

# Overview - Key Points

- **Multiple stressors interacting and in combination – integrated restoration plan**
- **Time for action is now – planning needs to move on to implementation**
- **Ecosystem approach is key to successful monitoring, research, and adaptive management**
- **Look to successfully implemented large-scale programs for guidance**

# The Kissimmee River Restoration Project

## Developing Restoration Expectations (Metrics)

### Long-term Process (1992-1995) with External Advisors

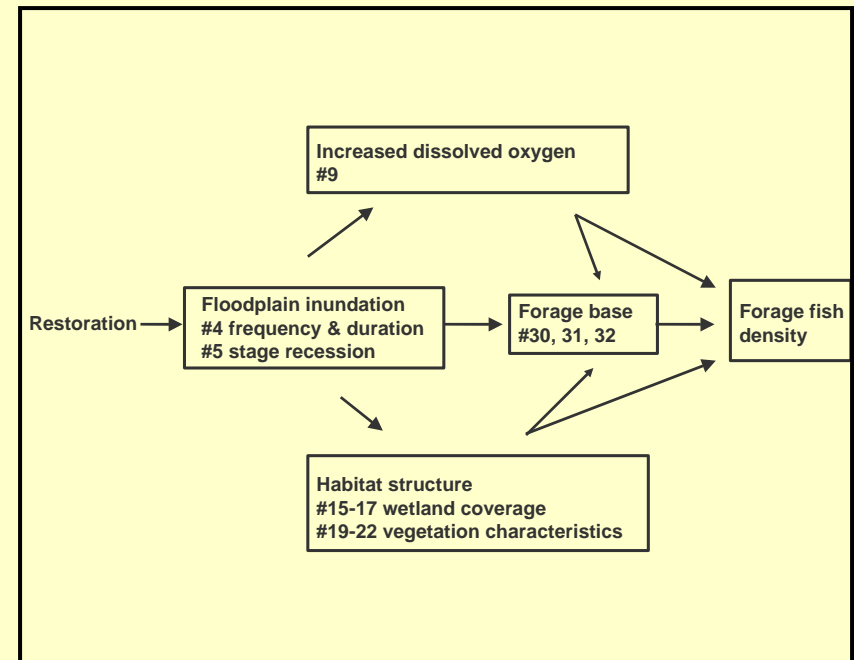
Key Product – Dedicated Issue of Restoration Ecology (1995)



