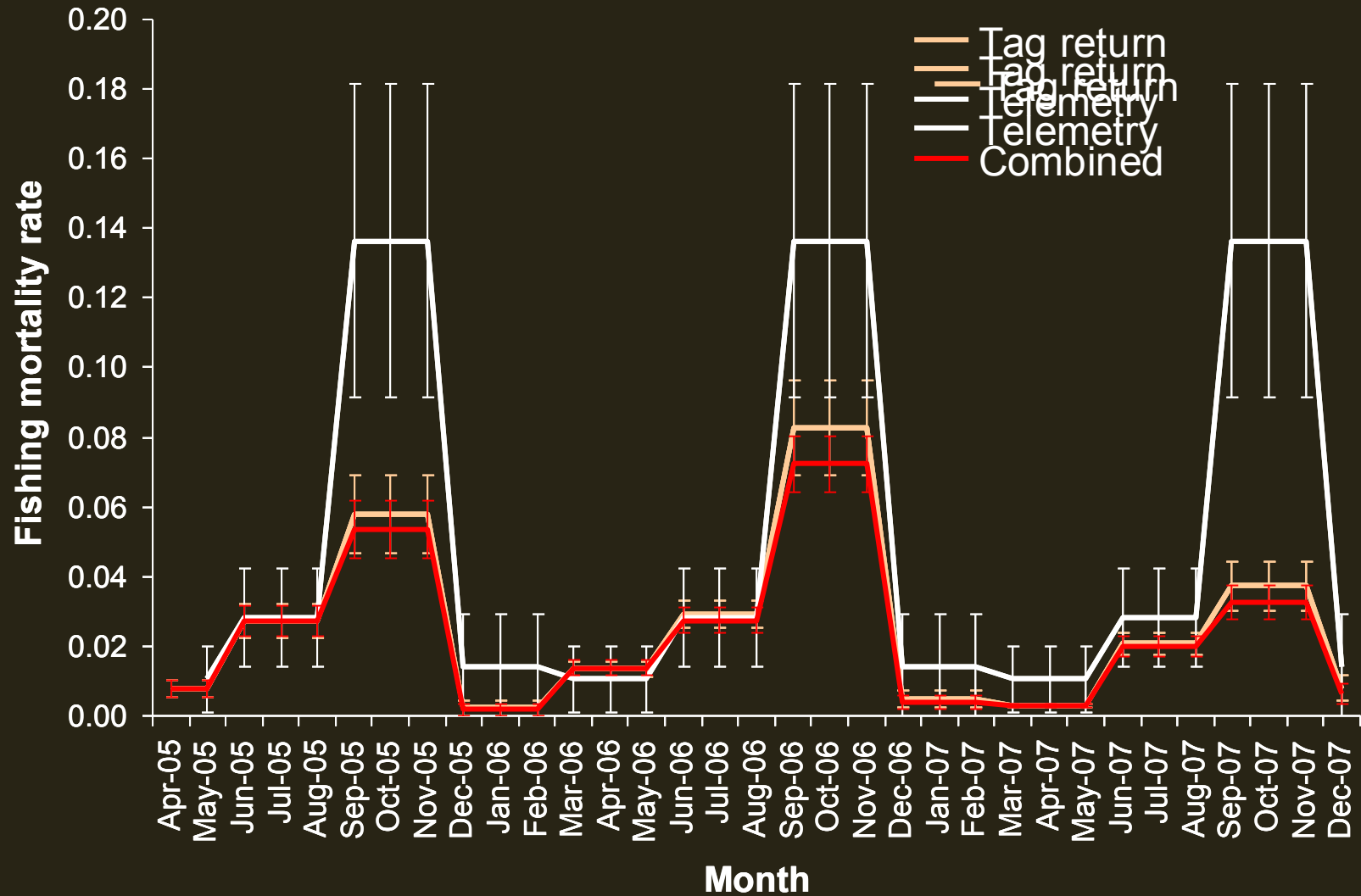
Caught and released



Estimates of annual fishing mortality



Estimates of monthly fishing mortality



Impacts

1. *Selectivity* -> deaths due to harvest and catch and release
2. *Annual fishing mortality estimates*-> index in landings-based stock assessment
3. *Natural mortality estimates* -> low predation mortality
4. *Seasonality in fishing mortality* -> efficient management
5. *Combined approach* -> effective in estuarine systems

