

Cancer pagurus –

Malin Stock (Vla) assessment and overall status

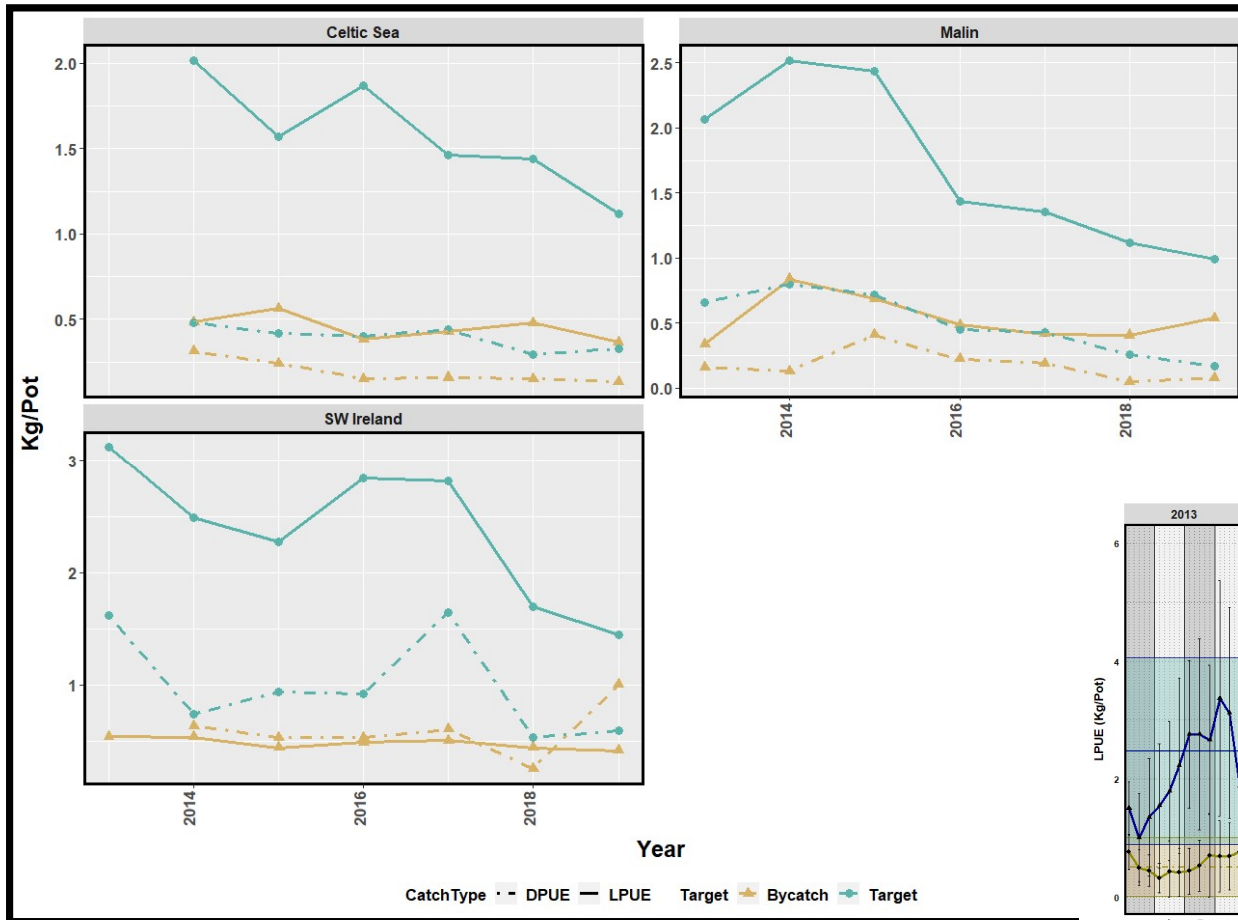
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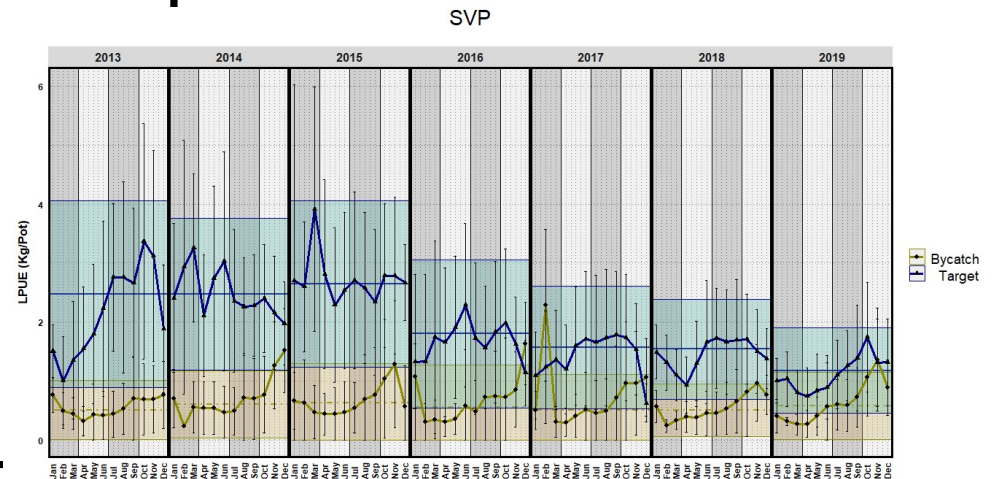
<https://github.com/gfmg/BrownCrab> IRL-NW

