



Forecasting Returns of Fraser River Sockeye Salmon

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Five Facts about Pacific Salmon

- 1) There are 5 species in N. America: Chinook, Sockeye, Coho, Pink, Chum
- 2) They are a keystone species
- 3) They are heroic migrators, and great navigators
- 4) They have an amazing ability to bounce back.
- 5) There are more Pacific salmon in the North Pacific now than ever before

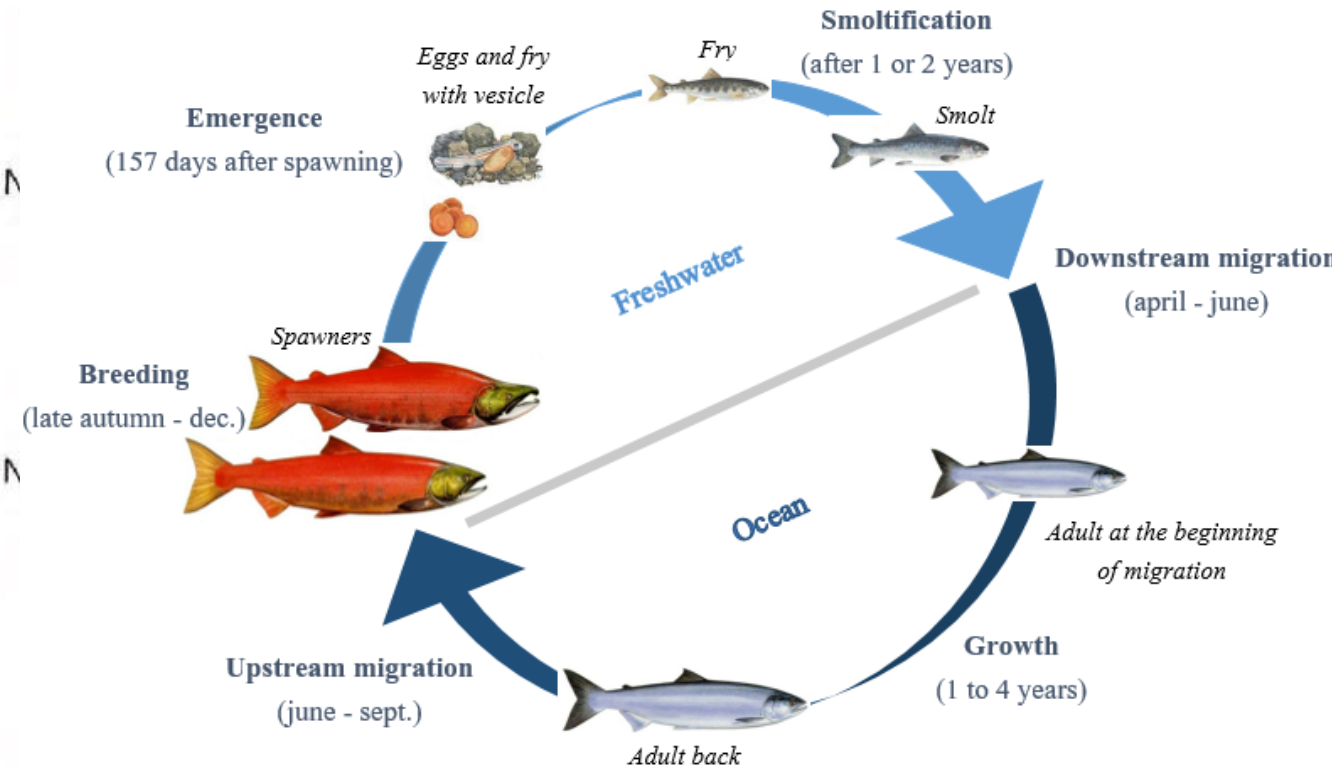
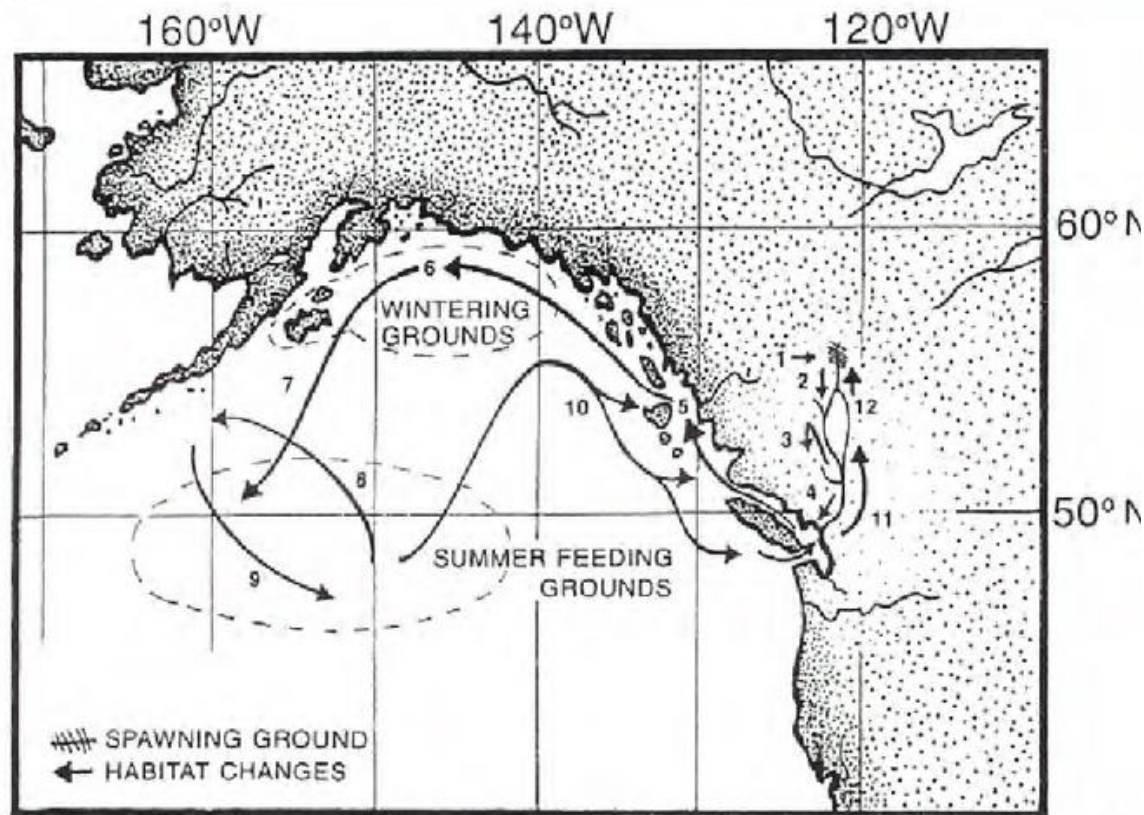


