After the rain: predicting the future for small-bodied threatened native fish in the Lower Murray

Threatened native freshwater fish conservation

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MURRAY FUTURES

Lower Lakes & Coorong Recovery

Overview

- **Project**
- **Introduce the species of concern**
- **3 phases of response**
- **Monitoring as an adaptive management tool**
- **Future for these species**

Project: Ensuring post-drought recovery of threatened small-bodied native freshwater fish in the SA MDB

Few life phases

➢Drought Action Plan (state funded project). Project developed out of a highly reactive response required to rapidly drying aquatic ecosystems across Lower Murray and decline of native freshwater fish

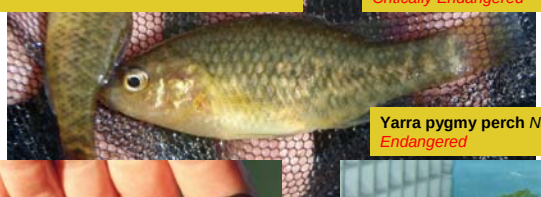
➢Critical Fish Habitat (federal funded project). Restoring Ecological Character of the CLLMM site by returning fish to the site

➢Works in compliment to TLM threatened fish monitoring program

Species of concern: Story … 2007 5 species of small-bodied threatened fish were chosen as high priority for protection

Southern pygmy perch *Nannoperca australis*
Vulnerable

Murray hardyhead *Craterocephalus fluviatilis*
Critically Endangered



Yarra pygmy perch *Nannoperca obscura*
Endangered

River blackfish *Gadopsis marmoratus*
Vulnerable

Southern purple-spotted gudgeon *Mogurnda adspersa*
Endangered

3 phases of response to ensure

- Species survival (no extinctions)
- Protection through drought
- Enhancement of refuge
- Maintenance of species genetic diversity

✓ Maintain the Ecological Character of the CLLMM region

Phase 1: Rescue

2007-2008

Phase 2: Recovery phase 2008 - 2011

Phase 3: Restoration 2011 onwards

Monitoring as an adaptive management tool

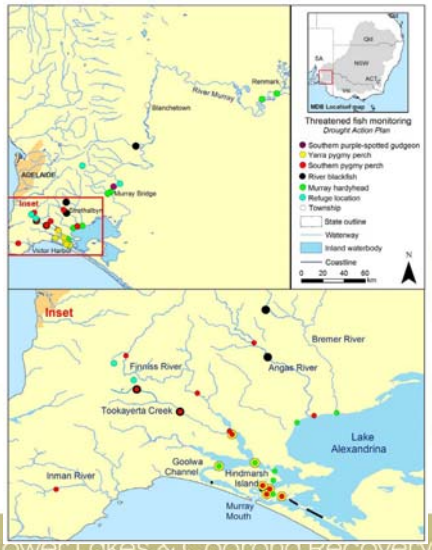
Monitoring as an adaptive management tool

- Collecting data since 2006 (SARDI/ AQUASAVE/ ADELAIDE UNI)
- Data collected quarterly reviewed quarterly by a steering group who then directed management and funding efforts
- Method included assessing: habitat availability, water quality parameters, fish abundance and recruitment, water level
- Monitoring is a key element in determining environmental watering requirements and where to direct management efforts including funding bids

Distribution of threatened fish across the CLLMM region

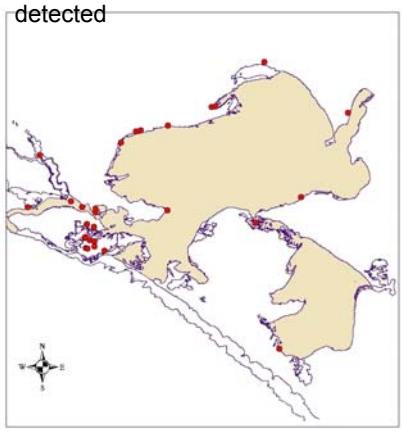
DAP = 26 sites, 16 CLLMM

2010-2011 = 0 threatened fish detected



TLM = 25 CLLMM

2010-2011 = 0 threatened fish detected



2010-2011 = 0 threatened fish sampled in the CLLMM region

Future for these species?

- Since 2010-11 flooding … where are the fish? Dispersed? Not survived? Numbers?
- We know that small scale flooding events have proven beneficial (through e-watering efforts)
- We don't know how large scale flooding events will impact these species
- 2011 onwards we are planning for restoration of fish that were rescued and bred

Conclusions and comments

1) Monitoring is an essential component to

- understanding habitat preference across varying environmental conditions
- tracking abundance and recruitment
- knowing when to act (through complementary set of triggers)

2) These fish were once relatively abundant in the CLLMM region

3) Drought has had a highly negative impact on species survival and recruitment

4) Drought drove fish into refugia = know where they are, concentration of fish for enhanced spawning

5) ER ensured survival of fish and potential for fish restoration

6) Larger flooding events have had an unknown impact on threatened fish, as they are more difficult to sample, larger dispersal could be leading to more diluted pops, more difficult to breed

7) Assumption is the return of water = recovery

Summary fish outputs 2011= future reintroduction potential

1) Yarra pygmy perch
0 known in the wild
Rescued 172 in 2007-2008
☺ 2011 over 10,0000 in breeding programs and in dams

2) Southern purple-spotted gudgeon
1 known in the wild
Rescued 30 in 2007
☺ 2011 over 8,000 across breeding programs and dams

3) Southern pygmy perch
~50 known in the wild
Rescued ~50 in 2007-2008
☺ 2011 over 1,000 in breeding programs and dams

4) Murray hardyhead
0 known (below Lock 1)
Rescued ~200 in 2008-2009
☺ 2011 over 1,000 in breeding programs and dams

5) river blackfish
~40 known in the wild
Rescued 7 in 2007
☺2011 ~15 in breeding program

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