

Contradiction between Ecology and International Law

The case of the North Atlantic Mackerel

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On International Fisheries Agreement, Entry Deterrence and Ecological Uncertainty

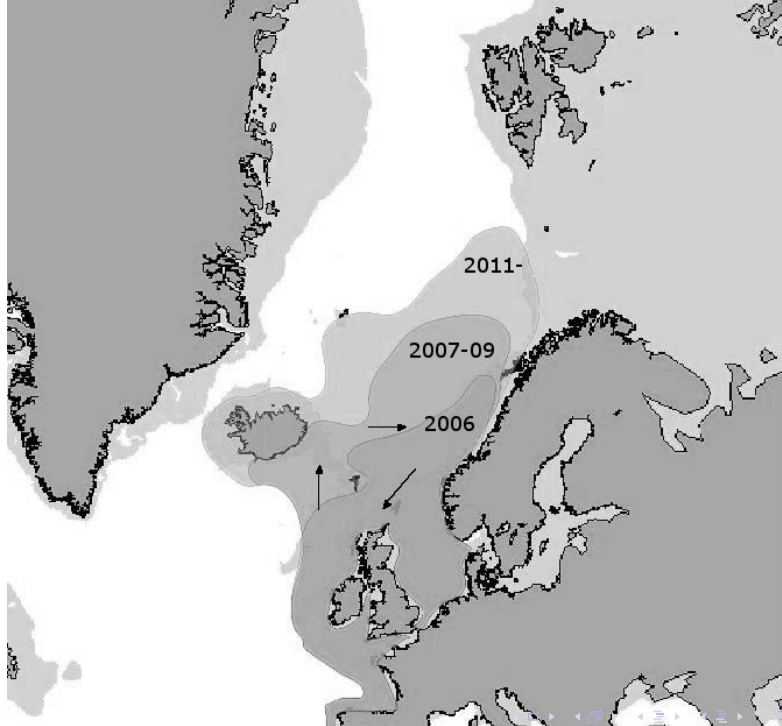
Hans Ellefsen, Lone Grønbaek Kronbak & Lars Ravn-Jonsen

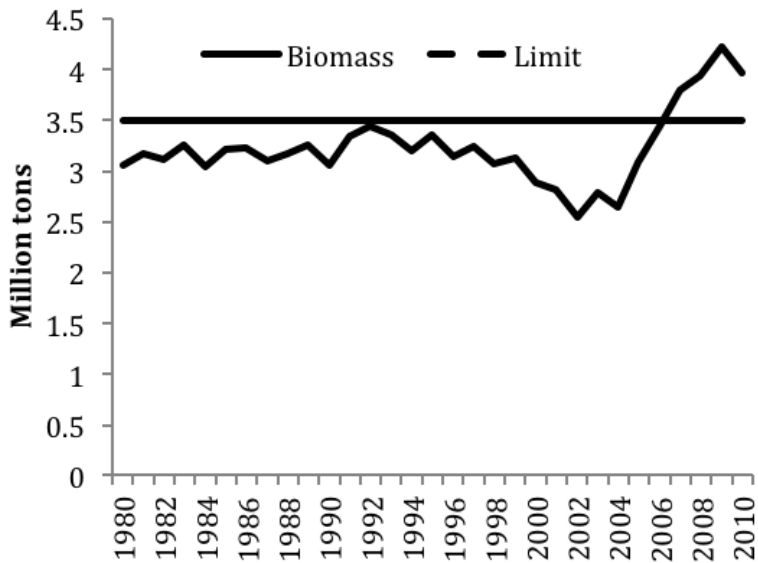


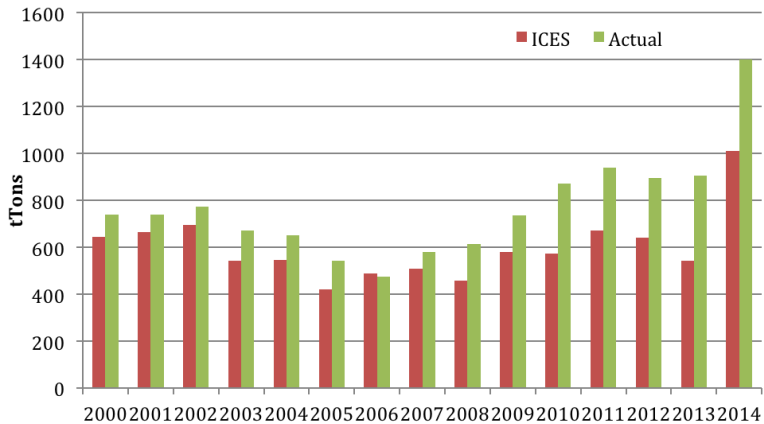
International agreements

- United Nations Convention on the Law of the Sea 1982 (1973-1982)
 - 200 nautical mile EEZ
 - Problems with
 - Transboundary fish stocks
 - Straddling stocks
 - Highly migratory species
- UN Fish stocks agreement 1995
 - Cooperation among all parties in regional fisheries management organizations,
- North-East Atlantic Fisheries Commission (NEAFC)
- Northwest Atlantic Fisheries Organization (NAFO)
- International Commission for the Conservation of Atlantic Tunas (ICCAT)