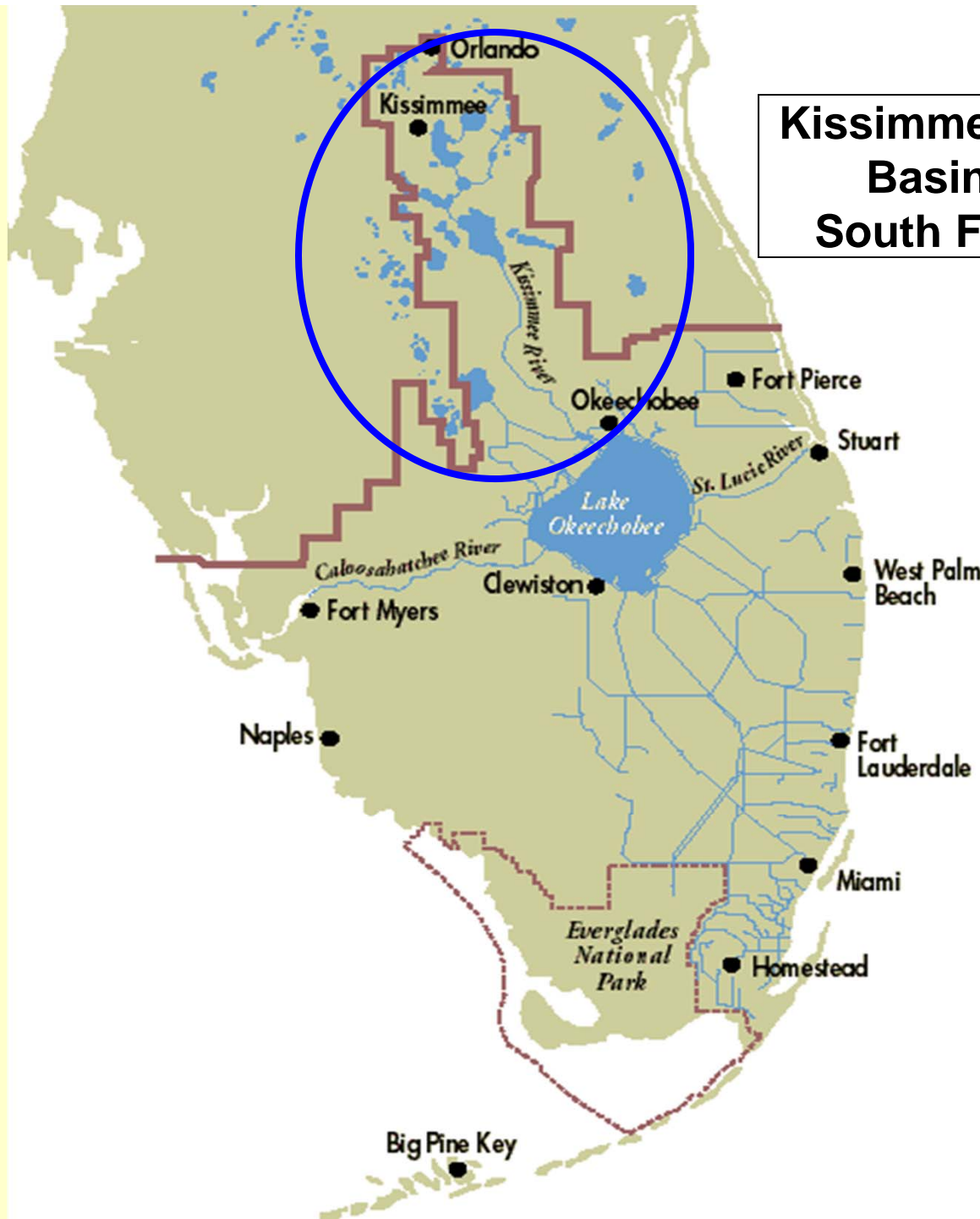
Restoration of the Kissimmee River

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Applying restoration expectations



**Kissimmee River  
Basin in  
South Florida**

**Pre-channelized Kissimmee River – 1950s**





**C-38 Canal and Remnant Kissimmee River  
Post-channelization circa 1980**

# Anatomy of the Phase I Backfilling



**February 9, 2001**

# Simple Conceptual Model

Restoration → Abiotic → Biotic

Flow

Geomorphic

Substratum

Algae

Plants

Invertebrates

Hydrologic

Dissolved  
Oxygen

Fish

Amphibians

Birds

Hydroperiod

# 60 Restoration Expectations (Metrics)

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- Hydrology - 6
  - Geomorphology - 2
  - Water Quality - 4
  - Vegetation - 10
  - Invertebrates - 11
  - Algae - 2
  - Amphibians - 2
  - Fish - 7
  - Birds - 11
  - Listed Species - 5
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Expectations linked to an experimental design, location and frequency of measurements, methods to be used, and ways to analyze and report the resulting data.