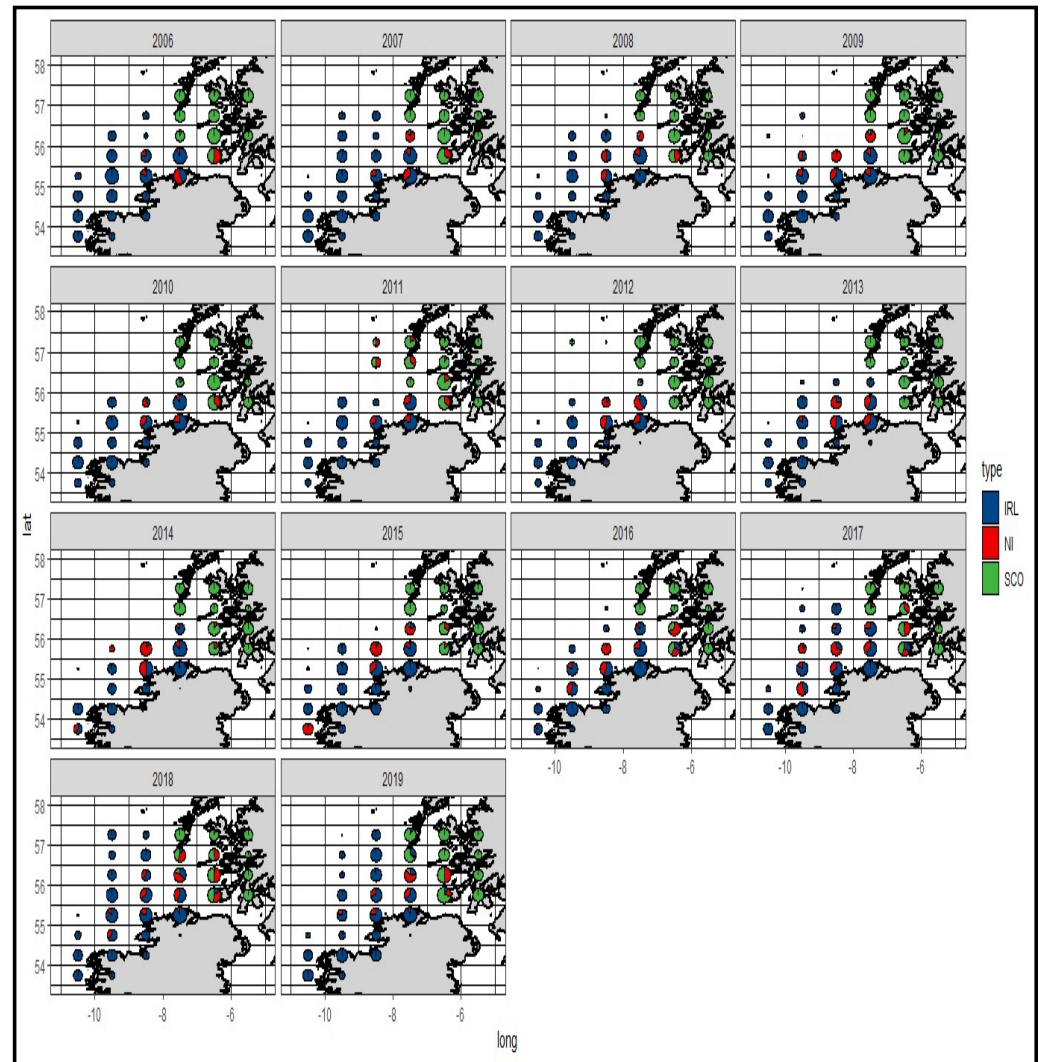
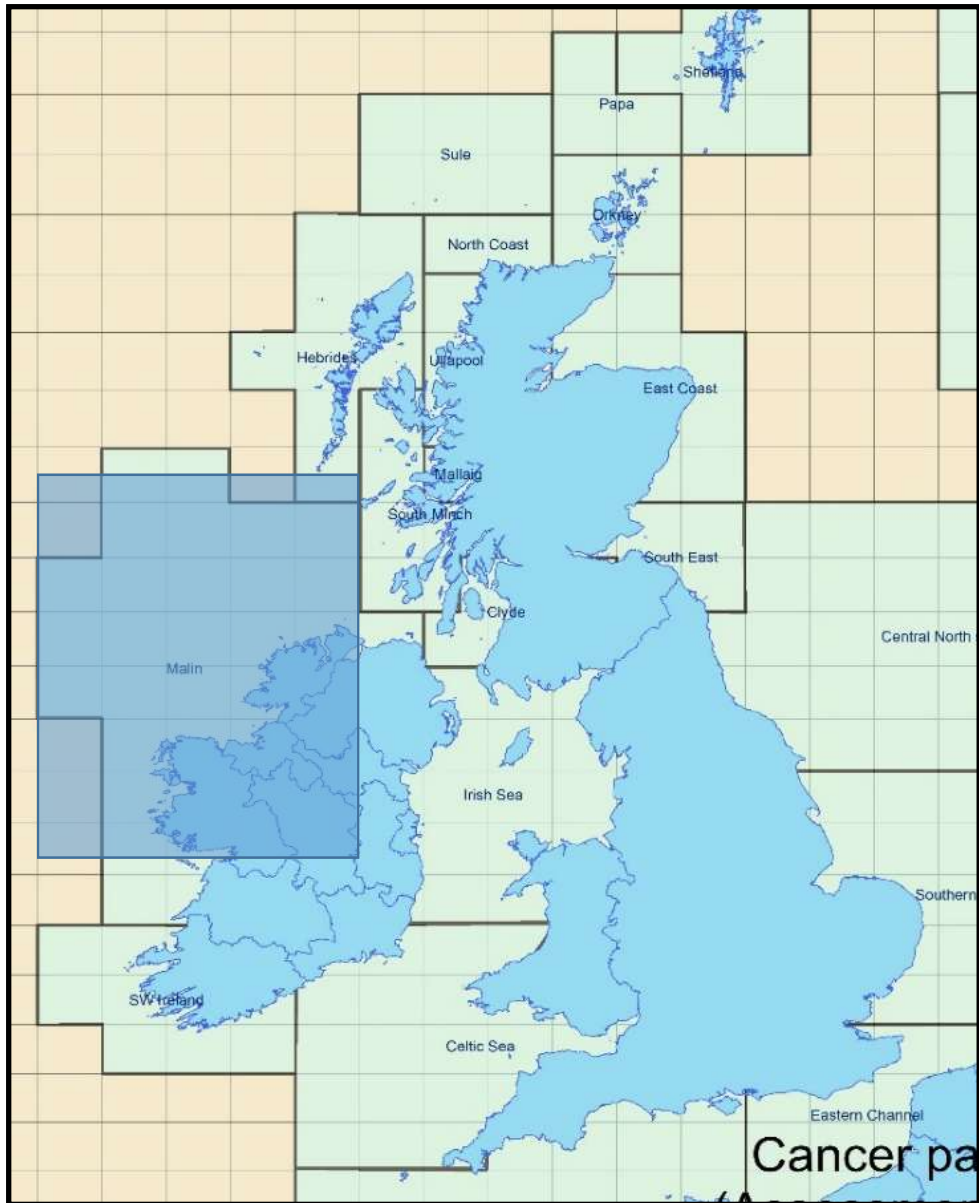