Two Explanations

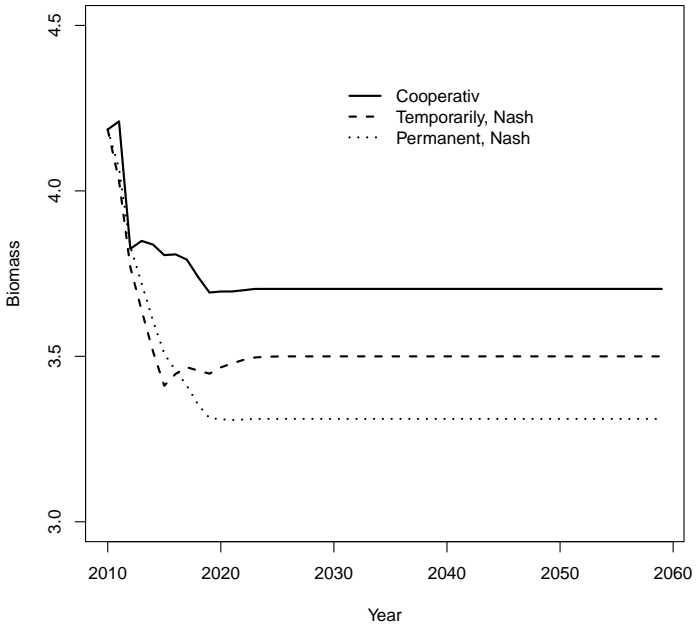
- Temporary Change
Because the stock is above 3.5 mil ton
- Permanent Change
Climate change

