

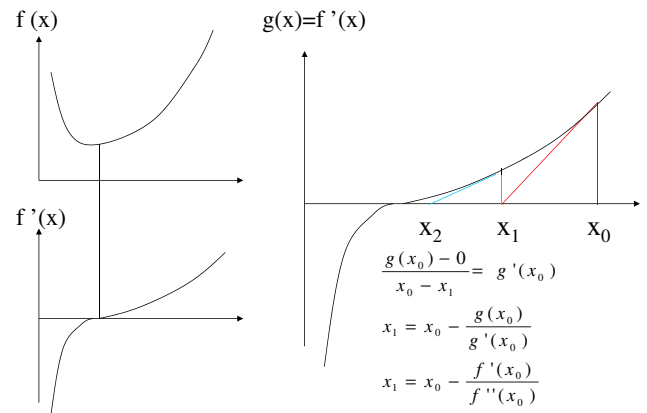
## Data for yellowfin tuna in Eastern Pacific

Year	Catch	Effort	CPUE	Year	Catch	Effort	CPUE
1934	60913	5879	10361	1945	89194	9377	9512
1935	72294	6295	11484	1946	129701	13958	9292
1936	78353	6771	11572	1947	160134	20381	7857
1937	91522	8233	11116	1948	200340	23984	8353
1938	78288	6830	11462	1949	192458	23013	8363
1939	110417	10488	10528	1950	224810	31856	7057
1940	114590	10801	10609	1951	183685	18726	9809
1941	76841	9584	8018	1952	192234	31529	6097
1942	41965	5961	7040	1953	138918	36423	3814
1943	50085	5930	8446	1954	138623	24995	5546
1944	64094	6397	10019	1955	140581	17806	7895

- Catch (thousand pounds)
- Effort (standardized class 4 clipper days)
- CPUE(pounds/ standardized class 4 clipper days)

Data from Schaefer (1957)

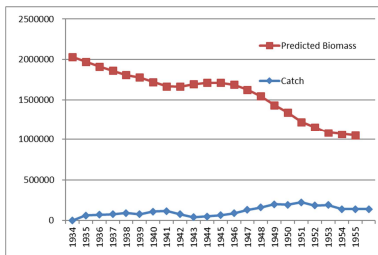
## Very simple illustration of Newton's method



## Data for yellowfin tuna in Eastern Pacific

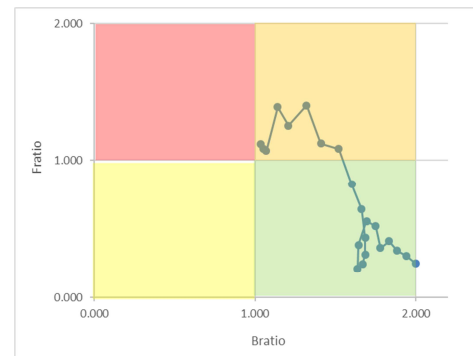
$$U_t = \frac{C_t}{E_t} = qB_t$$

$$B_t = B_{t-1} + r B_{t-1} \left(1 - \frac{B_{t-1}}{K}\right) - C_{t-1}$$



Parameters	
K	2030950
r	0.239645
B1934	2030950
q	0.000006
Challengin cells	
logK	14.52401444
logr	-1.428598609
logq	-12.1065004
Sum of Squared errors	
	0.631
Bench Mark	
MSY	121677
BMSY	1015475
FMSY	0.120

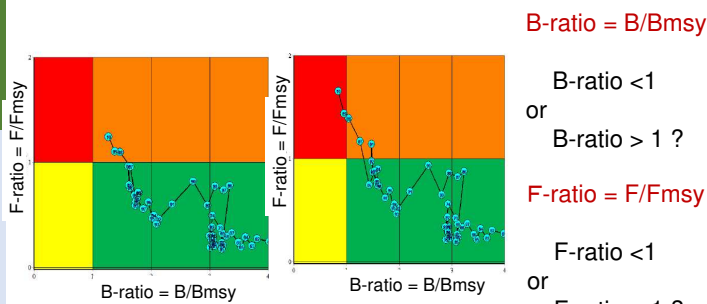
## Data for yellowfin tuna in Eastern Pacific



What do you say about the population/fishery status?

What is your possible measure for this fishery?

## KOBE 1 plots



What do you say about the population/fishery status?

What is your possible measure for this fishery?

## Wrap-up discussion

- Do you think that this population is healthy or not?
- What do you think of the population status in terms of sustainable use?
- Is it possible to apply this method to your fisheries?