Overall status of crab in Ireland

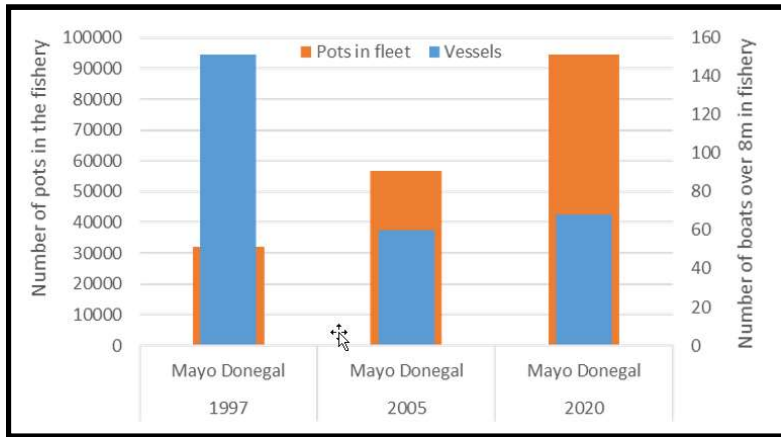


Sentinel Vessel Fleet (SVP) showing a continuous decline since 2014 (both LPUE and DPUE). Not observed before in previous data collection programmes