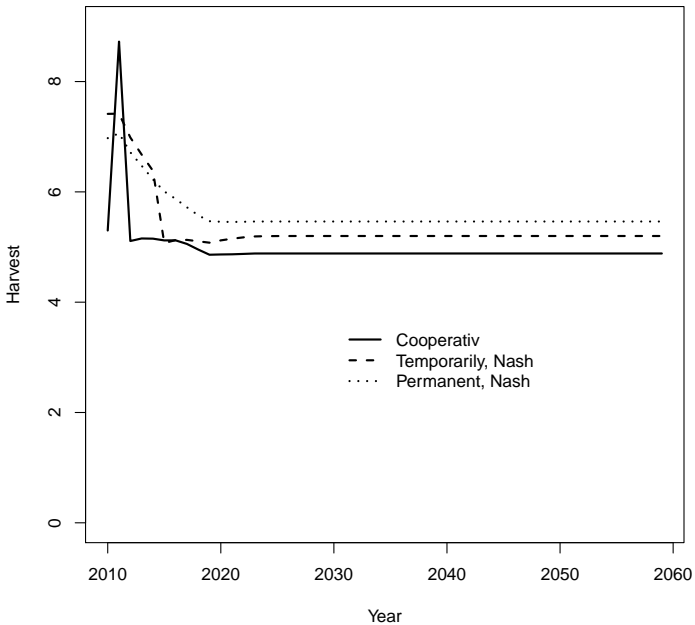


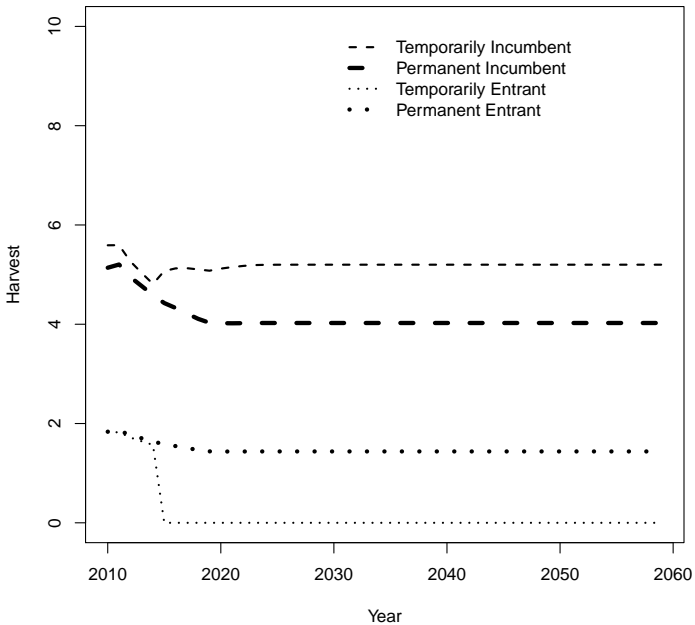
Model

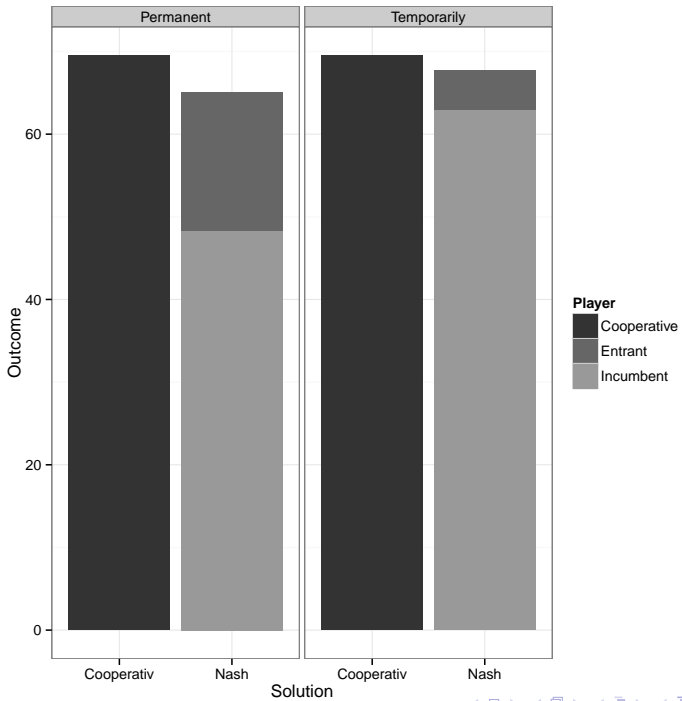
- ICES mackerel model — run 50 years
- Two scenarios
 1. Permanent change
Always available for Island
 2. Temporary change
Only available to Island if stock > 3.5 mil ton
- Game setting
 1. Two players 1) Incumbent (EU, Norway, Faeroe) 2) Entrant (Island)
 2. Cooperative (Max total rent)
 3. Nash game with two fishing mortalities

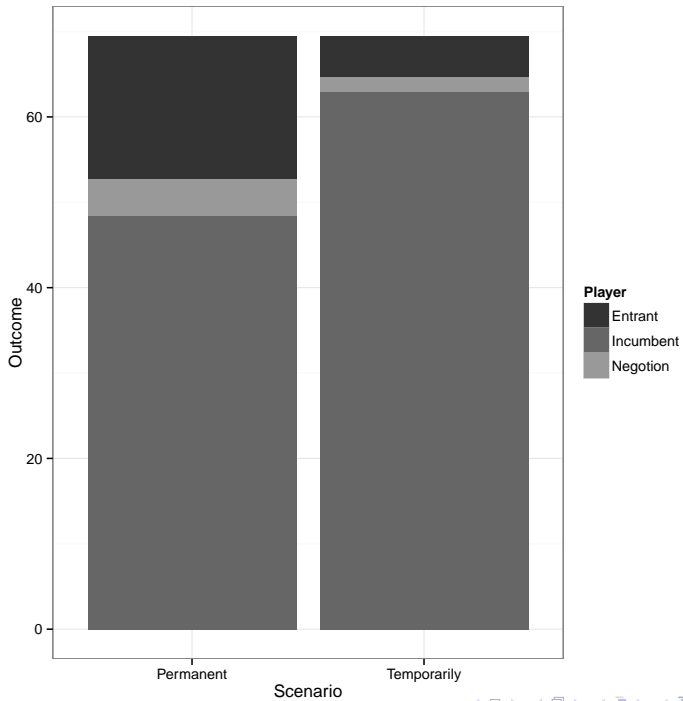












Conclusion

- Uncertainty regarding the migration pattern lead to the breakdown of an international fishery agreement
- More research into the ecology of the fish population?
- Fishery agreements, normally be based on a fixed sharing rule of e.g. a TAC
- Implicitly this assumes that the ecology of the fish population is static.



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Perspectives

- Inappropriate to base international agreements on a property that are highly variable with the implicit assumption that it is fixed.
- United Nations Convention on the Law of the Sea 1982
- UN Fish stocks agreement 1995
- Contradiction between ecology and international law
- Contradiction between game theory and International Law
- Ecology can not today point to the solution, but the solution should be found by a combination of ecology, economics and international law



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