12th International Riversymposium

Brisbane Australia 21 – 24 September 2009

The impact of climate change on Barramundi recruitment in Central Queensland

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Barramundi

Lates calcarifer

First year recruits
<350mm TL

Juvenile barramundi habitat-

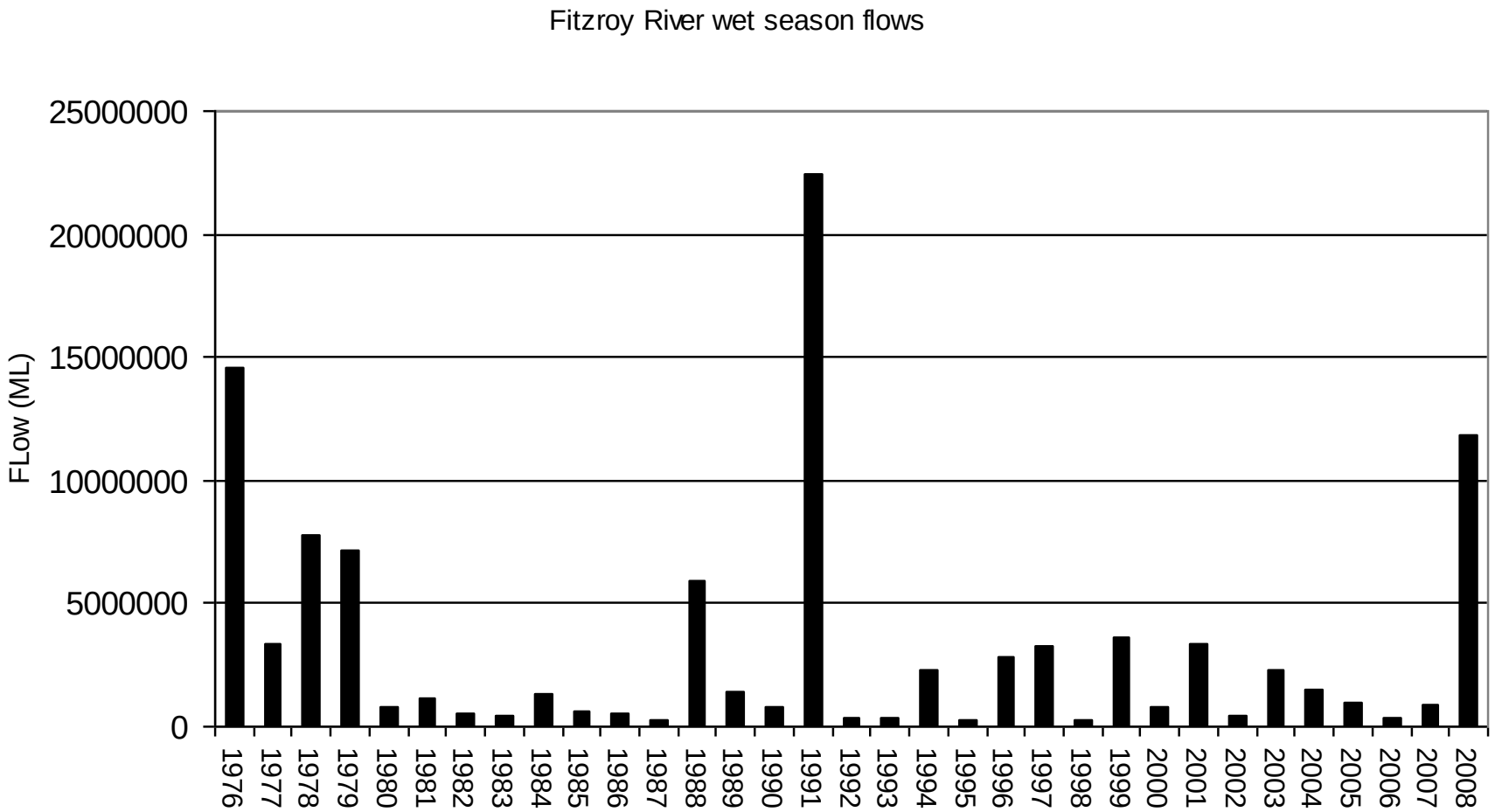
12 Mile Creek wetlands

Fitzroy River Floodplain

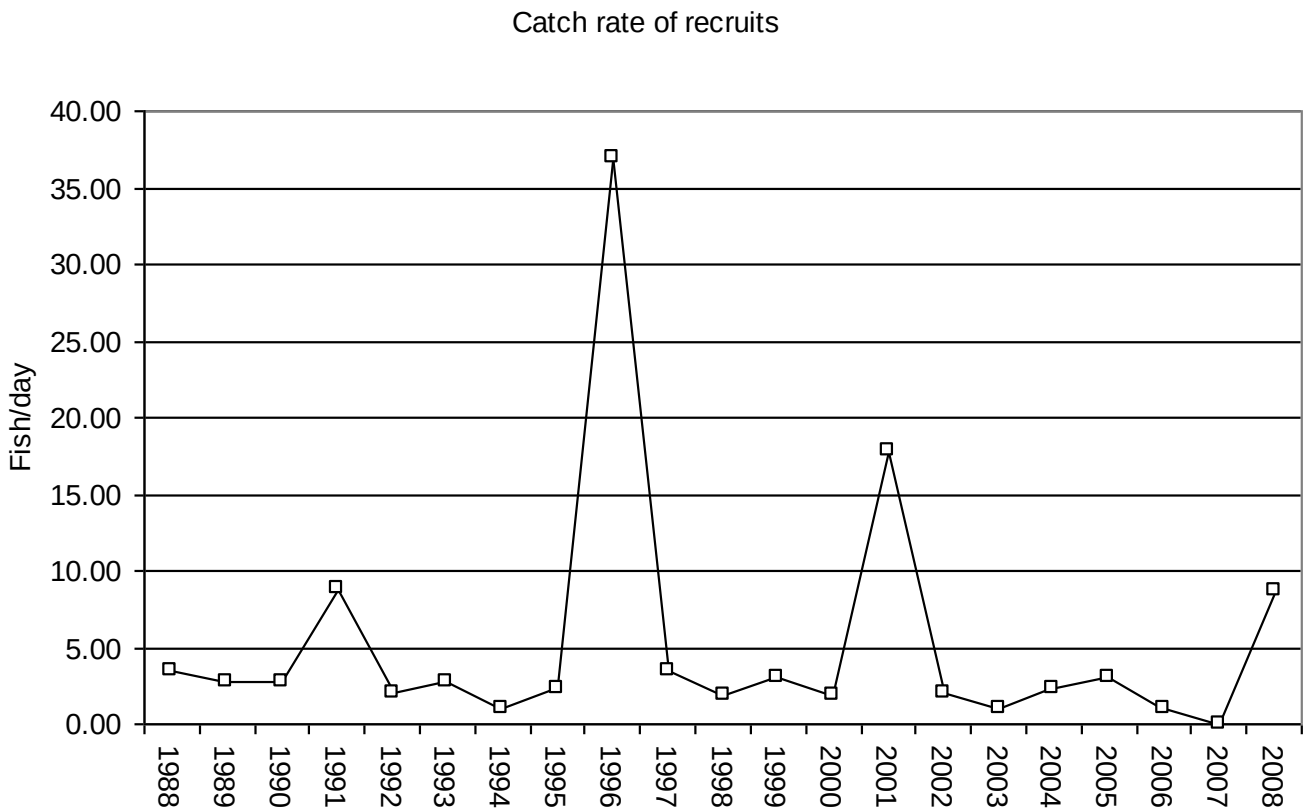
Predicting the impact of climate change by examining ecological response in a variable climatic location

How variable is the climate

Wet season flows 1976 - 2008



How variable is the response



Modelling response

GLM examination of flow and local rainfall compared to no of recruits shows best response related to both flow and rainfall as well as their timing:

- Wet season (November to March) flow
- Significant flows in January or February
- Significant local rainfall in January or February

Year	12mile recruits <250mm	wet season flow >1.5 GL	monthly flow >0.4 GL	monthly flow > 0.4 GL in Jan/Feb	12 mile rain >140 mm	High rainfall Jan/Feb
1988	41	√	√		√	√
1989	0	√	√	√	√	
1990	0	X	X	X	√	
1991	117	√	√	√	√	√
1992	0	X	X	X	√	
1993	0	X	√	X	X	
1994	0	√	√	√	√	
1995	5	X	X	√	X	X
1996	1236	√	√	√	√	√
1997	18	√	√	X	√	
1998	0	X	X	√	X	
1999	49	√	√			√
2000	9	X	X	√	X	√
2001	193	√	√	√	√	√
2002	7	X	X	√	X	√
2003	14	√	√		√	
2004	11		√	√	√	√
2005	24		X	√	√	
2006	6	X	X	X	X	X
2007	0	X	X	X	X	X
2008	360	√	√	√	√	√

X	Conditions outside range
	Conditions close to range
√	Conditions inside range

Predicted outcomes of climate change

- Thresholds –both rainfall and flow- will continue to occur
- Fewer but larger flow events will occur - period between flood events will increase
- This means that time between major recruitment events will also increase

Predicted Consequences

- Most barramundi live less than 8 years – shortage of adults if more than 8 years between events
- Barramundi change sex – large barramundi are female. Gender imbalance could occur if young fish are not recruiting

Predicted Consequences