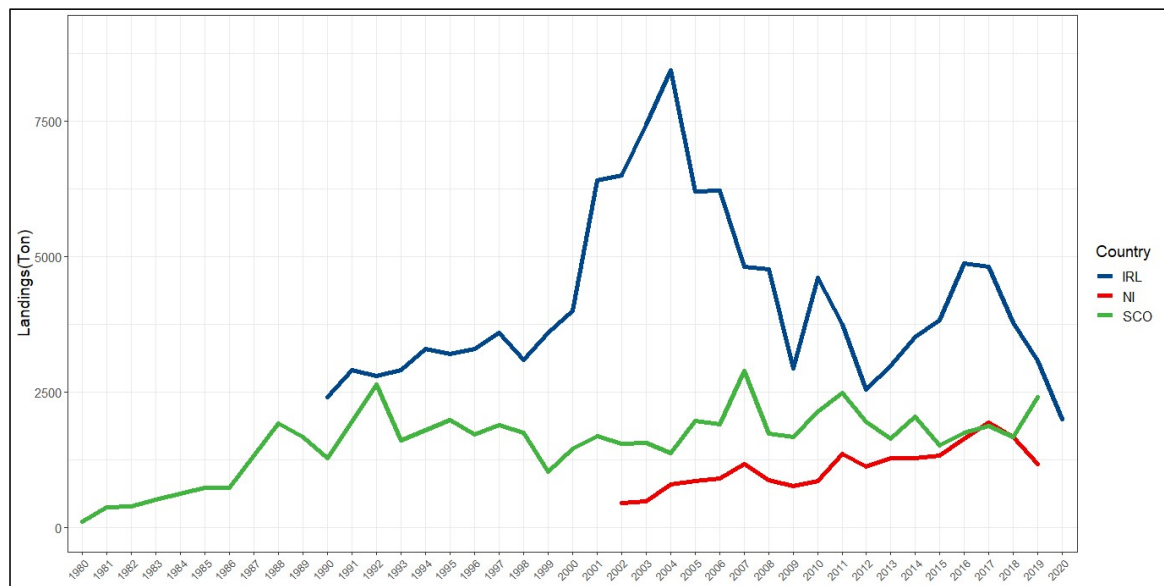




Fleet and fishing effort

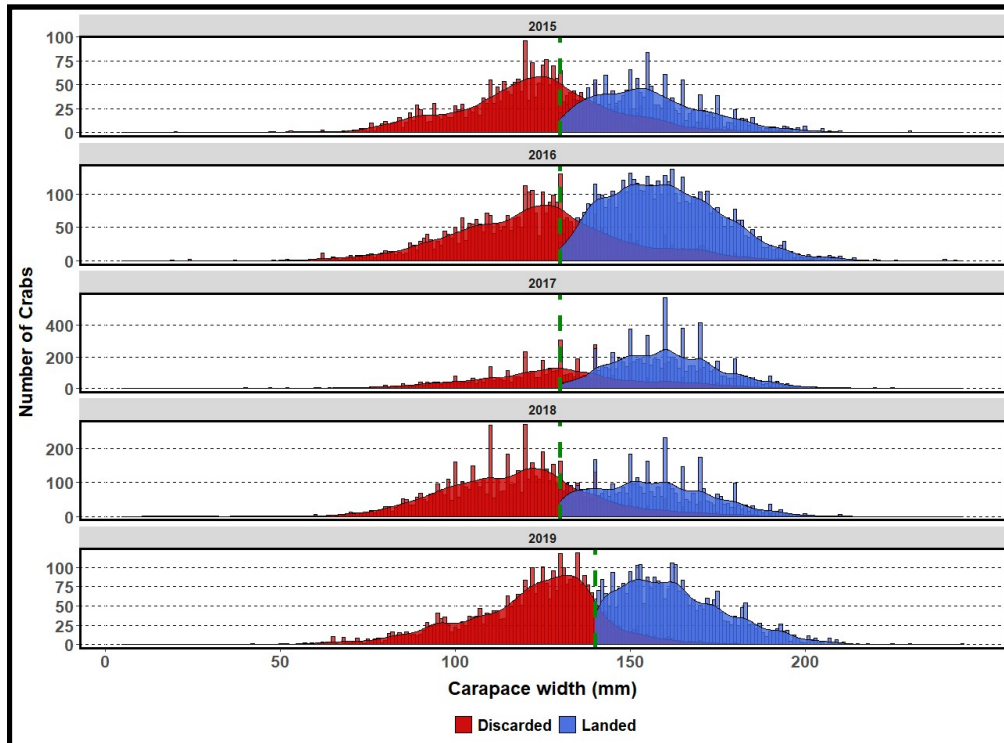


Landings (Malin Shelf) IRL, NI, SCO



Assessment method

Size data (length based methods) X



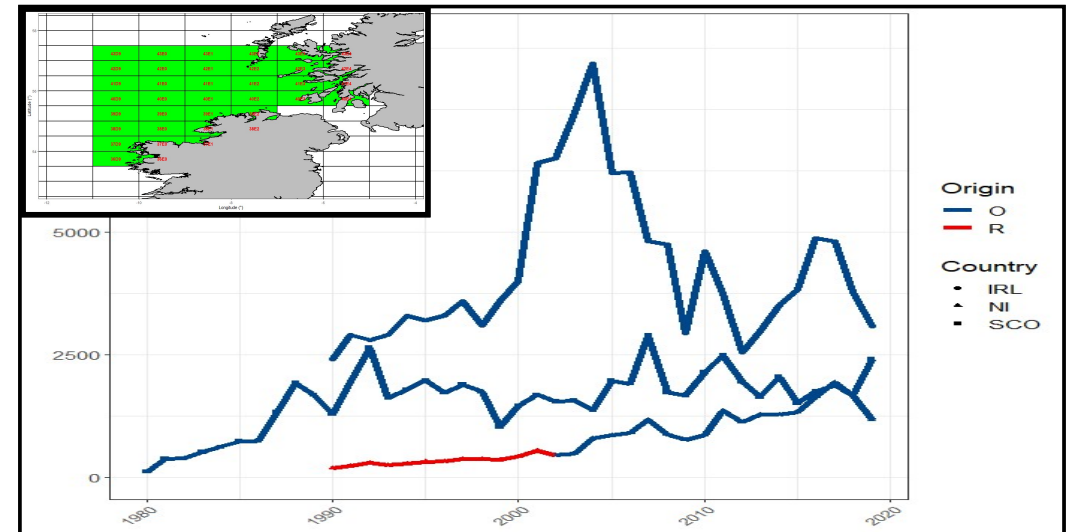