Five Facts About Sockeye (*Oncorhynchus nerka*)

- 1) They span from Oregon to Alaska + Japan and Russia
- 2) Most return in summer, and rear in lakes
- 3) They turn a vibrant red colour upon their return to freshwater
- 4) They are on the smaller side for Pacific salmon, generally <15lbs
- 5) Kokanee are landlocked sockeye



Fraser Sockeye Lifecycle



Why do we care?

Pacific Salmon are essential to:

Culture



Ecosystems

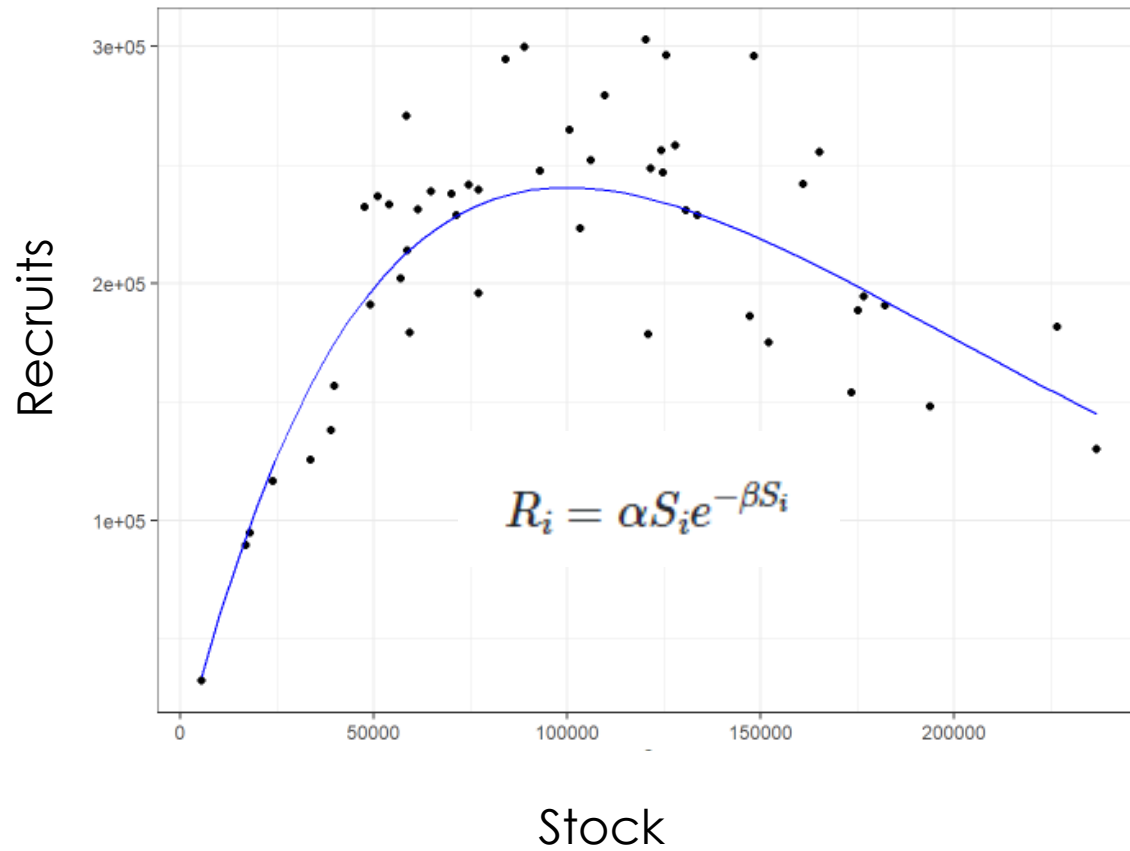


Economy



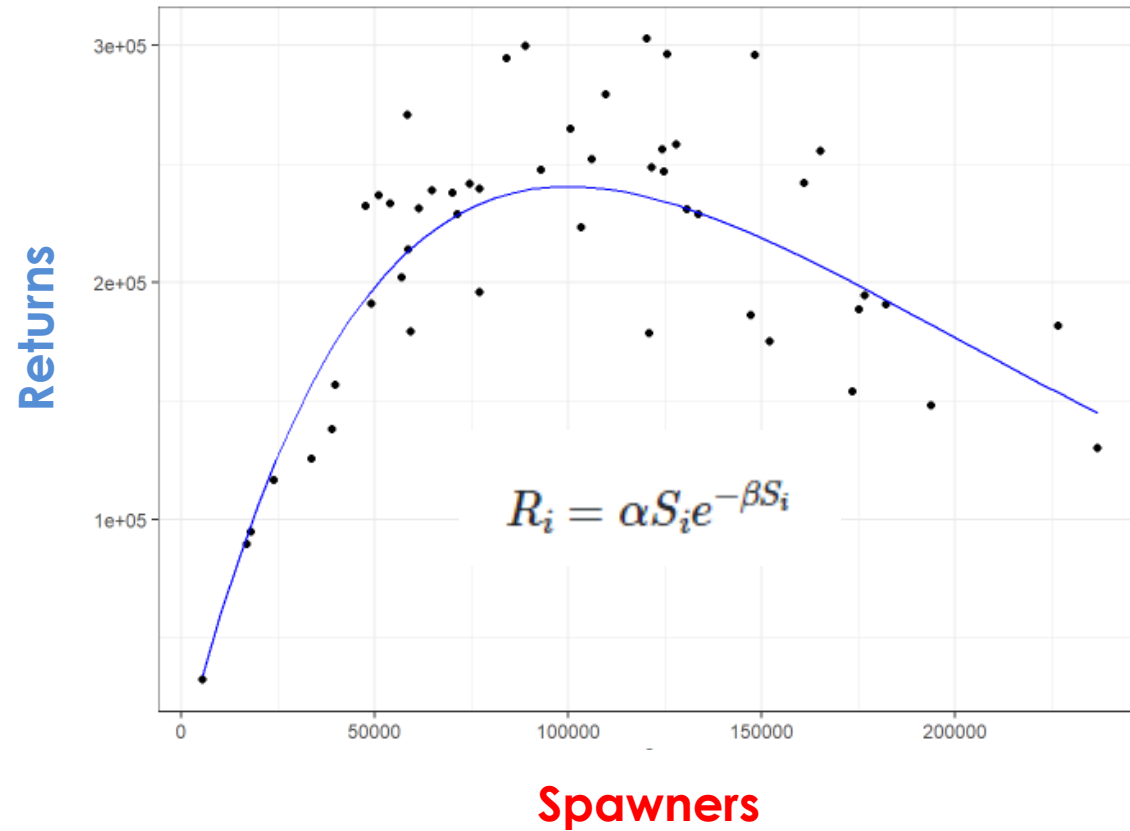
How do we model them?