<http://my.sfwmd.gov/portal/page/portal/sfwmdmain/home%20page>



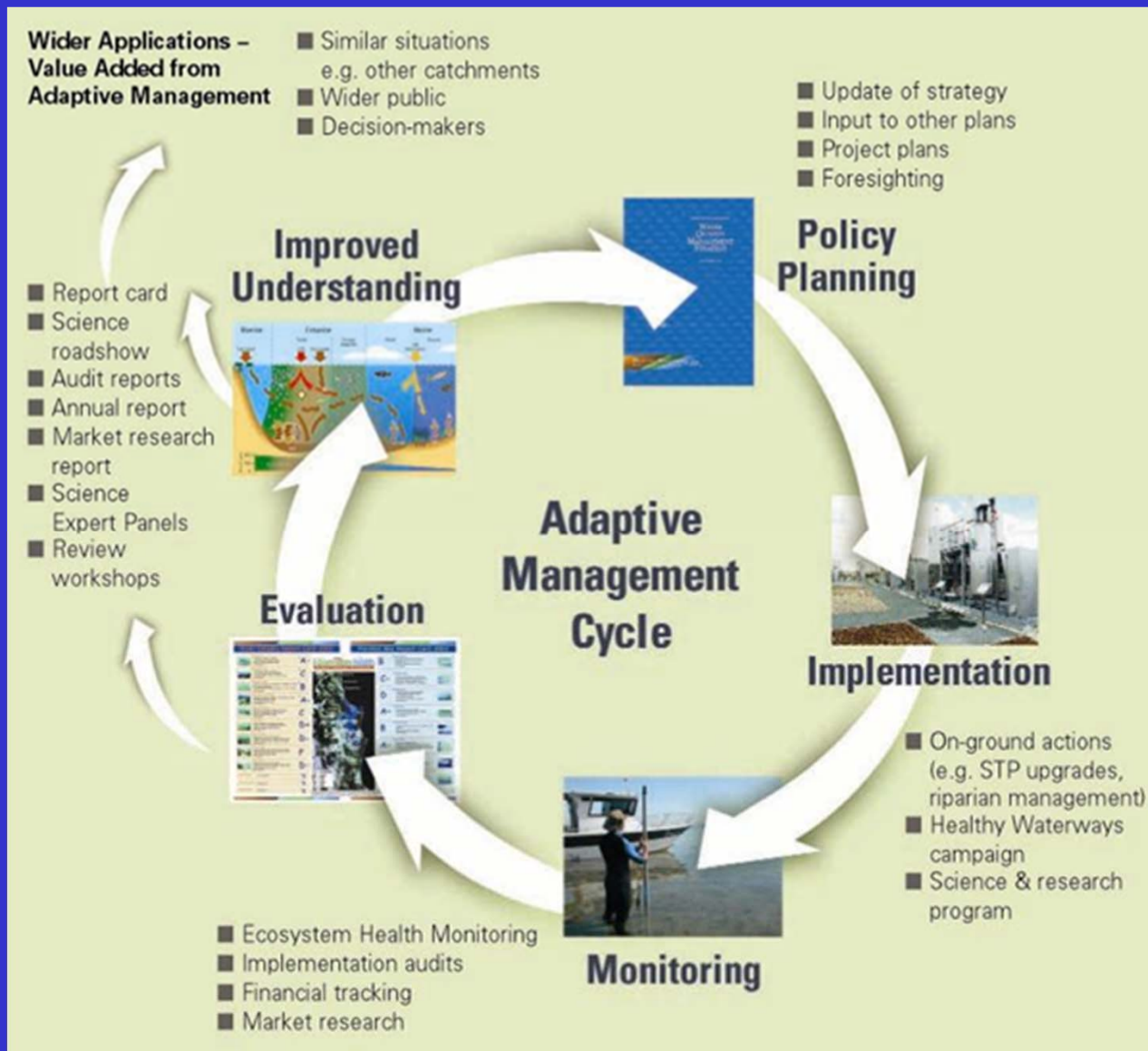
# Southeast Queensland, Australia - 2007

- ◆ 15 major catchments
- ◆ 22,672 km<sup>2</sup>
- ◆ 19 local government areas
- ◆ Population 2.5 m
- ◆ Fastest growing region in Australia





# Adaptive Management Framework



- ongoing knowledge acquisition
- critical role of monitoring
- continuous improvement in the identification and implementation of management.
- effective communication of knowledge for policy/planning

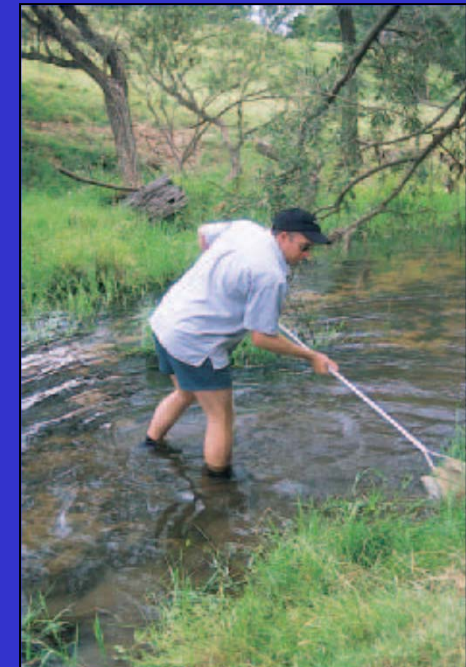
# Ecosystem Health Monitoring Program

## Freshwater EHMP

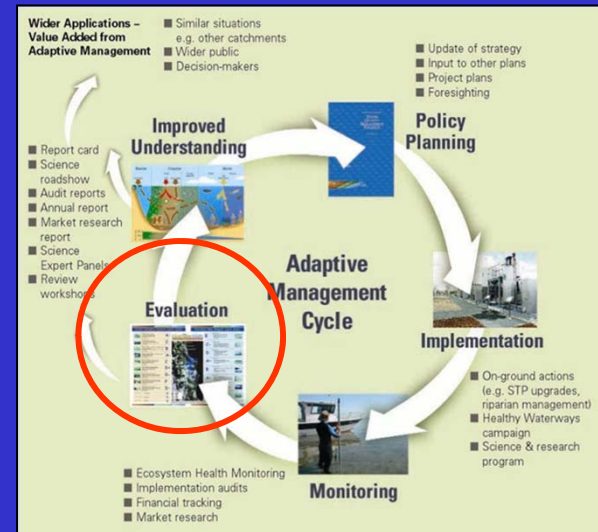
- Designed stage 3 ; Implemented 2002



120 freshwater sites (sampled 2x/yr)