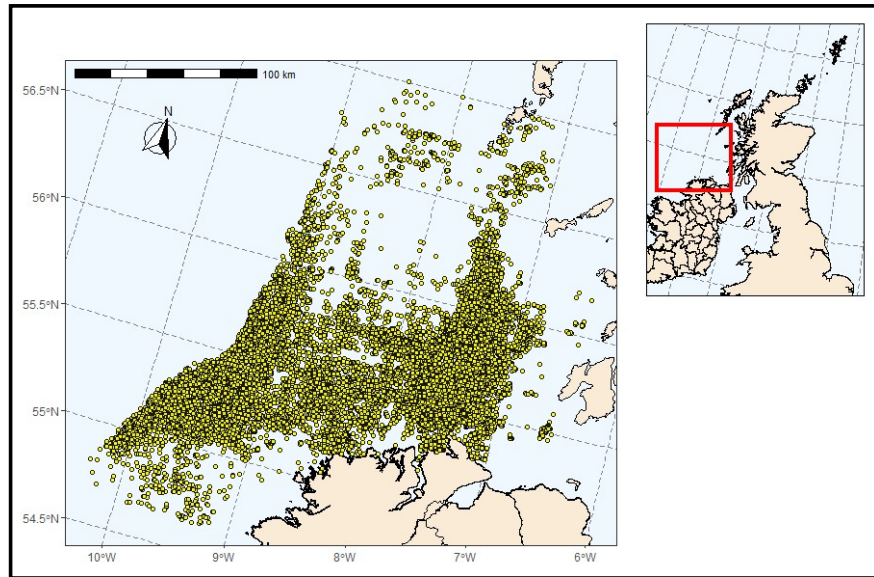
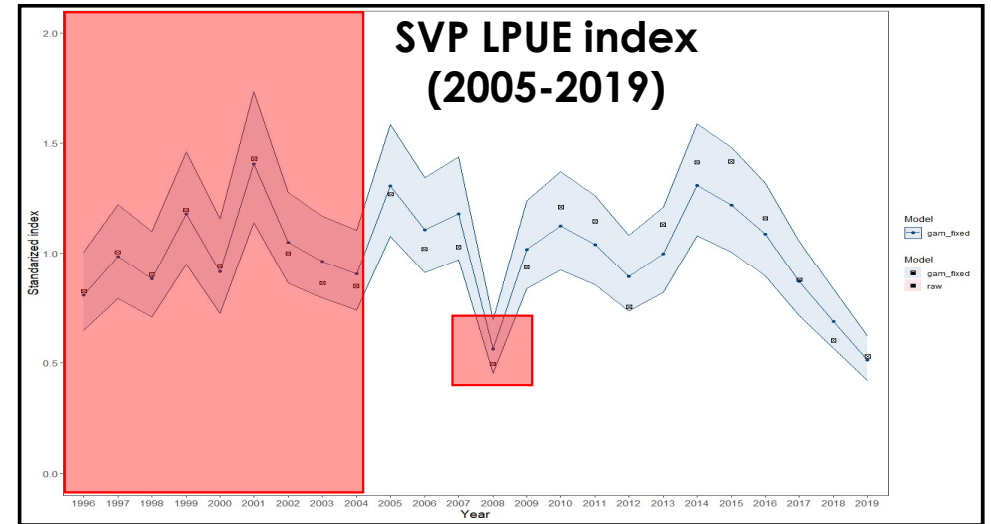
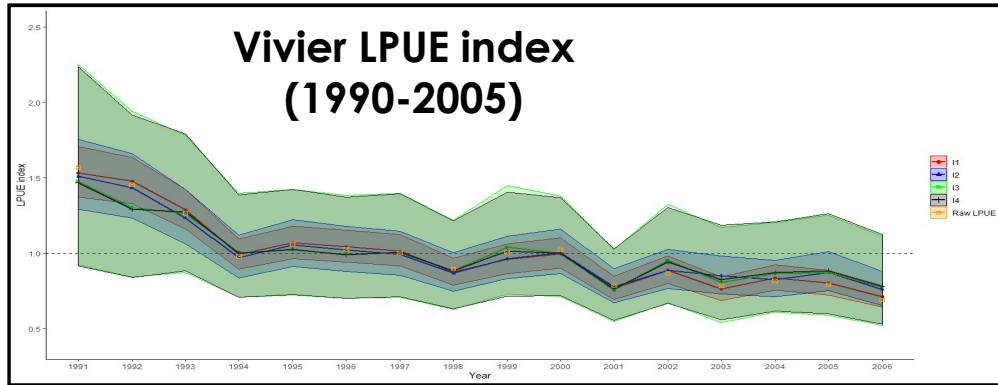
Surplus production model (SPiCT)

The overall response of stock to fishing mortality and how stock productivity changes.