Ricker Stock-recruitment Model



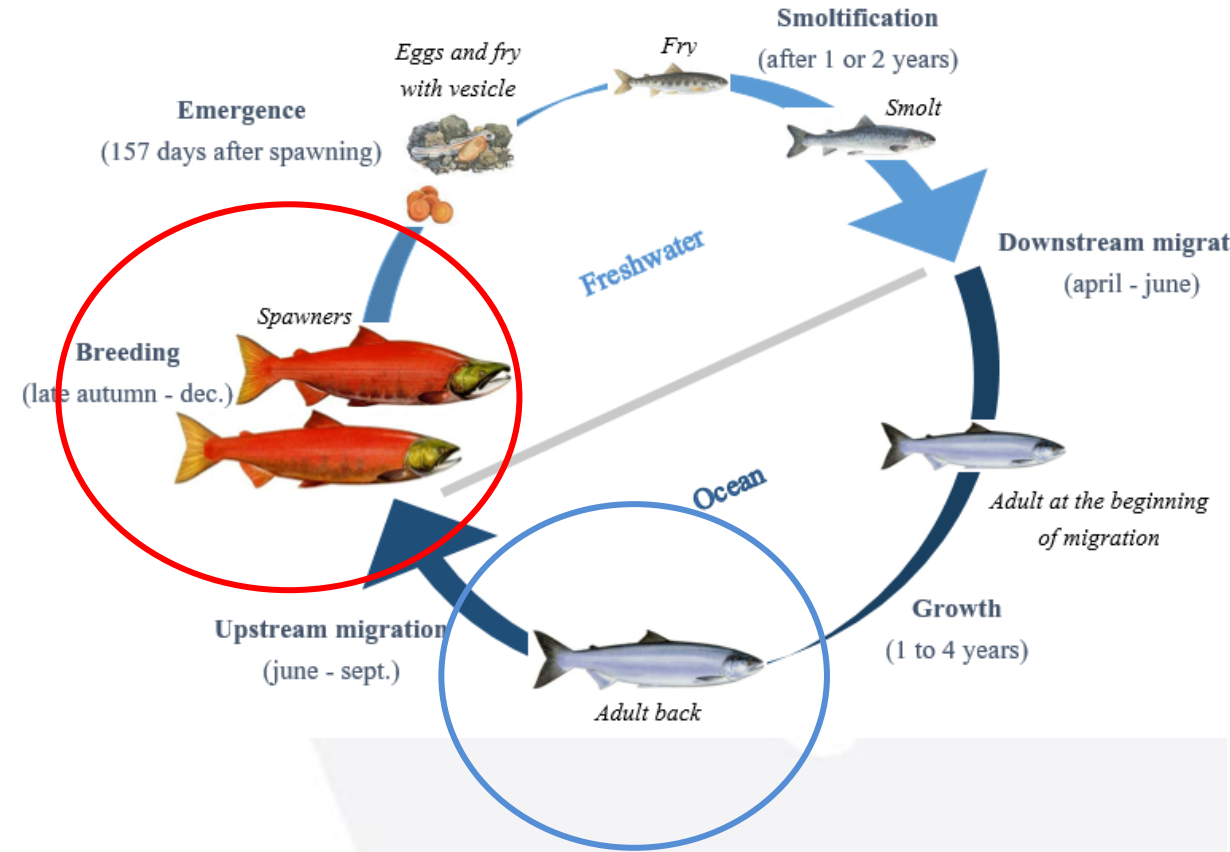
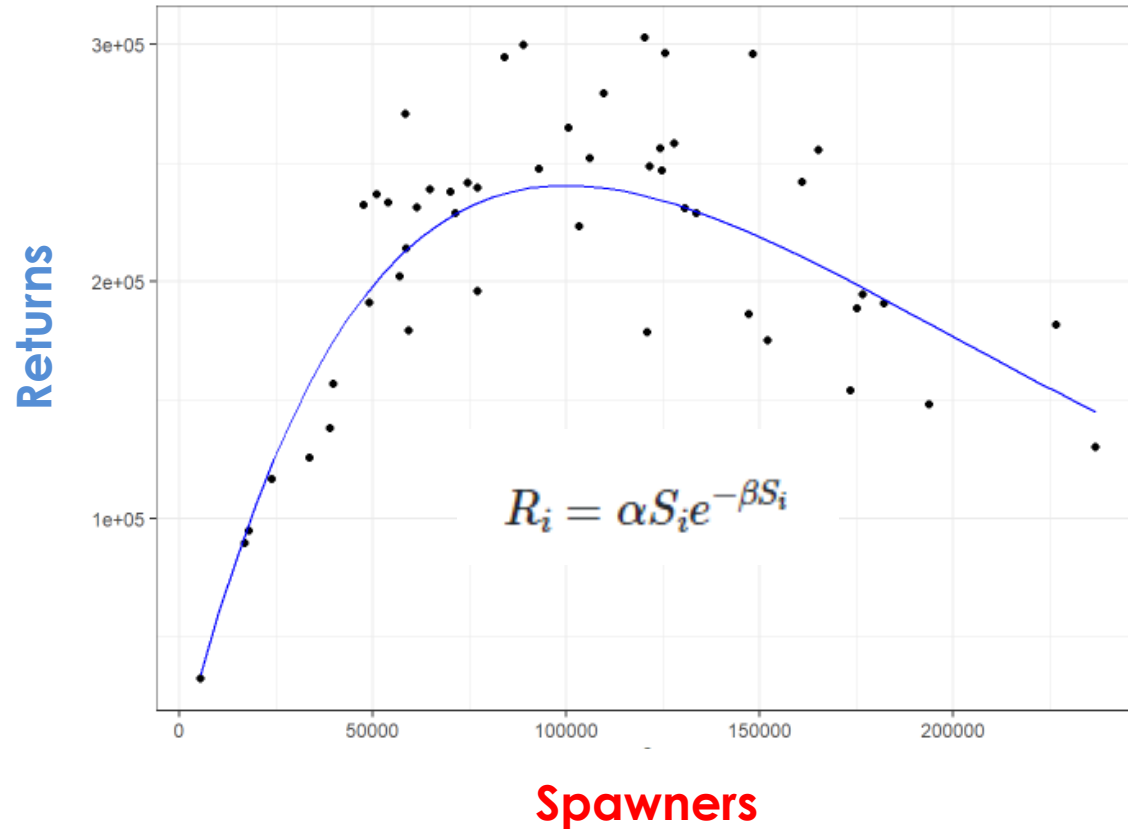