# Report Cards on Progress



## Ecosystem Health Monitoring Program

### A comprehensive monitoring program

The Ecosystem Health Monitoring Program (EHMP) delivers a regional assessment of ecosystem health for the waterways of South East Queensland. With its "catchment to coast" philosophy, the program targets both freshwater and estuarine/marine environments, in an area extending from Noosa in the north, south to the NSW border and west to Toowoomba. The EHMP uses rigorous science to identify waterway health incorporating a range of biological, physical and chemical indicators. The monitoring of appropriate indicators for the estuarine/marine component of the EHMP started in Moreton Bay in 1999, expanded north to the Sunshine Coast in 2001 and south to the Gold Coast in 2002, and now includes 250 monitoring sites. The EHMP expanded into the freshwater catchments in 2002, with a total of 120 freshwater sites now being monitored in South East Queensland's rivers and streams.

### A partnership approach

The EHMP was established in response to requests by the 19 Local Governments and other stakeholders in South East Queensland for provision of an independent audit of the effectiveness of environmental protection and management measures undertaken by their agencies. The program is managed by the Moreton Bay Waterways and Catchments Partnership on behalf of the various stakeholders and is implemented by a large team of experts from the Queensland Government (Natural Resources and Mines, Environmental Protection Agency, Queensland Health Scientific Services), universities (University of Queensland, Griffith University) and CSIRO.

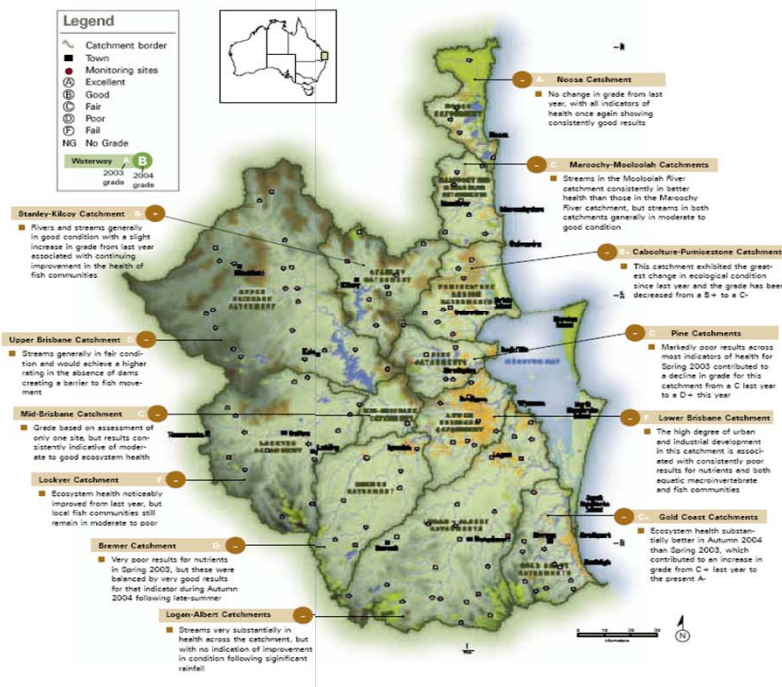
### Integrated into an adaptive management framework

The EHMP reports on regional ecosystem health condition, which can be used to provide long-term feedback on the effectiveness of management actions undertaken to protect South East Queensland catchments, waterways and Moreton Bay, and to identify emerging issues that may require management intervention. To achieve this, the program is embedded into the Partnership's adaptive management framework that links monitoring to management objectives and regular review and evaluation of the effectiveness of our actions.

The EHMP has received national and international recognition, and is considered one of the best comprehensive marine, estuarine and freshwater ecosystem health monitoring programs in Australia.

Detailed information on the indicators and methods employed in the EHMP can be found in the Ecosystem Health Monitoring Program 2002 - 2003 Annual Technical Report published by the MBWCP, or by visiting the Healthy Waterways website at [www.healthywaterways.org](http://www.healthywaterways.org).

## Freshwater Report Card 2004



## Estuarine and Marine Report Card 2004