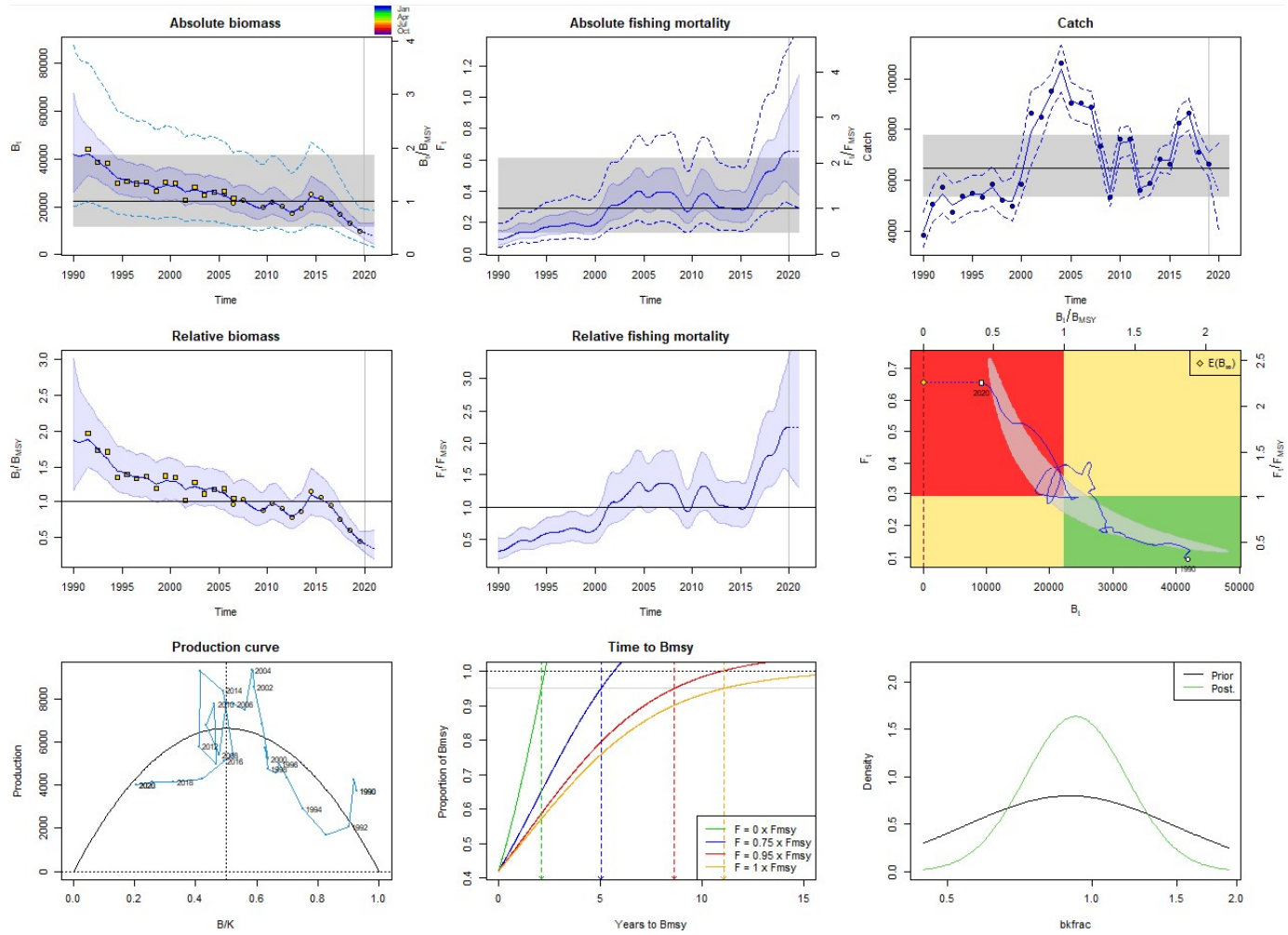
B_{msy} = biomass at which stock has best productivity on average in the long term

F_{msy} = the fishing mortality rate that allows for biomass to reach or stay at B_{msy}