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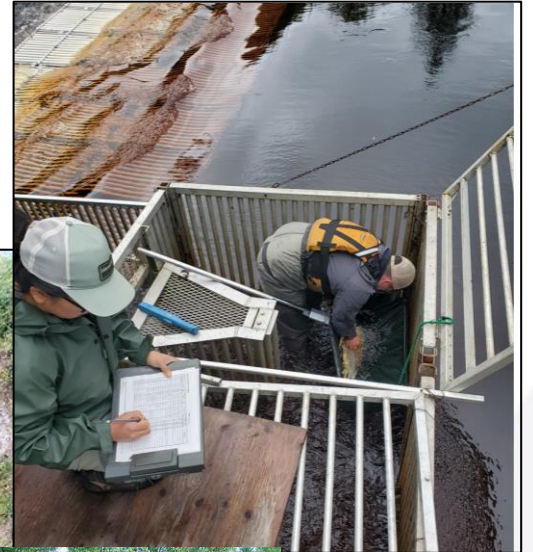
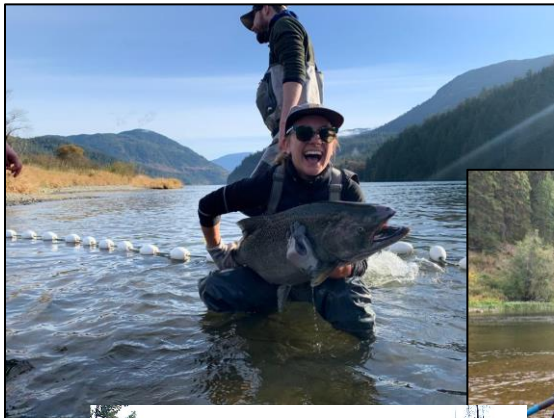
How do we model them?