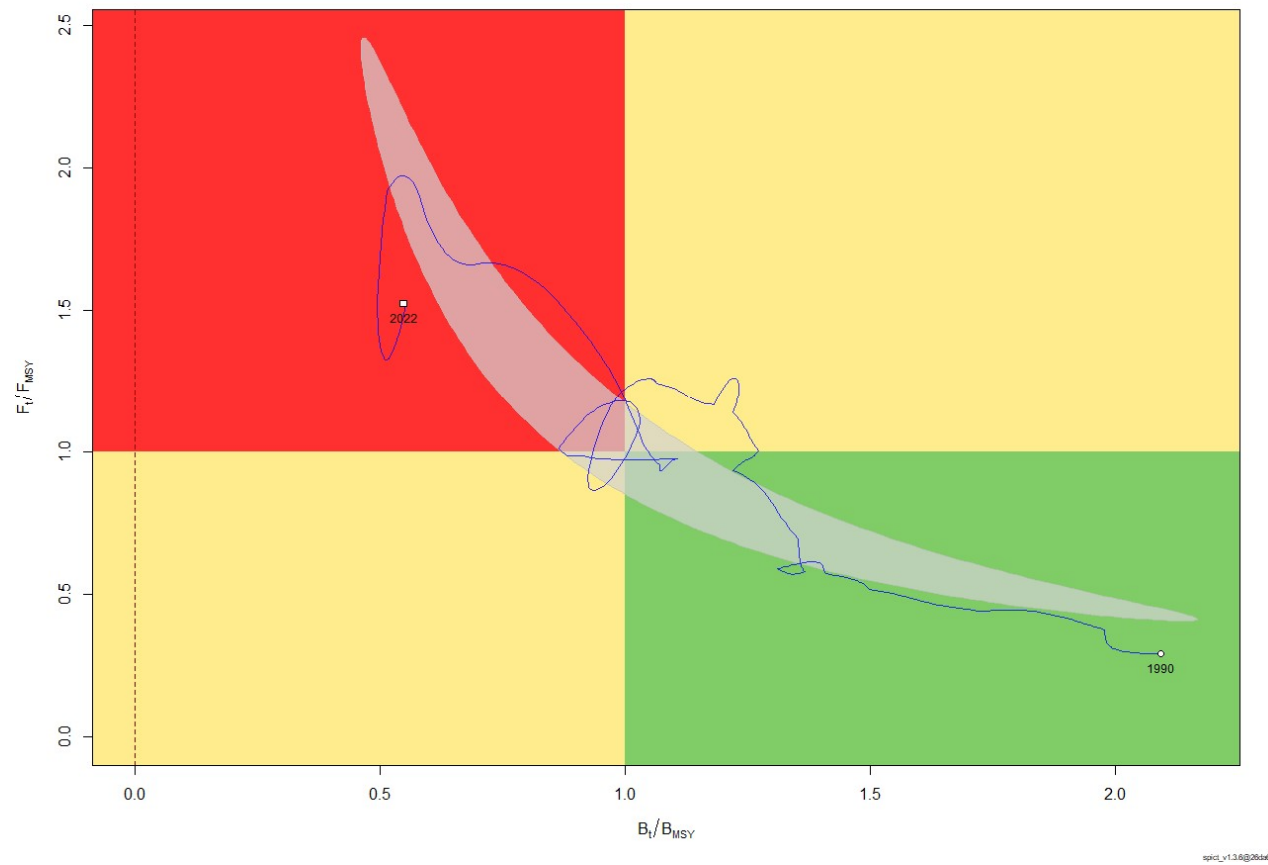
SPiCT data requirements



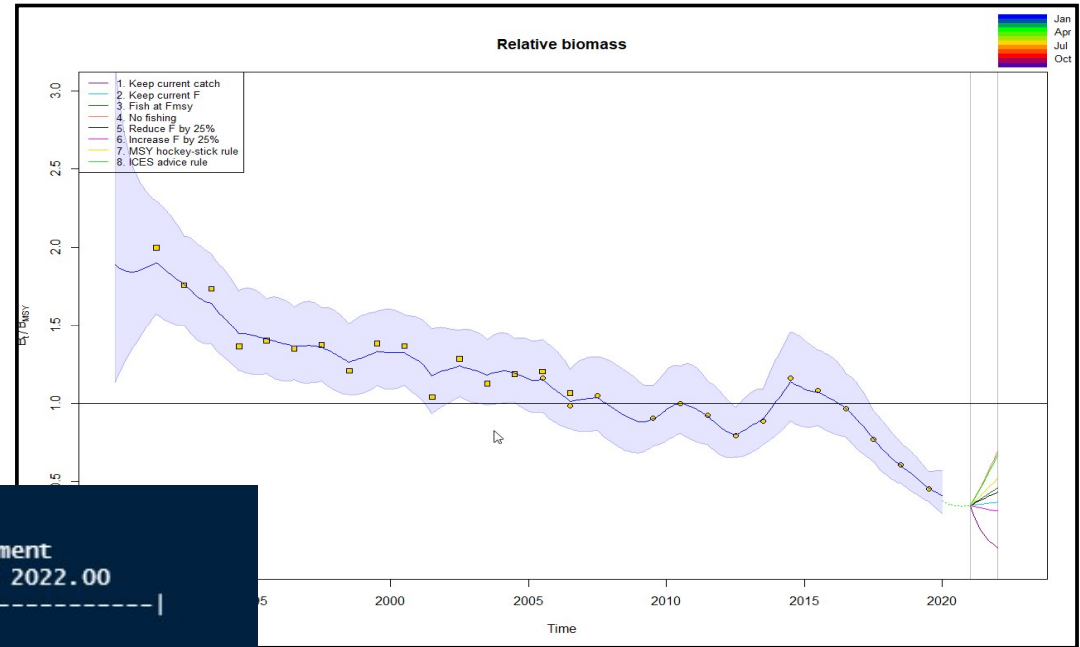
SPiCT outputs



Evolution of a sustainability metric (B/B_{msy}, F/F_{msy}) 1990-2022



SPiCT – Management Forecast



SPiCT timeline:

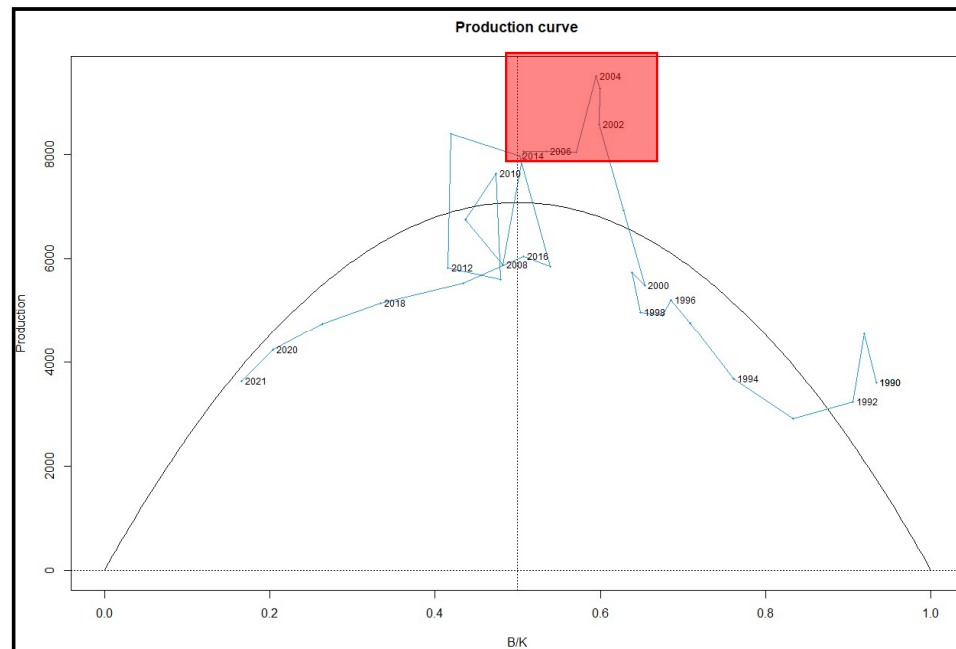
Observations	Intermediate	Management
1990.00 – 2020.00	2020.00 – 2021.00	2021.00 – 2022.00

Management evaluation: 2022.00

Predicted catch for management period and states at management evaluation time:

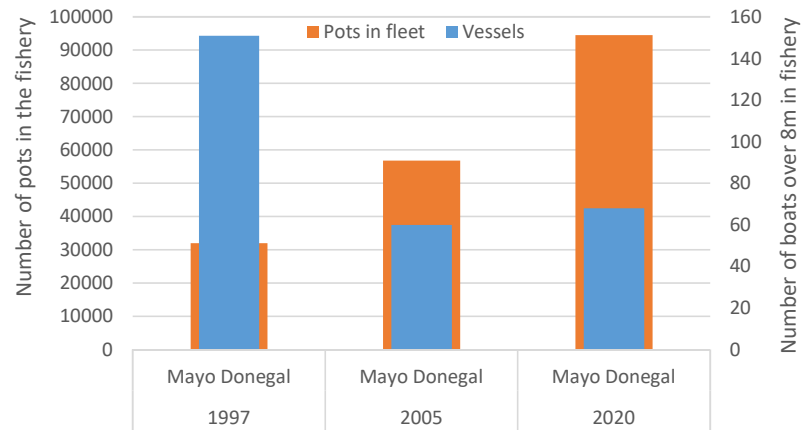
	C	B/Bmsy	F/Fmsy
1. Keep current catch	6590.6	0.08	4.97
2. Keep current F	3792.7	0.37	1.52
3. Fish at Fmsy	2785.3	0.46	1.00
4. No fishing	5.3	0.70	0.00
5. Reduce F by 25%	3080.9	0.43	1.14
6. Increase F by 25%	4385.4	0.31	1.90
7. MSY hockey-stick rule	2078.1	0.52	0.70
8. ICES advice rule	303.7	0.67	0.09

- Uncertainties in the Life-history parameters of crab (affecting scale of the production curve)
- Period from 2002-2006 interpreted as high productivity
- Need for contrast in index and landings
- Need to go beyond MSY to know where MSY is!
- Hyperstability of the commercial indices (index declines less than the stock)
- Extra sources of mortality (e.g. crab used as bait in whelk fishery that may not appear in the landings)



Industry perception (2020)

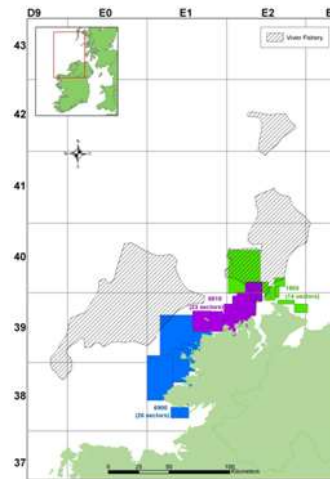
Questionnaire survey 2020; Inshore sector Donegal



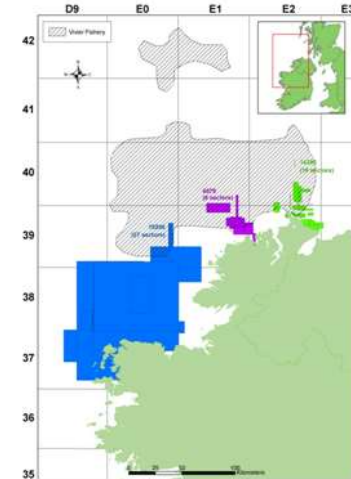
Average pots per Boat:

- 1997: 210
- 2005: 950
- 2020: 1400

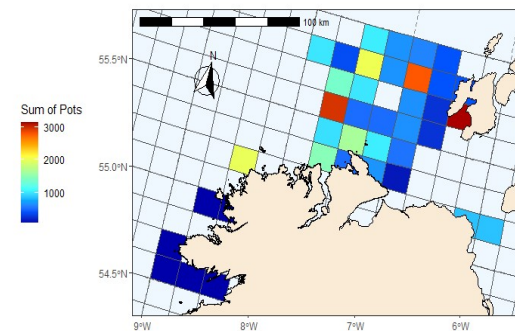
1997



2005



2020 ?

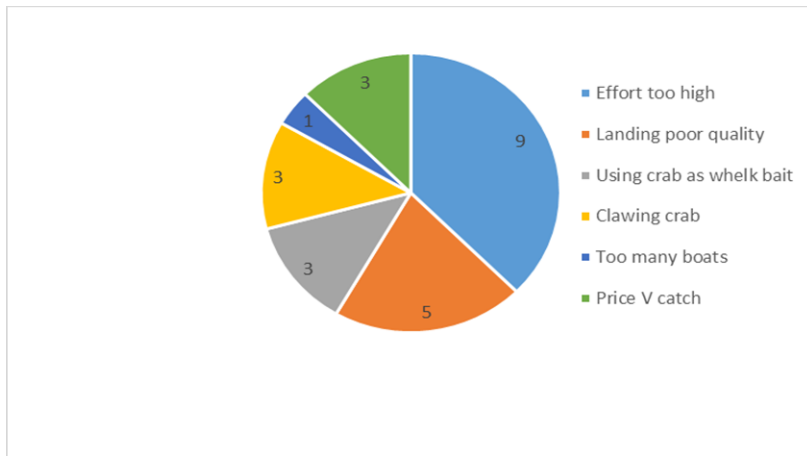


Comments in Questionnaire survey 2020

Trends in catch rates and total catches were reported to be negative by almost everybody. Sample of responses to question on trends in the fishery

- Very poor
- Down 60% since 2015
- Halving every year
- 2011 7000 boxes landed using 800 pots, 2019 3483 boxes using 2000 pots (*8 boxes per year per pot to less than 2 boxes per year per pot*)
- Down in trouble, gone, down worryingly so, down hard, future poor.
- Description of fishery in recent successive years; great, good, slow, disaster

Crab fishery: Issues Identified



Crab Fishery: Solutions Identified