Ricker Stock-recruitment Model



Data - Spawners

The number of mature fish observed on the spawning grounds, or migrating towards spawning grounds



Data – Returns

Catch



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Escapement



Data – Returns - Catch

Sector



Method



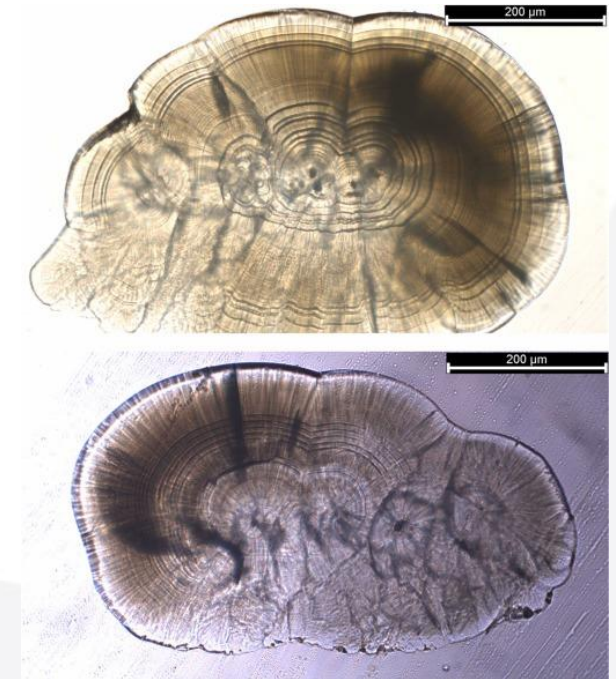
Data – Returns - Escapement



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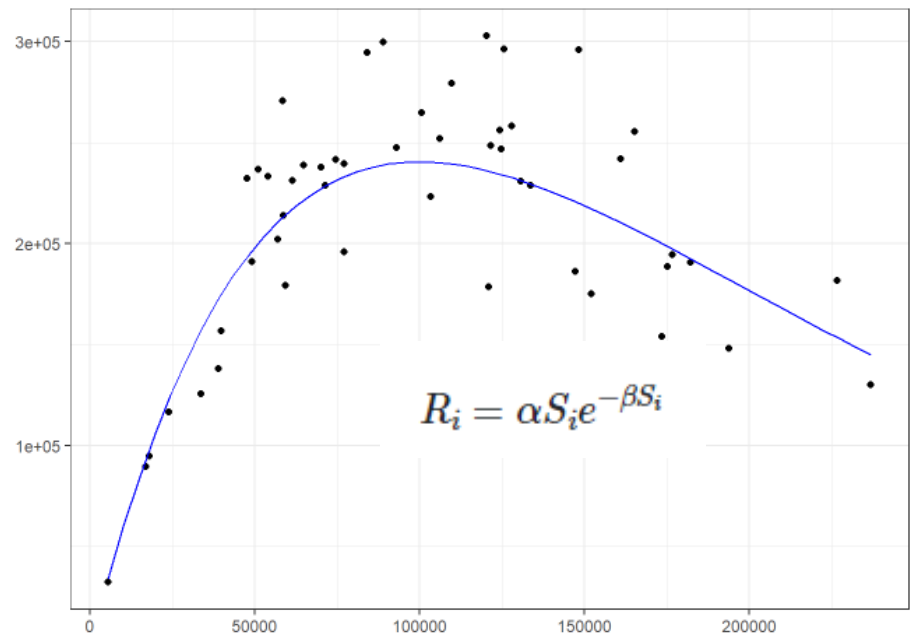
Data – Brood Table

Brood Year	Spawners	Age 4 Rec	Age 5 Rec	Total Recruits
1948	10859	179412	18741	198153
1949	168458	1029437	1271	1030708
1950	25658	240545	542	241087
1951	29785	158428	15217	173645
1952	15484	78012	10560	88572
1953	78238	537711	2886	540597
1954	18010	154781	701	155482
1955	1397	25824	1632	27456

Data – Brood Table

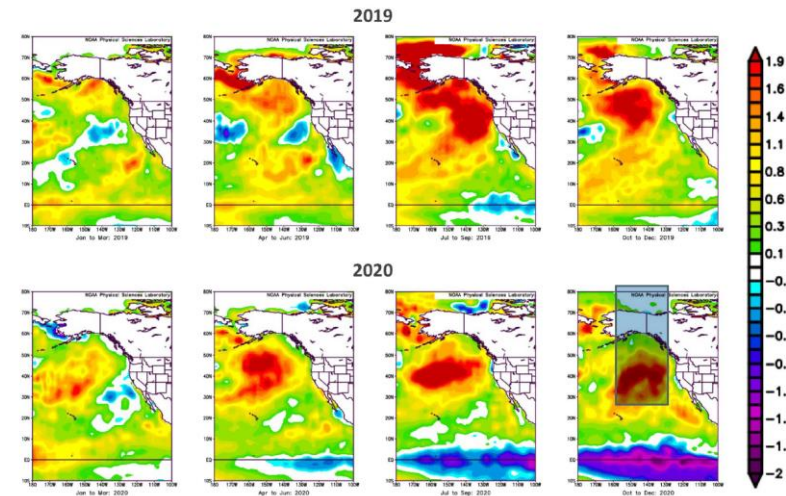
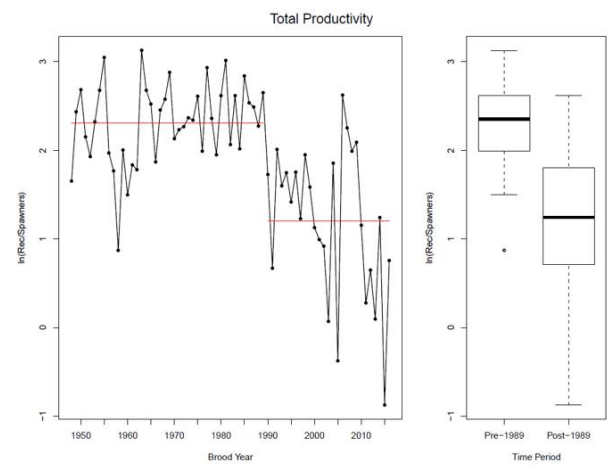
Brood Year	Spawners	Age 4 Rec	Age 5 Rec	Total Recruits	Total Recruits
1948	10859	172452	18741	198153	198153
1949	168458	1029437	1271	1030708	1030708
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Forecasting

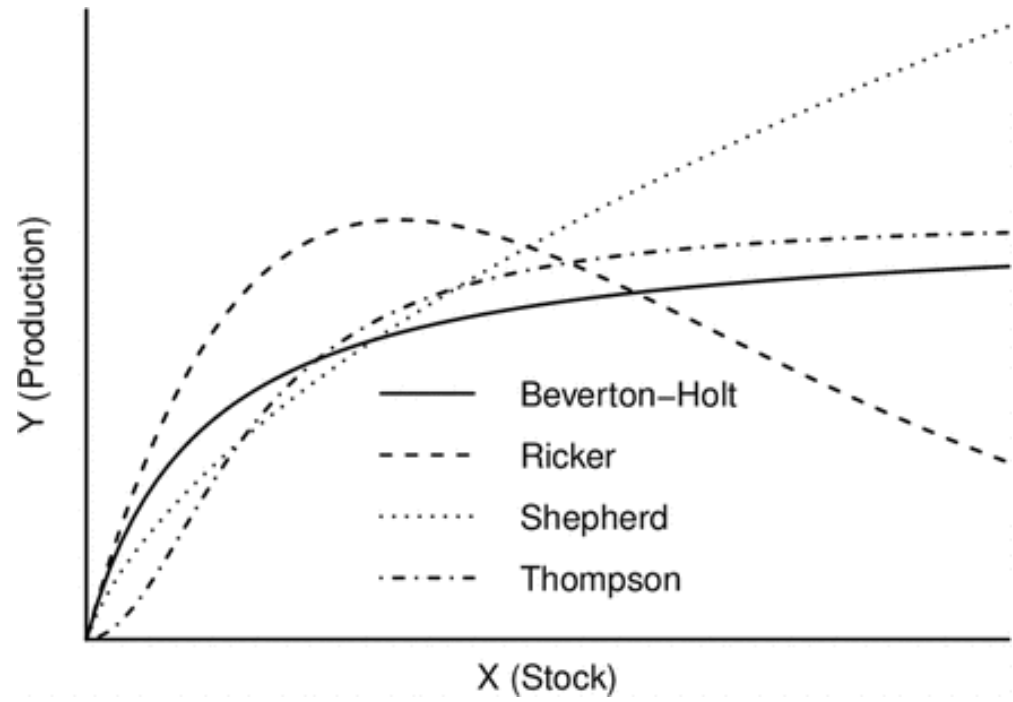


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Brood Year	Spawners	Age 4 Rec	Age 5 Rec	Total Recruits	Total Recruits
1948	10859	171952	1953	198153	198153
1949	168458	101953	1954	1030708	1030708
1950	25658	240545	542	241087	241087



Forecasting



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